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Podarcis pityusensis Newspaper clipping

A clippings and articles section with as focus the extinction event of the Pityusic wall lizard populations collected from 2010 to today




EL MUNDO

El PSOE hace campaña con la amenaza de un esquizofrénico

La Fiscalía exige a la Generalitat que vacune a policías y guardias

«El virus está devorando a la gente»


PERIÓDICO de IBIZA Y FORMENTERA

Un motorista pierde un pie tras ser embestido de noche por un amigo

Mascarillas en la playa por un día


EL PAÍS

El PP europeo exige duros controles a España por las ayudas de la UE

Los populares españoles se unen a los halcones para reforzar la vigilancia al Sur

La tensión entre progresistas y conservadores se eleva en el Constitucional

El último pulso se centra en la fórmula de juramento de 29 diputados

"No somos el villano ambiental del mundo"

DIARIO de IBIZA

El puerto de Eivissa, saturado

La firma de hipotecas, paralizada en las Pitiüses por la sentencia del Supremo


IBIZA KURIER

Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Warnung und Hilferuf: Farmer sendet ein SOS in Form von 60 Kilo Gerstensamen

Table of contents

24-07-2010 - Ignacio Siliceo and José A. Díaz - A comparative study of clutch size, range size, and the conservation status of island .... (article) 1
26-07-2010 - Carmen Álvarez et al. - Iberian snakes recently introduced to the Balearic Islands (article) 2
10-10-2010 - Marten van den Berg - Two new islet locations of Podarcis pityusensis formenterae near Formentera island (article) 3
28-12-2010 - Elena Soto - The Mediterranean according to lizards (research) 4
10-05-2011 - Samuel Pinya and Miguel A. Carretero - The Balearic herpetofauna: a species update and a review on the evidence (article) 7
04-06-2011 - Carmelo Convalia - The color of lizards (research) 8
28-12-2010 - Laura Jurado - The Boscà Pityusic lizard (research) 11
06-02-2012 - Opinión - Snake versus lizards (opinion) 13
23-02-2012 - José M. L. Romero - A new subspecies of lizard is being studied on Es Vaixell (research) 14
27-03-2012 - José A. Mateo and Enrique Ayllón - Feasibility of Snake Control in Ibiza and Formentera (article) 15
08-04-2012 - Willian E. Cooper Jr. And Valentín Pérez-Mellado - Historical influence of predation pressure on escape by ..... (article) 16
10-05-2012 - Nathan Dappen - Intralocus Sexual Conflict, Ontogenetic Conflict and Color Evolution in the Ibiza Wall Lizard ..... (article) 17
10-05-2012 - Iolanda Silva Rocha - Patterns of biological invasion in the herpetofauna of the Balearic Islands: ..... (article) 18
17-08-2012 - Nathan Dappen and Joris van Alphen - Cold-blooded Cannibals: Extreme Adaptations to Island Life (educational) 19
17-08-2012 - Nathan Dappen et al. - "The Symbol" video-update #1-2 (research) 20
12-09-2012 - Nathan Dappen et al. - "The Symbol" video-update #3-4 (research) 21
14-09-2012 - William E. Cooper Jr & Valentín Pérez-Mellado - Historical influence of predation pressure on escape by Podarcis ..... (article) 22
07-01-2013 - Joana M. Buades et al. - Variability of the mc1r Gene in Melanic and Non-Melanic Podarcis lilfordi and Podarcis ..... (article) 23
19-05-2013 - Antònia M. Cirer - Destiny stuck on an island (educational) 24
16-06-2013 - Antònia M. Cirer - Why are there black lizards? (educational) 27
30-06-2013 - Antònia M. Cirer - The lizards of Formentera (educational) 30
28-07-2013 - Antònia M. Cirer - What do lizards eat? (educational) 33
31-07-2013 - Nathan Dappen et al. - The Symbol: Wall lizards of Ibiza and Formentera (book) 35
03-08-2013 - Antònia M. Cirer - The symbol (opinion) 37
21-08-2013 - V. Rodríguez et al. - Multilocus genetic diversity and historical biogeography of the endemic wall lizard from Ibiza ..... (article) 38
20-06-2014 - José M. L. Romero - Pityusic lizards fear horseshoe whip snakes (opinion) 39
08-07-2014 - Opinión - Snakes and lizards (opinion) 40
16-09-2014 - José M. L. Romero - Lizards in the diet of rats (research) 41
27-01-2015 - Asociación Herpetológica Española - Pilot project for snake control in Ibiza 2015. (presentation) 43
10-02-2015 - Enrique Ayllón - The horseshoe whip snake (Hemorrhois hippocrepis) in the Balearic Islands ..... (article) 44
10-02-2015 - Carretero, M.A. & Silva-Rocha, I. - The ladder snake (Rhinechis scalaris) in the Balearic Islands. (article) 45
10-02-2015 - Mateo, J.A. - The Montpellier garter snake (Malpolon monspessulanus) in the Balearic Islands. (article) 46
08-04-2015 - Iolanda Silva-Rocha et al. - Snakes on the Balearic Islands: An Invasion Tale with Implications for Native Biodiversity ..... (article) 47
05-05-2015 - IB3 Notícies - The fight against snakes has intensified in Ibiza (control) 48
21-05-2015 - José M. L. Romero - Tagomago's lizards, stressed (opinion) 49
04-07-2015 - Elba María Montes et al. - Preliminary data from the snake control pilot project on the island of Ibiza (article) 50
06-07-2015 - Marten van den Berg et al. - New remarkable observations on the population of Podarcis pityusensis at Ses Margalides ..... (article) 51
08-07-2015 - José Mateo - Introduced Amphibians and Reptiles in the Balearic Islands: A Review of What We ..... (article) 52
08-07-2015 - Lluis Parpal et al. - COFIB 11 years working for biodiversity conservation (article) 53
27-07-2015 - Juan A. Torres - A shed snake has been found on the islet of s'Espartar, in the heart of the nature reserve (observations) 54
09-08-2015 - Marta Vázquez - Lizards and ants, under study (research) 55
29-01-2016 - José M. L. Romero - 87 years immersed in ethanol (research) 57
19-02-2016 - José M. L. Romero - Global warming threatens lizards (research) 59
11-03-2016 - Marten van den Berg et al. - Color formation in Lacertidae (presentation) 61
14-03-2016 - Marten van den Berg et al. - Ontogenetic color change in Podarcis pityusensis - first observations - (article) 62
18-05-2016 - Juan A. Torres - The snakes arrive in Ibiza town (observations) 63

Table of contents

21-05-2016 - Laura Riera - Snakes will eat lizards until they are full if we don't act (educational) 64
24-05-2016 - Europa Press - The lizards could disappear in Ibiza due to the proliferation of snakes (politics) 66
21-05-2016 - José M. L. Romero - The evolution of lizards in 3D (research) 67
22-06-2016 - IB3 Notícies - Proliferation of snakes in the fields and forests of the Pityusic Islands (control) 70
16-08-2016 - José M. L. Romero - The evolution of lizards in 3D (research) 71
18-09-2016 - Joan Costa - The symbiosis of the 'sargantana' and the 'olivella' (educational) 73
20-09-2016 - Abraham Mencía et al. - Not so naïve: Ibiza wall lizards acquired the ability to recognize alien snakes in a few years (summary) 74
29-11-2016 - Zaida Ortega et al. - Rapid acquisition of antipredatory responses to new predators by an insular lizard (article) 75
13-12-2016 - Arlo Hinckley et al. - The fall of a symbol? A high predation rate by the introduced horseshoe whip snake ..... (article) 76
07-01-2017 - Sonia Ribas - Ibiza captures almost 500 snakes in one year (control) 77
10-01-2017 - Elena Soto - Ibiza and Formentera, the Eden of snakes (control) 78
12-01-2017 - Ibiza - Snakes have already killed half of the lizards on the GEN farm (politics) 80
20-01-2017 - José M. L. Romero - The nightmare of the Ibizan lizards (educational) 82
25-02-2017 - IB3 Notícies - Snakes, threat to native wildlife (control) 84
26-04-2017 - IB3 Notícies - More than 150 snakes captured in the Pitiüses so far in 2017 (control) 85
26-04-2017 - Ricardo F. Colmenero - Every five hours a Pityusic lizard falls into a trap (control) 86
01-05-2017 - Valentín Pérez-Mellado et al. - The legacy of translocations among populations of the Ibizan Wall Lizard ..... (article) 87
17-05-2017 - IB3 Notícies - Medi Ambient captures 200 snakes in a month and travels to Formentera (control) 88
18-06-2017 - Sonia Ribbas - Homenade DIY snake repellent in Ibiza (control) 89
16-07-2017 - IB3 Notícies - The campaign against snakes in Formentera has already doubled the number of captures compared to last year (control) 91
17-08-2017 - IB3 Notícies - Invasive snakes on the rise (control) 92
05-09-2017 - Elena Soto - Horseshoe whip snake, a successful invader (control) 93
24-10-2017 - Amics de la Terra - The Lizards Amics de la Terra Ibiza (conservation) 96
26-01-2018 - Europa Press - 9,000 euros to hunt snakes in Ibiza (control) 97
30-05-2018 - Iolanda Silva-Rocha et al. - Herpetological History of the Balearic Islands: When Aliens Conquered These Islands ..... (article) 98
10-06-2018 - Antònia M. Cirer - The snakes wake up (educational) 99
19-06-2018 - VV.AA. - Strategy for the management, control and possible eradication of invasive snakes on islands. (article) 101
23-08-2018 - IB3 Notícies - The snake is the species that is causing the most harm to biodiversity in the Pityusic Islands (conservation) 102
10-12-2018 - Antònia M. Cirer - Color, a biological research tool in the Pityusic lizard (Eivissa, 64: 19-28) (article) 103
31-01-2019 - Iolanda Raquel Silva-Rocha et al. - Alien reptiles on Mediterranean Islands: A model for invasion biogeography (article) 104
26-04-2019 - IB3 Notícies - Coneixem the sargantana of Formentera (educational) 105
10-06-2019 - Antònia M. Cirer - Islands without invasive species. (Eivissa, 66: 39-45) (article) 106
12-06-2019 - Sonia Ribbas - 9,000 euros to hunt snakes in Ibiza (control) 107
18-08-2019 - R.I. - A horseshoe whip snake in Santa Gertrudis (observations) 108
09-09-2019 - Laura Amores - 1,800 snakes have been captured in the Pitiusas over the past five months (control) 109
10-12-2019 - Elba Montes et al. - Reproduction ecology of the recently invasive snake Hemorrhois hippocrepis on the island of Ibiza (article) 111
01-02-2020 - Mike Zawadzki - Success model "island lizard" – or rather a bleak future for the Ibiza wall lizard Podarcis ..... (article) 112
11-06-2020 - Manu Gon - "Our snakes are not poisonous." (control) 113
11-06-2020 - Manu Gon - Alejandro Macías's daily work (control) 116
12-06-2020 - R.I. - A snake tries to access a boat in Ibiza (observations) 118
23-06-2020 - IB3 Notícies - The invading snakes of Eivissa learn to swim (control) 119
29-06-2020 - Paco S. Pérez - Eight large snakes capturedon a farm in Sant Llorenç (observations) 120
13-07-2020 - Manu Gon - The snake breeding ground on Ibiza continues to increase (control) 121
22-08-2020 - IB3 Notícies - The presence of snakes is getting worse (control) 124
24-08-2020 - Ellie Shechet - A plague on Ibiza (conservation) 125
10-09-2020 - Antònia M. Cirer - Polymorphism in lizards from the island of Formentera (Podarcis pityusensis formenterae) (article) 136

Table of contents

10-10-2020 - Samuel Pinya Fernández and Carlota Viada - "Plan Bosca" for the conservation and recovery of amphibians and reptiles ..... (article) 137
27-12-2020 - Vincent Ribas - The lizards of the es Vedrà reserve are in an "excellent" state of conservation (conservation) 138
11-01-2021 - Josep Àngel Costa - Snake relief (control) 140
11-01-2021 - Natalia Cárdenas - Ibiza associations launch the 'SOS Salvem sa Sargantana Pitiüsa' campaign to combat the snake threat (control) 142
01-02-2021 - Natalia Cárdenas - 'SOS Salvem sa Sargantana Pitiüsa' needs volunteers to Eradicate snakes from Ibiza and Formenter (control) 143
04-02-2021 - Redacció Eivissa - Snake trapping campaign in Ibiza to save the native lizard (control) 144
10-03-2021 - Carlota Viada Sauleda - Red Book of Vertebrates of the Balearic Islands (article) 145
11-03-2021 - Elba Montes et al. - Collapse of the endemic lizard Podarcis pityusensis on the island of Ibiza mediated by an invasive snake (article) 146
17-03-2021 - Laura Ferrer - The Ibizan wall lizard will be extinct by 2030 due to snakes (conservation) 147
19-03-2021 - Isaac Vaquer Ferrer - A study warns of the possible extinction of the lizard in Ibiza by 2030 (conservation) 151
21-03-2021 - R.I. - Ibiza town begins campaign to preserve the Pityusic lizard (control) 152
21-03-2021 - Redacción - Ibiza town delivers snake traps in a campaign to save lizards (control) 153
22-03-2021 - Natalia Cárdenas - PROU demands that the Council control the entry of snakes into Ibiza (politics) 154
23-03-2021 - Xescu Prats - Bureacracy extinguishes lizards (opinion) 156
30-03-2021 - Laura Ferrer - Elba Montes: We need to create captive colonies of the Ibizan wall lizard because the outlook is very ..... (conservation) 157
05-04-2021 - Redacció Eivissa - The proliferation of snakes in the Pityusic Islands could make the native lizard disappear before 2030 (control) 161
08-04-2021 - César Navarro - Without lizards but with inept people (opinion) 162
09-04-2021 - Natalia Cárdenas - Untaltoni's cartoon: Middle class? No: Lizard (opinion) 163
12-04-2021 - Joan Lluis Ferrer - Vicent Roig: "To eradicate snakes, we must restrict the entry of olive trees" (politics) 164
14-04-2021 - Laura Ferrer - The fight against snakes finds an ally in the humor of the Pageses Emprenyades (video) (snakes) 167
17-04-2021 - Vicent Ribas - Eivissa donates support to the platform and starts a campaign to visualize this little fight (politics) 168
19-04-2021 - Isaac Vaquer Ferrer - The extinction of the lizard would endanger endemic plants of Ibiza (ecology) 169
20-04-2021 - Manu Gon - Learning how to fight Ibiza's snakes at school (control) 172
25-04-2021 - Redacción Local - Training workshop to train 200 volunteers in snake control (control) 174
29-04-2021 - Isaac Vaquer Ferrer - 'SOS salvem sa sargantana' distributes 47 snake traps in Santa Eulària (control) 175
12-05-2021 - Weizhao Yang et al. - Extensive introgression and mosaic genomes of Mediterranean endemic lizards (article) 177
18-05-2021 - Redacción - A study reveals that the diversity of colors of the Ibizan lizard is due to the mixture of Balkan, Greek and ..... (research) 178
21-05-2021 - Elba Montes - Natural History and impacts of an invasive snake: the horseshoe whip snake, ... (thesis) 180
31-05-2021 - Redacció Eivissa - Volunteers in Ibiza to protect the Pityusic lizard (control) 181
10-06-2021 - Antònia M. Cirer - Black lizards in unexpected places (Eivissa, 69: 4-11) (article) 182
22-06-2021 - Redacción - GEN y GOB warn of the "imminent" disappearance of the lizards due to the proliferation of snakes (opinion) 183
07-08-2021 - Marta Torres Molina - The 2,342 lizards by Sebastián Candela (educational) 185
23-09-2021 - Antònia M. Cirer - Presentation of the Puig des Molins Lizard Reserve project ..... (presentation) 190
26-09-2021 - Redacción - Lizards and snakes (conservation) 191
15-10-2021 - Redacción - Agreement with Barcelona Zoo to protect the calàpet and the Ibizan lizard (conservation) 192
10-11-2021 - Redacción - Elba Montes receives an excellent cum laude for her doctoral thesis on invasive snakes in Ibiza (research) 194
24-11-2021 - Antònia M. Cirer - Final campaign report, closed on 20-11-2021, SOS Salvem sa Sargantana Pitiüsa (article) 196
25-11-2021 - Elba Montes et al. - Rapid endangerment of the lizard Podarcis pityusensis by an invasive snake demands an immediate ..... (article) 197
26-11-2021 - Redacción - SOS Sargantanes, Francesc de Borja Moll award (control) 198
10-12-2021 - Antònia M. Cirer - The SOS Salvem sa Sargantana Pitiüsa volunteer group on the island of Ibiza (Eivissa, 70: 12-18) (article) 199
10-12-2021 - Antònia M. Cirer - URGENT! LIZARDS OR SNAKES (leaflet) 200
10-12-2021 - Antònia M. Cirer - CA NOSTRA, LIZARD RESERVE (leaflet) 201
14-12-2021 - Laura Ferrer - Sebastián Candela: "Politicians need to act more decisively to protect lizards." (politics) 202
25-01-2022 - José M. L. Romero - Snakes have arrived in Ibiza's Ses Salines Natural Park, threatening birds and lizards (snakes) 207
04-02-2022 - Manu Gon - Lizards, culture, politics, and a whole lot of history in issue 70 of 'Eivissa' magazine (educational) 209
22-02-2022 - Eugenio Rodríguez Martos - The environment Department requests the APB to create a quarantine zone to control their entry (politics) 211

Table of contents

17-03-2022 - Redacción - Antònia Cirer explains at the Urgell Primary School the importance of lizards and how to hunt snakes (educational) 212
17-03-2022 - Redacción - Ibizan lizards will have a reserve at the Puig des Molins Museum to ensure their survival (educational) 213
17-03-2022 - Gisela Revelles - Ibiza is committed to saving the lizards and creating a reservoir in Puig des Molins (control) 215
18-03-2022 - Josep Àngel Costa - The Ibiza wall lizard is key to preventing micro-insect infestations (ecology) 217
19-03-2022 - Verónica Carmona Acedo - A reserve for Ibiza's lizards (opinion) 219
27-03-2022 - José Miguel L. Romero - No, snakes won't eat all of Ibiza's lizards before 2030 (opinion) 220
29-03-2022 - Marta Torres Molina - The story of the 'sargantanes' which are hunt by snakes in Ibiza (educational) 223
02-04-2022 - Marià Mayans i Marí - About some incorrect statements regarding snakes and lizards (opinion) 225
05-04-2023 - María D. Calvo Vila - Lizards and snakes, a very serious problem (opinion) 226
03-04-2022 - Laura Amores - Snake catching training in Ibiza (control) 227
05-04-2022 - Redacción - Nearly 1,300 snakes were captured in Santa Eulària in 2021 (control) 229
21-04-2022 - IB3 Notícies - Cofib has captured almost 1,800 snakes in the Pityusic Islands in 2021 ..... (control) 230
01-05-2022 - Marten van den Berg - Morning copulation (educational) 231
04-05-2022 - R.I. - Volunteers are needed to maintain the lizard reserve at Soto Fosc (control) 232
29-05-2022 - Ibiza Kurier - For snakes, Ibiza is a culinary paradise – One eats about 500 lizards (control) 233
31-05-2022 - Redacción - The Council per day.- Ibiza will celebrate Environment Day with a day dedicated to the lizard (politics) 237
04-06-2022 - Josep Àngel Costa - "Ibiza's lizards are changing their behavior where snakes are present" (conservation) 239
05-06-2022 - Cristina Amanda Tur - Lizard trafficking from Ibiza and Formentera in the 21st century (trafficking) 242
09-06-2022 - Verónica Carmona Acedo - This is how snake traps are used in Ibiza (control) 245
25-06-2022 - Pablo Sierra del Sol - Snakes devour the iconic Ibizan lizard: "It's an environmental and cultural disaster." (conservation) 247
11-07-2022 - Isaac Vaquer Ferrer - Snakes are now present throughout Ibiza due to human mobility (control) 254
12-07-2022 - Isaac Vaquer Ferrer - Nearly 100 new volunteers join the fight against snakes (control) 256
09-08-2022 - Laura Ferrer - Young British tourists join the fight to protect the Ibiza lizard (educational) 258
10-10-2022 - Laura Ferrer - Sebastián Candela and Antònia Cirer present the book 'Sargantanes. El temps s'acaba' (educational) 260
14-10-2022 - Laura Ferrer - The extinction of lizards as a metaphor for other extinctions (educational) 262
15-11-2022 - Manu Gon - A new home for lizards at the Puig d'en Valls Primary School (control) 263
16-11-2022 - Ibiza Kurier - Neophytes and Neozoans: Are the newcomers beneficial or harmful? (ecology) 265
08-12-2022 - IB3 Notícies - For the first time this 2022 a horseshoe snake is found in Formentera (control) 268
14-12-2022 - Gisela Revelles - The lizards now have sanctuaries in the Necropolis and in es Soto (control) 269
20-12-2022 - Antònia M. Cirer - Final campaign report, closed on 15-12-2022, SOS Salvem sa Sargantana Pitiüsa (article) 271
20-01-2023 - NOVA FALCONS - Snakes in Ibiza and Formentera (Part I) (snakes) 272
28-01-2023 - NOVA FALCONS - Snakes in Ibiza and Formentera (Part II) (control) 277
30-01-2023 - Efe - Snake control in Ibiza: The Government restricts the entry of olive trees and declares the lizard a vulnerable species (control) 281
02-03-2023 - IB3 Notícies - Cofib captures 2,700 snakes in Ibiza in 2022, which is twice as much as the previous year (control) 282
06-04-2023 - Andrés Ferrer Taberner - Lizards on board (opinion) 283
14-04-2023 - AHE, APH and UIB - Biological Invasions on Islands - Book of summaries - (article) 284
24-04-2023 - Vanessa Hernández - The Consell acknowledges that it is impossible to eradicate invasive snakes from Ibiza (control) 285
24-04-2023 - Esther Matutes - They demand stronger measures to eradicate snakes and protect the lizard in Ibiza (control) 287
12-05-2023 - Vanessa Hernández - Shelters in Santa Eulària to protect the lizards (control) 288
15-05-2023 - IbizaHEUTE - Ibiza protects lizards from voracious snakes (control) 290
19-05-2023 - Toni P. - Marta Torres' art as inspiration for saving the lizards (educational) 292
26-05-2023 - IBIZA KURIER - Ibiza uncut: Snake Catcher Tim (control) 294
30-05-2023 - Jorge Miñano - A horseshoe snake zips through the sea at full speed in Cala Jondal, Ibiza (snakes) 295
31-05-2023 - Marten van den Berg and Mike Zawadzki - What goes up must come down ..... (article) 296
10-06-2023 - Antònia M. Cirer - Twenty years after the arrival of snakes in Ibiza (Eivissa, 74: 13-19) (article) 297
27-06-2023 - Toni P. - Lizards in the hotel (control) 298

Table of contents

03-07-2023 - Toni P. - Free step-by-step guide to hunting snakes and saving the lizards (control) 300
09-07-2023 - NOVA FALCONS - Notes on snake control in Ibiza and Formentera (1/3) (control) 302
18-07-2023 - NOVA FALCONS - Notes on snake control in Ibiza and Formentera (2/3) (control) 307
31-07-2023 - NOVA FALCONS - Notes on snake control in Ibiza and Formentera (3/3) (control) 317
06-08-2023 - IBIZA KURIER - Lizard hotels to protect the endangered species – workshop participants learn how to build shelters (control) 327
11-09-2023 - Marten van den Berg and Mike Zawadzki - Goodbye to innocence – The silent death and disappearing of the Ibiza ..... (article) 328
17-09-2023 - Inma Saranova - The future of the Pityusic lizard is in everyone's hands (control) 329
21-09-2023 - Ferran de la Cruz - Even darker: a case of complete melanism in Podarcis pityusensis from Na Gorra Island (Ibiza) (article) 332
05-11-2023 - Bea Roselló - Treasure Hunt in Ibiza: Discovering the secrets of lizards has its rewards (control) 333
23-11-2023 - efe. Ibiza - An intensive trapping pilot project captures 93 snakes in Ses Salines and Ses Feixes (control) 335
10-12-2023 - Antònia M. Cirer - Captures of invasive snakes carried out during the 2021-2022 biennium by ..... (Eivissa, 73: 29-32) (article) 336
10-12-2023 - Antònia M. Cirer - Final campaign report, closed on 10-12-2023, SOS Salvem sa Sargantana Pitiüsa (article) 337
14-12-2023 - Juan A. Torres - Minister Simonet believes it will be very difficult to eradicate the snake infestation in Ibiza (politics) 338
21-12-2023 - R.I. - Local organizations deploy a bioprotocol to control the entry of snakes into Formentera (control) 340
23-12-2023 - Antònia M. Cirer - Construcció d`una reserva de sargantanes a casa (El Pitiús 2024: 99-101) (article) 341
25-02-2024 - José Miguel L. Romero - The 798 Ibizan lizards at the Museum of Natural Sciences (research) 342
25-02-2024 - José Miguel L. Romero - A 'lizard' and 176 'calápets' from Ibiza from 1882 (research) 346
25-02-2024 - José Miguel L. Romero - When Ibizan lizards were captured with rubber bands (research) 348
11-03-2024 - Maite Alvite - Government data confirms that "snakes have colonized practically all of Ibiza." (control) 351
03-05-2024 - R.I. - Sant Antoni donates 25 snake traps to the municipality's Hunters' Society (control) 355
06-05-2024 - IEE - Communication from the IEE to SOS Sargantanes members and volunteers (control) 356
07-05-2024 - Redacción Digital - Snakes in Ibiza: the plague that has won the battle (control) 359
08-05-2024 - S. Ribas - Snakes in Ibiza: "It's possible that in 10 or 20 years we'll be able to implement a program to eliminate them." (control) 360
10-05-2024 - Verónica Carmona Acedo - Snakes, lizards, rats and dirty dishes (opinion) 363
11-05-2024 - Redacción - The alarming reality of the Ibiza lizard and its uncertain future (conservation) 364
13-05-2024 - IBIZA KURIER - The snakes are in for the kill – dead or alive: up to 30 euros per catch (snakes) 367
17-05-2024 - Gisela Revelles - 500 snakes have already been captured in Ibiza and Formentera this year (control) 368
17-05-2024 - Redacción Digital - They are promoting the creation of urban reserves in Ibiza to protect the Ibizan wall lizard (control) 370
17-05-2024 - Esther De Miguel - Stone and wooden shelters in public gardens to save the Pityusic lizard (conservation) 372
27-05-2024 - Govern de les Illes Balears - 25th anniversary of the Freus Marine Reserve of Ibiza and Formentera (educational) 373
20-06-2024 - Europa Press - The 'Sargantanes o Serps' platform trains around 400 volunteers participating in anti-snake campaigns (control) 374
24-06-2024 - IbizaHEUTE - Ibiza: Many snakes and few lizards (control) 375
27-06-2024 - R.I. - The risk of extinction of the Pityusic lizard increases (conservation) 377
27-06-2024 - EFE - The Ibiza and Formentera lizard is becoming increasingly endangered (conservation) 378
27-06-2024 - Laura Ferrer - The Ibizan wall lizard is now officially an endangered species after losing 50% of its population in 14 years (conservation) 379
27-06-2024 - Editorial - Change of category in the Red List of the IUCN for Podarcis pityusensis, Gallotia stehlini and ..... (article) 381
27-06-2024 - P. Bowles - Podarcis pityusensis, Ibiza wall lizard (article) 382
27-06-2024 - R.I. - The public gardens of Sant Josep are a refuge and reserve for lizards (control) 383
07-07-2024 - Ivonne Arañó - The Ibizan lizard in imminent danger of extinction (conservation) 385
07-07-2024 - Cristina Amanda Tur - Snakes have already colonized the islets of Santa Eulària (snakes) 386
10-07-2024 - IB3 Notícies - The Montpellier snake has appeared for the first time in many years on the island of Ibiza (snakes) 390
11-07-2024 - Juan Gordillo Tur - Snake cages burst open in Ibiza (control) 391
16-07-2022 - Redacción - Sant Josep promotes the capture of snakes to protect the lizard in collaboration with the Hunters' Society (control) 392
24-07-2024 - Agencias - An Ibiza resident is launching a crowdfunding campaign to save the Ibizan lizard (control) 394
28-07-2024 - Editorial - Snakes: a disaster due to negligence (opinion) 395
04-08-2024 - Gisela Revelles - An expert advocates removing the lizards from Ibiza to ensure their survival (conservation) 396

Table of contents

21-08-2024 - IBIZA KURIER - The “hypothetical damage after a bite” is different for each body (snakes) 401
26-08-2024 - efe - Ibiza's lizards have 30 new snake shelters (control) 402
27-08-2024 - IbizaHEUTE - Ibiza's capital protects lizards (control) 403
09-09-2024 - Redacción - A boat will monitor the status of lizard populations on the islets of Ibiza and the possible presence of snakes (control) 404
09-09-2024 - Esther De Miguel - COFIB has a new boat to control the populations of the Pityusic lizard on the islets (control) 406
10-09-2024 - IbizaHEUTE - Pityusic Islands: Snake plague spreads (control) 407
28-09-2024 - Govern de les Illes Balears - COFIB 20th Anniversary (educational) 408
08-10-2024 - Redacción - An influencer and snake hunter Dean Gallagher "reassure" Britons about the danger of snakes in Ibiza (snakes) 409
17-10-2024 - David Ventura - The processionary caterpillar advances in Ibiza thanks to the retreat of the lizards (ecology) 411
22-10-2024 - IbizaHEUTE - Pityusic Islands: Fighting the Processionary Moth (ecology) 414
20-11-2024 - R.I. - Ibiza's lizards open safe houses in Sant Josep (control) 416
18-12-2024 - Redacción - Nearly 500 snakes captured in Ibiza in six months thanks to IbizaPreservation traps (control) 418
28-01-2025 - Redacción - A video to raise awareness about the threat posed by invasive snakes to the Pityusic lizard (educational) 420
18-02-2025 - Estela Torres Kurylo - No one is monitoring the entry of snakes into Ibiza inside trees (control) 423
18-02-2025 - IbizaHEUTE - Ibiza: Nobody controls “snake trees” (control) 426
19-02-2025 - José Miguel L. Romero - "If we're allowed to work, there will be more lizards in 2040 than there are now." (control) 427
19-02-2025 - José Miguel L. Romero - The Government will monitor Ibiza's garden centers to prevent the arrival of more snakes (politics) 429
19-02-2025 - Juan A. Torres - Nearly 4,000 snakes hunted in Ibiza and Formentera: "The lizards will not become extinct" (politics) 431
19-02-2025 - José Miguel L. Romero - Fighting the snake invasion in Ibiza: "The new battlefront is in Sant Antoni." (control) 433
19-02-2025 - IB3 Notícies - The number of captures of invading snakes in the Pityusic Islands increases (control) 436
20-02-2025 - José Miguel L. Romero - X-ray (pending) of the effects of the snake invasion in Ibiza (research) 437
21-02-2025 - José Miguel L. Romero - Snakes in Ibiza are more sauriophagous than those in the Peninsula (research) 439
23-02-2025 - Editorial - Snakes and lizards, a foreseeable catastrophe. The situation of the Pityusic lizard is critical, especially ..... (opinion) 440
23-02-2025 - Dieter Abholte - How I see it... (opinion) 441
25-02-2025 - Laura Ferrer - Invasive snakes in Ibiza are seeking food at high altitudes and are now targeting geckos (snakes) 443
25-02-2025 - Ana Bianco - This is what would happen in Ibiza if snakes wiped out lizards (ecology) 445
27-02-2025 - Laura M. Expósito - Goodbye lizards (opinion) 446
13-03-2025 - IbizaHEUTE - Brit in agitation: Snake in the attic (control) 447
19-03-2025 - Antònia M. Cirer and Marten van den Berg - Estimation of lizard density in Podarcis pityusensis island populations over ..... (article) 448
21-03-2025 - Redacción - Amics de la Terra and GEN-GOB have been reported to the Guardia Civil for "hitting snakes." (opinion) 449
23-03-2025 - Opinión - About PACMA's complaint to the GEN-GOB and Amics de la Terra associations, by Antònia Maria Cirer (opinion) 450
30-03-2025 - José Miguel L. Romero - Ibizan blue (almost black) lizards in Berlin (research) 453
01-04-2025 - Antonia Maria Cirer Costa - Endemic lizards or invasive snakes? (educational) 460
01-04-2025 - IbizaHEUTE - Free ride for olive trees – and snakes? (control) 461
26-05-2025 - Redacción - Snakes arrive in the municipality of Ibiza and traps are delivered to hunt them (snakes) 462
27-05-2025 - Redacción Digital - A neighbor: "I was very surprised to see a snake in the center of Ibiza." (snakes) 463
28-05-2025 - Laura Ferrer - The scourge of snakes in Ibiza: a five-foot snake caught with eight partridge eggs in its stomach (snakes) 464
29-05-2025 - Marta Torres Molina - A hiker in Ibiza: "I don't know what's worse: the invasion of snakes or the invasion of stupid humans." (snakes) 465
31-05-2025 - Colmillo y Arena - What if snakes invaded Ibiza? Paradise under threat (snakes) 466
31-05-2025 - Josep Àngel Costa - A hiker in Ibiza: War on Snakes in Ibiza (control) 467
31-05-2025 - Redacción - 200 snake traps distributed in Ibiza (control) 470
02-06-2025 - Toni P. - The necropolis, heritage of the Pityusic lizard (conservation) 471
03-06-2025 - Ana Bianco - Snakes in Ibiza: This is why they get into homes (snakes) 473
03-06-2025 - Redacción - A large snake appears in Sant Francesc de Formentera (snakes) 475
04-06-2025 - Redacción - A 1.5-meter snake is found run over in Sant Antoni (snakes) 476
04-06-2025 - R.I. - The Government and the Barcelona Zoo have a plan to save the Pitiusan wall lizard (conservation) 477

Table of contents

04-06-2025 - EP - Barcelona Zoo will breed Pityusic lizards to protect them from snakes (conservation) 479
05-06-2025 - IbizaHEUTE - Barcelona Zoo breeds Ibiza's lizards (conservation) 481
06-06-2025 - Esther Sánchez - Ibiza's iconic wall lizards are being wiped out by an invasive snake that's already on 90% of the island (control) 482
08-06-2025 - Josep Àngel Costa - "It blows my mind to think that a snake would jump into the sea to seek out an islet." (control) 486
08-06-2025 - M.J. Real - "They said going out on a boat in Ibiza was a good idea... until you find a swimming snake." (snakes) 490
09-06-2025 - Laura Ferrer - A snake swimming in Ses Balandres, Ibiza, has triggered alarm (snakes) 491
10-06-2025 - S. Ribas - Swimming snakes in Ibiza wipe out subspecies of island lizards (snakes) 492
11-06-2025 - Jorge Montojo - Electronic soap opera (opinion) 493
12-06-2025 - Europa Press - The Parliament requests resources from the Government to control the entry of invasive snakes (politics) 494
12-06-2025 - Redacción - A proposal to protect the lizards has been approved by Parliament (politics) 496
15-06-2025 - María José Real - The British press is already warning about a snake "invasion" in Ibiza (snakes) 497
16-06-2025 - Jerónimo Marín - The Italian press is sounding the alarm about swimming snakes in Ibiza (snakes) 498
18-06-2025 - Vanessa Hernández - Ibiza Marina becomes a special refuge for native lizards (control) 499
19-06-2025 - Redacción Ibiza - Ibiza Marina becomes a refuge for lizards (control) 501
24-06-2025 - Marta Torres Molina - She comes across a snake swimming in Benirràs: "It's a sign that you need to rethink your path." (snakes) 502
25-06-2025 - Maite Alvite - The Puig des Molins necropolis, a "biodiversity bubble" (conservation) 503
16-06-2025 - María José Real - This is how snakes end in Ibiza (control) 506
17-06-2025 - Redacción - From trap to shelter to save lizards from invasive snakes (control) 507
21-06-2025 - Naroa Sánchez - Milka, the dog trained to fight against the invasion of snakes in Ibiza (control) 508
26-06-2025 - Marta Torres Molina - "Snakes deserve to die with respect, not like some people are killing them in Ibiza." (opinion) 510
29-06-2025 - Arual Martínez - "We tried to save baby birds, but many didn't survive after being in the snakes' mouths." (snakes) 511
30-06-2025 - Aarón Benet - Snakes in Ibiza: From Trap to Sack (control) 513
30-06-2025 - Marisol Plaza Sánchez - Real danger or unfounded alarm? What experts say about snakebites in Ibiza (snakes) 515
02-07-2025 - Laura Ferrer - Extraordinary discovery of five enormous snakes in the same trap on a farm in Sant Llorenç (snakes) 517
03-07-2025 - Marc Vez-Garzón et al. - Urban refugia enhance persistence of endangered endemic keystone lizard ..... (article) 519
05-07-2025 - Laura Ferrer - Litter, the other enemy of Ibizan lizards (conservation) 520
06-07-2025 - José Mguel L. Romero - The Snake Whisperer of Ibiza (control) 521
07-07-2025 - S. Ribas - The Government controls the presence of snakes in the Pityusic islands with active trapping in six enclaves (control) 525
07-07-2025 - S. Ribas - "The total eradication of snakes in Ibiza, today, is unfeasible" (control) 527
09-07-2025 - Europa Press - Historical: the first 'lizards' of Ibiza were born outside the island (conservation) 530
09-07-2025 - Redacción - The first Pityusic lizard offspring are born in Barcelona: a key step in saving the species (conservation) 532
09-07-2025 - Redacció - The first baby pitiüsa lizards are born at Barcelona Zoo (conservation) 534
10-07-2025 - R.I. - The Línea Verde of Sant Josep already includes a category to report the presence of invasive snakes (control) 535
10-07-2025 - Redacción - A new way to alert people about the presence of snakes in Ibiza has been activated (control) 536
10-07-2025 - R.I. - They capture a dozen snakes on a property in Santa Agnès (control) 537
10-07-2025 - Laura Ferrer - A snake appears inside a van in the port of Ibiza: "What a scare we got!" (snakes) 538
14-07-2025 - Ibiza Kurier - What happened to the olive tree import ban? (politics) 540
15-07-2025 - Esteban Morelle-Hungría - Collapse in the Pityusic Islands (opinion) 541
16-07-2025 - Ibiza Kurier - Snake hunter Dean Gallagher sets record: 1.80-meter monster caught in Ibiza (snakes) 543
16-07-2025 - Ibiza Kurier - Santa Eulalia's Weapons against the Snake Plague (control) 544
16-07-2025 - Laura M. Expósito - Snakes in Ibiza: Residents of Es Fornàs hunt 227 snakes in one month (snakes) 545
16-07-2025 - Ibiza Kurier - Santa Eulalia's Weapons against the Snake Plague (control) 546
17-07-2025 - Jerónimo Marín - Greenpeace warns: 32 Ibizan beaches will be cut in half due to rising sea levels (conservation) 547
25-07-2025 - Stephanie Woodgate et al. - Microgeographic diversity does not drive macroevolutionary divergence in bite force ..... (article) 552
28-07-2025 - Antònia Cirer et al. - Letter to the Spanish Scientific Committee CITES (conservation) 553
31-07-2025 - Jerónimo Marín - "The speed of the worsening snake infestation in Ibiza is exponential." (conservation) 554

Table of contents

02-08-2025 - Sergi Alcalde - This snake is leaving Ibiza without one of its most prized reptiles (conservation) 562
04-08-2025 - Redacción Digital - National Geographic reports on the snake plague in Ibiza (conservation) 566
05-08-2025 - Ibiza Kurier - Weapons against the snake plague: Over 1,000 traps and a "trap management" app (control) 567
07-08-2025 - Jerónimo Marín - "Snakes have already colonized the entire forest in the Ses Salines area." (conservation) 568
11-08-2025 - R.I. - Antònia Maria Cirer presents the lecture series "The Silent Invasion" on the snake plague in Ibiza. (educational) 579
13-08-2025 - R.I. - The Ibizan lizard has virtually disappeared from Ses Salines (conservation) 580
13-08-2025 - Redacción - Up to nine out of ten lizards are missing in Ses Salines Natural Park in Ibiza (conservation) 582
13-08-2025 - GEN-GOB - Informe de seguiment de la sargantana pitiüsa parc natural de Ses Salines 2023 - 2024 (conservation) 584
21-08-2025 - Verónica Carmona - More snake traps in Ibiza (opinion) 585
21-08-2025 - S. Ribas - "Mallorca experts believe that snakes and lizards will coexist in Ibiza, but that will never happen." (conservation) 586
22-08-2025 - Ibiza Kurier - Ibiza's lizards face extinction: Snakes eat lizards while geckos escape (conservation) 589
25-08-2025 - David Ventura - The days of the virot and the marten in Ibiza are numbered (conservation) 590
26-08-2025 - Guillermo Sáez - Snake Hunting at Diario de Ibiza (control) 594
27-08-2025 - Redacción Ibiza - From the Punic period to the 21st century, the evolution of snakes in Ibiza (snakes) 596
28-08-2025 - Laura Ferrer - "Ibiza's lizards are dying from tourists' trash." (conservation) 598
29-08-2025 - María José Real - They demand the dismissal of the top technical officer in charge of snake control in Ibiza. (control) 600
30-08-2025 - R.I. - Ibiza environmentalists defend the work of the island's top official in the fight against snakes. (control) 602
31-08-2025 - Cristina Amanda Tur - Coses Nostres | The velociraptors of Sa Conillera (conservation) 604
31-08-2025 - Joan Costa - Joan Costa's Gaze | Snake for Dinner (snakes) 606
03-09-2025 - Redacción Digital - Santa Eulària reports vandalism of its snake traps (control) 607
03-09-2025 - R.I. - Snake traps explode in Ibiza. (control) 609
03-09-2025 - Redacción - Traps to control invasive snakes in Santa Eulària are sabotaged (control) 610
03-09-2025 - S. Ribas - The COFIB coordinator in Ibiza argues that there shouldn't be a single community cat on the island. (control) 611
06-09-2025 - Gemma Peplow - Ibiza lizards 'near extinction' due to invasive snakes and mounting litter (control) 613
06-09-2025 - Vincent Ribas - Traps to control invasive snakes in Santa Eulària are sabotaged (control) 616
08-09-2025 - S. Ribas - Snakes in Ibiza: It is not illegal to transport catches from private traps to the COFIB (control) 618
11-09-2025 - E.P. - Environmentalists insist on controlling the entry of goods to curb the snake invasion in Ibiza. (control) 620
11-09-2025 - Europa Press - Environmentalists warn of the serious risk of extinction for the 'sargantana' of Ibiza and Formentera: "..... (control) 623
11-09-2025 - Por Redacción - The snake invasion in Ibiza is terrorizing residents and tourists and threatening the island's species (control) 625
14-09-2025 - Toni P. - "100,000 snakes need to be eliminated each year in Ibiza." (control) 627
14-09-2025 - Cofib-Ibiza - Control de especies invasoras en las Pitiusas (article) 630
16-09-2025 - R.I. - IbizaPreservation launches a new campaign to engage the public in protecting the Pityusic lizard. (control) 631
18-09-2025 - E.P. - New measures for the conservation of the Pityusic lizard (control) 633
18-09-2025 - R.I. - Parliament gives green light to measures to save the Ibiza and Formentera wall lizard (control) 635
18-09-2025 - Redacción - Natural alert: The Ibizan lizard loses 50% of its population, and a parliamentary plan is activated. (control) 636
20-09-2025 - Marisol Plaza Sánchez - Boira the dog, Ibiza's snake terror (control) 638
22-09-2025 - Antonia Cirer - Letter to Marga Prohens, Joan Simonet, Vicent Marí and the 5 mayors of Ibiza (conservation) 640
23-09-2025 - Laura Ferrer - Ibiza's countryside loses its natural ally to snakes: without lizards, insects are free to roam. (ecology) 641
23-09-2025 - David Ventura - "Incompetence and negligence." A biologist's harsh letter to the government regarding the ..... (conservation) 643
24-09-2025 - Verónica Carmona - A biologist alerts the Balearic government in a letter to the "extremely serious situation"..... (conservation) 645
23-09-2025 - Jerónimo Marín - Biologist Antònia Maria Cirer demands a plan to protect the lizard of Ibiza and Formentera (conservation) 647
25-09-2025 - Redacción Ibiza - Reinforcements for the fight against snakes in Ibiza: more control and biosecurity in the port (control) 650
25-09-2025 - R.I. - Port personnel training strengthened to prevent the entry of invasive snakes into the Balearic Islands (control) 652
27-09-2025 - Toni P. - Fifty people protest in Sant Josep in defense of cats (control) 655
27-09-2025 - David Ventura - Opposition from Consell technicians frustrated a campaign to eradicate snakes in Ibiza in 2015. (control) 657
29-09-2025 - Redacción Ibiza - The Government and Barcelona Zoo strengthen captive breeding of the Pityusic wall lizard ..... (conservation) 660

Table of contents

29-09-2025 - R.I - Barcelona Zoo will also breed lizards from the islets of Ibiza to combat the threat of invasive snakes (conservation) 662

29-09-2025 - Redacción - The Government and Barcelona Zoo are stepping up protection for the sargantana ..... (conservation) 664

03-10-2025 - Jordi Marín Guasch - Plan de recuperación de la lagartija de las Pitiusas (Podarcis pityusensis) . (conservation) 666

04-10-2025 - Marisol Plaza Sánchez - An Ibiza snake expert recommends checking storage rooms and garages after the severe flooding. (control) 667

04-10-2025 - Vicent Ribas - A nearly two-meter-long snake was caught on an Ibiza golf course: it attacked a player before being shot. (control) 669

08-10-2025 - Redacción Digital - The fight against snakes in Ibiza and Formentera is a model for the Government to eradicate snakes ..... (control) 671

08-10-2025 - R.I - The Government requests the State to expand the classification of introduced snakes as invasive alien species in ..... (control) 673

08-10-2025 - Redacción - The Government asks the State to expand the cataloging of invasive snakes to stop their spread. (control) 676

16-10-2025 - R.I - The Xarc High School promotes eco-environmental projects to conserve the Pityusic lizard and the marine ..... (control) 678

26-10-2025 - Vincent Ribas - Horseshoe snakes are changing their prey in Ibiza and are now attacking domestic birds. (snakes) 680

31-10-2025 - Jerónimo Marín - Biology expert warns: the disappearance of lizards in Ibiza is leading to an increase in the dangerous ..... (ecology) 682

06-11-2025 - Redacción Digital - A "decisive" step to save the lizard from the threat of snakes. (conservation) 685

06-11-2025 - Redacción - The plan to recover the Pityusic lizard results in the birth of 32 offspring. (conservation) 687

07-11-2025 - Europa Press - The conservation plan for the lizard has resulted in the breeding of 32 specimens. (conservation) 689

16-11-2025 - Redacción Ibiza - Joan Carles Palerm, president of the Grup d'Estudis de sa Naturalesa (GEN-GOB Eivissa): "We ..... (conservation) 691

16-11-2025 - Josep Àngel Costa - "People tell us that we are being kicked out of Can Casals because of our stance." (politics) 693

22-11-2025 - Toni P. - The terror of snakes in Ibiza is called Boira. (control) 697

25-11-2025 - R.I. - Boira, the snake-hunting dog, inspires an unprecedented alliance in Ibiza to protect biodiversity ..... (control) 700

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A comparative study of clutch size, range size, and the conservation status of island vs. mainland lacertid lizards

Ignacio Siliceo, José A. Díaz *

Departamento de Zoología y Antropología Física (Vertebrados), Facultad de Biología, Universidad Complutense de Madrid, E-28040 Madrid, Spain

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ABSTRACT

Whereas the range size of endangered species is undoubtfuly useful to predict risk of extinction, the role of their life-history characteristics is much less clear, and their effects may depend on the nature of the threatening factors. Such factors, for instance, are known to be different on islands and on the mainland. We used phylogenetically based statistical analyses to study the relationships among conservation status, insularity, range size, and life-history traits in a clade of Western Palaearctic lacertids including insular and continental species. These lizards are ecologically similar, but they show wide variation in life-history traits and vulnerability to extinction. Insular species of a given size had smaller clutches than mainland ones. Degree of threat was best predicted by a logistic regression including range size, insularity, clutch size, and the insularity × clutch size interaction. On the mainland, but not on islands, threatened species had smaller clutches than non-threatened ones. On islands, small clutch size is probably an adaptive trait, and it might predispose certain species to extinction, but the intrinsic characteristics of such species remain unclear. However, small clutch size was a good predictor of extinction risk on the mainland, having evolved most frequently in late maturing species from montane habitats in which climatic conditions limit their reproductive output and increase their vulnerability to stochastic hazards or habitat fragmentation.

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1. Introduction

With increased concern about biodiversity losses (Pimm et al., 1995), conservation biologists have sought general patterns in life-history traits that may render a species more or less prone to extinction. Both the areal extent of a species' distribution and the abundance of mature individuals, which play an apparent role in the IUCN Red List categories and criteria, are undoubtfuly useful, along with population tendency over time, to predict risk of extinction (O'Grady et al., 2004). However, these criteria do not always take into account the life histories of the taxa under consideration, which leads to situations in which the risk of extinction may be under- or over-estimated (Mattila et al., 2008). Ecological theory predicts that extinction risk should be higher in species with low rates of population increase, large fluctuations in the number of individuals, and/or short lifespans (Pimm et al., 1988). Other studies have pointed out ecological specialization or low fecundity as the main traits related to greater extinction rates (Foufopoulos and Ives, 1999; Cardillo, 2003). However, several problems complicate the study of the associations between life-history characteristics and probability of extinction. For example, life-history traits are frequently intercorrelated to a large extent (Stearns, 1992; Bauwens and Díaz-Uriarte, 1997), which makes it difficult to sort out what factors are primarily responsible for an increased susceptibility to extinction. More importantly, species-specific life-history characteristics may be of limited utility to predict vulnerability to extinction in the current scenario of man-induced global change. Instead, other authors emphasize the prevalence of extrinsic, anthropogenic factors such as habitat loss, over-exploitation, or introduced predators or competitors in the extinction of contemporary species (Purvis et al., 2000). Still others underline the interaction between the intrinsic attributes that render certain species susceptible to extinction and the intensity and nature of the factors that threaten them (Purvis et al., 2005). This latter view offers the advantage that it allows life-history traits to influence extinction risk in complex ways that may vary between different ecological scenarios.

From that perspective, the comparison between mainland and island taxa has been a main focus of interest for evolutionary ecologists and conservation biologists (Foufopoulos and Ives, 1999; Manne et al., 1999; Knapp et al., 2006). Some of these studies have found that extinction risk is actually higher on the mainland than on islands when holding for the effects of range size (Manne et al., 1999). Others have shown that local abundances may be one order of magnitude higher on islands than on mainlands, but only due to reduced predation and competition which leads to an enhanced

* Corresponding author. Tel.: +34 913945136; fax: +34 913944947.
E-mail address: jadiaz@bio.ucm.es (J.A. Díaz).

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Los ofidios ibéricos de introducción reciente en las Islas Baleares

Carmen Álvarez, José Antonio Mateo, Joan Oliver & Joan Mayol

Direcció General de Biodiversitat. Govern de les Illes Balears. Cl. Gremi Corredors 10. 07009 Palma de Mallorca. C.e.: jmayol@dgcapea.caib.es.

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La introducción de especies en áreas de las que no son originarias es una de las causas principales de la extinción de especies a nivel global (Mayol & Álvarez, 2010). En islas, donde los depredadores son escasos y las presas potenciales son por lo general ingenuas (no muestran conductas de defensa ante estos depredadores), este fenómeno resulta especialmente preocupante (Quammen, 1996).

Los ofidios son depredadores muy especializados, generalmente mal representados o incluso ausentes en las faunas autóctonas insulares (López Jurado *et al.*, 2005), y su llegada a islas y archipiélagos de las que no son originarios suele determinar la extinción de especies endémicas (Rodda *et al.*, 2002). Casos como el de la culebra lobo de la India (*Lycodon aulicus*) en Mauricio, el de la culebra malgache de hocico de cerdo (*Leioheterodon madagascariensis*) en Comores, y, sobre todo, el de la culebra arbórea café (*Boiga irregularis*) en la isla de Guam son buenos ejemplos de este tipo de introducciones y de los efectos que estas pueden llevar aparejados (Rodda *et al.*, 2002; Lever, 2003).

Baleares es un archipiélago que carece de ofidios autóctonos, pero en el que se han registrado introducciones muy antiguas, como las de las culebras de garriga -*Macroprotodon mauritanicus*- y viperina -*Natrix maura*- en Mallorca y Menorca, o la de escalera -*Rhinechis scalaris*- en Menorca (Alcover *et al.*, 1981; Mayol, 1985). La condición de arqueozoos de esas especies (ver la definición de arqueozoo ofrecida por Pyšeck *et al.*, 2009) ha determinado que su control y manejo se haya limitado hasta la fecha a las campañas de erradicación puntual de *N. maura* en el contexto de los planes de recuperación de *Alytes muletensis*, un anfibios endémico y amenazado, cuyas larvas y adultos resultan frecuentemente depredadas por esa culebra (Servei de Protecció d'Espècies, 2007).

A diferencia de Mallorca y Menorca, las islas de Ibiza y Formentera se habían mantenido, hasta hace pocos años, libres de ofi-



Two new islet locations of *Podarcis pityusensis formenterae* near Formentera island (Spain, Balearics)

MARTEN VAN DEN BERG, October 2010

Summary
Some remarks are made about the variability in *Podarcis pityusensis* in the Formentera and adjacent island populations. Two new islet populations of this species are described for Illa de Ses Perreres and Illa d'es Fonoll Mori, close to Es Pujols (Formentera).

Introduction
The Ibiza wall lizard, *Podarcis pityusensis* (Boscá, 1883), endemic to the Pityusic islands (Ibiza, Formentera and 41 adjacent islands) is today devided into 23 subspecies. South to the Es Freus channel, deviding Formentera from Ibiza, there are 8 known populations on islands besides the Formentera population, inhabited by 3 current recognized subspecies; Illa Torreta - *Podarcis pityusensis torretensis* (Buchholz, 1954), Illa Gastaví - *Podarcis pityusensis gastabiensis* (Eisentraut, 1928), and Illa d'en Pou, Illa s'Espalmador, Illa s'Espardell, Illa s'Alga, Illa d'es Pouet, Illa Redona de ses Illetes, and Formentera - *Podarcis pityusensis formenterae* (Eisentraut, 1928). (see: Image 1). In the past most islands were assigned with their own subspecies, respectively *Podarcis pityusensis puercosensis* (Buchholz, 1954) on Illa d'en Pou, *Podarcis pityusensis espalmadoris* (Müller, 1928) on Illa s'Espalmador and Illa s'Alga, *Podarcis pityusensis espardellensis* (Eisentraut, 1928) on Illa s'Espardell, and *Podarcis pityusensis algae* (Eisentraut, 1928) on Illa d'es Pouet. In addition there are another 3 discontinued subspecies from nowadays mainland Formentera; *Podarcis pityusensis sabinae* (Buchholz, 1954) from the former island Savina, today connected to the harbour of Formentera, *Podarcis pityusensis grueni* (Müller, 1928) from the Trucadors peninsula, and *Podarcis pityusensis subformenterae* (Buchholz, 1954) from the first elevated part of the Trucadors peninsula, just north of Formentera. Both parts of the peninsula are known to be seperated in recent history after flooding, but most of the time this rocky dune system is connected to the main island. Salvador (1984) considered these subspecies as synonym of Podarcis pityusensis formenterae. Beside the 8 inhabited islands there are 3 rocks which are not investigated in the Ses Illetes group, and 3 islands which are considered

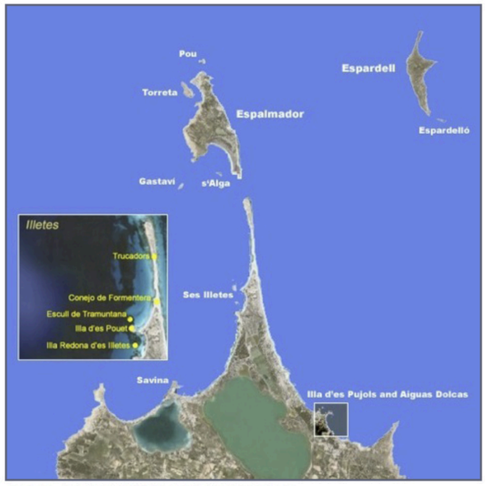
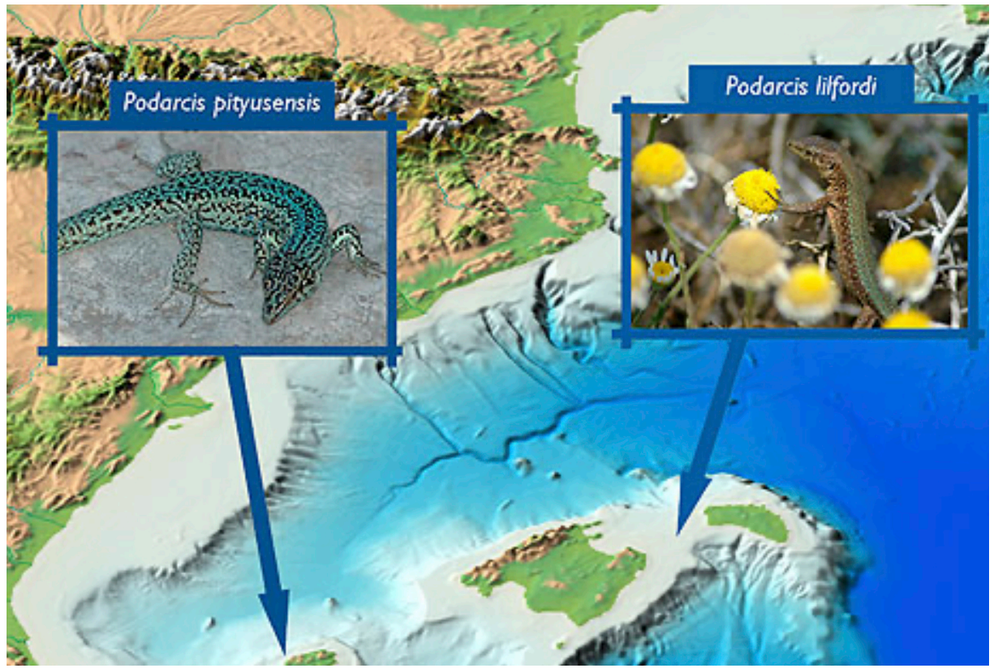


Image 1 - Northern part of Formentera with adjacent islands.

EL MUNDO | Baleares

El Mediterráneo según las lagartijas

The Mediterranean according to lizards



Elena Soto | Palma

Actualizado martes 28/12/2010 **09:16 horas**

About six million years ago, the confluence of the European and African plates blocked the Mediterranean's communication with the Atlantic. The Strait of Gibraltar closed and—being isolated and subjected to intense evaporation—began to dry out, with large areas of its basin emerging. During this period, the landscape of the Mare Nostrum was very different from today, and what is now the Balearic Islands was connected to the Iberian Peninsula, forming a large promontory, a continuation of the Sierra Bética. These lands were inhabited by a species of lizard that spread throughout the practically dry Mediterranean basin.

Today, the two descendants of this reptile—along with the ferreret—are the only three surviving terrestrial vertebrate species that populated the Balearic Islands before the arrival of humans; the rest were introduced by humans. In Mallorca and Menorca, lizards probably became extinct with the arrival of the Romans, and populations survived only in the Pitiusas, the Cabrera archipelago, and the islands and islets surrounding Mallorca and Menorca, evolving differently in each of them.

The uniqueness of these organisms, their survival mechanisms, their current distribution, and their diversity make them species that raise numerous questions: 5.3 million years ago, a major event occurred in the Mediterranean. It was an abrupt change, after which the common ancestor of lizards (*Podarcis*) was divided in the Balearic Islands into two species (*Podarcis pityusensis* and *P. lilfordi*). This separation, engraved, so to speak, in their DNA, found a biogeological explanation just a year ago, when the journal Nature published part of the work of a group of researchers from the Spanish National Research Council (CSIC), which explained that the waters returned to the Mediterranean thanks to the largest and most abrupt flood the planet has ever known.



A gigantic discharge of water that, according to scientists, filled the Mare Nostrum in just two years, forever divided the Balearic Islands into two large blocks of land: the Gran Gimnesia (Mallorca and Menorca) and the Gran Pitiusa (Ibiza and Formentera). The two platforms never reunited, and this event explains the sudden isolation of the two populations of the same species.

As a result, part of the geological history of the Mediterranean could be told by lizards, following the path of mitochondrial DNA sequences—the DNA inherited from the maternal line, unalterable from one generation to the next and affected only by mutations. Studying a set of populations of an organism, or populations of similar organisms, allows us to compare them and draw a family tree, establishing which are genetically closest and which are most distant, even helping to interpret the evolutionary processes responsible for their current distribution. The genetic distance between populations, like a molecular clock, tells us how long they have been separated from a common ancestor.

It should be noted that over the last two million years, numerous glacial periods have followed one another, separated by warmer periods. During the former, ice covered large areas of land, sea levels dropped, and the largest islands were connected to neighboring islets, allowing different organisms to colonize and mix. During interglacial periods, however, sea levels rose, and vast regions were flooded, once again isolating the islet populations. In the Quaternary, the two large blocks of land into which the Balearic Islands were divided experienced these ups and downs of the sea in particular.

Gene sequencing makes it possible to determine whether individuals in a population have evolved over the past 2,000 or 3,000 years or whether they are the result of sporadic translocations (movements from one place to another) and just arrived two weeks ago on a yacht.

Research on the Balearic Islands' endemic lizards dates back to the early 1980s, when the Genetics Laboratory of the Department of Biology at the University of the Balearic Islands (UIB) attempted a first molecular approach to studying their populations. However, at that time, techniques for studying DNA were not as developed as they are today, and this approach was achieved through the study of proteins.

The rise of DNA sequencing techniques has made it possible for the INSULAEVOL group—made up of genetic researchers, zoologists, and terrestrial ecologists from the UIB, the University of Salamanca,

and the University of Liverpool—to work together and interdisciplinarily on the different evolutionary and ecological aspects of these unique reptiles of the islands.

"Lizards became extinct in Mallorca and Menorca, probably in Roman times," explains Misericordia Ramon, professor of Genetics at the UIB, "with the introduction of predators, such as weasels and cats, which could have caused the species to disappear. On the other hand, Ibiza and Formentera were barely Romanized, and perhaps this is the reason why the species has survived in the Pitiusas."



Currently, DNA sequencing techniques have made it possible to measure the genetic divergence between populations of Podarcis lilfordi and determine the phylogenetic relationships within this species. The results indicate the existence of four distinct groups: the one in Menorca, located on small islands and islets surrounding the main island where the species has disappeared (Illa de l'Aire, Porros, Colom, Addaia petita, and Addaia gran, among others); the one in western Mallorca (Dragonera, Malgrats, and Toro). The other two belong to the Cabrera archipelago and to the northern and southern islands and islets of Mallorca (Na Guardia, Moltona, and Colomer).

From these four major phylogenetic groups, the evolutionary significant units (ESUs) that require the most protection can be determined. The existence of four major lineages provides a starting point for the recognition of unique matrilineal populations and indicates that at least four major groups should be recognized on a genetic scale for conservation objectives.

Regarding P. pityusensis, the main populations are distributed on Formentera and the islets surrounding the Pitiusas. "Interestingly," comments Bàrbara Terrasa, a member of this research group, "there is a group of this species on the Palma wall that is about 100 years old and possibly descends from specimens that arrived by boat to the port of Palma."

Due to the highly diverse conditions of the different habitats, the threats are highly varied. Frequent visits to confined spaces such as the islets can end up degrading them. Furthermore, translocations of individuals occasionally occur, which eliminates the genetic isolation and morphological traits that uniquely characterize many populations. Illegal capture, the introduction of potential competitors, or the use of poisoned traps for seagulls or rodents also affect the lizards. In short, their closely tied endemism to a habitat makes them vulnerable species, whose extinction could be driven by any eventuality.

10-05-2011 - Samuel Pinya and Miguel A. Carretero - The Balearic herpetofauna: a species update and a review on the evidence (article)

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The Balearic herpetofauna: a species update and a review on the evidence

Samuel Pinya[1], Miguel A. Carretero[2]

[1] *Espais de Natura Balear. Conselleria de Medi Ambient del Govern de les Illes Balears. c/ Pintor Josep Coll Bardolet, s/n. 07170 Valldemossa, Illes Balears, Spain.*
[2] *CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos. Campus Agrário de Vairão, 4485-661 Vairão, Portugal. Corresponding author.* E-mail: carretero@mail.icav.up.pt

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Abstract. Here, we update the current list of amphibian and reptile fauna present in the Balearic Islands, probably the most outstanding case in the Mediterranean and of the most in the world where massive species introduction is in conflict with the survivorship of highly restricted endemic taxa. Resulting of a long term evolution in insularity, endemic herpetofauna was already decimated during the Pleistocene but, after the human colonisation of the archipelago, the introduction of alien species, passive or deliberate, has been provoking new extinctions and range retractions in the native herpetofauna. Such process is not interrupted but has even intensified during the last years. The current species list is composed by five amphibians (one native) and 21 reptiles (2 native). A critical review of the evidence on extinctions and introductions is provided together with the conservation implications. Compared to the last review (Mayol, 1985) six new reptile species are now naturalised or are in process of naturalization, colubrid snakes constituting the most conflicting element due to their predator role.

Keywords. Balearic Islands, amphibians, reptiles, alien species, conservation.

INTRODUCTION

In a globalised world, the introduction of species out of their original ranges is becoming one of the most serious threats to biodiversity (IUCN, 2000; Nentwig, 2007). Amphibians and reptiles are among the groups which are most widely introduced and simultaneously most threatened by introductions, the recent large monographs on this topic (Lever, 2003; Kraus, 2009) reflecting the acuteness of the problem. Distinctions are to be made between alien (those transported and released outside their native ranges by human activities, intentionally or not), naturalised (those aliens maintaining reproductive populations) and invasive (those, aliens or not, that menace biodiversity) species (IUCN,

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DIARIO de IBIZA

El color de las lagartijas

The color of lizards

The biologist and professor at the University of Miami, Nathan Dappen, has been working for ten months in the Pitiusas, especially in Formentera, to study the influence of the different colors of lizards on their sexual relations.



Photomontage of the various lizard specimens studied in the Pitiusas and their adjacent islets. / NATHAN DAPPEN

Formentera | Carmelo Convalia
04 JUN 2011 3:17

Why do the lizards of the Pitiusas have such a wide variety of colors? How does this chromatic diversity influence their sexual relationships? Why does the same color gene manifest differently in males and females? These are just some of the questions that North American biologist and professor at the University of Miami, Nathan Dappen (Modesto, California, 1983), is trying to answer after ten months of fieldwork and various scientific experiments in which he has neither killed nor harmed any of the reptiles he has captured in order to observe their behavior.

In a few days, he will return to Miami to continue his research, working with the blood samples he has obtained from the aforementioned specimens, which are part of his doctoral thesis, entitled: "Color diversity and genetic evolution of the species *Podarcis pityusensis*" and its endemic subspecies, all of which are protected by current legislation.

On the occasion of International Environment Day, Dappen gave a lecture yesterday in the interpretation center of the Ses Salines Natural Park in Can Marroig, attended by the Park Director, Paula Goberna, and the Acting Minister for the Environment, Silvia Tur. This marked the beginning of a series of educational activities to be held in this space, dedicated to promoting knowledge and research into the marine and terrestrial environment of the Natural Park.

Three Colors in Formentera

The expert explained that the color of the lizards, *Podarcis pityusensis*, of the Pitiusas and their 42 adjacent islets is closely related to the characteristics of the territory. In the case of Formentera, there are three different types of specimens depending on their color. The blue ones are found in the forested and heavily vegetated area of Es Cap de Barbaria. The green ones are found mainly in La Mola, and the brown ones in the area of Ses Illetes and Es Trucadors, on the northern tip of the island. It so happens that in the central area, on es Ca Marí, specimens of various colors, green and blue, are found. It is particularly striking that on the islet of es Vedrà, he found blue-green specimens with a longitudinal yellow stripe down their backs, and that on the Bledes Islands, some of the specimens are black, although when observed closely, they are a very dark blue. He has also classified orange lizards on s'Illa Negra.

Nathan Dappen explains that his research has several parts. The most basic is the morphological and color classification of lizards. Another is the study of their behavior, especially during sexual relations, where he has detected that the dominant male is always the largest and most vividly colored. Dappen explains: "We want to know why there is such a large variation in colors in this species in Ibiza and Formentera, something that doesn't occur anywhere else in the world. It's very curious that we find such diversity in such a small area." He points out as his first conclusion that the colors of lizards vary depending on the vegetation in which they live: "When we are in a forested area, we find blue or green lizards, but when the land becomes desertified and there is little vegetation, they are brown. Furthermore, you don't find green lizards in Es Cap or blue lizards in La Mola." The reason is that this species combines its reproductive power and territorial defense through its color, mimicking its surroundings.

Cannibals and Omnivores

The expert reveals: "We have discovered that the intensity of the colors of male lizards is related to their size. If they are large, the color is more intense. Thus, when they see a large, very blue or very green specimen, they don't fight. However, the smaller and less colorful the specimen, the more susceptible it is to being attacked by another specimen, since this species is cannibalistic but also omnivorous."

The objective of this research, funded by the University of Miami's Faculty of Biology, in which nine students participated under the direction of Dappen, is to study the sexual behavior of this species, which is closely related to color.

A male lizard can copulate about ten times a day, but the larger and more intense its color, the more females it can win over. Another experiment was to isolate 20 males and 20 females in

a cage. After a week of coexistence, they introduced 20 more females, and the males only copulated with the newcomers.

The research team went further and used tattoo ink on 40 male and 40 female specimens. The result was that the artificially painted lizards had more sexual relations than those that hadn't been dyed. Dappen therefore concludes that color is a fundamental factor in the maintenance and reproduction of this species. "The bluer or greener the males are, the more females they attract," he concludes.

The biologist explained that the key lies in a common gene that determines the colors of males and females. When he arrives in Miami, he will be able to study this mechanism in the laboratory, thanks to the blood samples he sent from Formentera, which will be the subject of another investigation that will complete his work. The biologist explains: "When a female reproduces with a blue male, they have blue offspring, which is good for the males, but they also have blue females, which is not good for them, as they are confused and more vulnerable to predators. This creates a conflict over the same genes. That's what I'm studying."

Another conclusion is that blue lizards are the most attacked by predators, especially birds, followed by green lizards and finally brown lizards. For this reason, a female with bright colors is not beneficial for the maintenance of the species and represents a conflict for its survival.

Sexual behavior

One of the conclusions Nathan Dappen has drawn from his ongoing research is that males mate about ten times a day and prefer unknown females to those they've already met through sexual encounters. The male's color is a sign of attraction.

EL MUNDO | Baleares

La lagartija pitiusa de Boscà

The Boscà Pityusic lizard



Specimen of '*Podarcis pityusensis*'.

Laura Jurado | Palma

Actualizado martes 20/12/2011 **10:29 horas**

In 1877, Eduard Boscà revolutionized zoology in Spain. After thirteen years of work, he published the first version of the Catalogue of Reptiles and Amphibians Observed in Spain, Portugal, and the Balearic Islands. In addition to its national innovation, it was the first herpetological study of the archipelago. Six years later, he would add a pioneering investigation to the description of a new species: the lizard *Podarcis pityusensis*.

He was born in Valencia in 1843, the same city where he first earned his bachelor's degree in Medicine and Surgery before completing his degree in Medicine and Science at its university. Although he was already engaged in research, he spent his early years involved in teaching. In 1873, he earned his doctorate in Natural Sciences at the University of Madrid and began his career as a professor. That same year, the School of Agriculture and Veterinary Medicine of the Valencia Provincial Council became his first destination. The secondary schools of Xátiva, Albacete, and Ciudad Real would follow. Only a year remained until what would become his greatest work was published.

While he was a professor, Boscà laid the foundations for a major herpetological catalog. His research had actually begun in 1864, driven by Professor Rafael Cisternas at the University of Valencia. In 1877, the Annals of the Royal Society of Natural History published the first official version of the Catalogue of Reptiles and Amphibians Observed in Spain, Portugal, and the Balearic Islands.

The volume was revolutionary in Spain, not only because it was a nationwide study but also because it contained a map showing the geographic distribution of the species. Furthermore, the Valencian naturalist included a whole series of indications

such as diet, sexual dimorphism, and reproduction. Revolutionary on a national level, the Catalogue had been the first herpetological study of the Balearic Islands.

For some authors—as Valentín Pérez-Mellado, Claudia Corti, and Josep Miquel Vidal point out in Herpetological Explorations of the Balearic Islands During the Last Two Centuries—Boscà's work, despite being pioneering, was somewhat outdated and within the classical school to which Barceló i Combis and Pérez Arcas also belonged. Perhaps for this reason, the naturalist began to forge a new version of his catalog, a reissue that would benefit from his greater contact with European experts.

The new version of the work was published in 1881. For the first time, Boscà incorporated data obtained through experimentation and captive breeding of specimens into his study.

At that time, the innovative European taxonomy was beginning to enter our country. One of the Valencian's concerns was to identify the variability that could exist within a single species so as to avoid creating erroneous taxa. He considered altitude and habitat to be the most important climato-ecological factors. This task was assisted by the French herpetologist Ferdinand de Lataste and confirmed in 1883 with the description of a new species: *Podarcis pityusensis*, the lizard endemic to the Pityusic Islands.

The discovery was the result of the article "Herpetological Exploration of the Island of Ibiza," published in 1883 after a visit to Ibiza and its islets, but not to Formentera, throughout 1882. However, the Valencian cited it as a variety of *Podarcis muralis*, common in Mediterranean Europe. It would be one of his last published works.

"In another article, we indicated the advisability of adopting Dr. Bedriaga's criteria regarding the study of the polymorphic species *Lacerta muralis*," writes Boscà. Bedriaga himself would be the one to recognize the common lizard of Ibiza as an undescribed species and "perhaps exclusive" to the Pityusic Islands. This opinion, combined with the Valencian's studies, eventually led to the addition of the *pityusensis* variety to the already existing Balearic variety.

It had a neck thicker than the head, almost hemispherical dorsal scales, and an ochre or black tint on the granular scales that gave the pattern a mosaic or embroidered appearance. These were some of the characteristics the herpetologist used to discover what he considered to be only a new variety. According to Boscà, *pityusensis* had more in common with varieties from the Italian mainland and islands than with those previously known from the Iberian Peninsula.

Among the curious facts he points out is the "trust" the lizards displayed toward humans, which made them easy prey for bait and nets. In 2008, they were already listed as "near threatened" in the International Union for Conservation of Nature (IUCN) World Catalogue. He also noted that the specimens on the islets had worn toes, even missing nails or several phalanges. This fact was linked to the scarcity of soil and vegetation on the cliffs of their habitat. Currently, up to 30 subspecies are known, among which one stands out, a vivid blue one.

DIARIO de IBIZA

Serpientes versus lagartijas

Snakes versus lizards

Opinión

06 FEB 2012 6:30

It was always said that snakes didn't thrive in Ibiza due to some supposed virtues of the land and the supposed protection of the god Bes. But the gods are dead, as Nietzsche said—even Nietzsche died too, I believe—and surely this very morning many Ibizans aren't feeling very well.

Ah, the god Bes, what a lovable, pot-bellied, ugly fellow, what a good snake hunter. If there were an archaeological museum open in Ibiza, which unfortunately isn't the case, we could go and devoutly visit one of his images, even offer him a gift. One could always say that snakes have proliferated in Ibiza precisely when archaeological museums are no longer open to the public.

But you'd have to be very sensitive to think that the snakes eating our lizards are doing so out of revenge on the big-bellied god, now relegated to display cases where no one can see them. Thank goodness, instead of a very ugly god, we now have a government that, when it comes to cutting whatever is necessary, drafts decrees to cut off the heads of foreign snakes.



Ancient Egyptian god Bes was a god of childbirth, sexuality and fertility. He was also the god of war and humor.

DIARIO de IBIZA

Estudian una nueva subespecie de lagartija en es Vaixell

A new subspecies of lizard is being studied on Es Vaixell

A genetic study will determine whether the reptile found on the islet is different from the two subspecies found on Ses Bledes.

j. m. l. r. | ibiza

23 FEB 2012 6:30

"Sometimes you just have to look to find," suggests Virginia Picorelli. And by looking, they found flies they hadn't even heard of on Sa Conillera. And on Es Vaixell, one of the islets that make up Ses Bledes, they believe they have detected a new subspecies of the Ibizan wall lizard (*Podarcis pityusensis*), of which there are six known species in the area encompassed by the entire reserve. Es Vaixell is a veritable rock where, due to its characteristics (it's desolate), no one believed these reptiles could survive, much less the colony that has been detected.

The discovery was by chance. From the islet of Na Gorra—dwarf, but not as dwarf as Vaixell—the reserve's naturalist, Jorge Calvo, saw a specimen from a distance (50 meters) with his binoculars in 2010. The lizards there "are dark, black, and bluish, and the males are very large," explains Picorelli. Similar to those at na Gorra, although with some differences. "There's a significant population, and we're studying whether or not it's distinct from the other two subspecies present in ses Bledes," she adds. As she explains, "genetic (sequencing of complete mitochondrial genomes and the variation of repetitive DNA markers) and morphological studies are being conducted" on these specimens. "It would be an important discovery. It's not every day that a new subspecies is found," confesses the reserve's technical manager.

After being spotted with binoculars, landing on the islet was no easy task. It's such a difficult place to access that they had to use climbing equipment: "It's very steep and with hardly any vegetation. That's why we thought there wouldn't be any lizards there," says Picorelli.

Herpetologist Valentín Pérez Mellado, one of Spain's leading researchers, was specifically tasked with assessing the conservation status of the Pityusic lizard populations in the reserves: "A few years ago, we contacted him to offer him the opportunity to conduct a study to census and identify the lizards in the reserve. We got him to come, and he was completely fascinated by what we had here."

Initially, both Valentín Pérez and other researchers, such as Nathan Dappen of the University of Miami, indicate that "in addition to being diverse, the populations are well preserved." "We were concerned," Picorelli emphasizes, "about how many there were. The figures are positive; no population is in danger."



Viabilidad del Control de Ofidios en Ibiza y Formentera

Un estudio de la

Asociación Herpetológica Española

Para

Govern de les Illes Balears

Conselleria d'Agricultura, Medi Ambient i Territori

The Linnean Society of London BIOLOGICAL Journal of the Linnean Society

Biological Journal of the Linnean Society, 2012, **107**, 254–268. With 5 figures

Historical influence of predation pressure on escape by *Podarcis* lizards in the Balearic Islands

WILLIAM E. COOPER JR[1]* and VALENTÍN PÉREZ-MELLADO[2]

[1]*Department of Biology, Indiana University Purdue University Fort Wayne, Fort Wayne, IN 46805, USA*
[2]*Departamento de Biologia Animal, Universidad de Salamanca, 37071 Salamanca, España*

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Island tameness (reduced escape behaviour on islands where prey have experienced prolonged relaxation of predation pressure) is known in several taxa, although the relationships between recent predation pressure and escape on islands are poorly known. We investigated escape by numerous populations exposed to differing predation pressure of two sister species of *Podarcis* lizards in the Balearic Islands. Our main findings are that flight initiation distance was greater in *Podarcis pityusensis* than *Podarcis lilfordi* and increased as predation pressure increased in *P. pityusensis*. Island tameness led to extinction of *P. lilfordi* on Menorca and Mallorca following anthropogenic introduction of predators; this species is extant only on nearby islets. The lack of relationship between recent predation pressure and flight initiation distance in *P. lilfordi* indicates that the historically acquired deficit in the ability to adjust escape behaviour to predation pressure still exists. *Podarcis pityusensis*, which was exposed to greater natural predation pressure before human introduction of predators, survives on Ibiza and Formentera, as well as on islets. Retention of the ability to respond to predation pressure is consistent with our finding that flight initiation distance increases as predation pressure increases among current populations. © 2012 The Linnean Society of London, *Biological Journal of the Linnean Society*, 2012, **107**, 254–268.

ADDITIONAL KEYWORDS: antipredatory behaviour – flight initiation distance – predation risk – refuge use – Squamata.

INTRODUCTION

Escape behaviour has been studied extensively (Stankowich & Blumstein, 2005), primarily to test theories that predict how closely a prey permits a predator to approach before fleeing (flight initiation distance; FID) and how long a prey hides in refuge from costs and benefits of these behaviours (Ydenberg & Dill, 1986; Martín & López, 1999; Blumstein, 2003; Stankowich & Coss, 2006; Cooper & Frederick, 2007a, b, 2010). The emphasis has been on testing effects of factors affecting predation risk and costs of escaping or remaining in refuge within single populations (Martín, Marcos & López, 2005; Stankowich & Blumstein, 2005; Stankowich & Coss, 2007; Cooper & Wilson, 2008). Far less is known about variation of escape behaviour among populations, relationships among escape variables, and factors that may influence variation in escape behaviour among populations.

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Because risk of being captured is greater for lizards farther from refuge, FID often increases as the distance to refuge increases (Bulova, 1994; Cooper,

*Corresponding author. E-mail: cooperw@ipfw.edu

UNIVERSITY OF MIAMI

INTRALOCUS SEXUAL CONFLICT, ONTOGENETIC CONFLICT AND COLOR EVOLUTION IN THE IBIZA WALL LIZARD, PODARCIS PITYUSENSIS

By

Nathan B. Dappen

A DISSERTATION

Submitted to the Faculty
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May 2012

Universidade do Porto

Faculdade de Ciências

Centro de Investigação em Biodiversidade e Recursos Genéticos

Patterns of biological invasion in the herpetofauna of the Balearic Islands: Determining the origin and predicting the expansion as conservation tools.

Mestrado em Biodiversidade, Genética e Evolução

Iolanda Raquel Silva Rocha

May 2012

DAY'S EDGE PRODUCTIONS

Cold-blooded Cannibals: Extreme Adaptations to Island Life



Small island environments can be unforgiving, and their inhabitants have evolved extraordinary adaptations to survive the harsh conditions of island life. Mediterranean island lizards have evolved the ability to drink nectar, and eat flowers and fruits. This adaptation not only allows them to survive in harsh island environments, but their interactions with plants have forever changed these island ecosystems. However, this isn't the only dietary adaptation of island lizards...

17-08-2012 - Nathan Dappen et al. - "The Symbol" video-update #1-2 (research)

DAY'S EDGE PRODUCTIONS

"The Symbol" video-update #1: Welcome to Formentera!



"The Symbol" video-update #2: Behind the Scenes



12-09-2012 - Nathan Dappen et al. - "The Symbol" video-update #3-4 (research)

DAY'S EDGE PRODUCTIONS

"The Symbol" video-update #3: Es Vedrà Trek



"The Symbol" video-update #4: Final Update



The LINNEAN SOCIETY of London BIOLOGICAL Journal of the Linnean Society

Biological Journal of the Linnean Society, 2012, **107**, 254–268. With 5 figures

Historical influence of predation pressure on escape by *Podarcis* lizards in the Balearic Islands

WILLIAM E. COOPER JR[1]* and VALENTÍN PÉREZ-MELLADO[2]

[1]*Department of Biology, Indiana University Purdue University Fort Wayne, Fort Wayne, IN 46805, USA*
[2]*Departamento de Biologia Animal, Universidad de Salamanca, 37071 Salamanca, España*

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Island tameness (reduced escape behaviour on islands where prey have experienced prolonged relaxation of predation pressure) is known in several taxa, although the relationships between recent predation pressure and escape on islands are poorly known. We investigated escape by numerous populations exposed to differing predation pressure of two sister species of *Podarcis* lizards in the Balearic Islands. Our main findings are that flight initiation distance was greater in *Podarcis pityusensis* than *Podarcis lilfordi* and increased as predation pressure increased in *P. pityusensis*. Island tameness led to extinction of *P. lilfordi* on Menorca and Mallorca following anthropogenic introduction of predators; this species is extant only on nearby islets. The lack of relationship between recent predation pressure and flight initiation distance in *P. lilfordi* indicates that the historically acquired deficit in the ability to adjust escape behaviour to predation pressure still exists. *Podarcis pityusensis*, which was exposed to greater natural predation pressure before human introduction of predators, survives on Ibiza and Formentera, as well as on islets. Retention of the ability to respond to predation pressure is consistent with our finding that flight initiation distance increases as predation pressure increases among current populations. © 2012 The Linnean Society of London, *Biological Journal of the Linnean Society*, 2012, **107**, 254–268.

ADDITIONAL KEYWORDS: antipredatory behaviour – flight initiation distance – predation risk – refuge use – Squamata.

INTRODUCTION

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*Corresponding author. E-mail: cooperw@ipfw.edu

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Variability of the *mc1r* Gene in Melanic and Non-Melanic *Podarcis lilfordi* and *Podarcis pityusensis* from the Balearic Archipelago

Joana M. Buades[1], Virginia Rodríguez[1], Bàrbara Terrasa[1], Valentin Pérez-Mellado[2], Richard P. Brown[3], Jose A. Castro[1], Antònia Picornell[1], M. M. Ramon[1]*

1 Laboratori de Genètica, Universitat de les Illes Balears, Palma de Mallorca, Spain, **2** Departamento de Biología Animal, Universidad de Salamanca, Salamanca, Spain, **3** School of Natural Sciences and Psychology, Liverpool John Moores University, Liverpool, United Kingdom

Abstract

The association between polymorphism at the *mc1r* locus and colour variation was studied in two wall lizard species (*Podarcis lilfordi* and *P. pityusensis*) from the Balearic archipelago. *Podarcis lilfordi* comprises several deep mitochondrial lineages, the oldest of which originated in the Pliocene, while much shallower mitochondrial lineages are found in *P. pityusensis*. Here, we examined whether specific substitutions were associated with the melanic colouration found in islet populations of these species. Homologous nuclear sequences covering most of the *mc1r* gene were obtained from 73 individuals from melanic and non-melanic *Podarcis* from different populations (the entire gene was also sequenced in six selected individuals). MtDNA gene trees were also constructed and used as a framework to assess *mc1r* diversity. *Mc1r* showed greater polymorphism in *P. lilfordi* than in *P. pityusensis*. However, we observed no substitutions that were common to all melanic individuals across the two species. Only one significant association was detected in the *mc1r* partial sequence, but this was a synonymous A/G mutation with A alleles being more abundant in melanic populations. In addition, there were no associations between the main dominant phenotypes (green and brown, blue and yellow spots and ventral colour) and synonymous or non-synonymous substitutions in the *mc1r* gene. There was no statistical evidence of selection on *mc1r*. This study suggests no relationship between *mc1r* polymorphism and colour variation in Balearic *Podarcis*.

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* E-mail: cori.ramon@uib.es

Introduction

Although environmental stimuli can contribute to colour variation within species, most of this variation appears to be genetically controlled [1]. Molecular analyses are starting to reveal mutations associated with melanism in wild populations. In some birds and mammals, melanism seems to be associated with amino acid substitutions in the melanocortin-1 receptor (*mc1r*), a gene known to control the synthesis of melanin by melanocytes [2,3]. The agouti-melanocortin 1 receptor pathway is a ligand receptor pair that modulates the amount and type of pigment produced by melanocytes (red/yellow pheomelanin or brown/black eumelanin). Genetic subtypes of *mcr* genes (of which *mc1r* is one) have high structural similarity. The majority of them seem to have originated early in vertebrate evolution before the divergence of ray-finned fishes and tetrapods [4]. The main structural properties of these genes have remained remarkably conserved over a period of at least 400 million years [4]. Gain-of function and/or deletion mutations in the *mc1r* locus are well recognized causes of melanism [5]. For example, a deletion in the *mc1r* gene explains melanism in squirrels [6]. In birds, Guo *et al.* [7] reported abundant polymorphism in the *mc1r* gene which was associated with black plumage in Hebei chickens. Different mutations in the *mc1r* gene also explain the brown phenotype in the cavefish, *Astyanax mexicanus* [8].

Several studies have recently addressed the *mc1r* gene and colour polymorphism in amphibians and reptiles. Three independent *mc1r* mutations ($His^{208}Tyr$, $Thr^{170}Ile$, and $Val^{168}Ile$) are responsible for blanched coloration of three lizard species on the gypsum dunes of White Sands, New Mexico, where they are associated with melanin production in the species *Holbrookia maculata*, *Aspidoscelis inornata* and *Sceloporus undulatus* [9]. Although the same gene contributes to light phenotypes in these White Sands populations, the specific molecular mechanisms leading to reduced melanism production appear to be different. In contrast, sequence variation in *mc1r* does not explain melanism in the widespread amphibian *Rana temporaria* [10] nor does it appear to be involved in dorsal colour adaptations in two sympatric species of sand lizard (*Liolaemus*) that inhabit the south eastern coast of South America [11] or colour pattern in *Uta* lizards [12]. Some authors consider blue colouration to be a form of melanism in reptiles [13]. However the blue abdominal skin seen in several lizards is a sexually dimorphic trait that is more pronounced in males [14] and is attributed to eliciting a behavioural response in the observer [15]. Recently, an association between *mc1r* variants and brown

19-05-2013 - Antònia M. Cirer - Destiny stuck on an island (educational)

DIARIO de IBIZA

El destí enganxat a una illa

Destiny stuck on an island

During the Miocene, some quite interesting events occurred that need to be reviewed in order to understand the Mediterranean.



The Pityusic lizard and that of the ancient Gymnesian Islands followed different evolutionary paths.

Antònia M. Cirer | Eivissa

19 MAY 2013 6:30

Geologically, the Balearic Islands are the northeastern end of the Baetic mountain range, which emerged at the end of the Alpine orogeny, opening the so-called Valencia groove or Balearic trench during the post-Alpine distensional period of the Miocene. And already at that time there were lizards in the Pitiusas, as evidenced by the fossils that have been found. During the Miocene, some quite interesting events happened that need to be reviewed in order to understand the Mediterranean. First, the territories to the east of the Catalanids sank, and the Iberian plate tilted, raising the Cantabrian front and sinking the eastern part. This forced the Ebro river to change direction (it previously flowed into the Atlantic Sea) and look for a new outlet to the Mediterranean Sea. That is why this river seems to have lost its path when it has to cross the Montsià mountain range, winding between the Iberian massifs until it reaches the sea.

The islands of Corsica and Sardinia separated to the east, and a tectonic trench was formed that shaped the Gulf of Valencia, with the Balearic Islands separated from the continent. At the end of the Miocene, due to the tectonic activity of the Messinian „7.246-5.332 Million years ago (Ma)„ the Strait of Gibraltar was closed, closing the passage of Atlantic waters. The Mediterranean became an inland sea and because it is a basin with a large water deficit (more water evaporates than arrives through rain and rivers) the sea level dropped noticeably. This situation lasted at least 1 million years and the sea level dropped hundreds of meters. (As a reference for time, let's remember that the entire History and Prehistory of *Homo sapiens* has only lasted 0.1 Ma).

An Independent History

It is easy to imagine what the Pitiusas massif would be like at that time: all the islands and islets currently known would be united and the coastline would be well beyond the current bathymetric curve of 200 meters of depth. The Gimnèsies: Mallorca, Menorca, Cabrera and their neighboring islets, would also form a single massif, but the Pitiusas and the Balearic Islands would constitute 2 massifs separated from each other, since there is a very deep groove in between.

The natural history of the Pitiusas is, therefore, independent of the Balearic Islands. Naturally, on top of each fragment of land that separates there is a flora and fauna initially similar to the continent from which they come. These are not volcanic islands with a new faunal establishment, like the Canary Islands or the Columbretes, but continental islands originated by plate tectonics and changes in the coastline.

The faunal argument is a classic argument in plate tectonics, where faunas that are currently very distant from each other are analyzed, such as those of Australia and South America, but that in previous times were part of the same continental mass: Gondwana. Thus, the Baetic mountain range, which currently constitutes the northeast of Andalusia and the south of the Valencian Country, extends northeast to the Balearic Islands, with the clear testimony of the Tramuntana mountain range of Mallorca, which has an orogenic style similar to the Baetic. Therefore, all the non-flying terrestrial fauna of the Pityuses have remained without reproductive contact with any other congener since the Miocene. Thus appears the evolutionary opportunity that culminates in the great range of current populations, or circle of races as the ancient naturalists called them, which present some species of our islands: beetles, snails, and the most emblematic, the lizard *Podarcis pityusensis*.

Natural selection

In addition, the Pityuses are separated from the Gymnésies by a major fault that has isolated them within the isolation, while Mallorca and Menorca have alternated times of connection and separation, depending on the drops or rises in sea level. Therefore, the Gymnésies lizard Podarcis lilfordi, which inhabits the islets around Mallorca, Menorca and Cabrera has had a parallel evolutionary history, but different from the Pityüsian lizard. These Miocene populations that remained on the Pityuses massif: lizards, snails, beetles, plants, fungi, annelids, planarians, ... had plenty of time ahead

of them to try to adapt to the island environment in which they were confined or die in the attempt. Natural selection has no half measures, currently we have the populations of the species that are best adapted to the Mediterranean island terrestrial ecosystems. And there are not a few that have achieved it! In the Pityuses there is a high number of endemic species.

The adaptive race did not stop at this first episode. The Pityuses massif has been changing its coastline as time goes by. During warm periods, the sea level rises above what we currently have, therefore restricting the area of land available for the populations of the various terrestrial species that inhabit it. Reducing the number of individuals available to maintain the populations. Not always when there is a warm climate it translates positively for all reptiles, this automaticity may not have been the case in the case of our islands, since many lands currently emerged would be under sea water.

These episodes of lack of resources for perpetuation, called bottlenecks, are usually crucial in the evolutionary history of species, since those individuals who overcome the adverse episode will be the reproducers who will mark the future. Their genes will be those that will be present in future populations, leaving out of play all the genomes of individuals that, by chance, or due to specific selective causes, have disappeared; even though, sometimes, this chance causes the genomes that could have greater adaptive value to disappear, a phenomenon known as genetic drift. If the sea level rises during warm periods, it also drops below the current level in cold periods or glaciations. This is because the total amount of water that the planet has is finite, distributed between the sea, glaciers, groundwater, continental freshwater and water vapor in the atmosphere. The water that is in one compartment cannot be in another, so when there are large ice caps accumulated on the continents (currently we only have Greenland and Antarctica) there is a lack of water in the sea, and the level drops.

Falling sea level

Each glacial period has caused a fall in sea level and therefore the union of islands previously separated by shallow sea arms. Let us remember that the British Isles were united to Europe until about 20,000 years ago, during the Würm glaciation. At that time, the sea level in the Mediterranean dropped about 120 meters. At that time, the Black Sea became a freshwater lake, Mallorca and Menorca were united, and the same happened with the different islets that make up the Pityüses. The deeper the sea between islands, the longer they separated and the greater the degree of isolation (more accumulated evolutionary traits) the populations of living beings that inhabit them have (except for birds, of course).

Since it has been a longer time since they have been unable to reproduce with other individuals other than those on their island.

DIARIO de IBIZA

Per què hi ha sargantanes negres?

Why are there black lizards?

Reptiles are poikilothermic, so their internal body temperature depends on how warm or cool the outside is.



The side is the sexy zone for lizards. / DIARIO DE IBIZA

Antònia M. Cirer | Eivissa
16 JUN 2013 6:30

Each person has their own perception of colors that is different from others. And the same person also modifies the chromatic perception according to the lighting. When it comes to outdoor appreciations, with sunlight, we could say that depending on the time of year or the clouds in the sky, we all have a different chromatic experience every day.

In today's world, where the image easily replaces the description, there is little point in getting into arguments, it is enough to show a good collection of photographs to answer the question of what color is a lizard?

But it is worth knowing what to look for when we want to know what meaning each body color has, each design, and why they can have contrasting colors in one part of the body, and not in other areas of the body.

The dorsal design is what the few predators that act on the populations of the islets will see: birds. On the back, the lizards have three lines of black spots that can be continuous, or scattered spots. In fact, all juveniles have these three continuous and thick lines, and as the lizard grows, the black dots separate, while the color of the dorsolateral lines (what we identify as the color of the lizard in the strict sense) becomes more evident. The fact that the three black lines lose continuity when the

individual is older is an optical camouflage effect, since the silhouette of the lizard is thus blurred.

The coloration hides us from the lizard that, observed from the sky (from a bird's eye view), is confused with the colors of the vegetation, lichens, branches, sand, pebbles, dry leaves or cracks in the rocks. Depending on the most characteristic chromatic features of a micro-landscape, the predominant color of the back of the lizards in that place has been selected.

The coloration of the sides, on the other hand, is what other lizards see, and has a function of sexual attraction, intra-population hierarchy, and communication between congeners. The flanks usually have a different coloration from that observed in the center of the back. This coloration can be very striking: orange, turquoise, intense blue, and is then mentioned when we describe the coloration of a lizard, but it frequently has whitish, beige, more or less pearly colors.

Coloration of the sides

The coloration of the sides sometimes extends to the belly, where there is a lot of color variability. In many islets (Negre del Nord) it is common to find bellies of a bright orange color; in Es Vedrà and la Mola they are intense cobalt blue, in Trucadors practically pearly white, in s´Espartar emerald green, and dark gray or completely black in the melanistic populations of ses Bledes.

On the sides of the belly and on the throat there are usually spots, like freckles, of contrasting colors: black, blue, turquoise, orange... Very showy.

Why so much chromatic fantasy on the bellies and sides? Well, because this is the sexy area of the lizards. The sides are the part of the body most exposed to the view of other congeners and, when looking for a partner, one of the attraction movements that males make is to show their sides to the female, to rise slightly to show their belly, and to stand on their front legs to show their throat area. So individuals with more colored spots seem to be more attractive to the other sex and therefore would have more reproductive success, positively selecting for this character.

Conspicuousness in front of the opposite sex, or crypsis in front of predators is not the only function of color in saurians. The basic function of coloration is related to body temperature, in the possibility of absorbing more or less solar radiation and thus being able to thermoregulate.

Reptiles are poikilothermic (cold-blooded, as it was said before), so the internal temperature of the body depends on the heat or coolness of the outside. When they need to warm up, they flatten their bodies, so that their backs are flat, perpendicular to the direction of the sun's rays, and radiation is better absorbed. The belly in direct contact with the rock absorbs the heat of the substrate. On the other hand, if they do not need heat, they walk on all fours without touching their belly to the ground.

Poikilothermy

Poikilothermy is a mechanism that restricts large sizes, since absorption is carried out over the area (in cm^2) of skin that the animal has, but this energy must be supplied to the entire body volume (in cm^3); therefore, if the size increases, the area of energy absorption increases squared (cm^2), but the consumption of this energy increases

cubed (cm^3). So a larger size implies that it must improve the obtaining of thermo-solar energy.

This system can only improve with coloration, since light colors reflect more of the radiation received and dark colors absorb it more. Therefore, to be able to have a large size (gigantism observed in most islets) the mechanism for absorbing solar energy must be improved. And this is only possible if the body colors are darker. For this reason, all robust and large populations have high chromaticity, even black (ses Bledes), almost black (Margalida), or a blue so dark that it looks black (Murada). Melanism therefore has a positive selective value.

But this has the counterpart that the lizard becomes more apparent to its predators (negative natural selection). How is it, then, that large and black lizards, so visible to human eyes, have been positively selected in different places in the Pityüses? They seem like easy prey to visualize.

Let's look at which populations have achieved melanism and what the habitat where they live is like.

The most melanistic populations, and also of larger body size, are those of the Bledes islands; Margalida island and Murada island, there is also this tendency to darken the back at the other end of the Pitiusan archipelago at Cap de Barbaria, where they are in reproductive contact without barriers with the rest of the lizards of Formentera, which in the north of the island (Trucadors) are the smallest lizards and have the lightest dorsal coloration of the entire species.

All these places: Bledes, Margalida, Murada, Cap de Barbaria, are places of whitish limestone rocks, very fissured, with abundant cracks with sharp edges. The sun casts shadows from these cracks and edges, and if we saw the ground without depth or relief it would be a light surface with elongated black stripes and spots. And this is where the camouflage of the black lizards lies.

Seagulls

Birds, especially seagulls, are the main predators of lizards on islets. On large islands they are joined by some mammals, but on islets predation can only come from the sky. These predators have great visual acuity for colors, contours and movements, but they do not have stereoscopic vision like mammals, that is, they do not see the relief, they do not have depth of field, 3D does not exist for seagulls. Therefore, they do not differentiate the black shadow that a hole in the rock projects, from a silhouette of a black lizard lying sunbathing next to the hole.

So a still lizard is not visible, everything that moves is seen, but *Podarcis pityusensis* has quiet habits and spends most of its time without moving.

Based on this premise: "he who does not move is not seen", lizards with their indolence, without knowing it, save themselves from predation. And the selection of colors that are cryptic in each specific place is carried out each generation simply by natural selection.

DIARIO de IBIZA

Les sargantanes de Formentera

The lizards of Formentera

On this island you can see populations with very different colors.



The silhouette of the island of Formentera recalls a 3-point star, with a large central body. / IBIZA DIARY

Antònia M. Cirer | eivissa

30 JUN 2013 6:30

That within the same island we can find different populations of visually distinguishable lizards, and that each chromatic modality lives in a specific area, is a phenomenon that is easily verified in Formentera. On this island, without there being any geographical or ecological barrier that cannot be crossed by a lizard, populations with markedly different colors can be seen depending on the area.

The silhouette of the island of Formentera is reminiscent of a 3-pointed star, with a wide central body. The ends of the 3 points have remarkable geological and ecological characteristics. On the contrary, the center of the island is a strongly humanized landscape, more similar to the island of Ibiza than to the ends of Punta de Trucadors, Cap de Barbaria or the cliff of La Mola. Thus, on each of these 3 points there are very different lizards.

Cap de Barbaria

Es Cap is a rugged, arid, stony area, full of ravines and cracks. With a low vegetation cover formed by mastic bushes (*Pistacea lentiscus*) flattened on the ground by the wind, of large diameter and small height. It is a typical exokarst landscape and, as in Ses Illes Bledes, the angularity of the edges of the rocks projects small areas of shadow that help to camouflage the elongated silhouette of a black lizard.

The dorsal coloration of the lizards tends to be melanic due to the 3 lines of black spots being very wide, the color of the dorsolateral lines being very dark bluish green. This very dark coloration, almost black, allows the lizards to be much larger than the lizards in humanized areas or Punta de Trucadors. A phenomenon that is also observed in the lizards of the Bledes Islands (the largest of all the Pitiüses), and that is also repeated in La Mola: a large size requires a thermoregulatory supplement, which is only possible by darkening the dorsal color, but this is not possible if this coloration makes the lizard too visible to birds; therefore, melanism can only occur where a black body goes unnoticed in the environment. Difficult if the rocks are white!

The juveniles that are observed in this area frequently have the 3 clearly defined black dorsal lines, with the 2 dorsolateral lines and the flanks of a lighter color, generally brown or greenish-brown with variable intensity.

Why are large adults so dark, if there are lighter juveniles? Probably because only melanistic ones (which here go unnoticed by predators) achieve a thermoregulation that is optimal enough to maintain a large body, and large-bodied adults are the ones that dominate intraspecific competition, therefore those that are more likely to feed better and have a longer life expectancy.

La Mola

Like the area of Es Cap, La Mola is a massif of organogenic limestone. With an impressive cliff that reaches the maximum elevation of Formentera: 192 meters almost vertical from the sea. On this wall full of caves, the legend that most identifies the Pitiusas at the end of the 20th century around the world was forged: the hippies and their peculiar way of living and understanding reality.

Is this where the silhouette of a lizard begins to appear as a symbol of a way of living outdoors, in contact with nature, in search of inner peace? Probably.

Many plastic artists, filmmakers, jewelry designers, writers, fashion designers, musicians,... have spent seasons in this place, have contemplated the sea from the promontory of La Mola while enormous bluish and very dark lizards ran between their feet.

It is not surprising, then, that the best symbol of the Pitiüses that encompasses the entire cultural and social explosion of recent years is a large cyan blue, almost black lizard.

Punta de Trucadors

It is a coastal sand bar sedimented by the drift current that stretches north, where the Espalmador Island is located. If sedimentation continues in this way, the two islands will be joined by a tombol.

It is a very unstable area where prolonged periods of good weather cause the bar to almost emerge (the old mayors used to go to Espalmador by cart). Or a considerable depth appears, even breaking, in the Racó de ses Ampollas area, with small islets lined up after a strong storm.

The coastal dunes are weakly fixed with thin limestone crusts, produced by the upward migration of water during periods of aridity, small thickets of Trucador grass (*Otanthus maritimus*), of sedges (*Limonium* sp.), of piles of dry *Posidonia* leaves. The color of the landscape is characteristic and very uniform throughout the year: grayish ochre, straw or light sand color. The texture of the ground is smooth, without cracks or roughness, as corresponds to semi-consolidated dunes.

Any color other than light brown or beige will be a strident chromatic note for any bird that flies over this area. Thus, the lizards of Trucadors are ´forced´ to have light, cryptic colors in a sandy environment. The lizard of Trucadors is the one that presents the lightest coloration, and also the smallest of all the Pitiüses, as well as the one that has the most stylized body proportions, long and thin legs and fingers. Coloration and proportions similar to those presented by the populations of Illa Caragoler and Illot de s´Alga, islets of sandstone and sand with a substrate similar to that of Trucadors.

The 3 dorsal lines of the Caller lizards are light brown, and the 2 dorsolateral lines are even lighter in color (beige or light gray); the sides and gray belly are almost white, pearly; they may have spots (like a row of freckles) of turquoise color on the sides of the belly, since it is an area that predators do not see and that will have a sexual attraction function.

This coloration does not allow for the capture of large doses of solar energy, so it will not be very efficient in thermoregulation, and this will force the lizards not to reach a large size. They are always small if we compare them with those in other places on the island.

From an adaptive point of view, didn't we say that it was better to be larger, since there is better competition within the population and you can have more reserves in times of scarcity? In the rest of Formentera, the lizards are quite large.

Obviously it is better to be large, but let's remember that in order to leave descendants you must first survive predators, that is, you must not be visible. Therefore, the further north you go, the lighter the dorsal color of the lizards, since these are the only ones that can go unnoticed by the eyes of birds. Since birds have flat vision, without relief; and the body of a lizard blends in, to the bird's eye, with its surroundings if its back is the same color and texture as the substrate where it is sunbathing.

Darker lizards are certainly also born (small dark brown juveniles are seen in the area of Ses Salines de Marroig), since there is certainly a constant gene flow from the center of the island to the north. (There is no physical barrier that prevents this). But the darker lizards cannot thrive in this specific environment of Trucadors, with light, cryptic colorations being positively selected, in each generation, within a landscape dominated by ochres.

We therefore have what scientists call a clinal variation in the dorsal color and body size of the lizards, which varies from very light colors in the northernmost part of Trucadors, with a very small and agile body size; they gradually darken, very little by little, as we move south, and the ground acquires more plant cover and a greater diversity of micro-landscapes; until we reach the rural fields where the color and size of the lizards are already similar to the rest of the centre of the island, and quite similar to the lizards of Ibiza.

DIARIO de IBIZA

Què mengen les sargantanes?

What do lizards eat?

On all the islands and islets, lizards complement their diet with small fruits, flowers of all kinds, buds and tender leaves.



Lizard eating prickly pear flowers.

Antònia M. Cirer | ibiza
28 JUL 2013 6:30

Occupying, therefore, an intermediate position within the trophic scale: it needs some steps below, and its populations are controlled by the next step, or fourth trophic level.

On small islands, this is not possible, since there is no possibility of maintaining such a structured ecosystem. Let's not fool ourselves, however; with the few ecological resources available to each island, a climax stage is reached in which the various populations are structured in intrinsically well-regulated trophic networks. On each island, if there is no external distortion, especially human activity, populations are sustained with the maximum possible individuals of each of the species that inhabit it.

In the Pityusic Islands, the ideal food web that exists on the continent is truncated in several ways. Lizards do not have efficient predators that subject their populations to

a selective pressure that keeps them agile, small, elusive, with cryptic colorations, always hidden. Predators are scarce and those that could prey on lizards usually have other more interesting food sources. A very different situation may occur in the future if snakes continue to arrive from the continent hidden in gardening stocks: olive trees, palm trees and other trees with roots and soil, where snake eggs and young are hidden and are released into the wild on the island of Ibiza.

In all populations of any species, if there is no predation, their numbers increase considerably. And if there are denser populations, there is much more intraspecific competition for food, and here comes the first major evolutionary change that the lizard *Podarcis pityusensis* had to face: change of diet and increase of intrapopulation competition strategies.

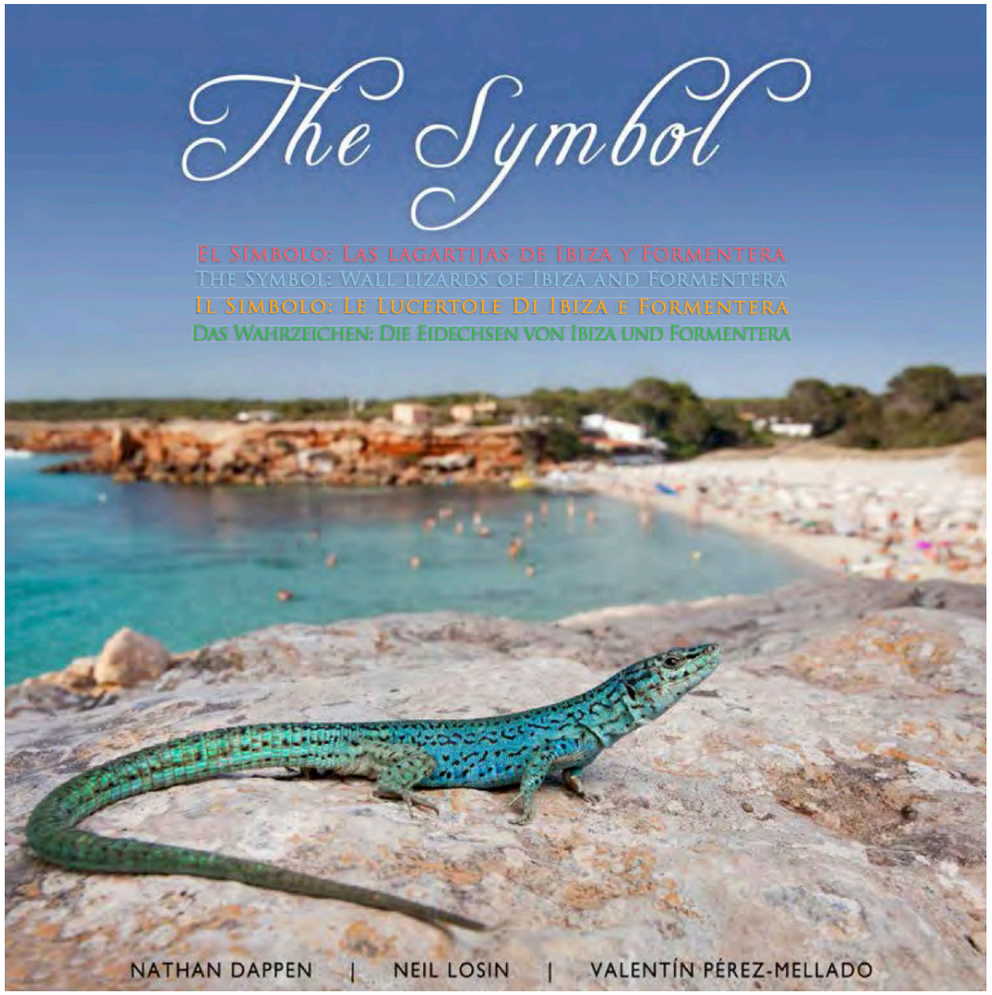
The main selective pressure has been to adapt to a new food source, not as elaborate as insects, but has had to resort to the first trophic level and feed directly on plants. On all the islands and islets, the lizards complement their diet with small fruits such as those of sea fennel (*Crithmum maritimum*) and the mastic bush (*Pistacia lentiscus*), flowers of all kinds, especially sea fennel or coca marine (*Limonium* sp.), buds and tender leaves. As well as any type of food that can be brought. It is common to observe lizards on small plants at the edge of the sea. And even more frequently they come to look for the food brought by people who visit the islets. Many fishermen tell anecdotes of when they went to make lunch on this or that islet. Since they always had to leave a person on guard to prevent the lizards from jumping into the boiling pot, attracted by the smell of the stew. This is currently the main selective pressure that the lizards of the Pityusic islets have: food.

Not so the predation, as in other European places. Much more relaxed pressure on the small islets and that has allowed the morphological change necessary to successfully achieve this change in ecological function (a 'formal' change as ecologist Ramon Margalef would say).

The search for new food sources does not stop with plants and becomes a little more daring. In some islets, such as sa Torreta, Espalmador or Illa d'en Pou, sea storms leave piles of dry *Posidonia* on the rocks, which will later be a good habitat for small crustaceans such as sea fleas. And there the lizards go to look for these large animals in the middle of the dry seaweed.

When a lizard is captured alive and held with your hands to prevent it from escaping, the lizard usually expels a defecation, which will inevitably contain remains of the food it has ingested in the hours or days prior to capture. By crushing these excrements, you can identify plant fibers, small pieces of invertebrate exoskeletons, sea flea legs, pits of some fruits, etc. That have revealed these dietary supplements that the lizards of the islets enjoy, where otherwise there would not be enough food to maintain the dense populations of large individuals that live there.

However, any change in diet implies some morphological change. You cannot have the same digestive tract if you are a herbivore, carnivore or insectivore. And therefore, now comes the great adaptive change that, through natural selection, we witness in the current individuals of a good part of Formentera (except Trucadors) and of most of the islets: gigantism.





Gigantism

The Pityusic lizards have a great tendency towards gigantism. All populations are much larger than any species of continental lizard. The Ibiza population is ostensibly larger than the lizards on the mainland, although those on Ibiza are much smaller than those found south of Formentera, or on any western islet.

A larger body size allows for a longer digestive tract; which allows for more efficient digestion of a diet rich in plants.

The increase in size is only possible if predator pressure is reduced, since otherwise they are very appetizing prey.

But it is not only a digestive issue, the increase in size is also favored because it allows for the accumulation of more energy reserves; which in a fluctuating ecosystem such as small islets are always a guarantee of being able to withstand times of food shortage.

And it also provides good assets within intraspecific competition, since, from lizard to lizard, the strongest and most robust one wins, which is the one that takes the bite. Everyone has seen two lizards fight: they try to bite off the base of each other's tail in order to snatch it from the other. The severed tail continues to move while the shorn lizard quickly flees. And what happens to this tail? Nothing is lost on an island where there is such a shortage of protein, the winning lizard will later return to look for the tail to eat it.

But this convenient increase in size is not possible if there is strong predation, since predators eliminate from the evolutionary game those individuals that present themselves as more appetizing (and a large lizard is, without a doubt!). Therefore, here is the reason for the possibility of a change in diet: the weakening of predatory pressure; a fact that allows very abundant populations and that requires larger individuals, as is observed in the current populations of the most isolated islets.

No matter how small an islet may seem, no matter how poor its vegetation may seem, with minimal conditions it is enough to sustain a population of lizards. A few thickets of tripe and sea fennel are enough, which apart from constituting the diet of the lizards, at the same time support insects, snails and other small invertebrates that will be the prey of the lizards. And lizards, in turn, do not have a predator efficient enough to control the entire network, so they have become the final step of the terrestrial trophic pyramid.

To a certain extent, they have ceased to be ecological strategists (species that produce many offspring but with high juvenile mortality), through a change of occupation that has allowed them to become species with an ecological strategy: more stable populations, with fewer offspring per female, but with larger and more resistant offspring.

DIARIO de IBIZA

The symbol

Opinión

03 AGO 2013 6:30

On Wednesday, July 31, I attended the presentation of a book of photographs of lizards, "The Symbol," at the Club Diario de Ibiza. Magnificent photographs, by the way; truly impressive. They deserve all the congratulations. But I was surprised by the text. First, by the whiff of "pioneer treading on virgin soil" that emanates from its introduction, as if we natives had no idea of the great scientific, ecological, evolutionary, and faunal value of our lizard.

Since the famous Germans of the early 20th century, there have been many naturalists (native and foreign) who have produced magnificent works on the islets and the lizards, completely ignored under the euphemism "scientists say." These details can be forgiven the photographers Dappen and Losin, but not Dr. Pérez-Mellado, since he has been present in scientific forums for the last 30 years.

He was also part of the panel that reviewed my doctoral thesis in 1987 ('Taxonomic Revision of the Lacertid *Podarcis pityusensis*'), and upon reading the text of 'The Symbol', I had to review it, since in the biological interpretation of lizard body color presented in 'The Symbol', and how color varies according to ecological parameters (especially in Formentera), it seemed to me like a remake of what I have often presented in scientific and popular texts. Apparently unknown to Dappen-Losin-Pérez-Mellado (?).

The second surprise is the conceptual blunders regarding island ecology. Newly formed islands, such as those in the Caribbean (read the work of M.L. Gorman), are confused with tectonic plate fragments, such as the Mediterranean islands (review the plate tectonics of the Betic-Balearic orogen, with the recent contributions of E. Roca, and the geology of Ibiza by Rangheard). The fauna of the Pitiüses never arrived; it had always been there. Lizards, snails, and beetles are wonderful examples of evolutionary radiation in the group of islets.

The famous Messinian crisis did not leave a salt desert (confused with Salt Lake?), but the emerged lands supported terrestrial ecosystems similar to those we find today in the emerged lands. They were not a kind of salt pond in Ses Salines in July, but xerophytic scrub, Mediterranean forest, rockery, sandy areas, and fields with grasses. Nothing to do with the image of a lizard crossing a salt desert. Finally, let me point out a symbolic detail. Why have all Ibizan souvenirs featured lizards for about 20 years, and before that, they were peasant women and little white houses? Because these islands were abuzz with artistic activity from the 1960s to the 1980s.

Many visual artists based in Ibiza and Formentera used the lizard silhouette as an identifying mark of their works: Gabrielet always includes a lizard or a turtle in some corner of his paintings; Majoral designed magnificent jewelry with the silhouette of a lizard; Jussara's naive paintings wouldn't be identifiable without his peasant women and lizards. And so on.

As a souvenir, The Symbol is great, but in Ibiza they also sell sarongs with Balinese geckos that pass as well as Formentera lizards.

Excuse me if I don't write in the language of the Pitiüses, but otherwise you wouldn't understand.

MOLECULAR ECOLOGY

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Multilocus genetic diversity and historical biogeography of the endemic wall lizard from Ibiza and Formentera, *Podarcis pityusensis* (Squamata: Lacertidae)

V. RODRÍGUEZ,* R. P. BROWN,† B. TERRASA,* V. PÉREZ-MELLADO,‡ J. A. CASTRO,* A. PICORNELL* and M. M. RAMON*

**Laboratori de Genètica, Universitat de les Illes Balears, 07122 Palma de Mallorca, Spain, †School of Natural Sciences & Psychology, Liverpool John Moores University, L3 3AF Liverpool, UK, ‡Department of Animal Biology, Universidad de Salamanca, 37071 Salamanca, Spain*

Abstract

Two monophyletic sister species of wall lizards inhabit the two main groups of Balearic Islands: *Podarcis lilfordi* from islets and small islands around Mallorca and Menorca and *Podarcis pityusensis* from Ibiza, Formentera and associated islets. Genetic diversity within the endangered *P. lilfordi* has been well characterized, but *P. pityusensis* has not been studied in depth. Here, 2430 bp of mtDNA and 15 microsatellite loci were analysed from *P. pityusensis* populations from across its natural range. Two main genetic groupings were identified, although geographical structuring differed slightly between the mtDNA and the nuclear loci. In general, individuals from islets/islands adjacent to the main island of Ibiza were genetically distinct from those from Formentera and the associated Freus islands for both mtDNA and the nuclear loci. However, most individuals from the island of Ibiza were grouped with neighbouring islets/islands for nuclear loci, but with Formentera and Freus islands for the mitochondrial locus. A time-calibrated Bayesian tree was constructed for the principal mitochondrial lineages within the Balearics, using the multispecies coalescent model, and provided statistical support for divergence of the two main *P. pityusensis* lineages 0.111–0.295 Ma. This suggests a mid-late Pleistocene intraspecific divergence, compared with an early Pleistocene divergence in *P. lilfordi*, and postdates some major increases in sea level between 0.4 and 0.6 Ma, which may have flooded Formentera. The program IMa2 provided a posterior divergence time of 0.089–0.221 Ma, which was similar to the multispecies coalescent tree estimate. More significantly, it indicated low but asymmetric effective gene copy migration rates, with higher migration from Formentera to Ibiza populations. Our findings suggest that much of the present-day diversity may have originated from a late Pleistocene colonization of one island group from the other, followed by allopatric divergence of these populations. Subsequent gene flow between these insular groups seems likely to be explained by recent human introductions. Two evolutionary significant units can be defined for *P. pityusensis* but these units would need to exclude the populations that have been the subjects of recent admixture.

Keywords: Balearic Islands, divergence time, evolutionary significant units, isolation-with-migration, multispecies coalescent, *Podarcis*

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Correspondence: Maria Misericordia Ramon,
Fax: 34-971173184;
E-mail: cori.ramon@uib.es

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Introduction

Coalescent theory has led to the development of statistical methods that enable key population parameters to

DIARIO de IBIZA

Las lagartijas pitiusas temen a las serpientes de herradura

Pityusic lizards fear horseshoe whip snakes

j. m. l. r. | es vaixell

20 JUN 2014 17:57

In addition to visiting the islets of Escull Vermell, s'Espardell, s'Espartar, es Penjats, sa Sal Rossa, Dau Gros, na Gorra, and Redona to collect data on their respective lizard populations, Zaída Ortega and Abraham Mencía conducted a week-long olfactory discrimination experiment to test whether Ibizan lizards recognize the danger posed by introduced ladder and horseshoe snakes.

Although they only have preliminary data at the moment, they believe that "they do recognize snakes as predators," although further tests are needed. The experiment consisted of introducing lizards from Ibiza (which are already familiar with snakes) and from the islet of sa Sal Rossa (where the snakes not yet have arrived) into terrariums previously occupied by snakes. Inside, they clearly responded to the threatening scent of snakes, for example by wagging their tails, a step prior to autotomy.

Curiously, the Balearic wall lizard doesn't react this way. Perhaps that's why it disappeared from Mallorca and now only inhabits certain islands.



Zaida Ortega
PhD · Professor (Associate) at University of Leon



Abraham Mencía
PhD · Federal University of Mato Grosso do Sul

DIARIO de IBIZA

Serpientes y lagartijas

Snakes and lizards

Opinión

08 JUL 2014 6:30

In Roman times, it was said that Ibiza was an island blessed by the Egyptian god Bes, and that its fertile soil was endowed with mysterious properties capable of repelling snakes, scorpions, and other poisonous creatures. The naturalist Pliny recorded this in the first century. From then on, according to legend, nobles and centurions demanded the importation of Ibizan soil to surround their tents during expeditions and thus ward off reptiles and other poisonous animals.

Two thousand years later, just last week, a professor of Zoology at the University of Granada shattered the legend and confirmed an unprecedented and worrying reality: half of the Ibizan countryside has been colonized by garter snakes, or horseshoe snakes, unaffected by the supposed toxicity of Bes. They pose a serious threat to our ecosystem and the species that live within it.

Reading the conclusions of Dr. Pleguezuelos—the reptile specialist—sent a shiver of repulsion through me, due to my phobia of snakes. But it also left me with the unpleasant feeling that the presence of snakes constitutes a metaphor for our decadence; for the extinction of the magical glow and magnetism that have surrounded Ibiza since ancient times and made the island a unique destination in the world. A while later, while I was philosophizing about Ibiza with a handful of strangers in this parallel universe that is the Internet, a woman offered a brief but extremely powerful reflection. In my view, it explains why snakes now slither among us with such familiarity: "The best thing about Ibiza was its simplicity," she chatted on Facebook, using the preterite tense. A sociologist could not have been more accurate in his diagnosis.

Certainly, until very recently, Ibiza was characterized by a simple and friendly lifestyle, whose essential values were hospitality, freedom, intelligent coexistence with nature, and a dogmatic respect for what was different from us—others describe it as polite indifference, but it amounts to the same thing. At the same time, we accumulated an ancestral culture, which we displayed with the same pride as our beaches, our cuisine, or our heritage.

Unlike other destinations, here, in addition to beauty, travelers above all found authenticity. They would see the fisherman moor his llaüt to any rock and lower it with a box of still-bouncing fish. Then, they would savor it at a beach bar run by a smiling Ibizan, who served them the food jokingly, without protocol or genuflections; face to face. A few such beach bars still exist, but they are gradually being replaced by beach clubs or substitutes owned by foreign investors and multinationals, staffed by a crew of waiters who look like they've stepped out of a swimsuit catalog. They don't serve rice dishes, fish stew, or stews, but sushi and Kobe burgers; the same offerings travelers enjoy in the trendy bars of their icy homeland or in the beach clubs of Miami, Monaco, or Barceloneta. Everything fits in Ibiza, but there must be a balance.

The same process of globalization affects many other things: the establishment of large retail outlets, new hotels built in the image and likeness of others around the world... Even the nightclub parties have long since lost the Ibizan touch of yesteryear. Right now, there's a legion of businesspeople and merchants from all over, including locals, who have set about milking the island at breakneck speed, their eyes clouded by greed. And no one seems to realize that the udders will eventually run dry.

Nature is always ahead and has been firing warning shots for some time, which we ignore like automatons: snake infestations resulting from not monitoring the olive trees we import to decorate our gardens, micro-algae invasions due to not caring for the beaches that turn the pristine waters of yesteryear into a thick broth, and which are increasing in number.

At the same time, Ibizans and longtime residents are selling off their businesses, homes, and land in the face of offers they can't refuse, leading to the expansion of a tourist destination devoid of local personality, which gains greater prominence with each passing season. I am convinced that there is a point of no return, an invisible frontier that, once crossed, will turn Ibiza into a tired and declining tourist destination, as has happened in other Mediterranean enclaves, such as the Costa del Sol or the Côte d'Azur. Snakes are just one more notch in the butt of the revolver aimed at our economic and environmental survival, but there have already been many. If we don't become aware and act, the snakes will eventually eat the lizards.

DIARIO de IBIZA

Lagartijas en la dieta de las ratas

Lizards in the diet of rats

Two British researchers are studying whether the regenerated tails of *Podarcis pityusensis* are an indicator that they are attacked by rodents.



The es Vedrà lizards are characterized by their turquoise-blue flanks and a striking yellow-orange stripe on their backs. / J.M.L.R.

José Miguel L. Romero | es Vedrà

16 SEPT 2014 20:03

How beautiful Vedrà is, how wonderful the turquoise waters that surround it, what a lovely picture. But what appears from a sailboat or from the coast to be a bucolic paradise is nothing short of hell for the few creatures that inhabit it: from dawn, the sun scorches the slopes of an islet carpeted with bones, molded from dried clay and covered with treacherous boulders that crumble at the slightest misstep. On an island at odds with the word horizontal and where there is barely any shade to shelter them, the few beings that inhabit it refuse to do anything to survive. There is such scarcity, the plants that grow there are so few and so withered, that only the opportunistic and the clever have a chance of living another day. There, only the most resourceful, the least gastronomically sybaritic, succeed: with so little food, some animals will eat anything, even their own kind, while others have developed spectacular techniques to escape the constant dangers that threaten them. British researchers John Newton and Paul Hudson have been visiting the nature reserves of es Vedrà, es Vedranell, and the Ponent islets for a week, specifically to investigate the relationship between two of the most abundant species there: rats (introduced and only temporarily eliminated from s'Espartar) and native lizards.

Of course, they get along terribly, as reflected in the title of the study initiated in 2012 by this British couple: "Regenerated lizard tails as a possible indicator of predation of *Podarcis pityusensis* by rats." Newton, 62, head of the Sheffield-based company Newton Ecology & Design, is convinced that lizards, although they seem indigestible, are part of the rats' daily menu, which, lacking anything better to munch on (there's little choice), raid their hiding places at nightfall. He claims that lizards are terrified of rats, perhaps because they already know (it must be ingrained in their genes) that they want to sink their teeth into them. Faced with the critical situation—which Newton describes as "anxious danger"—of seeing a damned rodent up close, they self-mutilate (autotomy): they lose their tail, which, by snaking for a long time, confuses the rats and gives them a chance to escape.

Few of the lizards that Hudson—a 40-year-old Sheffield electrician who repairs washing machines and other household items and is a volunteer in this research—and Newton captured last Wednesday in es Vedrà have their tails intact. Almost all of them have fully regenerated, although in some cases, parts are missing. Does this mean they have been attacked by rats? They don't know. They admit it could even be the result of fighting with other lizards (they are very territorial and aggressive) or even being harassed by other predators (raptors, for example, which are abundant on the islets), although the suspicion falls on rodents given their abundance, especially in places like es Vedranell. Newton also believes that autotomy is so aggressive and requires so much energy (something that is in short supply in these areas, now plagued by drought) that the Pityusic podarcis only resort to this mutilation in cases of extreme danger, as deadly as that posed by rats.

The couple has been recording the characteristics (sex, tail and total length, distance from the stump, etc.) of the lizards that inhabit the islets since 2012—then accompanied by nature reserve naturalist Jorge Calvo, whom they fondly remember as very helpful. Their goal is to complete their fieldwork this summer to begin drawing conclusions from the numerous statistics they've accumulated. During their visit to es Vedrà on Wednesday alone, they captured around thirty, although they were less fortunate when they landed at es Vedranell: "There was no way they would get near the tomatoes. They preferred to eat the seagull droppings," explained Newton, who also studies *Lacerta agilis* (agile lizard) in his country. They eat everything: droppings, their own eggs, their own young, any insect that comes near them, rotten seagull or rat meat...

Squashed tomatoes are ideal for trapping them, although other herpetologists prefer pieces of pear or apple (what a headline if Newton had used that for this research!). They place them in water bottles cut off at the nozzle and place them vertically between the bushes and *Limonium*, or between rocks, so that when the reptile enters, it has no way to escape, as it slides down the plastic walls. The sweet smell of tomatoes, which becomes more intense the hotter the sun, attracts them powerfully.

Blue, yellow, and orange

But in es Vedrà, the *Podarcis pityusensis vedrae*, with turquoise-blue flanks and belly and a striking yellow-orange stripe on their backs, are barely visible. There are no large concentrations, unlike in sa Bleda Plana or s'Espartar, which are rat-free islands. In es Vedrà, they are less curious and more elusive, a sign that they fear something (and that, perhaps, they don't have the same fear in sa Bleda Plana or s'Espartar). Only the aroma of tomatoes makes them lose their caution, show themselves in full sunlight, and fall into the traps or snares of the rods used by herpetologists to capture these elusive reptiles. The males are enormous. Some measure 13 centimeters from the tip of their snout to the beginning of their tail, 20 centimeters if you include the tail (when it's whole, of course).

The day on es Vedrà is exhausting for both researchers. It's a beautiful backdrop for those circling the islet in their boats or sailboats, but for Newton and Hudson, it's a 32-degree oven with no shade, whose slopes force them to maintain a precarious balance for four hours. They end up exhausted, their clothes soaked from the effort, their pants stained with dirt from constant slipping, bruised by the rocks and the dried branches of the bushes and stunted shrubs through which the striking *Podarcis pityusensis vedrae* scurry.

27-01-2015 - Asociación Herpetológica Española - Pilot project for snake control in Ibiza 2015. (presentation)



La culebra de herradura (*Hemorrhois hippocrepis*) en las Islas Baleares

Enrique Ayllón

Asociación Herpetologica Española. Apartado de Correos 191. 2910 Leganes. Madrid. C.e.: enrique.ayllon@herpetologica.org

Su área de distribución se encuentra en el Mediterráneo Occidental. En el Sur está presente en el Magreb (Túnez, Argelia y Marruecos) y en el Norte en los dos tercios meridionales de la península ibérica y en las islas de Zembra, Pantellaria y suroeste de Cerdeña, probablemente introducida en éstas por el ser humano (Cattaneo, 1985; Corti *et al.*, 2000). Ha sido introducido en las islas Baleares a principios del siglo XXI de manera accidental, dentro de los troncos de viejos olivos ibéricos llevados para usarlos como árboles ornamentales (Álvarez *et al.*, 2010; Mateo *et al.*, 2011). Fue encontrada por primera vez en Ibiza en el año 2003, en Mallorca en 2006 y en Formentera en 2010 (Álvarez *et al.*, 2010).

En Mallorca ocupa una banda ancha que recorre toda la isla de Este a Oeste, desde la zona de Capdepera y Arta, hasta la zona de Calvía, remontando por el norte hasta la zona de Alcudia (Torres, 2013, 2014), no conociéndose actualmente si se distribuye en núcleos aislados o existe una continuidad de sus poblaciones. En Ibiza se distribuye principalmente en la mitad noreste de la isla, en todo el término municipal de Santa Eulària des Riu y Sant Joan de Labritja, apareciendo citas



Figura 1: Ejemplar de *H. hippocrepis* dentro de una trampa de cajón capturado en Ibiza en la campaña de 2015, Santa Eulàlia des Riu.



Figura 2: Hábitat característico de *H. hippocrepis* en Ibiza. Los muros tradicionales de piedra seca tan habituales en la isla son un lugar idóneo para la búsqueda de alimento y como refugio. Municipio: Santa Eulàlia des Riu.

Miguel A. Carretero & Iolanda Silva-Rocha

CIBIO/InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos. Laboratório Associado. Universidade do Porto. Campus Agrário de Vairão. 4485-661 Vairão. Portugal. C.e.: carretero@cibio.up.pt

Rhinechis scalaris es un ofidio cuya distribución nativa ocupa la mayor parte de la península ibérica, estando sólo ausente del norte (Galicia, Cornisa Cantábrica y el Pirineo; Pleguezuelos & Honrubia, 2002), y se extiende también por el sudeste de Francia (Lescure & de Massary, 2013), siempre dentro del ámbito bioclimático mediterráneo. Su supuesta presencia en la Liguria italiana no se ha confirmado en tiempos recientes (Razzeti & Sindaco, 2006). Separadas de este rango continental continuo, se encuentran las poblaciones, consideradas introducidas, del archipiélago balear donde se señala su presencia en Mallorca, Menorca, Ibiza y Formentera (Pinya & Carretero, 2011). No obstante, el patrón de distribución varía entre islas. Mientras que en Menorca aparece a lo largo de toda la isla (Esteban *et al.*, 1994), en el resto sólo ocupa una parte del territorio. Así, en Mallorca se distribuye en tres núcleos separados, occidental, central y oriental (Álvarez *et al.*, 2010; Oliver & Álvarez, 2010); en Ibiza se concentra en el sector nororiental (Álvarez *et al.*, 2010; Montes *et al.*, 2015); y en Formentera sólo aparecen unas pocas observaciones en el extremo sudoriental (Álvarez *et al.*, 2010; Oliver & Álvarez, 2010). No se encuentra en ninguno de los islotes circundantes de las islas mayores.

La presencia de esta especie en Menorca es bien conocida desde hace tiempos históricos (Mayol, 1985). Teniendo en cuenta su completa ausencia en el registro fósil plio-pleistocénico (Caloi *et al.*, 1988) y su aparición ligada a yacimientos arqueológicos de los IV y III BCE y del año 150 CE, se piensa que su introducción es prerromana (Vigne & Alcover, 1985). Al ser una especie de gran talla se especula con un transporte deliberado con fines religiosos (Pleguezuelos, 2002). Por el contrario, en Mallorca, Ibiza y Formentera, la especie no aparece en los registros herpetológicos hasta principios del siglo XXI (Álvarez *et al.*, 2010). Tanto las observaciones directas como la distribución contagiosa de los registros en torno a los viveros abogan por una introducción pasiva a través de la importación de olivos viejos plantados con fines ornamentales en urbanizaciones y rotondas (Álvarez *et al.*, 2010; Montes *et al.*, 2015; Silva-Rocha *et al.*, 2015).

La evidencia filogeográfica apunta a un origen en el sur peninsular (Silva-Rocha *et al.*, 2015). En efecto, el hecho de que la especie presente una diversidad en el ADN mitocondrial muy baja en su área nativa (Nulchis *et al.*, 2008) debería en principio impedir la detección exacta del área fuente. Sin embargo, los haplotipos de las poblaciones de las islas Baleares, incluyendo Menorca, son idénticos o separados por una mutación de los peninsulares en tanto que la antigüedad del aislamiento de las islas Baleares (Mesiniense, 5,33 m.a. BP, Cavazza & Wezel, 2003) debería haber producido una diferenciación considerable como la que existe en los reptiles endémicos (Brown *et al.*, 2008).



Figura 1: Dos ejemplares de *R. scalaris* en Sant Llorenç de Balafia, Ibiza.

La culebra bastarda (*Malpolon monspessulanus*) en las islas Baleares

José Antonio Mateo

Avda. Joan Miró, 35. 3º. 07015 Palma de Mallorca. C.e.: mateosaurusrex@gmail.com

El área de distribución natural de *Malpolon monspessulanus* (Figura 1) se extiende por las regiones ribereñas de la cuenca occidental del Mediterráneo, incluida la mayor parte de la península ibérica, el sur de Francia, Liguria, Marruecos, el norte de Argelia y la franja litoral del Sáhara Occidental (Martínez-Solano *et al.*, 2009).

Hasta que en 2003 fue detectada por primera vez en Ibiza, la especie se consideraba ausente en todas las grandes islas del Mediterráneo (Álvarez *et al.*, 2010; Mateo *et al.*, 2011). Tres años más tarde también se detectó un ejemplar adulto en Cas Guitarró, una finca del término municipal de Capdepera (Mallorca), en la que unos años antes habían sido trasplantados varios centenares de olivos procedentes de la península ibérica (Álvarez *et al.*, 2010; Mateo *et al.*, 2011). Desde entonces el atlas de especies del Servei de Protecció d'Especies del Govern de les Illes Balears (<www.bioatles.caib.es>) ha recogido 17 observaciones de *M. monspessulanus*, siete de ellas en Ibiza y el resto en Mallorca. Se trata de una cantidad relativamente baja si se compara con el número de registros de otros ofidios ibéricos detectados en los últimos años (Álvarez *et al.*, 2010; Mateo *et al.*, 2011; Silva-Rocha *et al.*, 2015).

El goteo de observaciones de *M. monspessulanus* registradas en Ibiza desde 2003 no se ajusta a un patrón biogeográfico reconocible (<www.bioatles.caib.es>). Este patrón aparentemente aleatorio y el hecho de que no se haya detectado ni un solo ejemplar después del mes de junio de 2010 sugieren que el éxito del proceso de colonización de esta especie haya sido muy limitado en esa isla, sin que haya sido detectada en Formentera (Mateo & Ayllon, 2012; Montes *et al.*, 2015).

En Mallorca, por el contrario, nueve de las 10 observaciones realizadas hasta la fecha se concentran en los alrededores del Puig de Sant Martí (Alcudia), habiendo sido detectada en el extremo septentrional del Parque Natural de S'Albufera. Este patrón contagioso y



Figura 1: Ejemplar joven de *M. monspessulanus* en Sa Roca (Parc Natural de S'Albufera).

PLOS | ONE

RESEARCH ARTICLE

Snakes on the Balearic Islands: An Invasion Tale with Implications for Native Biodiversity Conservation

Iolanda Silva-Rocha[1☯], Daniele Salvi[1☯*], Neftalí Sillero[2], Jose A. Mateo[3], Miguel A. Carretero[1]

1 CIBIO Research Centre in Biodiversity and Genetic Resources, InBIO, Universidade do Porto, Vairão, Vila do Conde, Portugal, **2** CICGE, Centro de Investigação em Ciências Geo-Espaciais, Faculdade de Ciências da Universidade do Porto, Observatório Astronómico Prof. Manuel de Barros, Vila Nova de Gaia, Portugal, **3** Servei de Protecció d'Espècies, Govern de les Illes Balears, Palma de Mallorca, Spain

☯ These authors contributed equally to this work.
* danielesalvi.bio@gmail.com

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Abstract

Biological invasions are a major conservation threat for biodiversity worldwide. Islands are particularly vulnerable to invasive species, especially Mediterranean islands which have suffered human pressure since ancient times. In the Balearic archipelago, reptiles represent an outstanding case with more alien than native species. Moreover, in the last decade a new wave of alien snakes landed in the main islands of the archipelago, some of which were originally snake-free. The identification of the origin and colonization pathways of alien species, as well as the prediction of their expansion, is crucial to develop effective conservation strategies. In this study, we used molecular markers to assess the allochthonous status and the putative origin of the four introduced snake species (*Hemorrhois hippocrepis*, *Malpolon monspessulanus*, *Macroprotodon mauritanicus* and *Rhinechis scalaris*) as well as ecological niche models to infer their patterns of invasion and expansion based on current and future habitat suitability. For most species, DNA sequence data suggested the Iberian Peninsula as the potential origin of the allochthonous populations, although the shallow phylogeographic structure of these species prevented the identification of a restricted source-area. For all of them, the ecological niche models showed a current low habitat suitability in the Balearic, which is however predicted to increase significantly in the next few decades under climate change scenarios. Evidence from direct observations and spatial distribution of the first-occurrence records of alien snakes (but also lizards and worm lizards) suggest the nursery trade, and in particular olive tree importation from Iberian Peninsula, as the main pathway of introduction of alien reptiles in the Balearic islands. This trend has been reported also for recent invasions in NE Spain, thus showing that olive trees transplantation may be an effective vector for bioinvasion across the Mediterranean. The combination of molecular and ecological tools used in this study reveals a promising approach for the understanding of the complex invasion process, hence guiding conservation management actions.

IB3N Notícies

S'ha intensificat la lluita contra les serps a Eivissa

The fight against snakes has intensified in Ibiza

05/05/2015



Consell d'Eivissa



d'Eivissa

Departament de Medi Ambient, Medi Rural i Mar

Av. d'Espanya, 49
07800 Eivissa (Illes Balears)
tel. 971 19 53 00 · fax 971 19 59 14
mediambient@conselldeibiza.es
www.conselldeivissa.es

UCCIÓ D'UNA TRAMPA PER CAPTURAR SERPS

Xapa:

- Xapa: 1 cm de gruix aproximadament. Aguantarà millor si és tauler marí.
- Xarxa metàl·lica (no de plàstic): forats de 5 x 5 mm com a màxim.
- 4 frontisses.
- 2 tancadors.

Porta d'entrada de la serp (fig. 3):

- Consta de dos trossos de fusta, el més exterior sempre ha de ser més petit que l'interior.
- El diàmetre de l'entrada exterior pot ser de fins a 5 cm, sempre que el forat interior sigui major.
- S'ha de penjar un tros de xarxa metàl·lica a mode de porta basculant a la part interna de la fusta exterior. Aquesta porta serà més grossa que el primer forat i més petita que el segon forat. D'aquesta manera, la porta es pot obrir cap a dins, però no cap a fora. La següent fotografia està feta des de l'interior de la trampa. La porta penja de 3 grapes en forma d'U.

Portes per accedir a la trampa (fig. 4):

- La porta del compartiment del ratolí és recomanable que sigui grossa per poder ficar-hi un recipient gros per l'aigua del ratolí.
- La porta del compartiment de la serp és recomanable que sigui petita per evitar fugues quan el bloino l'agafi.
- Els tancadors poden ser d'altres tipus, com el de la fotografia.

Esquer:

Al compartiment tancat s'ha de posar un ratolí amb una garrafa tallada plena d'aigua (amb pedres perquè pugui entrar i sortir) i menjar suficient (pa, fruita, pa dur, restes de menjar vegetals, pinso, adequat...), així com herba seca perquè el ratolí estigui còmode. A l'altre compartiment tancat s'ha de col·locar un recipient amb aigua pla a la serp, amb pedres, per si entra una sargantana per accident. COL·LOCAR SEMPRE A L'OMBRA!

Pilanols i mesures:

A continuació teniu els pilanols i mesures per fabricar-vos la vostra pròpia trampa:

DIARIO de IBIZA

Las lagartijas de Tagomago, estresadas

Tagomago's lizards, stressed

A report warns that the massive arrival of tourists to the islet is disrupting its behavior and reducing its population.



Original photo replaced by a lizard that is from Tagomago (Marten van den Berg).

J.M.L.R. | IBIZA
21 MAY 2015 19:26

The current situation of the endemic lizard on the islet of Tagomago "is not optimal," concludes Valentín Pérez Mellado, PhD in Biology, zoologist and herpetologist, as well as a professor at the University of Salamanca and the world's leading expert on the reptiles of Ibiza, in the "Analysis and Diagnosis of the Islets of Santa Eulària," in which he collaborated as an external consultant with an extensive report. Pérez is concerned that while the population densities of the podarcis on other Llevant islets (such as Canar, Rodona, and Santa Eulària) are high, those on Tagomago, the largest island, are low: "It exhibits significantly lower densities, even with lower values than those recorded in areas of Formentera and Ibiza, which would indicate that the current situation of the Tagomago population is not optimal," warns the scientist.

In his opinion, there is a possible explanation for its "significantly low" lizard density: the islet is under "environmental stress and human pressure" that directly affects the lizards. Without mentioning this in the report, one can guess that the islet's beach club does not provide relief to these small, colorful, and delicate reptiles.

Tagomago specimens, which before German entrepreneur Matthias Kühn began exploiting it for tourism had a diet rich in ants, now have access, especially in summer, to a range of food that, according to Mellado, does not favor their survival: "The influx of food products and the organic waste generated from them disrupts and interferes with the lizards' natural food-gathering patterns, disrupts their foraging behavior, and creates artificial densities in suboptimal but food-abundant areas, where individuals are in a state of permanent stress." And this, the herpetologist warns, affects their immune systems, their escape behavior from predators, and "other essential traits of their life history."

The massive influx of pets, especially cats, is another factor altering their population. But the scientist goes further. Just as dangerous as the landing of felines would be the "undesirable" arrival of lizards from the island of Ibiza, which is not unusual given the large volume of boat traffic. This could lead to the loss of "a unique population from an evolutionary perspective."

Prohibit landing

Hence, in addition to requesting its inclusion in a Nature Reserve along with the islets of es Canar, Rodona and Santa Eulària, which also have endemic populations, some of them spectacular, it is considered necessary to restrict landing throughout the archipelago, establish a system to eliminate inorganic waste and potential traps for lizards (such as plastic water bottles) and, above all, "the prohibition of public uses and tourist exploitation of Tagomago."

Dades preliminars del projecte pilot de control de serps a l'illa d'Eivissa

Elba María MONTES, Jaume ESTARELLAS, Enrique AYLLÓN, Miguel Ángel CARRETERO, Mónica FERICHE, Pedro Luís HERNÁNDEZ, Juan Manuel PLEGUEZUELOS

Elba María Montes Vadillo, Consell Insular d'Eivissa, Av. Espanya, 49 – 3er pis, Dep. Medi Ambient, 07800 – Eivissa (Illes Balears) elba.montes@conselldeivissa.es

Resum

El Consell Insular d'Eivissa va iniciar a 2014 un programa pilot per avaluar la distribució, l'estat de les poblacions, conèixer aspectes sobre la seva biologia i controlar les poblacions d'ofidis a Eivissa. Les dades preliminars indiquen que dos espècies introduïdes a l'illa d'Eivissa estan naturalitzades i que són abundants a l'entorn de Santa Eulària des Riu, Sant Llorenç de Balàfia i Santa Gertrudis de Fruitera; predomina *Hemorrhois hippocrepis* i és més escassa *Rhinechis scalaris*; tanmateix, no hi ha dades de *Malpolon monspessulanus* des de 2010. Les dos espècies presents en l'actualitat realitzen festejos i còpules al mateix període que a les regions on són natives. Almenys *H. hippocrepis* realitza postes amb ous viables. La presència de nadons de les dos espècies en dates d'eclosió per la Península Ibèrica pareix constatar la reproducció efectiva. Almenys en *H. hippocrepis*, s'ha constatat la predació sobre *Podarcis pityusensis*. Des de la seua introducció en 2003, *H. hippocrepis* ha mostrat una resposta funcional cap al gigantisme, amb exemplars que mostraven el 213% de la biomassa màxima registrada a la seua àrea nativa de la península Ibèrica. La utilització de trampes pareix efectiva, sempre que el seu número sigui elevat. L'elecció del tipus de trampa, esquer i lloc de col·locació condiciona els resultats obtinguts. Tanmateix, la continuïtat d'aquest estudi al llarg de l'any 2015 es fa imprescindible per augmentar la mida de mostra. El proper any es pretén la utilització de nous mètodes de captura i especialment, la col·locació d'un major número de trampes tipus caixa.

Introducció

La introducció d'espècies en zones que no formen part de la seua àrea de distribució natural és una de les primeres amenaces per a la biodiversitat i un problema econòmic important. Les illes de la Mediterrània són molt vulnerables a les invasions biològiques i les seues comunitats presenten a l'actualitat un gran nombre d'espècies continentals. En aquest sentit, les comunitats presents a les Illes Balears posseeixen, per exemple, comunitats de rèptils en les quals el nombre d'espècies introduïdes és major que el de natives. Mallorca, Menorca, Eivissa i Formentera venien de patir els efectes de les glaciacions quaternàries, de tal manera que els primers humans que s'assentaren en elles només van trobar sargantanes com a rèptils locals (Mateo *et al*., 2011). Els dragons, els grans lacèrtids, els escínids, els testudínids, els anfisbènids i per descomptat, els ofidis que havien poblat les illes fins el Plistocé no varen sobreviure als grans vaivens climàtics de l'Holocé (Bover, 2008). Més tard, els humans durien, de forma voluntària o involuntària, la resta d'espècies que ara es poden trobar a les illes (Mateo *et al*., 2011).

Al territori de l'illa d'Eivissa, com a la resta d'illes i illots de l'arxipèlag, no hi havia ofidis fa poc més de quatre mil anys (Álvarez *et al*., 2010). Però, mentre que Mallorca i Menorca van ser ràpidament colonitzades durant el període Talaiòtic per algunes espècies introduïdes, les Pitiüses es van mantenir lliures de colobres fins els darrers anys del segon mil·lenni de la nostra era (Mateo *et al*., 2011). Aquesta tardança podria haver estat determinada per la vinculació de l'illa al culte a Bes, una deïtat protectora front als ofidis, que probablement determinà que en l'antiguitat no s'introduïssin colobres en aquestes dues illes com a símbol d'identitat (Mateo i Ayllón, 2012).

Així que, mentre que Mallorca i Menorca quedaren ràpidament despoblades de sargantanes (en l'actualitat només els illots que rodegen ambdues illes tenen poblacions de *Podarcis lilfordi*), degut a la predació per part del ofidis introduits, a les Pitiüses les sargantanes autòctones continuen essent comunes (Pleguezuelos *et al*., 2002). En els primers anys del segle XXI es detectaren les primeres serps en diverses localitats de la Pitiüsa major (Mateo *et al*., 2011). La presència de tres espècies d'ofidis a l'illa pareix estar associada a la importació d'oliveres i altres arbres ornamentals des de la Península Ibèrica (Mateo *et al*., 2011), així com possiblement a la importació de materials vegetals tals com llenya o palla, també des de la Península Ibèrica. Es tracta de la serp blanca (*Rhinechis scalaris*), la serp de ferradura (*Hemorrhois hippocrepis*) i la serp verda (*Malpolon monspessulanus*) (Álvarez *et al*., 2010; Mateo *et al*., 2011). Totes elles presenten en la seua fase adulta mides mitjanes o grans- *M. monspessulanus* arriba a sobrepassar els dos metres de longitud total –, totes són depredadores de vertebrats i estan íntimament lligades als ecosistemes mediterranis ibèrics. Resulta previsible que la seua presència afecti de forma severa les espècies de vertebrats terrestres autòctons de l'illa, especialment a *P. pityusensis* i a aus de petita i mitjana mida, així com a totes les espècies d'interès cinegètic (Mateo y Ayllón, 2012). Les primeres cites de serps daten de

New observations on Ses Margalides



New remarkable observations on the population of *Podarcis pityusensis* at Ses Margalides (Ibiza/Spain)

MARTEN VAN DEN BERG, MIKE ZAWADZKI and MICHAEL KRONIGER, July 2015.

Summary

We report on our visit to the largest of the Ses Margalides islands during our spring 2015 herpetological trip to Ibiza. The island habitat is described, the herpetological history of the *Podarcis pityusensis* population on this island is summarized, and additional data of this population is given. Among this new data are pictures of red bellied green backed lizards, blue lizards, and a description of a light gray color morph, all previously unknown to this population.

Keywords: *Podarcis pityusensis hedwigkamerae*, Ses Margalides, new color morphs.

Los Anfibios y los Reptiles Introducidos en Baleares: un repaso a lo que sabemos y un ejemplo de puerta de entrada

José A. MATEO

Avda. Joan Miró, 3. Palma de Mallorca. mateosaurus@terra.es

Resumen

La mayor parte de los anfibios y reptiles que conforman las comunidades de Baleares ha sido introducida. Desde que se iniciara la colonización humana del archipiélago muchas especies se han ido incorporando poco a poco, pero en los últimos 25 años el número de naturalizaciones se ha disparado. La exploración llevada a cabo en un vivero de Mallorca ha permitido hacer un rápido repaso a todas esas introducciones.

Introducción

A casi nadie le sorprende ya que las comunidades insulares sean casi siempre más pobres en número de especies que las áreas continentales próximas y, en el caso de los anfibios y de los reptiles, las islas que componen el archipiélago Balear se comportan como ejemplos paradigmáticos de esa regla biogeográfica (Mayol, 2003).

El registro fósil Cuaternario nos dice que hace pocas decenas de miles de años en Baleares podían encontrarse tortugas terrestres de gran tamaño, anfisbénidos, gecónidos, escíncidos, ánguidos, al menos tres especies de lacértidos, un colúbrido y una víbora, además de dos especies de anfibios de la familia Alytidae (Alcover & Mayol, 1981; García-Porta et al. 1988; Bailón et al., 2005 y 2010). Sin embargo, la mayor parte de esas especies no soportó los intensos cambios climáticos sufridos por la región mediterránea a lo largo del Pleistoceno, y se extinguieron (Bailón et al., 2005 y 2010).

Si la comparamos con otras islas cercanas como Córcega, Cerdeña o Sicilia, la pérdida de diversidad biológica sufrida por las islas del archipiélago Balear debido a los cambios climáticos del Cuaternario fue especialmente importante (ver Delaugerre y Cheylan, 1992). Por eso, cuando hace algo más de cuatro mil años los primeros humanos se establecieron en Baleares sólo dos lagartijas (*Podarcis pityusensis* en Formentera, Ibiza e islotes, y *P. lilfordi* en Mallorca, Menorca, Cabrera e islotes) y un anfibio anuro (*Alytes muletensis* en Mallorca y Menorca) todavía las poblaban (Bailón *et al*. 2005, 2010; Bover et al., 2014). Muy pronto, sin embargo, la situación empezaría a cambiar, y las primeras especies foráneas que suelen acompañar al hombre en sus desplazamientos empezaron a establecerse (Tabla I).

Poco a poco, los primeros anfibios y reptiles introducidos por el hombre en Baleares se fueron asentando en una o más islas, pasando así a formar parte de sus comunidades de vertebrados terrestres, alterando en mayor o menor grado el medio e interactuando con las especies autóctonas.

Sin embargo, y tras un goteo que ha durado miles de años, los últimos veinticinco años han sido testigos de una avalancha de especies foráneas sin precedentes en las islas (ver Tabla II; Álvarez et al., 2010; Oliver y Álvarez, 2010; Mateo et al., 2011).

Este reciente aumento del número de especies de anfibios y reptiles introducidos en Baleares puede explicarse por la facilidad con la que los humanos pueden ahora desplazarse, por la globalización del comercio, por la proliferación de viveros y por el auge de la importación y la venta de mascotas (Mateo et al., 2011). Oliver y Álvarez (2010) citan hasta una veintena de nuevas especies exóticas detectadas en libertad, muchas de la cuales no han llegado a naturalizarse por no encontrar condiciones bioclimáticas adecuadas o por tratarse de ejemplares aislados escapados de cautividad. Algunas, por el contrario, han acabado naturalizadas (Tabla II).

Lagartos y galápagos ibéricos traídos voluntariamente desde el centro y sur de España y más tarde liberados en cañadas, charcas y marismas (Pinya et al., 2008; Mateo et al., 2011), lagartijas del litoral ibérico mediterráneo que han viajado como polizones entre mercancías para establecerse en áreas recubiertas de matorral (Vicens 2005, Oliver & Vicens 2007), reptiles ápodos minadores llegados desde la península Ibérica o desde mucho más lejos ocultos entre la tierra de las macetas (Mateo et al., 2011; datos inéditos) y, sobre todo, varias especies de ofidios ibéricos que se han establecido con el nuevo siglo en Mallorca, Ibiza y Formentera (Álvarez et al., 2010; Ayllón et al., 2014) prometen convertirse en habituales de los ecosistemas de Mallorca, Ibiza y Formentera, y en un problema para algunas especies autóctonas (Álvarez et al., 2010; Mateo et al., 2011).

Consorci per a la Recuperació de la Fauna de les Illes Balears, 11 años trabajando para la conservación de la biodiversidad

Lluís PARPAL, Víctor COLOMAR, Patxi BLASCO, Nieves NEGRE, Miquel PUIG, Jéssica SOLÀ, Tomás PARÍS, Ignaci COLL, Toni MORRO, Tomeu MIR

COFIB, Consorci per a la Recuperació de la Fauna de les Illes Balears (Conselleria d'Agricultura , Medi Ambient i Territori del Govern de les Illes Balears / Fundació Natura Parc). Carretera de Sineu Km. 15'400, 07142-Santa Eugènia, Mallorca (Illes Balears). luisparpal@hotmail.com, crcofib@gmail.com

Resumen

El COFIB, *Consorci per a la Recuperació de la Fauna de las Illes Balears* se creó en el año 2004 con la finalidad de atender las necesidades de recuperación de la fauna silvestre así como gestionar problemáticas relacionadas con la fauna exótica. Las entidades que lo constituyen son la Conselleria de Agricultura, Medi Ambient i Territori del Govern de les Illes Balears y la Fundació Natura Parc, entidades que aportan los medios necesarios para llevar a cabo las actividades del Consorcio. Durante estos años se han atendido 26.119 casos de fauna silvestre de las Islas Baleares y se han recogido 4.148 ejemplares de fauna exótica. Se ha participado en diferentes planes de conservación y recuperación que lleva a cabo el Servei de Protecció d'Espècies de la DG de Medi Natural. Los cuatro últimos años se ha incorporado el equipo de Sanidad y Control de Fauna, que interviene en acciones de control de especies invasoras y domésticas asilvestradas en diferentes espacios de la R.N.2000 y que ha capturado 11.622 especímenes de 25 especies distintas. Se colabora y participa en el seguimiento y monitorización de las enfermedades que afectan a la fauna silvestre. Desde el año 201,2 el COFIB coordina la recuperación de ejemplares de la fauna silvestre en todas las Islas Baleares. Gracias a los datos obtenidos a lo largo de estos 11 años, se ha contribuido en líneas de investigación y publicaciones que mejoran el conocimiento sobre nuestras especies. Finalmente, la educación ambiental y la investigación complementan las acciones de recuperación que lleva a cabo el COFIB. El artículo repasa algunas de las actuaciones, resultados y los datos más importantes recogidos durante este periodo.

Introducción

"En la filosofía de muchos centros de recuperación está presente y se considera prioritario, dirigir los esfuerzos hacia la conservación y la recuperación de las poblaciones de especies salvajes y de los ecosistemas que las sustentan. Los Centros de Recuperación (CRs) han sido, son, y a buen seguro serán, decisivos en la salvaguarda de muchas especies." Así rezaba hace 20 años uno de los primeros documentos técnicos que emanaban de la joven CONCER (Coordinadora Nacional de Centros de Recuperación) (CONCER, 1994), que aún hoy, ahora ya con las nuevas herramientas de comunicación, mantiene vivo el contacto entre los diferentes centros a nivel nacional.

La figura de centro de recuperación (CR) tal y como se entiende en la actualidad se empieza a gestar en nuestro país en los años 80 cuando empiezan a funcionar los primeros. Siguiendo aquellos inicios en los que buscábamos referentes en centros como el Raptor Center de Minnesota, poco a poco se fue desarrollando su actividad cada vez más coordinada y ordenada. Algunos de ellos entraron a formar parte o fueron creados propiamente por las administraciones de las CCAA, que se empezaron a apoyar en éstos para las acciones a desarrollar en conservación y protección de la fauna.

Primero con la vieja conocida Ley 4/89 y actualmente con la Ley 42/2007 – *del Patrimonio Natural y de la Biodiversidad*-, se encontraron las vías para justificar la necesidad de atender los problemas de la fauna silvestre, y con ellas, las acciones a desarrollar en los CRs. En el año 86 se produce la incorporación de España en Europa y se publica el instrumento de adhesión al *Convenio sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres*, más conocido como CITES del que aplicamos directamente los Reglamentos Europeos CE 338/97 y 865/2006. Normativa que nos exigirá un control y tramitación en los movimientos de fauna entre países, pero también la necesidad de disponer de una documentación para certificar el origen legal de determinadas especies. Y llegamos a estos últimos años, al boom de la tenencia de mascotas diferentes al perro, gato y el canario, los denominados NACs -nuevos animales de compañía- y casi sin darnos cuenta nos encontramos en la Serra de Tramuntana trampeando mapaches, en Santa Ponça o Bellver lanzando redes a cotorras de Argentina o diseñando artilugios para capturar tortugas de agua - de las llamadas de Florida- en diferentes zonas húmedas de las Baleares. Al final, después de muchas reuniones y no sin controversias, llegó el *R.D. 630/2013 por el que se regula el Catálogo español de especies invasoras (EEI)* que afecta directamente a la gestión que se venía haciendo en el comercio y diferentes centros autorizados, incluyendo en el mismo, algunas especies problemáticas por sus posibles repercusiones en el medio natural, y obligando a las administraciones, a tomar determinadas medidas de gestión, control y

PERIÓDICO de IBIZA Y FORMENTERA

Encuentran la muda de una serpiente en el islote de s'Espartar, en plena reserva natural

A shed snake has been found on the islet of s'Espartar, in the heart of the nature reserve



FORMENTERA. Snakes arrive in La Mola. The horseshoe snake is an invasive species that arrives on large olive trees used for landscaping. In the image, a snake of this type in Ibiza | Photo: Local News

Juan A. Torres | Eivissa | 27/07/15 0:00

Snakes are no longer content to roam freely around Ibiza and are beginning to explore new territories. This is the case of one specimen, or at least its shed, found a year and a half ago on the islet of s'Espartar. The Ibiza Council does not know how the snake reached this esparto grass patch, but they do not rule out the possibility that the reptile swam there, as one has been sighted in the water off the coast of Capdepera in Mallorca. Another option, perhaps the most likely, is that a seagull picked up the snake's skin and carried it to s'Espartar.

However, the Council points out that no further trace of the snake has been found on any of the Ponent Islands. If snakes were to colonize this area, "the situation would be extremely serious," says Jaume Estarellas, environmental specialist for the Ibiza Council, since small rodents are absent there, and they could wipe out the area's endemic lizards, such as *Podarcis pityusensis kameriana*, a subspecies of the Pityusic wall lizard.

For more than a decade, Ibiza has ceased to be the island Pliny the Elder spoke of almost two thousand years ago, where snakes had no place. Sightings of these reptiles are increasing, and therefore, their captures are increasing. A pest that, a priori, is difficult to exterminate, but it hasn't discouraged the environmental experts of the Consell d'Eivissa (Eivissa Council). Earlier this spring, they installed 200 traps made by students from the Escola d'Arts i Oficis (Eivissa School of Arts and Crafts), which have captured 80 specimens so far. The island's highest authority describes the situation as satisfactory. "[The traps] are working very well, but many more would be needed," comments Estarellas.

Areas

Most of the traps have been set up in Santa Gertrudis, Sant Llorenç, the Can Guasch area (Santa Eulària), and Sant Carles, with the s'Aigua Blanca area being the location where many specimens have recently been found, and they are even reaching Sant Vicent de sa Cala.

For now, the south of Ibiza is being spared from this plague, which has also reached Formentera.

PERIÓDICO de IBIZA Y FORMENTERA

'Sargantanes' y hormigas, a estudio

Lizards and ants, under study



Scientist Sara Castro holds a 'sargantana' in Formentera at one point in this interview

Marta Vázquez | Eivissa | 09/08/15 0:00

Biologist Sara Castro and environmental scientist and project technician Carles Molina, researchers at the Doñana Biological Station belonging to the Spanish National Research Council (CSIC), are currently in Formentera conducting a study on the native reptile, the lizard (*Podarsis pityusensis*), and an invasive insect species, the Argentine ant (*Linepithema humile*).

—What does this scientific project involve?

—Carles Molina: The project aims to compare two very different species: a typical invasive species like the Argentine ant and a native species like the Pityusic lizard, which has been found to be invasive in an area of the Basque Country and in Mallorca. We are measuring various parameters both here and in the invaded area to understand their adaptive capacity, as well as, in the case of lizards, their evolution

and their response capacity to attacks from potential predators.

—We see that you have different instruments to perform calculations and measurements...

—Sara Castro: That's right. We set different traps to capture the lizards. The bait is usually a tomato. From there, we catch them and take a series of measurements: head size, body length, and tail. We check if this appendage has regenerated recently, since when the reptile feels threatened, it releases its tail to distract the predator, giving it time to flee. We also check if it still has all its toes or has V-shaped marks on its abdomen, indicating it has been fighting with its peers. We also use the homemade 'Lizzcelerator,' which we use to calculate the lizards' running speed when they feel threatened. We also analyze the parasites and mites found in the native reptiles and those that have been transported off the island.

—C.M: Regarding the parasitic load, we calculate it both externally, in the blood, and in feces, as we want to verify whether the new parasites found in the invaded area affect them or make them stronger and allow them to adapt to the new habitat. In the case of the Basque Country, the Pityusic lizard is found on a rock where they have displaced the native lizard.

—What are the most notable characteristics of the Pityusic lizard?

—C.M: One of the main features is their varied diet. They can eat fruit but also carrion, which makes them more resilient compared to other species that only eat live animals. Another point is their rather strong greenish coloration, although within the same population they come in different shades, and if we go to the islets, even though they are the same species, the range of colors changes. The fact that the ones from Formentera are so attractive has contributed to people trafficking them, and that's why there are colonies off the island. It's a gregarious animal with colonies of large numbers of individuals, although we've been told that garter snakes, a new predator, have appeared here on La Mola a few years ago. In any case, this doesn't affect the lizards' very high reproduction rate.

—Let's now talk about an invasive species, the Argentine ant.

—S.C: The species we've taken as an invasive reference is the Argentine ant, which is continental and has spread practically throughout the world. On the Iberian Peninsula, it's found throughout the periphery, especially in Catalonia, and it's also reached the islands, although on Formentera we've only located it in a specific spot.

It's an aggressive insect, with very large colonies, and its unique feature is that it's polygynous—it has many queens, which makes its reproductive rate extremely high. It also eats everything, is accustomed to nesting near inhabited areas, and is easy to spot because it forms long rows full of these medium-sized, brown insects. This type of ant arrived in the Balearic Islands, it's estimated, in the 1950s, probably in fruit crates. One of the primary characteristics of this species is that the fertilized queen forms a new nest with the help of a few workers, so there's no need for many to arrive. This creates what's called a super-colony, with large nests. Even when nests of this species are miles apart, they can recognize each other by their antennae and don't attack each other. They even collaborate with other nests of the same species to help them harvest. Of course, they are ferocious toward colonies belonging to a different species, hence their high invasiveness.

DIARIO de IBIZA

87 años metidas en etanol

87 years immersed in ethanol

Three experts on Pityusic lizards are studying the collection of Ibizan subspecies described by Martin Eisentraut in 1930 in Berlin.



Jars filled with lizards collected by Eisentraut in na Gorra between 1928 and 1930. The labels were written by the naturalist / VALENTÍN PÉREZ

José Miguel L. Romero | Ibiza

29 ENE 2016 17:47

Between 1928 and 1930, naturalist Martin Eisentraut (Gross-Tofer, 1902–Bonn, 1994) traveled throughout the Pitiusas and each of its islets to describe the subspecies of lizards that inhabited them. From each island, he collected dozens of *Podarcis pityusensis*, which he placed in jars filled with ethanol and deposited at the Natural History Museum (Naturkunde) in Berlin, where he was then working as a scientific assistant.

Eight decades later, at the beginning of last December, the Berlin museum opened its doors to Valentín Pérez Mellado, professor of Zoology at the University of Salamanca, and to the biology doctors Ana Pérez Cembrano and Zaida Ortega—also experts on Pityusic lizards—so they could study Eisentraut's valuable legacy: dozens of jars that the naturalist himself sealed with ground-glass stoppers after rubbing their edges with Vaseline to prevent the alcohol from evaporating. Pérez, who has spent decades analyzing the German scientist's every visit to these islands and each of the experiments he conducted there, felt "like a rocket," excited to have before him such "historical, unique, and enormously interesting material," jars overflowing with blue, green, and almost black podarcis, labeled by Eisentraut in pen and ink, in his own hand.

The Naturkunde in Berlin possesses the types and holotypes, that is, the original specimens, with which Eisentraut described the subspecies of the Pitiusas: "The objective of our trip," explains Pérez Mellado, "was to study these types. We are conducting a systematic review of the subspecies of the

Ibizan lizard and the Balearic lizard, for which the types are essential. Each type is exactly the physical specimen with which the author made their description. You have to verify that there were no errors and that, indeed, that specimen belongs to that population and is representative. Because sometimes it isn't." In the 1930s, when Eisentraut collected the lizards from the Pityusic islets, they weren't very methodical: "When you describe a new subspecies, you are obliged to designate one specimen as the type. And a series (the specimens captured to carry out that description) as paratypes. That's done very strictly now, but in the 1930s, some people weren't so strict. That's why there were times when it was later necessary to decide which type the author had actually used to describe a particular subspecies.

From nine in the morning to six in the evening, one of them measured, another examined with a magnifying glass, and the third took notes. The professor and the two doctors thus attempted to verify whether the types in Eisentraut's collection were representative specimens. They verified and studied more than two hundred from all over the Balearic Islands, more than half of which were from the Pitiusas. They even analyzed reptiles from places where they have already disappeared, such as those from the island of Les Rates, in the port of Mahon (Menorca), which was dynamited in 1935. There are no living specimens of that Menorcan *Podarcis lilfordi*, but several are preserved in ethanol at the Naturkunde Museum.

Not a single creature sacrificed

The jars contain lizards (sometimes up to thirty in each one) collected from the islets of Ponent, such as Na Gorra. But there are none from es Vaixell because Eisentraut believed that not a single reptile lived on that inhospitable rock. Therefore, the naturalist used it for one of his experiments: on March 5, 1930, he introduced 51 specimens from the island of Ibiza. But he failed: none survived, probably because he deposited them near the sea, not high up, a very difficult place to access. The lizards that survive up there are, according to recent research by these three experts from Salamanca, a subspecies of their own. And that, precisely, is another purpose of the trip to Berlin: to describe them, they needed to study the specimens from na Gorra and all the nearby islets that Eisentraut captured.

Valentín Pérez Mellado isn't willing to sacrifice a single specimen for the description of this new subspecies: "We'll do something unusual, but it's sometimes done: use a photo as a type of the subspecies. The nomenclature code allows it. The reason is that I don't want to sacrifice any creature. I don't feel like it. I refuse." They have already submitted this work for publication. In it, they explain the population and its genetics. They also compare it morphologically with other populations."

In the medium term, these scientists' goal "is to conduct a complete revision of all the subspecies of *Podarcis pityusensis*," something for which the study of the Eisentraut collection at the Naturkunde Museum has been essential. And how are these lizards doing after more than eight decades immersed in ethanol? "Fairly well," the professor notes: "85 years ago, the specimens were fixed in a fairly basic way. They were placed in preservative liquids, not injected, as is done now." They were generally labeled by jar, not individually, as is done now. Eisentraut packed up to thirty of them into some jars, like sardines in a can: "First, we removed the 30 from each jar; then we examined them one by one carefully with a binocular magnifying glass, and finally, we put them back inside. It was laborious," explains Valentín Pérez. It was hard work "but very enjoyable because it is historical material that has, above all, the quality of being unique. We must not forget that it was collected 85 years ago and, therefore, its interest is enormous," he emphasizes.

The race of the subspecies

Martin Eisentraut's collection dates back to a time, the late 1920s, when there was "a real race" to describe the Pityusic subspecies: "Eisentraut, who used to work in the tropics, saw at one point that this was a gold mine. He competed directly with the herpetologist Lorenz Müller, although they had great mutual respect, and also, to a lesser extent, with the herpetological guru of the time, Robert Mertens. There was another individual named Karl F. Buchholz, who was a physiologist, but who also took to describing subspecies. He was very aggressive and accused Eisentraut of being a Lamarckist, which isn't strictly true," explains Pérez Mellado. They were at odds with each other. They rushed to describe subspecies. Anything went to be the first, to go down in history: "The race was so brutal that they started publishing their descriptions in third-rate magazines just to get them published quickly and be the first. These were magazines for aquaristic hobbyists (like 'Acuarology') and terrarium enthusiasts. There were populations of *Podarcis* from Ibiza that were published three times in the same year, in three magazines and by three different authors." But out of that rush, this excellent collection of the Berlin Natural History Museum originated.

DIARIO de IBIZA

El calentamiento amenaza las lagartijas

Global warming threatens lizards

A Pityusic *Podarcis* expert warns in her thesis of the consequences that climate change could have on this endemic species.



Ortega holds some lizards from the islet of ses Margalides / J.M.L.R.

José Miguel L. Romero | Ibiza

19 FEB 2016 12:24

The Pityusic lizards could face a difficult time if climate change continues: If the temperature continues to rise, the reptiles endemic to the islets could have difficulty finding a more favorable habitat, as their land area is limited and they cannot escape. Furthermore, their ecosystem would become "unbalanced", threatening their food sources (plants and invertebrates), according to Zaida Ortega Diago, who in September received her doctorate in Biology from the University of Salamanca after defending her thesis "Thermal Biology of High Mountain Lizards of the Genus *Iberolacerta*",supervised by the Salamanca-based herpetologist and professor of Zoology, Valentín Pérez Mellado, a leading figure in the field. Ortega is an expert on Ibizan *Podarcis*, whose thermoregulation she has studied in situ for years with Pérez Mellado.

The biologist explains in her thesis that *Iberolacerta*, specialists in low temperatures and excellent thermoregulators, already adopt various behaviors to cope with rising temperatures. In the case of *Iberolacerta cyreni*, they counteract the impact of climate change through their behavioral thermoregulation. For their part, *Iberolacerta galani* "modifies their preferred temperature range between spring and summer", leading to greater thermoregulatory effectiveness in both seasons. "All the results of this thesis have added relevance due to the climate change we are experiencing, which particularly threatens these species of high-mountain Iberian lacertids", says Ortega, who is confident that "the contributions to our knowledge of the thermal biology of ectotherms will be useful in preventing their extinction in the medium term".

Lizards that are already adapting

Ortega concludes that Mediterranean lacertids "that live confined to high mountain areas are one of the reptiles most threatened by climate change." The *cyreni* "would already be counteracting the effects of global warming through its behavior."

But she warns that "there are consequences of global warming that are not related to thermoregulation and that could threaten the survival of these high-mountain lizards" and, therefore, of the Pityusic lizards: "The five species of the genus *Iberolacerta* are specialists in low temperatures. This characteristic is very important in light of the effect that global warming could have on mountain lizards, since the more specialized an ectotherm is, the more its biological effectiveness declines when its body temperatures exceed the physiological optimum." Hence, "the fact that they live in high mountain areas, where they could not migrate to colder places, combined with the fact that they are low-temperature specialists, makes these lizards one of the most vulnerable animal groups to climate change."

Vulnerability of the Podarcis

Something similar could happen to the *Podarcis* lizards of Ibiza and Formentera, according to the scientist, whose temperatures she has studied in recent years, similar to the studies conducted for the different *Iberolacerta* species that are part of her thesis. Although they are still working on analyzing the data for publication, for now she believes the preferred temperature range (PTR) of Ibizan lizards is "high but narrow, between 33°C and less than 35°C." The narrower this range, the more specialized they are; the wider it is, the more generalist they are: "*Podarcis pityusensis* is more thermophilic compared to *Iberolacerta*s, which would be adapted to low temperatures; but its optimal temperature range is narrow."

And this fact is crucial when studying what would happen to it if climate change continues to turn the planet into a furnace: "A priori, it would not be as physiologically vulnerable as the *Iberolacerta* of the Peninsula, since its optimal range is higher, but it could be more vulnerable than other more generalist species, such as the [also peninsular] *Podarcis bocagei*."

Complications on the Islets

The populations of the Pityusic islets, the doctor warns, "could indeed find themselves in an increasingly complicated situation as temperatures and droughts increase with global warming," since in these small rocky outcrops, just as on mountaintops, "the lizards lack the ability to move to favorable locations once current habitats become unfavorable." For example, where could they find a cooler spot on the small island of Gorra? Added to this is another problem: the population density of lizards on the different islets. On some islands, they are very low. This factor would be "important, as there are very small populations that could be truly compromised."

Food Shortage

Furthermore, Zaida Ortega warns of another additional problem. Even if the Pityusic *Podarcis* were able to adapt to the new temperatures, the species they feed on might not be so lucky: "With climate change, ecosystems could become unbalanced, which would be a further threat. It's possible that it would affect the plants and invertebrates that serve as food for the lizards differently, altering, for example, their biological cycles, so that there could be greater food shortages during certain periods." This would have "negative effects on the populations," since, for example, "any alteration could be critical during the lizards' breeding season."

The biologist points out, however, that "it is very difficult to predict what could happen, since we still don't know what could happen to each organism individually, but we do know that the relationships between species would be significantly altered." In this sense, she believes that "it is possible that the great adaptability of Ibizan lizards when it comes to taking advantage of any trophic resource [related to nutrition] played in their favor to adapt to new conditions." In other words, perhaps they are saved because, above all, they are very smart.



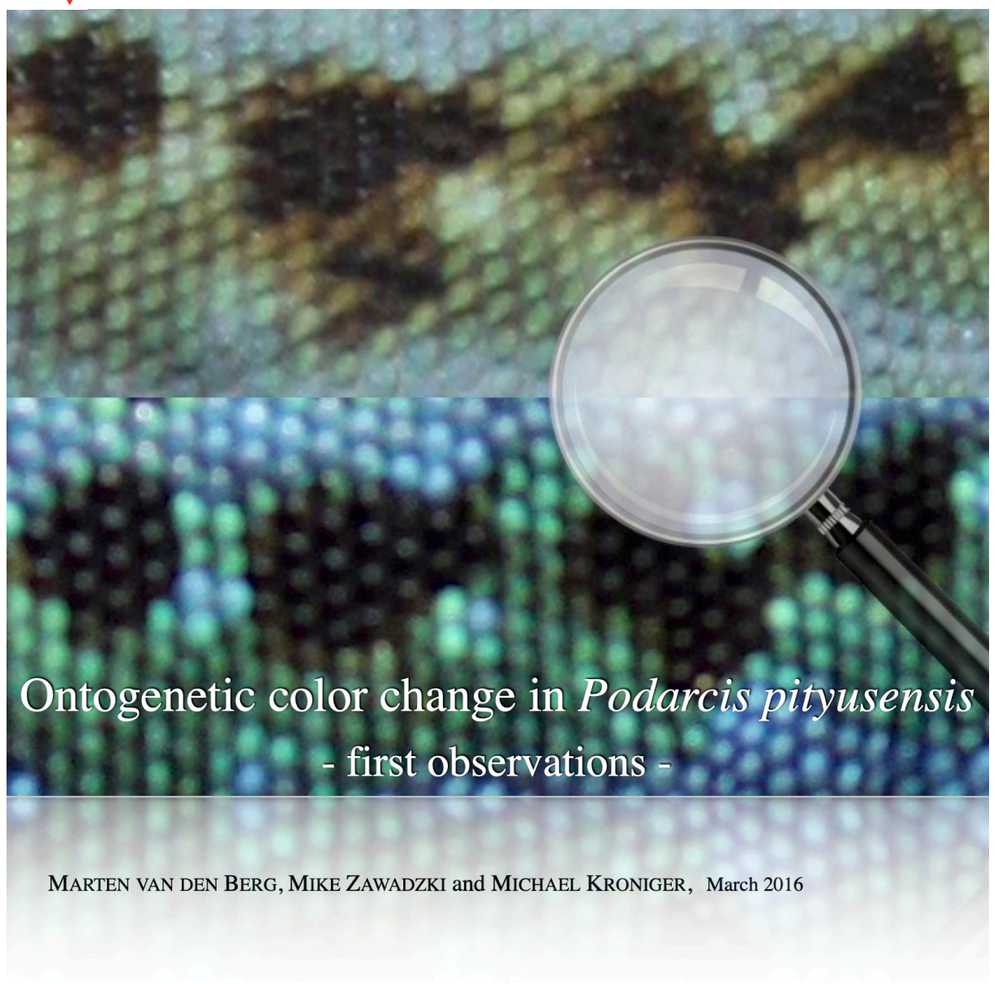
Color formation in lacertidae

MARTEN VAN DEN BERG, MICHAEL KRONIGER & MIKE ZAWADZKI, March 2016

English version:

Summary:
Presentation held at the annual meeting of the DGHT-AG Lacertiden in Gersfeld/Rhön (Germany), from the 11th till the 13th of March 2016. A hypothesis concerning color formation on a cellular level for lacertid lizards, based on recent research on other lizards, is shown.





Ontogenetic color change in *Podarcis pityusensis* - first observations -

MARTEN VAN DEN BERG, MIKE ZAWADZKI and MICHAEL KRONIGER, March 2016

Abstract

A short introduction and a hypothetical model concerning color formation in lacertid lizards is presented. Thereafter we observe and discus the ontogenetic changes in a single female captive bred *Podarcis pityusensis* lizard from Formentera (Balearic islands/Spain). Striking transformations concerning coloration are observed.

Keywords: Ontogenetic color change, *Podarcis pityusensis*, Formentera.

PERIÓDICO de IBIZA Y FORMENTERA

Las serpientes llegan a Vila

The snakes arrive in Ibiza Town



Image of the snake located on the roadway of the Eurocentro industrial estate

Juan A. Torres | Eivissa | 18/05/16 0:00

Workers at the Eurocentro industrial park in the city of Ibiza received quite a scare this morning when they encountered this snake, specifically a ladder snake (*Rhinechis scalaris*), as they began their workday.

Shortly before 10:00 a.m., Ibanat officers responded to the area to remove the snake, which was found dead. The authorities are trying to control the snake infestation that has plagued the Pityusic Islands for more than five years, since they arrived en masse hidden in trees from the peninsula.

DIARIO de IBIZA

«Las serpientes comerán lagartijas hasta saciarse si no actuamos»

"Snakes will eat lizards until they are full if we don't act"

Biologist Antònia Maria Cirer will explain the importance of the lizards of the Pityusic Islands in a talk to be held today at the Cervantes Cultural Center, on the occasion of Biodiversity Day.



Maria Antònia Cirer with her book on Pityusic lizards. / SERGIO G. CAÑIZARES

LAURA RIERA | IBIZA

21 MAY 2016 6:30

Biologist and author of the book "Ibiza and Formentera. Lizards and Islands," Antònia Maria Cirer, will give the talk "The Riches of Everyday Life: Biodiversity of the Pityusic Species" this afternoon, starting at 7:30 p.m., at the Centro Cultural Cervantes. Before her talk, she expressed her concern about the proliferation of snakes on the islands, as they pose a threat. "If we don't act, the snakes will feast on the lizards, eating them to their hearts' content," says Cirer.

On the occasion of Biodiversity Day, which is celebrated tomorrow, the Sant Antoni City Council and the Ibiza Daily Club have organized this talk, which highlights the lizard as an example of biodiversity. To begin, the Ibizan biologist defines this concept as a set of different varieties and agents that can exist within the same species and ecosystems. "Biodiversity has a value that isn't monetary; it can't be quantified with money, but it is very valuable," the expert emphasizes. In her opinion, it's a "free" value offered to tourists as a lure.

Cirer maintains that the Pityusic islets are an example of biodiversity in the Pityusic Islands. "Each of them has its own genetic diversity of lizards, since there are different species of these reptiles on each one," Cirer points out, adding that the plant and lizard populations on each islet are isolated, forming a "microcosm." As an example, the professor chose Sa Conillera to explain the characteristics of the reptiles that live there: they are large and robust.

Regarding color, she explained that "it varies greatly" because lizards of different colors can be found in the same place. Therefore, "their coloration is not limited to the common deep green, bordering on blue," the expert points out.

To demonstrate this wide range, the speaker has prepared a series of slides so attendees can admire some of the most unique lizards. "There are rather light browns, which are not quite dark brown; light green, through a more intense color, up to bottle green, and even a bluish green that everyone uses to describe these creatures," explains the biologist, who points out that only the most striking ones capture most people's attention. "However, to study their genetics, you have to observe them all," she adds.

Black Lizards

Although the lizards of Sa Conillera are large, they are no larger than those of Ses Bledes: "They are enormous for one reason: they are as black as coal, which allows them to maintain a higher temperature. If they get more heat, they have a faster metabolism and can accumulate more matter, which allows them to grow larger."

Second in the ranking

Next in this ranking of lizards are those from es Vedrà. They are characterized by the yellow color, "lemon or similar to Parcheesi," which dominates their dorsal area, the center of their back, and their belly. Their sides are blue, with shades ranging "between navy blue and Parcheesi," a combination reminiscent of the old Ibizan marine flag.

"For me, this type of lizard is a symbol of this flag, which our ancestors venerated and to which we owe respect," says Cirer. Although she only highlighted the lizards from these three islets, the researcher and educator insists that each one of them forms "the complete collection." Therefore, she maintains that "each and every one of these lizard populations should be taken into account and given the value they deserve as an individual category." She also recalls that if the scientist Charles Darwin had traveled to the Pityusic Islands instead of the Galapagos Islands, he would have reached similar conclusions, but with the lizards as an example of evolutionary radiation instead of the famous finches from his theory of species.

Finally, to help children better understand these tiny reptiles, Cirer recommends teaching them to observe them "with patience."

PERIÓDICO de IBIZA Y FORMENTERA

Las 'sargantanes' podrían desaparecer en Ibiza por la proliferación de serpientes

The lizards could disappear in Ibiza due to the proliferation of snakes



Image of a lizard | Photo: Ultima Hora

Europa Press | Ibiza | 24/05/16 0:00

PP MP Miquel Àngel Jerez stated this Tuesday that the lizards could disappear from Ibiza as a result of the proliferation of snakes in the Pitiusas. "Possibly one of our symbols of Ibiza, the lizard, will end up disappearing, and we'll see a snake before a lizard," he declared.

This was his statement during the plenary session of the Parliament, where he asked the Government if it plans to limit the entry of ornamental trees in the Pitiusas to reduce the proliferation of snakes. The Minister of the Environment, Vicenç Vidal, replied that they are working with the Government to control the entry of olive trees into the islands, especially in the summer, since "the entry of olive trees has brought these snakes."

Vidal, who expressed satisfaction with the PP's current concern about invasive species, which are the main cause of biodiversity loss, explained that the winter months are the most appropriate for the arrival of olive trees in the Pitiusas and said that they are working with the State to develop regulations on the matter.

However, he admitted that with this issue, "we clash with free trade" and the Government can only "deal with phytosanitary issues." He indicated that a pilot plan is being developed in Formentera that is proving "great success," with 21 specimens captured with 20 traps in two days.

He said that the knowledge they gain in Formentera will allow them to "act better in Ibiza." He also added that the fact that "nothing" has been done against invasive species for years means that it is now "more difficult" to combat them.

DIARIO de IBIZA

La evolución de las lagartijas en 3D

The evolution of lizards in 3D

German scientists are studying the evolution of the lizards of es Bosc, s'Escull Vermell and sa Bleda Plana using three-dimensional images of their current populations, which they compare with those collected almost 90 years ago by Martin Eisentraut and 40 years ago by Alfredo Salvador.



German scientists are studying the evolution of the lizards of es Bosc, s'Escull Vermell, and sa Bleda Plana / J.M.L.R.

José Miguel L. Romero | Ibiza

10 JUN 2016 13:23

Naturalist Martin Eisentraut (Gross-Tofer, 1902–Bonn, 1994) would faint if he saw how science has evolved in recent decades. Eighty-eight years ago, he began collecting Pitiusan lizards left and right, in all the populations on the islets, without worrying about the possibility of decimating them. He simply captured them (himself or the fishermen he hired) and placed them in dozens of jars, the edges of which he greased with Vaseline to prevent the alcohol from evaporating. Thanks to his care (and the fact that this collection was miraculously saved from bombing during World War II), they have been preserved to this day in Berlin's Naturkunde, the Natural History Museum in the German capital, and are the key element of a study that seeks to determine whether, since then (Eisentraut immersed them in alcohol between 1928 and 1930), the populations he captured have undergone any morphological variation.

And is morphological evolution possible in such a short time? But didn't Charles Darwin say that even a minimal variation would take thousands of years? Peter and Rosemary Grant already demonstrated that something similar had happened with Darwin's finch on Daphne Major Island in the Galapagos, whose story was chronicled by Jonathan Weiner in "The Finch's Beak." Evolution, they showed, can be faster than the British scientist imagined: after long periods without rain on Daphne Major, only a few finches managed to survive, those with beaks hard enough to crack a very hard seed, the only food that survives on the archipelago after extreme droughts, and their subsequent generation's beaks grew by 10%.



A lizard before its 3D photo shoot. Three cameras and three synchronized flashes were used. Photo: J.M.L.R.

Something similar has happened on several uninhabited islets (of *Podarcis pityusensis*) off Ibiza, where almost 90 years ago Eisentraut introduced, as an experiment, lizards from various populations, some melanic (dark) and others not: in just nine decades, at breakneck speed, the morphological characteristics of some of the original populations were diluted. This is what happened on es DauGros, where Eisentraut released eight male *Podarcis pityusensis maluquerorum* from s'Escull Vermell (a rock opposite sa Bleda Plana, where they are dark and bluish) and 20 females from Ibiza (lighter colors). Now they all have black backs and dark blue bellies, with hardly any trace of the green of the originals from the main island.

Changes in the Skull

Something similar is what a team of scientists composed of Valentín Pérez Mellado, professor of Zoology at the University of Salamanca and the leading expert on Pityusic reptiles, Ana Pérez, PhD in Biology from the same university, Johannes Müller, professor of Paleozoology and one of the heads of Naturkunde in Berlin, and his doctoral candidate, 30-year-old biologist Martin Kirchner, have been investigating this week on the islets of es Bosc, s'Escull Vermell, s'Espartar, and sa Bleda Plana. The latter is preparing a thesis on the evolution of the lizards on these islets in recent decades as a result of several factors: "There are populations that have been devastated by humans, while there are other places that have been very well preserved over time and have barely changed.

"What Müller and Kirchner want to find out are the effects that human pressure, confrontations between males (as they are very territorial), or the degree of escarpment [slope] have had on the cephalic morphology [the skull] of these *Podarcis*," explains Pérez Mellado. These are factors that can cause them to have "increasingly powerful heads" over time. They also believe that the variation in morphological characteristics can also be "very intense" when the population density is high, as is the case in Sa Bleda Plana, while in Es Bosc it is much lower.

From a caliper to 3D

The interesting thing is how they're going to investigate. In addition to the populations collected by Eisentraut in the 1930s, they're also going to use those collected in the 1970s by Alfredo Salvador, a CSIC researcher, which are housed in the Museum of Natural Sciences in Madrid, and they're going to compare them with current populations. To do this, they use a sophisticated portable 3D system invented by Martin Kirchner. Typically, herpetologists measure the lizards' morphology (head, legs, body, tail) with a caliper and photograph them with a camera, then identify them using the same software used for whale sharks (whose bodies are covered with polka dots similar to those on frilled dresses).



The German biologist is preparing the ingenious device he invented for taking three-dimensional photographs. Its small size allows it to be carried by hand to hard-to-reach islets. Photo: J.M.L.R.

But Kirchner has set out to use three-dimensional (3D) images to verify whether the lizard's skull has evolved. To do this, he designed a device consisting of three cameras and three flashes that synchronously shoot each lizard (tied with a Pilates band) on a pedestal that moves slowly 360 degrees while the images are captured with macro lenses. It's "geometric morphology," more detailed than that captured with a caliper, says Pérez.

At Naturkunde in Berlin, there's a similar photogravimetry device, but it's a behemoth that, logically, can't be moved from there, much less transferred to an islet. That's where the novelty lies. The hundreds of lizards Eisentraut collected died submerged in alcohol, something that is ethically unacceptable for today's scientists. Since they couldn't be killed, nor could they be transported alive to Berlin for scanning (they are extremely protected by law, so their removal from their natural environment is prohibited), Kirchner devised a miniature 3D scanner, which this week he took with him to each islet in an airtight box, a tiny photographic laboratory that allows these scientists to maintain their ethics while achieving their goals. Could the same thing be done by holding them in one's hand? "No, with a slight turn, a slight stretch of the arm, the proportions would change dramatically," Kirchner points out.

The cameras, three digital Nikons, capture up to a total of 80 images (it looks like a tiny photo booth), from which those with errors can be discarded (inevitably, the lizard sometimes moves its head): 20 are taken by each device, although one of them captures a double through a special mirror that doesn't produce reflections, as Kirchner explained. The result is a spectacular 3D image of each *Podarcis pityusensis pityusensis* head currently captured in es Bosc (where they analyzed 28), sa Bleda Plana, and s'Escull Vermell, which will be compared with others taken in Berlin and Madrid with those captured by Eisentraut and Salvador, respectively.

A Tray as a Reflector

Every time he photographs a new lizard, Martin Kirchner controls the focal length, the flash power (necessary to avoid shadows), and the shutter speed to maintain the correct proportions and intensities. He even created the software that controls the system. And when problems arise, he uses his ingenuity: at Es Bosc, he was missing a reflector panel, so he used a white polyurethane tray instead, containing a sandwich, which he devoured first.

This isn't the first time Kirchner has used his invention. He took a similar but larger device to Croatia, which he has now rebuilt to make it more manageable, although he wants to make it even smaller. There, he captured Balkan lizards such as the *Podarcis sicula*, the *muralis*, and the *melisellensis*, as well as the Dinarolacerta mosorensis, in 3D. "It sounds like a crazy invention, but it's perfect!" Kirchner says. Martin Eisentraut would have been amazed.

IB3 Notícies

Proliferació de serps als camps i boscos de les Pitiüses

Proliferation of snakes in the fields and forests of the Pityusic Islands

22/06/2016



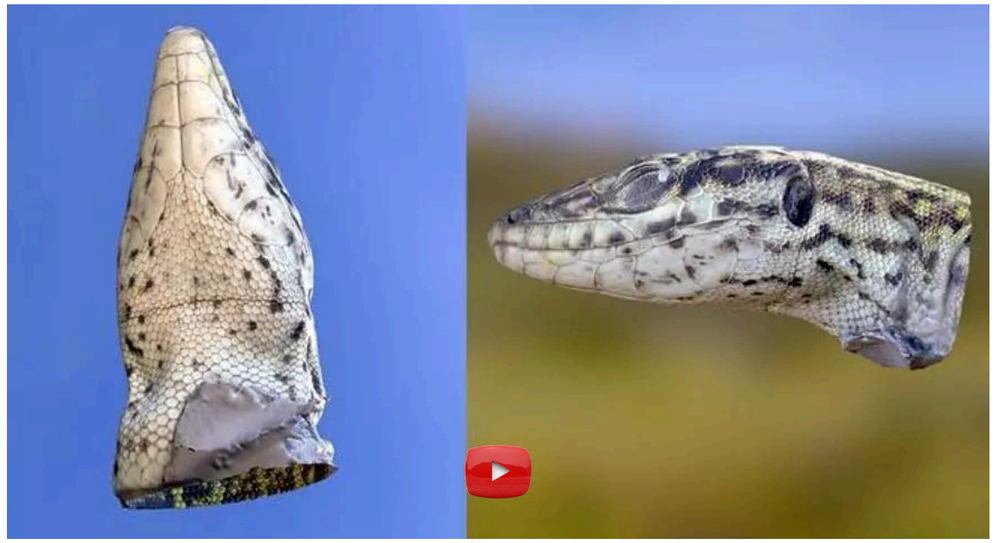
The presence of snakes in the fields and forests of the Pityusic Islands is greater than previously thought. In the first 15 days of the ophidian control program on the island of Ibiza, 45 specimens have been caught with 40 cage traps. In Formentera, since April 29, almost 200 have been hunted.

DIARIO de IBIZA

Lagartijas desde todos los ángulos

Lizards from all angles

German biologist Martin Kirchner has already created the first 3D models of lizard skulls from the Pitiusas.



A lizard from S'Illa Grossa seen from different angles thanks to the 3D device designed by Martin Kirchner.

José Miguel L. Romero | Ibiza
16 AGO 2016 6:30

Two German biologists, Johannes Müller, professor of paleozoology and one of the directors of Naturkunde in Berlin, and his doctoral student, 30-year-old biologist Martin Kirchner, visited Ibiza and its islets in early June to investigate the evolution of the head morphology of the lizards that inhabit them over the past 90 years. They used a sophisticated device invented by Kirchner himself to photograph each individual on each island in three dimensions. These dimensions were then compared with those of the lizards captured by Martin Eisentraut between 1928 and 1930 and those captured by Alfredo Salvador, a CSIC researcher, in the 1970s, which are housed in the Museum of Natural Sciences in Madrid.

As a result of that work, Martin Kirchner has now developed a series of models in Germany that allow lizards and their proportions to be observed and analyzed using a three-dimensional image. From a computer screen and with a mouse, each skull can be rotated to any possible angle, a very useful tool for researchers, as well as a spectacular one.

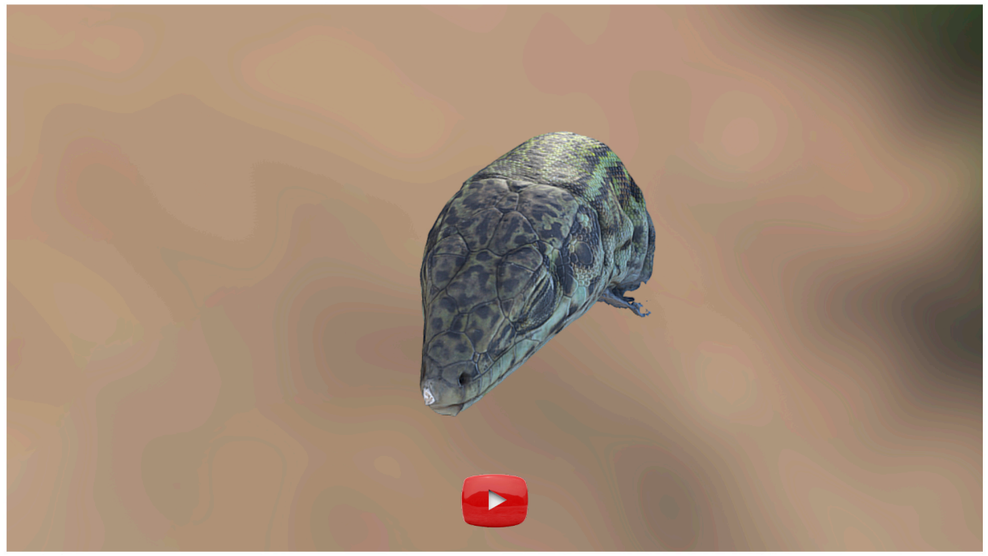
Readers of Diario de Ibiza can use this 3D image on the newspaper's website,

specifically with the skull of a lizard from s'Illa Grossa, where the es Botafoc lighthouse is located. Valentín Pérez Mellado, professor of Zoology at the University of Salamanca, who accompanied the German researchers in this experiment along with Ana Pérez, a doctor in Biology from the same university. He explains that they selected reptiles from this islet (connected to the rest of Ibiza by a road) to see how human pressure may have altered their head dimensions. To do this, they will have to compare them with those of lizards trapped 90 and 45 years ago in the same location, but also with the evolution that may have occurred on islets where human presence has been accidental, such as s'Escull Vermell, s'Espartar, sa Bleda Plana, or na Gorra.

This is the thesis Kirchner is preparing: the evolution experienced by lizards in recent decades as a result of various factors. Kirchner wants to investigate, in addition to the effects of human pressure, the effects that confrontations between males (who are very territorial) and the slope may have had on the skulls of Pitiusan lizards.

To capture the 3D images, Kirchner designed a device (which, despite its sophistication, can be placed in a sealed suitcase) composed of three cameras and three flashes that fire synchronously at the lizard's head, placed on a pedestal that moves, little by little, 360 degrees. It's like a miniature 3D scanner (the one at Naturkunde in Berlin is gigantic) that, thanks to its size, can be transported to each islet.

The cameras used are three digital Nikon cameras that capture up to a total of 80 images of each lizard. Each camera takes 20 per animal, although one captures a double image through a special, glare-free mirror. The result is a spectacular 3D image of each *Podarcis pityusensis pityusensis* head, like the ones illustrated in this article.



Ibiza Wall lizard 3D scanned alive in the field

3D Model

3DLab MfNBerlin PRO

FOLLOW

2k 28

DIARIO de IBIZA

La simbiosis de la ´sargantana´ y la ´olivella´

The symbiosis of the 'sargantana' and the 'olivella'

The Pitiusan reptiles and the *Cneorum tricoccon* plant have developed an association that has even determined the size of the plant species' seeds, which are smaller in Ibiza than in the rest of the islands.

CAT | Joan Costa

18 SEPT 2016 18:02

Ecosystems are dense networks of connections and associations in which anything can have unexpected consequences. This unquestionable premise has a little-known but striking example in the symbiosis between the popular lizards and a plant known in Spanish as olivillo and olivella or raspall on the islands (*Cneorum tricoccon*).

The presence of lizards in Ibiza and Formentera explains the abundance of this plant in the Pitiusas, just as the scarcity of lizards in Menorca and their disappearance in Mallorca result in the reduced presence of this plant species. Lizards are precisely the most efficient dispersers of the seeds of these plants; the animals eat the fruits, the seeds pass through their digestive tract, and then germinate. With the added peculiarity that, as biologist Joan Carles Palerm, president of the Grup d'Estudis de la Naturalesa (GEN), explains, reptiles are generally rare as dispersal agents, although such a relationship is more common in island ecosystems, where the number of species is lower.

Fifteen years ago, a study by Imedea (Mediterranean Institute for Advanced Studies) explored the hypothesis of a decline in *Cneorum* populations due to the disappearance of lizards and reached interesting conclusions about the evolutionary pressure that animals have exerted on the plant. When lizards have to eat them, they choose the smallest fruits and, by doing so, have forced the plant, over the years, to adapt to reptilian tastes. All this means that *Cneorum tricoccon* specimens from Ibiza produce visibly smaller fruits compared to those grown in Mallorca or Menorca.

"The introduction of carnivores to the Balearic Islands has led to significant changes in the population dynamics of many native species. On the larger islands (Mallorca and Menorca), carnivores appear to have caused the extinction of endemic lizards that acted as the sole dispersers of some plants such as *C. tricoccon*," states the study, written by Nuria Riera, Anna Traveset, and Oscar García. In Mallorca, lizards became extinct with the arrival of humans and their pets, which became the main predators of reptiles (cats are as effective lizard hunters as snakes). This extinction is considered to have directly caused *C. tricoccon* to become a rare species, as it lacks its most effective seed disperser. Likewise, biologists believe that the disappearance of *Podarcis lilfordi* in Menorca (subspecies survive on some islets) has led to the near extinction of the olivella on that island.

The plant, which blooms from April onwards and is abundant near streams, has small yellow flowers and produces red fruits that ripen in groups of three (hence the species' name, three coconuts) and turn dark when dry. The intense drought the islands are experiencing this year has made it difficult to find the red fruits most appealing to lizards. In the past, children made necklaces with these fruits, and the branches were used as brooms to sweep houses.



An olive tree with its fruits, which lizards feed on.
Photo: Joan Costa

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ORIGINAL ARTICLE

Rapid acquisition of antipredatory responses to new predators by an insular lizard

Zaida Ortega[1] · Abraham Mencía[1] · Valentín Pérez-Mellado[1]

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Abstract
Alien predators may impose a great threat to naïve prey. Ibiza wall lizards (*Podarcis pityusensis*) live in Ibiza, a snake-free island until 2003. We studied the lizards' discrimination of scents of two invader snakes: one that depredates lizards, the horseshoe whip snake (*Hemorrhois hippocrepis*), and another that does not, the ladder snake (*Rhinechis scalaris*). We compared two populations of Ibiza wall lizards: one from the main island of Ibiza, which coexists with both snakes, and another from the nearby snake-free islet of Sal Rossa. Lizards from Ibiza recognized the scent of the horseshoe whip snake and responded with clear antipredatory behaviours. However, they reacted to the scent of the ladder snake similarly to that of the controls (odourless control and pungent scent). Lizards from Sal Rossa did not respond to any of the snakes or the controls. Our results show that lizards can rapidly acquire the ability to react to a novel predator. As only about ten generations of lizards have coexisted with snakes, the most plausible explanation to our results is that lizards have learned to associate the scent of the predatory snake with a threat. This is the first study reporting the rapid acquisition of lizards' antipredatory responses to the chemical cues of novel predators. However, more research is needed in order to identify the mechanisms implicated in the response.

Significance statement
How naïve prey acquire antipredator behaviour is both important for basic scientific research and useful for the conservation of native species subjected to biological invasions. The island of Ibiza (Spain) has been free from snakes until their introduction by humans in 2003. We compared the reaction of lizards from Ibiza (where presently three species of snakes cohabitate) and lizards from Sal Rossa (a nearby snake-free islet) to the scent of two snakes (one that feeds on lizards and other that does not). The results were clear: lizards from Ibiza react to the scent of the predatory snake with antipredatory behaviours, while ignoring the scent of the non-predatory snake. Lizards from the snake-free island of Sal Rossa did not react to any of the snakes. Our study shows that lizards can rapidly acquire the ability to react to a completely new type of predator, most likely by learning.

Keywords Response to predators · Lizards · Snakes · Chemical discrimination · Invasive species · Learning

Introduction

Predation is one of the main evolutionary forces in animals (Endler 1986; Lima and Dill 1990). The hunting efficiency of predators usually coevolves with the antipredatory behaviours of the prey (Greene 1988; Vermeij 1994). Nonetheless, the invasion of alien predators imposes new predator-prey interactions among animals that do not share a common evolutionary history (Strauss et al. 2006; Sih et al. 2010; Simberloff et al. 2013). In this scenario, naïve native prey may be unable to recognize predators or respond to them appropriately (Banks and Dickman 2007; Kovacs et al. 2012; Cooper et al. 2014). In addition, sometimes, the alien predator has coevolved with similar prey in its original habitat, hence

Zaida Ortega and Abraham Mencía are cofirst authors.

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✉ Zaida Ortega
zaidaortega@usal.es

[1] Department of Animal Biology, University of Salamanca, Campus Miguel de Unamuno, s/n, 37007 Salamanca, Spain

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ORIGINAL ARTICLE

The fall of a symbol? A high predation rate by the introduced horseshoe whip snake *Hemorrhois hippocrepis* paints a bleak future for the endemic Ibiza wall lizard *Podarcis pityusensis*

Arlo Hinckley[1] · **Elba Montes**[2] · **Enrique Ayllón**[3] · **Juan M Pleguezuelos**[4]

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Abstract Invasive species currently account for a major threat to global biodiversity, and island ecosystems are among the most vulnerable, because of the frequency and success of species introductions on islands. Within Mediterranean islands, reptiles not only are frequently introduced species but are also among the most threatened because of these introductions. The Balearic archipelago is a good example of this, since only two of its current 16 species of reptiles are native. Thirteen years ago, the snake *Hemorrhois hippocrepis* was introduced by cargo in Ibiza island, and it is in expansion. Individuals obtained from an early eradication campaign showed a fast expression of phenotypic plasticity and acquired larger sizes than those of the source population, probably due to a high prey availability and predator scarcity. The species is thriving at the expense of a small variety of native and non-native prey, but the predation pressure on the endemic *Podarcis pityusensis*, the only native reptile in the island, is very high, as this lizard represents 56% of the prey in frequency, which might threaten its survival on the long term. Our results on the feeding ecology of the snake are of sufficient concern to justify the maintenance of actions to eradicate this invader.

Keywords Balearic islands · *Hemorrhois hippocrepis* · Invasive species · Snake · Lizard

✉ Juan M Pleguezuelos
juanple@ugr.es

Arlo Hinckley
arlohinckley@hotmail.com

Elba Montes
elba.montes@conselldeivissa.es

Enrique Ayllón
enrique.ayllon@herpetologica.org

[1] Estación Biológica de Doñana (EBD-CSIC), Conservation and Evolutionary Genetics Group, Av. Americo Vespucio s/n, 41092 Sevilla, Spain

[2] Department of Environment, Ibiza Island Council, Av. España, 49, E-07800 Ibiza, Spain

[3] Asociación Herpetológica Española, PO 191, E-28911 Leganés Madrid, Spain

[4] Departamento de Zoología, Facultad de Ciencias, Universidad de Granada, E-18071 Granada, Spain

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Introduction

Introduction and establishment of alien invasive species is one of the major threats to biodiversity on a global scale (Brooks et al. 2006). Island ecosystems are among the most vulnerable to invasive species, mainly due to the intrinsic traits of their native biota. Species that have evolved for a long time in islands are usually unsuccessful competing and avoiding being predated by newcomers and are also more vulnerable to parasites brought by invaders (Whittaker and Fernández-Palacios 2007; Simberloff et al. 2013). The Balearics have been isolated from the continent for 5.33 million of years, and its biota has evolved to adapt to these insularity conditions and experienced natural extinction processes during the Plio-Pleistocene (Bover et al. 2008) and human-mediated ones by the end of the third millennium BCE, when humans colonized the islands, and alien species introductions started (Pinya and Carretero 2011). Some of these introductions, like that accomplished by two mammals, *Martes martes* and *Mustela nivalis*, together with an introduced snake, *Macroprotodon cucullatus*, have been considered responsible for the extinction of the native lizard *Podarcis lilfordi* in the main islands (Mallorca and Menorca; Alcover et al. 1981). The ability of reptiles as invaders is due in part to their biological characteristics: as

EL MUNDO | Baleares

Ibiza captura casi 500 serpientes en un año

Ibiza captures almost 500 snakes in one year

The Government believes that the figure is a "good initial result" for controlling snake populations. In Formentera 312 were captured.



One of the specimens captured in Ibiza. GERMÁN G. LAMA.

SONIA RIBAS | Ibiza

07/01/2017 18:34

Last year, 2016, a total of 312 snakes were captured in Formentera and 478 in Ibiza, which represents a "good initial result," as highlighted yesterday by the Director General of Natural Spaces and Biodiversity, Miquel Mir. He sent a letter of thanks to the volunteers participating in the snake population control project in Ibiza and Formentera. The Consortium for the Recovery of Fauna of the Balearic Islands, the regional governments of Ibiza and Formentera, the Ministry of Agriculture, Fisheries, Food and the Environment, the town councils of Santa Eulària and Sant Joan, and environmental officials also collaborated on the initiative.

The Regional Ministry of Environment, Agriculture and Fisheries stated yesterday that there is "still room" to improve and expand the capture systems, making monitoring tasks easier for those collaborating with the project. They pointed out that the help and involvement of the Ibizan community is "essential" and "has been demonstrated, since the control of invasive species is not the exclusive responsibility of the Administration and cannot be successful without the participation of the local population." They also explained that even the cages where no snakes have been captured have been useful, as they have allowed priority action areas to be defined, and these will be taken into account this year to achieve a substantial reduction in introduced snake populations for the benefit of the native species of the Ibizan Islands.

The campaign has now been suspended until March, since during this time most snakes hibernate, and captures are expected to be very low. In the middle of last year, the Government announced that it would launch the Snake Control Program in Ibiza with the installation of 200 traps. The Island Council also participated in the initiative, having installed traps and other mechanisms for the past two summers to try to control the snake population. Thus, the island's institution planned to place at least 150 more traps, according to the island's Environment Minister, Miquel Vericad, who stated at the time. Since 2003, there has been an unstoppable accidental entry of peninsular snakes into the Balearic Islands. In Ibiza, where the species did not occur, specimens of the horseshoe snake (*Hemorrhois hippocrepis*) and the white or ladder snake (*Rhinechis scalaris*) have been detected, and they have also been found on Formentera.

10-01-2017 - Elena Soto - Ibiza and Formentera, the Eden of snakes (control)

EL MUNDO | Baleares

Ibiza y Formentera, el edén de las serpientes

Ibiza and Formentera, the Eden of snakes

The demographic stability of the endemic lizard of the Pityusic Islands may be threatened after the accidental introduction of snakes that travel hidden in olive trees used for ornamental gardening. Ibiza captures almost 500 snakes in one year.



Capture of a horseshoe snake (*Hemorrhois hippocrepis*), a species found in Ibiza. COFIB.

ELENA SOTO | Palma

10/01/2017 14:25

A horseshoe snake (*Hemorrhois hippocrepis*) takes refuge for hibernation in the trunk of an olive tree in Jaén or Granada and awakens from its slumber in the Eden of Ibiza or Formentera. This snake, an efficient predator of lizards, arrives in a new territory with no natural enemies and abundant prey and begins to expand; in this case, the worst hit is the Balearic endemic *Podarcis pityusensis* (Pityusic lizard), which constitutes an important part of its menu. Biological invasions are always a problem—they are among the main causes of biodiversity loss worldwide—but if they also occur in extremely sensitive ecosystems with endemic species, such as islands, the consequences can be catastrophic.

Today, two species descended from a common ancestor of the lizards (Podarcis), along with the ferreret, are the only three surviving terrestrial vertebrate species that populated the Balearic Islands before the arrival of humans; the rest were introduced by humans.

In Mallorca and Menorca, these animals probably became extinct with the arrival of the Romans, and only a few populations survived in the Cabrera archipelago and on the islets surrounding these two islands and in the Pitiusas. However, the demographic stability of *Podarcis pityusensis* may currently be threatened following the accidental introduction of snakes to Ibiza and Formentera just over a decade ago.

Their arrival coincides with the landscape trend for Mediterranean gardens and the olive tree as a prominent ornamental tree. Not just any tree will do to decorate these spaces. Centennial trees are especially sought after, preferably thousands of years old, with thick, twisted trunks. These trees typically provide shelter for a large number of species, both animal and plant, that travel as hitchhikers and, in some cases, can end up causing pests and biological invasions at their destinations. Paradoxically, what is a source of biodiversity in one place is a source of problems in another.

Thousands of olive trees have been imported to the Balearic Islands in recent years from the Peninsula (Jaén, Córdoba, Seville, Granada or Valencia). The trees are generally uprooted and transported during the winter months to reduce their damage. With them, hibernating in the hollows of their trunks or branches, come a range of fauna such as the two snakes that are colonising the Pitiusas, the horseshoe snake (*Hemorrhois hippocrepis*) in Eivissa and the white or ladder snake (*Rhinechis scalaris*) in both Ibiza and Formentera. Although neither are poisonous, they constitute a serious danger to the native fauna, especially reptiles.

Without knowing the exact density of their populations, the perception was that there were many, because people regularly came across them in numerous places, something unusual on islands where snakes had never been seen. In March 2016, the Balearic Government, through the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), in collaboration with the regional governments of Ibiza and Formentera, the Ministry of Agriculture, Food and Environment, the town councils of Santa Eulària and Sant Joan, and the environmental authorities, launched a campaign to control its population.



Capture of two ladder snakes, one juvenile and the other adult. COFIB.

DIARIO de IBIZA

Las serpientes han acabado ya con la mitad de las lagartijas en la finca del GEN

Snakes have already killed half of the lizards on the GEN farm

A control carried out in Can Toni d'en Jaume Negre confirms the decline of this species in four years.



Can Toni d'en Jaume Negre estate in Sant Llorenç, where the count took place. / DIARIO DE IBIZA

IBIZA
12 ENE 2017 5:30

The spread of snakes in the Pityusic Islands seems unstoppable. This was confirmed by a survey conducted by the Nature Studies Group (GEN) at the Can Toni d'en Jaume Negre estate, which determined that, in just four years, the lizard population density had decreased by 40%.

In the spring of 2012, on this Sant Llorenç estate, which the environmental organization maintains and operates as ecological land, the GEN decided to implement the SARE program developed by the Spanish Herpetological Association. The project consisted of conducting a lizard count along a predetermined one-kilometer route around the estate. "So, that year, we had only seen one shed snake on the farm. The following year we saw two, the following year we located a snake... And so it was until last year when we did the lizard count again and found that the population density was 40% lower," said Joan Carles Palerm, president of the GEN, yesterday.

"The Government has it on hold."

This count is yet another of the measures that Palerm considers "essential" to tackle the snake problem, an issue that the Government seems to have no response to. "What is unacceptable is that the plan to eradicate snakes is on hold; that cannot be. The excuse that, in theory, the arrival of olive trees to the islands cannot be prohibited because it cannot go against free trade is relatively false: European regulations allow, for environmental reasons, restrictions on the trade of olive trees, and the Balearic Islands can do it, we can do it, and Madrid doesn't need to do it." "If they don't like it, let them come and cancel it later," questioned the president of the GEN, who pointed out that until now the initiative to try to control the snake infestation has been carried out by the Consell, "when it's a government responsibility." "They don't believe the problem really exists, and by the time they realize it, it might already be too late."

Palerm asserted that work can be done on "several fronts," but that the government lacks the political will. "We can work with local nurseries, run information campaigns with landscapers and designers, award badges through the Pimeef (National Institute of Conservation and Conservation) to businesses involved in snake eradication... many things can be done. To begin with, population censuses should have been conducted to determine the incidence, as we did in Can Toni d'en Jaume," he insisted.

It can be achieved in Ibiza.

For the president of the GEN, we must get to work "seriously and put millions of euros on the table; develop an effective plan, not a control campaign. The current plan seems to be designed to reduce snake density, which is great, but not to eradicate them."

Palerm recalled that "it's true that there's no successful case of snake eradication on an island in the world, but it hasn't been seriously attempted either, except for the island of Guam, where it's been impossible. But if anywhere it can be eradicated, it's here, with 18 billion houses in the countryside and a huge population density eager to set a trap and control it."

For her part, Hazel Morgan, president of Amics de la Terra, shares Palerm's concern about the proliferation of snakes. "It's terrible. I live in the countryside, in Santa Eulària, and I haven't seen lizards in a while," Morgan stated yesterday, adding that greater forcefulness and effectiveness on the part of the administration is needed. "It's becoming clear that the measures are insufficient, but at least now with Minister Vericad, more is being done than before, when nothing was being done," she noted.

Last June, Amics de la Terra sent a letter to the Balearic Minister of the Environment, Vicenç Vidal, calling for urgent measures to eradicate this plague that is wiping out the lizards in the Pityusic Islands.

DIARIO de IBIZA

La pesadilla de las lagartijas ibicencas

The nightmare of the Ibizan lizards



Horseshoe whip snake captured after hunting a rat. It was so fat it couldn't get out of the rodent's burrow. / C.C.

José Miguel L. Romero | Ibiza

20 ENE 2017 13:39

Pitiusan wall lizards (*Podarcis pityusensis*) "know Latin," according to Valentín Pérez Mellado, professor of Zoology at the University of Salamanca and the scientist who has studied the reptile of these islands the most. At least they recognize snakes as a threat and don't become enraged when they see or smell one. Pérez Mellado confirmed this in an experiment he conducted in 2014 with his students. The wall lizards went crazy when they were placed in a terrarium where a horseshoe whip snake (*Hemorrhois hippocrepis*) had recently slithered. That, he says, is the positive side of that study. The negative side is that they learned this very quickly due to the brutal predatory pressure they are subjected to. They know what they are exposed to if they are around them. They panic when they see them. They are their nightmare.

Pérez Mellado will present the results of this experiment this Friday, January 20th, at the Club Diario de Ibiza, alongside Ana Pérez Cembranos, a doctor in biology and fellow lizard expert, in a talk entitled "Predators and Human Pressure. Old and New Threats to the Ibizan Wall Lizard." According to the herpetologist, "these threats to the species *Podarcis pityusensis* have always been somewhat the same: human pressure and the pressure of predation, which is partly the result of human pressure, as predators have usually been introduced by humans." When they face natural predators, "nothing happens, as populations never become extinct as a result of natural predation pressure."

But predatory pressure has had very different consequences for the two sister species of Balearic lizards. In the case of the Balearic lizard (*Podarcis lilfordi*), it became completely extinct on the main islands, Mallorca and Menorca. Its presence was thus reduced to the surrounding islets. However, the Pitiüses lizard survives on the main island. Pérez Mellado goes back to the origins of that species to explain the reasons for such a divergent fate: "Each one has had a different history. The Balearic lizard lived in a kind of paradise for five million years, since there were no predators in Mallorca and Menorca that would have it as part of their menu." Relaxed, with no one wanting to eat it, it gradually lost many of its anti-predator mechanisms. "Hence," Pérez Mellado continues, "when humans arrived in Mallorca and Menorca accompanied by allochthonous predators around 5,000 years ago, they had already lost their ability to defend themselves. The animals introduced by humans wiped them out on the main islands, and they only survived on the coastal islets." They were eaten mainly by "cats, weasels, and martens, which hadn't existed there before. Snakes were also introduced later, but were barely relevant," the Salamanca scientist assures.

Five million years under threat

The case of the Pitiusan lizard is completely different, despite the fact that Mallorca is just a stone's throw away: "They lived in a different world where there were no mammals, except for bats, but where there were an enormous number of birds that, in many cases, were predators of lizards. There were giant owls, all kinds of creatures that surely exerted intense predation on the *Podarcis*. Hence, for five million years, the Pitiusan lizards adapted to the pressure of predators; they recognized them. They suffered more or less, but like all natural populations. A portion of the population, which is always a minority, died as a result of being hunted, but the majority was adapted and had defense mechanisms."

Unlike the rest of the Balearic Islands, these reflexes remained intact when humans settled in Ibiza and Formentera, accompanied by all the animals they introduced: "In Mallorca and Menorca, they didn't know how to defend themselves because they hadn't had predators for five million years. In the Pitiusas, on the other hand, they had been under that threat for five million years. They knew how to protect themselves. When humans arrived with cats, rats, and genets, the lizards already knew Latin. That's why they still survive on the main island today." Hope and that, according to Pérez Mellado, is one of the advantages the Pitiusan lizard has against the snake invasion of the Iberian Peninsula: "The hope is that the snakes are facing a species of lizard that has been standing up to predators for millions of years. The predation pressure from these predators is brutal, but all is not lost because they recognize snakes as a threat, as we have verified in a couple of experiments," the zoologist indicates.

In these experiments, they worked with the Balearic lizard and the Pitiusan lizard: "We found that the Balearic lizards did not identify the introduced snakes. They don't even know who they are. The Italian lizard that lives in Menorca, which is more or less contemporary with the introduction of these predators, does identify them perfectly. There is an intermediate situation in the Moroccan lizard, which is also found in Menorca."

The results were very different with the lizards of the Pitiusas: "The amazing thing is that the *Podarcis pityusensis* of the main island already knows perfectly well how the horseshoe snake smells. They know it in an astonishing way. In just 10 years they have already learned that they pose a threat." At Sa Sal Rossa they do not fear them.

They also worked with the lizard from the islet of Sa Sal Rossa: "The most amazing thing of all is that when they did the experiment with the *Podarcis* from that islet, where a snake has never been present, they were unable to recognize that smell, that threat, that predator. This is clear proof that the lizard on the main island has suffered that pressure over the last ten years, that it's not a reminiscence of experiences with snakes from thousands of years ago, which they didn't have because there's no fossil record of that. It could be a possibility, but it's ruled out since the lizards on the islet of Sa Sal Rossa don't recognize horseshoe snakes."

In the professor's opinion, this has two interpretations: "The positive interpretation is that the creature is prepared to recognize the threat. It already knows how to react to these predators. That gives some hope that there won't be a mass extinction of Ibiza's lizards." And then there's the dark side of this matter: "The negative interpretation is that this predation pressure has been so brutal that it has caused the lizards to learn so quickly. This learning cannot be explained without enormous pressure. Practically all of the individuals must have had bad experiences with snakes. The snake must be present all over the island because what is certain is that no relative from the north of Ibiza has communicated this information to those in the south by letter. It's evident that they must have directly experienced, in some way, the presence of these snakes." He says this because in the area where they captured the lizards they experimented with, near Sa Casilla (at kilometer 5 of the Sant Josep road), there was no evidence of snakes: "But they definitely exist. The horseshoe snake must now be distributed throughout Ibiza."

He wonders what would happen in other places: "That's why we'll try this experiment on other islets and in more areas of Ibiza." However, the reactions they observed in the reptiles left no room for doubt, he assures. They used three types of terrariums. One smelled like the snake they had placed there for a day. Another was odorless. And the third had a pungent odor, like cologne, which the lizards detect but have no meaning for them. When they put them in the terrarium where a snake had been, there were "some blatant results." They exhibited anti-predator behaviors, such as moving around more, trying to escape, or wagging their tails, which is the first step toward autotomy (cutting their tails to leave a decoy and thus have a better chance of escape). This didn't happen in the control terrariums." In the one that smelled like snakes, "they went crazy."

They were surprised that he "perfectly" recognized the horseshoe snake as a predator: "The *Podarcis* has developed defense mechanisms that work very well. The bad thing is that the pressure they have endured has been so enormous that it has already triggered those anti-predator mechanisms."

IB3 Notícies

Les serps, amenaça de la fauna autòctona

Snakes, threat to native wildlife

25/02/2017



In Ibiza, the lizard population has decreased in the areas where the snakes have arrived. Last year, 800 were captured in the Pitiüses, but there is no study of the population of this reptile that threatens the native fauna. This year, new traps will be installed that will allow the number of snakes to be counted.

IB3 Notícies

Capturades més de 150 serps a les Pitiüses en el que portem de 2017

More than 150 snakes captured in the Pitiüses so far in 2017

26/04/2017



Individuals have to manage the traps themselves because there are not enough resources to take care of all the cages. It is estimated that the first snakes arrived in Ibiza about 15 years ago, where the population has spread over almost half the island. In Formentera they landed a decade ago and are concentrated in La Mola.

EL MUNDO | Baleares

Cada cinco horas una serpiente pitiusa cae en una trampa

Every five hours a Pityusic lizard falls into a trap

The Government wants to know if the Ibizan lizard population has already decreased.



A trap set in Ibiza for hunting snakes. GERMÁN LAMA.

RICARDO F. COLMENERO | Ibiza 26 ABR. 2017 | 10:53

It only takes one statistic to realize that the problem of snake proliferation in the Pitiüses is far from over. In 2014, when snake capture began on the island of Ibiza, eight were caught in the few traps that were set up. In 2015 there were 121 and last year 478, when they also began to be hunted in Formentera, where 68 traps allowed for the capture of 312 specimens.

The Balearic Ministry of Environment, Agriculture and Fisheries announced yesterday the start of the campaign last March, managing to capture 144 snakes in a single month in the Pitiüses: 60 in Ibiza and 84 in Formentera. The Environment Ministry believes that the data demonstrates that "effective work is being done, especially when comparing the number of captures with similar projects in previous years promoted by the Ibiza Council."

Technicians have installed 93 cages in Formentera and 167 in Ibiza, and it is expected that up to 300 traps will be set, of which 130 will be installed in the smaller Pitiusas and 200 in the larger one. The Government recalls that the snake control campaign was launched last year "after years of inactivity by the Executive" "autonomous" and highlights that it is a problem "that is particularly virulent in Ibiza." The traps were designed by the Ibiza School of Arts and Crafts and have been developed to improve their effectiveness.

The Government aims to obtain data on the biology and ecology of the different captured species, including their prey, and will carry out an assessment of the population density of the Pityusic wall lizard (*Podarcis pityusensis*) in relation to the presence of snakes. The central government has received a document prepared by the Balearic and Canary Islands for the drafting of the national strategy for the control of invasive snakes.

Biological Journal of the Linnean Society, 2017, **121**, 82–94. With 7 figures.

The legacy of translocations among populations of the Ibizan Wall Lizard, *Podarcis pityusensis* (Squamata: Lacertidae)

VALENTÍN PÉREZ-MELLADO[1*], ANA PÉREZ-CEMBRANOS[1], VIRGINIA RODRÍGUEZ[2], JOANA M. BUADES[2], RICHARD P. BROWN[3], WOLFGANG BÖHME[4], BÀRBARA TERRASA[2], JOSÉ A. CASTRO[2], ANTÒNIA PICORNELL[2] and CORI RAMON[2]

[1]*Departamento de Biología Animal, Universidad de Salamanca, 37007 Salamanca, Spain*
[2]*Laboratori de Genètica, Departament de Biologia, Universitat de les Illes Balears, 07122 Palma de Mallorca, Spain*
[3]*School of Biological and Earth Sciences, Liverpool John Moores University, Liverpool L3 3AF, UK*
[4]*Zoologisches Forschungsmuseum Alexander Koenig, D-53113 Bonn, Germany*

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The Ibizan wall lizard, *Podarcis pityusensis*, was the subject of several documented translocations by the German vertebrate zoologist Martin Eisentraut, in 1930. He aimed to initiate long-term experiments into the evolution of melanism and other morphological traits and accordingly he designed introductions into five islets that (he believed) contained no lizards. In this study, we analyzed the genetic and morphological characteristics of individuals we found there. We found no lizards on two of the islets, namely Escull de Tramuntana and Galera, but for the first time, detected a large population on a third islet, Es Vaixell. Eisentraut founded the Es Vaixell population with non-melanistic Ibizan specimens, but the present day population of Es Vaixell was found to be fully melanistic. Genetic markers support a strong similarity between Es Vaixell and its neighbour islet, Na Gorra, and indicate that, in all likelihood, the individuals introduced by Eisentraut have left no descendants. It is likely that Es Vaixell already contained lizards prior to this introduction. Analyses of microsatellite DNA placed individuals from a fourth islet, Dau Gran, with those of one of its source islet, Escull Vermell. They are also morphologically close to individuals from Escull Vermell. This suggests that selection pressures could have favoured the Escull Vermell phenotype following introduction. For reasons we discuss, the translocations have revealed less than Eisentraut would have originally hoped for. Although evolutionary processes are normally time-consuming, these translocations do provide some potential insights into the rapid evolution of lizard morphology following colonization.

ADDITIONAL KEYWORDS: Balearic Islands – Ibiza – microsatellites – mtDNA.

INTRODUCTION

Evolutionary changes can occur over months or decades in the wild (Kinnison, Unwin & Quinn, 2008) but there is a lack of empirical data on contemporary adaptive evolution. In general, morphological traits appear to undergo rapid short-term changes after a population is exposed to new conditions (Kinnison & Hendry, 2001 for a review). These rapid evolutionary responses have been demonstrated in several organisms, from fish (Stockwell & Weeks, 1999) to mammals (Williams & Moore, 1989). Some key studies have also addressed this topic in reptiles (Herrel *et al.*, 2008; Kolbe *et al.*, 2008, 2012; Stuart *et al.*, 2014; Thorpe, Reardon & Malhotra, 2005).

Field translocation experiments are employed as a useful tool to test predictions on fast evolutionary responses and directional selection intensity (Thorpe *et al.*, 2005 and references therein). In this study, instead of designing an experimental procedure to test some hypotheses, we analyzed the results of some translocations made 86 years ago by the German vertebrate zoologist Martin Eisentraut (Eisentraut, 1949). These translocations were especially well documented and

*Corresponding author. E-mail: valentin@usal.es

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IB3 Notícies

Medi Ambient captura 200 serps en un mes i mig a Formentera

Medi Ambient captures 200 snakes in a month and travels to Formentera

17/05/2017



Formentera has registered a considerable increase in snakes on the island, and this has forced the start of the ophidian control campaign a month earlier than planned, which will last until November.

Last year, around 300 snakes were captured and this year, in a month and a half, more than 200 have already been captured. Faced with this problem, the Ministry of the Environment has decided to hire a technician who will work on the island to fight against this invasive species.

The main focus of ophidian is in La Mola and, at the moment, 150 traps have already been installed there.

EL MUNDO | Baleares

Bricolaje casero contra las serpientes en Ibiza

Homenade DIY snake traps in Ibiza

Those who buy a trap sign a protocol to kill the reptile "humanely: with a sharp blow to the head."



One of the snakes recently captured in Ibiza. GERMÁN G. LAMA.

SONIA RIBAS | Ibiza 18 JUN. 2017 | 10:24

If you live in the countryside and are afraid of snakes, the best thing you can do is take a quick DIY course to build your own trap so you don't have to rely on anyone else to eliminate these reptiles from your land. This is the conclusion reached by a resident of Sant Josep, outraged after finding one of these reptiles in the town's cemetery, calling all the phone numbers recommended by the institutions, and listening to technicians from the Ibanat, "overwhelmed and overwhelmed," according to the woman, admitting there was nothing they could do because they didn't have cages and advising her that "if you're a bit handy, you can make the trap yourself." The plans for doing so, she was told, can be downloaded from the Ibiza Council website.

During her trip, the woman also experienced the surprise of her interlocutors when she explained that the snake had been seen in Sant Josep, since, according to specialists, sightings of these animals are not very common in this municipality. Although the Ibiza Council and the Balearic Government have advised on numerous occasions to call 112 when a snake is seen, the island institution now clarifies that the work of the Ibanat technicians is limited to recording data to compile a sighting map and, at most, collecting the reptile if it has fallen into a trap. From the Balearic Government, officials from the Species Protection Service acknowledge that they cannot reach all the points on the island where

these animals have been seen and insist on recommending that those affected go to the Santa Eulària Agricultural Cooperative to purchase a trap, despite the long waiting lists.

The Cooperative is the only official location in Ibiza where an interested party can obtain one of these traps. This year, the Consell (Consell) has ordered only 200, "which are being manufactured and, as they are made, they are distributed, which is why there is this waiting list." "We won't know if we'll be able to reach everyone by the end of the campaign. More will definitely be needed," explains an official.

Bottleneck

n 2016, in collaboration with the Santa Eulària and Sant Joan City Councils, nearly 300 cages were ordered. This year, the Labritja Council subsidized the construction of 50. "Manufacturing isn't going as fast as we would like, which is why there's this bottleneck. We've started distributing to people who signed up last year, and after meeting this demand, we're now serving this year's buyers. What we ask is that people sign up on a list because later, for various reasons, they may not be interested in the cages, and they could be passed on to someone else," the center explains. The traps are built by a carpenter and cost 15 euros, including the small mouse that serves as bait and a bit of food for the rodent.

"What's important is that people understand that purchasing a cage entails a series of obligations, such as keeping the mouse alive and being responsible for self-management of the traps, meaning no one will go to the interested party to retrieve the snake," the Cooperative reminds.

The protocol that those who collect one of these boxes must sign explains that each person must be responsible for the captures and gives advice on how to dispose of the caught reptiles "humanely," preferably "with a sharp blow to the head." It is also recommended to check two or three times a week if any snakes have been caught and, very importantly, to ensure the mouse is in good condition and that "the bait remains alive as long as possible." It is also recommended that the cages be placed in areas where reptiles or rodents have been seen, such as stone walls or chicken coops. In addition, it is advisable to note where and when the captures took place and, if possible, measure the animal.

The Cooperative emphasizes that the snakes found in Ibiza are not poisonous, although it is advisable to handle them with gloves to avoid bites. They also ask that the animal not be transported alive after being captured to prevent it from escaping. "People are very cooperative. They are patient and understand the conditions involved in keeping a cage. It's a pest, and more resources and more traps would surely be needed," they insist.

At the end of April, the Balearic Government confirmed that the snake control campaign was launched in 2016 "after years of inactivity by the regional government" and emphasized that it is a problem "that is particularly virulent in Ibiza." According to their report, last year 478 snakes were captured in Ibiza using 245 cages and 312 in Formentera using 68 traps. Among the objectives announced by the Government were to collect data on the biology and ecology of the different captured species, including their prey, in order to carry out an assessment of the population density of the Pityusic wall lizard (*Podarcis pityusensis*) in relation to the presence of snakes.

The Ministry of the Environment considered in April that the data demonstrate that "effective work is being done, especially when comparing the number of captures with similar projects in previous years promoted by the Ibiza Council, since no intervention had ever been made in Formentera before."

16-07-2017 - IB3 Notícies - The campaign against snakes in Formentera has already doubled the number of captures compared to last year (control)

IB3 Notícies

La campanya contra les serps a Formentera ja duplica el nombre de captures respecte l'any passat

The campaign against snakes in Formentera has already doubled the number of captures compared to last year

16/07/2017



The fight against snakes in Formentera does not stop and this year a government technician is dedicated to controlling the population in situ. The campaign, which began in April of this year and will last until November, has so far yielded very good results. To date, almost 700 snakes have been captured.

IB3N Notícies

Les serps invasores en expansió

Invasive snakes on the rise

17/08/2017



UIB scientists are analyzing the age, sex, skull, scales, size and gut contents of snakes that have fallen into traps in Ibiza, Formentera and Mallorca.

They have already established that there are specimens of all ages and that they are well fed. Samuel Pinya, from the UIB Ecology group, explains that the invasive snakes are expanding and that they eat the chicks of birds, lizards, dragons and rodents. They have also discovered that, at least in the Pitiüses, they have no predators and, on the other hand, in Mallorca, nearly a third of those captured have small amputations at the end of their tails, which indicates that they do have a predator.

In Mallorca, the invasive snakes have spread throughout the Levant, the North and specific points in the South. They have recently been detected in Pollença. Experts believe that they could soon enter the Tramuntana.

EL MUNDO | Baleares

Serpiente de herradura, una invasora exitosa

Horseshoe whip snake, a successful invader

Researchers attribute the success of the horseshoe snake's invasion to the lack of natural enemies. Specimens of this species in Ibiza are larger and have larger clutches.



Researcher Elba Montes, in Guam, with a snake. ELBA MONTES.

ELENA SOTO | Palma 5 SEP. 2017 | 09:27

With the arrival of the new millennium, snakes arrived in the Pitiusas; the centuries-old olive trees are the "Trojan horses" that hide hibernating reptiles or their eggs inside. The Mediterranean garden trend has opened the door to invasive snakes, and the threat is spreading, claiming its victims. The first victim is the Balearic endemic *Podarcis pityusensis* (Pityusic lizard), an easy prey that constitutes an important part of its menu.

Much of the island of Ibiza is being colonized by the horseshoe whip snake (*Hemorrhois hippocrepis*), and on Formentera by the ladder snake (*Rhinechis scalaris*). Both species are roaming freely and feel even more at home than at home. Is their eradication possible?

Environmental scientist Elba Montes traveled in January to Guam, in the Mariana Islands, an island roughly the size of Ibiza, invaded by snakes. He wanted to see what was happening there and how they

were dealing with the problem. "In the 1950s, some specimens of the brown tree snake (*Boiga irregularis*) arrived with the goods, and since no measures were taken, they completely colonized the island," he says. "By the time they got around to it, it was too late; the population had reached extremely high densities. In about three decades, they exterminated much of the native fauna, especially birds, which favored the proliferation of insects and spiders due to the absence of predators."

Their disappearance has caused significant changes in forest structure and vegetation because many of the extinct species dispersed seeds. But, in addition to the impact on biodiversity, snakes also cause significant economic losses, causing continuous power outages, as they commonly climb power lines. With an estimated population of around two million individuals, the island of Guam is an example of the ecological disaster that an invasive species can unleash.

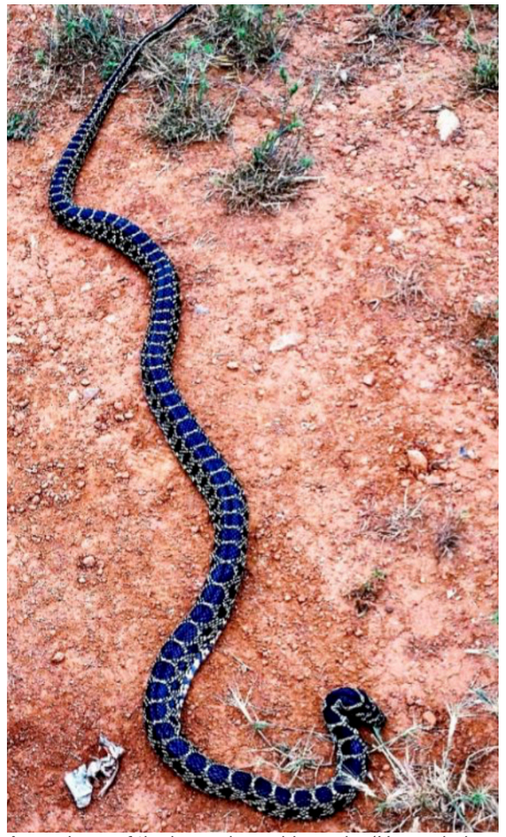
In Ibiza, as in Guam, snakes have virtually no enemies, and everything indicates that the plague is widespread. Elba Montes, a technician from the Ibiza Island Council, is investigating the invasion of the horseshoe snake, which has been the most successful on this island. "Together with Jaume Estarellas, I started a pilot project to diagnose the situation and see which methods and traps worked best, and it was carried out in 2014 and 2015," she explains, "as we worked with the Spanish Herpetological Association (AHE), its then president, Juan Manuel Pleguezuelos, one of the country's leading experts on Iberian snakes and who has studied these snakes in their native peninsular habitat, suggested I do a PhD on this topic."

"One of the things that has caught our attention the most is the tendency towards gigantism," she adds, "in just one decade we observed that in the Pityusic Islands there are specimens larger than the maximum that have been detected on the peninsula, which implies a very rapid phenotypic plasticity. The largest individual of this species (1,894 millimeters in total length and 1,442 grams in weight) was found in Ibiza. On the mainland, the record is 1,660 millimeters and 675 grams. Furthermore, if we average the island's and Iberian whales, the latter are much smaller, which implies a 114% increase in total length and a 213% increase in maximum weight.

"The first thing we began to study was their diet, and we found a much higher rate of predation on reptiles than in other populations, including those introduced to other Mediterranean islands such as Sardinia and Pantelleria, two places where these snakes also occur," Montes points out. "In their natural environment, a large part of their diet is endothermic animals, rodents, small mammals, and birds. Here, the most common prey is the lizard; approximately 57% of its diet is *Podarcis pityusensis*, which is very worrying because it is an endemic species. The rest is made up of various animals, such as blackbird chicks, geckos, mice, and voles. Furthermore, the Ibizan garter snakes have high levels of fat."

Reproduction is another aspect that researchers are studying, and where differences are also emerging. "They begin to reproduce at shorter lengths and have larger clutches," he emphasizes. "The most surprising thing is that the number of females that reproduce each year in Ibiza is one-third, while on the mainland it's practically 90%. If the most common prey is the lizard, an animal that doesn't provide a large amount of energy, how do we explain the snake's tendency toward gigantism?

If only one-third of reproductive females are reproducing, how do we explain its invasive success? Researchers believe the most plausible hypothesis is the "enemy release," known as the Enemy Release Hypothesis.



A specimen of the horseshoe whip snake (*Hemorrhois hippocrepis*) in Ibiza. ELBA MONTES.

"We attribute the success of the invasion to this theory," Montes points out. "When a species arrives in a place and doesn't have the natural enemies of its native area, the path is paved for it; everything is easy. It can reach larger sizes and, surely, a longer lifespan—although I don't have demographic data at the moment—to the point that females can afford to reproduce every three years on average, and that's enough not only to maintain the population but to increase it. What we're seeing in Ibiza is that they're expanding."

Another surprise that has set off alarm bells has been the sight of horseshoe snakes swimming in the sea. "We have photos and sightings, and it's worrying, especially for the islets," he warns. "If they reach them, it would be a disaster." These areas are home to endangered or vulnerable birds, such as the Balearic shearwater (*Puffinus mauretanicus*), and are home to subspecies of lizards specific to each islet, so their arrival would mean the extinction of a subspecies.

Of the seven predators of the snake on the peninsula, only two are found in Ibiza: the kestrel and cats, which also don't catch very large specimens, so when it comes down to it, they have no enemies that can stand up to them. Taking what happened on the island of Guam as a reference, what could happen in the Pityusic Islands? "For now, they're eating lizards because they're easy prey, but as these become scarcer, the most likely scenario is that they'll start targeting birds," he warns. "We found blackbird chicks in the stomach contents, which means they could prey on the young of species like the Balearic warbler or the shearwater."

"Prevention is the most effective, but if invasions aren't tackled decisively at the outset, they're unstoppable. I fear that with current means, they will spread throughout the island," he ventures. "The main entry route is the ornamental olive tree. They began to be seen when the trafficking of these trees began, but the trade continues and should be regulated somehow, because the invasion is ongoing. Winter and summer are the seasons of greatest risk because snakes are hibernating and laying eggs. Furthermore, it would be very helpful to set up a closed enclosure with traps at the port and leave the plant material there for two weeks. One of the control measures adopted in Guam to prevent their entry to other islands is to leave the containers for a while in concrete enclosures with traps. Our biodiversity is at stake."

Amics de la Terra Eivissa

Apassionats per la natura. Les Sargantanes Amics de la Terra Eivissa

Passionate about nature. The Lizards Amics de la Terra Ibiza



We want to raise awareness of the biodiversity, natural and landscape values of the most emblematic and representative natural spaces of the island of Ibiza. The importance of lizards by Antònia Maria Cirer. Discover the Nature Lovers!

Project with the support of the Ministry of the Environment of the Government of the Balearic Islands.

EL MUNDO | Baleares

9.000 euros para cazar serpientes en Ibiza

9,000 euros to hunt snakes in Ibiza



One of the specimens captured in Ibiza. GERMÁN G. LAMA.

EUROPA PRESS 26 ENE. 2018 | 11:57

The Ibiza Council will allocate €9,000 this year to pay for the snake traps made by a local carpenter and distributed by the Santa Eulària Agricultural Cooperative. According to the institution's information to Europa Press, 200 traps will be ordered in 2018, the same number as in 2017. The carpenter who makes them, they noted, charges €45 per trap.

For its part, the Santa Eulària City Council has acknowledged that it is waiting to see if "more traps will need to be ordered in 2018." They noted that an agreement was reached last year to distribute 200 cages through the Cooperative, highlighting that they have ordered two batches in recent years. The Santa Eulària Agricultural Cooperative has stated that there is currently not "as much demand" for traps because snakes hibernate in the cold. "We are also stocking up on cages so we can supply customers when they come looking for them in the spring. For now, traps are available, and we recommend doing so with plenty of time and foresight," they explained.

Last June, Cooperative officials highlighted the waiting lists that arose when purchasing one of these traps, given that they are handmade and demand was very high. They cost around 15 euros, including the small mouse used as bait.

They also reminded everyone that this year, when purchasing a trap, the same protocols will be applied as in 2017, with advice on keeping the cage in good condition and what to do if you catch a snake. The protocol that those who collect one of these boxes must sign explains that each person must be responsible for the catches and recommends checking several times a week to see if any snakes have been caught. It is also recommended that the cages be placed in areas where reptiles or rodents have been seen, such as stone walls or chicken coops, among other recommendations.

Chapter 5
Herpetological History of the Balearic Islands: When Aliens Conquered These Islands and What to Do Next

Iolanda Silva-Rocha, Elba Montes, Daniele Salvi, Neftalí Sillero, José A. Mateo, Enrique Ayllón, Juan M. Pleguezuelos and Miguel A. Carretero

Abstract Balearic herpetofauna represents a paradigmatic case of multiple biological invasions within the Mediterranean Basin, with a much higher number of alien amphibians (i.e. frogs and toads) and reptiles (i.e. lizards, snakes and turtles/tortoises) than native. The paleogeography of the Balearic Islands, located on Western Mediterranean between Spain and Sardinia, is complex, comprehending an ancient split from the continent during the late Miocene and Pleistocene climatic fluctuations connecting and disconnecting islands from one another (but not them to

I. Silva-Rocha (✉) · M. A. Carretero
CIBIO/InBIO—Research Centre in Biodiversity and Genetic Resources, Universidade do Porto, Porto, Portugal
e-mail: irocha@cibio.up.pt

I. Silva-Rocha
FCUP, Faculdade de Ciências da Universidade do Porto, Porto, Portugal

N. Sillero
CICGE: Centro de Investigação em Ciências Geo-Espaciais, Faculdade de Ciências da Universidade do Porto, Vila Nova de Gaia, Portugal

J. A. Mateo
Black Market, Cl. Paraires 23, 07001 Palma de Mallorca, Spain

E. Montes
Department of Zoology, Faculty of Biological Sciencies, Valencia University, c/. Dr. Moliner 50 Burjassot, 46100 Valencia, Spain

E. Montes
Environment Department, Ibiza Island Council, Av. España, 49, 07800 Ibiza, Spain

E. Ayllón
Asociacion Herpetologica Espanola, Espanola, Spain

J. M. Pleguezuelos
Department of Zoology, Faculty of Sciences, Granada University, 18071 Granada, Spain

D. Salvi
Department of Health, Life and Environmental Sciences, University of L'Aquila, Via Vetoio, 67100 Coppito, L'Aquila, Italy

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DIARIO de IBIZA

Desperten les culebres

The snakes wake up

Young and small horseshoe snakes feed on lizards, occasionally on worms and insects.



A horseshoe whip snake. / A.M.C.

Antònia M. Cirer | Eivissa

10 JUN 2018 6:30

These days, while they were organizing removals in Moncloa, the snakes that had been missing all winter woke up in Ibiza. This year everything is a bit behind schedule. It has rained a lot and temperatures have not yet risen. That is why the snakes are also a bit behind schedule. But in a house near the torrent de ses Dones, right next to the old bridge, where the torrent des Fornàs changes its name, they had a big surprise when at mid-morning they found a snake of about 180 cm on the terrace in front of the front door. It was as long as the owner of the house.

It was still, immobile, with its belly firmly attached to the trestle, in order to absorb the heat emitted by the stones, soaking up the warm mid-morning sun while its body temperature increased; this behavior is called thermoregulation. It had just woken up from its winter lethargy to begin its first hunts of the season. It was impossible to find out where it had come from, or where it had spent the winter. There are so many places to hide!

In Ibiza, the first thing to do when you see a snake is to kill it with a hoe or similar, it is an invasive species; we would never do that on the peninsula, where it is a structural part of the ecosystem. But here it is a distorting piece of the island ecosystem. Next, it is interesting to know what its diet has been. To find out, you have to dissect the abdominal cavity and observe the contents of the digestive tract, from the mouth to the anus. In this case, the entire digestive tract was completely empty, from

the esophagus to the cloaca there was no content. More than obvious proof that it had not eaten for a long time: it had just begun its spring awakening.

Without poison

On the continents adjacent to Ibiza (North Africa, Europe) there are many types of snakes, and all of them are susceptible to being introduced to our island with agri-food goods or construction aggregates. They all bite, they are all predators, but most do not inject venom into their bite.

In this case it is a horseshoe snake (*Hemorrhois hippocrepis*, formerly *Coluber hippocrepis*), named after a blackish horseshoe-shaped spot behind the head, where the back begins. The rest of the body is covered with regular dark spots, highlighted in black, on a colored background. The belly can be whitish, yellowish or orange. The specimen in question had a faint salmon pink color. Most books describe this species as being 150 cm long, exceptionally 175 cm; but this one slightly exceeded 180 cm. It is not the only discovery of snakes in the Pityuses with a size greater than the maximum described for its species. And this is very worrying, since it indicates a lack of population regulation: they have no active predators.

Its natural distribution covers North Africa (Morocco, Algeria, Tunisia), the south and southeast of the Iberian Peninsula and some Mediterranean islands (Sembra, Sardinia, Pantelleria) due to its introduction. Now we will also have to add (at least for the time being, if capture measures are not successful) the Pitiüses Islands. Its preferred habitat is vineyard or dry land areas, rockeries with bushes, abandoned terraces; but it adapts very well to humanized areas, and we can easily find it in the arid gardens characteristic of the Ibizan countryside. The garden areas of rural tourism establishments perfectly meet the needs of this species.

It is fast-moving, agile, usually lives on the ground, but can also climb trees and bushes. It is rabid if attacked and can bite when captured. It is not poisonous, so the bite is just that, a bite. But you should not try to immobilize it with your hands, better with your shoe, a stone, or a hoe.

It is quite thermophilic, which is why it is found in places with a relatively high average annual temperature, such as the island of Ibiza. With diurnal habits, it can surprise us at any time when doing work in the field, or walking.

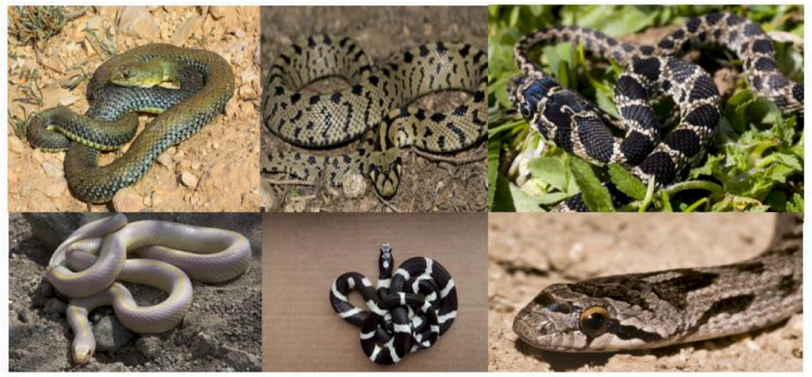
Threat to lizards

Its diet is very varied and seems to depend on its size. Young and small horseshoe snakes feed on lizards, occasionally worms and insects. As they grow, they prefer small mice and other micromammals, as well as some small birds. Look at the table that includes the results of three classic scientific works carried out by Pleguezuelos and Moreno (first column), Vericad and Escarré (second column) and Meijide and Salas (third column), in three different areas of the Iberian Peninsula.

It is clear that the lizards of these islands have a real threat. Especially when the initial populations of introduced snakes begin to breed. Initially, a drastic decline in lizard populations has not been observed, since the introduced individuals were generally adults, but soon there will be new generations of snakes born in the Pitiusas, which while they are juveniles will actively prey on the lizards, which in a few generations may disappear from some places; or see how the survivors do not have the same colorations that the Pityusic lizards described during the 20th century had.

PDF

ESTRATEGIAS DE CONTROL – CRITERIOS ORIENTADORES



ESTRATEGIA DE GESTIÓN, CONTROL Y POSIBLE ERRADICACIÓN DE OFIDIOS INVASORES EN ISLAS

GOBIERNO DE ESPAÑA
MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA

ESPECIES EXÓTICAS INVASORAS

23-08-2018 - IB3 Notícies - The snake is the species that is causing the most harm to biodiversity in the Pityusic Islands (conservation)

IB3N Notícies

La serp és l'espècie que està fent més mal a la biodiversitat a les Pitiüses

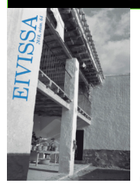
The snake is the species that is causing the most harm to biodiversity in the Pityusic Islands

23/08/2018



In the Pityusic Islands, 800 horseshoe and ladder snakes have been captured so far this year. The snake is the invasive species that is currently causing the most damage to the biodiversity of the Islands. For this reason, a campaign to control it has been underway since 2016. Last year, 2,000 were hunted. The cages are effective. In the Pityusic Islands, more than 800 snakes have been captured in 2018. The control campaign that began two years ago seeks to eradicate the ophidians in Ibiza and Formentera. It is complicated, but in the Pitiüses Minor it could be a reality. This program is the one that concentrates the most resources of the species protection service. There is a specific person on each island dedicated only to snakes, and a third, sent by the Ministry, who moves between the two Pityusic Islands. This invasive species arrived in Ibiza and Formentera in early 2000 in olive tree trunks from the Peninsula. The real problem is that their favorite food is lizards. They don't want what happened in Mallorca years ago to happen again. There are snakes all over the Balearic Islands, but they only harm biodiversity in the Pityusic Islands.

10-12-2018 - Antònia M. Cirer - Color, a biological research tool in the Pityusic lizard (Eivissa, 64: 19-28) (article)



El color, eina d'investigació biològica en la sargantana de les Pitiüses

per Antònia M. Cirer

A la memòria del Dr. Lorenzo Plaza Montero,[1] Institut d'Òptica Daza de Valdés

El color com a eina de investigació biològica ha estat present des dels inicis dels estudis naturalistes. Animals i plantes freqüentment s'han descrit en funció de la coloració que presenten, d'aquí la importància que ha tengut sempre determinar el to concret que presenta cada un dels colors que serveixen per a identificar una espècie o una subespècie. Basta pensar en la rellevància que té encara avui el dibuix a color en els llibres de Ciències Naturals. Així com les controvèrsies dialèctiques generades pel senzill fet que diferents científics descriviren amb paraules diferents una mateixa coloració. Qüestió aquesta, que el Dr. Lorenzo Plaza Montero responia amb un senzill «evidente», ja que ell havia treballat acuradament en la subjectivitat del color i havia evidenciat que l'ull humà és un mal colorímetre (Plaza, 1983). Experiència que li venia d'una llarga trajectòria en la qual va treballar per tal d'obtenir la fidel reproducció del color pels sistemes CBS i RCA de la naixent TV en color.

Conscient de l'enorme potencialitat que té poder definir matemàticament els colors del món real, va buscar coordenades cromàtiques, amb valors numèrics, a fi d'aplicar les tècniques colorimètriques a molts camps del saber científic, entre ells la Medicina, per tal de facilitar, per exemple, el diagnòstic dels diferents tipus de melanomes segons el color que presenten. El color en el món de la moda, els teixits, els estampats; i la senyalització viària per tal de fer les carreteres més segures, els indicadors més visibles (Plaza, 1984), tenen el seu referent en els estudis realitzats a l'Institut d'Òptica Daza de Valdés.

Tasques que poden semblar dispars a la comesa d'un centre d'investigació d'òptica pura i aplicada, adscrit al CSIC, com és l'Institut d'Òptica Daza de Valdés, de Madrid, però que representaren una obertura del centre a tot tipus d'investigacions relacionades amb el color.

Dins la Biologia, l'Herpetologia és, tal vegada, la disciplina on el color pot adquirir màxima importància per a la vida dels individus acolorits. Del color depèn la termoregulació i, per tant, l'adquisició de les constants vitals per al seu moviment, metabolisme, medi intern, vivacitat... Però el color determina també la seva vulnerabilitat davant els depredadors, ja que segons sigui el color corporal i el color de l'entorn els individus poden semblar críptics (passar desapercebuts als depredadors) o aposemàtics (cridaners dins



Foto 1. Lorenzo Plaza (primer per l'esquerra) durant la celebració del 40è aniversari del Comitè del Color, Madrid 19 de desembre de 2005.

1. Nascut a Fuentes de Oñoro, Salamanca, 1923; mort a Madrid el 2012. Investigador del CSIC en el camp de l'Òptica durant més de 60 anys. Fundador del Comitè Espanyol de l'Òptica el 1940, i de la Societat Espanyola de l'Òptica (SEDO) en 1969, auspiciat per l'Institut d'Òptica Daza de Valdés, del CSIC, on ha tingut càrrecs directius des de 1956 fins a la seva jubilació. Fundador de l'Associació Internacional del Color a Washington el 1977, va establir la relació entre les coordenades de color d'un objecte i la seva representació en la naixent TV en color.

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BIODIVERSITY RESEARCH

WILEY Diversity and Distributions

Alien reptiles on Mediterranean Islands: A model for invasion biogeography

Iolanda Raquel Silva-Rocha[1,2,3] | **Daniele Salvi**[1,4] | **Miguel A. Carretero**[1] | **Gentile Francesco Ficetola**[3,5]

[1]CIBIO Research Centre in Biodiversity and Genetic Resources, InBIO, Universidade do Porto, Vairão, Portugal
[2]FCUP, Faculdade de Ciências da, Universidade do Porto, Porto, Portugal
[3]University of Grenoble-Alpes, CNRS, LECA, Laboratoire d'Écologie Alpine, Grenoble, France
[4]Department of Health, Life and Environmental Sciences, University of L'Aquila, Coppito, Italy
[5]Department of Biosciences, University of Milano, Milano, Italy

Correspondence
Iolanda Silva-Rocha, InBIO/CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, Universidade do Porto, Vairão, Portugal.
Email: irsr.14@gmail.com

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Editor: Robert Cowie

Abstract

Aim: The Mediterranean basin has a long history of interactions between humans and biota, with multiple ancient and recent introductions of alien species. Such a multitude of introductions makes it difficult to distinguish between alien and native species but provides an excellent opportunity to investigate factors related to introductions and long-term persistence of alien species. In this study, we combined genetic and distribution data to identify the factors promoting the presence of alien reptiles on islands, considering human-related, geographic and species features. Furthermore, we assessed whether the use of genetic evidence to identify alien species improves inference of the factors determining their distribution.

Location: Mediterranean islands.

Methods: We combined genetic data and distribution databases to obtain information on biological traits and on the native/alien status of reptiles on >900 Mediterranean islands, and we gathered data on geographic and human features of islands. We then used spatially explicit generalized additive mixed models to identify the factors associated with the establishment of alien reptiles.

Results: Alien reptile populations are more frequent on islands far from the native range and with large human population. Alien populations of reptiles that are able to feed on plants are particularly frequent. Traditional data sources underestimate the frequency of alien reptiles on Mediterranean islands, and using genetic evidence to assess the status of populations provided a more complete picture of the factors associated with the presence of alien populations.

Main conclusions: Humans are key drivers of the distribution of alien reptiles on Mediterranean islands, but the distributions are determined by a complex interplay between human activities, geographic factors and species features. Genetic data are essential for obtaining reliable biogeographic assessments of invasive species, particularly in systems with a long history of human influence.

KEYWORDS
alien reptiles, biological Invasions, genetics, human-mediated transport, Island Biogeography, Islands, Mediterranean, spatial Generalized Additive Mixed Models

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IB3 Notícies

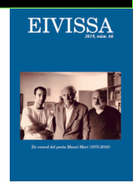
Coneixem la sargantana de Formentera

The invading snakes of Eivissa learn to swim

26/04/2019







Illes sense espècies invasores

per Antònia M. Cirer

Aclariments sobre biodiversitat

Quan parlem de biodiversitat, a vegades atorguem qualificatius a les espècies com si això conferís alguna característica que ens permetés situar-les dins una escala de bondat-malignitat que ens facilités la presa de decisions, dins la gestió ambiental, per tal de saber quines espècies són les *bones*.

Espècies autòctones es confonen amb espècies endèmiques, espècies introduïdes amb espècies invasores, i espècies protegides amb espècies en perill d'extinció. Per no mencionar qui creu que si s'introdueix una nova espècie en un indret, això farà augmentar la biodiversitat d'aquest lloc. Clarificarem, primer de tot, aquests conceptes.

Una espècie és autòctona d'una zona si forma part de l'ecosistema des de temps immemorials, és a dir, que existeix en aquest lloc independentment de l'existència de la humanitat. Sense pobladors humans també trobaríem les espècies autòctones de cada lloc concret. A les Pitiüses la savina (*Juniperus phoenicea*), el pi blanc (*Pinus halepensis*) i els matolls del bosc mediterrani són espècies autòctones; i la majoria també les trobarem en altres llocs; autòcton no vol dir exclusiu.

Les espècies endèmiques són aquelles que, a més de ser autòctones d'un lloc, sols les podem trobar en aquell lloc concret. Així, a prop de la mar, per tota la costa mediterrània hi ha ensopegalls o saladines, plantes del gènere *Limonium*. Hi ha moltes espècies de *Limonium,* plantes autòctones de les rocalles on arriba l'esquitxada de la mar. Algunes espècies estan per tot el Mediterrani, són autòctones però no endèmiques. Però l'espècie *Limonium ebusitanum* sols es troba a les Pitiüses, és un endemisme de les Pitiüses; mentre que *Limonium formenterae* és una altra espècie endèmica que sols habita a Formentera.



Foto 1. Sargantana de l'illa del Rei, al port de Maó: *Podarcis lilfordi balearica*.

Les espècies, independentment que siguin autòctones, endèmiques o res d'això, poden estar en risc d'extinció o necessitar algun grau de protecció legal per les circumstàncies concretes de la seva biologia. *Limonium ebusitanum* és endèmica, però no està en risc d'extinció, en canvi *Limonium formenterae* és vulnerable, ja que existeix un elevat risc que les seves poblacions disminueixin.

Si les saladines són, dins la botànica, un bon exemple d'espècie aparentment humil, però de gran valor biogeogràfic, les sargantanes ho són dins la fauna. I a les Pitiüses en tenim un bon exemple. Per tot Europa hi ha sargantanes, a cada zona hi ha una espècie de sargantana pròpia (autòctona) d'aquell lloc. Així, a la Península Ibèrica hi ha la sargantana autòctona *Podarcis hispanica*. En moltes illes mediterrànies hi ha sargantanes diferents de les del continent, endèmiques d'aquella illa. Per exemple, als illots de Mallorca, Menorca (foto 1) i Cabrera hi ha la sargantana endèmica *Podarcis lilfordi,* i a les Pitiüses tenim la sargantana endèmica de les Pitiüses *Podarcis pityusensis* (foto 2). Aquestes dues espècies són autòctones cada una del seu arxipèlag; i, a més, són endèmiques ja que no es troben a cap altre lloc del món. I encara més qualificatius: totes les espècies de sargantana són espècies protegides, en els seus hàbitats respectius, per la seva elevada vulnerabilitat.

Ara bé, a Mallorca també hi ha una població de la sargantana de les Pitiüses, que ha estat introduïda en algun moment incert del segle XIX. En aquest cas, la població de *Podarcis pityusensis* que hi ha a Palma no és una població autòctona, ni endè-

EL MUNDO | Baleares

Capturadas 700 serpientes en cuatro meses

700 snakes captured in four months

The government began the campaign last March and maintains that the use of cages is "a good method for Reducing densities."



A snake captured in Ibiza. CAIB.

SONIA RIBAS
Ibiza

Actualizado Miércoles, 12 junio 2019 - **08:24**

More than 700 snakes have been captured in four months. This is the result of the campaign promoted by the Balearic Government in Ibiza and Formentera to eradicate this invasive species.

The regional government launched this action last March, for the fourth consecutive year, and it will initially run until October. Its officials explained yesterday that the initiative is proceeding "as usual" and, as in previous years, in collaboration with individuals, regional councils, the Hunting Federation, and other local entities. The government also stated that, year after year, the campaign has been "a complete success" in terms of the number of captures and the effectiveness of the cages distributed throughout the island. These cages "have proven to be a good method for reducing densities, and are valid for mass control projects," according to the Balearic Government.

By island, 370 snakes have been caught in Ibiza since last March, a figure very similar to that recorded during the same period in 2018. Added to this figure are the captures by the Balearic Hunting Federation, with several hundred individuals captured, and those by individuals. In Formentera, there have been 130 captures, a much lower figure than the 337 captured at the same time last year. The acting Director General of Natural Spaces and Biodiversity, Miquel Mir, stated yesterday that "this figure is a good indicator that the work being done is a complete success." According to Mir, "in La Mola, the main population of invasive snakes is limited by traps, and the objectives remain ambitious and focus on the definitive eradication of the population."

Among other things, the Catalan government requested yesterday that anyone who has a trap in custody and hasn't activated it return it to the place where it was obtained, as it will be given to another individual who requested it.

Capture data from recent years only confirms that snakes have invaded the Pityusic Islands at a rapid pace. In 2017, in just seven months, 959 specimens were captured in Ibiza and 992 in Formentera. Two hundred traps had been set on both islands. These figures were added to other captures made by environmental agents or individuals, so the number could rise to 2,500 specimens.

The Executive also noted that the species found were not dangerous, but "at this point, the direct medium-term effects they may have on biodiversity are unknown." It noted that there is data on predation of the endemic lizard *Podarcis pityusensis*, although preliminary studies by researchers at the University of Salamanca had not found any indicators indicating a decrease in lizard density in areas where snakes are present.

In 2018, the Ibiza Council allocated €9,000 for the manufacture of traps made by a carpenter in Ibiza and distributed by the Santa Eulària Agricultural Cooperative.

PERIÓDICO de IBIZA Y FORMENTERA

Una serpiente de herradura en Santa Gertrudis

A horseshoe whip snake in Santa Gertrudis

R.I. | 18/08/19 10:26

A horseshoe whip snake, the most common invasive snake, was found this Saturday in Santa Gertrudis. This snake, just over a meter and a half long, was found dead. The discovery of this specimen was shared by a Facebook group called 'Snakes on Ibiza no thank you'. The horseshoe snake has been found in numerous locations across the island and is becoming a serious threat to some endemic lizard species.





A young man dares to pick up the snake while his friends watch.
Photo: Snakes on Ibiza no thank you - Serpientes en Ibiza no gracias (Facebook).

PERIÓDICO de IBIZA Y FORMENTERA

Capturan 1.800 serpientes en las Pitiusas durante los últimos cinco meses

1,800 snakes have been captured in the Pitiusas over the past five months



A horseshoe whip snake captured in Ibiza | Photo: Daniel Espinosa

Laura Amores | Eivissa | 09/09/19 4:01

From April to the end of August, around 1,800 snakes were captured in Ibiza and Formentera by the Balearic Hunting Federation and the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB). The vast majority were horseshoe snakes, according to the Balearic Hunting Federation. Of these 1,800 specimens, approximately 1,600 were captured in Ibiza, of which 800 were captured by a Hunting Federation employee and 800 by two COFIB employees. The remaining 200 specimens were captured in Formentera by an employee of the Consortium for the Recovery of Fauna of the Balearic Islands. During the entire last season, 1,500 snakes were captured between Ibiza and Formentera, according to the Hunting Federation.

The Hunting Federation has around 400 traps distributed throughout the island of Ibiza and assures that this species of snake "is neither poisonous nor dangerous to humans; if cornered, it could bite, causing a minor injury." However, it does pose a threat to the survival of the native lizard, as well as to baby partridges and young rabbits.

Snakes are an invasive species that began arriving in Ibiza more than 10 years ago, but the Balearic Hunting Federation began this work three years ago.

"They probably arrived in olive trees or containers of plants that were transported to the island by boat," said Alejandro Macías Torres, a member of the Balearic Hunting Federation. "They come hidden, hibernating, and with the heat, they emerge; April to October is their most active season," he concluded.

Sant Carles, Sant Lorenç, Santa Gertrudis, and Sant Miquel are the areas with the highest number of snakes. The Hunting Federation pointed out that this could simply be due to the fact that these are "the areas where plants have been distributed, which have arrived with snakes inside, and there, by reproducing without predators, the population has increased rapidly."

This oviparous species, lacking predators on the island, as Alejandro explained, "is important to control the population and prevent mass reproduction." To this end, the Balearic Hunting Federation sets traps in areas where the animal has been most prevalent and encourages individuals to distribute them around their homes if they suspect snakes may be inhabiting their land.

Furthermore, it's important to keep in mind that these animals' life expectancy can reach up to 15 years.

The Ibiza Council signed an agreement with the Balearic Hunting Federation in which it pledged to collaborate with snake capture.

The Santa Eulària cooperative sells traps, subsidized by the island's institution, for 15 euros. These traps consist of a wooden box with two compartments. One contains a mouse and the other is empty, where the snake will become trapped when it tries to enter and eat the rodent. The system works through a grid through which the oviparous mouse can enter, but not exit. The mouse remains alive in the trap. It can last for years if fed simply once every 10 days. It can even be stored for the next season. If a new mouse is needed, one can be purchased for six euros.

The best areas to place the traps, Alejandro explained," are the places where they usually live, such as tree trunks, rock walls, and streams."

Once the snake is captured, it is killed with a blow to the head and sent to the UIB (University of the Balearic Islands) to be studied and to better understand the species.

"People are increasingly aware and try to collaborate to capture the snakes because they know that the island's native lizard is in danger," he concluded.

Alejandro assured that his phone number is always available "to help anyone who has problems with the trap."

The Government informed Periódico de Ibiza y Formentera that "the first snakes to colonize Ibiza probably arrived thanks to the trade in ornamental olive trees from the Peninsula. They were hibernating in the root balls of these trees, and when they were transplanted and spring arrived, they awoke, escaped from their hiding place, and dispersed, establishing stable populations. Today, it is impossible to completely eradicate them." He added that this entry route makes "controlling the snakes very difficult, given that they are hidden and, at the same time, protected by the tree itself."

Regarding the possibility of restricting the entry of plants or other merchandise that could contain them, the Government indicated that the issue of limiting the free movement of goods "in the EU is not simple. There are many legal obstacles to imposing these restrictions." However, he assured that they are "evaluating the possibility of finding some legal loophole that, for biosecurity reasons, would allow for the establishment of controls."

The Ibiza Council indicated that, regarding any option other than killing the oviparous birds, according to the Department of Environment technicians, "it is the only way that currently exists." Although they affirm that some current opinions "advocate reintroducing them to the Peninsula," the technicians' general opinion "is that reintroducing a species that has changed its habitat in its original habitat can be very counterproductive, given that it has undergone behavioral, parasitic, and genetic changes, and given that the reintroduced species' behavior is unpredictable." Therefore, "no other option is being considered other than killing them."

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Article

Article

Reproduction ecology of the recently invasive snake *Hemorrhois hippocrepis* on the island of Ibiza

Elba Montes [a,*], Mónica Feriche[b], Leticia Ruiz-Sueiro[c], Esmeralda Alaminos[d], and Juan M. Pleguezuelos[b]

[a]Department of Zoology, Faculty of Biological Sciences, University of Valencia, c/Dr. Moliner, 50, Burjassot, Valencia E-46100, Spain, [b]Department of Zoology, Faculty of Sciences, Granada University, Granada E-18071, Spain, [c]Laboratory of Ecology and Evolution, Butantan Institute, University of São Paulo, Av. Vital Brazil, 1.500, Butantã, E-05503900, São Paulo, Brasil and [d]Department of Sciences, Granada Sciences Park, Granada, Spain

*Address correspondence to Elba Montes. E-mail: elbamontesv@gmail.com

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Abstract

Knowing the causes of biological invasion success can be relevant to combat future invasive processes. The recent invasion of the horseshoe whip snake *Hemorrhois hippocrepis* on the island of Ibiza provides the opportunity to compare natural history traits between invasive and source populations, and to unravel what makes this snake a successful invader that is threatening the only endemic vertebrate of the island, *Podarcis pityusensis*. This study compares the basic reproductive traits of mainland native and invasive populations of the snake. Our results revealed that invasive populations were characterized by female maturity at a smaller size, extended reproductive period, and much lower reproduction frequency compared to the native population. In contrast, some major reproductive traits—the abdominal fat body cycle, clutch size, hatchling body size, and hatchling body condition, did not differ between the two populations. Some of these results must reflect the environmental differences in the recently invaded island with respect to the source area, and overall plasticity of reproductive traits. Plasticity is evolutionarily interesting, and may aid the successful growth of this species in their invasiveness of Mediterranean islands like Ibiza. The most significant finding is that this expression of phenotypic plasticity occurred rapidly in this invasive population, within a period of 14 years maximum. Our results on the reproduction ecology of the invasive population were not conclusive regarding the factors determining the invasiveness of the snake and pointed to alternative causes.

Key words: Ibiza, invasion success, islands, reproduction frequency, snakes

Invasive species affect ecosystems around the planet, mostly threatening island species (Jones et al. 2016), which are particularly vulnerable due to their inherent characteristics. Island species have evolved in relatively isolated conditions, and are adapted to fit the typically innocuous insularity of their environment; newcomers to islands, however, are usually more efficient than native species (Cohen 2002; Simberloff et al. 2013). Therefore, knowing the possible causes of success regarding biological invasions would give us accurate predictions for invasive processes as well as efficient control and eradication mechanisms for non-indigenous species (Jeschke and Strayer 2006; Hayes and Barry 2008; Rödder et al. 2009; Mahoney et al. 2015).

Diverse factors have been tested in order to determine a causal effect with invasion success, like the reproductive traits of invader species (Cohen 2002): early sexual maturity has been reported as a

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Success model “island lizard” – or rather a bleak future for the Ibiza wall lizard *Podarcis pityusensis* (Boscá, 1883)?

Mike Zawadzki, 2020

Abstract

The Ibiza wall lizard, *Podarcis pityusensis* is the only endemic land vertebrate of the Pityusic Islands. It inhabits the two main islands Ibiza and Formentera as well as the vast majority of the offshore small islands. When humans first arrived at the islands, they brought with them a handful of foreign predators, such as genets, beech martens, rats, and feral cats – all lizard predators. *Podarcis pityusensis* is fully protected by national and international legislation and listed in Annex II of the Bern Convention and in Appendix II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). It is declared as “Near Threatened” by the IUCN (2009). However, some of the populations are very much reduced, endangered or on the verge of extinction as they are threatened by illegal collection, disturbance by visitors, introduction of cats and rats to the islands, and accidental poisoning with bait left for seagulls. The recent introductions of three snake species on Ibiza and Formentera are of particular concern. The Montpellier snake (*Malpolon monspessulanus*) has not been caught on the islands since 2010. The horseshoe whip snake (*Hemorrhois hippocrepis*) has shifted its diet towards lizards, with the native Ibiza wall lizard, representing 55.4 % of the observed prey. A similar dietary shift is probably occurring with the ladder snake (*Rhinechis scalaris*) in Formentera, as a preliminary study shows that more than half of its prey is constituted by *Podarcis pityusensis* (Hinckley et al. 2017). The effect of predation may seriously threaten the lizards in the main islands and the arrival of snakes in the surrounding islands may produce a catastrophic and irrecoverable event for lizard populations as they would be the only available prey.

PERIÓDICO de IBIZA Y FORMENTERA

«Nuestras serpientes no son venenosas»

"Our snakes are not poisonous."

According to expert Alejandro Macías, the number of these animals has barely increased this year in the northern region.



Expert Alejandro Macías | Photo: Daniel Espinosa.

Manu Gon | Ibiza | 11/06/20 4:01

A few weeks ago, the appearance of a snake emerging from the sea on Talamanca beach alerted much of the island of Ibiza. The image quickly went viral and was shared on all social media, creating a high level of alarm. Furthermore, comments began to emerge from residents in different areas claiming to have seen snakes near their homes, and rumors spread that there were many more than in previous years.

This isn't true. Yesterday, Alejandro Macías, the expert hired four years ago by the Ibiza branch of the Balearic Hunting Federation and the Consell d'Eivissa, assured Periódico de Ibiza y Formentera that from April 1 to May 5, 2020, he only captured ten more snakes than during the same period in 2019. "I'm very surprised by the alarm that has been generated these past few days, with my phone ringing nonstop, because according to data I've verified, last year we captured 237 snakes and this year, 247."

Furthermore, according to data provided by the Balearic Hunting Federation and the

Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), Macías captured around 800 snakes from April to the end of August 2019. This year, according to his estimates, the number may be lower. "From what I see on a daily basis and from all the work that has been done over these four years to deplete the population, at first I caught four or five in the same trap, and now one or two at most, or even none at all."

Fourth Season

Alejandro Macías began working four years ago after his position was created through an agreement between the Consell d'Eivissa and the Ibiza branch of the Balearic Hunting Federation. For a good part of the year, he sets traps, collects the snakes that fall into them, and answers the many calls he receives from individuals across the island, primarily in the north and east.

Other experts from the Consortium for the Recovery of Fauna in the Balearic Islands (COFIB) are working in other areas of Ibiza and also on the island of Formentera.

However, the work of this young man, who is not yet thirty, is proving key to wiping out the snake population in this part of the island and gradually reducing their numbers. "When I started, I didn't really know where the snakes were, so I was guided by the calls neighbors made to my cell phone and the first ones I found. But later, in the following years, I set the traps in very similar places to wipe out the populations and gradually reassure people."

The traps Macías sets are very simple, and in fact, many residents of the area where he works have already started buying them or making their own at home. As he explained yesterday and showed to Periódico de Ibiza y Formentera, they are a wooden box with two different compartments. In one of them is the little mouse that serves as prey and is never in danger. In fact, Alejandro Macías feeds them every week, changes their water, and checks their health. The other compartment is designed to trap the snake. Its operation is very simple, as it has a hole with a slit that allows entry but not exit, because once the animal is inside, it hits the stop.

These traps are subsidized by the Santa Eulària City Council and can be purchased at the Municipal Agricultural Cooperative for a nearly symbolic price of 15 euros. More and more people are buying them and using them with increasing success, as demonstrated by data provided by Macías, which shows that from April 1 to May 15, 2020, residents captured 117 snakes, compared to the 62 caught during the same period the previous year.

The Consell expert also explained that these traps are usually placed near stone walls, reservoirs, areas with abundant firewood, low traffic, or irrigated areas, and "always with the metal face against the wall."

Afterwards, if people are afraid of picking up the trapped snakes, Macías is the one in charge of doing so and later classifying them. However, the maintenance of the trap is the responsibility of the neighbor who placed it. "My phone is always available to provide information, answer questions, and be able to lend a hand at a moment's notice, but there are more and more traps all over the island, and I wouldn't be able to fit everything into my daily routine."

"They are not dangerous."

Due to his extensive experience, despite his youth, Macías is one of the foremost experts in the Pitiusas and an authoritative voice to reassure the public on the subject of snakes. "In Ibiza, there are basically two types: the horseshoe snake, with a slender shape, a long, thin tail, and a pointed head that is very distinct from the trunk. And the ladder snake, with a robust body, a relatively short tail, a small, shallow head, and a pointed snout. Neither of them is venomous," Macías told Periódico de Ibiza y Formentera yesterday as he held one in his hand in one of his traps.

Therefore, the expert issued a message of calm to the people of Ibiza. "If we see one in the countryside, we have to stay calm and not be afraid of them because they are completely harmless, and generally, when they see a human, they will end up running away because they are more afraid than we are."

Furthermore, in the very hypothetical case that one of them were to bite us, "we must not lose our calm, because all that is needed to heal the wound is a little soap and water."

Advice for citizens

Alejandro Macías advises citizens to place traps in areas where they have seen snakes to catch as many as possible from May to June, their peak period of activity. Traps can be purchased at the Santa Eulària Municipal Cooperative, where they are subsidized for €15. They should be placed in low-traffic areas, near stone walls, reservoirs, firewood, or irrigation, and always with the metal part facing the wall. The mouse should be fed and its water changed once a week. Once you have captured a snake, call 686905930 and ask for Alejandro Macías to classify it properly.



Photo: Daniel Espinosa.

PERIÓDICO de IBIZA Y FORMENTERA

El día a día en el trabajo de Alejandro Macías

Alejandro Macías's daily work



Alejandro Macías poses with a captured snake | Photo: Daniel Espinosa.

Manu Gon | Ibiza | 11/06/20 7:13

The first thing Alejandro Macías does is check each of the traps he's set over the past few days. First, he opens the area where the mouse is to make sure it's in perfect condition, and then the area on the left where a snake might be trapped. If so, he proceeds to capture it.

Capturing the Trapped Snakes

Alejandro captures the trapped snakes by hand, but always wears a special glove to avoid being bitten. However, he constantly assures us that Ibizan snakes are not poisonous. After stunning them a bit, he has no choice but to finish them off.

The specimens are stored for classification.

Once the snake is dead, Alejandro meticulously stores each specimen found in the trap in sealed plastic bags. He writes the reference number of the trap where the snake was found on them with a marker and carefully stores them in his car for later classification.



Photos: Daniel Espinosa.

Feeding and Changing the Water for the Mice in the Traps

Once he finishes his work, capturing the snakes from the traps scattered across the north and east of the island, Alejandro Macías adds food and changes the water for the mice. These animals are never in danger, and as the expert from the Consell and the Balearic Hunting Federation explained yesterday, they can survive the entire summer if they are well fed.

PERIÓDICO de IBIZA Y FORMENTERA

Una serpiente intenta acceder a un barco en Ibiza

A snake tries to access a boat in Ibiza



Video of the snake hooked on the ship's ladder

R.I. | Ibiza | 12/06/20 12:40

A horseshoe whip snake was filmed this Friday hooked on a boat's ladder in the Port de Sant Miquel, as can be seen in the accompanying video.

The presence of these snakes is becoming more frequent on Ibiza's beaches. On the first of July, a horseshoe whip snake was seen on Talamanca Beach.

The horseshoe whip snake is an animal, despite its large size and rapid movement, which bite is not poisonous.

IB3 Notícies

Les serps invasores d'Eivissa aprenen a nedar

The invading snakes of Eivissa learn to swim

23/06/2020



Can you imagine swimming peacefully in a cove and coming across a snake? That's what happened in Ibiza, in the water of Cala de Sant Vicent. It surprised bathers and lifeguards and also surprised experts, who had no idea that they swam so well. It is an invasive species, therefore, it could endanger other organisms that live on the coast or on the islets.

Experts emphasize that, although the image may be shocking, in principle they are not dangerous to people. The fact that in the last five or six years more have been seen swimming in the sea is surprising, and could be because there is a high density of these snakes in Ibiza.

This could pose a new threat to species that live on the coast or on the islets, such as small birds or other subspecies of lizards.

At the moment, COFIB, which depends on the Government, has 500 traps distributed in Ibiza and Formentera to capture snakes and they have caught 6,000 in the last four years.

PERIÓDICO de IBIZA Y FORMENTERA

Capturan ocho grandes serpientes en una finca de Sant Llorenç

Eight large snakes captured on a farm in Sant Llorenç

Paco S. Pérez | Ibiza | 29/06/20 20:29



Eight snakes over a meter long in a trap. This was the catch found yesterday in a trap located on a property in Sant Llorenç.

This catch is one of the most remarkable captures made on the island. The horseshoe whip snakes were found in one of the traps deployed by the Balearic Hunting Federation through an agreement with the Consell.

This impressive capture joins other recent images that have gone viral, such as that of a snake climbing onto a boat.

PERIÓDICO de IBIZA Y FORMENTERA

«El área de dispersión de las serpientes en la isla de Ibiza no para de aumentar»

"The snake breeding ground on the island of Ibiza continues to increase"

Veterinarian Víctor Colomar laments that "with the lack of protocols," they are always one step behind.



Manu Gon | Eivissa | 13/07/20 4:01

"The snake dispersal area continues to increase on the island of Ibiza, and new nuclei are being detected every year." This was the blunt and direct statement made yesterday by Víctor Colomar Costa, veterinarian and invasive species expert from the Consorci de Recuperació de la Fauna de les Illes Balears (Cofib), to the Periódico de Ibiza y Formentera, when he spoke and analyzed the current situation of these reptiles on the largest of the Pityusic islands.

Although this expert does not want to generate public alarm—"fundamentally because a bite from a horseshoe snake or a ladder snake is not fatal or causes major problems for humans"—Colomar did make it clear that "the situation in 2020 is far from being under control."

This is due, above all, as the veterinarian commented, to the fact that technicians are always behind in the protocols being used to combat them. "The serious problem we face when working to eradicate an invasive species is that there are no previous action protocols on the islands that we can refer to or draw inspiration from. This means that, although we constantly

learn about their behavior, we are unfortunately always one step behind."

This problem of lack of documentation is not unique to the Pitiusas. According to Colomar, Europe in general "has never taken the issue of the spread of invasive species very seriously, as did Australia or New Zealand, which are pioneers in this field." Furthermore, the technician asserts that all this is aggravated by the fact "that the inhabitants of Ibiza or other places in Spain, having never considered hunting or capturing snakes among their priorities, have left nothing written down on such fundamental issues as the creation or installation of traps."

Given the magnitude of this problem, the Balearic Government's Department of Environment and Territory launched the Sustainable Tourist Tax (ITS) a year ago, which includes a program specifically designed to address invasive animal species, implemented by the Cofib itself. According to Colomar, this represents a significant commitment by the Balearic Islands' highest authority, "since €853,000 will be invested to equip the Cofib over the next three years with approximately 2,000 traps, replacing the current 400, six technicians, and three new vehicles." All of this is to achieve, according to this expert, "the ultimate goal of not capturing any snakes in the coming years because it would be a sign that we have eradicated them from the Pitiusas."

"There's no need to be afraid."

In this regard, as Alejandro Macías, an expert working for the Pitiusas branch of the Balearic Hunting Federation, insisted to this same newspaper a few days ago, Víctor Colomar asserted that horseshoe snakes and ladder snakes—the two species found in Ibiza and Formentera—should not be feared because their bites are not fatal. "It's completely understandable that people might be frightened when they encounter them because in Ibiza, until relatively recently, we were only used to seeing lizards measuring about 20 centimeters and not snakes that can reach two meters, but we must call for calm and remember that they are not harmful to humans." This doesn't mean, as the Cofib veterinarian made clear, "that we have to confront them, but rather that we act using common sense and the precautionary principle."

At the same time, Colomar called for calm following the latest news, videos, and photographs that have appeared on social media of up to eight snakes on a property in the Sant Llorenç area. "We as technicians don't give it too much importance because in this case, it's not a sign of a significant increase in snakes in this area, but rather that it was very likely a female that entered the trap, attracting the attention of seven other males that were also trapped there."

Furthermore, we shouldn't give "excessive importance" to the snakes that have appeared in the sea, on boats, or among towels. "Perhaps these are biological behaviors that we hadn't documented on our island due to the lack of previous protocols for fighting snakes, but we have confirmed that this is a rare occurrence in a place like Ibiza, where snakes don't have major predators to worry about and a high population that can record everything with their cell phones and upload it to social media."

Despite this, Víctor Colomar assures that these images are always welcome because they serve to update his work and his way of staying ahead of snake behavior in the Pitiusas. "It's always good to discover that there are snakes near the sea or living peacefully among the rocks or cliffs because that helps us discover the new places they are colonizing and try to stay one step ahead of them."

"Patience and care"

Traps play a very important role in the fight against snakes. The Cofib veterinarian stated that to see results, "you have to be patient because snakes don't come in and get trapped every day," and that "proper maintenance by the individuals who have purchased them from the institutions or cooperatives that sell them" is also essential.

According to Colomar, the results have been noticeable for several years now. "In 2014, the Ibizan Council attempted to trap snakes through a two-year experimental program that helped implement improved traps in Formentera. Later, four years ago, the project, in which Cofib and the Ibizan delegation of the Balearic Hunting Federation, with Alejandro Macías, are now participating, has allowed us to make significant progress in the fight against this invasive species."

Furthermore, the catches are sent to Palma, where, among other things, their diet and the location where they were found are analyzed to learn more about their lifestyle and coexistence with other species. In this regard, Colomar noted that the Cofib "almost monitors each individual specimen, thanks to the fact that all the traps set up on the island are mapped using a GPS system."

These results are then shared in meetings attended by experts from the Cofib and the team hired by the Balearic Hunting Federation, university researchers, representatives of the administrations, and people involved in the issue. All this with the aim, according to Víctor Colomar, "of closing the gap that still separates us from the behavior of snakes in the Pityusicas."

"In Formentera, we can eradicate snakes in the medium term."

The island of Formentera is also part of the campaigns to combat invasive species being carried out by the Cofib. Colomar explained that in this case, "sentinel cages are placed around the affected area, into which snakes must never enter." If any captures are made, "they are moved to increase the number and analyze the different areas."

In the case of the lesser Pitiusa, "the intensive trapping area suggests that the snakes can be completely eradicated in the medium term." However, there have also been surprising discoveries, such as snakes over twenty years old, which, according to the Cofib veterinarian, is causing experts to seriously question "whether they really arrived in the Pitiusas hidden in olive trees or on logs that crossed the sea."



IB3 Notícies

La presència de serps empitjora

The presence of snakes is getting worse

22/08/2020



The presence of snakes on the island of Ibiza, far from being solved, seems to be getting worse every year. This year, the same number of reptiles have already been captured as last year and there are still a couple of months, at least, until they hibernate again. In addition, it seems that the presence is spreading throughout the island and also affects individuals.

The Delegation of the Balearic Hunting Federation has signed an agreement with the island's Council to try to prevent the increase in this species, but this year things, far from improving, are getting worse.

Almost a thousand in 150 traps and, sometimes, very curious images have been found, such as a snake that laid eggs in a trap or specimens of a very considerable size. And to this we must add the expansion. Sant Carles, Sant Antoni and Sant Josep are areas where the presence of these ophidians has been detected and, on many occasions, on private properties. The capture campaign will be active until October or until temperatures drop.

VICE

A Plague on Ibiza

By Ellie Shechet August 24, 2020, 8:00am



The light was just beginning to turn in Ibiza Town, smudging the boxy, cluttered street into something slightly more inviting. It was January, and a line of taxis waited patiently for no one. The clubs were closed, the superyachts were gone, and DJ Paris Hilton was 6,000 miles away, posting an Instagram story of her dog Diamond Baby in a carpeted Las Vegas hotel room. Shutters in the old town of Dalt Vila were drawn, signaling empty rentals reserved for tourists. Palm trees swayed quietly at the port.

Elba Montes was waiting for me in a small white Volkswagen SUV. “Should we go to my house?” she asked. At the time, Montes was an environmental project manager with the local government in Ibiza, and a biodiversity and evolutionary biology PhD student at the University of Valencia. She had a good-humored expression, and brown hair streaked with auburn dye. “There are snakes in the freezer.”

For many people living elsewhere, the word “Ibiza” might conjure images of Leonardo DiCaprio hovering above the sea on a flyboard, or British tourists falling off balconies to their deaths, or a 2018 Netflix comedy about a publicist who falls in love with a DJ. Snakes aren't really part of the brand. But since arriving unexpectedly in the early 2000s, then fanning out like fingers gently stretching out from the island's northeast flank, herpetofauna have become a local preoccupation.

When we met, Montes was one of the primary local researchers studying the *Hemorrhois hippocrepis*, or horseshoe whip snake, a medium-sized, fairly understated-looking snake with large round eyes and a horseshoe-like pattern on its head. Since the first sighting in 2003, three snake species have been introduced to Ibiza and Formentera, known as the Pityusic Islands, but the horseshoe whip snake, Montes's subject, is now the most common in Ibiza. It's native to southern Spain and other areas in the region, but considered invasive in Ibiza, which sits about 60 miles off the mainland coast in the southwest corner of the Balearic archipelago. Although the snakes aren't poisonous to humans, Montes's research suggests that they are endangering the survival of an iconic local lizard.

Though the term “invasive species” can imply some measure of intent, snakes did not simply decide to come to Ibiza, much like wasps did not ship themselves to Hawaii inside of Christmas trees, or how Canadian beavers did not paddle all the way down to Tierra del Fuego determined to plow through an old-growth forest. People brought them. The earliest government documentation of a snake in Ibiza was in the village of Sant Josep de sa Talaia, after a man sprayed water inside the trunk of an olive tree imported from Córdoba, Spain, and inadvertently caused the animal to flee.

“There was a story on the island that snakes will never survive because of the soil,” said Bernd Brosius, a retired landscaping business owner. Pliny the Elder declared something to this effect in the year 77, and the island itself, Eivissa, is believed to have been named after the ancient god Bes, who was sometimes depicted with a knife in one hand and a snake in the other (or occasionally strangling snakes with both his hands). Until 2003, no wild snakes of any species had been documented on the Pityusic islands, aside from a dwarf viper that disappeared when humans first arrived 4,000 years ago. This ominous historical context has not gone unremarked upon in scientific papers, newspaper articles and a letter from local activists scolding government officials.

“This was a story which I always believed,” Brosius continued. (Brosius was not entirely alone; a landscape architect told me that a friend occasionally takes his pet boa on trips off the island for preventative health reasons.) “And so I said oh, not a big problem, they're going to die off. But all of a sudden I found they became more and more and more.”

Local reporting on the topic has been extensive—the Spanish newspaper El Mundo dubbed Ibiza and Formentera an “Eden for snakes”; another 2018 article featured a dead snake, several meters long, hanging off the claw of a bulldozer with its entrails hanging out. There's even a Facebook group for English-speaking Ibiza residents called “Snakes In Ibiza No Thank You” dedicated to snake news, trapping methods, and the occasional photograph, including one of a small boy clutching a large snake vertically in one hand, his eyes wide with wonder.

We drove into the pink afternoon towards Montes's house in the middle of the island, past billboards squealing FULL MOON AMNESIA and DANCE OR DIE USHUAÏA and something about DAVID GUETTA. Montes lived in an old flour mill attached to a shuttered vintage store, a dusty white structure rising abruptly against the sky on the side of the road, in an area where snakes are thought to be abundant (snakes are shy, and hard to find). Two gigantic headed palm trees stood stubbornly in the front and back of the house, reduced to eerie monuments of themselves.

Montes's three-legged cat flung past us as she showed me around her home, a whitewashed space with high ceilings that she shared with her landlord. She considers herself lucky to be able to afford her rent, she told me later, which, she said, is “really really really cheap compared to everything here.” She wasn't planning to stay in Ibiza for much longer.

Until very recently, the Balearic Islands were a major tourist destination in Spain, which is the second-most visited country in the world. At the time of my visit, just before the pandemic hit, Ibiza was home to the world's most expensive restaurant, as well as a club called Amnesia whose owner was arrested in 2016 during a money laundering raid, and a gated community for millionaires complete with a “nondenominational temple” that was built on a foundation of crushed crystals. Real estate prices have increased significantly in recent decades, a real estate agent in the luxury Mediterranean market told me in March, and “quite a few northern Europeans have chosen Ibiza as a place to live, to bring their kids, and have a healthier, more relaxed life, rather than living in the insanity of London or Paris or wherever.”

Meanwhile, according to a 2017 report on Ibiza's socio-environmental carrying capacity, the income of an average worker has barely covered basic housing costs. In past years, some seasonal workers have had to rent balconies. The island's economy is built around hospitality, but for workers, “it's very hard here, the life in Ibiza,” said Milagros Carreño, a local spokesperson for Las Kellys, a national labor group representing housekeepers in the tourism sector. Carreño takes Valium and anti-inflammatories every day to keep up with the workload, she said, which, when we spoke through a translator in early July, she expected to increase with coronavirus-related precautions. “Our bodies are destroyed by this work.”

The earth itself is always churning; the universe expands, neutron stars collide, Selling Sunset's Chrishell Stause transitions to listings in the Valley.

Over the years, opulent gardens have bloomed in Ibiza. But because plants are living habitats, they tend to collect other creatures. When they are moved, guests often come along. A knobby old olive tree with snakes in it is an unusually biblical demonstration of this rule—“They have holes, crevices, different areas where animals can hide inside,” said Samuel Pinya, a biologist at the University of the Balearic Islands.

Researchers and government officials in the Balearic Islands believe that these olive trees—usually uprooted from their groves on the mainland and shipped as landscaping products—have likely been the main pathway for the snakes' entry (though there's often more than one way in, and other imports, like bales of hay, could also be contributing). The snakes, which have been seen and photographed on and around the trees, share a habitat with the region of Spain where many of the olive trees come from, and their appearance correlates with what researchers have called the “exponential” growth in the trees' importation to the Balearic Islands. According to a 2019 report, ornamental olive trees have also introduced the common yellow scorpion to Ibiza, as well as *Macrothele calpeiana*, a very large European spider.

Gardening is not exclusive to the ultra-wealthy, and neither is tourism in Ibiza, which historically has been more closely associated with 20-somethings in a K-hole trawling for “hot birds.” But these particular ornamental trees—occasionally over a thousand years old—can sell for anywhere from several hundred to around 50,000 euros each, and are mostly bought by second home-owners, hotel complexes, developers, and other high-income buyers.

“If we hadn't these capricious rich people who wanted the Mediterranean garden because it's fashion, then we wouldn't have the snakes,” Montes said bluntly.

Similar to places like Hawaii and the Galapagos Islands, economic development, tourism and tourism-adjacent urban sprawl in the archipelago has been associated with an assortment of environmental pressures beyond the snakes, from water supply issues to “a continuous discharge of sewage” into the sea. “The economic system is embedded within the natural system,” said Ivan Murray, a geography lecturer at the university who co-authored the carrying capacity report.

At her house, Montes showed me a photo of a blue-ish Ibiza wall lizard intact inside the open stomach of a snake, surrounded by an unusually large layer of fat. She also took out the snakes, frozen in permanent figure-eight patterns. She had caught and killed them in her yard, and was keeping them for future study. They looked like plastic toys, slightly mangled. One was large, with dried orange-red blood on its underside and its jaw was open in an unnatural position. Another was tiny, curled delicately into itself like a loose bowline knot.

“If they are here and they are bad for the island, it's because of us, not because of them,” she said, the last light fading through the glass doors as we sat down at her kitchen table.

Montes, who is originally from Galicia, Spain, started working with the snakes in Ibiza as a government employee. In 2014, she and a coworker at the Consell Insular D'Eivissa, the local island government, decided to do a pilot project testing different kinds of snake traps. A regional government employee had sounded the alarm on the ecological threat the snakes posed when they were first discovered over a decade earlier, but little had been done. In the process, she met a professor of zoology at the University of Granada, who would become her PhD advisor.

Only a small percentage of species relocated by humans end up having impacts that are considered harmful towards the health, economy or ecosystem of their new home, earning them the “invasive” category. But the total number being pinballed around the world continues to grow, and on islands in particular, where species have evolved in relatively isolated, sometimes fantastic ways, invasive species are considered a serious threat to biodiversity. Islands often lack entire groups of fauna, such as (in Ibiza's case) snakes, making whoever evolved there potentially more vulnerable to certain newcomers. Islands also import a lot of things, leading to higher rates of species introductions. In an escalating extinction crisis, the stakes are high.

In 2016, Montes co-authored a study led by PhD student Arlo Hinckley that found that a substantial percentage of the horseshoe whip snake's diet was composed of the speckled Ibiza wall lizard, or *Podarcis pityusensis*. The lizards are part of the story the island tells itself and its visitors, their friendly outline reproduced on bumper stickers, tourist tchotchkes, wooden gates and lawn ornaments. They're the lone native reptile in Ibiza and Formentera, and as an endemic species, the sub-archipelago is their only natural range; they're also seed dispersers, playing an important role in the island's ecosystem. On islets surrounding Ibiza, where they have evolved in tiny isolated populations, they appear in spectacular, gemlike shades of blue and other colors.

“The lizards have been in danger because of the cats, the dogs, kestrels,” Montes said. “But this is new.” A warning lurked nearby: a few thousand years ago, an introduced snake is believed to have contributed to the extinction of a similar lizard, the Lilford's wall lizard, from the main islands of Menorca and Mallorca.

At the time of my visit, Montes was readying a chapter of her dissertation for submission to a journal, co-authored by her advisor Juan Pleguezuelos, Brahim Chergui, an assistant professor of mathematics at the University of Hassan II Casablanca in Morocco, and Fred Kraus, an evolutionary biologist at the University of Michigan. Snakes are hard to study because they're hard to find; researchers often have to rely on rough indicators like traps and reported sightings. But Montes performed a census in 2018 suggesting that the island's mascot is rapidly disappearing, and that the horseshoe whip snakes are responsible: in areas determined to have high horseshoe whip snake densities, they found no lizards. She also found no lizards on an offshore islet previously observed to have them, shortly after a snake was captured swimming its way.

The study hasn't completed peer review or been accepted for publication yet, and in past years the snake threat hasn't been settled among researchers. “There are some people saying there is an impact, others that are saying there is not an impact,” summarized Samuel Pinya. “My opinion is that there is an impact, but up to date we cannot quantify that impact.”

But Montes is firm about the implications of her findings. “If the snakes spread throughout the island, then the lizard will be gone from the island,” she predicted.

Something similar happened in Guam, where Montes visited in 2017 to learn about the snake control mechanisms implemented there. Guam is often cited as a sort of worst-case scenario in the field of invasion biology. In the decades after poisonous brown tree snakes arrived, probably in U.S. military cargo, six lizard species vanished, and, famously, most of the island's native birds. In their place, the forests are filled with spiderwebs.

Though she does store their dead mangled bodies in her freezer, Montes loves horseshoe whip snakes. Her face brightened visibly when she talked about them. She even hand-painted an image of one with soulful green-flecked eyes for a PowerPoint presentation on their reproductive ecology. We watched a video of two males fighting elegantly for dominance, swiveling their heads on top of each other's without touching until one declared victory, like a mimed thumb war.

“I hate to kill them,” she muttered. Once a snake is caught, the protocol is to knock them unconscious against a hard surface and then smash them in the head with a rock or hammer.

She often dreams of snakes, she confided later. Sometimes, in the dreams, they turn into a viper and kill her, but recently they've been gentler, transforming into impossible technicolor versions of themselves.

Some years following the snakes' first appearance, many documented sightings were clustered near a landscaping company called—appropriately enough—Noah's Garden. There is no single party responsible for the snakes' arrival and subsequent success on the island, and snakes have been found in multiple garden centers. But the former owner Bernd Brosius,

now retired, had helped out with the snake control project Montes worked on, and she suggested I get in touch.

“I brought in containers and containers and containers of these trees to the island,” Brosius recalled in a phone call. Researchers and nursery owners associate the ornamental olive tree trade with faster rates of tree turnover as olive oil production intensified. The trees are often uprooted and moved in the winter, when their growth has slowed—“otherwise the tree suffers,” he explained. But he hadn't realized, he said, that inside the dormant trees were hibernating snakes.

“In the last years I told the guys, listen boys, I don't want to bring in any more fucking snakes, please put hot water in all the olive trees so the snakes come out,” he said. (Washing the trees is one technique some sellers use before sending them to more strictly regulated destinations.)

When I visited Noah's Garden, I spent some time gawking at one of Brosius's olive trees, which was so large and twisted and overwhelmingly beautiful that it looked like it ought to be accompanied by a centaur. He told me that it was his male customers who really pushed to buy them: “This, for men, means power.”

The new old olive trees are common in Ibiza—there are properties on the island with dozens of them—though some clearly homegrown trees are also dotted around the island, in one case looming like elderly grandfathers in angry, splintered clusters over an ancient grave site. I spotted them at garden centers, in front of a clothing store near the port in Ibiza Town, leaning over the edge of a pristine Mediterranean garden, standing in the elegant courtyard of a renowned architectural firm on the island.

A few were visibly sick, I noticed, with hacked-off limbs or browning leaves, throwing another wrench in the impression they were clearly meant to give: that things had always been like this, and maybe always would be.

On a cool rainy day I met Eric Montcerisier, the landscape architect whose friend takes his boa off the island, for coffee in a trendy hotel lobby near the port in town. He had thinning gray hair, a black scarf tied precisely around his neck, and a relaxed, sun-drenched face. A small T. rex fossil reconstruction roared over the couch area, and to our right, a large glass refrigerator lit with clubby red lighting contained a pig carcass hanging on a meat hook.

Ibiza, Montcerisier told me dreamily, has a “special earth energy,” some kind of magnetic quality, a belief also shared by travel blogs aimed at wellness tourists. I hadn't personally experienced this magnetism, though I was momentarily trapped in Mallorca when my destination airport in Alicante burst into flames, which was weird. Mostly I just had insomnia. I kept finding dying bugs rolling around on their backs on the floor near my bed, which felt thematically a little too on-the-nose.

Montcerisier observed that Ibiza is “getting a little bit more glamour, a little bit more like Saint Tropez.” Over the years, many people came to invest in large homes, he said, and they want high quality landscapes, though he tries to steer his clients away from thirsty tropical plants and toward native species. With increasing volumes of plant imports, Montcerisier explained,

came others. “We imported the beetle, we imported the snakes, we imported the bacteria.”

“When they arrive, we are already late.”

Globally, the horticultural industry is hugely varied, ranging from beloved local shops running on thin margins and native plant nurseries that work on ecological restoration projects to breeders, seed companies, giant multinational corporations and online marketplaces. But its impacts can be enormous—rhododendrons planted at a resort, for example, are believed to have introduced an oomycete called *Phytophthora ramorum*, which has killed millions of oak and tanoak trees on the West Coast, to the Big Sur area.

“Ultimately it comes down to, well maybe we shouldn't be moving plants at all, which is probably a non-starter,” remarked Dave Rizzo, chair of the department of plant pathology at UC Davis.

The bacteria mentioned by Montcerisier—a pathogen called *Xylella fastidiosa* that's considered invasive—has killed millions of olive trees in Italy, and is also in the Balearic Islands, choking off the trees' water supply and turning their silvery-green leaves to a crunchy rust. The beetle, called the red palm weevil, eats the hearts of (also imported) *Phoenix canariensis* palm trees so vigorously that you can sometimes hear them chewing.

The palm looks perfect, Montcerisier recalled. “And then from one day to another, black. Ciao.”

There is no harmonious moment in the past when life was static, or safe. Nature, as the ecologist Steward Pickett defined it in 1992, is flux. Humans have been shifting themselves and other species around the globe for millennia, driving extinctions left and right, and populations have been migrating and floating to new places for longer. The earth itself is always churning; the universe expands, neutron stars collide, Selling Sunset's Chrishell Stause transitions to listings in the Valley. The Balearic Islands were once connected to the rest of the Iberian peninsula, separating from it, and each other, at the end of the Messinian period.

However, as Pickett and Richard Ostfeld warned a few years later, “the flux in the natural world has severe limits.”

In 1560, as Alfred Crosby wrote in The Columbian Exchange, the olive tree was first introduced into what had recently become Lima, Peru by a man named Antonio de Rivera. He brought seedlings back from Spain, guarding them with slaves, at about the same time that the Inca people of the region were being killed in devastating numbers by Spanish diseases. Today the trees, known as Parque El Olivar, are “practically drowning” thanks to 25 acres of imported crabgrass installed around the grove.

During the period of European colonial expansion, white settlers inflicted themselves and their menageries on new places all over the world, with vast ecological legacies still chomping around today. In New Zealand, “invasive species are just another form of colonization,” said Amanda Black, a research scientist and co-founder of the Māori Biosecurity Network, or Te Tira Whakamātaki. With industrialization, globalization and the expansion of consumer

capitalism, the pace and spread of species translocations kept ratcheting up all over the world, and Europe increasingly got a taste of its own medicine.

Today, research has homed in on the human activities behind these movements. The plant trade plays a role, as does ballast water on ships, the exotic pet trade, tourism, cargo containers, the U.S. military, even the billions of tons of plastics in the ocean now apparently serving as highly durable rafts. People have shuffled other creatures around for lots of reasons—including as ill-advised biocontrol agents for other invasive species—but researchers have found that the number of introduced species often correlates with economic growth (although invasive species are also studied more in wealthy countries).

Ultimately, governing bodies are responsible for imposing regulations, and Montes's latest paper includes suggestions, like quarantines, to prevent olive trees from bringing snakes into the Balearic Islands—which still hasn't been done, frustrating Montes and local environmental activists, who have pushed hard for regulatory changes. Balearic government officials have argued that European trade laws make it difficult to regulate certain importations within the bloc.

The day I met him, Victor Colomar seemed irritated. He's a regional government employee in charge of managing invasive species across the Balearic Islands, which is, he told me several times, a really difficult job. Though it's been achieved on islands, it is often impossible to get rid of a species by the time they have become a problem.

“We are always late,” he said at a coffee shop in Ibiza Town, speaking through my translator, a shy vegan teenager with long talon nails and a septum piercing. “Because when they arrive, we are already late.”

Colomar is a veterinarian by training, but his job mostly involves coordinating strategies for eliminating animals across the Balearic Islands, including charismatic or culturally valued species. A recent attempt to remove the goats that were eroding and destroying the endemic vegetation on es Vedra—a famous islet off Ibiza's coast plagued by persistent rumors of UFO sightings—was placed on pause after a lawsuit, he told me. The goat population has begun to recover, and Colomar said his team will likely have to shoot more goats than originally anticipated to finish the job.

He doesn't have a problem with goats, or snakes, or cats, he said, as we drove up one of the island's main roadways, on our way to look at snake traps. “I have a problem with irresponsible people.” He became a bit heated, letting out a “pfft” noise that in Spain seems to mean everything is so stupid, no? Oh well. He mentioned, with disdain, that people in Madrid began buying racoons as pets after watching Pocahontas. Now they're everywhere, and some of them have rabies.

“She's always saying we are not doing all we should do to fight against the snakes in Ibiza,” Ivan Ramos, the head of the Species Protection Service for the Balearic government, said of Montes. “But we don't agree with her, because most of our money is used to fight against invasive species and especially against the snakes in Ibiza.” Government traps have captured 2,700 snakes in Ibiza since 2016; using funds from the Balearic Islands' “Sustainable Tourism Tax,” they're increasing the number of snake traps and personnel on the island in an effort to

better control the population. This year, Ramos told me, they hope to hire a team of lawyers to develop laws regulating the olive tree trade with the peninsula.

No one really expects to stop the transport of species entirely, to be clear. The idea is generally to slow the pace.

“Look at what's going on with COVID testing,” explained Dave Rizzo. “You've got a shipment of a million plants, you can't test every single one, inevitably something is going to go through.”

“We can't go back to the prehistoric era. We exist in the current world.”

We arrived at our destination, a flat clearing backed by forest that looked out past shrubland onto low green hills leading out to the sea. Scores of ornamental olive trees had been planted at an enormous villa rental nearby, he said, which he believes initiated the snake population in this area. Several meters away from one of the simple wooden snake traps was a low stone wall. The snakes and lizards share a habitat, and inside this wall, he said, both were hibernating.

“Formerly, all of these forests were transformed into farmlands, because people were very hungry,” Colomar said. A degree of human disturbance has favored the Ibiza wall lizards—they like the open spaces and rock walls that crisscross the island's landscape. But as the island abandoned agriculture, he said, the forests began to recover ground.

Montes's research suggests that other factors, including forest regrowth, can't explain the dramatic changes she observed. Colomar agrees with Montes that the snakes—particularly the horseshoe whip snakes—threaten the Ibiza wall lizards, and he believes that without them, the lizard populations would cling on. But the lizards, Colomar emphasized, have been under additional pressures, like cats, pesticides, and land use change.

When I was back in the U.S., I asked Katharine Suding, a plant community ecologist at the University of Colorado at Boulder, how introduced species tend to fit into this constellation of human impacts.

“Restoration ecology often thinks about these threats as simultaneous,” she replied. “And that if the system is impacted by a lot of human disturbances, that system is going to be much more susceptible to exotic species coming in, which then will change it even more, and you'll start kind of tumbling down this hill.”

If Montes is right, the snakes in Ibiza could end up being a stark example of what we lose when a blender is carelessly taken to the living planet. But sometimes the picture isn't so clear. In the Balearic Islands, for example, where most land vertebrates have been introduced, she noted that the line marking an animal as “native” can, in some cases, be hard to distinguish. Colomar mentioned a subspecies of genet, a spotted cat-like mammal, that was introduced there a long time ago and has since integrated into the ecosystem.

“I don't have to kill genes,” he said. “Nature has already changed, I can't do anything. We can't go back to the prehistoric era. We exist in the current world.”

Species translocations are a complex and context-dependent process, and the categories that frame the field of invasion science are often contentious. Some have argued, controversially, that a species' origin shouldn't matter, or that invasive species are more benign than advertised, or that the field itself shouldn't exist, and some scientists have responded with heated declarations of “invasive species denialism.”

Folded in are ongoing calls of xenophobia, as critics have compared conservation efforts to keep nonhumans in their imagined-to-be-natural place with racist and nationalist anxieties around human migration. As Smithsonian has reported, terms like “alien” and “invasion” certainly are the same ones that Trump and other white nationalists use to demonize immigrants and refugees, and particularly in a time of rising ecofascism—and regular fascism—it can be hard to hear them as neutral, regardless of scientists' intent. Of course, geopolitical borders often don't even sync up with nonhuman communities. The snakes causing problems in Ibiza are from Spain, and the olive trees are a commodified expression of Balearic heritage.

Complications are everywhere. As scientists regularly note, the “negative” impacts that generally define a species as invasive are subjective, to varying degrees (and not everyone uses impacts to define what's “invasive”). One team of researchers recently went so far as to suggest that Pablo Escobar's “cocaine hippos” are stepping into ecosystem roles lost during the late Pleistocene. Climate change adds its own twists, further complicating origin labels (or, some have argued, dismantling the native/non-native binary entirely).

Some animals who are threatened by invasive species in one place might even face eradication attempts in another. The Ibiza wall lizards, though technically endemic to the Pityusic Islands, are also considered invasive on the Basque islet of San Juan de Gaztelugatxe, a former Game of Thrones set. What then?

It's easy to fall down a whirlpool here. But for many, like Julissa Rojas-Sandoval, a researcher at the University of Connecticut who studies invasive plants in the Caribbean, inaction is unacceptable. “If the species is impacting native species or unique species that you have in the area, you need to do something,” she told me. “The point is that we are the ones who are moving these species.”

Back at the trapping site, we returned to Colomar's car and drove down the hill. I strained to glimpse the villa's olive trees through a surrounding fence, and asked if he'd contacted the owners.

“They haven't done anything illegal. What can I say? 'I don't like what you have done'?” Colomar laughed. “They're not the only ones.”

Since I was in Ibiza, a lot has changed.

Martin Cristóbal Torres, a gardener, belongs to the anarcho-syndicalist union CGT, which he told me has helped feed dozens of struggling families. In Ibiza, as everywhere, the pandemic is exacerbating existing inequities and injustices. In general, “it takes a lot more work to convince someone to hire a Senegalese person than a Spanish person,” said Ndiaga Sarr, president of the Senegalese Association of Ibiza and Formentera, speaking in French. Now,

he said, though a limited tourism reopening has begun, jobs are even more scarce.

Celebrities and the ultra-rich, the BBC reported, have been enjoying the quiet. A recent report by a real estate company specializing in luxury properties noted that inquiries have increased since the onset of the pandemic.

The coronavirus, which some researchers have been comparing to an invasive species, has demonstrated the extent to which humans are suspended within ecological systems, and, as Ferris Jabr wrote in the New York Times Magazine, the extent to which humans have unilaterally re-shaped and harmed those systems.

“The chytrid fungus that attacks amphibians worldwide is the main cause of global amphibian decline,” Franz Essl, an ecologist at the University of Vienna, told me. “It's also a pandemic, but a pandemic of amphibians, caused by a pathogen that has been transported all over the world by humans.”

Human circumstances on the island may have shifted considerably, but the snakes seem to be doing more or less the same. They've now been detected essentially throughout Ibiza, indicating to Montes, who recently moved to Valencia, that the lizards' days may be numbered. A homeowner recently sent the new owner of Noah's Garden a video of a big snake on her patio. There were others, too—“they were mating in the sun,” he reported glumly.

One day soon before leaving the island, I marched up a quiet country road past a cluster of tastefully restored fincas. I'd been there for over a week, but I still hadn't found my subjects in the wild. Surrounded by a curtain of golden-green brush, I scanned pointlessly for snakes, lizards, anything alive, although I knew they were hibernating.

In the end, it felt right that I never actually saw either. People are always in the way. Some of us more than others.

Ellie Shechet

Selected Work

About Me



Hi! I'm a writer, editor, and gardener based in New Orleans. My writing has appeared in publications including The New York Times, Popular Science, The New Republic, VICE Magazine, and Scholastic's Science World.

I work as a horticulturist at New Orleans City Park, where I propagate Gulf Coast native plants for community plant sales. I was a staff editor at Brooklyn Botanic Garden from 2022-2024, where I oversaw web editorial content and contributed to exhibitions and interpretive signage. I received a master's degree in science journalism at Columbia University in 2020, and before that I was a senior writer at Jezebel, where I wrote about politics, pop culture, and fireflies.

You can reach me at e.shechet@gmail.com. You can read my newsletter here.

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Polimorfisme en les sargantanes de l'illa de Formentera (*Podarcis pityusensis formenterae*)

Dra. **Antònia Mª CIRER COSTA**
Adreça: Passatge Metge V. Riera Ferrer, núm 8, 3r, Eivissa. Correu electrònic: acirer@gmail.com

RESUM

Es revisa un gran nombre de fotografies obtingudes des dels anys 80 del segle XX fins l'actualitat i les descripcions de la coloració corporal de les diverses col·leccions consultades de *Podarcis pityusensis* procedents de l'illa de Formentera. Es posa de manifest l'ampla diversitat de coloracions, amb un gran polimorfisme intra-poblacional i inter-poblacional existent a l'illa de Formentera. Es constata la variació gradual (clina) nord-sud observada, especialment a la punta des Trucadors, paral·lela als canvis de substrat i de recobriment vegetal. També es constata que no totes les coloracions pròpies de *Podarcis pityusensis formenterae* són presents en tots els indrets de l'illa, sinó que a cada zona existeixen unes coloracions pròpies, i sempre amb una elevada riquesa intra-poblacional.
Comparant el material obtingut en diferents èpoques es constata que aquestes diferències geogràfiques en la coloració corporal de les sargantanes es mantenen al llarg del temps.
Els juvenils presenten sempre la mateixa coloració a tota l'illa.

PARAULES CLAU: Biodiversitat; coloració; adaptació; evolució; variació geogràfica.

ABSTRACT

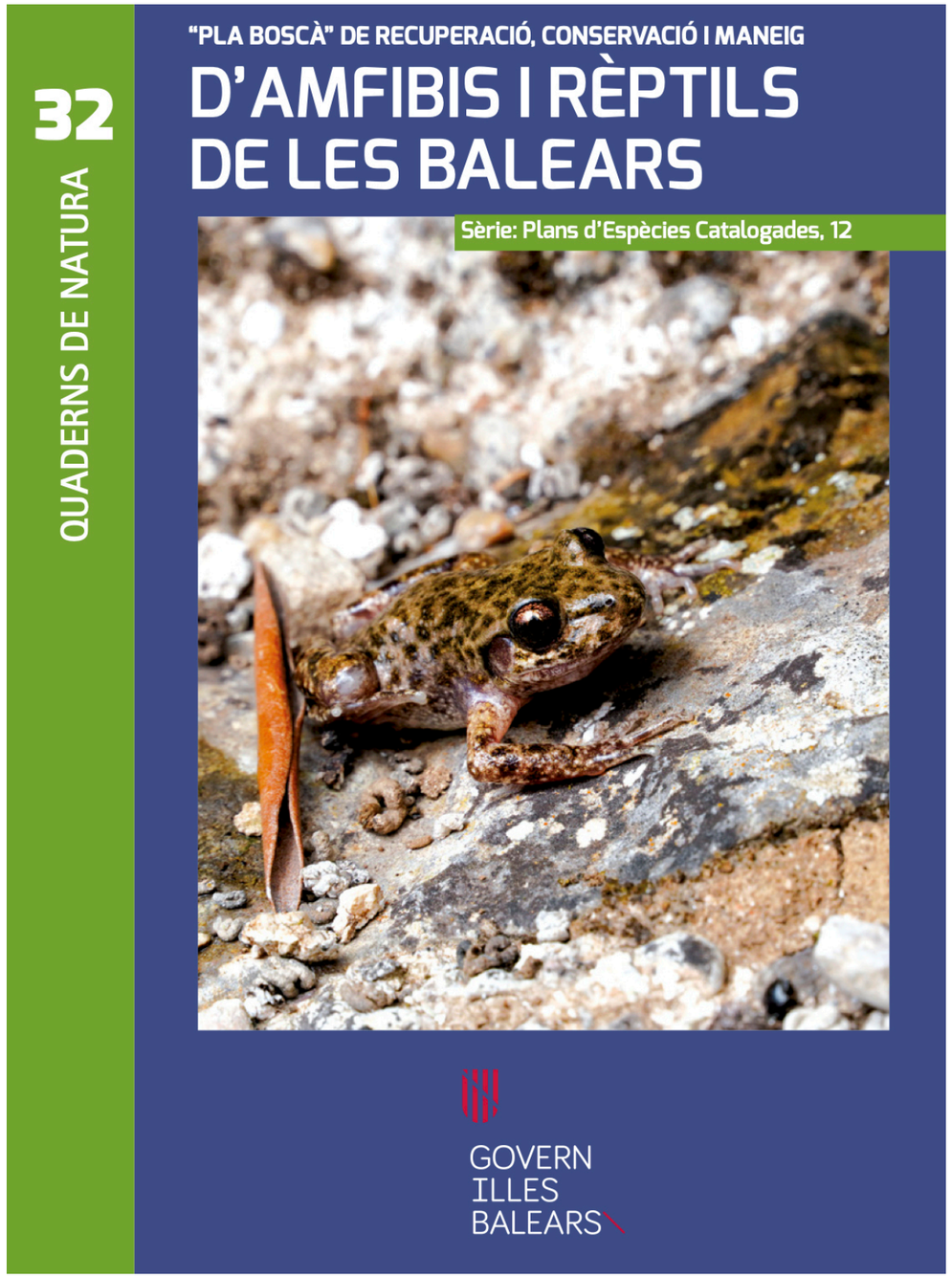
We review the enormous photographic material obtained from the 80's of the 20th century to the present and the descriptions of body colouration of the many consulted collections of *Podarcis pityusensis* from the island of Formentera. The wide variety of colourations is evident, with a large intra-population and inter-population polymorphism existing on the island of Formentera. A north-south gradual change is observed, especially at the Punta des Trucadors, parallel to the changes in the substrate and the vegetation. It is also noted that not all the colors of *Podarcis pityusensis formenterae* are present in all parts of the island, but that each region has its own colourations, and always with a high intra-population richness.
Comparing the material obtained at different periods, it can be seen that the geographic differences in lizard body colouration persist over time.
The offspring always have the same colouration throughout the island.

KEYWORDS: Biodiversity; colouration; adaptation; evolution; geographic variation.

RESUMEN

Se revisa un gran número de fotografías obtenidas desde los años 80 del siglo XX hasta la actualidad y las descripciones de la coloración corporal de las múltiples colecciones consultadas de *Podarcis pityusensis* procedentes de la isla de Formentera. Se pone de manifiesto la amplia diversidad de coloraciones, con un gran polimorfismo intrapoblacional e interpoblacional existente en la isla de Formentera. Se constata la variación gradual (clina) norte-sur que se observa, especialmente en punta des Trucadors, paralela a los cambios de substrato y recubrimiento vegetal. También se constata que no todas las coloraciones propias de *Podarcis pityusensis formenterae* se encuentran en todos los lugares de la isla, sino que en cada zona existen unas coloraciones propias, manteniendo siempre una elevada diversidad intrapoblacional.
Comparando el material obtenido en distintas épocas se constata que estas diferencias geográficas en la coloración corporal de las lagartijas se han mantenido a lo largo del tiempo.
Mientras que los juveniles presentan la misma coloración en toda la isla.

PALABRAS CLAVE: Biodiversidad; coloración; adaptación; evolución; variación geográfica.



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Eivissa i Formentera

La 'sargantana' de la reserva de es Vedrà, en "excelente" estado de conservación

The lizards of the es Vedrà reserve are in an "excellent" state of conservation

Por **Vicent Ribas** — 27 diciembre 2020



En la imagen, dos 'sargantanes'. Foto: Nathan Dappen

EFE / The annual counting campaign for the Pityusic lizard (*Podarcis pityusensis*) in the Es Vedrà, Es Vedranell and Els Illots de Ponent Nature Reserve concludes that the populations inhabiting the protected Ibizan islets are in an "excellent" state of conservation.

The Department of Animal Biology at the University of Salamanca, formed by Ana Pérez Cembranos and Valentín Pérez Mellado, conducted the study, which analyzed the population density of each of the islets, the Balearic Government reported in a statement this Sunday.

The researchers highlighted the results obtained on the islet of Es Vaixell, where the lizard population was discovered in 2010 and where the living conditions are "extreme."

In this area, population numbers exceed 10,000 individuals per hectare, a notable increase compared to 2019, when the figure was around 7,950 individuals.

It also highlights the excellent condition of the na Gorra and s'Espartar populations, and the stability of the l'Illa des Bosc population.

On the islet of Es Vedrà, it was not possible to collect data this year due to weather conditions. However, the trend is upward, with 1,280 individuals per hectare recorded in 2019, according to the Government.

For its part, Es Vedranell maintains high densities, close to 1,000 individuals per hectare, and 2020 saw the highest numbers in recent years, indicating an optimal conservation status for the species.

The results on the remaining islets have shown a stable population on l'Illa des Bosc (400 individuals/ha) and Conillera (600 individuals/ha), and a slight decrease on na Plana (600 individuals/ha) compared to last year (890 individuals/ha).

The decrease has been most notable on s'Espartar (760 individuals/ha) compared to 2019 (1,020 individuals/ha), possibly due to lower food availability, the study indicates.

On the islet of Escull Vermell, the numbers are "exceptional," with 3,000 individuals/ha, compared to around 2,370 individuals/ha in 2019. On S'Espardell de s'Espartar, the population density is trending upward, with approximately 760 individuals per hectare.

On the islet of Na Bosc, approximately 1,900 individuals per hectare were detected this year, exceeding previous years. On the islet of Na Gorra, approximately 1,050 individuals per hectare were counted, a decrease compared to last year's 1,540 individuals, explained by adverse weather conditions.

For their study, the researchers visited the sites and conducted line transects of the individuals during peak activity times. This methodology allows for reliable estimates of population density and comparisons with previous years.

Since the Nature Reserve officials emphasize that these figures not only indicate the species' good health, but also that the protected natural area is in a good state of conservation.

DIARIO de IBIZA

Leva contra las serpientes

Snake Relief

SOS Salvem sa Sargantana Pitiusa is seeking volunteers to monitor more than 2,000 traps to combat the invasive snake plague.



Image of snakes captured in Ibiza by the Balearic Hunting Federation's traps. / D. I.

Josep Àngel Costa | **Ibiza**

11 ENE 2021 21:41

The snake infestation that has spread across Ibiza in recent years has prompted the creation of a platform that seeks to eradicate this invasive species, particularly given the threat it poses to the native lizard, *Podarcis pityusensis*. Under the slogan "Save the Pityusic Lizard," a campaign is being launched to mobilize volunteers willing to collaborate in maintaining a cordon of traps around the entire island. The goal is to have the entire system ready for spring, when the snakes' hibernation has ended and their breeding season begins.

The initiative is being promoted by the organizations Amics de la Terra, GEN-GOB Eivissa, Institut d'Estudis Eivissa, and Prou! Pitiüses en Acció. Furthermore, according to Antònia Cirer, a representative of the Institut d'Estudis Eivissa, the initiative is open to the involvement of neighborhood associations or farmers who want to join the cause, in addition to seeking coordination with groups that have already mobilized to capture snakes, such as the Balearic Hunting Federation.

Political involvement

Cirer, who holds a PhD in Biological Sciences and has conducted various studies on the Pityusic lizard, was one of the driving forces behind the snake eradication platform, which was launched in mid-September 2019. "At the time, we were seeking political action and received very positive support from the town councils and the regional government," she recalls. "It's time to move on to fieldwork."

"The snakes are currently hibernating, and we'll try to ensure that when they begin to wake up in March, they find a welcoming committee," Cirer jokes. Once the SOS Save the Pityusic Lizard campaign has begun to spread, interested parties can join through participating organizations. Her intention is for the working groups to cover the monitoring and maintenance of a cordon of mousetraps, which, to be effective, would require more than 2,000 units.

Maintaining the bait

The volunteers' primary task would be to ensure that each cage is kept in good condition, adding bait, and ensuring they are in a suitable location. The platform also seeks to coordinate with municipal technicians and the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), the agency responsible for combating this pest and collecting captured snakes.

"The authorities are responsible for providing the resources and financing the traps; we will provide the volunteers and the hours to make this campaign possible, because their technicians cannot monitor all the cages," she emphasizes. In fact, last December, the Catalan government approved allocating €853,000 to Cofib for snake control.

The infestation of horseshoe and ladder snakes, which initially affected the municipality of Santa Eulària and the Sant Llorenç area, has also spread to Sant Joan, Sant Miquel, Sant Mateu, and Corona, the biologist warns. "The western part is safe for now, but it is essential to create a cordon of traps across the island to prevent their further spread," she emphasizes.

This invasive species has arrived in Ibiza in recent years inside large ornamental olive trees brought from the mainland, where they hide and hibernate. Therefore, this platform will continue to urge the Balearic Government and the Consell to insist that the central government regulate the entry of these goods into the Balearic Islands with the goal of eradicating the snake infestation.

noudiari.es
Eivissa i Formentera

Asociaciones de Ibiza inician la campaña ‘SOS Salvem sa Sargantana Pitiüsa’ ante la amenaza de serpientes

Ibiza associations launch the 'SOS Salvem sa Sargantana Pitiüsa' campaign to combat the snake threat



Pityusic lizard. Photo: NC.

Por **Natalia Cárdenas** — 11 enero 2021

NouDiari / Amics de la Terra Eivissa, GEN-GOB, el Institut d’Estudis Eivissencs y Prou! Pitiüses en Acció! have decided to join forces to defend the Pityusic lizard from the threat of snakes.

These associations point out that several species of snakes have arrived in the Pityusic Islands since 2003. These predatory reptiles pose a threat to native species, as they feed on, among other species, baby birds, small mammals, and, above all, lizards.

The Pityusic wall lizard (*Podarcis pityusensis*), with all its populations and subspecies that inhabit the islands of Ibiza, Formentera, and the rest of the Pitiusan islets, is the most endangered species.

"In recent years, some traps have been set up to capture snakes in the most affected areas of Ibiza, but not only have they not been able to eradicate them, but they are spreading throughout the rest of the island," they explain in a joint statement.

"The resources used and the actions taken so far have been clearly insufficient," they insist. For this reason, the aforementioned associations have decided to launch the "SOS Salvem sa Sargantana Pitiüsa" campaign with a clear objective: to protect the Pityusic wall lizard from the threat of invasive snakes.

This campaign will have to give an exponential boost to all the work carried out so far. "We have received support from all of Ibiza's city councils and the Consell, but to carry it out, the most important thing we will need is the help of many volunteers. We will ask our members to participate, but we will also appeal to any other individual, entity, or association to participate," they specify.

They intend to create a network of volunteers throughout the island of Ibiza that will begin operating next spring 2021.

"We know it's a difficult challenge, but we also know that the appreciation we have for our native flora and fauna is what motivates us and gives us the strength to start this campaign, and we hope it will also encourage you to participate," they conclude.

noudiari.es
Eivissa i Formentera

‘SOS Salvem sa Sargantana Pitiüsa’ necesita voluntarios para erradicar las serpientes de Ibiza y Formentera

'SOS Salvem sa Sargantana Pitiüsa' needs volunteers to Eradicate snakes from Ibiza and Formentera



A snake eating a gecko in Sant Carles, Ibiza. Photo: Adri de los Santos Juan.

Por **Natalia Cárdenas** — 1 febrero 2021

NouDiari / Amics de la Terra Eivissa, GEN-GOB, el Institut d’Estudis Eivissencs y Prou! Pitiüses en Acció! decided to join forces to defend the native Pityusic lizard (*Podarcis pityusensis*) from the threat of snakes. Therefore, they created "SOS Salvem sa Sargantana Pitiüsa," a project for which they need the collaboration of volunteers.

These associations explain that for several years now, the lizards have been seriously threatened by several species of foreign snakes, "to the point of being at risk of extinction," they explain in a statement.

The goal is ambitious, as they describe it: "We don't want to control the snake invasion, but rather to eradicate them from the Pitiusan territory. Nor do we want to maintain a 'reasonable' and 'controllable' number, but rather for Ibiza and Formentera to once again be snake-free." Their hope is that the Pityusic Islands will remain a land of lizards instead of a land of snakes, and that "*Serpens pityusensis*" will never exist again.

For this immense task, they need the collaboration of everyone: associations, institutions, and, above all, volunteers.

Many individuals have contacted these associations after announcing the start of this campaign. "Now the time has come for the initial offer to become a firm commitment so that when the lizards and snakes emerge from their winter hibernation, they will find us well prepared," they explain.

For all these reasons, the associations that make up 'SOS Salvem sa Sargantana Pitiüsa' need the support of volunteers.

There are several ways to help with this task, including setting traps on your property, volunteering for trap maintenance, culling snakes, and raising mice.

Those interested in helping can contact this initiative at sargantanes.eivissa@gmail.com.

To sign the commitment to volunteer, click on this link and fill out the form.

IB3N Notícies

Campanya de captura de serps a Eivissa per salvar la sargantana autòctona

Snake trapping campaign in Ibiza to save the native lizard

Institut d'Estudis Eivissencs and GEN-GOB will be responsible for delivering thousands of traps to residents of rural areas.



Video not retrieved.

Redacció Eivissa

Different associations in Ibiza are preparing for a massive snake-catching campaign on the island. Organizations such as the Institut d'Estudis Eivissencs and GEN-GOB will be responsible for delivering thousands of traps to residents of rural areas so that they can be active between March and April, when the reptiles, the main threat to Ibizan lizards, stop hibernating.

PDF

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Autora:
Carlota Viada Sauleda (SEO/BirdLife)

Direcció:
Ivan Ramos (cap de Servei de Protecció d'Espècies)

Col·laboradors del Servei de Protecció d'Espècies:
Irene Garneria, Eva Moragues i Rafel Mas

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Original Article

Original Article

Collapse of the endemic lizard *Podarcis pityusensis* on the island of Ibiza mediated by an invasive snake

Elba Montes [a]*, Fred Kraus[b], Brahim Chergui [c], and Juan M. Pleguezuelos[d]

[a]Department of Zoology, Faculty of Biological Sciences, University of Valencia, c/Dr. Moliner, 50, Burjassot, E-46100 Valencia, Spain, [b]Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, MI 48109, USA[c]Laboratoire Ecologie, Systématique, Conservation de la Biodiversité, Faculté des Sciences de Tétouan, Université Abdelmalek Essaâdi, BP 2121 El M'Hannech, Tétouan, Morocco, and [d]Department of Zoology, Faculty of Sciences, Granada University, Granada E-18071, Spain

*Address correspondence to Elba Montes. E-mail: elbamontesv@gmail.com

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Abstract

The invasive snake *Hemorrhois hippocrepis* colonized the island of Ibiza (Balearic Islands) in 2003 as stowaways inside trunks of olive trees imported for gardening. It has quickly spread since 2010, posing a threat to the island's only remaining endemic vertebrate, the Ibiza wall lizard *Podarcis pityusensis*. We map the yearly expansion rate of the snake and estimate via transect surveys how severely it affects the distribution and abundance of the endemic lizard. As well, we surveyed 9 of 30 small lizard populations on islets surrounding Ibiza that have been isolated since the Last Glacial Maximum. Snakes had invaded 49% of Ibiza's land area by 2018, and censuses show a critical contrast in lizard abundance between areas with and without snakes; almost all censuses in areas without snakes show lizard presence whereas nearly all censuses in areas with *H. hippocrepis* lack lizard sightings. Moreover, at least one subspecies previously thriving on one of the offshore islets has become extinct, and there have been several snakes recorded swimming between Ibiza and the surrounding islets. Therefore, lizard populations have been dramatically reduced or have vanished within the range of the snake, and our results quantitatively support upgrading this species' threat level for extinction. This study can inform to programs to manage invasive snake populations and to conservation actions to recover the endemic lizard.

Key words: Balearic Islands, conservation, extinction, *Hemorrhois hippocrepis*, lizard census

Biological invasions are among the biggest threats to biodiversity (Wilcove et al. 1998; Mehring and Stoll-Kleeman 2008; Simberloff et al. 2013; Bellard et al. 2016; Courchamp et al. 2017), and they are especially damaging on islands (Reaser et al. 2007; Jones et al. 2016), where endemism rates among native biota are often high (Kier et al. 2009) and disappearance of a species is, as a rule, an extinction (Smith et al. 2012). Island organisms are frequently vulnerable to invasive predators (Cohen 2002; Whittaker and Fernández-Palacios 2006; Simberloff et al. 2013; Van Moorleghem et al. 2020), many of which may belong to ecological guilds or taxa never before encountered in the evolutionary history of insular natives. Consequently, there are numerous examples of extinctions on islands due to invasive species, both for plants and animals (e.g., Blackburn et al. 2004; Sax and Gaines 2008; Bellard et al. 2016).

The Balearic Islands, in the western Mediterranean Sea, have suffered several extinctions due to human introductions (Alcover et al.

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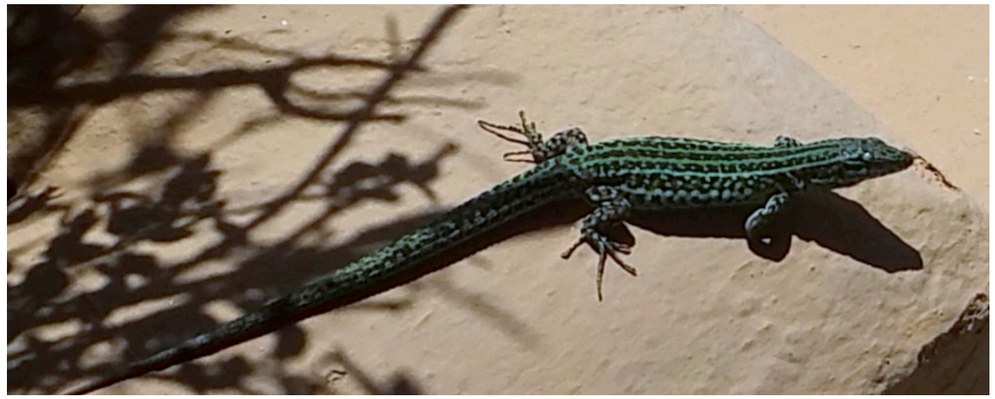
Eivissa i Formentera

La lagartija de Ibiza estará extinguida antes de 2030 a causa de las serpientes

The Ibizan wall lizard will be extinct by 2030 due to snakes



Pityusic lizard. Photo: NC.

Por **Laura Ferrer** — 17 marzo 2021

Laura Ferrer Arambarri / The study "Collapse of the endemic lizard *Podarcis pityusensis* on the island of Ibiza mediated by an invasive snake," published by Oxford Academic Journals and in which experts from several universities (including Elba Montes) participated, concludes that the invasive snake called the horseshoe snake (*Hemorrhois hippocrepis*) "is causing a rapid decline in the distribution and abundance" of the endemic Ibizan lizard (*Podarcis pityusensis)* on Ibiza and its surrounding islets.

The impact is such that the study explains that the point of extinction has already been reached on islets such as S'Ora and that, following current trends, "the Pityusic lizard will be extinct before 2030."

The study explains that predation pressure is so high that their survival is impossible unless drastic measures are taken.

In Ibiza, "the disappearance of lizards in the northeast of the island cannot be explained by factors other than snakes," since other predators have coexisted with the lizards for years without serious impacts on their populations.

In this regard, the study highlights that five other lizard predators have been identified on the island: wild cats (*Felis silvestris*) (see the recent controversy with the Sant Josep City Council), gulls (*Larus cachinnans*), genets (*Genetta genetta*), barn owls (*Tyto alba*), and kestrels (*Falco tinnunculus*).

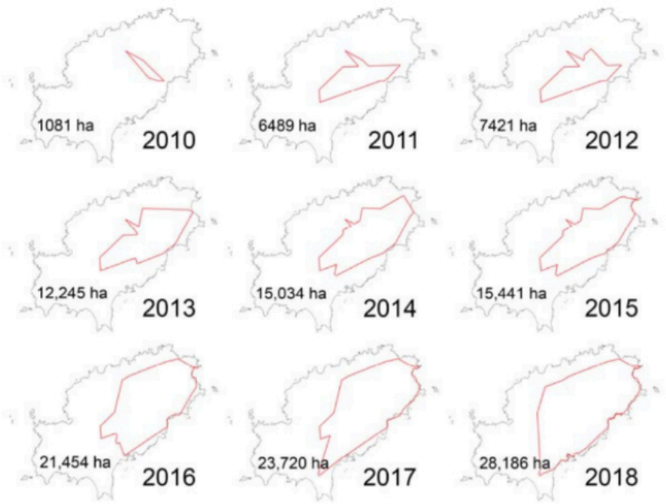
Regarding cats, the study indicates that most of these colonies are in the southwestern half of the island "where lizards are still common." Predation by gulls, meanwhile, is limited to the coast, while the genet population is scarce and declining on the island, and lizards are a secondary food item in their diet. There is no quantitative data on the kestrel's diet, although it is only occasionally observed feeding on lizards.



Image of a snake eating a dragon in the Sant Carles area of Ibiza. Photo: Adri de los Santos Juan.

Furthermore, each of these predators is either native (gull, kestrel, or owl) or has been established on Ibiza for four millennia (wild cat or genet), and their population and distribution do not correlate with the rapid disappearance of lizards over the past decade in the northeastern part of the island (where there are more snakes), a population disappearance that has not yet occurred in the southwestern part.

Habitat change also doesn't explain the absence of lizards. Thus, urban development increased by 5.5% from 2008 to 2015, the study indicates. "However, maps show greater human development during this time in southwest Ibiza (data from the Consell Insular d'Eivissa 2018), where lizards are still common (and this lizard frequently inhabits human structures; Pérez-Mellado 2002)," they report. Furthermore, the extent of the forest has changed minimally over the past 20 years, so it can hardly be considered a cause of the decline, they also point out.



The area circled in red shows how the snake population has spread since 2010. Source: cited study.



Photo: Nathan Dappen

“The results of our census strongly support the hypothesis that snakes eliminated native lizards where snake populations are well established,” and it appears that this process will continue.

“Our most disturbing finding is that the population on the small islet of S’Ora [off the coast of Sant Carles] disappeared within 10 months at the most,” the report highlights. “The population was decimated by snakes in a very short time,” they indicate. Thus, on the islet of S’Ora, no lizards were found during three visits (June 23 and July 8, 2018, and June 18, 2019), nor were any lizard feces or molts observed. This extinction occurred within a maximum of 10 months (after the last record of lizards in 2017), coinciding with the sighting of a snake swimming 20 meters from the islet in April 2018.

The fact that snakes can swim through the sea is a major threat to the islets, they point out. "As long as snakes thrive in Ibiza, the spread of the horseshoe snake poses a serious threat not only to Ibiza's main population of lizards, but also to Formentera, which is located 7 km from Ibiza and where goods are transported continuously between the two islands," they report.

"Therefore," they conclude, "our findings strongly support the urgent need to strengthen control efforts in Ibiza," they emphasize.

The study found that snakes were present in 49.31% of the island's surface area and in 43.04% of the entire distribution area of the endemic lizard (including the islands of Ibiza, Formentera, and 38 offshore islets). And this is data from December 2018, so the current situation is much worse.

Thus, following the model created by experts, by the end of last year, snakes would have covered more than 50 percent of the entire surface area inhabited by lizards in Ibiza, and they will completely cover the island and all lizard habitats by 2027 and 2028.

The study was conducted by Elba Montes, from the Department of Zoology at the Faculty of Biological Sciences



Illot de S'Ora, where there are no more lizards.

in Valencia, Fred Kraus, from the Department of Ecology and Evolutionary Biology at the University of Michigan; Brahim Cherguic, from the Ecological, Systematic and Biodiversity Conservation Research Team, Faculty of Sciences in Tétouan, Abdelmalek Essaâdi University; and Juan M. Pleguezuelos, from the Department of Zoology, Faculty of Sciences at the University of Granada.



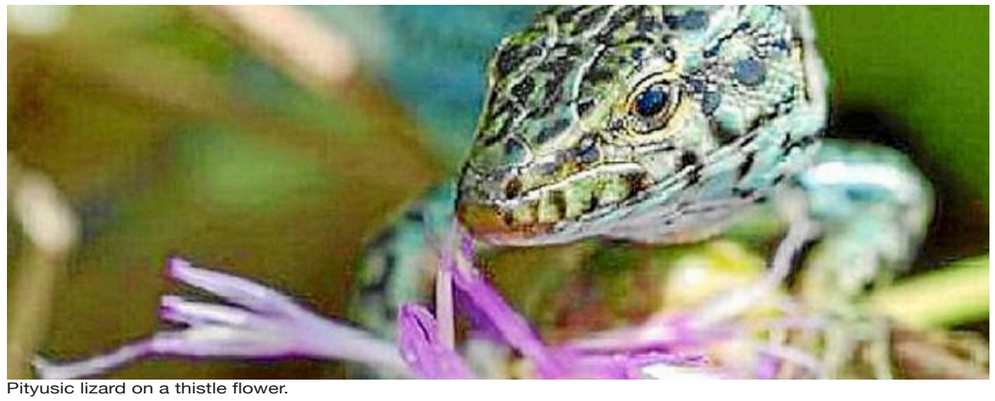
Elba Montes in a file photo. Photo: L.A.

PERIÓDICO de IBIZA Y FORMENTERA

Un estudio alerta de la posible extinción de la lagartija en Ibiza en el año 2030

A study warns of the possible extinction of the lizard in Ibiza by 2030

The Oxford University Press publication warns of the need for snake control.



Pityusic lizard on a thistle flower.

Isaac Vaquer Ferrer | Ibiza | 19/03/21 4:01

The only endemic vertebrate on Ibiza, the Pityusic lizard, could disappear before 2030 due to the expansion of the horseshoe snake. This is the conclusion reached by a team of academics led by Elba Montes, PhD in Ecology and Evolutionary Biology at the University of Valencia, in the article "Extinction of the endemic lizard *Podarcis Pityusensis* on the island of Ibiza due to the invasion of snakes." The article has been accepted for publication by Oxford University Press. Three academics from the University of Michigan, the University of Tetouan, and the University of Granada also contributed to the study.

According to the study, conducted between 2010 and 2018, snakes have invaded 49% of the island of Ibiza since their arrival in 2003 due to human activity. The Pityusic lizard census in the areas where snakes were recorded (the northwestern half of the island) has declined dramatically, reaching a level that experts consider to be at risk of extinction.

Disappearance on an islet

The study also assessed the population of endemic lizards on several islets. On one of them, the islet of s'Ora or s'Or, near Tagomago, the lizards could have become extinct due to the arrival of swimming snakes. The researchers indicate that they did not find any lizards during their visits, suggesting that a species that had inhabited the islet since the last major ice age may have disappeared. On other islets such as Illa Grossa and Illa Rodona, a notable decline in the lizard population has also been observed, in line with previous studies.

"Preventing the spread of snakes on the islets is unfeasible," the experts state, so urgent work is needed to control them in Ibiza.

The study's authors believe the virtual extinction of the Pityusic wall lizard on half the island of Ibiza has been proven. "In light of these disturbing findings, a review of the lizards' conservation needs is necessary. Leaders now have an urgent duty to improve snake control to prevent extinction."

PERIÓDICO de IBIZA Y FORMENTERA

Vila comienza la campaña para preservar la 'sargantana pitiusa'

Ibiza town begins campaign to preserve the Pityusic lizard



Horseshoe snake captured after hunting a rat. It was so fat it couldn't get out of the rodent's burrow. / C.C.

R.I. | Ibiza | 21/03/21 4:01

Yesterday, Ibiza Town Council launched the "SOS Salvem sa Sargantana Pitiüsa" campaign in collaboration with the environmental organizations GEN-GOB and Amics de la Terra, an initiative to preserve native lizards from the proliferation of predators such as snakes.

With this step, the Ibiza Town Council becomes the first on the island to launch this initiative.

The campaign, which took place at the Can Tomeu estate, began with a workshop-lecture where projections produced by the Balearic Government's Species Protection Service were shown. Questions were then answered, and volunteers handed out snake-catching equipment, consisting of traps equipped with mice, water bowls, and mouse feed to facilitate the capture process.

The representatives of the aforementioned associations explained to the attendees how to care for and handle the trap, where it should be placed, and how to proceed correctly with the capture. All the materials were funded by Ibiza Town Hall, according to a statement released yesterday.

The workshop was held in two shifts, at 11 a.m. and 12 p.m., with small groups of seven people to comply with current COVID-19 protection measures.

During the trapping season, volunteers will be monitored, and advice and support will be provided to ensure the maximum number of snake captures and thus contribute to the protection of the lizard, which has been seriously threatened since the introduction of snakes into ornamental trees from the peninsula.

DIARIO de IBIZA

Vila entrega trampas contra serpientes en un campaña para salvar las lagartijas

Ibiza town delivers snake traps in a campaign to save lizards

The City Council, the GEN and Amics de la Terra launch the 'SOS Salvem sa Sargantana Pitiüsa' project.

REDACCIÓN. Ibiza
21 MAR 2021 6:00

Ibiza Town Council announced yesterday the start of activities at the Can Tomeu estate for a campaign in which it is collaborating with environmentalists from GEN and Amics de la Terra to protect the island's lizards. The initiative, dubbed "SOS Salvem sa Sargantana Pitiüsa," includes talks, workshops, and the distribution of traps for capturing snakes, which have been proliferating in Ibiza and Formentera for years in the roots of olive trees imported from the peninsula to decorate gardens.

These traps "are equipped with mice, a watering trough, and food" for these animals, which act as decoys, "to make the work easier." Volunteers from both associations explained to the attendees yesterday "how to care for and handle the traps, where to place them, and how to respond to any snakes caught."

The City Council explains, after highlighting that it is the first on the island to launch this campaign, that it will finance all the materials used to make these snake traps.

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Eivissa i Formentera

PROU exige al Consell que cumpla con el control de la entrada de serpientes en Ibiza

PROU demands that the Council control the entry of snakes into Ibiza.

Por **Natalia Cárdenas** — 22 marzo 2021



NouDiari / The PROU Pitiüses en Acció platform has sent a letter to the president of the Ibiza Council for "failing to comply with one of the points of the Pact signed two years ago on control and quarantine measures for the entry of trees and other products likely to carry snakes into Ibiza," they explain.

In their text, they demand that Vicent Marí comply with point 2.5 on "Invasive Species" of the Pact signed by him when he was a candidate for the presidency of the Consell and representatives of the aforementioned platform on March 27, 2019. The point in question reads: "Urge the competent authorities to control the entry of trees and non-native species that potentially carry invasive species and/or diseases, establishing the corresponding quarantine periods, if necessary."

In these two years of the Pact's validity, "you have not taken any action aimed at its compliance, so we demand that you take a first step not only to comply with the signed agreement, but above all to try to avoid the ecological cataclysm that the extinction of the Pityusic lizard caused by snakes will entail if you continue with the same passivity," they write in their letter.

PROU reminds Marí that for years, local and international scientists have warned of the threat that snakes pose to the Pitiusan lizard. Recently, a scientific study published by Oxford University Press and reported by NouDiari warns that snakes have already invaded 49% of Ibizan territory, the northeastern half of the island: Sant Joan, Sant Llorenç, Sant Carles, and Santa Gertrudis, among other areas, which is precisely the part of Ibiza where the lizards have drastically disappeared. Likewise, the study concludes that if this trend continues, the Pitiusan lizard will become extinct in Ibiza before 2030 (the study and published information are attached).

A partnership of organizations (Amics de la Terra, Gen-Gob, Institut d'Estudis Ibizasencs, and PROU) is currently underway. With the support of the Island Council, the Ibiza town councils, and a good number of volunteers, it has launched the "SOS Salvemos la Lagartija Pitiusa" campaign, which complements other initiatives already working to eradicate snakes from our island, such as the one carried out for years by the Federation of Hunters and the Council through its technical offices.

However, they insist in their letter to the president, "No matter how hard we try, the fight will be in vain if we don't stop the uncontrolled entry of trees, bales of fodder, plant containers, and all those goods through which snakes still enter today. It's reminiscent of the punishment of Sisyphus, the character in Greek mythology whom the gods punished in the underworld by having to push a heavy boulder up a wall. Upon reaching the top, the boulder rolled down, and Sisyphus had to start all over again... and so on for all eternity."

To avoid repeating "a new punishment of Sisyphus," the PROU Platform urges Vicent Marí to quarantine (if it's during hibernation, that is, from October to April) or to outright ban the import of any plant, tree, or bale of fodder that could carry snakes among the roots, inside the trunk, or in the straw

"Control measures must be imposed without delay if we do not want this ecological catastrophe (yet another) to happen more quickly than the aforementioned study predicts," they explain.

If the Consell does not have the authority to implement such measures, "we ask you to urge whoever has the authority to order efficient control (as we agreed in the Pact). We are certain that, faced with a matter of such environmental gravity, there will be no opposition from the competent administration, especially if requested by the institution you preside over, backed by scientific studies by experts confirming the rapid disappearance of an endemic species, an icon of the Pitiusas."

For many years now, Ibiza's institutions, "with the Consell as their champion, should have taken appropriate measures to avoid this environmental calamity, so many years that we cannot continue to maintain this situation without falling into irresponsibility and shame," they add.

PROU concludes the letter by reflecting on "the scientific study referenced at the beginning of the letter is signed by the prestigious biologist Elba Montes, who was a senior environmental technician for the Consell d'Eivissa between 2009 and 2020. As such, in 2014 she co-signed, with Jaume Estarellas (also a Consell technician) and others, 'Preliminary data from the pilot project for snake control on the island of Ibiza,' which already established a clear relationship between the importation of certain plant nurseries and the snake invasion: The first reports of snakes date back to 2003, and since then, increasing numbers have been seen."

"We wonder what the role of the Consell's environmental technical advisors is if their recommendations are not taken into consideration and serve only to enhance their resumes. You are acting now, immediately and decisively. We must rectify a situation that has gotten out of hand." "What would have happened if we had acted when the first warning signs appeared, when your technicians, those from the Consell, were already identifying the problem and its causes? What will the situation be like in a few years if we continue to remain inactive?" they conclude.

DIARIO de IBIZA

Opinión

La burocracia extingue las lagartijas

Bureaucracy extinguishes lizards



Xescu Prats

23 MAR 2021 6:00
Actualizada 23 MAR 2021 10:26

I am saddened and somewhat indignant to witness a debate on social media sparked by the publication of a scientific study that examines the spread of snakes across the island and how their advance is resulting in the extinction of the native lizard at an identical rate. The most worrying conclusion of this work is that, without a drastic change in pest control, Ibiza and the surrounding islets will lose their entire lizard population by 2030.

This report, prepared by a multidisciplinary team from the universities of Valencia, Michigan, Granada, and Tetouan, with the participation of Elba Montes, the former Environmental Technician for the Island Council, reveals such worrying data as the fact that horseshoe snakes, which did not exist on Ibiza two decades ago, now occupy 50% of the island's territory and will spread to the entire island by 2027 or 2028. In 2010, the snakes only inhabited 1,000 hectares of the island, and by 2018 they had already expanded to more than 28,000.

Since there are no predators in Ibiza to control this exponential growth of the snake population, there are two options to exterminate them or at least slow their spread: set a large number of traps and prohibit or monitor the import of ornamental olive trees, of which we actually have an absolute surplus, as well as straw bales and other plant species where the snakes camouflage themselves while hibernating. When they wake up, they find themselves in a paradise where no other living beings threaten them and a plentiful diet based on lizards and mice, among other species.

Setting traps works, as hundreds of specimens are caught in them every year. However, the number is absolutely insufficient, and new ways to capture them are necessary. A map of the expansion of horseshoe snakes across the island in just eight years suggests that the bait currently used is like a drop in the ocean.

The debate I referred to at the beginning, however, revolved around the second issue: preventing or effectively monitoring the reintroduction of snakes into imported plant species. The lack of progress on this issue provoked angry criticism until an environmentalist didactically explained the root of the problem. To prohibit the harvesting of olive trees or establish an expensive inspection service, it is essential to first declare snakes an invasive species. The problem is that this species is protected on the peninsula, and ecological criteria are unified for the entire national territory. Only the Ministry of the Environment, currently known as the Ministry of Ecological Transition, has the authority to change this classification.

The Ibiza Island Council, at the time, sent reports to the Balearic Government detailing the spread of snakes and the damage they cause to the native lizard population. The Ministry, in turn, referred them to the Ministry of the Environment requesting control of plant species likely to harbor snakes. Since then, the equivalent of a legislative term has passed, not a single inch of progress has been made.

We are, therefore, facing a bureaucratic mess of the kind that festers and doesn't unravel until the problem is beyond repair. When there is not a single lizard left and the fields and forests of Ibiza are infested with snakes, then the Ministry of the Environment will declare the snake an invasive species.And while the tragedy is on its way to perpetuating itself, is that it? Do we leave it like that? Do we wash our hands because now the ball is in the court of the Ministry of Ecological Transition, where the island's problems, judging by the progress made, represent a non-event?

We have a Balearic government that is expeditious enough to shoot and exterminate the goats of Es Vedrà in order to protect the native flora, but it doesn't bother to put the slightest pressure on Madrid to save the lizards, which have immeasurable value and are also an icon of the island. And what can we say about all these Ibizan and Balearic politicians who occupy a seat in Congress or the Senate, supposedly to represent us? Has anyone presented a motion, requested a meeting with the minister, or expressed the slightest complaint about this?

The fact that all we have been able to do in a decade to prevent the extermination of the lizards is set a few traps is a dramatic example of the incompetence, indolence, and lack of ideas of our administrations. In reality, the lizards, just like the snakes, are being exterminated by bureaucracy.

noudiari.es
Eivissa i Formentera

Elba Montes: «Hay que crear colonias de lagartija de Ibiza en cautividad porque las perspectivas son muy malas: se va a extinguir»

Elba Montes: "We need to create captive colonies of the Ibizan wall lizard because the outlook is very poor: it's going to become extinct."

Por **Laura Ferrer** — 30 marzo 2021

Laura Ferrer Arambarri / Elba Montes was an Environmental Technician for the Consell de Ibiza from April 2009 to August 2020. She currently works in Valencia as a manager for a waste consortium while completing her doctoral thesis. A study she authored, which will be part of this thesis, has sparked great interest on the island after its publication in Noudiari due to its devastating conclusions: Ibiza's lizards will be extinct by 2030 due to predation by snakes known as the horseshoe snake.

The study, published in Oxford Journals and advanced by Noudiari, is part of her doctoral thesis, Natural history and impacts of the invasive snake Hemorrhois hippocrepis on the island of Ibiza.

Yes, I began my PhD in 2014 alongside the Consell's snake control pilot project. Nowadays, it would be unthinkable for an administration with no jurisdiction over something to spend money on it, but at the time, and since no one was doing anything, we took the lead and started this project, which immersed me in the world of snakes. We did so by contracting with the Spanish Herpetological Association, and its then-president, Juan Manuel Pleguezuelos, professor of Zoology at the University of Granada, encouraged me to write my thesis on this topic. The study you published is the most important part of the thesis.

What other aspects have you studied?

I've also studied the diet of snakes, reproduction, parasites... and all of this in comparison with the source population to see where the key to the invasive success of snakes in Ibiza lies.

I've also studied the predatory pressure on snakes, that is, which animals eat snakes in the source population and which animals eat snakes in Ibiza. We've seen that in Ibiza they have only two predators: cats and kestrels, but they only prey on very small snakes. That's part of the key to their success.

I didn't want to limit myself to natural history, but rather delve into what's happening with the lizard in Ibiza. That's when we began censusing the populations on the islets and published this study. We've already submitted the second part to a journal and are awaiting a response. It addresses what measures should be taken in this regard.

Well, I'd like to give you a spoiler for your own study: what measures can be taken in the face of a situation as worrying as the one you describe?

The first thing we propose is that the lizard *Podarcis pityusensis* be listed as an endangered species, as it is currently simply listed as Near Threatened (NT).

Regarding specific measures, we are going to propose captive colonies of the lizard because the outlook is very poor. We need to create a lizard repository to have certain colonies that can be reintroduced.

On the other hand, what has always been requested is to control the entry route, which is a relatively simple task. We know how they enter and we have regulations that protect us from this entry, and it's a matter of will and economic priorities. We know they enter the olive trees. What we recommend is that olive trees only enter during the spring months, when the snakes are most active and when there is no danger of them hibernating or laying eggs entering. We also request that, once they arrive on the island, the trees undergo a quarantine period within a closed perimeter with traps. All of this would minimize the risk of snakes entering as much as possible.

So, what's being done so far is completely insufficient?

The eradication campaigns being carried out by the Balearic Government are working very well, but they are clearly insufficient. A rapid response protocol should be developed for snake sightings in areas where there are no established populations. The moment a snake is seen leaving a breeding ground, it should immediately be surrounded by traps to capture it and ensure there are no more.

And more investment in research?

Of course, we must promote scientific research to understand as much as possible how we can capture them. I've done a very preliminary study of very basic things, but there are millions of other things that can be studied: interactions, capture measures that can be taken, which traps work best... things that can greatly help in management.

The Consell's environmental education programs and the Government's campaigns are very good, but we need to unify all of this, pull together, and run a good awareness campaign that involves people because citizens are eager to put an end to this.

We need to unify everything, pull together, and run a good awareness campaign that involves people because citizens are eager to put an end to this.

I've received comments on social media and from friends who think it's exaggerated to say that the Pityusic wall lizard will become extinct before 2030. That it's impossible that there won't be any Pityusic wall lizards in nine years.

Well, we've even been conservative. What we've done is relatively simple: we've studied areas with high densities of snakes, we've conducted censuses in those areas, and at the same time, we've conducted censuses in places without snakes, or rather, without established snake populations. Of 15 transects [samplings in a predetermined area] we conducted in areas with high snake densities—each one repeated three times—we only found lizards in one of those repetitions. In "snake-free" areas, there were lizards in all but three repetitions. This means that when snake densities are very high, the lizards disappear. There's no doubt about it. That's how it is.

On the other hand, we have mapped the extent of the snake populations, excluding isolated sightings. That's why this mapping has been very conservative. That is, we have said that only the areas where there are many sightings are considered to be covered by snakes, and not those where there have only been a few isolated sightings. We have mapped that area that was invaded for each year, and we have extrapolated that increase, year by year, into the future, and it is perfectly linear. That is, if the rate remains the same, and for the moment there is nothing that makes us think that this will change, the snakes will be well established throughout the entire surface of the island.

That means that all the lizards across the entire surface of the island will eventually disappear.

When snake densities are very high, the lizards disappear. There is no doubt about it. It's crystal clear...

I don't have a crystal ball. What I say is what science and mathematics say. We have a responsibility as scientists to sound the alarm and say: be careful, this could happen. If it doesn't end up happening, I'll be overjoyed, I promise. But we have to say it, we have to say that this could happen.

Besides, we're not talking about something that has never happened anywhere else. On the island of Guam [in the Western Pacific], with a land area similar to that of Ibiza, lizards, other reptiles, and even birds have become extinct. The only place where an endemic bird remains is on an islet a few hundred meters from the main island. You walk through the jungle and you don't hear anything, not even birds singing. Nothing. No, we're not making anything up to be alarmist. I wish it weren't like that, but this can happen.

The horseshoe snake, which I believe is the most common snake in Ibiza, does it threaten other species?

Yes, it is the most common, and yes, that's the big question. When the lizards, which are like jelly beans to snakes, run out, what will they eat? It's clear that snakes' staple diet is rodents and small mammals. Those will never become extinct; it's very difficult for mice and rats to become extinct on an island... although I wish they would because they don't belong there. But there are other vulnerable prey types: birds. The horseshoe snake's diet includes birds, and on the islands we have the Balearic warbler and the virot, birds that are perfect prey for the snake.

For all of us who don't quite remember when this nightmare began, when was year zero and where was ground zero?

There are reports from environmental officials documenting it: the first of all those seen was in May or June 2003 emerging from an olive tree. The first ones appeared in nurseries in the Sant Llorenç and Santa Eulària areas. From then on, they spread.

Where do these imported olive trees come from?

From the south of the Iberian Peninsula.

According to your study, the Pityusic lizards have developed a self-defense system against snakes consisting of slow-motion movements and tail movements. It's not enough, apparently, but they're trying...

Yes, that's true. That study is by Valentí Perez Mellado, along with another scientist, who have seen that the lizards are developing responses. This means they're learning something, but it's not enough because they can't defend themselves against predation.

The study also says that they don't exhibit these defense mechanisms on the islets because they aren't exposed to snakes... but snakes are arriving on the islets.

That's right. Regarding the islet of s'Ora, because it's been widely discussed, I'd like to clarify that I don't say at any point in the article that the lizard extinction we've documented was due to a snake. What I'm saying is this: what a coincidence that after 20,000 years of such peaceful lizards, with humans having entered the island of Ibiza, a host of non-native species, and other habitat alterations, nothing has ever happened to them, and precisely a

few months after a snake was seen swimming toward this islet, I go and find not a single lizard. Everyone can draw their own conclusions. As a scientist, I think it's quite likely that it was a snake.

On Illa Grossa, I saw a snake, and the number of lizards was very low. Two snake molts have been found on S'Espartar, although in this case, it's a large island, and a single snake with so many lizards might not wipe them out, I don't know.

Your thesis is about Ibiza, but do you have any information about the situation in Formentera?

My thesis, as you mentioned, focuses on the horseshoe snake on the island of Ibiza. It's true that horseshoe snakes were found on Formentera, but it's unknown why they didn't thrive there. It's a very unique and positive case in the sense that the ladder snake, which is the one they have there, is cornered on Cap de la Mola. The traps are working so well that I think it could be the first successful case of eradicating an invasive snake on an island.

The problem is that they're on the edge of the cliff where there are populations of virot that nest, and that's the most worrying thing. The ladder snake's diet is mainly warm-blooded animals like birds and rodents, although they also eat lizards there, which is also a worrying fact. In Formentera, I'm more concerned about the birds than the lizards.

Can a horseshoe snake swim to Formentera?

Well, based on genetic evidence, it's believed that the horseshoe snake arrived from North Africa to the peninsula by swimming across the Strait of Gibraltar. By swimming... or by rafting, that is, they ride on some plant debris or anything that floats, carried by the current. This phenomenon is documented to occur on islands. But they can't only arrive that way: they can appear in the hold of a ship; there are loads of trees that go directly to Formentera without going through Ibiza... Once, a horseshoe snake arrived in Barcelona from Ibiza on the engine of a motorcycle that was being repaired.

How outrageous! Is it also an animal that's so adaptable due to its physiognomy that it can hide anywhere?

Snakes are very secretive; they hide, they stay very still, and, as they are cold-blooded animals, they can go for a long time without eating or drinking and still remain alive.

The lizard is a beloved species in Ibiza, endemic, an icon... but what consequences would the loss of the Ibizan lizard have on the ecosystem?

I'm studying precisely this in another project with National Geographic. We want to study the interactions with the plants for which the lizard acts as a pollinator and seed disperser. There are plants that depend on the lizard to reproduce and expand, and if the lizard disappears, there could be a problem.

Have you sent this study to the Government, the Consell...?

Yes, I sent this article to the Balearic Government, but it's worth noting that Oxford Journals has published a draft version [laughs] that has some typos that will be corrected in the final version. My message is that we shouldn't wait any longer. The work started late, and I think this issue needs to be taken very seriously.

05-04-2021 - Redacció Eivissa - The proliferation of snakes in the Pityusic Islands could make the native lizard disappear before 2030 (control)

IB3N Notícies

La proliferació de serps a les Pitiüses pot fer desaparèixer la sargantana autòctona abans del 2030

The proliferation of snakes in the Pityusic Islands could make the native lizard disappear before 2030

According to experts, the solution is to control agricultural goods entering the port of Ibiza.

05/04/2021



Redacció Eivissa

The proliferation of horseshoe snakes in the Pitiüses, especially since 2010, could cause the native lizard to disappear before 2030. This is warned by a study published by Oxford Academic Journals and which used data provided by the Ibizan doctor of Biology, Antònia Maria Cirer Costa.

The lack of predators is one of the main reasons why the horseshoe snake has managed to establish itself on the island. Although the presence of snakes was detected in Ibiza as early as 2003, it has been the last decade when it has become a real problem.

In the latest studies carried out to calculate the current population of lizards, the results are truly alarming. Dr. Cirer urges all political circles to find a solution to this problem before it is too late. She assures that this is to control the agricultural goods that enter the port of Ibiza.

DIARIO de IBIZA

Sin lagartijas pero con ineptos

Without lizards but with inept people

Opinión



César Navarro

08 ABR 2021 6:01
Actualizada 08 ABR 2021 10:21

In ten years, there won't be any lizards in Ibiza and Formentera, and that recurring and original logo will have to be replaced with one of a boa constrictor or a python. A study by environmentalist Elba Montes dates what seems inevitable due to the entry of snakes into the roots of olive trees, which have been imported, by the thousands, as decoration. As if we didn't already have wonderful, exuberant flora on the islands. Stupidity, snobbery, and globalization are what they have, destroying any hint of what today seems outdated, tacky, and even tacky, but which the day after tomorrow will be a bucolic memory of a paradise we will regret having lost. It terrifies me to think what the Pitiusas will offer tourists who in a decade decide to spend their summers in these latitudes when, thanks to climate change, they can do so on the wild Norwegian coast. We won't even have any nightclubs. And if the virus takes hold and continues to mutate relentlessly, we won't be able to offer them those wonderful bars and restaurants that served as a refuge for socializing. We've been unable to stop the snakes, and we'll be left without *Posidonia* and even pine trees, even though it seems unthinkable and exaggerated. Is such ineptitude, such uselessness, normal?

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Eivissa i Formentera

La viñeta de Untaltoni: ¿Clase media? No: Sargantana

Untaltoni's cartoon: Middle class? No: Lizard



This isn't a hat. It's a tragedy ... but don't forget the refugees.

Por **Natalia Cárdenas** — 9 abril 2021

NouDiari / This week's cartoon by cartoonist Untaltoni is dedicated to the native Pityusic lizard, whose survival is in danger, like the middle class, due to invasive snakes.

DIARIO de IBIZA

Vicent Roig: «Para erradicar las serpientes hay que restringir la entrada de olivos»

Vicent Roig: "To eradicate snakes, we must restrict the entry of olive trees"

The measure to curb the arrival of snakes depends on the Ministry of Ecological Transition, and the Consell plans to request it. "The next two months will be crucial to corralling them."



The island's Environment Minister, Vicent Roig, during the interview. / TONI ESCOBAR



Joan Lluís Ferrer

Ibiza 12 ABR 2021 6:00 Actualizada 12 ABR 2021 13:23

Almost twenty years after the spread of invasive snakes began in Ibiza, and when the island's endemic lizard is already on the verge of extinction, the Island Council has finally concluded that the entry of olive trees, the only cause of the snakes' arrival, should be restricted. However, as the Island Councilor for the Environment, Vicent Roig, explains in this interview, this is a request that has yet to be submitted to the relevant authorities. The Council believes, in any case, that the widespread distribution of traps by individuals can decisively halt the spread of the snakes that are exterminating Ibiza's endemic lizard.

What is the Council's assessment of the situation of the endemic lizard of Ibiza and its critical situation due to the proliferation of snakes?

The important thing is that, while until now some town councils and the Consell (Spanish Consell) had acted somewhat independently in the manufacture of traps and through agreements with the Hunting Federation, this year will be a turning point, with the launch of the campaigns launched by Cofib (the Government's Wildlife Recovery Center) and the four social platforms (Amics de la Terra, Institut d'Estudis Ibizasencs, Prou, and GEN-Gob). This year's action will mark a turning point. These campaigns will have a significant impact on the island, as they aim to set between 2,000 and 2,500 traps. The process may be slower than we thought because coordinating volunteers is not easy, but it's true that the four platforms are doing a great job in this regard. The Consell is and will continue to be involved in this issue, as an island institution, we must help with coordination and in any way we can, because this is an issue that has been a concern of ours for some time. We have made several requests to the Government, approved motions, and initiatives at the parliamentary level. Also important was the approval of this Sustainable Tourism Tax (ITS) allocation to set 1,000 traps this year, with seven people and two vehicles. This week, we will call a coordination meeting to see how we can present this campaign to the public.

What do you think of the current situation, with 50% fewer lizards?

The situation in Ibiza today is a bit out of control. It's true that the actions taken haven't been as decisive as they should have been. The Balearic Government is finally taking action with a fairly significant measure, two years late, but here it is. The Port Authority has been asked to create a quarantine area and to prevent the transport of olive trees during periods when they could be carrying snake eggs. This is a request we will make from the Consell. Because we can deploy all the resources we want to combat them, but if they continue to enter the island, we have a problem. And, above all, we must study ways to capture these specimens before they leave the port area, whether they have been quarantined or not. It's true that we're late, but we must apply pressure to achieve this. Now that the port area plan is underway, it's a good time to push for this, which is why the environmental report prepared by the Consell included this observation.

Why is it coming so late when this situation has been known from the very beginning, almost twenty years ago?

Well, I can talk about what we've done since we took office. And since then, we haven't stood still. We've pushed for the implementation of the Cofib agreement, an entity that now has a space in Sa Coma to set the traps. We've coordinated meetings with the four platforms to deploy volunteers. Negotiations have been made with the State, motions... Within our means, we've done everything we could. And now, with the support of these platforms, we'll continue along these lines. Hasn't this been done before? It's true. There has been some neglect on the part of the governing teams, but now we must insist on these lines.

Isn't the possibility of completely banning the arrival of olive trees being considered?

It would be a very important step to transport the olive trees only when the snakes are no longer reproducing. Deciding that they can never be transported? Well, it's an issue that must be put on the table and evaluated..

And, if necessary, who makes that decision?

From the Ministry of Ecological Transition. When there is a supra-regional scope (transport from the Peninsula to the Balearic Islands), it depends on the Ministry and also on the Government.

Is there any kind of coordination or communication between the Consell and the Balearic Government for the fight against snakes?

This is the problem. The problem is that the Government delegates control to the Cofib (National Council of the Balearic Islands), which has done what it could, but not what it should have done. Now it has a headquarters here, staff, and the strength to act. There is constant contact with them; there is coordination. And from the Consell, we try to do our part to coordinate administrations and other stakeholders. What we need is a meeting point.

One of the proposals in the study by environmentalist (and former Consell technician) Elba Montes is to breed lizards in captivity in case they become extinct. Is this action planned?

It's on the table. And it's one of the topics we'd like to discuss at the coordination meeting we'll have on Thursday.

Do you think there's a chance of preventing the disappearance of Ibiza's endemic lizard?

There are possibilities for carrying out very intensive action to halt their disappearance. Everyone agrees that eradicating snakes at this point will be complicated, but it's not ruled out either. The objective must be to eradicate them. At least there's a general awareness among the population that they must be eradicated. Whatever can be done in the next two months will be extremely important, because it could have a significant impact. We must corner the snakes and see if we can eradicate them that way.

The initiatives you mentioned have arisen either from private entities or from other administrations. Doesn't the Consell plan to design its own strategy or some initiative directly from the institution?

The only thing that has happened so far has been at the initiative of the Consell... Everything that has been done so far in terms of traps and coordination with different actors was, first in 2014, an initial initiative of the Consell, and then the city councils (especially Sant Antoni and Santa Eulària) have acted together with the cooperatives to set the traps, but they have always been initiatives from the Consell, not from other areas.

How many traps are ready to be distributed?

Right now, there are about a thousand in place. People need to know that the traps they set require maintenance. The mice need to be fed and watered, and they need to be replaced. Anyone who has traps at home and isn't using them should hand them in to the platforms to optimize resources.

In other words, if individuals mobilize, the situation can change...

Absolutely. Furthermore, if there isn't global collaboration to plant around 2,000 more traps across the territory, it will be complicated. And this has to be done now, before the snakes hatch, which happens when the heat arrives.



The Council considers citizen mobilization essential to halt the disappearance of the native lizard. | T. ESCOBAR / JOAN LLUÍS FERRER

14-04-2021 - Laura Ferrer - The fight against snakes finds an ally in the humor of the Pageses Emprenyades (video) (snakes)

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Eivissa i Formentera

La lucha contra las serpientes encuentra un aliado en el humor de las Pageses Emprenyades (vídeo)

The fight against snakes finds an ally in the humor of the Pageses Emprenyades (video)



L. F. A / Since NouDiari published a worrying study on March 17 predicting the disappearance of the Pitiusan lizard before 2030 and subsequently published a full interview with the report's author, there has been a steady stream of concern about this dire prognosis. Even the Island Council is working to accelerate measures in this regard.

But the fight against the plague of invasive snakes (specifically the horseshoe whip snake) that is ravaging Ibiza and is the great threat to lizards has had many allies for years, and among them, the Association of Entrepreneurial Farmers, which has joined the campaign by adding a bit of humor to the issue, which, as is well known, is the perfect ingredient for understanding and addressing serious issues. They explain in the video how the traps work and why the invasive horseshoe snake species has arrived in Ibiza. The villagers encourage keeping a snake trap in every home (emphasizing that the rats aren't stressed by acting as bait) and in their conversation, they leave no stone unturned, with digs at "the foreigners," who are the ones who have mostly bought the imported, snake-infested olive trees for their mansions, or the villagers, who have little idea of the Ibizan countryside and go to the countryside to slouch all over.

The message is clear: the lizards are as important as the villagers and must be preserved, both for their value as part of the Ibizan ecosystem for thousands of years, and for their endemism (this species and its variants only occur in Ibiza and Formentera), and for having become a symbol of the islands. Pageses Emprenyades are the actresses Neus Torres, Maria Francisca Salvadó and Espe Llorenç. It must be remembered that there is a campaign underway to preserve the Pityusic lizard promoted by Amics de la Terra Eivissa, Gen-Gob Eivissa, Institut d'Estudis Eivissencs and the Prou Platform and that the video that frames it within this initiative.

The idea and script of the video that accompanies these lines is from the Associació de Pageses Emprenyades itself, while the recording and editing has been carried out by BIOCAM.

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Eivissa i Formentera

Eivissa dona suport a la plataforma ‘SOS Salvem sa sargantana pitiüsa’ i inicia una campanya per visualitzar aquesta lluita

Eivissa donates support to the platform 'SOS Salvem sa sargantana pitiüsa' and starts a campaign to visualize this little fight

Por **Vicent Ribas** — 17 abril 2021

NouDiari / The plenary session of the Consell Insular d'Eivissa has held a meeting organized by the Department of Presidency and Environmental Management, which will be attended by the associations that make up the platform 'Salvem sa sargantana pitiüsa' (Amics de la Terra, GEN-GOB, IEE and PROU! Pitiüses en Action!), representatives of the councils, from the Hunting Federation, from COFIB, technicians from the Balearic Government, the Minister of Presidency and Environmental Management, Vicente Roig, and the insular director of Rural and Marine Environment, Joan Marí.

This finding has the main objective of coordinating the 2021 campaign to capture snakes, one of the main threats to the survival of the Pityusic lizard, in particular that the platform 'SOS Salvem sa sargantana pitiüsa' is a new agent that contributes volunteers to the task of capturing the snakes.

So, the Ibiza Island Council will propose the coordination of the work carried out by both the agents of the Balearic Government and the volunteers of the platform, proposing joint actions and the possibility of making available to citizens telephone numbers for information and assessment on the capture of snakes.

As the Minister of Environmental Management, Vicente Roig, has explained, “the one we want is that we all work as coordinated as possible, we have the tools and the will to fight against the snakes and protect there an endemic species in retreat such as the Pityusic lizard.”

“With the team of volunteers from the platform and the technical staff of the Government and COFIB can donate a strong impulse to this group and that as the Government has the work of the volunteers as they participate in the technical assessment of the Government, the objective is to add synergies” explained Roig.

Furthermore, Roig will present the image of the campaign in defense of the Pityusic lizard that has been agreed upon by all the agents involved. A campaign that will raise awareness and involve everyone in the need to visualize the problems of this species.

IIn the first part of the campaign, 5,000 stickers will be distributed and more awareness actions will be scheduled. For its part, the Santa Eulària des Riu city council offered its snake trap control application as a useful tool for the rest of the island..

This year, 2,000 snake traps are planned to be installed on the island of Ibiza. The existing staff will be joined by COFIB technicians, a support person from the Santa Eulària town council, a part-time person from the Sant Josep town council and the existing advisor through the Hunting Federation.

PERIÓDICO de IBIZA Y FORMENTERA

La extinción de la ‘sargantana' pondría en peligro a plantas endémicas de Ibiza

The extinction of the lizard would endanger endemic plants of Ibiza

Several studies on the relationship between lizards and some plants in the Mallorca and Menorca areas reveal that the population of some plant species suffered a serious impact after the extinction of the reptiles.



File photo of a lizard among plants on the island of Ibiza.

Isaac Vaquer Ferrer | Eivissa | 19/04/21 4:01

What impact could the disappearance of the Pityusic wall lizard have? Does protecting Ibiza's only endemic vertebrate simply mean preventing the disappearance of a symbol that appears on T-shirts, ashtrays, and car bumper stickers?

Working to save an endemic animal from extinction due to a human-caused snake infestation seems more than enough reason to act.

This fact has led dozens of people to participate in the "SOS Salvem sa Sargantana Pitiüsa" platform to work toward the eradication of invasive snakes and, as the platform's name suggests, save the wall lizard. But the impact of the snakes' expansion goes beyond the threat to a single species. Some plants will also suffer from their voracity.

It's not that snakes have become herbivores in Ibiza due to wellness tourism; it's simply the impact that the disappearance of one of the cogs in the wheel—the lizards—that make a complex mechanism work

could have on such a delicate island ecosystem. This is what several studies on the impact of the lizard's disappearance in Mallorca and Menorca reveal, giving an idea of what could happen to Ibiza in a few years if no action is taken.

Mutualisms

In a study by Anna Travesset and Nuria Riera published in 2005 in Conservation Biology, the journal of the international Society of Conservation Biology, they analyzed the relationship between the lizard and the Menorcan Daphne. This shrub is currently only abundant on the only islet where lizards still exist. The study shows that the absence of this lizard in most of Menorca's populations is what has caused the decline of this plant, currently considered at risk of extinction.

The interruption of this mutualism, this relationship of dependence between two living beings, has led to the practical extinction of the plant following the disappearance of the vertebrate. As the study shows, lizards are the ones that disperse the seeds of this plant. When they ingest them, they carry them to other locations in their digestive tract, and when they are defecated, the seeds become viable and germinate. Furthermore, the researchers indicate that the seeds of this plant have a harder time germinating when they fall to the ground, while when they pass through the reptile's digestive system, the seed coating softens, making germination easier.

But this is not the only example. In another study in which the two researchers participated on the olivilla, a plant from which vegetable oil can be obtained, they discovered that the disappearance of the lizard in Mallorca and Menorca "would have had significant ecological consequences for the plant" with a significant reduction in its growth areas. On Menorca, in 2002, when this study was conducted, around 50 specimens remained.

The researchers propose that "the large number of undispersed fruits in areas where lizards have become extinct supports the hypothesis that seed dispersal of this plant has decreased after the introduction of carnivores."

As with the Menorcan *Daphne*, the impact is not only on seed dispersal, but also on promoting germination. Lizards select smaller fruits with lighter seeds, and their passage through the reptile's digestive tract makes them more suitable for development.

The study reveals that in the case of Ibiza, the Pitiusan lizard is the only seed disperser, except in areas where genets, already very rare, also consume the fruits of this plant.

Action is needed

Could something similar happen in Ibiza? "The lizard is a very ancient species in Ibiza, the only vertebrate that remains from before the island was colonized by humans, so it has had many years of coevolution with many plant species. Therefore, yes, the disappearance of the lizards could mean the disappearance of other plant species endemic to the island," explains Nuria Riera.

For this researcher, who dedicated herself between 1999 and 2003 to studying the diet of the Pitiusan lizard with grants from the CSIC and the Mediterranean Institute for Advanced Studies, the *Podarcis pityusensis* is "a jewel" of our fauna. "They are small treasures that allow us to have enormous biodiversity in a small area. A single species like the *Podarcis pityusensis* could have up to 45 subspecies," she explains.

He believes that "a very important effort should be made here to eradicate" snakes, given that "this invasive species was introduced only very recently, in the evolutionary scale of ecosystems, but the impact is being very rapid and the consequences could be disastrous."

The trigger for the extinction of the Menorcan and Mallorcan lizards was the introduction of carnivorous mammals from the time of Roman rule. Their disappearance came after centuries of predation. The Pitiusan lizards resisted the invading carnivores, like irreducible Gallic villagers, but now they find themselves besieged by another exotic species with unprecedented voracity on the island: the snake.

For this reason, she is highly critical of the scant action she believes the Balearic Government is taking. "We need to give the Balearic Government a hard time, we need to urge the Cofib and the Ministry of

the Environment, because we are facing a very serious problem. The Balearic Government should have very powerful eradication plans to reverse this situation, but what we have are small interventions," she complains.

Above all, she is concerned about the arrival of snakes on the islets. "It will surely lead to the disappearance of more than one endemic plant species. Lizards are the only vertebrates found on these small islands; in many cases, they are primarily responsible for seed dispersal and pollination. If a snake reaches an island, it's a catastrophe. It's a very small space where lizards often have little shelter. Any snake that reaches this territory will eat everything there," he warns.

Impact on other animals

In a recent study published in one of the Oxford University Press journals, "Collapse of the endemic lizard *Podarcis pityusensis* on the island of Ibiza caused by an invasive snake," environmentalist Elba Montes, along with other researchers, revealed that the main prey of snakes on the island is the lizard. A study of the digestive tracts of captured snakes and their excrement revealed this.

But what happens when the lizard population in an area is already completely decimated? "This remains to be studied," Montes indicates. "In addition to micromammals such as mice, rats, and dragons, their diet also includes birds. In Ibiza, we have some endangered birds such as the virot and the Balearic warbler that could begin to suffer greater attacks from snakes."

On the other hand, farmers in Santa Eulària are noticing the absence from their fields of another mammal that is very beneficial for pest control: the shrew.

Ibiza is the only island in Spain with a subspecies of shrew adapted to the island's conditions, the *Crocidura russula ibizanensis*. This insectivorous mammal was once present in the cultivated fields of northeastern Ibiza. Shrews make their burrows at the edges of fields, where they return at night to eat beetles, snails, or worms. Furthermore, in their search for food, they dig holes in the ground, which aerate the soil and improve soil fertility.

Although there are no studies on the impact of snakes on these mammals, the perception of farmers surveyed in Santa Eulària is that shrews no longer exist in the area. Perhaps they have become a memory, like the lizard.

The Particular Island Phenomenon of Lizards as Pollinators

An interesting aspect of the Pitiusan lizard is its role as a pollinator. The consumption of flower nectar by reptiles is a rare phenomenon that has only been described on the islands of New Zealand, Madeira, the Seychelles, the Antilles, and the Balearic Islands.

According to Nuria Riera, "all lizards that include nectar in their diet act as pollinators, thanks to the fact that the texture of their skin favors the transport of pollen."

In Ses Salines, specifically on Es Codolar beach, Riera describes how this curious behavior of lizards can be observed with sea fennel. "The lizards move from flower to flower, consuming nectar, just as insects do. Nectar normally acts as a means of transport that increases the probability of pollen loading. That is, when the lizard sucks nectar from flowers, it touches the stamens with its snout, and a large number of grains become stuck. When it moves to another flower to collect nectar, if it touches the stigma, the grains fall, and pollination occurs.

A similar phenomenon was studied on the island of Aire, in Menorca, with the *Rapa mosquera*, a plant with a flower similar to the water lily. The potential role of the lizard in the pollination of the *Rapa mosquera* was studied through an exclusion experiment. The test consisted of isolating a series of randomly selected plants from their potential pollinators, flies or lizards. To do this, 10 plants were isolated from lizard access by means of plastic fences fixed to the ground. Fly access was prevented by isolating another plant sample using cubic cages made of mosquito netting, which only allowed lizards access from the bottom. Seed viability and fruit development were subsequently compared in these two exclusion groups with a third control group of plants to which all potential pollinators were allowed access. The study revealed that flies were the main pollinators of this plant, although lizards also played this role, despite being a "poor transport" in this case.

PERIÓDICO de IBIZA Y FORMENTERA

Aprendiendo en el instituto a luchar contra las serpientes de Ibiza

Learning how to fight Ibiza's snakes at school

Yesterday, the Santa Eulària City Council, together with Amics de la Terra, held an informative workshop for fourth-grade students at the Quartó del Rei Secondary School.



One of the lectures to students of the municipality of Santa Eulària.: Photo: Ayuntamiento de Santa Eulària.

Manu Gon | Santa Eulària des Riu | 20/04/21 12:50

Members of the Santa Eulària City Council and the environmental association Amics de la Terra visited the Quartó del Rei Institute yesterday to explain how the extensive operation implemented on our island works to try to end the snake infestation that is endangering endemic species of the Pitiusas.

According to the council, the initiative was initiated by the school's management and was aimed at the 35 students in its five fourth-grade classes. "As soon as they told us about it, we thought it was a very good idea because at this age, students are already fully aware of the need to take care of our environment and the very delicate situation the Pitiusa lizard is experiencing due to the proliferation of snakes on our island," explained Santa Eulària's Environment Councilor, Mónica Madrid, yesterday.

Thus, the initiative consisted primarily of a workshop in which the campaign was explained to the students in a fun and entertaining manner. In addition, together with a specialist from Amics de la Terra, they saw firsthand half a dozen snakes captured in different locations on the island of Ibiza by volunteers from the Balearic Hunting Federation, as well as a few small mice that serve as bait without running any risk to the snake.

One of the talks for students from the municipality of Santa Eulària. Photo: Santa Eulària City Council.

They also learned how to react if they see a reptile, how to maintain traps, how to handle the mice inside, and how to report their findings through an app launched by the Santa Eulària City Council.

Traps for students

The council also provided each class with traps to be placed around the school, an area where, according to the City Council's Environmental Officer, Javi Gómez, there is a large proliferation of snakes.

There are 15 of them, three per class, plus one that the students themselves created in a very comprehensive and effective way. "The intention is for the students to be in charge of all maintenance, taking care of the mouse, monitoring the catches, and learning how to use the information app that the city council has launched so that the fight against snakes can advance as quickly and effectively as possible," Gómez summarized.

New event on Saturday afternoon at the Palau de Congressos

The city councils of Santa Eulària and Sant Joan, in collaboration with the COFIB and the SOS Salvem sa Sargantana Pitiüsa Platform, are organizing an informational event on Saturday at 5:30 p.m. It is aimed at approximately 200 volunteers – 150 from Santa Eulària and 50 from Sant Joan – who will receive training on how and where to place traps, how to care for bait, how to handle captured snakes, and how to share information on the municipal app.

In addition, attendees can purchase a trap and bait after paying a €20 reservation fee to begin collaborating in snake containment.

Those interested should fill out a form available at the top of the Santa Eulària City Council website.



PERIÓDICO de IBIZA Y FORMENTERA

Jornada para formar a 200 voluntarios en la lucha contra las serpientes

Training workshop to train 200 volunteers in snake control

Attendees learned how to set traps and capture snakes



The training session, organized by Santa Eulària and Sant Joan in collaboration with the COFIB and the SOS SOS Salvem Sa Sargantana Pitiusa platform, took place at the Conference Center. Photo: Arguiñe Escandón

Redacción Local | Santa Eulària | 25/04/21 9:33

The Santa Eulària City Council held a training session this Saturday to instruct 200 people in the handling and care of baits to combat the proliferation of snakes in Villa del Río and the municipality of Sant Joan.

Attendees were able to obtain a trap to place on their properties and contribute to containing this snake infestation, which seriously affects the island's ecological balance, particularly the disappearance of lizards. The activity was jointly organized by the City Councils of Villa del Río and Sant Joan in collaboration with the COFIB and the SOS Salvem sa Sargantana Pitiüsa platform.

During the training, municipal technicians and specialists from the SOS Salvem Sa Sargantana Pitiüsa platform and the COFIB explained how and where the traps should be placed, as well as how to care for the mouse used as bait to extend its useful life.

They also discussed snake capture and management, as well as how to report information to the City Council so it can monitor the progress of the infestation, determine where the snakes are most prevalent, and study the effectiveness of measures to fine-tune procedures.

PERIÓDICO de IBIZA Y FORMENTERA

'SOS salvem sa sargantana' reparte 47 trampas para serpientes en Santa Eulària

'SOS salvem sa sargantana' distributes 47 snake traps in Santa Eulària



Volunteers receive training prior to lending the traps and assistance during the campaign | Photo: Daniel Espinosa

Isaac Vaquer Ferrer | Ibiza | 09/04/21 4:01

No snakes have yet been sighted in Ibiza this year. Their hibernation season ends in the spring months, but it seems the climate is still too cold for this invasive reptile, which could lead to the extinction of the Pitiusan wall lizard in less than a decade. That's why the "SOS Salvem sa Sargantana Pitiüsa" platform is working against the clock to receive them with a network of traps distributed among its volunteers.

From last Wednesday until today, Friends of the Earth will distribute a total of 47 traps to 30 volunteers in Santa Eulària. Participants in the initiative will place the traps around their homes and will be responsible for caring for them, ensuring they remain active until November or December, when the snakes return to hibernation. This task involves feeding the rodent that serves as bait to attract the snakes, monitoring captures, and eliminating them. Volunteers receive a trap with a laboratory mouse and food for a week.

It should be noted that the mice used have lost their instinct to fear predators, so they don't suffer stress in the presence of snakes in the trap.

Hazel Morgan, the president of Amics de la Terra in Ibiza, is very satisfied with the response from Santa Eulària's civil society, which has sold out the three days of trap distribution. Some have requested more than one trap.

Similar to what the Vila City Council did a couple of weeks ago, the Santa Eulària City Council has funded the traps and provided the platform with a training space for volunteers. It has also set up a digital trap monitoring system to obtain data that will allow for future improvements in the fight against this invasive species. Volunteers will have access to a section of the digital pest control system, set up exclusively for this purpose, where they can record the tracking of their trap catches, their location, and any incidents they encounter.

Morgan highlights the improvement this monitoring entails "so that in the coming years, we can use this data to improve the strategy for combating snakes."

Facilitating Collaboration

Furthermore, he emphasizes the improvement in trap management brought about by the platform's involvement. In previous years, the island's municipalities offered subsidized traps to agricultural cooperatives. Individuals there had to purchase them at a reduced price, but they received no training and no monitoring of catches.

"Now we provide training to the volunteers; we have direct contact with them for any questions. This makes it easier for people who previously wouldn't consider setting a trap because they wouldn't know what to do with the snake or where to get a mouse, to participate thanks to the distribution of tasks we've implemented."

"SOS Salvem sa Sargantana Pitiüsa" now has a network of 70 volunteers on the island. Participants offer their services according to their ability and availability in three areas: mouse breeding, trap setting and care, and snake culling. In this way, the platform itself provides volunteers with mice for the traps, and if the user with a trap doesn't know how or can't kill the snake, another person can go to the trap location to euthanize it.

So far, the platform has distributed 67 traps, including the 20 distributed in Vila and the 47 that will be distributed in total in Santa Eulària. The trap distribution campaign will take place in the municipality of Sant Josep in the coming weeks. The platform "SOS Salvem sa Sargantana Pitiüsa" is made up of the associations GEN-GOB, Amics de la Terra, the Institut d'Estudis Ibizasencs (IEE), and "Prou!". Anyone who wishes to can volunteer and collaborate in any of the campaign's activities through the links on the GEN-GOB and Amics de la Terra websites.



One of the traps. Photo: Daniel Espinosa.

nature COMMUNICATIONS

ARTICLE

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Extensive introgression and mosaic genomes of Mediterranean endemic lizards

Weizhao Yang[1✉], Nathalie Feiner[1], Catarina Pinho[2], Geoffrey M. While[3], Antigoni Kaliontzopoulou[2], D. James Harris[2], Daniele Salvi[4] & Tobias Uller[1✉]

The Mediterranean basin is a hotspot of biodiversity, fuelled by climatic oscillation and geological change over the past 20 million years. Wall lizards of the genus *Podarcis* are among the most abundant, diverse, and conspicuous Mediterranean fauna. Here, we unravel the remarkably entangled evolutionary history of wall lizards by sequencing genomes of 34 major lineages covering 26 species. We demonstrate an early (>11 MYA) separation into two clades centred on the Iberian and Balkan Peninsulas, and two clades of Mediterranean island endemics. Diversification within these clades was pronounced between 6.5–4.0 MYA, a period spanning the Messinian Salinity Crisis, during which the Mediterranean Sea nearly dried up before rapidly refilling. However, genetic exchange between lineages has been a pervasive feature throughout the entire history of wall lizards. This has resulted in a highly reticulated pattern of evolution across the group, characterised by mosaic genomes with major contributions from two or more parental taxa. These hybrid lineages gave rise to several of the extant species that are endemic to Mediterranean islands. The mosaic genomes of island endemics may have promoted their extraordinary adaptability and striking diversity in body size, shape and colouration, which have puzzled biologists for centuries.

[1] Department of Biology, Lund University, Lund, Sweden. [2] CIBIO/InBIO Research Centre in Biodiversity and Genetic Resources, University of Porto, Campus Agrário de Vairão, Vairão, Portugal. [3] School of Natural Sciences, University of Tasmania, Sandy Bay, Tasmania, Australia. [4] Department of Health, Life and Environmental Sciences, University of L'Aquila, Coppito, L'Aquila, Italy. ✉email: weizhao.yang@biol.lu.se; tobias.uller@biol.lu.se

18-05-2021 - Redacción - A study reveals that the diversity of colors of the Ibizan lizard is due to the mixture of Balkan, Greek and ..... (research)

noudiari.es
Eivissa i Formentera

Un estudio revela que la diversidad de colores de la lagartija ibicenca se debe a la mezcla de genes balcánicos, griegos y peninsulares

A study reveals that the diversity of colors of the Ibizan lizard is due to the mixture of Balkan, Greek and peninsular genes



Por **Redacción** — 18 mayo 2021

An international study published in Nature has shown that the evolution of lizards offers clues as to how major events in the climate and geology of the Mediterranean, millions of years ago, not only caused the extinction of species but also fostered the biodiversity of others.

They cite the Ibizan lizards as an example, since, according to the study, half of their genes come from lizards on the Iberian Peninsula and the other half from those of the Balkans and the Greek islands.

The study demonstrates that the fact that the Ibizan lizard originated as a hybrid is behind their rich and interesting color variations and detailed features. This would explain why they display such different colors and patterns when they live in environments so close to each other, such as the islands of Ibiza and Formentera.

While the debate is currently raging over their imminent extinction due to the predation of invasive horseshoe snakes, the study focuses on the origin of this variety. Thus, the history of this lizard begins with the so-called Messinian salinity crisis, six million years ago, when the Mediterranean practically dried up due to a massive accumulation of salt on its bottom and refilled with water when the Strait of Gibraltar opened, generating massive flooding with Atlantic waters.

These dramatic changes led to a convergence of species that had been isolated from each other and that shared genes.

"We believe that hybridization has driven evolution, promoting biodiversity and the extraordinary adaptability of certain species," says Tobias Uller, professor of evolutionary ecology at Lund University in Sweden, an expert who led the international study published in Nature.

Fig. 1: Phenotypic diversity of wall lizards.

From: Extensive introgression and mosaic genomes of Mediterranean endemic lizards

Podarcis spp. | *Podarcis pityusensis*



Left panel shows representative male phenotypes of six *Podarcis* species: *P. siculus* (top left), *P. filfolensis* (top right), *P. erhardii* (middle left), *P. tauricus* (middle right), *P. waglerianus* (bottom left) and *P. muralis* (bottom right). Some *Podarcis* species are extraordinarily variable, as illustrated by the right panel that shows representative male phenotypes of six distinct populations of *Podarcis pityusensis*, a species endemic to Ibiza, Formentera and adjacent islets. Photo credits: Birgit and Peter Oefinger (https://www.eurolizards.com/) for all six species on the left panel, and for *P. pityusensis* Day's Edge Productions (top left, middle right, bottom left) and Mike Zawadzki (top right, middle left and bottom right).

Image included in the study published in Nature with photographs taken by Birgit and Peter Oefinger, Nathan Dappen and Mike Zawadzki.

PDF

VNIVERSITAT DE VALÈNCIA

Doctoral Programme in Biodiversity and Evolutionary Biology

DOCTORAL DISSERTATION

Natural History and impacts of an invasive snake: the horseshoe whip snake, *Hemorrhois hippocrepis* (Linnaeus, 1758), on Ibiza

PhD student
Elba María Montes Vadillo

Directors
Juan Manuel Pleguezuelos Gómez
Mónica Feriche Fernández-Castanys

Tutor
Pilar Navarro Gómez

Dissertation deposit application: June 2021

IB3N Notícies

Voluntaris a Eivissa per protegir la sargantana pitiüsa

Volunteers in Ibiza to protect the Pityusic lizard

SOS Salvem la Sargantana Pitiüsa which already has a network of 300 people on the island.

31/05/2021



Ibiza Editorial

For a month now, hundreds of boxes with a mouse inside have been patiently waiting in the Ibizan countryside for their moment: to catch a snake. Nearly 300 volunteers have joined the 'SOS salvem sa sargantana pitiüsa' campaign launched by different associations on the island and which has also received the support of different administrations. Among the volunteers there are also those who raise the mice that they use as bait or who sacrifice the captured snakes.

The first time the presence of a snake was reported on the island was in 2003. Since then, the growth in the number of specimens on the island has been inversely proportional to the reduction in the presence of the Pityusic lizard.



Sargantanes negres a llocs inesperats

per Antònia M. Cirer

Resum
Dins l'espècie de sargantana pitiüsa (*Podarcis pityusensis*) les formes melàniques habiten les illes més antigues: ses Bledes, sa Margalida i illa Murada. A més, hi ha poblacions melàniques a dos illots pitiüsos, on esperaríem trobar sargantanes no melàniques. Aquest article ens ofereix una possible resposta a aquests melanismes inesperats.
Paraules clau: Sargantana melànica, *Podarcis pityusensis*, illot, introducció.

Summary
The melanic forms of Ibiza Wall Lizard (*Podarcis pityusensis*) inhabit the oldest islets: ses Bledes, sa Margalida and Murada. There are melanic populations on two Pitiusa islets where we would expect to find non-melanic lizards. This article offers a possible answer to this unexpected melanism.
Key words: Melanic lizard, Podarcis pityusensis, Pitiusa islet, introduction.

Introducció

A l'inici del segle XX els terrariòfils europeus descobriren l'existència de les sargantanes dels illots mediterranis i des del mar Egeu fins a les Pitiüses els proveïdors d'aquest incipient mercat rastrejaren cada racó per tal de trobar exemplars amb coloracions exòtiques que tenguessin un elevat preu de venda.

Als illots de Ponent de les Pitiüses hi ha un d'aquests llocs privilegiats per a trobar aquests tipus de «mercaderies». A grans trets tenim les sargantanes des Vedrà i des Vedranell (*Podarcis pityusensis vedrae*) amb una característica coloració que combina el groc, el blau i el negre (foto 1).

Més al nord hi ha l'illot de s'Espartar, amb l'escull de s'Espartar i s'Espardell de s'Espartar o illa des Frare, nom que fa referència a un picatxo que surt del mar que ens recorda la silueta d'un frare (foto 2). Als dos primers illots hi viu una sargantana amb uns colors marró rogenc, laterals blaus cianosos o turquesa, a vegades amb tons maragda (foto 3), que es van descriure com *Podarcis pityusensis kameriana* i *Podarcis pityusensis zenonis* respectivament, malgrat que actualment es consideren, les dues, la mateixa subespècie. Les sargantanes de s'Espardell de s'Espartar o illa des Frare també haurien de ser similars, ja que aquest illot és quasi una prolongació de s'Espartar, separat d'ell sols uns metres (foto 4); però les sargantanes que viuen en aquest illot són ben diferents de les de s'Espartar. A l'illa des Frare les sargantanes són negres i es descriviren com *Podarcis pityusensis frailensis*.



Foto 1. Sargantana des Vedrà (autora Genevieve Guillaume).

Encara més al nord, a l'extrem més llunyà respecte a l'illa d'Eivissa, hi ha les set illes de ses Bledes. Les sargantanes de les quatre Bledes que en tenen població són negres (foto 5). També hi ha sargantanes melàniques a l'illa de sa Margalida, i de color blau molt fosc, quasi negres, a l'illa Murada.

noudiari.es
Eivissa i Formentera

GEN y GOB alertan de la «inminente» desaparición de la sargantana a causa de la proliferación de serpientes

GEN-GOB warn of the "imminent" disappearance of the lizards due to the proliferation of snakes



Por **Redacción** — 22 junio 2021

The GOB issued a warning this Tuesday regarding the "imminent disappearance" of the Pityusic lizard in Mallorca and the Pityusic Islands, which "highlights" the "defenselessness" of the Balearic Islands' biodiversity.

This lizard, native to Ibiza and Formentera, is also found in Mallorca. It has around 30 subspecies and inhabits peripheral areas of large islands and islets.

The island sections of the GOB of Menorca, Mallorca, and Ibiza (GEN-GOB) met for their annual meeting to discuss the most relevant environmental issues affecting the islands, the conservation organization reported in a statement.

Environmentalists "confirm" that the COVID-19 pandemic has in no way motivated public administrations to commit to the "necessary" change in the economic and environmental model, "not even" despite the "dramatic" economic weakness of "monoculture tourism."

The public authorities "have not reacted," the GOB complains, remaining "anchored" in the approaches of the 1980s and continuing to "squander" resources in favor of overcrowding, ignoring the effects and consequences of climate change.

"The Balearic Islands are part of the problem, not the solution, to the most serious threat to the human species, and are one of the island territories with the weakest and most unsustainable economic model in the world," states the GOB, which laments the "systematic disregard" for the natural environment by the islands' public institutions.

One of the "most dramatic" examples, notes the GOB, is the extinction of the Pityusic wall lizard (*Poadarcis pityusensis*), "solely" to avoid affecting the business of selling large ornamental olive trees for landscaping.

The GOB regrets that the "lack of decisive and necessary" action to protect biodiversity has led to the introduction of species carrying the bacteria *Xylella fastidiosa* and has led to the "automatic and absolute ban" on the export of hundreds of plant species.

However, the introduction of invasive snakes over the past two decades has not provoked "any reaction" beyond some "anecdotal" observations, without "tackling the root of this problem."

The appearance of these invasive species, with great potential to affect ecosystems and native species, is spreading throughout the archipelago and "threatens to become a biodiversity desert," warns the GOB.

"The Balearic Islands are ignoring the problem of the accelerated loss of biodiversity, which at the European level is being reflected in the Biodiversity Strategy 2030 document, which emphasizes not only protecting it but also restoring habitats and species populations," argue environmentalists.

GEN-GOB

The Grup d'Estudis de la Naturalesa de les Pitiüses (GEN) was founded in 1982. In 1992 it was integrated into the organic structure of the GOB (Grup d'Ornitologia Balear i Defensa de la Naturalesa), which will be named GEN-GOB.

DIARIO de IBIZA

Las 2.342 'sargantanes' de Sebastián Candela

The 2,342 lizards by Sebastián Candela

The objective of this photography enthusiast is to raise awareness with his photos of the "serious danger" in which this species is found



Sebastián Candela, with two paper reproductions of his photos. / MARTA TORRES MOLINAM. T.M.



Marta Torres Molina
Ibiza 07 AGO 2021 6:00

Sebastián Candela has a total of 2,342 photographs of lizards on his computer. Or had, at least, until the Jew. Maybe now there are already some more. Practically all of them are captured in the Natural Park of Ses Salines and three of them are also winners of the Eight of August Photography Award of the Ibiza Council. A series that has been named 'Sargantana pitiüsa, let's protect it'. "They are fascinating, captivating animals", comments Candela, who was editor-in-chief of the Sports section of Diario de Ibiza, looking at a paper enlargement of one of the images included in the award-winning series. The little saurian looks at the camera with its mouth so open that it seems capable of eating the photographer's lens. The eyes are directed, irremissibly, towards the black hole framed by the pink palate and the almost violet shine of the tongue about to stick out. The green and gray scales contrast with the intense terracotta of the tile on which the animal rests.

"It was very difficult for me to choose the ones I presented", he confesses. Of those more than 2,300 he managed to keep a dozen. And there he already had to ask for help. Well, advice, who is in charge of making the paper copies, Rafa Domínguez. Because he likes to have copies. palpate them Watch them without having to turn on the computer. "Also, it doesn't sell the same on a screen. They are much more beautiful," he says, showing an image that he did not submit to the competition, but from the same series as another that he did include in his award-winning triad and in which he captured all the movements of a lizard devouring a piece of apple that he had brought from home. The thin claws hold the piece of fruit, which it seems to hug with its body, the pale belly stuck to the pulp and the jaws open to the



Candela, with his camera in Ses Salines. | D. I. / MARTA TORRES MOLINAM. T.M.

unimaginable for the juicy morsel. Sometimes it's an apple in small pieces of ripe banana. Tomato in some of the last ones. Use the bait only occasionally. So that the ones that are in the surroundings come out, they get together, they swirl around the food, they fight over it... "It may seem like a trap, but we look for the game between them", he considers.

When his phone rang on Wednesday and he saw an unknown number, he got nervous. The moment he heard the voice of the Minister of Culture, Sara Ramón, telling him he had won, he thought his heart was going to jump out of his chest. I had confidence. In your photos. And on the subject. But I knew it was going to be very difficult to win. The 2,500 euros of the prize will be used to make a present for his wife and daughter and to offset the cost of paper copies of his photos, some of which hang on the walls of the homes and offices of friends and family.

"They'll disappear"

Her photos of lizards have a very clear objective: "To protect them, to make people aware of them and realize that if we don't do something, they'll disappear in a few years. To make them realize that it's a problem." She warns that it's increasingly difficult to see these animals and is seriously concerned about the snakes entering the natural park. "They've already been seen on Sant Jordi, very close by. If they get in there, they'll be gone. Future generations will have to go to a zoo to see them," reflects Candela, who doesn't understand why the entry of olive trees hasn't been restricted and urges people to be more aware of this "serious problem." "It's not just snakes that kill lizards, but also cats and even some birds," she comments, showing a photograph on Instagram of a bird devouring a lizard.

Looking back, he remembers the *Podarcis pityusensis* as an omnipresent animal in his daily life. So much so that, he says, as a child and young adult, they didn't catch his attention. He wasn't afraid of them, but he didn't like them. "I didn't know them, but now I love them; I find



'Pitiüsa lizard, let's protect it', three award-winning images / MARTA TORRES MOLINAM. T. M.

them very funny. They're a spectacle, with their movements and colors, their docked tails, when they shed their skin, their scales... They're like little dinosaurs," says Candela, who began taking photography seriously when he retired.

Before that time, he had already taken some sports photos for the newspaper, where, as editor-in-chief of the section, he also had to select a large portion of the images. "I learned a lot from the photographers. I was always interested in the technical details of the photographs," he emphasizes. So, in 2018, when he quit his job, his colleagues gave him a photography course, which he learned "for real." Photojournalist Germán G. Lama taught him how to get the most out of his camera, a "normal" Nikon.

The three photographs in the winning series were taken at spots he knows well in Ses Salines Natural Park, which has become one of his favorite spots on the island. He is also convinced that, despite all the talk and writing about it, it is largely unknown: "Most people don't know what we have." This is not the case for him. He has located the pools where birds go to drink, the holes where lizards seek shade, the times when flamingos appear pinkest, where the sun rises and sets in all seasons of the year, and the walls favored by small Pitiusan lizards. Of the latter, he has his favorite. He especially likes the terracotta, almost red tones of one, the perfect contrast with the greens, blues, blacks, and grays of these animals' scales.

“Every day I go, I discover new things. I go at six in the morning and at ten at night. The sunrises at es Cavallet are beautiful,” says the amateur photographer, who in recent years has learned a tremendous amount about the flora and especially the fauna that inhabits ses Salines. Curious and eager to learn more about those who brought his photos to life, he has been building a small library. His long hours in the park have served him not only to observe the beaked, tailed, and clawed animals, but also the two-legged ones and their lack of respect for the protected area. “It’s fenced off, but many of them jump out,” he comments angrily.



‘Pitiüsa lizard, let’s protect it’, three award-winning images / MARTA TORRES MOLINAM. T. M.

His photography tricks are threefold: patience—“I can spend hours taking a photo”—knowing the park almost better than his hallway at home, and shooting in burst mode. “They’re very fast,” he points out. In fact, one of the photos in the winning series, the one showing the open mouth, is the only one of the dozens taken in just a few seconds that shows the lizard's gullet in all its splendor. Getting nine specimens to peer curiously out of the hollow in a wall took him "many days."

He relishes those moments. Many of them alone. "Being at one of the observation points in winter, with a radio or a newspaper, tripod, and camera ready is fantastic. It doesn't matter if they come or not in the end," he says. Neither the cold nor the rain deter him. On days when the humidity and the cold penetrate to the marrow, she hasn't hesitated to stay inside the car, next to one of those walls she loves so much, with the window down and her camera ready to shoot, explains Candela, who confesses how much she missed nature and walks in the protected area during the lockdown and also during the last few months before her hip surgery, when she could barely walk. The park was an important part of her recovery. "After the operation, they recommended I walk," she explains.

The Pending Photos

He doesn't always travel the trails alone. Sometimes he goes with his wife, Esther Guillem: "She's a very important part of my photos." Other times, he's also accompanied by Carme Torres and Pepe Bonet. They, along with biologist Maria Antònia Cirer, encouraged him to enter the competition organized by the Consell de Ibiza. The latter, with whom he has forged a good friendship, chose some of his photos for her book 'Lizards and Islands'. In addition to this volume, his images of lizards have been published in this newspaper and served as a Christmas card from the Institut d'Estudis Ibizasencs (IEE). He says he'd like to put on an exhibition of them, and he confesses that he looks "with a certain envy" at the images of



‘Pitiüsa lizard, let’s protect it’, three award-winning images / MARTA TORRES MOLINAM. T. M.

photographic safaris in exotic and distant places and with a touch of nostalgia at the advertisements for these trips in agencies. In the current situation, he prefers not to travel too far with his camera. "I still have a lot of photos to take without leaving the island," he says.

Candela claims he barely retouches his photographs. "I don't know," he says. "I know the basics of Photoshop and LightRoom, a little contrast and a bit of color, but nothing more," he continues. "In fact, I don't like highly retouched photos," concludes the journalist, who just a few days before learning he had won the Premi Vuit d'Agost, won a "mini-prize" for another of his lizard photos published on his Instagram profile (@sebasibzcandela): the #salvemsasargantanapitiusa, organized by Amics de la Terra. His image of a lizard with its tail severed, captured on the Can Blai street, also in Ses Salines, earned him first prize: a "really good" Ses Cabretes cheese, of which not a single piece remains. And not because he shared it with the scaly models in his award-winning photos. To them, he explains with a mischievous laugh, he only brings the apples and bananas he steals from his wife.

The jury of the Premi Vuit d’Agost photography award highlighted the series ‘Sargantana pitiüsa, protegim-la’, presented by Sebastián Candela, “the author’s timeliness and patience in each of the photographic captures and the vindication he makes of an element so representative of Ibiza’s symbolism and so present in the island’s ethnography.”



RESERVA DE LAGARTIJAS

Conservación preventiva

projecte
RESERVA DE SARGANTANES
Podarcis pityusensis

Impulsado por:

Antonia Mª Cirer, investigadora independiente

Jaume Estarellas, Consell Insular d'Eivissa

Pepita Costa, directora CIFP Can Marines

Maria Bofill, Conservadora MAEF



TvClick

Sargantanes i serps

Lizards and snakes

26-09-2021



Ibizan lizard expert Maria Antònia Cirer Costa tells us, at the Ibiza Botanical Biotechnology Center, about the danger this emblematic species of the island faces due to the introduction of snakes.



DIARIO de IBIZA

Convenio con el Zoo de Barcelona para proteger el calàpet y la sargantana de Ibiza

Agreement with Barcelona Zoo to protect the calàpet and the Ibizan lizard

The Balearic toad is in danger of extinction in Ibiza, where no specimens have been found for years, and the Pityusic lizard is threatened by predatory pressure from introduced snakes.



Specimens of Ibizan lizard (*Podarcis pityusensis*). / SEBASTIÁN CANDELA

Redacción

Ibiza 15 OCT 2021 6:00

The Balearic Minister of the Environment, Miquel Mir, and the Third Deputy Mayor of Barcelona City Council and President of the Board of Trustees of the Barcelona Zoo Foundation, Laia Bonet, agreed yesterday to expand their current collaboration with the reintroduction program for the ferrerets (Balearic toad). This expansion will affect two endangered species in the Pitiusas: the calàpet (Balearic toad), which has not been sighted in Ibiza for years, and the sargantana (Pityusic lizard), which is endangered due to the presence of snakes as new predators in recent years.

Mir previously visited the Zoo facilities, accompanied by its director, Sito Alarcón, and the director general of Natural Spaces and Biodiversity, Llorenç Mas. They visited some of the biosecure breeding facilities and other species that have conservation and reintroduction projects.

Mir and Bonet assessed the results of the reintroduction program for the ferreret (*Alytes muletensis*), which, this summer alone, has allowed the reintroduction of 57 specimens of this endemic amphibian from Mallorca, which is in danger of extinction, to the Sierra de Tramuntana. The Zoo maintains a conservation program for this species with the aim of repopulating the area from which they had disappeared.

The success of this project has led both parties to agree to expand this collaboration with a new breeding project involving the balearic calàpet (*Bufotes balearicus*). This species is listed as endangered in Ibiza, where it has not been found in recent years. It is the subject of a recovery plan (Pla Boscà) that includes the reintroduction of specimens from other locations to favorable habitats. In this regard, and in parallel work, it was agreed that the Barcelona Zoo will breed balearic lizards from Mallorca. The captive-born specimens will be transferred to rehabilitated favorable habitats within the Plan Boscà.



The calàpet or Balearic toad. / WIKIPEDIA

Furthermore, the regional government has commissioned the Zoo to draft, based on its practical experience, a conservation protocol for the Mediterranean stickleback (Gasterosteus gymnurus) and the Pityusic lizard (*Podarcis pityusensis*), which will include a genomic study of both species.

The spiny-head thornback is a small native fish classified as vulnerable and in serious danger of extinction in Mallorca's S'Albufera Natural Park, the only known natural location. The sargantana is an endemic species found throughout Ibiza, Formentera, and the surrounding islets, with a significant degree of genetic differentiation. In recent years, it has been subjected to severe predatory pressure from two species of snakes introduced to the island as a barrier to the ornamental plant trade.

The regional minister expressed his "great satisfaction with being able to expand this collaboration with the Zoo" and noted that "biodiversity promotion and conservation policies must be at the forefront of any government that aims to address the climate emergency."

Furthermore, the president of the Barcelona Zoo Foundation stated that "these projects and partnerships are what give meaning to and explain the New Zoo Model, which goes beyond its grounds to become involved, on-site, in the conservation of a species endemic to the Mediterranean ecosystem."

Barcelona Zoo began the ferreret conservation project in 1993, and since then, more than 1,500 specimens have been born at its facilities, 95% of which have been delivered to the Balearic Islands for reintroduction. These data demonstrate the success of the project, which has resulted in a species that was considered extinct and only had fossil records, now having stabilized populations in its natural habitat.

10-11-2021 - Redacción - Elba Montes receives an excellent cum laude for her doctoral thesis on invasive snakes in Ibiza (research)

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Eivissa i Formentera

Elba Montes obtiene un excelente 'cum laude' con su tesis doctoral sobre las serpientes invasoras de Ibiza

Elba Montes receives an excellent cum laude for her doctoral thesis on invasive snakes in Ibiza



Por **Redacción** — 10 noviembre 2021

Elba Montes, who was a senior environmental technician at the Consell Insular de Ibiza for 11 years and is one of the authors of the study that revealed that Ibizan lizards will be extinct by 2030 if the invasion of horseshoe snakes is not controlled, has obtained her doctorate with an excellent cum laude grade in Biodiversity and Evolutionary Biology from the University of Valencia with the doctoral thesis Història natural i impactes d'un ofidi invertir, la serp de ferradura, *Hemorrhois hippocrepis* (Linnaeus, 1758), a Eivissa (Natural history and impacts of an invasive ophidian, the horseshoe whip snake, *Hemorrhois hippocrepis* (Linnaeus, 1758), in Ibiza).

Montes defended her thesis last Friday, November 5th, and in it, the expert analyzes the changes that the invasive horseshoe snake population on the island of Ibiza has undergone compared to the source population on the Iberian Peninsula in terms of its diet, reproduction, and the predatory pressure they endure. Montes has demonstrated that the most likely causes of its invasive success lie in the absence of natural enemies on the island (predators, competitors, and parasites), thus fulfilling the so-called Enemy Relaxation Hypothesis.

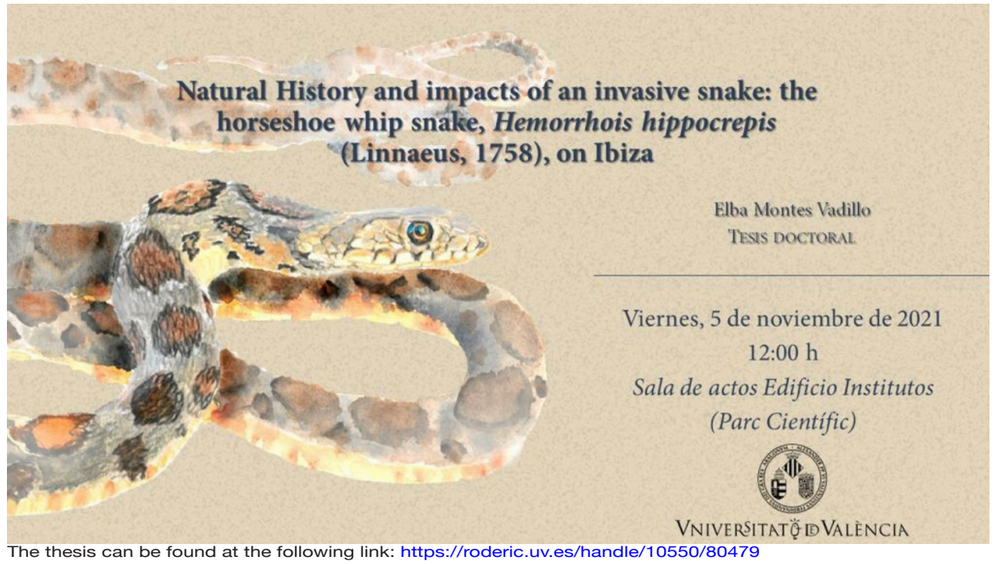
Furthermore, the thesis devotes two chapters to studying the impacts that snakes have on the endemic lizards of the Pitiüses (*Podarcis pityusensis*).

The study shows that, by 2020, snakes had already spread across half of the island of Ibiza, and that, extrapolating the trend, they could cover the entire island by 2030.

Furthermore, quantifying the impact on lizard abundance shows that where snakes are abundant, lizards disappear.

It also describes the extinction of the *P. pityusensis hortae* subspecies on the Illot de S'Ora and the damage to a population on another islet where a snake was sighted.

Finally, Montes also proposes conservation measures, such as those he mentioned to Noudiari in an interview, "which include the creation of a reserve to guarantee the survival of the lizards and the control of snake intrusion, among others." He also proposes changing the classification of the Pityusic lizard from Near Threatened to Endangered on the IUCN (International Union for Conservation of Nature) Red List of Threatened Species.



The thesis can be found at the following link: https://roderic.uv.es/handle/10550/80479

SOS Salvem sa Sargantana Pitiüsa

INFORME FINAL DE CAMPANYA
Tancat a 20 de Novembre de 2021

Enviat a:

- Consell Insular d'Eivissa
- Ajuntament d'Eivissa
- Ajuntament de Sant Antoni de Portmany
- Ajuntament de Sant Joan de Labritja
- Ajuntament de Sant Josep de sa Talaia
- Ajuntament de Santa Eulària des Riu
- Cofib
- Servei de Protecció d'Espècies – Conselleria de Medi Ambient (GOIB)

Official journal website:
amphibian-reptile-conservation.org

Amphibian & Reptile Conservation
15(2) [General Section]: 238–243 (e291).

Rapid endangerment of the lizard *Podarcis pityusensis* by an invasive snake demands an immediate conservation response

[1,*]Elba Montes, [2]Juan M. Pleguezuelos, and [3]Fred Kraus

[1]Department of Zoology, Faculty of Biological Sciences, University of Valencia, c/ Dr. Moliner, 50, Burjassot, E-46100, Valencia, SPAIN [2]Department of Zoology, Faculty of Sciences, Granada University, E-18071 Granada, SPAIN [3]Department of Ecology and Evolutionary Biology, University of Michigan, Ann Arbor, Michigan, 48109, USA

***Abstract.*—Fifteen years have elapsed since the arrival of the invasive snake *Hemorrhois hippocrepis* to the island of Ibiza (Balearic Islands, Spain). In that time, the only endemic vertebrate, the Ibiza Wall Lizard (*Podarcis pityusensis*), has disappeared across half of the island, a subspecies restricted to an offshore islet has vanished, and its extinction in its native range is likely to happen in the next several years if managers do not implement conservation measures with alacrity and decisiveness. In light of these findings, our re-assessment of the IUCN extinction risk category for this lizard shows that its risk status has increased by two levels since its last assessment in 2008, from Near Threatened to Endangered. We also classify this snake as producing a Massive (MA) impact under the Environmental Impact Classification for Alien Taxa. Lastly, we suggest six management measures to prevent the extinction of the majority of genetic and taxonomic diversity of this lizard on Ibiza, Formentera, and the numerous surrounding islets.**

Keywords. Balearic Islands, Europe, extinction, Ibiza, invasive species, management

Citation: Montes E, Pleguezuelos JM, Kraus F. 2021. Rapid endangerment of the lizard *Podarcis pityusensis* by an invasive snake demands an immediate conservation response. *Amphibian & Reptile Conservation* 15(2) [General Section]: 238–243 (e291).

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Introduction

The prominent role of invasive predators in leading to species extinction on islands is well known (e.g., Ebenhard 1988; Courchamp et al. 2003; Blackburn et al. 2004; Reaser et al. 2007). However, most attention has historically focused on the impacts from mammalian predators. With respect to reptiles, the devastation of Guam's native species by the Brown Treesnake (*Boiga irregularis*) was admitted too late to save most of that island's bird and lizard species (Jaffe 1994), but the snake has since become famous for its wide-ranging ecological impacts (Fritts and Rodda 1998; Rodda and Savidge 2007; Rogers et al. 2012; Caves et al. 2013). Subsequently, snake predation has been inferred as contributing to species losses on other islands (Deso and Probst 2007; Cheke and Hume 2008; Smith et al. 2012), though those invasions have been studied less intensively. Because the impacts from invasive snakes on islands can develop quickly, it is imperative that the introductions of snakes to islands be studied soon after establishment.

Ibiza is the largest of the Pityusic Islands, the southwestern portion of the Balearic Islands, and a small archipelago in the western Mediterranean that is politically part of Spain (Fig. 1A). Ibiza has an area of 572 km^2, maximum elevation of 486 m, mean annual temperature of 18.3 °C, and mean yearly rainfall of 413 mm. The island is covered by native pine and juniper forests (*Pinus halepensis* and *Juniperus phoenicea*), cultivated lands, and native shrubland. The Pityusic Islands currently have one endemic vertebrate, the lacertid lizard *Podarcis pityusensis* (Fig. 1B), though an endemic Dwarf Viper (*Vipera latastei ebusitana*) went extinct with the human colonization of Ibiza 4,000 years ago (Torres-Roig et al. 2020). This lizard occupies Ibiza, Formentera, and most of the surrounding rocks of the Pityusic Islands, a total land area of 656 km^2. Ibiza comprises the large majority of this lizard's native range, although there are introduced populations in the Iberian Peninsula (Carretero et al. 1991; García-Porta et al. 2001; Gosá et al. 2015; Colodro et al. 2020). The species has been divided into 23–28 subspecies using morphological criteria, most of which are restricted to individual small rocks surrounding Ibiza and Formentera (Salvador 2015;

Correspondence. **elbamontesv@gmail.com*

26-11-2021 - Redacción - SOS Sargantanes, Francesc de Borja Moll award (control)

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SOS Sargantanes, premi Francesc de Borja Moll

SOS Sargantanes, Francesc de Borja Moll award



Por **Redacción** — 26 noviembre 2021

L'obra Cultural Balear has awarded the Francesc de Borja Moll award, in its XXXV edition, to the SOS, Sargantanes association for its efforts in preserving the Pityusic lizard (*Podarcis Pityusensis*), currently at risk of extinction due to the introduction of snakes to Ibiza.

The Francesc de Borja Moll Award is the main one of the eight December 31st Awards awarded by the OCB at its Night of Culture, which this year will be held on December 11th in Manacor.

SOS Sargantanes is currently formed by the Institut d'Estudis Eivissencs and Prou! Pitiüses en acción. The more than 300 volunteers are coordinated by Antònia Mª Cirer Costa, and have reported, to date, the capture of more than 885 snakes.

Currently, and during the snakes' hibernation, next year's campaign is being prepared (preparation of traps, breeding mice, etc.), with which it is hoped to further reduce the density of snakes in Ibiza, until their eradication is achieved.

10-12-2021 - Antònia M. Cirer - The SOS Salvem sa Sargantana Pitiüsa volunteer group on the island of Ibiza (Eivissa, 70: 12-18) (article)



El voluntariat *SOS Salvem sa Sargantana Pitiüsa* a l'illa d'Eivissa

per Antònia M. Cirer

Resum
Durant l'any 2021 a tota l'illa d'Eivissa s'ha estructurat una xarxa de voluntariat per gestionar trampes per a serps invasores, amb la finalitat de realitzar una acció complementària a la que fan els tècnics de medi ambient. Prèviament es van realitzar gestions polítiques a escala municipal, insular i autonòmica per tal de buscar mecanismes de control d'entrada de mercaderies susceptibles de portar serps. Finalment, s'apunten els tres eixos d'acció per afrontar la salvaguarda de la fauna autòctona i l'erradicació de les serps exòtiques.
Mots clau: xarxa de voluntariat, serp exòtica invasora, trampes per a serps.

Summary
In 2021, in Ibiza island, has been structured a volunteer force to manage snake traps, in order to carry out a complementary action to environmental technicians. Previously, political procedures were carried out at the municipal, insular and regional level in order to seek mechanisms for controlling the entry of goods susceptible to carrying snakes. Finally, the three axes of action are pointed out to face the safeguarding of native fauna and the eradication of exotic snakes.
Keywords: volunteer network, invasive exotic snake, snake traps.

Introducció

Ayboshim o Ibosim és el nom que van donar els fenicis a Eivissa. Significa l'Illa del déu Bes. Déu protector de la llar, de la bona sort, el que fa fugir les serps.

La posició geoestratègica que tenien les Pitiüses dins el mapa de navegació pel Mediterrani, les seves característiques climàtiques i ambientals, i el fet de no haver-hi serps afavorien l'elecció de l'emplaçament fenici a Eivissa. Aquesta absència de serps va determinar que situessin les illes Pitiüses sota la custòdia del déu Bes.

Originàriament, les petites illes mediterrànies no tenen serps en la seva fauna autòctona. Però, les que formaren part de la cultura grecoromana des de molt abans de l'era cristiana, tengueren introduccions d'ofidis lligades als conceptes sagrats de llar, salubritat, farmacopea o comerç que tenien els romans. En canvi, les que ostentaren cultures d'origen semític, com la cultura fenícia i la cartaginesa, sembla que no compartiren aquest fet.

L'absència de serps era una característica que agradava molt als pobles semites, marcadament ofidiòfobs. Mentre que els seus rivals, els romans, tenien una cultura en la qual incorporaven la presència de serps als seus rituals, simbologia i vida quotidiana. L'illa de Bes, era illa sense serps quan estava habitada pels cartaginesos, i quan la romanització es va imposar sobre la cultura púnica, el romans ja no realitzaven rituals a la Bona Dea i altres divinitats simbolitzades amb serps, rituals abandonats durant època imperial. Més tard, la romanització va venir acompanyada de la nova religió cristiana, que té una marcada aversió a les serps, i per tant, no hi va haver oportunitat per a la introducció d'ofidis a Eivissa.

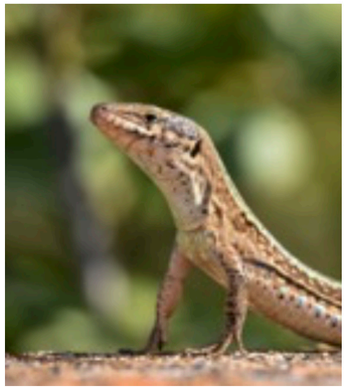
Quan i per què arriben les serps a Eivissa

L'absència de serps s'ha mantingut a les Pitiüses durant els més de 25 segles que hi ha hagut assentaments humans estables i pròspers, fins a l'inici del segle XXI, en què sembla com si la protecció del déu Bes hagués desaparegut.

A partir del 2003 es confirma la presència de serps, i des d'aquell moment no ha parat l'avistament, cada cop més freqüent i en més parts del territori, d'exemplars de serps invasores. La primera espècie que es va observar fou la serp verda (*Malpolon monspessulanus)*, que després no ha tornat a ser observada. Van seguir avistaments de serp blanca: *Zamenis (= Rhinechis) scalaris*, i poc després de serp de ferradura (*Hemorrhois hippocrepis)*, actualment la més ubiqua de totes les serps a Eivissa (Mateo, 2015).

Anteriorment, el *Diario de Ibiza*, en dates tan llunyanes com la dècada de 1930, anava donant notícies d'alguna serp observada a l'illa. Però sempre sense conseqüències ja que els exemplars que es detectaven no varen arribar a naturalitzar-se. La qual cosa va propiciar alguna explicació fantasiosa de per què no hi havia serps a l'illa d'Eivissa, *«terra sagrada de Bes»*, es comentava en aquell temps.

Segurament, des del temps dels romans han arribat serps de diverses espècies en diferents ocasions, amagades entre les mercaderies, a l'illa d'Eivissa. Per què no han proliferat fins ara?



URGENT!

SARGANTANES O SERPS



CA NOSTRA, RESERVA DE SARGANTANES

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Eivissa i Formentera

Sebastián Candela: «Los políticos tienen que actuar de manera más contundente para proteger las lagartijas»

Sebastián Candela: "Politicians need to act more decisively to protect lizards."



Sebastián Candela next to the exhibition poster in Ebusus 'Sargantanes. The time is over.

Por **Laura Ferrer** — 14 diciembre 2021

Until a few years ago, everyone in Ibiza knew Sebastián Candela (Manzanares, Ciudad Real, 1955) as Sebas from Sports. It couldn't be any other way after 38 years working at Diario de Ibiza, 32 of them as chief sports editor.

Photography came later, although he had always been interested in it. It wasn't until his partial retirement in 2017 that he was able to dedicate time to it. The walks he took, camera in hand, through the Ses Salines Natural Park to rehabilitate his hip after an operation were not only a miracle cure for his health but also led him to encounter some fascinating little creatures. He had barely noticed them, but now he's a fan. The Ibizan lizards have won him over, and he wants his photos to raise awareness of the threat of their extinction due to the snake invasion. The Sargantanes exhibition. El temps s'acaba en Ebusus, organized by the Institut d'Estudis Ibizans with a selection of his photos, is the first step in a collaboration that will lead to a book. Sebastián Candela is now Sebas, the lizard man.

When did you first become interested in photography?

I've always been interested. At first, I was drawn to sports photography, but I was never able to take pictures because on Saturdays, Sundays, and holidays, when there were competitions, I was managing the sports section. It wasn't until I semi-retired in 2017 that I was finally able to dedicate more time to it. At my farewell meeting at the newspaper, my colleagues gave me a photography course with Germán Lama, a photographer with whom, by the way, I continue to train.

And you delved into nature photography…

Yes, in the Ses Salines Natural Park. I had a bad hip, and after the operation, I needed to walk. It's become my favorite place. For four years, you could say I've lived there and discovered a fascinating world.

What have you discovered?

I'm surprised every day I go there with something new. There's everything. I have thousands of photos of flamingos and all kinds of birds… but my greatest discovery has been the wonderful world of lizards. The variety of colors, the pearl-like scales, their behavior... I think the Natural Park is the last refuge for the Pityusic lizard, since it has disappeared in other areas. Even one was recently found in Sant Francesc. There's a serious risk that there won't be any lizards in ten years.

This is what Elba Montes warned, but many people say it's an exaggeration.

It's not. It's indisputable that many farmers who used to see lizards on their land no longer see them. Everyone says there are far fewer now. They're a precious treasure that we Ibizans must preserve. If we don't do anything, they'll disappear in ten years. Many experts have said so. I think my future grandchildren will have to see them in a terrarium, and it makes me incredibly sad.

Who would have thought I'd no longer be 'Sebas from Sports' but 'Sebas from the Lizards'!

There are many photos of lizards, but I think my photos have sparked interest because I've spent hours and hours waiting to see them eating, fighting, throwing things at each other, to capture a gesture, a look... Of course, I didn't expect it. I think there's another factor that has contributed to the positive reception of the photos: many people have discovered the Natural Park after the lockdown. It was a perfect place because you could walk around peacefully, without bumping into too many people, and whole families would go there. And well... something else happened: they would throw away fruit scraps, banana peels, and suddenly the lizards would come out to eat. That gave me the idea of taking them out to eat.

Were you interested in animals before?

No, I've never had a dog or a cat or anything. Animals have been a real discovery for me. I only discovered them now, in the Natural Park, and they're wonderful. I have thousands and



Rafa Domínguez, from the Raymar photography studio, and Sebastián Candela pose during the exhibition's installation. Domínguez helped with the selection and editing.

thousands of photos of everything: goldfinches, ducks, flamingos... I take a radio, a newspaper, a tripod, and I wait. And something always happens.

Are there any "strategic" places to photograph the lizards?

I discovered a place where there's a hole in the wall where they peek out... and another that's like a terrace, where I've taken photos of seventeen lizards at once, one next to the other, sunbathing [laughs].

What surprised you about the lizards?

Their gaze. I mean, they look at me, they look at me out of the corner of their eyes. And the colors, the variety of colors. Those scales that look like pearls. How territorial they are. It's a whole world [during the interview, he shows several photos on his computer, his eyes shining as he talks about the anecdotes surrounding each one].

And how did the idea of exhibiting the photos come about?

It actually started in the Natural Park while I was taking photos of lizards. One day, by pure chance, I passed by the Ibizan biologist Antònia Maria Cirer, who specializes in the world of lizards. We introduced ourselves, and it turned out I already knew her brother, Felip Cirer. I showed him my photos, and he encouraged me to do an exhibition. I thought about it a lot. Other people also suggested I do it. Finally, I decided the best thing I could do was donate the photos to the Institut d'Estudis Ibizasencs (IEE) so they could hold exhibitions and disseminate information. That way, it would be more successful and have more impact than if I did it privately.

How did they receive the idea?

The Institut d'Estudis Eivissencs, led by its president, Marià Mayans, has fully embraced this project because they are committed to protecting the lizard. I have donated 300 of the 3,000 lizard photos I have to the Institut d'Estudis Eivissencs.

Was it very difficult to make the selection for the IEE and for this exhibition?

Well, imagine. First, we had to select 300 of the 3,000 lizard photos I have, and now we've selected 30 of the 300 for the exhibition. Rafa Domínguez's (from Foto Raymar) help with the selection was essential, and he's also editing and framing the photographs. His judgment and professionalism have been fundamental. He told me directly that he's done some pruning [laughs].

Will they be for sale?

Yes. The IEE organized the exhibition in Ebusus, which collaborated on everything and is an unbeatable location, in Vara de Rey. If the sale yields profits, all proceeds will go to the protection of the Pityusic lizards. The IEE will cover all setup costs.

Do you expect a good response?

Apart from the artistic aspect, I'm sure there are companies or individuals who would like to contribute to the cause of the lizards by purchasing a photo.

You're not making any money from this exhibition, but I know you have other objectives.

I would like people to become aware of the importance of preserving these reptiles that are so "ours." I hope my photos will serve to raise awareness among people in general, and politicians in particular, about the importance of mobilizing to protect the lizards from the snake invasion. If they really want to protect them, they have to act more decisively because what they've done so far isn't enough.

Has photography been important to you after retirement, a kind of project?

It's been a stroke of luck for me to get hooked on photography because it makes me walk, go for walks, and that's good for me. It's a hobby that requires some investment at first, but not so much later. It's been a great distraction, not just taking pictures, but editing and archiving them. I have to thank my wife, Ester, because she understood and supported me. It's been a lot of hours!

The photo on the poster is spectacular, with a lizard perched on a fig tree...

Well, that fig tree belongs to my friend Pepe, from s'Hort Nou. He brought me some figs, I opened one, and put it there. And you can't imagine the fuss that was made with the lizards and Pepe's fig tree [laughs]. Sometimes I throw them some fruit to see what they'll do, but the most spectacular photos of hiding places are the result of hours of waiting.

An exhibition like this deserves a traveling exhibition. Will it be able to be seen in other places?

The exhibition will also go to Santa Eulària, because the City Council has expressed interest. I was also particularly excited that the Archaeological Museum has expressed interest in having some images of the lizards for school visits. As you can imagine, having my photos in the Archaeological Museum is thrilling. It will also go to municipalities that request it, and there's a chance it will go to Formentera, Mallorca, Dénia, and Barcelona. This makes me very happy because, as I was saying, what I want is for people to see the beauty of lizards, to be aware of their importance, and that they must be protected without further delay.



Sebastián Candela has been dedicated to photography since 2017 after working for 38 years at Diario de Ibiza. J.M.L.R.

Will there be a catalog with the images?

There's a project to publish a book with texts by Antònia Maria Cirer and the photos I've donated.

This year she won two photography competitions.

And both for photos of lizards, yes. One award was given to me by Amics de la Terra (Friends of the Earth), and the other was the Vuit d'Agost (August) photography prize from the Consell de Eivissa (Eivissa Council).

Do I need a special camera to take these photos?

I have a pretty average Nikon. It's not a great camera. I have a 100-400 mm lens. It's more the wait than the camera!

The exhibition: Where: At Ebusus from December 15 to January 6. Hours: 11 a.m. to 1 p.m. and 6 p.m. to 8 p.m. daily.

The exhibition: There will be 30 photos on display that will be for sale.

The photographs are exclusive. There are no other copies and they are signed by the author.

DIARIO de IBIZA

Las serpientes llegan al Parque Natural de ses Salines de Ibiza y amenazan a aves y lagartijas

Snakes have arrived in Ibiza's Ses Salines Natural Park, threatening birds and lizards

A "large" snake, recently seen while sunbathing, joins another sighting near the DC-10, a dead one found on the road, and those captured at the airport, although "its density is not yet high."


A horseshoe whip snake captured in Santa Gertrudis. / J.M.L.R.



José Miguel L. Romero
Ibiza 25 ENE 2022 6:00 Actualizada 25 ENE 2022 8:18

Unstoppable, invasive snakes have already spread to the heart of one of the Pityusic' environmental treasures, the Ses Salines Natural Park. A week ago, a horseshoe whip snake (*Hemorrhois hippocrepis*) was spotted on the Can Blai road, a path that has been maintained and opened to hikers for a year. It starts near the Toro Mar and extends to the airport wall: "It was a sunny day. Now, with the cold, they're hiding, but when it clears up, they come out to warm themselves," explains Vicent Forteza, a technician at the Ses Salines Natural Park.

This wasn't the only snake sighting in this sensitive Ibizan ecosystem: "We have evidence of two other snakes detected near Sant Francesc de s'Estany in the last two years." One was found dead on the road in Ca na Maria. Another one was seen, in this case alive, just over a year ago in Can Mariano Fita, very close to the DC 10 nightclub, Forteza details.

"It's true that snakes are arriving at the Natural Park. For the past four years, I've been worried that they'll enter the wetland area, that we'll start seeing many sightings of snakes in those areas, and that they'll affect the nesting areas of aquatic birds. It's not just lizards that are threatened by snakes," warns the technician. Indeed, a private individual notified them a few

years ago that he had seen one near Sa Sal Rossa, in Sa Torre des Carregador, after which "the Natural Park managed five cages for a period." But none were caught.

The Cofib (Consortium for the Recovery of Fauna of the Balearic Islands) has installed sentinel traps around the perimeter of the Natural Park to detect them: "But with such low densities of snakes, the traps don't work as well as if they were high." Nor did any fall into those cages.

But they do exist. In addition to those sighted inside the Natural Park, some have even been captured within the airport, whose perimeter borders this protected area: "They're also trapping specimens there, as part of their wildlife control efforts. Some were on the runways. And during the recent construction work, when they brought in heavy machinery and dismantled walls, they pulled out some dead ones."

Sunbathing in Sant Francesc

Víctor Colomar, a veterinarian from Cofib and coordinator of the plan intended to halt the proliferation of snakes in the Pityusic Islands, confirms what Forteza said: "In 2021, there were some captures inside the airport [with cages provided by Cofib, but AENA didn't provide much information or explanation]. And about three years ago, a private individual saw one in the sa Sal Rossa area." More recently, he continues, "a very large snake was found sunbathing [sunbathing to thermoregulate] near Sant Francesc de s'Estany." They come out when the sun is out to warm up, but "not yet to eat, so it doesn't make sense to go after them yet," says Colomar, referring to setting traps to capture individuals of this invasive species: "When the campaign begins, this and other sightings will be taken into account. And since it's a Natural Park, special care will have to be taken."

Colomar points out that, while there are undoubtedly snakes in Ses Salines, their density is not yet high: "We installed a fairly large number of cages around that entire peripheral area of the Natural Park to control them, but no one was caught. Within Ses Salines and the peripheral area, there are definitely some snakes. But the fact that they haven't fallen into the traps means that their density in that area is very low... but they are there." They do exist, but not as exaggeratedly as in Sant Llorenç or Santa Gertrudis: "We haven't found many, nor that there is a density or population that is getting out of control."

For now, Colomar emphasizes, "there isn't an unstoppable number of snakes in Ses Salines. When this started in Santa Eulària [they were detected in 2003 and became a problem in 2010], the densities were extreme and they had already done a lot of damage. In the Park, the damage is currently potential." He also suggests not to overdramatize: "One swallow doesn't make a summer. Seeing a snake in Ses Salines Natural Park shouldn't make us tear our clothes, even if it worries us. We were already worried before they were seen there." If they were to proliferate, Colomar warns that "density can be contained, but not their expansion" with existing resources.

It's not just the lizards that are at risk

In addition to the lizards, if horseshoe snakes enter the Natural Park, "waterbirds such as sandpipers and woodcocks..." will be at risk, warns Víctor Colomar. "All birds that nest on the ground or in the small trees of Ses Salines are susceptible to predation. Especially eggs and chicks." The arrival of the snakes worries the Cofib because it threatens the diversity of Ses Salines.

PERIÓDICO de IBIZA Y FORMENTERA

'Sargantanes', cultura, política y mucha historia en el número 70 de la revista 'Eivissa'

Lizards, culture, politics, and a whole lot of history in issue 70 of 'Eivissa' magazine



Ibiza issue 70 was presented at the Can Ventosa library.

Manu Gon | Ibiza | 04/02/22 3:59

A new issue of the magazine Eivissa, published periodically by the Institut d'Estudis Ibizasencs, was presented on Thursday night at the Ibiza municipal library in Can Ventosa. This is the 70th issue of this third edition and is now on sale for €5 in bookstores and at the institute's headquarters on Via Púnica Street in Ibiza Town.

The first thing that catches the eye about this issue, once again edited by Enric Ribes i Marí, is the spectacular photograph illustrating the cover. It is one of the many images taken by former journalist Sebastián Candela of Ibizan lizards, whi ch he donated to the institute to support the SOS Save the Lizard campaign, which seeks to draw attention to the dire situation this animal faces in the face of the spread of snakes. A topic that is also covered in depth in the publication thanks to the article "El voluntariat SOS Salvem Sa Sargantana

Pitiüsa a l'Illa d'Eivissa" (The Volunteers' fund to save the Pityusic lizard on the Island of Ibiza), written by one of the leading experts on the subject, Antònia M. Cirer. This seven-page text talks about the network created in 2021 to manage traps for invasive snakes and carry out complementary work to that carried out by environmental technicians. It also includes three lines of action to safeguard native fauna and eradicate reptiles. According to Cirer, these are "continuing to call on politicians to find ways to control the entry of invasive species, continuing intensive predation through snake traps, and urgently establishing wildlife protection zones that are inaccessible to predators."

History Articles

As usual, the magazine includes other articles related to the history of the Pitiusas. The first is the one that opens this issue under the title "Isidor Macabich (1915-1931): Religious, Social, and Political Activism." This is the second part of Isidor Marí's extensive research on the biography of the well-known priest, historian, archivist, folklorist, and poet, focusing this time on the years leading up to the Second Republic. Through it, readers will discover how Macabich "opposed the spread of socialism" and how, for example, "he was a promoter of agrarian unionism in Ibiza through the National Catholic-Agrarian Confederation" or how, "when the Republic arrived, he promoted the creation of the Social Agrarian Party on the island in 1931."

Following the article on the lizards, the magazine continues with the extensive article "A proposal for Ibizan society for the effective and accurate protection of the microtoponymy of Ibiza and Formentera," written by Ángel Custodio, secretary of the Formentera Council and professor of Civil Law at the UIB; Bernat Joan's reflection, "Thinking about the Future of Europe," on the challenges facing the European Union, "such as managing immigration, climate change, education, the creation of a shared European culture, technological change, and managing the recovery from the pandemic"; and Bartomeu Ribes' personal perspective on writing and its relationship with work and the search for words, written under the title "Paraules d'amor a la faltriquera." Immediately afterward, the renowned historian Felip Cirer addresses the 18th of July in Ibiza in an article in which he also highlights the role of the secretary of the Ibiza Town Hall at that time, Luis Suvirón from Malaga. Thanks to his writings in the town hall's minutes book, we can discover precisely and from a different perspective everything that happened that day when the state of war was declared, as well as various aspects of daily life on the island of Ibiza that year.

The following texts are "Catalog and Commentary on the Studies on Folklore by Isidor Macabich in Ibiza," in which Joan Gomila addresses the contribution of the studies of this great Ibizan figure to folklore and ethnopoetics through the publication of Words of Good Christianity in 1918 and of Volume V of History of Ibiza in 1967; Two Memories of the Civil War in Ibiza, written by Luis Ruiz Val, discusses the figures of several people killed on the island during the conflict. He analyzes "how in all wars, including ours, there was repression and innocent victims on both sides." He also writes "with the intention of constructing a collective, inclusive memory that respects individual and family memories." Artur Pérez-Cabrero's The Tourist Guide, in which Laura Serra Suñer explains what the first guidebook on the life and customs of the Ibizan people was like in the late 19th and early 20th centuries.

Finally, the magazine concludes with a summary of the 2020 Curs Eivissa de Cultura, which included four lectures and a roundtable entitled Epidemics and Pandemics: Reflections from the Pitiusas, and the 2021 Manifesto for Sant Joan's Night.

22-02-2022 - Eugenio Rodríguez Martos - The environment Department requests the APB to create a quarantine zone to control their entry (politics)

DIARIO de IBIZA

Serpientes en Ibiza: Medio Ambiente reclama a la APB una zona de cuarentena para controlar la entrada

Snakes in Ibiza: The Environment Department requests the APB to create a quarantine zone to control their entry

Minister Miquel Mir explained in the Balearic Parliament that four meetings have already been held with the governing body of the port of Ibiza.



Environment Minister Miquel Mir during the presentation of snake-control traps. / VICENT MARI



Eugenio Rodríguez Martos
Ibiza 22 FEB 2022 10:28 Actualizada 22 FEB 2022 10:34

The Balearic Minister of the Environment, Miquel Mir, declared this morning in the Balearic Parliament the need for the Port Authority of the Balearic Islands to implement a quarantine zone in the port of Ibiza to prevent the entry of snakes into the islands, especially in ornamental trees. In response to a question from PP MP Virginia Marí, Mir pointed out that the Port Authority is working on the new special plan for the port, which has not yet been made public. "We will wait for it to be produced, review its content, and make any contributions we deem appropriate," said Mir, who also explained that four meetings have already been held with the governing body of the port of Ibiza, some of which were also attended by the Balearic regional councils, and that this issue has been addressed, not only in Ibiza but also in the port of Mallorca.

The PP MP emphasized that the "serious problem" of the snake invasion in Ibiza "continues to grow," to the point that they are now appearing in areas where "they had never been seen before," such as in the Can'Escandell area of Ibiza City and in the Ses Salines Natural Park. She also noted that in January 2021, the Department of the Environment of the Consell de Ibiza sent a technical report to the Balearic regional government "urgently requesting this quarantine zone." Marí stated that this measure is not only necessary to implement in Ibiza, but should also be implemented "in the ports of origin."

In his response, Mir indicated that not only will they insist on implementing this quarantine zone on the island of Ibiza, but they will also "find the legal mechanisms for the Spanish Government to control the ports of origin, especially those of ornamental trees, which are the source of the snakes."

He also said that if action had been taken in 2004, "when the entry of snakes into Ibiza was identified, the problem wouldn't be as large as it is." "I say this as constructive criticism," he pointed out, while explaining that since 2016, under the latest progressive governments, the number of people working exclusively in Ibiza to control the snake infestation has increased from one to eight, and the number of private cages has increased from 300 to 2,000, thanks to collaborative work with the hunters' association and the Consell.

17-03-2022 - Redacción - Antònia Cirer explains at the Urgell Primary School the importance of lizards and how to hunt snakes (educational)

noudiari.es
Eivissa i Formentera

Antònia Cirer explica en el CEIP l'Urgell la importancia de las lagartijas y cómo se cazan las serpientes

Antònia Cirer explains at the Urgell Primary School the importance of lizards and how to hunt snakes



Antònia Cirer demonstrates how a snake trap works to students at CEIP Urgell.

Por **Redacción** — 17 marzo 2022

Yesterday, the 3rd grade students at Ceip l'Urgell Primary School received a very special visit from Ibizan scientist and lizard expert Antònia Maria Cirer.

The group, called "Mandarins," is researching and studying the world of lizards and the current problem of snake invasions, so they had the opportunity to interview the expert in the classroom. She also taught them how snake traps work.

The young researchers were interested in aspects such as the importance of the species, what they eat, how long they've been in Ibiza, what types there are, and how many eggs they lay.

The school asked the City Council to help them organize this meeting, as well as permission to visit some of the islands and to have snake traps available.

The school highly values the initiative, from which they learned a lot and after which they presented Cirer with a diploma.

"We look forward to continuing to be Antònia's helpers and saviors of our beloved *Podarcis pityusensis*," they conclude.

17-03-2022 - Redacción - Ibizan lizards will have a reserve at the Puig des Molins Museum to ensure their survival (educational)

noudiari.es
Eivissa i Formentera

Las lagartijas ibicencas tendrán una reserva en el Museo del Puig des Molins para garantizar su supervivencia

Ibizan lizards will have a reserve at the Puig des Molins Museum to ensure their survival



Por **Redacción** — 17 marzo 2022

This morning, the Ibiza Council hosted the presentation of the Ibizan wall lizard (*Podarcis Pityusensis*) reservoir, which will be located at the Puig des Molins Archaeological Museum in Ibiza Town.

This initiative aims to "guarantee the survival of this vertebrate reptile," one of the most emblematic animals of the island's native fauna and currently "in danger of extinction due to the proliferation of snakes recorded on the island in recent years."

The project represents "a very important step" toward guaranteeing and preserving this species, "of incalculable biological value to Ibiza's natural ecosystem," explained one of the initiative's coordinators, biologist Antònia Maria Cirer.

The expert warned of the "accelerated rate of extinction" suffered by lizards, given that they account for 56% of the snakes' diet. This has led to a significant decline in the population of this reptile, "which is decreasing exponentially as the snake population grows," Cirer emphasized.

The establishment of this reserve represents "a necessary preventive measure to preserve the genetic conservation of the Podarcis population on the island." They will be able to live freely

in a safe environment, oblivious to the danger posed by the presence of snakes. The initiative was launched by students and teachers from the Can Marines agri-food sector training courses, according to the Consell (Spanish Consell), and also involves the Balearic Government, Ibiza City Council, and the Species Protection Service Cofib.

The president of the Island Council, Vicent Marí, took advantage of the event to thank all the people and institutions involved in this project, which, he said, "must be one of the many initiatives promoted to preserve an animal as iconic and important to our biodiversity as the lizard."

Marí highlighted the coordinating work of the Consell and called for "the necessary involvement of island society in the preservation of this species." They will take advantage of all the existing infrastructure and the educational team from the MAEF (Spanish Ministry of Environment and Natural Resources) will carry out outreach activities.







PERIÓDICO de IBIZA Y FORMENTERA

Ibiza se vuelca en salvar a la 'sargantana' y crear un reservorio en Puig des Molins

Ibiza is committed to saving the lizards and creating a reservoir in Puig des Molins

The idea came from a group of vocational training students at Can Marines



Puig des Molins will host a reservoir for Ibizan lizards | Photo: Consell de Ibiza

Gisela Revelles | Ibiza | 17/03/22 15:40

Antònia Maria Cirer's fight for the preservation of Ibizan lizards is beginning to bear fruit. This was demonstrated yesterday with the presentation of the first reservoir created for these reptiles in Puig des Molins. Thanks to various institutions, they will be able to live and reproduce without the risk of predation that snakes currently pose on the rest of the island.

Cirer, through the SOS Sargantanes platform, has managed to bring the regional government, the regional council, and the Ibiza City Council together to launch this space. The project also involves the Archaeological Museum of Ibiza and Formentera, the UIB (University of Ibiza and Formentera), and, in the future, if the organization's managers agree, the Parador del Castillo.

The idea came from a group of vocational training students at the Can Marines center, led by Pepita Costa.

"Indisputable Native Value"

During the project presentation, which took place at the Consell d'Eivissa (Eivissa Council), Cirer made it clear that this is a "preventive conservation action." "It's about," she added, "preventing what we already have from disappearing." The professor, an expert on these reptiles, pointed out that the "native value" of the lizards "is indisputable." She recalled that this species is essential for maintaining the ecosystems of Ibiza and its islets and that, among its peculiarities, is that it is "one of the great examples of how evolution and adaptation work."

But the lizards are also part of the island's idiosyncrasy. Thus, Cirer pointed out, they have become a "cultural icon" that connects Ibiza's past with its present and future. "They are an icon of most of Ibiza's cultural activity," she stated, "and they are the image of the way we Ibizans see life."

This amazing animal, however, is currently in danger due to the snake invasion. A situation that has led experts like Cirer to launch various initiatives to prevent the disappearance of this species. "The snake is a very effective predator" that "competes with the lizards for shelters," Cirer recalled. Furthermore, while a family of lizards is capable of laying only one egg per year, the snakes themselves can lay that number tenfold. Therefore, it is "urgent" to take action.

In Cirer's opinion, Puig des Molins is the perfect place to create a genetic reservoir that will allow the lizards to remain on the island. It is a location protected from snakes by an "urban crown" and, furthermore, it is easy for citizens to observe these animals. Currently, it has "a high density" of lizards, and the fact that it is a publicly owned site somewhat guarantees the continuity of the project.

"It's the ideal place," Cirer asserted, "the best custodian for the reserve." A space that, moreover, has remained unchanged "since time immemorial" and is the same location as the Archaeological Museum, "custodian of the great values of Punic Ibiza."

The project's presentation gives an idea of its importance. In addition to Cirer herself and Pepita Costa, the President of the Consell, Vicent Marí; the Island Councilor for the Environment, Vicent Roig; the Director General of Vocational Training (FP) of the Government, Antonio Baos; and the Councilor for the Environment of Ibiza town, Jordi Salewski, among others, attended. And, in the words of María Antonia Cirer, the protection of the lizards must be "a project of all civil society."



18-03-2022 - Josep Àngel Costa - The Ibiza wall lizard is key to preventing micro-insect infestations (ecology)

DIARIO de IBIZA

Antonia Maria Cirer, herpetóloga: «La lagartija de Ibiza es clave para prevenir plagas de microinsectos»

Antonia Maria Cirer, herpetologist: "The Ibiza wall lizard is key to preventing micro-insect infestations"

Puig des Molins and es Soto have been symbolically declared "preventive reserves" for *Podarcis pityusensis* to ensure the continued existence of its population in Ibiza.



Image of the lizard endemic to es Vedrà. | J.A.RIERA / JOSEP ÀNGEL COSTA. EIVISSA



Josep Àngel Costa

Ibiza 18 MAR 2022 6:00 Actualizada 18 MAR 2022 8:00

A proposal from a group of vocational training students at Can Marines resulted yesterday in an institutional commitment to intensify the fight against the snake infestation in Ibiza, with a lavish presentation at the Consell headquarters. For now, both the island and regional governments, as well as Ibiza City Council, have taken up the student challenge and are proposing a "preventive reserve" of lizards in es Puig des Molins and es Soto, a symbolic declaration of intent to promote a plan to raise awareness, disseminate information, and safeguard the most emblematic species of the Pitiusas.

"It's the main vertebrate endemic to the Balearic Islands and was already present in Ibiza before Homo sapiens appeared in the world," recalled Antonia Maria Cirer, herpetologist and founder of the SOS platform "Save the Pitiusa Sargantana." Beyond its iconic value, the *Podarcis pityusensis* is a paradigmatic example of Darwin's theories, on par with the finches the English scientist discovered in the Galapagos Islands.

Example of evolutionary theory

"As each island has a separate population of lizards, with a different and unique evolutionary

history, this favored the discovery of what is known as a significant evolutionary unit on each island," Cirer explained. Thus, while on the mainland these small reptiles are insectivores, on the Pitiusas they are omnivores that feed on decomposing organic matter as well as flowers, fruits, or "any food source available on an islet."

They also devour small insects, so their omnipresence makes them a central element of the food web and ecosystems of Ibiza and Formentera. "Hence their great biological importance, because they play a preventive role against microinsect pests. These are bugs that we don't see until they are abundant, but if the lizards disappear, we will notice," the herpetologist warned.

Awareness

The awareness-raising and snake-trap installation work carried out by SOS Salvem sa Sargantana Pitiusa since last year has also extended to the educational field, as is the case with the Can Marines CIFP (Center for the Protection of the Land of the Agrarian and Maritime Fisheries) program. "We teach training courses for agricultural and maritime fishing families, which are closely related to environmental values," noted the center's director, Pepita Costa. "That's why it's also important to train citizens with positive attitudes that help improve the environment," she added.

As a result of this premise, the first-year students of Agro-ecological Production proposed in a tutorial that they participate in the mass distribution of snake traps and the breeding of mice as bait, as well as declaring the Can Marines estate a reserve for lizards. This latter plan was brought to Cirer, who, seeing a good idea, suggested seeking support from the Consell, so environmental technician Jaume Estarellas is one of the advisors for this reserve project.

The Ideal Area

"We have a proposal for a division of tasks, and we will ask the Government and Cofib [Consortium for the Recovery of Fauna of the Balearic Islands] to develop the biosecurity project to prevent snakes from entering the reserve. It's a commitment to create synergies, involve other administrations to monitor and oversee the lizard population in this area, and promote environmental education," Estarellas emphasized.

The technicians also realized that Can Marines was not the ideal location, although the center remains involved in the project as a driving force. Es Soto and es Puig des Molins are natural areas with a high density of lizards that, being surrounded by the urban center, have so far been spared from the snake infestation. "The reserve is a preventive conservation project, and it's not about doing anything, but rather trying not to lose what we already have," Cirer emphasized.

This ideal location facilitated the addition of the last necessary element to the reserve: the Archaeological Museum of Ibiza and Formentera (MAEF), which, thanks to the necropolis, boasts more than five hectares of protected and fenced nature. This will expand and strengthen the environmental work already initiated by biologist Olivia López, author of the inventory that compiled more than 150 species of flora and fauna in Puig des Molins.

"This reserve is like preventive conservation, one of the basic principles of archaeology. These are the measures we take to protect a site without disturbing it. When they are no longer sufficient to preserve it, restoration comes into play. This is what we want to avoid with the lizard," Bofill stated.

DIARIO de IBIZA

Una reserva para las lagartijas de Ibiza

A reserve for Ibiza's lizards

Opinión



Verónica Carmona Acedo

19 MAR 2022 6:00
Actualizada 19 MAR 2022 9:23

It wasn't unusual to see lizards inside the house. Sometimes they gave me a real scare. They took advantage of the fact that the front door was always open in the summer to sneak in and scamper across the floor in search of a crumb of bread or leftover food to eat. Sometimes they crept so far into the house that they appeared in the living room where we practice yoga and settled on the warm rug that covers the entire floor of that room. I wasn't amused when I started seeing the unmistakable mouse droppings. These also sneaked into the house at any time of year and once even made a litter.

But since a new neighbor moved in, there are no more mice or lizards on the stairs that connect the house to the unpaved area. Last summer I found one sunbathing in front of the door. It was a fairly large snake. Emboldened, we grabbed a hoe at home and left it near the stairs to hunt it down, but the truth is, it was always faster than us, and not everyone is good at killing, even though it's an invasive species and is wiping out the Pitiusan lizards. We bothered the snake so much last summer every time it came out to sunbathe that we thought it had already left.

But a few days ago, when the sun came out again, we saw it hadn't left. The fight against snakes now seems like a lost battle; now they're even planning a reserve for the Pitiusan lizards, which once populated the entire island.

DIARIO de IBIZA

No, las culebras no se comerán todas las lagartijas de Ibiza antes de 2030

No, snakes won't eat all of Ibiza's lizards before 2030

The leading expert on '*Podarcis pityusensis*' doubts that the Pitiusian endemism will disappear from Ibiza in eight years as a result of the expansion of horseshoe snakes, as claimed in a thesis he harshly criticized.



Valentín Pérez Mellado during his lecture at Can Jeroni. | J.A. RIERA / JOSÉ MIGUEL L. ROMERO



José Miguel L. Romero

sant josep 27 MAR 2022 6:00 Actualizada 27 MAR 2022 8:49

Exactly a year ago, panic spread: "The rate at which the invasive population is spreading suggests that the lizard will be extinct on the island of Ibiza before 2030." This was the assertion in the abstract of the thesis "Natural history and impacts of an invasive snake: the horseshoe whip snake on Ibiza," presented at the University of Valencia by Elba Montes, a former technician at the Consell. In eight years, not one. Valentín Pérez Mellado, PhD in Zoology from the University of Salamanca and the foremost expert on endemic reptiles of Ibiza, doubts it, as he explained yesterday during the talk he gave as part of the 1st Scientific Outreach Conference organized by the Nature Reserves of es Vedrà, es Vedranell, and the Ponent islets near the ses Salines Natural Park.

Basically, Pérez questions both the conclusions of that thesis and the purity of the scientific method used. "Elba Montes's work says that lizards have practically disappeared from the northwest of the island. That's not true. Nor is it true that, as the thesis points out, they were once evenly distributed throughout the island. It would be the only case on the planet," noted Pérez, who bases his analysis on data he collected with Dr. Ana Pérez Cembranos in 2017: "In the northeast, the density is low. And it was already that way before the arrival of the snakes," he asserts.

"Just because you don't see them doesn't mean they don't exist."

The professor of Zoology also criticized the way in which, based on a 500-meter transect, Montes concludes that there are no more lizards in the analyzed area because they have been eaten by snakes: "You can't do a 500-meter transect and, if you haven't seen them, say they're gone. Negative data isn't easy to obtain; it requires many years of work [...] As a scientist, I don't accept that based on a 500-meter transect, you can say there are no more lizards because you haven't seen them."

Based on his experience (he has been studying the Pityusic lizards for more than 40 years), sometimes there are, other times not: "The fluctuations, especially on the islets, are very large." Magnificent populations six years ago "remain at lower values for some time afterward, but that doesn't mean we should throw our hands up in horror. We need a series of years to be able to say anything concrete about it," says Pérez, who gave the example of es Vedrà: "It now has extraordinary populations, but they were very low five years ago."

"Apocalyptic Conclusions"

In this sense, he explained that "apocalyptic" conclusions should not be reached without taking into account other data, such as stochastic factors (processes whose evolution over time is random), "those that we cannot control." For example, rainfall. In his studies on the Aire lizard (Menorca), he found that "there is a correlation between rainfall and the number of lizards. The more it rains, the more there are. It's a factor that must be taken into account." Sometimes, a storm is enough to decimate them, as is often the case on the islet of d'en Pou, in the heart of Es Freus, or on Es Caragoler, where "we can now estimate a population, when for years not a single one was seen." Populations are not a snapshot.

In Pérez's opinion, "you can't make the syllogism that if you don't see lizards in the northeast of the island, which isn't true, then by 2030 the lizards on Ibiza will have disappeared," as Montes's thesis states. "The situation," he warned, "regarding the *Podarcis* is serious, but we can't dramatically establish an apocalyptic scenario. If it doesn't happen in nine years, they'll laugh at us." Pérez believes that snakes "are a huge problem," and therefore must be "controlled," given their appetite for the *Podarcis pityusensis*: "But there are other characteristics that contribute. [...] The populations are not doing well, it's true, but not just because of the snakes. There are many reasons why their situation is complicated."

Belling the Cat

For example, he advocates controlling cats: "I believe we shouldn't put all the focus on snakes. We have to bell the cat. What about them? We have to include them in the equation, but since they are so popular. Since we have a Judeo-Christian upbringing, it's easy to demonize snakes; it's more complicated with cats." Christian upbringing and watching so many Disney movies have distorted our view of the animal world to the point of infantilizing it.

The herpetologist believes that horseshoe and ladder snakes "have been the final straw for lizard populations that had been threatened for some time." Because in 60 years, "the island has changed dramatically." Urban planning, cementing walls... That has certainly put them on the ropes for decades, he asserts: "In Ibiza, what's happening, the main problem, is that the

natural environment is disappearing."

Lizards for 20 euros

The Salamanca-based zoology professor points out that each islet has its own endemic species (more than four dozen in the Pitiusas), with unique genetic material: "Creating 44 evolutionary units, maintaining that gene bank, would mean creating a captive breeding center that doesn't exist anywhere else in the world. It's unfeasible to have those populations," he notes regarding this other recent development. And it wouldn't be useful either, in his opinion, because animals aren't just genetic: "There's epigenetics [modifications that occur in response to changes in the environment], the influence of environmental conditions, which isn't achieved in captivity. We always opt for artificial solutions, when what we need to protect is the population, the island where they live."

There's another pressure on lizards: human. In the 19th and 20th centuries (supposedly until 1983), hundreds were captured for scientific collections: "This collection continues: in Na Bosc in 2017, we saw several traps made with plastic bottles. They continue to be sold." Up to €20 per specimen, despite the ban.

Some Germans are trying to legalize their breeding farms to "export them to the United States." CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) asked Valentín Pérez for a report on the matter. And he was categorical: "This trade cannot be legalized because there is no way of knowing the origin of these lizards, which is surely recent. Since 1983, it has been prohibited to remove them from here. The Germans say they've had them for 50 years. It's another outrage." They argue that they could be used for translocations [moving individuals of one species to another location for repopulation] if they are endangered on some islets. This reasoning is outrageous; it's purely commercial.

Because lizard translocations "are impractical," in his opinion: "Each population is a treasure that must be preserved." Each one, on each islet, "has been isolated for hundreds of thousands of years, with unique characteristics. It makes no sense to translocate; it's outrageous. That's not a conservation measure." For example, if the lizard population on es Vedranell were to plummet, "it would be foolish to translocate lizards from es Vedrà to solve that problem."

The Endemism of Es Vaixell

Pérez recalled the experiment conducted 90 years ago by Martin Eisentraud on the islet of Es Vaixell (among others). He introduced 58 lizards from the island of Ibiza. They were believed to have disappeared until Jorge Calvo, a Nature Reserve official, saw them with binoculars from Na Gorra. When he climbed Es Vaixell (given its devilish terrain, it must be done via alpine climb), the ones Valentín Pérez saw had nothing to do with those from Ibiza. A subsequent analysis determined that their genetics were unique: completely melanic, their DNA is very far from that of the main island and close to that of Na Gorra, but with subtle differences. They are a unique subspecies (although Pérez prefers to speak of a significant evolutionary unit): "It does not contain haplotypes from Ibiza. Therefore, the ones Eisentraud introduced never interbred with those from Es Vaixell; they disappeared."

29-03-2022 - Marta Torres Molina - The story of the 'sargantanes' which are hunt by snakes in Ibiza (educational)

DIARIO de IBIZA

La historia de las 'sargantanes' que cazan serpientes en Ibiza

The story of the 'sargantanes' which are hunt by snakes in Ibiza

Meritxell Rius Montcusí and Paquita Marí Bonet present the story "L'assemblea de les sargantanes."



Meritxell Rius Montcusí and Paquita Marí Boned, with a copy of the book. / MARTA TORRES MOLINA. IBIZA



Marta Torres Molina
Ibiza 29 MAR 2022 6:00

At twelve noon, under a blazing sun and at the foot of the Ses Portes tower, there gather "the fine lizards of Vila, their dark cousins from Sant Rafel, the emerald ones from S'Espartar, the turquoise ones from Sa Conillera, the large black lizards from Ses Bledes, the discreet ones from Punta des Trucadors, and the showy ones from Es Vedrá, always so attractive." The great council of the lizards of the Pitiusas, with a single objective: to prevent the snakes from eating them. Thus begins "L'assemblea de les sargantanes" (The Assembly of the Snakes) (Balàfia Postals), written by Meritxell Rius Montcusí and illustrated by Paquita Marí Boned, which will be presented on April 6 at eight in the evening at Sa Nostra Sala.

"I started writing it in 2016, while working on a project with third-year high school students about a Sioux people rebelling against an oil pipeline that crossed their sacred lands," the writer recalls. That project led to an exhibition that included a space about the lizards, and the threat they face made her decide she had to do "something."

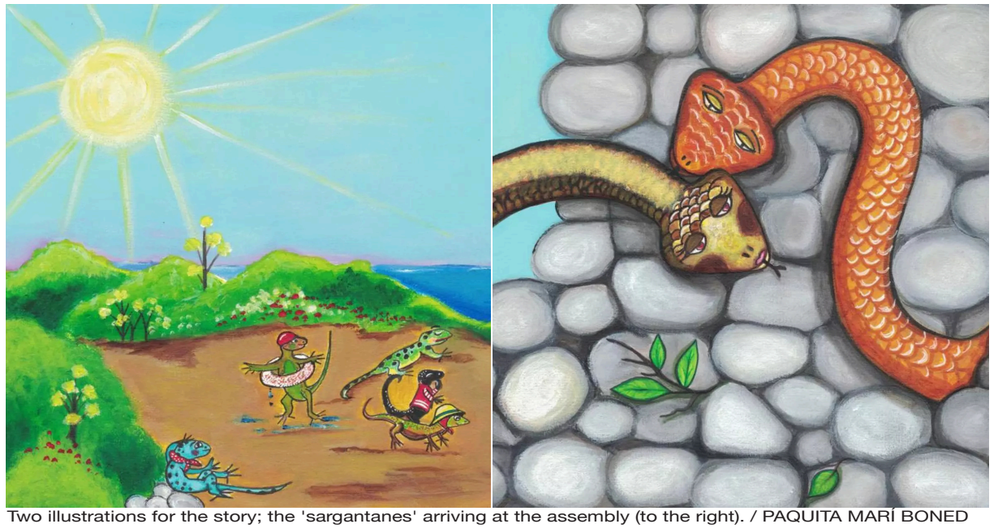
On a boat trip, she wrote the entire story, except for the ending, which eluded her. "It stayed in a drawer, and I didn't finish it until last year, during one of the strong waves of the pandemic," she notes. However, at that moment, the ending flowed with the same ease with which she had written the rest of the story five years earlier. In January, she sent it to Neus Escandell, editor of Balàfia Postals, to whom she said she wanted Paquita Marí Bonet—"she

was perfect for this"—to add color and form to her rebellious lizards. Color, shape, and backpacks, bundles, caps, tail flops, peace symbol pendants, and even a float. Essential for traveling to the assembly from the more distant islands. Meritxell researched the different shades of these animals and even passed the text to expert Maria Antònia Cirer to ensure everything was correct.

Before putting her brushes to work, Paquita read the story a couple of times. "You start coming up with ideas, you see the personalities of the protagonists, and you let your imagination run wild," she explains. "I love the details," Meritxell comments as she turns the pages until she reaches one of the key scenes in the plan the little saurians devise to convince the snakes not to eat them. "They're fixing the snake's skin, and look at the one sewing, who's wearing sewing glasses, or the rag of one of the cleaners, which is dirty," she notes, admiringly. "I was working on a project of drawing a picture a day, and I think the more you draw, the more your creativity flows," notes the illustrator, who points out that combining the text with the illustrations has been the "most complicated" part of the process.

The aim of the story is to raise awareness among children about the danger lizards face and encourage them to come up with "imaginative" solutions. That's why, Meritxell explains, the ending is "intentionally open." "The Assembly of Lizards" has been in bookstores for a few days now. María, one of the first readers, sent Meritxell a voice note with her proposal for a solution to the serious problem. "She said why don't we put all the snakes on a plane, with food and well cared for, headed to Hawaii. I loved it. It's about getting them involved, contributing creative ideas, and then we'll refine them," says the author of the story, who hopes many children will make suggestions to prevent snakes from killing lizards.

"It's a serious problem. I recently spent a week walking around Sant Llorenç, every day, along different paths. In seven days, I didn't see a single lizard, but I did see three snakes," the writer notes. "I remember when we went to the beach and my father took a nap in the shade, they would run over his stomach," the illustrator notes. Given the current situation, and with the fear that future generations won't be as familiar with the lizards, Meritxell didn't plan a happy ending for her story. The presentation, which will also include the editor and actress Neus Torres, will include "surprises," they note mysteriously.



Two illustrations for the story; the 'sargantanes' arriving at the assembly (to the right). / PAQUITA MARÍ BONED

DIARIO de IBIZA

Sobre alguna afirmació errada referent a serps i sargantanes

About some incorrect statements regarding snakes and lizards

Opinión | Tribuna

Marià Mayans i Marí

02 ABR 2022 6:00

I would like to be able to convey some considerations about the article published in this newspaper under the title "No, snakes will not eat all the lizards of Ibiza before 2030".

First of all, introduce the person who said this sentence as "The greatest expert on *Podarcis pityusensis*", a statement that is obviously difficult to prove and refute, but that, based on his statements, I think that, at least on the ground, he does not deserve such a qualification. Cats cannot be implicated in the disappearance of lizards. There have been cats in Ibiza (as many or more than now) since time immemorial and they have never endangered lizards. It is true that cats, as hunters that they are, eat a lizard when they can, and also a sparrow, mice..., and now even snakes! But the amount of lizards that cats can eat has nothing to do with their disappearance. No cat has ever climbed into the cracks of a wall to reach lizard nests, as snakes do.

Mr. Valentín Pérez dares to say that we have a childish (and religiously mediated) vision of the animal world, where snakes are demonized animals and cats are idealized by the "Disney world". Perhaps for some city dwellers who don't know animals up close, this may be the case, but the generalization is false. In Ibiza, more or less, we know animals well enough to distinguish between a real cat and a stuffed or cartoon cat. Urban planning and plastered walls are also a factor, which are obviously not a primary part of the problem. There are hundreds of kilometers of dry stone walls and nooks and crannies for millions of lizards to live in if no one eats them.

He says that it is not true that lizards have disappeared from all of northeast Ibiza. Well, I don't know how often Mr. Pérez comes to Ibiza and if he has a lot of visitors, but I'm there every day and I can assure you that at home (in the center of the island) you haven't seen a single lizard for years. There are plenty of snakes, on the other hand. Last summer I hunted twenty-three. The statement that "just because you don't see lizards doesn't mean they don't exist" may be philosophically correct, but absurd in the practical and real realm. I also find it painful to disqualify the work of a colleague, such as Elba Montes. Do you remember Perogrullo? When philosophers argued about whether movement was real or a simple illusion, he would take two steps and tell them "you donkeys, look: movement is demonstrated by walking."

In this sense, Mr. Pérez could be a great philosopher on an abstract scale, but in practice, and allow me the truism: if there are no lizards, there are no lizards. At home, where I used to see dozens of them, I have stopped seeing them since the appearance of the first snakes. Denying the evidence makes no sense. No one can really put an exact date on the disappearance of lizards in Ibiza, nor whether it will be total or if there will be a reservoir somewhere inaccessible to snakes (is there any place inaccessible to snakes?), but statements that minimize the problem and that can demotivate so many people as we are currently collaborating to prevent the expansion of snakes in Ibiza do not seem right or appropriate to me.

Thank you for your attention.



DIARIO de IBIZA

Lagartijas y serpientes, un problema muy grave

Lizards and snakes, a very serious problem

María D. Calvo Vila
Ibiza 05 ABR 2022 6:01

I read the article in the Diario de Ibiza newspaper on March 27 about Mr. Pérez Mellado's lecture on March 26 at Can Jeroni. I'm surprised by the headlines and the somewhat dismissive tone regarding some of the data. I don't know if it's from the journalist in charge of writing the article or reflects the one used by the speaker. 'No, snakes won't eat all of Ibiza's lizards before 2030.' So will it be in 2031 or 2040?

I live in the northeast part of the island, between Santa Gertrudis and Sant Miquel. I walk almost daily around the grounds of my house and around the area, and it's been four or five years since I've seen a lizard! The speaker says: "It's not because I don't see them that they don't exist," but before, we used to watch them with my children, sunbathing peacefully on the rocks. Now, we don't even see them running. With the same premise: I see snakes because there are snakes, I don't see lizards because there aren't any.

Cats, potential predators of lizards... (there have always been some in farmhouses). We don't have cats in our house, and even if we do, they don't crawl between the stones in the wall to rummage in lizard nests. Snakes can do that.

I don't know Elba Montes, but a thesis isn't done willy-nilly, nor are results obtained at random. The area I monitor is about 40,000 m2, and day after day I come to the same conclusion: there are no lizards in the NE area of Ibiza! The information about the new attempt to commercialize the lizard is interesting: I'm sure the relevant authorities will be attentive.

For now, here in Ibiza, the "Save the Snakes" project is working to raise awareness among public authorities and the public about the need to control the entry of snakes and to implement practical actions to prevent these predators from spreading and endangering the existence of our lizards. Participating in the issue of traps, snake/lizard sightings, and creating a refuge area for the latter in the southern region (where, according to data, snakes appear to have not yet spread) is a practical, real, and, I believe, effective way to prevent their disappearance. Hopefully, we can combine knowledge and practical work to achieve this.



DIARIO de IBIZA

Formación para capturar serpientes en Ibiza

Snake catching training in Ibiza

The 'Sargantanes or Serps' platform of Amics de la Terra and GEN-GOB is holding theoretical and practical sessions in Can Tomeu so that volunteers can learn how to prepare traps, care for mice, and manage invasive snakes they may capture.



This was the training for capturing snakes in Ibiza / VICENT MARÍ



Laura Amores
Ibiza 03 ABR 2022 6:00 Actualizada 03 ABR 2022 10:26

The "Sargantanes o serps" platform of Amics de la Terra and the GEN-GOB, with the support of Ibiza City Council and the Balearic Government's Cofib, launched its 2022 campaign yesterday to protect the Pitiusan wall lizard from foreign snakes. It did so with training at Can Tomeu, divided into three sessions: from 10 to 11:30 a.m., from 12 to 1:30 p.m., and from 1:30 to 2:30 p.m.

The session consisted of offering "minimal training for those who want to collaborate with snake capture and save the lizards," explained Hazel Morgan, president of Amics de la Terra. During the session, tips and guidelines were provided on caring for the mouse, protecting it from direct cold and heat to keep it alive, and finally, information on how to remove the snake from the trap once captured, how to handle it, and how to euthanize it by first rendering it unconscious. In this regard, Morgan indicated that the association has "volunteers who help with the slaughter of animals for those who, especially the first time, are unable to do so."

The training began with the screening of three educational videos guided by Juanjo Torres, from Amics de la Terra, which were complemented by explanations from Dean Gallagher, a campaign volunteer, who taught those interested how to manage the snake once it has been captured in the trap. Torres

noted that the objective of the training was "to ensure that the distribution of traps among volunteers is successful, since the more snakes captured, the better."

Afterwards, to familiarize themselves with the invasive species, attendees had the opportunity to touch a ladder snake, which, along with horseshoe snakes, are the most commonly found on the island of Ibiza.

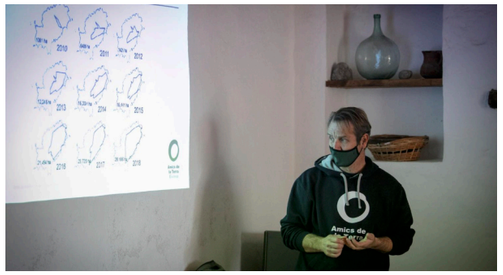
Finally, the volunteers prepared their own traps to take home. They used sawdust, straw for the mouse's nest, water, and a rodent (bred by Hazel Morgan for this purpose). Vicent Ribas was one of the ten who attended the 12-hour training session because, despite living in Sant Josep, the municipality on the island with the fewest snakes, he said he and his neighbors had already observed "the skins of these animals in the area." Therefore, he decided to prepare "to prevent them from destroying the lizards that can still be seen around my house." Ribas learned "how to set the trap, the importance of how to treat the mouse and the snake once captured, and how to slaughter it with respect," he added.

To purchase a trap, all volunteers had to do was leave a €20 deposit with Amics de la Terra to ensure its return when they were no longer using it, ensuring that the traps were not abandoned and thus ensure that they had a record of the registered traps, according to the association's president. Captured snakes were then recorded using the Línea Verde mobile app.



Volunteer Vicent Ribas picks up a ladder snake during training. / L. AMORES





Amics de la Terra Eivissa

SARGANTANES O SERPS — AMICS DE LA TERRA & GEN-GOB

GEN-GOB

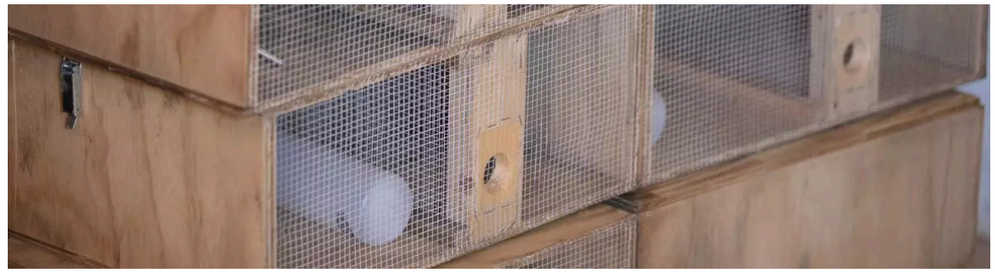
05-04-2022 - Redacción - Nearly 1,300 snakes were captured in Santa Eulària in 2021 (control)

DIARIO de IBIZA

Cerca de 1.300 serpientes capturadas en Santa Eulària en 2021

Nearly 1,300 snakes were captured in Santa Eulària in 2021

Santa Eulària City Council allocates 5,000 euros to cat sterilizations and adoptions through the Sabine's Cats association.



Redacción

Ibiza 05 ABR 2022 16:05 Actualizada 05 ABR 2022 16:34

The Santa Eulària City Council held its Animal Welfare Roundtable this Tuesday, where the results of the 2021 campaigns and those planned for 2022 were explained, as well as the initial figures from the new contract for Animal Collection, Fostering, and Adoption after the first two months and the amendment to the bylaws to incorporate the new canine DNA collection service.

The first item on the agenda was to report on the first edition of the Junts per ses Sargantanes workshop, according to the City Council in a statement. In total, 416 traps were given to volunteers, and 1,278 snakes were captured. In this regard, the City Council's technical staff explained that the animals were euthanized due to the legal impossibility of returning them to their natural habitat. For 2022, the campaign will focus on hiring a professional to manage the traps, and new ones will be provided to volunteers who request them.

Sterilized Cats

Regarding the cat sterilization campaign, €5,000 was invested in sterilizations and adoptions through the Sabine's Cats association. This initiative resulted in 64 male and female cats being sterilized.

For this year, a smaller contract of almost €15,000 is being put out to tender to sterilize as many cats as possible. The contract will be finalized in the coming weeks, and animal welfare organizations working in the TM will be open to participation.

Can Dog

On February 2nd, the new Animal Collection, Fostering, and Adoption service began. It was awarded to Can Dog for two years and €309,000. At that time, there were 18 dogs in foster care, and so far, 51 animals have been adopted (7 cats, 43 dogs, and 1 pig).

In total, seven adoptions have been achieved (incentivized in the contract as this is the primary objective). There are currently 32 animals in foster care.

The City Council has hired a technician to monitor this contract, and unannounced inspections have been conducted to check the animals' condition "with very satisfactory results." In addition, the contracting company will be required, among other obligations, to organize awareness workshops and launch a website and social media profiles to promote adoption.

Before questions and requests, the final item of business addressed the amendments to the Animal Ownership and Protection Ordinance, which will incorporate changes that will enable the implementation of the new canine DNA registry, the mandatory carrying of bags for collecting feces and water bottles for urine, the regulation of dog access to beaches in winter, and other minor issues to correct and improve the text.

IB3 Notícies

El Cofib ha capturat gairebé 1.800 serps a les Pitiüses al 2021, són 500 més que l'any ant

Cofib has captured almost 1,800 snakes in the Pityusic Islands in 2021, 500 more than the previous year

In Santa Eulària a decrease in the density of snakes has been recorded, although it continues to be one of the places with the most snakes.

21/04/2022



vimeo

Còpula matinal

Morning copulation

Ibiza town 2022-05-01





PERIÓDICO de IBIZA Y FORMENTERA

Se necesitan voluntarios para mantener la reserva de lagartijas desde Soto Fosc

Volunteers are needed to maintain the lizard reserve at Soto Fosc



Ibiza Town Council and SOS Salvem sa Sargantana Pitiüsa are organizing a day to find volunteers to maintain the lizard reserve at Soto Fosc. Original photo replaced by lizards from the Puig des Molins area (Marten van den Berg)

R.I. | Ibiza | 04/05/22 15:05

Ibiza Town Council, together with SOS Salvem sa Sargantana Pitiüsa, has organized a day to find volunteers interested in helping keep the lizard reserve in the es Soto and Puig des Molins area free of snakes. The event is open to all residents of the municipality, especially those living closer to the Puig des Molins area. The meeting will be held this Saturday, May 7, at 12 p.m. in the Reina Sofia Park.

In the municipality of Ibiza, a space has been established as a Sargantanes Reserve, specifically in the Puig des Molins necropolis area and in the Es Soto natural area. Therefore, and considering that snakes have already been recorded in areas near the city such as Jesús and Cas Mut, Ibiza Town Council will distribute free snake traps to volunteers who wish to manage them responsibly. The Department of the Environment has explained that the intention is for these volunteers to place traps in private areas where municipal workers cannot access them—houses, gardens, or ground-floor apartments with terraces.

On Saturday, members of the SOS Salvem sa Sargantana Pitiüsa will clear up any doubts and distribute snake-catching equipment, including traps equipped with mice, water bowls, and mouse food to make the task easier.

IBIZA KURIER
Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Für Schlangen ist Ibiza ein kulinarisches Schlemmerparadies – Eine frisst etwa 500 Eidechsen

For snakes, Ibiza is a culinary paradise – One eats about 500 lizards

Private individuals and environmental groups raise the alarm



Timotheus Freytag has lived on Ibiza since 1984 and, like hardly any other island resident, is busy educating people about the local nature and wildlife.

According to his and many other environmentalists' assessment, this is threatened, especially endemic bird species, but also the cute lizards, the heraldic animal of Ibiza.

His special mission is to combat the snakes that have been spreading invasively across the island for several years. They have no natural predators to fear, and so the reptiles are spreading rapidly. A single snake can lay a good ten eggs per year. Ibiza is a true culinary paradise for snakes.

Over the past few years, Timotheus has gathered a variety of insights into how Ibiza's wildlife has changed since the arrival of the snakes. The first specimens were introduced in the root balls of olive trees imported to Ibiza from the mainland.

Twelve years ago, due to the increasing number of snake sightings and growing concern, he set up a Facebook page to translate relevant information from local news articles, such as those in the Diario de Ibiza , into English. He wanted to "raise awareness of the potential

threat." Even then, he knew that the island was heading "for an ecological catastrophe." Today, over a decade later, the Pityusic lizards are on the list of endangered species. Many islanders confirm that they rarely see the cute little creatures anymore. "Public interest grew, but unfortunately, the authorities largely ignored them," reports Timotheus.

Over the years, the snakes have spread across the island and are a threat to “our fragile ecosystem.”

The reptiles began arriving undetected on the island around 2001, mostly in the planters of trees and plants intended for garden centers and private and public landscaping projects.

"It wasn't until 2016 that the authorities woke up and realized they had to act." Since then, a unique "snake-catching experiment" has been taking place on Ibiza. The group "Snakes on Ibiza – No Thank You" grew and gained momentum.

The damage has long since been done: The number of snakes is growing exponentially. They feed primarily on the island's lizard population. These two reptiles, one small and naive, the other large and stealthy, are very unequal opponents, as evidenced by the snakes' deadly hunting patterns.

Their average lifespan is 20 years, during which time a single snake will consume approximately 500 lizards and, depending on their age and maturity, also eat eggs, rodents, birds, rabbits, and kittens. When fully grown, they can reach a length of up to 2.5 meters.

They are shy and reticent, usually moving unnoticed, and therefore difficult to stop: "People often think they don't have snakes, but in fact, they do. They just need to check if they have any lizards."

In the Mediterranean region, a snake gives birth to a dozen babies each September. They quickly adapt to the world and immediately begin hunting their own food, mainly insects.

Most species can produce offspring two years after birth.

In 2020, as a growing number of islanders reported sightings and called for help, Timotheus decided to "not only devote time to the issue, but also to physical engagement." But it may already be too late: "Pityusic lizards are now on the EU's endangered species list."

In recent years, he has not only provided information and advice to those affected, but also numerous traps and mice that serve as bait.

"I've spoken to hundreds of people and heard many personal stories. I've researched specific related topics. All of this paints a picture of where this story will lead if we don't act—far more far-reaching than we can currently imagine."

The motto is: "We must act now, and we must act together." Since he had little hope of support from the authorities, he quickly teamed up with a carpenter to design and build traps and make them available to those affected.

There is now a second carpenter on board who has volunteered his time to make snake traps at cost price.

They use leftover wooden boards, which they recycle "because the cost of new wood is considerable." Over the past two years, they have delivered around 220 crates to locations across the island. "Our group is now almost 100 trappers strong. We've set up chat groups to keep us informed. These are strictly managed for specific purposes, and we're now forming subgroups by region to allow for more precise organization."

The boxes contain bedding, mice, a water bowl, and food at the time of delivery – and are available at cost. He's not interested in making money; quite the opposite: "I pay for everything out of my own pocket," explains the snake hunter.

The exact number of snakes captured so far is unknown. Some traps catch none, while others catch 5 to 40 snakes per season. Because our traps are sent to people who have experience with snakes on their property, we can say that on average we have higher capture rates, perhaps 3 to 5 snakes per box. This means we have captured between 660 and 1,100 snakes per season. "Remember, each snake consumes 500 lizards and other wildlife—this equates to saving 330,000 to 550,000 lizards."

May, June and July are extremely important months for snake hunters because it is the time when the animals emerge from their winter hibernation and leave their hiding places in search of prey.

Timotheus and his team of volunteers currently have their hands full. The phone is constantly ringing. Calls come not only from private individuals, but also from hotel owners and businesspeople. Recently, a woman in a garden restaurant in Santa Eulalia had a large snake fall from a tree directly into her lap – and this in the middle of an urban area. Snakes have even been spotted on the upper floors of houses in the town center. Snakes are adept climbers, which makes it easy for them to reach bird nests. Snakes have even been spotted swimming in the sea. This poses a threat to the bird populations on the small rocky islets between Ibiza and Formentera, where the birds normally retreat to breed.

Timotheus used the winter months to breed nearly 300 mice. "I also showed others how to breed them. And made enclosures for them because they are an important part of our trapping process as bait."

Timothy spends many hours a day responding to calls, inquiries, and feedback. All this in addition to the time he spends on meetings, fundraising, and trap building.

He is proud of the redesign and development of a larger all-weather trap box: "Demand for the new box is growing, and the feedback is positive." Since mice are happiest in larger family groups, these boxes can house up to 30 mice. The formula for success is simple: "More mice, more scent, more activity – that means a higher chance of catching snakes."

His greatest wish is for even greater public involvement. "We need individuals and companies to get involved, especially those with land." The areas around San Antonio, Santa Eulalia, San Mateo, San Juan, Portinatx, and Xarraca are currently of concern, "but San Lorenzo has

always been the epicenter." The first specimens were discovered there.

There are now other Ibiza organizations dedicated to this issue. Approximately 4,000 traps have been distributed by COFIB, the Asociacion de Cazadores, the SOS Sargantanes platform, Gen-Gob, and Amics de la Terra. Thanks to their efforts, a total of around 14,000 snakes have been caught. "But we need to do more, much more," emphasizes Timotheus.

"Wherever we clear an area of snakes, we witness the lizards returning," he says confidently. However, these areas cannot be left unchecked, because otherwise the snakes will return: "The reality is that there are far more snakes than we physically see."

Therefore, it is "important and urgent that we set up many more traps on properties as quickly as possible, as efficiently as possible, and as cheaply as possible." "My goal is to get the project fully funded. In that case, I would take on the task full-time for the next 5 to 10 years." A non-profit organization is currently being established, and the team is growing.

The environmental initiative COFIB is currently working on a prototype of a “snake barrier” that will function like a fence and turn the property into a “lizard-proof area.”

"We are actively researching concepts for snake barriers that extend over kilometers, cutting off snakes' access to certain areas and thus stopping their spread," explains Timotheus. Previously, snakes were found in larger numbers mainly in the north of Ibiza, "but now they are slowly moving south past the center of the island."

His greatest wish is to make Ibiza a snake-free island again, as it once was. "We know it's a huge task, but nothing is impossible if we tackle it together." Timotheus sees himself as a key figure capable of "moving and inspiring" people through positive logic, sound facts, and practical, common-sense thinking—not to mention thinking big and outside the box.

Setting up traps:

To cover material costs, small traps have a cost price of €35. The larger, new design, "Snake Trap 2.0 Reloaded," costs €90. Anyone who would like to donate to the initiative independently will actively help reduce snakes on Ibiza, as more traps can be set up and larger concepts can be implemented. For large villas, properties, and hotels/ agrotourisms, setting up four to ten standard traps plus one or two large traps is more successful than simply placing one or two.

Contact & Information
Timotheus Freytag Tel.: 696 197 372
Facebook groups for the exchange of affected people and tips:
StopIbizaSnakes
Snakes on Ibiza no Thank You – Serpientes en Ibiza no Gracias
Ibiza Snake Trappers Community

IbizaWildlifeProtection

31-05-2022 - Redacción - The Council per day.- Ibiza will celebrate Environment Day with a day dedicated to the lizard (politics)

noudiari.es
Eivissa i Formentera

El Consell al Dia.- Eivissa celebrarà el Dia del Medi Ambient amb una jornada dedicada a la sargantana

The Council per day.- Ibiza will celebrate Environment Day with a day dedicated to the lizard



Por **Redacción** — 31 mayo 2022

The Department of Presidency and Environmental Management of the Ibiza Island Council has organized a conference on lizards on the occasion of Environment Day, which is celebrated on Friday, June 3.

The session Lizard of the Pitiusas, from evolutionary success to fragility will take place in the plenary hall of the Ibiza Council, between 5 and 8 p.m.

The social and environmental concern derived from the situation of the Pityusic lizard due to the effects of the snake invasion on its lizard populations led the Ibiza Island Council, as a supra-municipal entity, to call on the competent administrations to act as a priority to eliminate, or at least reduce, the impacts derived from this new invasion.

The island institution initiated a pilot snake control project that served as a starting point for the current projects developed by the Government of the Balearic Islands.

In addition, the Department of the Presidency and Environmental Management is collaborating in the coordination tasks with the different platforms that have emerged to distribute and manage snake traps with volunteers and has coordinated the new creation of the Puig d'es Molins Lizard Reserve in order to have a lizard population reservoir.

Within this framework of supporting and contributing to the improvement of the protection tasks of the Pityusic lizard, the Ibiza Island Council has organized this informative conference in which experts who are working scientifically in a specific way on the state of the lizard population and on the potential effects of the snake invasion will participate.

“With this monographic conference on the Pityusic lizard, we want to make the population aware of the conclusions, recommendations and narrow forecasts of the field work that the main researchers and scientists are currently carrying out”, explained the Minister of Presidency and Environmental Management, Vicent Roig, who will present this session on June 3.

The program of the conference ‘Pityusic lizard, from evolutionary success to fragility’ to be held on Friday, June 3 is as follows:

17:00-17:30 Opening and presentation of the conference: **Vicent Roig Tur**, Minister of Presidency and Environmental Management. **Ivan Ramos Torrens**, Head of the Species Protection Service, Ministry of the Environment of the Government of the Balearic Islands: **The regulatory protection of endemic lizards of the Balearic Islands**.

17.30-18.00 **Antònia Maria Cirer Costa**, PhD in Biology, Professor of Natural Sciences: **Lizard reserve, preventive conservation**.

18.00-18.30 **Balma Albalat Oliver**, oceanographer, technician of the conservation programs of the GEN-GOB Ibiza: **Monitoring a lizard population: the case of Can Toni d’en Jaume Negre**.

18.30-19.00 **Elba Montes Vadillo**, PhD from the University of Valencia: **Natural history and impacts of an invasive ophidian, the horseshoe snake, in Ibiza**.

19:00-19:30 **Oriol Lapiedra González**, doctor and researcher at CREAF (Centre for Ecological Research and Forestry Applications): **Ecosystemic effects of biological invasions: the case of Ibiza**.

19:30-20:00 **Ana Pérez Cembranos**, assistant professor, doctor at the University of Salamanca, **Valentín Pérez Mellado**, professor of Zoology and doctor at the University of Salamanca: **Past, present and future of the lizard of the Pitiüses**.

20:00 **Closing** of the Conference with tasting of local products.

04-06-2022 - Josep Àngel Costa - "Ibiza's lizards are changing their behavior where snakes are present" (conservation)

DIARIO de IBIZA

«Las lagartijas de Ibiza están cambiando de comportamiento donde hay culebras»

"Ibiza's lizards are changing their behavior where snakes are present"

The Ibiza Council brings together some of the leading experts to evaluate conservation measures for the '*Podarcis pityusensis*' population.



Pityusic lizards. / SEBASTIÁN CANDELA



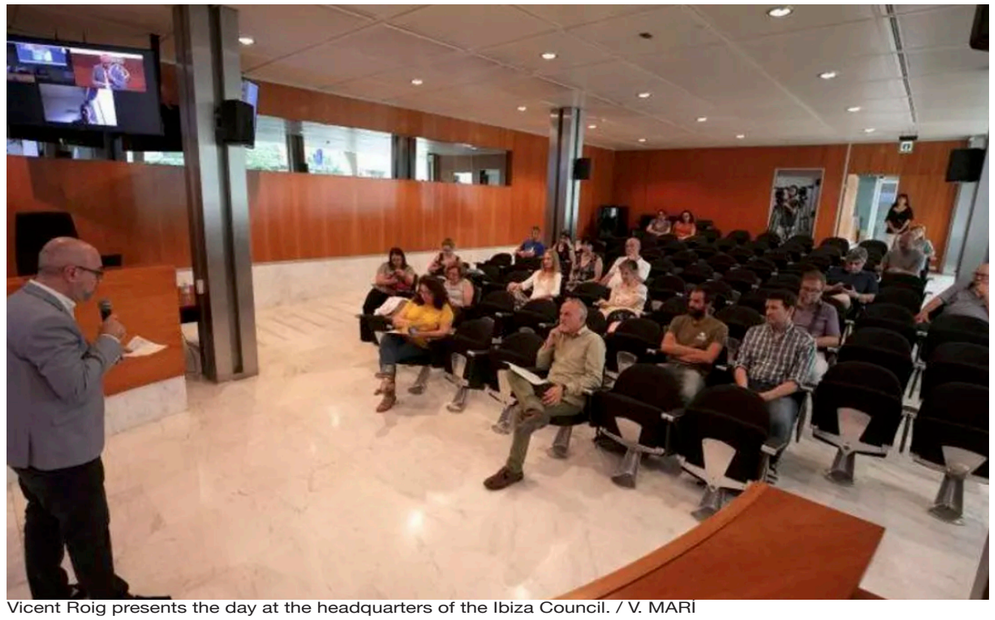
Josep Àngel Costa

Ibiza 04 JUN 2022 6:00 Actualizada 04 JUN 2022 17:08

The Ibiza Council celebrated World Environment Day yesterday with a day dedicated to the *Podarcys pityusensis*, given "the social and environmental concern over the effects of the snake invasion on their populations," according to the Councilor for Environmental Management, Vicent Roig. One of the invited scientists, Oriol Lapiedra, revealed that this endemic species is changing its behavior, and possibly its diet, in areas where it coexists with garter snakes, while Professor of Zoology Valentín Pérez again warned that rigorous studies on the effects of snakes on the decline in lizards are lacking.

At the opening conference, the head of the Balearic Islands Species Protection Service, Ivan Ramos, veiledly criticized the central government for its lack of involvement in the snake infestation. The Balearic government is preparing regulations that "allow for the restriction of the entry of trees" that, like olive trees, can harbor snakes. The goal is to find "legal loopholes" in a problem arising from the free movement of goods within the EU. "In meetings with the Ministry of Ecological Transition, they offer us their congratulations, but no support," he lamented.

Likewise, the State claims there is no space in the port of Vila to quarantine the trees. "It would only be necessary during the hibernation period," he recalled. Other methods attempted by the Ministry of the Environment, such as training dogs to detect snakes dormant in the pots, have not yielded results.



Vicent Roig presents the day at the headquarters of the Ibiza Council. / V. MARI

Mediterranean Alliance

The driving force behind the citizen mobilization to protect the native lizard, Biology Professor Antònia Maria Cirer, advocated for an alliance between the Mediterranean islands, as they share pests resulting from free trade. Cirer focused on the preventive reserve project in Es Molins to safeguard "the most powerful symbol of the biodiversity of the Pitiüses." "55% of the snakes' diet is lizards," she explained. This threat is further aggravated by the fact that both reptiles share refuge among the stone walls.

During the public question period following Cirer's intervention, the proposal by Unidas Podemos Minister David Álvarez was surprising. Just as "one nail drives out another," the politician inquired about the effectiveness of introducing a snake predator to the Pitiüses.

The herpetologist gave the example of Australia, where, to curb the rabbit plague, predators such as dogs and foxes were introduced. "They ignored the rabbits," she recalled, after finding other prey that provided much more food: "Then they had to protect the kangaroos with tremendous barriers all over Australia.

"The GEN example

Balma Albalat, a conservation programs technician with the Grup d'Estudis de la Naturalesa (GEN-GOB), outlined the results of the monitoring carried out at Can Toni Jaume Negre, in Sant Llorenç. GEN manages this estate under a custodianship regime and in 2012 launched a lizard counting campaign, along four one-kilometer transects per year, between April and June.

This method provides them with the minimum population within that perimeter, which, before snakes had yet been detected on the estate, was between 70 and 80 individuals per survey. The first snake was sighted in 2015, and a year later, the lizard count had dropped by 40%.

The population then stabilized, likely due to the installation of snake traps, Albalat said. But in 2020, due to COVID-19, it was not possible to monitor or set the traps. A year later, only one lizard was detected, the same number as in the two surveys carried out in 2022.

Elba Montes, a doctor in Evolutionary Biology, is the author of a thesis on the impacts of the snake plague, which warned that, in 2018, the lizard population had become extinct on half the island. Furthermore, by comparing the horseshoe snakes captured in Ibiza with those on the Spanish mainland, Montes found that they develop a "tendency toward gigantism."

Too big

Thus, numerous specimens reaching two meters are being found, far exceeding the peninsular average. This factor is compounded by the fact that, compared to the seven natural predators they have on the mainland, the only enemies on the island are the kestrel or cats. But neither of these two species can hunt a two-meter snake, Montes explained. Her thesis predicts that, if the rate of recent years continues, the snakes will have spread throughout the island by 2028. He also noted that a snake was found swimming just 20 meters off s'Illot de s'Ora, near es Figueral. He then noted that the lizard population on that islet "had become extinct," but stressed that it cannot be determined whether this was due to the invasive species.

The behavior of the *Podarcis pytiusensis* may also be affected by the presence of snakes, according to recent research led by Oriol Lapiedra of the Center for Ecological Research and Forestry Applications (CREAF). The lack of efficient predators has historically favored the native lizard's development of "island tameness, as it takes many risks." Now, in the areas where they coexist with snakes, Lapiedra has found "a pattern of new, much more cautious behaviors." Likewise, in these areas, he observes signs of changes in their diet. In contrast, where there are no lizards, he notes a significant increase in the number of arthropods, their main food source, which led him to wonder if this phenomenon will favor the emergence of mealybug or beetle infestations.

Studies Lacking

The session concluded with the videoconference "Past, Present, and Future of the Pitiüses Lizard," on the studies carried out by Ana Pérez and Valentín Pérez Mellado, although it was the latter who led the discussion. Despite the technical problems that made his talk difficult to follow at various points, Pérez Mellado made it clear that in-depth studies are lacking to demonstrate the effects attributed exclusively to snakes. The zoology professor criticized categorical statements in Montes's thesis, such as "stating that the lizard will be extinct by 2030." Regarding s'Illot de s'Ora, he noted that he didn't see any specimens on two of his five visits to the islet, so its population shouldn't be considered extinct after a single visit.

Vicent Roig: "To eradicate snakes, we must restrict the entry of olive trees"

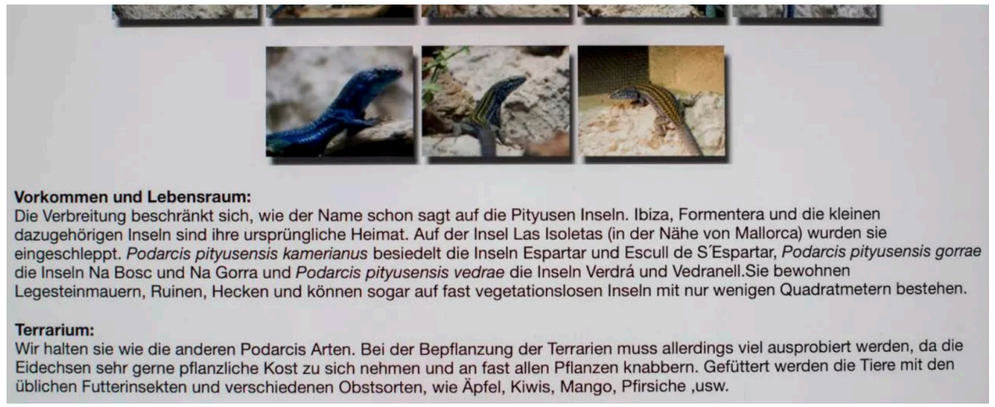
"We cannot blame the reduction in lizards exclusively on snakes," Pérez Mellado added, recalling that in a 1984 study he had already found that the presence of *Podarcis pytiusensis* was much lower in the northeast of Ibiza. The expert emphasized that measures must be taken against other threats, such as wild cats. He also noted that collectors continue to pose a major threat, reporting that three lizard traps were found on the islet of Na Bosc last year.

DIARIO de IBIZA

Tráfico de lagartijas de Ibiza y Formentera en el Siglo XXI

Lizard trafficking from Ibiza and Formentera in the 21st century

The terrarium trade in the Netherlands and Germany continues to be one of the threats facing Ibizan lizards. Advertisements for sale and purchase can be found online, and some German breeders are trying to legalize their activity.



Vorkommen und Lebensraum:
Die Verbreitung beschränkt sich, wie der Name schon sagt auf die Pityusen Inseln. Ibiza, Formentera und die kleinen dazugehörigen Inseln sind ihre ursprüngliche Heimat. Auf der Insel Las Isoletas (in der Nähe von Mallorca) wurden sie eingeschleppt. *Podarcis pityusensis kamerianus* besiedelt die Inseln Espartar und Escull de S'Espartar, *Podarcis pityusensis gorrae* die Inseln Na Bosc und Na Gorra und *Podarcis pityusensis vedrae* die Inseln Verdrá und Vedranell.Sie bewohnen Legesteinmauern, Ruinen, Hecken und können sogar auf fast vegetationslosen Inseln mit nur wenigen Quadratmetern bestehen.

Terrarium:
Wir halten sie wie die anderen Podarcis Arten. Bei der Bepflanzung der Terrarien muss allerdings viel ausprobiert werden, da die Eidechsen sehr gerne pflanzliche Kost zu sich nehmen und an fast allen Pflanzen knabbern. Gefüttert werden die Tiere mit den üblichen Futterinsekten und verschiedenen Obstsorten, wie Äpfel, Kiwis, Mango, Pfirsiche ,usw.

A specimen from Formentera with the most sought-after hues. / BY CRISTINA AMANDA TUR @TERRITORIOCAT

Cristina Amanda Tur | **@territoriocat**

Ibiza 05 JUN 2022 6:00

When we talk about wildlife trafficking, the images and headlines that come to mind are those of African elephants slaughtered for their tusks, chimpanzees rescued by primatologist Jane Goodall, or perhaps news of small Galapagos tortoises wrapped in plastic and confiscated at an airport. Or we'll recall the case of the pangolin, considered the most trafficked mammal, a trade that could also be the source of the COVID-19 coronavirus.

Species trafficking—one of the greatest threats to the planet's biodiversity—affects so many taxa of flora and fauna that an inventory could fill a book. And the endemic lizards of Ibiza and Formentera are on that list. Although scientific collecting already endangered some populations, and two decades ago trafficking for terrariums was intense and some significant police interventions were recorded, greater and better controls have reduced the threat. However, at least minor, small-scale trafficking persists, which can still be detected by searching forums and websites for reptile and amphibian enthusiasts.

After spending a few hours searching in some depth, one comes to the first conclusion that it is on German pages where most endemic lizards and geckos are searched for, such as the Pitiusan lizard (*Podarcis pityusensis*) or the Balearic lizard (*Podarcis lilfordi*), the only two species from the islands –along with the ferreret (*Alytes muletensis*)– surviving from the Plio-Pleistocene fauna of the Balearic Islands.

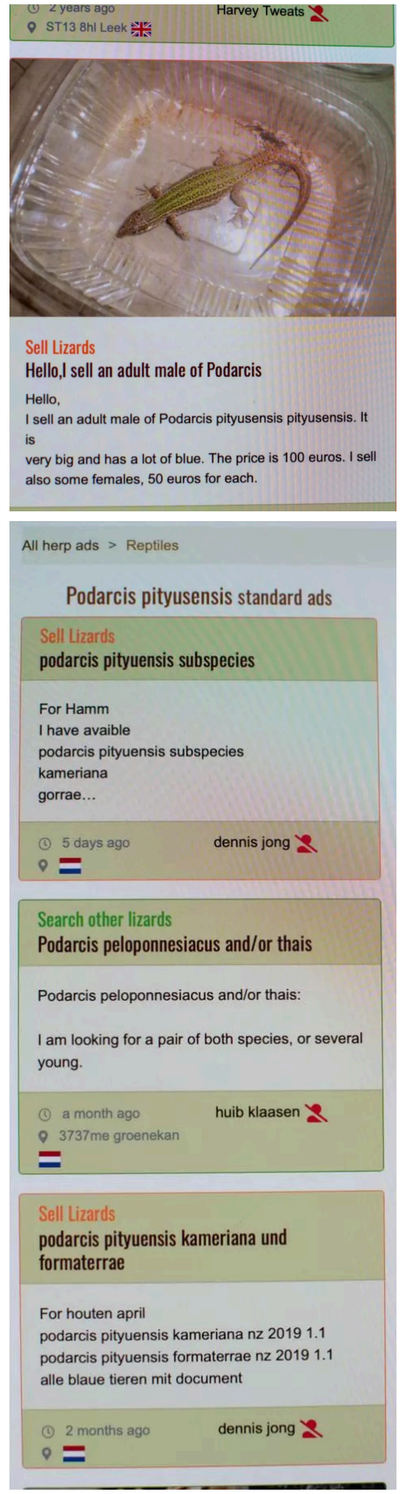
In an initial search in English, the first ad that catches the eye is located on a page intended to connect private sellers and buyers of all kinds of reptiles, amphibians, insects, spiders, and even some mammals to keep as pets in terrariums. A photograph appears of a male specimen, undoubtedly of the Pitiusan species, displayed in one of those Tupperware containers used to deliver Chinese food to your home. A man named Aitor Sancho, from Spain, advertises that he is selling the male, "very large and very blue," for 100 euros. He adds that he also has "some" females, which he sells for 50 euros.

The ad is two years old. On the same website, we find a man named Roger who wants to buy an Ibizan wall lizard. The ad is only a month old and is in German. We repeat the search by region—in Germany and also in the Netherlands—as the same website allows, and now also in German, and more cases appear. A certain Dennis, who appears with the Dutch flag, sells a specimen of the subspecies from the islet of s'Espartar and claims to have the Cites document, something very difficult because the Balearic Ministry of the Environment itself has confirmed to Cites – the International Convention on Endangered Species – that since the 1980s, since the entry into force of the law prohibiting the capture of lizards from the islands, no permit for captive breeding or authorization for the extraction of individuals from any island or islet has been granted.

And the truth is that the Government has had to report this because there is a project to legalize a Pitiusan lizard farm in Germany for the purpose of trading these animals. The farm is promoted by a team of reptile breeders who already have Pitiusan lizards—they explain this on a website—and who claim to have been breeding them for more than 40 years. Therefore, according to their version, the initial lizards were caught before the ban on removing them from their habitat. However, without any documentation to prove it and given suspicions that the specimens may have been captured illegally, it is difficult for CITES in Spain to authorize it (the Germans have requested it in their country through their Ministry of the Environment); The project also has an unfavorable report signed by the herpetologist Valentín Pérez Mellado, the researcher who currently best knows the situation of the lizards that exist throughout the Balearic archipelago and who, together with the researcher Ana Pérez Cembrano, carries out, among others, the monitoring of the populations of the reserves of es Vedrà, es Vedranell and els illots de Ponent.

The Most Wanted

Actually, this investigation found two websites belonging to two different groups of reptile breeders claiming to have Pitiusan specimens. Both are German. The second one reads: "We currently have three subspecies of the Pitiusan lizard: *Podarcis pityusensis gorrae, Podarcis pityusensis kamerianus*, and *Podarcis pityusensis vedrae*."



On top, an ad for the male in the image is selling for 100 euros. On the bottom, a seller even claims his lizards have legal documents. / BY CRISTINA AMANDA TUR @TERRITORIOCAT

> **Bottle Traps**
>
> University of Salamanca herpetologist Valentín Pérez Mellado offers further evidence that lizards continue to be illegally extracted from the islands, even from protected islets. The proof is that they have found traps for catching them on the Ponent islands: broken bottles that were not intended to capture the reptiles at the time, but whose purpose, without a doubt, was that. In other words, these broken bottles were upside down because they were not being used at the time. When these traps are set, they must be constantly monitored because the lizards quickly die if left trapped in a glass or plastic bottle, exposed to the sun and heat. This is something that must be taken into account to avoid accidentally leaving deadly traps for the animals in gardens or on terraces.

Continuing with some more advertisements found online, on another website, also in German, we found more terrarium enthusiasts looking for various lizards from the islands. A potential buyer specifies that he would like a blue and black specimen. The colors are important, because the varieties with the most striking colors—such as the turquoise blue or emerald green of some subspecies—are the most sought after and could fetch a higher price.

It should be noted, as a positive point, that occasionally forum participants or visitors to one of these sites intervene to point out that the reptiles they are seeking or selling cannot be kept as pets because it is illegal. In fact, one of the conclusions of this investigation—conducted for Nautilus, the science and environment program on IB3 radio—is that there is a significant lack of awareness about the illegality of removing these species from their habitat.

One last important detail is the doubt that arises from the fact that the first advertisement cited, the one showing a photo of a male in a Tupperware container, is from a seller in Vitoria, and in the same community, there is a location, San Juan de Gaztelugatxe, where the Pitiusa lizard is considered invasive. In other words, the question is whether there would be any difference if the specimen being trafficked was caught in its place of origin or in an area where it is an invasive species. Valentín Pérez Mellado clarifies this point and assures that the situation is the same. "Breeding them in captivity," he adds, "regardless of where they come from, only serves to encourage terrarium hobbyism and increase the demand for individuals from other populations. Environmental education must be done and people must understand that lizards, like any other wild species, should be free and not in terrariums."

> **The Largest Stash**
>
> Two of the largest seizures of lizards illegally extracted from the Pitiüs Islands were recorded in 1988. The first case was in February, when 400 lizards were discovered inside a suitcase at Heathrow Airport. In December, in an operation involving the UK Customs Service, Greenpeace, and the Government, with the collaboration of British Airways, another 450 specimens were rescued in Bristol. A more recent example is the case of the forty lizards seized in 2001 on the boat from Formentera to Ibiza, bound for Germany.

09-06-2022 - Verónica Carmona Acedo - This is how snake traps are used in Ibiza (control)

DIARIO de IBIZA

Así se usan las trampas para serpientes en Ibiza

This is how snake traps are used in Ibiza

Santa Eulària distributed a hundred of these traps last week during the ECOUC Medi Ambient Fair.



Snake traps. / M.C. MOLINA

Verónica Carmona Acedo | **Ibiza**

09 JUN 2022 10:51 Actualizada 19 FEB 2025 19:15

Last week, during the ECOUC Environment Fair, the Santa Eulària City Council distributed one hundred snake traps, out of the 400 it recently acquired to combat the snake infestation. People who picked up the trap also received a voucher for a mouse that could be collected at the Santa Eulària Countryside Cooperative.

The City Council also sent an email to the owners of these traps explaining their use, including three videos from Friends of the Earth, as well as instructions for registering captured snakes. Each box delivered has a number, and the location where it will be installed has been previously recorded.

Trap Position

The Ibiza snake trap has two compartments, one sealed for the mouse and another where the snake enters and cannot exit thanks to a one-way trapdoor. The box comes with a lock to prevent the rodent or snake from escaping. The mesh allows you to see what type of snake it is, so you can open the door or not. The trap should be placed near a stone wall, for example. The scent of the mouse will attract the snake, which will circle the box until it enters through the trapdoor. Try to keep the box upright, not tilted backward to prevent rain or moisture from pooling at the bottom and leaving the trapdoor open. You can level it with stones. If it needs to be tilted, it's best to tilt it forward, toward the mesh. If it tilts backward, the trapdoor will

stay open and the snake could escape again, according to the instructions given by the expert in the Amics de la Terra video. In summer, you should avoid leaving the box in the sun all day. You can find a tree for shade, and in winter, the opposite is true: find a sunny spot so the mouse doesn't die of either exposure to the cold or the heat. When it rains, you can place a piece of plastic secured to the ground with stones to cover the entire box except for the entrance. It's necessary to check the mouse's condition every two or three days. It's important to ensure the rodent is always in top condition.



Mouse Care

The mouse should be picked up by the tail and then held in one hand, with a glove if desired, to prevent it from getting nervous. Water should be provided using a hamster waterer or a dish with a rock, or a plastic bottle with holes and a couple of rocks to prevent it from drowning. The food you can feed it is commercial or pet food. Fruit or leftover food can cause diarrhea in the mouse, so it is advisable not to offer this type of food. To make the mouse more comfortable, you can use toilet paper or newspaper as a nest, especially in winter, as this will keep it warmer. The mouse's items should be placed as follows: water in the front, and the nest and food in the back. If you place the food in the front, it may get wet with water and last less time. The mice used for this purpose are laboratory mice, not field mice; they're unfamiliar with snakes, so they aren't stressed. They can stay with the snake in the trap for a week and maintain their normal behavior, the expert explains in the Amics de la Terra video.



Snake Extraction

Once a snake has fallen into the trap, you must know what type it is before opening it: horseshoe or white, the common types on the island. You can wear gloves to feel safer, and it's advisable to wear long sleeves to protect yourself from bites. Once you know what type of snake it is, you can open the box. Then, you must pick up the snake from above by the head and grasp it by what would be the animal's neck. With your other hand, support the rest of its body and let it coil around a bit to prevent it from getting nervous. Once caught, the way to sacrifice it is as follows: first, you must give it a sharp blow to the head to render it unconscious and then destroy its central nervous system (the top of the head) with a sharp object.



25-06-2022 - Pablo Sierra del Sol - Snakes devour the iconic Ibizan lizard: "It's an environmental and cultural disaster." (conservation)

elDiario.es

Las serpientes devoran a la icónica lagartija ibicenca: “Es un desastre ambiental y cultural”

Snakes devour the iconic Ibizan lizard: "It's an environmental and cultural disaster"

The proliferation of snakes, artificially introduced on the island, seriously threatens the native lizards, which could disappear by 2030. Since 2016, 15,000 snakes have been hunted, but experts and activists are calling on the government to provide more resources to reduce the population of this invasive species.



A specimen of *Podarcis pityusensis* / Sebastián Candela

Pablo Sierra del Sol / Eivissa

25 de junio de 2022 -22:34 h **Actualizado el 26/06/2022 -05:30 h**

The chest is full of snakes. It's a large freezer, the size of a bar. The reptiles are stacked by the half-dozen, wrapped in plastic. They look like packages ready to be labeled and placed on the counters of a supermarket's cold-storage section. In Vietnam, Indonesia, or China, this wouldn't be a strange sight: snake meat is part of the traditional recipes of those countries. But we're not in Asia. The dozens of snakes have ended up in this freezer after spending months or years slithering across the soil of Ibiza.

Their freedom ended when they entered one of the 2,000 traps that the Balearic Fauna Recovery Consortium (Cofib) has placed on the island. "These snakes will be sent to Barcelona, Valencia, or Salamanca," explains Víctor Colomar, the Ibizan coordinator of this organization, which reports to the Ministry of the Environment, as he closes the freezer lid, "so that the universities collaborating with the Government can continue studying their habits and



Seeing lizards in any field in Ibiza was common until a few years ago / Sebastián Candela

characteristics: age, weight, length, diet..." The diet of these reptiles, consisting mainly of lizards, is the reason why hunting them has become one of the main tasks of technicians like Colomar, who started working alone and now leads a team of twelve people. In that period—six years—some 15,000 snakes have been captured in the Balearic Islands.

The snakes had already arrived long before the institutions took action. Sightings were already recorded in 2003, even emerging from among the roots of olive trees that adorn the gardens of villas and luxury homes. Reports from environmental technicians at the Ibiza Council confirm this. The horseshoe snake—non-venomous and capable of growing to a meter and a half—spread rapidly and, while multiplying, has continued to eat lizards.

The only endemic vertebrate of Ibiza and Formentera has become a near-threatened species, according to the parameters of the International Union for Conservation of Nature. A study published last year in a scientific journal edited by Oxford University is even more pessimistic: the *Podarcis pityusensis* will disappear from Ibiza by 2030 at the latest if the trend is not reversed.

The maps from this research project, in which Elba Montes, a doctor from the University of Valencia and one of the leading experts on the subject, participated, are clear. A decade ago, the snakes were concentrated in the interior of the municipality of Santa Eulària (occupying 1,000 hectares), and today they can be found over an area 30 times larger, reaching many areas in the south of the island.

Snakes Arrive from the Peninsula

Furthermore, despite the ecological problem that has arisen, the transportation of trees and plants from nurseries on the Peninsula is constant. Since there is no legislation prohibiting or controlling this—through quarantines at the port of origin, for example—the snakes have never stopped crossing the Dénia Channel. The Ministry of the Environment assures that they



A snake captured by Cofib technicians, / Conselleria de Medi Ambient

have urged the central government "on numerous occasions" to take the initiative and create a legal framework to regulate the problem. According to sources within the Government, permission has even been requested from Madrid to draft regional regulations, but they have not been able to clarify whether "the Balearic Islands, as an autonomous community, have the authority to do so."

The draft Special Plan for the port of Ibiza, drawn up by the Port Authority, includes a quarantine zone for unloaded plant species. For now, it's the only glimmer of hope on a very dark horizon. "As long as the entry of olive trees isn't controlled, our job will be like trying to empty the sea with a bucket," Colomar summarizes. Because the invasive species has no predators: except for the genet, rare and localized in the northern mountains, and wild cats, another problem for Ibiza's native fauna, only traps (or being run over when crossing a road) can decimate it.

An international problem

The problem in Ibiza is not unique worldwide. Looking to other islands provides clues for imagining the future of Ibiza's lizards. Where action has been taken—relatively—early and where financial and human resources have been allocated, there is still hope. To control the California king snake, an artificially introduced snake that threatens the giant lizard of Gran Canaria, "the Island Council has allocated 800,000 euros this year [double the amount of the regional government in Ibiza and Formentera] and has forty-four technicians working [four times more than in the Pitiüses]," explains Colomar.

Where, on the other hand, nothing was done for decades, the cascade of consequences is devastating for the island ecosystem, which is more fragile than others due to its disconnection from the mainland. This is what happened in Guam. On the largest island in the Marianas, an archipelago dependent on the United States, the snakes snuck into the holds of

cargo ships that docked during World War II.

Six decades later, the battle is more than lost, even if methods are applied that seem straight out of a 1990s Hollywood blockbuster. “In Guam, they've been forced to throw away dead mice—with paracetamol in their stomachs—because on an island the size of Ibiza, about 550 square kilometers, there are an estimated two million snakes. The density is brutal. Six species of lizard have disappeared, as have many birds. This imbalance is seriously affecting the native flora. It's evident when you compare the situation with other neighboring islands where the invasive species hasn't entered,” says Elba Montes.

The researcher took advantage of a vacation to travel to the Western Pacific and experience the situation in Guam firsthand. It was 2017. She was working as an Environmental Technician for the Consell d’Eivissa (Eivissa Council) and was more than familiar with the problem that snakes already represented. “The regional government, which is the competent authority, told us there was nothing to do. There was a bit of passivity. I have notes in old notebooks wondering what we could try. We went back and forth, and in 2014 we found a bureaucratic way to launch a pilot snake control project. It lasted two years. That's when I connected with this story and with José Manuel Pleguezuelos, a professor at the University of Granada, who advised us. I decided to write my thesis on this invasive species and its effects, supervised by him,” she says.

Montes specifies the amount of money the Consell was able to invest in its experiment: “Barely 36,000 euros. Two minor contracts at the time.” The success, according to her, wasn't so much—or only—involving the regional government (since 2016, 1.2 million euros have been invested—70% in the last two years—to finance the Cofib's work: hiring more staff and acquiring more vehicles, basically), but in raising “awareness among Ibizan society that we had a problem.” Hunters, environmentalists, and residents of rural areas began to request traps from the government or make their own to capture snakes.

“We are losing our heritage.”

Sebastián Candela saw the head of a lizard poke out of a crack in the wall and aimed his camera lens. He waited a few minutes, and little by little, more reptiles emerged from that crevice to say hello. “In one of the photos, I counted nineteen,” says this journalist who, since retiring four years ago, spends many mornings walking the paths surrounding the salt flats. There, and in other locations, he has compiled an archive containing thousands of images of lizards: some are extreme close-ups, achieved thanks to a good lens and the nibbles of fruit he gives the small reptiles to get them closer to the camera.

His image bank is a treasure trove for biologists and researchers like Antònia Maria Cirer, whom Sebastián met one day while taking photos in the island's only natural park. "She explained to me the value of my photos in spreading this reality and making us Ibizans aware of the heritage we were losing. People my age grew up playing among lizards, even in the city. Many people think it's impossible that this animal could disappear. It's always been there, and there have been many. Perhaps that's why we didn't pay any attention to it. Photographing them has fascinated me with their behavior, the complexity of their scales, and, above all, the way they look at the camera."



The dry stone walls are one of the favorite habitats of the only vertebrate endemic to Ibiza / Sebastián Candela.

Some of Sebastián Candela's images were on display last winter in an exhibition organized by the Institut d'Estudis Ibizasencs, with the eloquent title: Sargantanes. Time is Running Out. “Snakes don't just eat them, taking advantage of the fact that their prey has never had a major predator and is usually overly trusting; they also take refuge in one of the lizard's favorite habitats: the nooks and crannies formed in dry stone walls,” explains Cirer, who dedicated his doctoral thesis, back in the 1980s—when his neighbors asked him why he spent so much time studying “those creatures”—to describing the eighteen subspecies of *Podarcis pityusensis* that inhabit Ibiza, Formentera, and their islets.

Snakes are known to have swum in from the shore on some of these miniature islands, and, as documented by Elba Montes, on one of them, s’Illa de s’Ora, off Es Figueral beach, their main food source has disappeared. “Running out on lizards wouldn’t just be an environmental disaster; they’re an iconic animal on a cultural and historical level. It’s more important than ever to create reservoirs to ensure there’s always a sufficient lizard population so we can reintroduce them to areas of the island where they might become extinct,” says Cirer.

The Lizard Oasis

The Cofib hasn't wasted any time: the boundaries of the Ses Salines Natural Park are riddled with traps. Technicians know that it's inevitable that the snakes will dive into the salt ponds, threatening not only their favorite food but also the young and eggs of the birds that live in or visit the wetland. However, with this measure, they can prevent their proliferation and the irreparable disaster.

Phoenicians, Punics, and Romans buried their dead at es Puig des Molins. The part of the necropolis that had survived the centuries began to be studied and protected in the late 1940s. Archaeology prevented the urbanization of five hectares of this hill located near the ancient walled city, which, when it ceased to be a cemetery, became farmland and grazing land.

Its characteristics—a fenced perimeter and separated from the rural areas surrounding the city of Ibiza by several kilometers of asphalt—have made es Puig des Molins an interesting place to create the first large lizard reserve. It will be difficult for snakes to reach it. An agreement between institutions made it possible this spring. A twist in the story: ancient Ibosim (for the Punic and Phoenician) or Ebusus (for the Romans) was a place somewhere between fascinating and sacred because, despite its Mediterranean climate, it was free of snakes. Lizards had nothing to fear back then. Whoever wanted olive trees planted them.

Reptile Hunting

Alejandro Macías and Beatriz Chica are loading the back of a white-painted, unmarked Dacia Sandero. Military green T-shirts are the only thing that identifies them as members of the Cofib. Inside the trunk they put several jugs of water, empty wine bottles, their toolbox, and a cage full of the mice they raise in the old stables behind them.

We're standing next to the warehouse where Víctor Colomar showed us that chest full of frozen snakes. Until the Catalan government and the regional council clean up a space in the old Sa Coma barracks, this disused equestrian center is the base of operations for the technicians who work with the fauna of the Pitiüses: from a blue shark or a dolphin that needs to be rescued because they wash up injured on a beach to domestic turtles abandoned in the wild and that can cause disaster if they manage to reproduce. But their main job, especially during the warmer months, is to eliminate snakes.

The pair of technicians start the car and drive north: today they must check the twenty traps they have set up on the old Portinatx road. Every hundred or two hundred meters, Álex stops the car and Bea opens the trunk. They gather their equipment and locate the wooden box (two compartments separated by a grid, one for rodents, which attract snakes with their scent, and another for visitors). They leave it, covered with plastic and with something heavy on the lid, in a damp, sun-protected spot. For example, the side of a stream.

If they had another vehicle, a four-wheel drive, they could also strew traps on other, more inaccessible paths, those that climb through pine trees on steep hills surrounded by forest, where they sense there must also be large colonies of snakes. They carefully crouch down to check if the mice are still alive. They replenish their food. They also update the water trough. If the trap still has a plastic tube, they replace it with a wine bottle, which they refill with water: at the beginning of summer, the glass prevents the liquid from evaporating too quickly. If the bait dies, the snakes won't take the bait. If there's a reptile inside the cage, they hold it by the head with gardening gloves, stun it by hitting it against a rock or wall, and when it loses consciousness, they euthanize it with a hammer.

The surprise is great when, empty trap after empty trap, they discover that the snake catch will be minimal, despite the fact that the latest data stored in the application used by the Cofib to record its work indicates that the northwest of the island has the highest density of snakes. Today, there are two specimens. Ten days earlier, coinciding with the last check, there were thirty-two.

Álex confirms the number by looking at one of the last pages of the notebook he carries in his pocket to take rough notes when traveling through places where his phone has no coverage.



A trap for capturing snakes / Conselleria de Medi Ambient.



A Cofib technician shows a small specimen of the horseshoe snake / Conselleria de Medi Ambient.

They are part of increasingly comprehensive statistics that, when translated, led the Minister of the Environment, Miquel Mir, to admit last April, when the 2022 campaign began, what technicians and experts have been warning about for years: at this point, eradicating the horseshoe snake from Ibiza is a pipe dream. Controlling its density—as has been achieved in Formentera, where the reptiles were concentrated on the La Mola plateau from the outset—is presented as the only solution. “We have to find a balance between snakes and lizards, a ratio that allows them to coexist. Then we would no longer consider the horseshoe snake an invasive species because it would have already integrated into the Ibiza ecosystem,” says Víctor Colomar. Finding that number before it's too late, however, seems like squaring the circle.

PERIÓDICO de IBIZA Y FORMENTERA

Las serpientes ya están presentes en toda Ibiza por culpa de la Movilidad humana

Snakes are now present throughout Ibiza due to human mobility

The situation in Formentera remains under control, while half of Ibiza's population is experiencing high numbers.



Several snakes inside one of the traps managed by Cofib

Isaac Vaquer Ferrer | 11/07/22 3:59

The snakes have already spread throughout Ibiza, and half of the island suffers from a high density of snakes.

This expansion was already anticipated, but Victor Colomar, a technician with the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), believes it is too rapid to be natural. He therefore believes they could be being transported by human means. This hypothesis is difficult to confirm with reliable data, but it seems the most likely theory.

These are some of Colomar's assessments at the midpoint of the 2022 snake population control campaign in the Pitiusas.

Increased Captures

So far this year, the Cofib has captured 1,600 snakes in Ibiza, to which the 500 captured by the hunters' association should be added. There is still no data from the "Sargantanes o Serps" campaign promoted by Gen-Gob and Amics de la Terra. In any case, these would be considerably more captures than at this point in previous years.

In Formentera, 400 captures have been reached, figures that are within expectations.

Colomar expresses concern for the largest of the Pitiusas, due to the aforementioned presence of snakes throughout the island and the fact that half of it is at a high density. The areas of Sant Joan, Santa Eulària, Roca Llisa, and the outskirts of Jesús up to Ibiza are said to be the areas with the highest density detected on the island.

The northeastern part of the island was the first affected by the arrival of snakes due to the importation of olive trees, and we can see how the settled population is declining southward, settling in the outskirts of Vila. "Especially in Sant Joan and the outskirts of Jesús and Vila, the density is especially high," Colomar explained. The outskirts of Vila are particularly noteworthy, where between last year and this year there has been an incredible change in density.

Each passing year presents a new situation as we better understand the species' expansion pattern. "In the 2016-2018 campaign, we could only theorize about how they expanded. Now that we are beginning to detect patterns, we are surprised by the population explosions of snakes in areas where we see an explosive increase in the population." There are areas where the opposite occurs in a way that has yet to be explained."

This data gives technicians an advantage in combating invasive species, but it is difficult to obtain, given that conclusions about expansion are drawn from observations over long periods.

Strategy

In addition to the usual resources, this year there is an increase in traps and personnel through the Sustainable Tourism Tax, which allows Cofib technicians to manage an average of 1,200 traps, with the possibility of increasing this number throughout the year in Ibiza.

Regarding the use of traps, Colomar explains that Cofib has around 2,000 cages that are in motion and are constantly being activated and removed. With this, Colomar indicates that the average number of active traps will increase over the coming weeks. In Formentera, there are 400 stabilized traps, which make up the effective control perimeter.

Depending on the density pattern, in the case of Ibiza, the traps are moved and reorganized. "Now, mid-season, we rethink our objectives. We remove traps from some locations and place them in others, so that the average number of traps remains stable but the trapping points increase," explains the technician.

Formentera

On Formentera, the snake population remains confined to the La Mola area, with occasional sightings in low-lying areas, which is normal. The Cofib technician indicated that there may be occasional sightings of snakes in other areas of the island, but that this is not a cause for concern. Despite this, he remains optimistic about the eradication, although he cannot set a date.

Colomar points out that the strategy is being effective, but the population is "very resistant to trapping." Many captures are being carried out consistently, but despite this, the population remains stable. "It's something we couldn't have known; there are no precedents for this type of strategy and campaign, and we can't know how long they will last. Their resilience is surprising, but the good outlook remains because they haven't left the established trap line."

Ibiza volunteers are bordering on professionalism in their trap control and management efforts

Cofib highlights the volunteers' work within the "Sargantanes o Serps" campaign, organized by several associations within Ibizan civil society.

"After more than 15 years working on invasive species control, I find it incredible. I think it's one of the cases in which a citizen initiative has been most effective and most professional. There are people in Ibiza who, independently and voluntarily, are developing professional capture strategies, managing a large number of cages that they handle as well as we do. It's one of the things that has surprised me most positively, and we are very grateful for these initiatives," said technician Víctor Colomar.

Therefore, he points out that, within the "disgrace" of the snake invasion in Ibiza, it is very positive that the involvement and mobilization of the population has been achieved, driven by many groups in Ibiza that have joined this task.

He warned, despite this arduous task, that "we will see an increase in the snake population for at least the next decade." This should not discourage the public and institutions and lead them to give up, but rather the opposite. It's time to maintain intensive campaigns; the results will take years to be seen, but they will be seen, according to this expert.

PERIÓDICO de IBIZA Y FORMENTERA

Casi un centenar de nuevos voluntarios se unen a la lucha contra las serpientes

Nearly 100 new volunteers join the fight against snakes

The "Sargantanes o Serps" program of GEN-GOB and Amics de la Terra has more than 300 participants



Cofib technicians during the training of volunteers from the 'Sargantanes o Serps' on July 7 | Photo: GEN-GOB

Isaac Vaquer Ferrer | Ibiza | 12/07/22 3:59

On San Fermín Day, the final talk and snake trap distribution event for the 2022 "Sargantanes o Serps" campaign took place. It was the fourth of the year and exceeded expectations. A total of 52 people attended Can Casals, in the Cas Serres neighborhood of Ibiza, some with their own traps. The following day, two of the volunteers had already captured them.

In total this year, the campaign, promoted by GEN-GOB and Amics de la Terra, recruited 92 volunteers and distributed 128 traps. "It's truly an incredible achievement," celebrated Hazel Morgan, president of Amics de la Terra.

She believes one of the reasons for this increase is the rising density of snakes across the island, which the volunteers themselves note and encourages them to participate in the campaign. "We already know that they have spread to Cala Llonga, Talamanca, and Sant Rafel," she notes, while believing that the participation of more people in snake capture will provide more data to understand expansion patterns and improve the capture strategy.

Independent Volunteers

'Sargantanes or Serps' has 302 active volunteers halfway through the campaign. Morgan points out that many of them are already independent and within the volunteer network simply need a replacement mouse.

In a survey conducted among volunteers to find out how many people needed help handling the snakes and how many handled everything themselves, they observed that "the majority manage the captures themselves. Some need help the first time, but then they manage the entire process," explained the president of Amics de la Terra.

On the other hand, it indicates that capture recording has been improved, now being done through the Cofib green line.

Campaign

Regarding this year's capture data among volunteers, there are no updated figures yet. However, the number of snakes killed by the Ibiza Hunters Association and Cofib technicians is known, totaling approximately 2,100.

Each annual campaign is divided into two parts: one until July 31st, which covers the snake mating season, when the most active season occurs and the bulk of the captures are made. At that point, halfway through the campaign, an initial count of trapped snakes is made.

The second part runs until the first autumn rains and the arrival of cold weather, when the traps are collected as the snakes begin their hibernation period.

At this point, almost all of the traps funded by public authorities have been distributed, and some people are waiting to participate in the next campaign.

Those interested in volunteering or needing mice for the traps they have can contact GEN-GOB or Amics de la Terra Eivissa on their respective websites.

There are practical videos and guides for volunteers, both for raising mice and for respectful handling of catches.

El apunte



La falta de Plan Especial retrasa la puesta en marcha de una zona de cuarentena

Isaac Vaquer Ferrer

One of the measures demanded by Ibizan institutions and civil associations to control the entry of snakes into the island is the creation of a quarantine zone in the port for goods likely to contain snakes, primarily olive trees. The Balearic Port Authority (APB) included the creation of this quarantine zone in the Special Plan for the Port of Ibiza, which is still being processed, according to the public authority. The Ibizan government announced that it is preparing a motion for the next plenary session to request that the implementation of this space be accelerated to prevent the increase in the snake population through imports.

09-08-2022 - Laura Ferrer - Young British tourists join the fight to protect the Ibiza lizard (educational)

noudiari.es
Eivissa i Formentera

Pequeños turistas británicos se suman a la lucha para proteger la lagartija de Ibiza

Young British tourists join the fight to protect the Ibiza lizard



Young British tourists learn about Ibiza's snakes and their dangers (but also that they're not poisonous) from volunteer Dean Gallagher.

Por **Laura Ferrer** — 9 agosto 2022

Education is the best tool for eradicating prejudice, and Dean Gallagher, an English teacher and volunteer with Amics de la Terra in the fight to eradicate the invasive horseshoe and ladder snakes that are decimating Ibiza's endemic lizard population, knows this well.

Her own outreach and snake-hunting work, combined with the interest of two tourist families in helping their children learn about Ibiza, has resulted in a unique, almost improvised workshop in which mostly British children learned everything there was to know about these invasive snakes during their vacation.

It all started when Gallagher received a call to remove five snakes caught in traps near Benirràs, in the municipality of Sant Joan.

Two tourist families staying in vacation homes in the area, after learning about the reality of the infestation, asked the expert to teach their children the importance of the campaign to try to stop and end the invasion.

"I loved the idea," says Gallagher, concerned about the alarmist approach some British media have given to the Ibiza infestation, "as if snakes were poisonous or dangerous to humans."

Upon arrival, he found a small group of children with expectant faces who, far from being afraid, were eager to approach the snakes. "I even had to slow them down a bit! First, they had to learn basic safety skills, like how to grab them and that they must be handled with care, even though they are an invasive species," Dean Gallagher told Noudiari.

"If children as young as six, seven, or eight can pick up snakes without gloves, we're showing the truth: that they're not dangerous to people or to tourism," says Gallagher, who strongly rejects "the hysteria, sensationalism, and other nonsense that is sometimes generated by this type of information." "The children have understood that we are fighting to save an endemic species and that, unfortunately, snakes have to be killed so they don't eat all the lizards," he emphasizes.

"Finally, they've learned the important lesson that we must respect the environment and ecosystems, and also that in other places, snakes are part of the environment and are dangerous, and they shouldn't be touched. My message is clear: respect nature and stop the importation of species that don't belong there," the volunteer emphasizes.

This workshop also dispels other prejudices, such as the belief that all tourists who visit the island do so without understanding the island's reality and are only interested in the sun, the beach, and the nightclubs. "All of this was due to the initiative and the interest of the parents who wanted them to learn about this reality of the island," insists Australian Gallagher.

The children learned that lizards are in danger due to the invasion of these snakes, but at the same time, that if they see a snake in their vacation homes, gardens, or hotels, "they don't have to worry because they are neither poisonous nor dangerous," he insists. "Just leave them alone or make some noise to keep them away, because they are very sensitive to sounds," he explains.

Gallagher explained how to handle them if they need to be removed from a trap. "They have teeth and can bite you, even if they are not poisonous, and you have to avoid that, so you have to pick them up by the head and be very careful," he explained to the children.

Thus, girls and boys learned and enjoyed a unique vacation day in Ibiza that will leave them with unforgettable memories.

An experience, in short, that has been tremendously positive for families and children, as well as for the volunteer himself, who thus "recruits" reinforcements for the protection of the Ibizan wall lizard.

The "snake hunter" states that he is more than willing to undertake more activities like this with tourists to show the British press that much of what they say about the plague is false.

***People who spot a snake can notify the environmental organization Amics de la Terra, the relevant City Council, or the Green Line of Cofib.

10-10-2022 - Laura Ferrer - Sebastián Candela and Antònia Cirer present the book 'Sargantanes. El temps s'acaba' (educational)

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Sebastián Candela y Antònia Cirer presentan el libro 'Sargantanes. El temps s'acaba'

Sebastián Candela and Antònia Cirer present the book 'Sargantanes. El temps s'acaba'



Antònia Cirer and Sebastián Candela.

Por **Redacción** — 10 octubre 2022

The book Sargantanes. El temps s'acaba, with photographs by Sebastián Candela and text by Antònia Maria Cirer, will be presented this Thursday, October 13th at 7:30 p.m. at the Club Náutico de Ibiza.

This is a visually striking work, thanks to Candela's photographs, which, in its 236 pages, illustrate the daily life of the Pityusic lizard in its natural habitat. The book also includes highly educational texts written by Cirer, a PhD in Biology and professor of Natural Sciences.

The event will feature speeches by the manager of the CN Ibiza, Vicent Canals; the president of the Institut d'Estudis Ibizas, Marià Mayans; the deputy general manager of Iberian Press Content in the Balearic Islands, Joan Serra; and the book's authors.

The snapshots of the lizards were captured in different areas of the Ses Salines Natural Park, where numerous specimens of the *Podarcis pityusensis* can still be seen.

The Institut d'Estudis Ibizasencs, organizer of the event and publisher of the book, highlights that during the first seven months of this year, twice as many snakes (predators of lizards and causing the threat of extinction) have been captured compared to 2021.

They emphasize that the lizard is the most important local biological treasure, "since it is the only terrestrial vertebrate truly native to Ibiza and Formentera."

Thus, the ultimate goal of the book is to raise public awareness of the serious risk of extinction currently faced by the Pityusic lizard, mainly due to the invasive snakes that arrived on the islands in 2003.

In parallel with the book's presentation, the CNI is hosting a traveling photography exhibition of the same name until October 19th. Images donated by Sebastián Candela to the IEE (Spanish Institute of Natural Sciences) to promote the lizard's preservation campaign have already been exhibited in Ebusus and Santa Eulària.

"However, we still lack serious and effective measures to prevent the arrival and disembarkation of invasive species through the port of Ibiza," they lament.



14-10-2022 - Laura Ferrer - The extinction of lizards as a metaphor for other extinctions (educational)

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La extinción de las lagartijas como metáfora de otras extinciones

The extinction of lizards as a metaphor for other extinctions



The presentation of the table book on lizards, with photos by Sebastián Candela and texts by Antònia Cirer.
L. F. A.

Por **Laura Ferrer** — 14 octubre 2022

The presentation of the book "Sargantanes, el temps s'acaba," with photos by Sebastián Candela and texts by Antònia Cirer, yesterday at the Club Náutico de Ibiza (CNI) was a resounding success, with the audience filling every available seat. At the same time, it was a moment to reflect on the changes and depredation Ibiza is undergoing, exemplified by the danger posed to the Club Náutico de Ibiza concession itself.

Thus, the extinction of the lizards, which the book denounces through photographs and texts that show the importance and beauty of the species, acted as a metaphor in the presentation for the changes and other extinctions the island is experiencing.



The presentation was a resounding success with the public. Photos by L. F. A.

15-11-2022 - Manu Gon - A new home for lizards at the Puig d'en Valls Primary School (control)

PERIÓDICO de IBIZA Y FORMENTERA

Un nuevo hogar para las sargantanas en el CEIP Puig d'en Valls

A new home for lizards at the Puig d'en Valls Primary School

This school in the municipality of Santa Eulària is the first in Ibiza to build a reserve for these endangered animals.



Manu Gon | Santa Eulària | 15/11/22 13:45

The problem of lizards in Ibiza is increasing. They are increasingly at risk of disappearing forever due to the spread of snakes, so any help or awareness-raising action is positive, especially if it's working with students who, sooner rather than later, will be our future.

Based on this foundation, CEIP Puig d'en Valls has become a pioneer on the island in creating a lizard reserve on its premises. Located very close to the main entrance, on the right, it is delimited by several decorated murals and was built by all the school's students so that these small animals, native to the Pitiusas, can find a new home.

As Toni Marí, a sixth-grade primary school teacher and the school's environmental coordinator, explained this morning to Periódico de Ibiza y Formentera, this initiative emerged two academic years ago at the request of APIMA, although it was only implemented last year. "The main objective of this project is to raise awareness about this serious problem we have on the island because many people still don't know that if the lizards disappear, our very ecosystem is in danger, since everything in nature is directly related."

Everyone involved

The process of creating this lizard reserve hasn't been easy, "but it has been very satisfactory, since the entire educational community has done its part throughout the different stages."

In this regard, Marí recalled this morning the visit received by biologist and lizard expert Antònia María Cirer, who was given to the 6th grade students "to learn about these small animals, how they live, how they eat, and how to care for them." She also mentioned how some of the stones used to build the new gymnasium "have been used to create a dry stone wall where the lizards can enjoy their nooks and crannies." She also mentioned how specific snake traps have been created "following the advice of specialists from the Balearic Islands Wildlife Recovery Consortium (Cofib), which were then distributed throughout the playground."

They've even created a video to promote the project, and a panel has been set up next to the reserve to inform about its purpose and the area's location. This space also includes "very necessary plants to attract mosquitoes and insects that feed the lizards" and "a small recycling corner created by the students themselves."

Highly aware

The result of the initiative couldn't be more positive. Beyond the creation of the reserve at the entrance to the school, the 6th grade students have become strong advocates and promoters of the idea of keeping the Pityusic lizard alive.

"We must take care of the lizards because they are in danger of extinction, because they are very important for our environment, and because if one day they disappear, everything could end up being destroyed," explained Carlos, one of the students, very seriously and conscientiously this morning, summarizing a widespread opinion among his classmates.

Therefore, as María and Idaira confirmed, "we built a house for all of them following Antònia María Cirer's advice, using the stones from the gymnasium construction" and achieving "little by little there are more lizards in the reserve, with beautiful colors like green or blue." In fact, they are all very clear that they need to send the message to the rest of their schoolmates "that they should be allowed to live in peace."

Furthermore, as Joel said, "the most beautiful thing has been seeing how all the work is starting to bear fruit and how Cirer herself congratulated us, telling us that everything was very well done and very well finished."



IBIZA KURIER
Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Neophyten und Neozoen: Nutzen oder schaden die Neulinge?

Neophytes and Neozoans: Are the newcomers beneficial or harmful?

A controversial view of the snake plague and other “invaders”



No, this article won't be about the various groups of new immigrants to Ibiza. This time we want to focus on neophytes and neozoans.

Neophytes are newly immigrated or introduced plants, neozoans are newly settled animals.

But first, the question arises: where should the boundary between "new" and "old" actually be drawn? In ecological terminology, a distinction is made between neophytes that arrived in an area after 1500 and archaeophytes that arrived earlier. Accordingly, the boundary between archaeozoans and neozoans is set at around 1500, with the establishment of transatlantic contacts.

The carob tree, which is widespread in the Pityusic Islands, is an archaeophyte, and the genet, introduced by the Phoenicians, is an archaeozoan.

For several decades, the term "invasive neophytes" has haunted conservation movements. The most well-known of these "invasive neophytes" on Ibiza is the sulfur-yellow flowering nodding wood sorrel (*Oxalis pes-caprae*), which is spreading along roadsides and in fields – not only on Ibiza, but throughout the Mediterranean region and also on the Canary Islands.

Vegetable growers consider it a nuisance weed, which they remove whenever possible. This isn't done out of xenophobia; they do the same to archaeophytes and native plants when they become a nuisance in the field. The same applies to native snails and aphids.

The ecological significance of neophytes and neozoans is often hotly debated. Do they distort flora and fauna? Do they disrupt the ecological balance? Do they cause damage to native flora and fauna?

The decision as to whether something is good or bad is, as we all know, very subjective. Just as there is no objective answer to the question of whether German immigrants to Ibiza are good or bad, one cannot objectively say whether wood sorrel should be considered annoying or beautiful. It is rarely found in relatively untouched forests, practically only in biotopes heavily modified by humans.

Conservation activists often argue that these newcomers pose a threat to native ecosystems and must be combated. They displace native species. But if you ask which species they are actually displacing, you usually get only a confused shrug.

Ecologically trained people naturally view the arrival of newcomers in a more nuanced and generally less dramatic way. There are isolated cases in which animals introduced to islands, in particular, have a devastating effect on the native fauna. The best example is the snakes that have plagued Ibiza for several years. In most cases, however, the newcomers can barely hold their own against the native species.

Since the South African Cape region has a climate similar to that of the Mediterranean, newcomers from there often feel quite at home in the Mediterranean region. In addition, the region is very rich in unique species, making it a paradise for ornamental plant enthusiasts.

In addition to wood sorrel, we also find several ice plant species in the Pityusic Islands that have grown wild from gardens. On the beaches of Ibiza and Formentera, for example, *Carpobrotus acinaciformis* and *Mesembryanthemum cristallinum* are becoming increasingly common. Should we fight them as nuisances? Or can we enjoy them and view them as an enrichment to the flora? One thing is clear: getting annoyed with the newcomers doesn't solve any problems.

Fred Pearce's book "The New Wild Ones: How to Save Nature with Alien Animals and Plants" was published by Munich-based Oekom-Verlag. The author argues that newcomers are an asset and, in times of climate change, even represent the future. One doesn't have to accept all of his statements in their entirety, but he certainly deserves credit for offering something constructive and optimistic to counter the widespread hysteria against newcomers. According to his estimates, only one percent of newcomers are problematic, although he doesn't reveal how he arrived at this figure. One thing, however, is clear: We can't generalize; we must consider each case individually.

Now, ecosystems have always been in a state of constant change, whether with or without human intervention. Species have always migrated, and that in itself is nothing to worry about. Today, due to human activity, migrations are occurring more rapidly. But that shouldn't worry us either. Pearce says: "The resilience and self-healing powers of nature are not

recognized by most conservationists."

Human activity doesn't always have to be viewed in a one-sidedly negative light; otherwise, our logical goal would be to exterminate our own species. All too often, ecology is confused with misanthropy, and not just on Ibiza.

Over the centuries, human activity has also created valuable habitats on Ibiza, such as the garrigues and the walls, which are the result of extensive pastoral farming.

It is a fact that many introduced plants rarely or never grow wild. This applies to the vast majority of useful and ornamental plants, including archaeophytes. The carob tree (*Ceratonia siliqua*), which originates from the Orient, occasionally grows wild, but certainly not to a dangerous extent. The prickly pear cactus (*Opuntia ficus-indica*), native to Mexico and a neophyte, is also not often found growing wild here, unlike on La Gomera, for example, where it has found an ideal habitat (without displacing many native plants). The South American nasturtium (*Tropaeolum majus*), although it reproduces well in gardens, rarely spreads further.

Over the centuries, local varieties of the important American crops corn and tomatoes have been developed on Ibiza. Tomatoes only grow spontaneously where they face no competition; corn cannot self-seed and therefore cannot become invasive.

Recently, parrots, similar to those found in cities like Barcelona or Santa Cruz de Tenerife, have been spreading in Ibizan towns. It certainly can't be said that they are displacing native animals in cities to any significant extent. Rather, they are occupying habitats from which humans have displaced many native animals. The threat comes more from unrestrained development than from the parrots.

But what about the snakes that have been invading Ibiza for a few years? So far, they've been the ladder snake (*Rhinechis scalaris*) and the horseshoe whip snake (*Hemorrhois hippocrepis*). There are great fears that they will cause the Pityusic lizard (*Podarcis pityusensis*) and local bird species to disappear. Snakes have been introduced repeatedly for thousands of years, but they never survived for long.

Today, we no longer attribute this to the protective god Bes, as the Phoenicians once did, but rather to the hedgehog that kills snakes. Hedgehog numbers on Ibiza have been greatly reduced due to increasing road traffic. Perhaps it would be more honest to see the "danger" in car traffic rather than in snakes?

The Australian eucalyptus planted in some places is problematic because it absorbs a lot of water. In some areas, it was planted to drain swamps. This is undesirable on Ibiza, where water shortages are already increasing. Fortunately for the island's water supply, however, it is not spreading invasively.

This article isn't meant to be a license to introduce anything and everything without hesitation. Rather, it should enable us to view the newcomers without prejudice and allow us to recognize their beauty.

IB3N Notícies

Per primera vegada aquest 2022 es troba una serp de ferradura a Formentera

For the first time this 2022 a horseshoe snake is found in Formentera

The sighting was in the port area and it could not be captured.

N 08/12/2022



cofib
CONSORCI DE RECUPERACIÓ DE LA FAUNA, ILLES BALEARS

PERIÓDICO de IBIZA Y FORMENTERA

Las sargantanes cuentan ya con santuarios en la Necrópolis y en es Soto

The lizards now have sanctuaries in the Necropolis and in es Soto

Antònia Cirer points out that the species remains in an "emergency" situation.



From left to right, Vicent Roig, Antònia Cirer, Jaume Estarellas, Víctor Colomar, María Bofill and Jordi Salewski | Photo: Daniel Espinosa

Gisela Revelles | Ibiza | 14/12/22 12:29

The Archaeological Museum, the Can Marines Vocational Training Center, the Ibiza Council, the Ibiza Town Council, and the SOS Sargantanes organization presented this Wednesday the first sanctuary for Ibizan lizards, located in the Puig des Molins Necropolis. This is a specially protected area against the access of snakes and other invasive species at a time of "particular emergency" for the lizards, according to SOS Sargantanes coordinator Antònia Cirer.

The idea of locating a protected area for Ibizan lizards in the necropolis came from the students of the Can Marines Vocational Training Center, whose manager, Pepita Costa, conveyed it to the Council. The island institution accepted the proposal and involved the other administrations in its implementation, with the collaboration of the SOS Sargantanes volunteer association. The Minister of the Environment, Vicent

Roig, stated that this Wednesday is "a day of joy" due to the presentation of the results of a project that has been in the works for "more than a year." Roig explained that various information panels will be installed in this first sanctuary, visible from outside the sanctuary, so that both visitors and those strolling around can learn about what is being done to protect the Ibizan wall lizard. "The main objective is to make people aware that the lizard must be cared for as much as possible," the Minister emphasized.

Antònia Cirer, for her part, indicated that the lizards remains in a very delicate situation because "it is increasingly retreating from the island due to the presence of invasive species." Cirer explained that it is necessary to look for places "where the snakes have not yet reached" in order to establish these protected areas. In the case of the necropolis, the situation is very positive because, in addition, the city itself acts as a protection belt to prevent snakes from entering. This area should also serve as an "example" so that those citizens who have country houses or houses with gardens can join a network of small sanctuaries where lizards can live safely, indicated the coordinator of SOS Sargantanes. "It's about seeing if, in the future, the situation can be reversed," added Antònia Cirer, who emphasized the need to "prevent snakes from reaching this area."

Vila's Environment Councilor, Jordi Salewski, explained that the City Council has joined the project by making the es Soto area available to its managers. Starting in January, he noted, a forest clearing will be carried out in this area and information panels will also be installed. The City Council has also distributed traps and plans to adapt similar spaces in Can Escandell and Can Misses.

Representing the Balearic Government, veterinarian Víctor Colomar emphasized "the need to create synergies to conserve native species and prevent invasive ones." In this regard, he supported projects like the one presented this Wednesday, which he described as "pioneering." The goal, he added, is "to try to ensure the maximum number of lizards in these protected areas."

Jaume Estarellas, a biologist with the Consell d'Eivissa, also warned of the need to "reverse the situation" facing the lizard in Ibiza by extending this project to other areas of the island. "Every country house," he noted, "can have its own small reserve of lizards."

Finally, the curator of the Archaeological Museum, María Bofill, emphasized the need to "join forces to preserve a natural heritage that is under threat." "The necropolis," she added, "is an ideal place for this reserve because the lizards are already here naturally, and this is what must be preserved."

SOS Salvem sa Sargantana Pitiüsa

INFORME FINAL DE CAMPANYA 2022
Tancat a 15 de desembre de 2022

INSTITUT D'ESTUDIS EIVISSENCS, Via Púnica, 29; Eivissa

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Serpientes en Eivissa y Formentera (Parte I)

Snakes in Ibiza and Formentera (Part I)

20-01-2023

Historically, both Ibiza and Formentera have been snake-free. The current snake plague we find in Ibiza and Formentera is the result of irresponsible human activity.

Once again, a capricious attitude and a lack of awareness about the fragility of our ecosystems—which we as a species have repeatedly demonstrated—has led to the current snake plague in Ibiza and Formentera. A snake plague that seriously threatens the survival of Ibiza's only terrestrial vertebrate endemic to the island: the Pityusic wall lizard (*Podarcis pityusensis*).

This, in practice, means that in a ridiculously short time, the Pityusic wall lizard (*Podarcis pityusensis*) could end up disappearing from the ecosystems of Ibiza and Formentera, a unique biological gem in the world.



Specimen of the Pityusic lizard (*Podarcis pityusensis*).

The problem is serious; the dates given for the possible extinction of the Pityusic lizard are as close as 2030 (E. Montes).

The process that gives rise to a new species is a long process, lasting thousands of years, in which a series of environmental and social characteristics must come together to foster the isolation and emergence of a new species.

The fragility of island ecosystems is due, in part, to the unique genetic characteristics of their species. These species have developed different adaptation mechanisms to the environment over thousands of years, which are specific to stable environmental conditions. In other words, generally, when a factor appears that radically changes an aspect of the ecosystem, such as temperature, rainfall, exotic competitors, or the appearance of a predator for which they have no defense mechanisms, the species most affected by these changes may be driven to abrupt extinction.



Geckos, or "dragons," are another of the many species that can be affected by the predatory action of horseshoe and ladder snakes.

It is important to highlight the extent to which this is relevant to global biodiversity. The species that inhabit islands, in many cases, are completely isolated from their original offspring. These species have followed a slow but steady process of evolution, independent of the rest of the species, for thousands of years, leading them to become unique in the world—that is, an endemism that cannot be found anywhere else in the world. This endemism of an island ecosystem will determine its great fragility in the face of abrupt changes in its ecosystem—such as the destruction of its environment or the introduction of invasive species—since the total population of individuals that make up this endemism worldwide is the total population existing in a handful of square kilometers that are very easily altered by human action.

So we shouldn't take lightly the warnings of experts in the field who have been warning us for years about the serious threat posed by invasive snakes in Ibiza and Formentera.

Ample proof of this is the already confirmed disappearance of the lizard population on the islet of S'Ora, where the last specimen was detected in 2017, which is attributable to the arrival of invasive snakes, something that was confirmed before the lizards on the islet had disappeared. The lizard population on the islet of S'Ora remained isolated from the rest of the populations in the Pityusic Islands since the last Glacial Maximum (E. Montes, 2021), that is, for about 20,000 years. 20,000 years of genetic wealth are going down the drain of evolution in just a handful of years due to irresponsible human action.

What species of snakes are we talking about?

The snakes we are concerned with are basically two. The vast majority are the horseshoe snake (*Hemorrhois hippocrepis*), and to a lesser extent, but now naturalized, the ladder snake (*Rhinechis scalaris*). Both species were, and are currently, introduced through the importation of centuries-old olive trees for ornamental garden purposes. The first record of the horseshoe snake in the Pitiusas was in 2003. A third snake, the Montpellier snake (*Malpolon monspessulanus)*, has also been detected on more than one occasion, but its naturalization on the island (natural reproduction) has not been confirmed to date, so it is considered that all detected specimens originate from the peninsula.



Adult specimen of the horseshoe snake (*Hemorrhois hippocrepis*), captured in the area of Ibiza Airport.

Due to the greater impact and presence of the horseshoe snake compared to the ladder snake, we believe it is necessary to emphasize the former. Horseshoe snakes in Ibiza and Formentera have already developed some peculiarities that differentiate them from the

populations in the southern Iberian Peninsula (from which they originate). They are larger; that is, they have developed a so-called gigantism that can reach up to 2 meters in length. However, despite growing larger, females reach sexual maturity at a smaller size compared to their full adult size in Ibiza and Formentera. Female horseshoe snakes in Ibiza reach sexual maturity at around 48% of their maximum length, while in peninsular populations, they do so at around 63%. This means that a female measuring about 63 cm is already capable of reproducing. In the case of males, this size is reduced to 50 cm.

On the other hand, there is evidence that their breeding season may be extending into September-October, although it is concentrated in the months of May and July (though it has not been confirmed that this translates into two clutches rather than late clutches).

Why should we be concerned about invasive snakes in Ibiza and Formentera?

As already indicated, invasive snakes are posing a serious threat to the survival of current ecosystems due to their predatory activity. The main threatened species is the iconic Pityusic lizard (*Podarcis pityusensis*). Due to its endemic status, this species also represents incalculable value from a genetic and evolutionary perspective.

However, snakes in general, and the horseshoe snake in particular, are versatile predators. And although it is currently estimated that their diet consists of 56% lizards, the other 44% is divided into small mammals, birds, and their eggs. Therefore, there's no need to wait for the extinction of lizards to know what will happen to other species. If action is not taken on this



Traps are normally removed in October-November, but in areas with high densities, if it is possible to keep them in place year-round, it is advisable to leave them in place, as occasional catches may still occur beyond those months.

issue and effective solutions are not sought as quickly as possible, we are all responsible: public administrations (regardless of their jurisdiction), social organizations, businesses, and individuals.

Furthermore, as already mentioned, horseshoe snakes are considered to have greater reproductive potential in Ibiza and Formentera, compared to the mainland populations from which they originate. Another factor to consider when assessing their degree of danger to ecosystems is the almost total absence of predators. As far as we know, only domestic cats and common kestrels (*Falco tinnunculus*) exert predatory pressure, but this is minimal: they only hunt a few small juveniles.

Therefore, it is urgent to control the snake population in Ibiza and Formentera. This is a collective and individual responsibility, which we must demand of ourselves and the public authorities.

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Serpientes en Eivissa y Formentera (Parte II)

Snakes in Ibiza and Formentera (Part II)

28-01-2023

Snake control in Ibiza began as a pilot project in 2014, led by the Ibiza Regional Government. During the pilot phase, different control methods were tested, ranging from the use of dogs to different types of traps that led to the current system.

The trap manufacturing plans are distributed free of charge by the Regional Ministry of the Environment. For those who wish to make their own traps, the direct link is available below.

At Nova Falcons, we have been using the same model with some minor modifications related to size and environmental insulation. The basic operation is very simple: it consists of a wooden box with two compartments divided from each other. One contains one or more live mice, which act as an attractant for the snakes. The other, which is empty and inaccessible to the mouse compartment, has a trapdoor that snakes can only open from the outside. Once inside, they cannot leave or access the mouse compartment. Both compartments have lids on the top so that both the mice and the snakes that are captured can be handled.





Snake control is a system that works with live bait, so it requires minimal care and attention from the snake trapper. This live bait is mice, not wild mice, but rather the typical mice used as live food. Due to their genetic characteristics, they are not afraid or prone to stress or any other physical or psychological suffering resulting from life in captivity.

Mice must always have access to water, food, and materials with which to build a warm, dry nest (such as straw). Since they are rodents, this material will likely need to be replaced periodically, as they tend to break it down. Another factor to consider is rainfall. If the trap is made following the mesh front pattern, this must be taken into account, since if the trap floods or the interior leaks, the mouse will likely die of hypothermia. In our case, we modified the design to ensure that even if water gets inside, it drains perfectly. This means that our snake traps can be left in place year-round, without worrying about the weather or the well-being of the rodents.

Setting the Traps

Where you place your snake traps influences the results you will obtain. The easiest way is to place them where snake sightings have been made: close to bushes, dry-stone walls, etc. If you're conducting a survey to verify whether or not there are snakes in the area, the basics are the same: place them where they're most likely to be seeking shelter or food. When setting a new trap, give it a little time. Snakes primarily find traps by scent, and as the scent of rodents camouflages the scent of people, wood, and other materials used to make them, the traps become more effective.

If a trap doesn't yield results within weeks, it's best to relocate it, but following the same principle: place it in a place where snakes can naturally come to seek food or shelter. It's important to remember that the peak activity months are June through August, although captures can occur from April through November. Therefore, the fact that snakes do not fall during the winter months is perfectly logical and normal: as a rule, they will be lethargic and hibernating.



Capture Management

No one who loves nature and living beings in general is going to enjoy sacrificing a living creature. All of us who are aware of the need to capture snakes in Ibiza and Formentera are aware of the seriousness of the situation for the survival of certain species in the current ecosystems of Ibiza and Formentera. Therefore, having to sacrifice every single specimen captured is not a pleasant experience: it is a purely objective necessity. A necessity that must be carried out as quickly and as bloodlessly as possible.



The famous and spectacular "blue lizards" of Formentera, one of the species seriously threatened by the spread of horseshoe snakes.

When removing the snake from the trap, keep in mind that they are fast, although they usually retreat initially. It may be advisable to use special tweezers, or failing that, pick them up directly with your hand, always protected by a glove. Although they will probably try to use modern ones, we shouldn't worry about this: their teeth are tiny and do not contain any venom. If you are unsure of the snake species inside the trap, it is always advisable to consult a professional as a precaution.

It should be noted that the current route of entry for horseshoe and ladder snakes, as well as some Montpellier snakes (*Malpolon monspessulanus*), is none other than the importation of centuries-old olive trees for ornamental purposes. This entry is still active, so the possibility of new species arriving, which in some cases may be venomous, cannot be ruled out. Therefore, if we are unsure of the species inside the trap, the safest course of action is to consult a professional.

This article complements what has already been presented in "Snakes in Ibiza and Formentera," where we basically focus on briefly explaining the seriousness of the uncontrolled spread of the horseshoe snake (*Hemorrhois hippocrepis*) and, to a lesser extent (but not entirely serious), the ladder snake (*Rhinechis scalaris*) for the ecosystems of Ibiza and Formentera.

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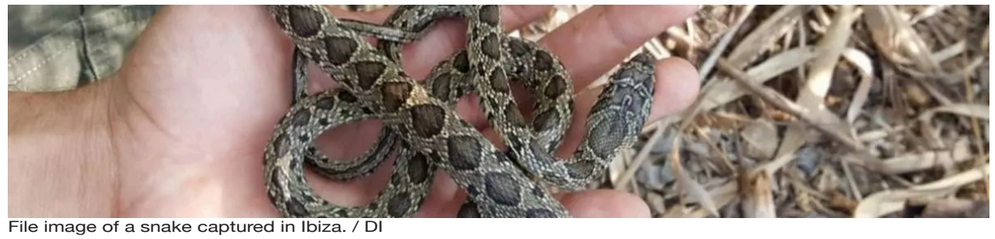
DIARIO de IBIZA

Control de serpientes en Ibiza: el Govern limita la entrada de olivos y declara a la lagartija especie vulnerable

Snake control in Ibiza: The Government restricts the entry of olive trees and declares the lizard a vulnerable species

The objective is to prevent the arrival of snakes to the Balearic Islands.



File image of a snake captured in Ibiza. / DI

Efe

Palma 30 ENE 2023 16:28 Actualizada 30 ENE 2023 17:09

As previously reported by this newspaper, the Governing Council approved this Monday a restriction on the entry of olive trees, carob trees, and ornamental holm oaks to prevent the arrival of snakes to the Balearic Islands, as well as declaring the Pityusic and Balearic wall lizards as vulnerable species, the Balearic government reported in a statement.

To this end, it has approved a Decree Law on extraordinary and urgent measures for the protection of the Pityusic wall lizard (*Podarcis pityusensis*) and the Balearic wall lizard (*Podarcis lilfordi*) and for the prevention and control of species of the *Colubridae* family sensu lato, i.e., snakes, in order to preserve the islands' endemic reptile species.

To this end, the entry of olive trees, carob trees, and ornamental holm oaks with a trunk circumference of more than 40 centimeters will be restricted during the egg-laying months until the snake species hatch and hibernate.

For the rest of the year, authorization must be requested from the Ministry of Environment and Territory and proof must be provided that control and biosecurity measures have been adopted to prevent the introduction of snakes, as well as the identification, origin, date of extraction, and traceability of the specimen.

Dates on which there will be no restrictions

The entry of these trees without restrictions will be permitted from April 1 to June 15 and from September 15 to October 15. Species introduced outside of this period will be quarantined in an enclosure impervious to snakes.

Likewise, nurseries, businesses, organizations, and individuals that sell, collect, or distribute ornamental trees will be required to set traps at least between April 1 and October 30.

Furthermore, the Pityusic lizard and the Balearic lizard are also included in the "Balearic Catalogue of Endangered and Specially Protected Species," classified as vulnerable for protection.

The Sustainable Tourism Tax (ITS) has funded the setting of 1,246 traps in Ibiza this year, and seven technicians have been working full-time on the island.

In Formentera, 394 traps have been set, and two technicians have been working full-time. In total, 1,640 cages have been set on the Pitiusas.

As for captures, 2,710 snakes were captured in Ibiza last year, more than double the previous year, and 664 in Formentera. In total, 2,834 specimens were recorded captured in the Pitiusas, 11,648 since 2016 (7,411 in Ibiza and 4,237 in Formentera).

The Decree Law will enter into force 11 days after its publication in the Official Gazette of the Balearic Islands, allowing businesses and individuals to adapt to the regulations.

IB3 Notícies

El Cofib captura a Eivissa 2.700 serps el 2022, són gairebé el doble que l'any anterior

Cofib captures 2,700 snakes in Ibiza in 2022, which is twice as much as the previous year

Even if the services continue to expand, this big difference is linked to the fact that last year is going to be served more often during the entire campaign.

02/03/2023



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DIARIO de IBIZA

Lagartijas a bordo

Lizards on board

"Surprising news: the discovery of several specimens of the Pityusic' endemic lizard on the Oliva coast"

Opinión | A pie de isla



Andrés Ferrer Taberner

06 ABR 2023 6:30

A few days ago, a Valencian newspaper reported surprising news: the discovery on the Oliva coast of several specimens of *Podarcis pityusensis*, the lizard endemic to the Pitiusas. Adding to the number of specimens that appeared on the coast of Denia a few years ago, this demonstrates the presence of this species outside its geographical area. Are these isolated cases, or does it mean that this small vertebrate is beginning to colonize, in some way, even by chance, the Mediterranean coast of the Iberian Peninsula?

Presumably, these lizards reach the mainland from the numerous boats that depart from the Pitiusas on their way back to Valencian ports, with nothing more to their luggage than the striking and unmistakable coloring of their scales that distinguishes them so much from their Iberian counterparts. The maritime flow between the two coasts—almost a bridge of lengths—is extraordinarily intense in summer, a circumstance these small reptiles take advantage of to sneak aboard and then disembark at the first opportunity. Swift, tiny, and always slipping through the shadows, no one ever witnesses their nautical adventures firsthand. Whoever takes a photo of them one day, catching them red-handed, will win a prize.

We are certainly not the only species driven by curiosity. Life, like the universe itself, tends to expand, to explore new paths to ensure its own survival, the first commandment of any brain, however primitive it may seem. "First me, then me, and always me," as the protagonist of the famous French novel "The Red and the Black" would say, is on the lips of every living being. The path of water is always to occupy the lowest levels; that of life is to occupy the empty spaces devoid of it, wherever they may be. Even if they are nowhere, as is the case with the "afterlife" concocted by humans, that's where we also want to be after our death. The instinct to remain in one way or another works miracles.

Obviously, the Pityusic lizards don't wonder what's on the other side of the sea; not even when they're drunk on the sun (nor am I so happy here at the expense of the island's blues). But since they're naturally restless and relentless, if they're given the opportunity to hop aboard a boat, they'll always find a spot, either there or anywhere else they fancy (one day I found one in the passenger seat of the car returning home from the port of Sant Miquel).

With the current bustle of ships up and down the river, they'll have plenty of opportunities. What they can never suspect is that when they disembark, they'll find themselves, to their surprise, facing new territories on the other side of the sea, all very much like Christopher Columbus. Their approach isn't new, although it is faster, traveling as stowaways on comfortable ferries. It's not new, I say, because in Polynesia, for example, there were a multitude of species that populated the different islands, clinging as best they could to trunks and branches drifting with the currents, especially during hurricane season. This is how fauna managed to spread across those latitudes, apart, of course, from those introduced by humans for their own benefit.

In the Mediterranean, there were also species that expanded in this way, although today the image is much less evocative. Instead of reaching the coasts on drifting branches or trunks, now they are on those small plastic islands that, with horror, we see floating at the mercy of the tides.

I am convinced that it hasn't all been ferries or dream boats; not even Robinson Crusoe rafts or small boats of friendly cuttlefish fishermen. More than one of our beloved Pityusic lizards has arrived on the Valencian coast from the clear plastic cover of a tangle of bags, let's say from the supermarket, conveniently crowded together by the random waves.

Andrés Ferrer Taberner | Writer

Universitat de les Illes Balears

XVII Congreso Luso-Español de Herpetología y XXI Congreso Español de Herpetología

Invasiones biológicas en Islas

Del 19 al 22 de abril de 2023

Santa Eulària des Riu (Eivissa)



PERIÓDICO de IBIZA Y FORMENTERA

Desde el Consell reconocen que es imposible erradicar las Serpientes invasoras de Ibiza

The Consell (Eivissa Regional Government) acknowledges that it is impossible to eradicate invasive snakes from Ibiza

The Director of Agriculture for the Consell d'Eivissa, Joan Marí, is concerned about the large number of olive trees with snakes on the island.



File image of an invasive snake in Ibiza

Vanessa Hernández | Ibiza | 24/04/23 0:30

The Island Director of Agriculture for the Consell d'Eivissa, Joan Marí, expressed concern that it is impossible to eradicate invasive snakes from Ibiza due to their widespread spread across the island over the years. In this regard, he explained to the Periódico de Ibiza y Formentera that a series of lines of work are being developed with the aim of controlling this spread, or at least slowing it down "as much as possible."

"We are counting on the collaboration of all the municipalities and public and private administrations to control these snakes through traps," the Island Director noted, emphasizing that it is the Environmental Management Department of the Consell

d'Eivissa that is developing the management and control measures for snake species in Ibiza. "The snakes have caused real disasters on the island. "We have a major problem that affects all Ibizans because half the island of Ibiza is almost devoid of native lizards," Joan Marí pointed out, adding that there are areas like Sant Carles, the town where the first specimens were detected, that no longer see the presence of lizards because they have been swallowed by these snakes.

Insufficient

He also pointed out that the Balearic Government's approval of limiting the entry of olive, carob, and ornamental holm oak trees to prevent the arrival of snakes hidden in their roots from the Peninsula is insufficient because there are many olive trees planted on Ibiza. "Every day I see more olive trees on the island. We have a large number of these trees here," he noted with concern. In this regard, he also lamented that there are no predators on Ibiza that could threaten these snakes, and all these problems would mean, according to the island director, the possible extinction of the Pityusic lizard in a few years.

Furthermore, he recalled yesterday that hundreds of traps were distributed, which, in just a few months, managed to capture hundreds of snakes. That is why the Consell d'Eivissa supports all active measures to try to eradicate these invasive snakes from the island, as they did in the past, demanding a quarantine zone in the port of Ibiza to prevent the arrival of these species. "We must not forget that the Consortium for the Recovery of Fauna of the Balearic Islands allocated more than €800,000 to combat snakes in the Pityusic Islands, and we know that various control measures are being implemented," he noted, while recalling that the Balearic Government has already included the native lizard as a vulnerable group in the Balearic Catalogue of Endangered Species and Species Requiring Special Protection.

Consell d'Eivissa

Joan Marí Guasch (Independent) is an agricultural professional with training in production and marketing models, and agricultural cooperatives and associations. He has served on the governing board of the Ibiza Young Farmers Association, the governing board of the Santa Eulària Cooperative, the Island Agricultural Council, the Balearic Water Council, the social council of the Can Marines Training Center, and has served as promoter, vice president, and president—for 16 years—of the Agroeivissa Cooperative.



IB3N Notícies

Reclamen mesures més contundents per erradicar les serps i protegir la sargantana a Eivissa

They demand stronger measures to eradicate snakes and protect the lizard in Ibiza

The organization launches the 'SOS Sargantanes' campaign for the third year and distributes mice for snake traps.

24/04/2023



Esther Matutes

The Pityusic lizard is at risk of extinction. It is the main diet of snakes, first detected in Ibiza in 2003. Since then, the snake population has grown exponentially. The Institut d'Estudis Eivissencs has been running the SOS Sargantanes campaign for three years.

The organization distributes mice that volunteers put in traps installed in their homes, between April and October, to try to reduce the population of these snakes and thus save the lizard.

Rosa Maria goes to the headquarters of the Institut d'Estudis Eivissencs today to collect a mouse. She lives in Sant Jordi and is one of the 500 volunteers that the organization has in the SOS Sargantanes campaign. She is being looked after by Antònia Maria Cirer, a member of the Institute, a woman very involved in the protection of the lizard.

Together with Antònia, we visit Neus Torres, who shows us the two traps he has in his house. He has lived there for twenty years and, in these two decades, he has seen how snakes have clearly gained ground over lizards.

In the last two years, he has managed to capture around 25 snakes. The evolution in the rest of the island is clear. And just as the snake population is growing, lizards are disappearing.

The Institute of Ibizan Studies believes that the public administration could act more effectively to eradicate snakes, for example by using pheromones. The organization will call for a grant to study what snakes feed on most. At the moment it is lizards, but it could affect more species.

PERIÓDICO de IBIZA Y FORMENTERA

Refugios en Santa Eulària para proteger a las 'sargantanes'

Shelters in Santa Eulària to protect the lizards

Students of the IES Quartó del Rei, together with the ecological entity GEN-GOB Ibiza, install houses to avoid predators



A moment of the day this Friday in Santa Eulària | Photo: Daniel Espinosa

Vanessa Hernández | Santa Eulària | 12/05/23 11:46 | Actualizado a las 18:08

The environmental organization GEN-GOB Eivissa continues working to eradicate snakes on the island, a very difficult goal considering the large number of invasive snakes found on Ibiza. That's why its main objective is to help the survival of the Pityusic wall lizard by installing shelter boxes. To this end, this organization enlisted the support of the Santa Eulària City Council and the Consortium for the Recovery of Fauna and Flora (COFIB) this Friday, but above all, it counted on the special help of several first- and second-year secondary school students from the Quartó del Rei Secondary School. Very early in the morning, educators and technicians from GEN-GOB Eivissa, Balma Albalat, Jordi Serapio, and Teresa Marí, traveled with the students to the port of Santa Eulària to set up shelters for the protection of the wall lizards. The installation took place from the area surrounding the Conference Center to Río Street.

"This area of the town is home to a large population of Pityusic lizards. That's why we've installed the shelters here," Balma Albalat told Periódico de Ibiza y Formentera, highlighting that this native species is seriously threatened due to the proliferation of invasive snakes. The aim of the project is to prevent the extinction of the lizard and raise awareness among young people about the importance of these species within Ibiza's biodiversity. "Throughout the week, we built several shelters, a total of 30, to protect the different species. The goal was to promote the improvement of the natural heritage through the protection of biodiversity," emphasized the environmental organization GEN-GOB Eivissa, while the students placed the shelters to protect the lizards in the more landscaped areas of the Santa Eulària Seafront Promenade.

Great Involvement

"They've been very involved from the beginning," Balma emphasized, referring to the students. In this regard, she noted that both these awareness-raising activities and the training workshops held at the start of the project have been very well received by these secondary school students. "We held a debate and everyone collaborated. Furthermore, thanks to this initiative, many of the students have discovered other protected and unique species of the Pitiusas, such as the small ferradura ratapinyada," explained the environmental organization.

Without going any further, they indicated that during the week they also made shelters for the bird species. These shelters of various sizes, insulating against the temperature, were placed in the school's garden area. Regarding the materials used, they noted that the students used ceramic blocks and plant elements to give these native species the sensation of being in a natural environment.

Furthermore, the environmental organization emphasized that, once these shelters are installed, the most important thing now is to monitor these huts and observe the surroundings to learn about nature, since often "you don't need to see Australia's Great Barrier Reef or the Amazon rainforest to realize all the biodiversity that exists." "We have invited them to monitor the shelters installed outside the school, to visit them periodically, and to observe the surroundings and see if there are any remains," Balma Albalat pointed out.

Ibiza HEUTE

Ibiza schützt Eidechsen vor gefräßigen Nattern

Ibiza protects lizards from voracious snakes

Using clever ideas and computer technology to combat the snake plague: initiatives by schoolchildren and foundations are supporting conservationists' fight against the snakes that are decimating the native lizards on Ibiza and Formentera.

15. MAI 2023



Students install protective stones into which the lizards can retreat in a flash. Photo: Santa Eulària Town Hall

The Fundación IbizaPreservation is joining the fight against snakes on Ibiza to preserve the endangered Pityusic lizards. Since gardeners accidentally introduced horseshoe snakes to the island in plant pots over 20 years ago, and until recently, little was done about it, the animals have been multiplying rapidly. They feed on the lizards, among other things, and have already severely decimated their populations. In many parts of the island, the nimble brown or emerald-green miniature lizards are no longer seen.

IbizaPreservation supports the Consortium for the Conservation of Fauna in the Balearic Islands (Cofib) and the numerous volunteer associations working in the fight against the snakes. The foundation is building 100 smart traps for Cofib, which experts and students on Ibiza developed at the hackathon in October 2022 and which can be monitored by computer.

The foundation also developed 100 artificial protective stones for the lizards to shelter in. The stones have small holes through which the lizards can slip inside, protecting them from the snakes and the heat. GEN-Gob conservationists will place them in gardens. The initiative is funded by an environmental program of CaixaBank and Fundación Sa Nostra.

Loopholes for lizards: Students set up stones

Incidentally, around 200 students from the Quartó del Rei secondary school, with the participation of Erasmus students from Finland, also set up protective stones for lizards on the beach promenade in Santa Eulària on Friday. The boys and girls had built these "refugios" themselves. Lizards can indeed still be seen on the beach promenade between the river and the convention center.

In addition, insect hotels and bat boxes are intended to contribute to a healthy fauna.



A moment from this Friday's opening at Can Casals | Photo: Toni P.

PERIÓDICO de IBIZA Y FORMENTERA

El arte de Marta Torres como inspiración para salvar las 'sargantanes'

Marta Torres' art as inspiration for saving the lizards

Students from the CEIP Poeta Villangómez school hold an exhibition in defense of the lizards



A moment from this Friday's opening at Can Casals | Photo: Toni P.

Toni P. | Ibiza | 19/05/23 15:24

Fifth and sixth grade students at CEIP Poeta Villangómez inaugurated a charity exhibition this Friday in Can Casals featuring the works they have been creating over the past few months, inspired by Ibizan artist Marta Torres.

The proceeds from the sale of the paintings created by the students, in collaboration with the Vila Department of the Environment, will go to the "Sargantanes o serps" (Lizards or Snakes) platform. A destination chosen by the students themselves.

As explained by the teacher in charge of the project, Nieves Vázquez, and the school's director, Antonia Corral, "48 students participated, divided into two different groups. Each group was inspired by a work by Marta Torres, for which we have been preparing for four months by studying the artist's life and work." However, Vázquez wanted to emphasize that the spirit of the project revolves around "students being able to help our flora and fauna firsthand. In a way, creating little activists who are directly and meaningfully involved in an educational environmental action through art. Letting art be our working tool to help and preserve our heritage."

The artist couldn't hide her pride "because the students have been inspired by my work." During the talk Torres held with the students attending the launch of her exhibition, she wanted to explain the meaning of the symbolism behind her work, which, "beyond representing Ibiza, there is a whole symbolism behind everything."

In the conversation the students had with the artist, Aurora approached Marta Torres to explain why she had chosen her work as a reference for their project: "We were inspired by your paintings because they represent the island of Ibiza so well, and lizards are a symbol of Ibiza that are in danger of extinction." Yasmine, for her part, explained that "my favorite paintings are those of Dalt Vila, with the bougainvilleas."



Torres took advantage of Yasmine's presentation to explain to her young guests the significance of this plant in her work while joking about her own dress. "Today I came dressed as a bougainvillea! It's a plant I love and has a whole symbolism behind it: The trunk represents our body, which is attached to the earth by its roots. The flowers, which look toward the sky, represent the states of the soul." With this explanation, Torres wanted to emphasize to his young audience that "whenever you look at a painting, you have to be aware that there's always something else behind it. Whenever you create a work, you have to capture your soul, your feelings, something that is uniquely yours."

In this way, Levin explained the meaning of his work, arguing that "it conveys that there is a lot of pollution on Earth and that we all have to contribute so that the lizards or turtles don't die anymore." Pablo explained the significance of the peasant woman in his work, who "represents ancient Ibiza."

Agnés Vidal, representative of 'Sargantanes o Serps', wanted to thank the students for their sensitivity "when it comes to getting involved in projects of this type. It's incredible that the teachers are so involved with such multidisciplinary projects, which send a very important message that goes far and wide. Now you are ambassadors of this message in defense of the lizards, which is so important."

The exhibition can be visited, and you can contribute by purchasing one of their artworks for a minimum of ten euros, until next Sunday at Can Casals (from 5:00 p.m. to 7:00 p.m. on Friday and Saturday and from 11:00 a.m. to 1:00 p.m.), in the Cas Serres neighborhood. This is an opportunity, as the director of CEIP Poeta Villangómez points out, "to create a neighborhood around the school."



IBIZA KURIER
Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Ibiza ungeschnitten: Schlangenfänger Tim

Ibiza uncut: Snake Catcher Tim



May 2023 - There are an estimated half a million to one million snakes on Ibiza today, says snake catcher Timotheus Freytag. For centuries, the island was known for being free of poisonous and dangerous animals. Imported olive trees have been the cause of a veritable snake plague for over 20 years.

The reptiles reproduce rapidly. Depending on their size, they lay four to twelve eggs per year, Tim explains. They have few natural predators on the island. Hedgehogs, cats, hawks, and seagulls catch and eat some of the snakes, but not nearly enough. The worst affected areas are the municipality of San Joan and the towns of Santa Gertrudis and San Mateo.

By the time the reptiles reach a body length of 1.5 meters, they have devoured up to 100 lizards. When they grow larger, they prey on rabbits, birds, and rats. Montpellier snakes and horseshoe snakes are common on Ibiza. The ladder snake is found on Formentera. All three species can grow up to 2.5 meters long and live up to 25 years.

There are over 20 different subspecies of lizards on Ibiza and the surrounding rocky islets. It is estimated that 60-70% of all lizards have already been wiped out.

Tim has made it his mission to combat the invasion. He has developed special traps for this purpose. Mice are used as bait, but are not eaten. In the past two years, Tim has set over 400 traps across the island.

Destrezas y Vida en el Medio Natural
411 abonnees

Una culebra de herradura 'surca' el mar a toda velocidad en Cala Jondal Ibiza

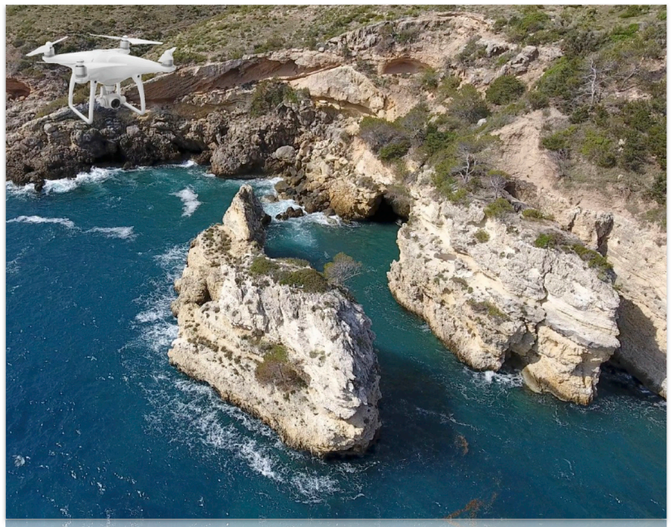
A horseshoe snake zips through the sea at full speed in Cala Jondal, Ibiza

30-05-2023



Jorge Miñano

Incredible sighting in Cala Jondal, Ibiza! A horseshoe whip snake has been seen zipping through the sea at an impressive speed. Horseshoe whip snakes are known for their swimming prowess, but witnessing this scene in the waters of the Pityusic Islands is truly astonishing. Nature always gives us fascinating moments. Don't miss it!



What goes up must come down – The discovery of a new island population of *Podarcis pityusensis* (Boscá, 1883) in the North of Ibiza by use of an aerial drone.

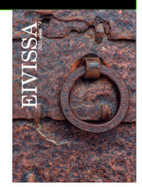
Marten van den Berg & Mike Zawadzki

Abstract

Unmanned aerial vehicles (colloquially known as drones) equipped with a high-definition camera have a wide range of applications in biological research. In this article we report on our experiences using a drone to explore the surface of hard to access small islands in the North of Ibiza (Balearic Islands, Spain) for possible occurrences of lizard populations. On one of these small and unnamed islets that we call "Escull a Punta de Llevant" we detected a hitherto unknown population of *Podarcis pityusensis*.

Keywords: Drone, UAV, *Podarcis pityusensis*, *Euphorbia margalidiana*, Ibiza, Escull a Punta de Llevant.





Vint anys després de l'arribada de les serps a Eivissa

per Antònia M. Cirer

Resum
Vint anys després d'haver constatat la introducció de serps a l'illa d'Eivissa, encara no hi ha una estratègia sòlida i coherent per fer front al risc ecològic més gran que amenaça les espècies autòctones i els nostres ecosistemes. En aquest article es fa un repàs d'aquests vint anys, com s'ha enfocat el problema des de la ciència, la legislació i la gestió mediambiental. S'exposen les estratègies que s'han implementat fins ara i quina és la previsió de futur. Es proposa d'iniciar la instal·lació de petites reserves de sargantanes en espais públics o particulars que conservin els factors que configuren l'hàbitat de *Podarcis pityusensis pityusensis*.
Mots clau: espècie introduïda invasiva, legislació mediambiental, estratègies de trampeig, reserva de sargantanes.

Summary
The snakes arrival to the island of Ibiza has been confirmed twenty years ago, but there is still no solid and coherent strategy to face the greatest ecological risk that threatens native species and our ecosystems. A review of these twenty years is presented, how the science, legislation and environmental management have focused the problem. The strategies that have been implemented, and what is the future forecast are presented. We propose to start the installation of small Lizards Reserves in public or private spaces that conserve the factors that configure the *Podarcis pityusensis pityusensis* habitat.
Keywords: invasive introduced species, environmental legislation, trapping strategies, lizards reserve.

Introducció

Tot just fa vint anys que tenim constància que a Eivissa hi ha serps invasores que alteren greument els ecosistemes pitiüsos. L'any 2003 els agents de medi ambient ens alertaren de la presència d'ofidis que havien arribat hivernant dins les soques d'oliveres centenàries destinades a usos ornamentals (Oliver et al., 2008; Álvarez et al., 2010). Temps suficient perquè els gestors mediambientals oferissin una resposta clara i decidida per lluitar contra unes espècies al·lòctones que des del principi sabíem el dany que podien provocar. Però, fins ara, les estratègies establertes han estat escasses, insuficients i erràtiques, d'una simplicitat que fa pensar que en la gestió del nostre medi ambient no hi ha planificació a llarg termini, sinó sols un intent d'anar tapant els efectes visibles sense considerar els problemes que s'esdevindran més endavant. Estratègia de posar-ho tot baix la catifa i mirar cap a una altra banda.

Cal aclarir que sobre un problema ambiental hi intervenen, almenys, tres tipus d'actors diferents. Els científics estudien el fenomen aplicant el mètode científic, generalment sense implicacions ni valoracions socials o econòmiques. Els tècnics mediambientals són els encarregats d'aplicar en el camp els remeis als problemes, amb l'ajuda dels coneixements científics, però no necessàriament amb les restriccions del mètode científic. En tercer lloc, els gestors polítics, amb les seves decisions, proporcionen els recursos necessaris per ampliar els coneixements científics i per implementar



Les serps entraren a inicis del segle XXI dins les soques d'oliveres centenàries per a usos ornamentals.

PERIÓDICO de IBIZA Y FORMENTERA

Sargantanes en el hotel

Lizards in the hotel

Ibiza hotels join the protection of the Pityusic lizard



A moment from the project presentation this Tuesday in Ibiza | Photo: Toni P.

Toni P. | Ibiza | 27/06/23 18:22

This Tuesday morning, the "Protegim Ses Sargantanes" project was presented at the Alua Soul Ibiza hotel in Es Canar. This project, promoted by IbizaPreservation in collaboration with GEN-GOB and Amics de la Terra, and with funding from CaixaBank and Fundació Sa Nostra, enables Ibiza hotels to join in the protection of lizards by installing shelters in their gardens for this endangered reptile throughout the island.

The initiative began last year with the installation of shelters on the Santa Eulària promenade and is expanding this season "not only with the installation of new sanctuaries, but also with new smart snake traps and mass trapping in localized areas such as ses Salines and ses Feixes de Talamanca," explained Inma Saranova, director of IbizaPreservation, who emphasized that this initiative aims to "support the work and initiatives already carried out by other organizations and initiatives such as SOS Sargantanes, Sargantanes o Serps, or COFIB."

Jordi Serapio, the coordinator of this project, explained that "this project makes sense within a context in which the Pityusic lizard is practically becoming extinct, especially in much of the rural areas of the island of Ibiza, especially in the northeast." However, Serapio emphasized that "it has been observed that there are urban and residential areas that have acted as a refuge for this species of reptile, which is more accustomed to human presence than its more elusive predators." The coordinator of Protegim Ses Sargantanes expressed his gratitude for the Hotel Federation's reception of the project: "The hotels have large garden spaces where a good population of lizards has been observed to survive," specifically highlighting the importance of the Alua Soul hotel, where the project was presented, "which is located in Es Canar, in an area where the lizard has disappeared from its entire periphery and which retains a population in its most urban area that could be key to the conservation of the species."

In this way, 44 hotel establishments have joined the initiative, which plans to install up to 100 shelters. These shelters consist of a type of artificial rockery that serves "as a habitat to promote and improve this lizard population. At the same time, we offer information and recommendations for managing these spaces in a more species-friendly way, promoting the presence of native plants that also contribute to more efficient water management."

The director of the Alua Soul Ibiza hotel, Nuria Anuncibay, emphasized, as Serapio explained, that "we have a large presence of Pityusic lizards in our facilities, and with the installation of these shelters, we hope to contribute to halting the extinction of this species, while promoting biodiversity and sustainable tourism based on the protection of the territory's biodiversity."



PERIÓDICO de IBIZA Y FORMENTERA

Paso a paso gratuito para cazar serpientes y salvar las 'sargantanes'

Free step-by-step guide to hunting snakes and saving the lizards

The IEE is organizing a series of talks on the use of snake traps



The audience listened attentively to Antònia Maria Cirer's explanations | Photo: Toni P.

Toni P. | Ibiza | 03/07/23 21:35

This Monday, the IEE launched its series of free workshops aimed at the fight for the conservation of the Ibizan lizard and the understanding of snake behavior, which is responsible for the threat of extinction of this native reptile of the Pityusic Islands.

The workshop leader is Antònia Maria Cirer, who emphasizes that "the workshops cover three different levels of knowledge and experience on this topic." Thus, the workshop held this Monday afternoon before a dozen participants at the IEE headquarters was aimed at the most basic level. This Thursday at 7:00 p.m., the workshop will be aimed at "those with more experience, and in which we will delve into how to get the most out of traps and explain the biology of these reptiles, which have nothing to do with mammals and about which there is a profound lack of knowledge," explained Cirer, who also added that "we will also teach how to train dogs to help us hunt snakes." The third of the workshops, scheduled for Saturday at 11:00 a.m., as Cirer noted, "will be a UOM-level conference on snake biology."In the first workshop, the biologist explained how snake traps work, which "are based on a box with two separate compartments. One of them has an entrance-only door through which the snake enters and becomes trapped." The second compartment of this trap houses the most important piece of the device: the mouse, "which is what really does the work." In this regard, Cirer explained to the audience a series of basic tips for caring for the mouse, such as "always keeping it well-fed, preferably with dry food, for example, for rabbits, and ensuring it has plenty of water, as well as providing straw or sawdust, toys, and items for its entertainment, such as a piece of brick to play with in its holes or old children's toys. A depressed or sick mouse doesn't attract the snake's attention; on the other hand, a happy mouse can become a 'champion' that catches several." Cirer also highlighted a series of tips and precautions to keep in mind, such as "never cleaning the mouse compartment. Cleaning it will eliminate the mouse's scent, which is one of the things that attracts snakes. The mouse itself is responsible for managing this," as well as "being very careful when making the hole to place the mouse's waterer. Keep in mind that if we make it too big, the snake could get in. Just enough for its head to fit through it for it to squeeze through."

Regarding the location of the trap, Cirer explained that "it must be placed in a place where we think there might be snakes, and always horizontally or at a slight angle so that the entrance door always remains closed." Once the snake has fallen into the trap, as the biologist explained, "we can remove it with tweezers or with gloves to avoid bites, which are not poisonous but are annoying."



NOVA FALCONS

NOVA FALCONS, A COMPANY SPECIALIZING IN SNAKE CONTROL AND CAPTURE

Notas sobre el control de serpientes en Eivissa y Formentera (1/3)

Notes on snake control in Ibiza and Formentera (1/3)

09-07-2023

Horseshoe snakes (*Hemorrhois hippocrepis*) and ladder snakes (*Zamenis scalaris*) in Ibiza and Formentera

The snake infestation in Ibiza and Formentera, especially the horseshoe snake (Hemorrhois hippocrepis), is one of the most serious environmental problems in the Pityusian archipelago (with all due respect to the aberrant urban planning and mass tourism we "enjoy"). This infestation poses a serious threat to numerous species, including the Pityusic wall lizard (*Podarcis pityusensis*), a local endemic species that is threatened with extinction due to the introduction of this colubrid by humans. For those who are not aware of the relationship between the Pitiusas and invasive snake species, we encourage you to read the previous posts on this topic, available both in the Nova Falcons information section and in the Nova Control services section, where we discuss the issue in greater depth.



Specimen of the Pityusic wall lizard (*Podarcis pityusensis*), a local endemic species that is at risk of disappearing from the Pitiusan ecosystem.

The purpose of this post (divided into three parts for ease of understanding) is to share the self-educational process we've undertaken as we studied some horseshoe snake specimens we captured in 2022, as well as the results obtained. Since the main objective was not to conduct a scientific study, but rather to better understand this invasive species and collaborate in its control, no experimental design was carried out prior to the start of the captures (so it was necessary to correct this, as far as possible, after the fact). This, coupled with a small sample size—that is, few specimens analyzed to apply statistical analyses that would allow us to generalize the results to any other environment and location—does not allow us to establish complex relationships between the different parameters studied. However, these data do serve our main objective, which was to further deepen our knowledge of this species and thus improve our expertise in effectively carrying out control. Now, by sharing some of the results in this post, divided into three parts, if possible, we also provide brief informative notes to help raise awareness of the species locally for those who want to learn more about the horseshoe snake. And, while we're at it, implement species control, something that requires everyone's commitment.

Snake Control as an Invasive Species

Nova Falcons provides wildlife control services in a public area where there is no control or eradication plan for invasive species (including the horseshoe snake), and which also borders the Ses Salines Natural Park. Therefore, we take this opportunity to do our part in controlling this species on the island of Ibiza, working in such a sensitive area as the surroundings of the Ses Salines Natural Park in Ibiza and Formentera, on a strictly voluntary basis. That is, the work in this area did not have any funding from the public administration or any other entity (more on this aspect in the third part of the publication). The total number of traps was 40, installed over approximately six months. We will call this area Zone A. During the same period, we also placed a total of 18 traps in the Roca Llisa-Jesús area, which we will refer to from now on as Zone B. We consider these two points interesting to compare, since the first is of high ecological value and supposedly has a lower density of snakes, and the second has a different environmental value but presumably has a higher density of snakes due to its proximity to the original outbreak. We added another area, Zone C, with a somewhat more diffuse methodology, a more dispersed location between Zones A and B, and with specimens provided by third parties.

The traps used were double-compartment cage traps, one for the live mouse, which acts as an attractant for the snake, and the other accessible only to the snake. Obviously, the mouse is not harmed even if the snake enters the trap, but using live bait entails a series of resource and maintenance costs, which significantly increases the workload compared to systems with solid bait or baitless capture systems; especially when managing dozens of traps, instead of 2-4 in a domestic setting, without having a team of technicians dedicated exclusively to this service.

The total sample was 59 individuals, but biometric data could not be obtained from 8 due to their poor condition (unusable roadkill, advanced state of decomposition, etc.). Therefore, the biometric data presented here were obtained from a total of 51 snakes, most of them captured with traps, although some were captured manually and were run over (see Figure 1 below). Of these 59 snakes, 12 specimens were donated to us by Jordi Ferrer, from *Posidonia* Environmental Health, so we could study them and continue learning about this fascinating

species. It must be said that it is not to blame for the environmental damage it causes, the responsibility for which lies with the humans who introduced it to the Pitiusas. Separately, within Zone C, various individuals donated another 8 specimens to us, including a ladder snake (the only specimen in the sample).

Facts to keep in mind to understand the graphs and the different subzones of Zone A

In order to provide a representative sample (as indicated above, there was no prior intention to conduct a properly prepared study), we created 3 zones (A, B, and C) and divided Zone A into two subzones (1 and 2). These two subzones of Zone A are explained by the difference in results they yielded, the physical barriers that divide them, and whether or not they are in direct contact with the Natural Park (only subzone 1 is, while subzone 2 has subzone 1 between it and the park).

The comparison to evaluate the performance and results of the traps will be made only between the 40 traps in Zone A and the 18 traps in Zone B, for two main reasons: these traps are managed 100% of the time by us, and they are active during the same periods.

As already indicated, Zone C includes data from those traps, ours or those of third parties, that have not been active during the same months and which, in some cases, are also located in other areas of the island halfway between the two points.

Captures

The sum of trap captures from Zones A and B gives a total of 30 specimens from 58 traps,



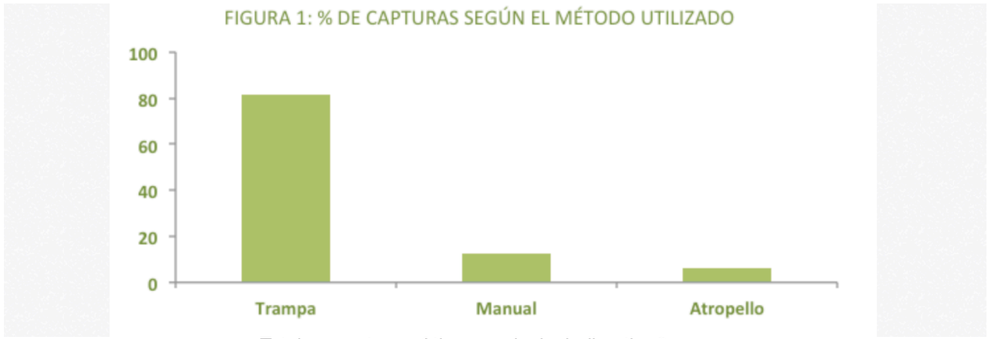
Horseshoe snake (*Hemorrhois hippocrepis*).

which is not a very high figure (i.e., we exclude the trapped specimens from Zone C and the specimens from the three zones that came from routes other than traps; more on this below).

This low number, in our opinion, has a positive side, as captures are especially low in the two subzones of Zone A compared to Zone B, and are even lower in the case of subzone 1, which shares a border with the park. Thus, our data seem to support the hypothesis that density remains lower in the south than in the northeast of the island, where the other sampling Zone B (Roca Llisa-Jesús) is located and where the traps had a higher yield.

In subzones 1 and 2 of Zone A, 10 snakes were captured in 40 traps (0.25 per trap), while in Zone B, 20 snakes were captured in 18 traps (1.10 per trap). Despite this apparent lower density in Zone A, in the natural park itself and its surroundings, direct sightings of snakes appear to be increasing compared to previous years. This indicates that the snake population is probably growing, although density is still relatively low and prey abundance is high enough to influence the effectiveness of traps. And we say that the population may be relatively low because if we add to the 10 specimens the 6 roadkills and the 3 manual captures in both subzones of Zone A, we are left with 19 specimens for Zone A. In other words, the traps have a certain degree of capture capacity, but despite the number of traps (40), we have almost the same number of captures from other sources as from the traps.

We have no roadkills or manual captures of specimens in Zone B, basically because Zone B is not fenced off as it is a public space, physically delimited and with restricted access where we can recover specimens from manual captures or roadkills, as is the case in subzones 1 and 2 of Zone A. Therefore, to compare the number of captures between both zones, we limit ourselves to traps. In Zone C, we do have one manual capture.



Total percentage of the sample, including the 3 zones.

Evolution of the number of captures

The months in which we captured the most snakes were May, June, and July, corresponding to the peak activity of the species, probably due to the start of the reproductive period. In August, we captured virtually none, which is surprising given this species is thermophilic, but could be explained by a reduction in activity due to the extremely high temperatures. In September, there was a slight peak in captures, which decreased again with the arrival of colder temperatures, although captures continued to be recorded throughout the year (even in January 2023), which means that they did not fully hibernate in Ibiza (Figure 2).

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Notas sobre el control de serpientes en Eivissa y Formentera (2/3)

Notes on snake control in Ibiza and Formentera (2/3)

18-07-2023

Biometrics, Sexual Maturity, and Body Condition

Studying the biometrics of the captured animals (the taking of standardized measurements and biological processes of the individual) was a task of great interest and utility, since only the body size of the snake (Snout-to-Cloaca Length, not including the tail, which can be longer in males than in females) and thanks to previous studies (see references at the end of the third post) can determine whether a specimen is an adult (sexually mature) or a juvenile (sexually immature), and therefore whether it is capable of reproduction. According to recent studies (see references at the end of the third part of the post), snakes in Ibiza reach sexual maturity at 62.8 cm for females and 50 cm for males. The average SN of the specimens we analyzed was 69.0 cm, an adult size for both sexes.

Regarding sex, the sample percentage was fairly even. Of the total sample, 47 individuals could be sexed: 26 males and 21 females. The majority of the total captured (62.5%) were sexually mature. However, while 92.3% of the males were found to be mature, only 52.4% of the females were (at least based on the biometric data available to date). Just as the capture of mature adults of both sexes indicates the possibility that reproduction is occurring on the island (apart from having been confirmed for years), the capture of small, recently born individuals confirms the time of year in which they were born. This provides information on the species' life cycle, which may be useful for documenting abnormalities or otherwise in an environment where it is classified as an invasive species and where variations could arise relative to its area of origin as it expands and establishes itself in the territory.

The smallest individual (29.8 cm long and 7.9 g in weight) was within the neonate range (23.7–30.8 cm; 6.1–9.0 g) and was captured on November 23 in Zone C (in this specific case, at a private home in Sant Jordi de Ses Salines). The measurements of this specimen indicate that it must have been born between October and November, considerably later than the usual date, both in Ibiza (September) and on the Peninsula (late August–early September). In fact, on the Iberian Peninsula, laying appears to occur in late June, while in Ibiza, evidence has been found of later egg laying, around July. Furthermore, developed oviductal eggs have been found from May to July, and there is even evidence of a possible second spermatogenesis in males in early autumn. All of this seems to support the extension of the species' reproductive period in Ibiza. Although we do not yet have sufficient data to confirm this, we have confirmed the presence of neonates on dates that fit with these studies, which affirm a lengthening of the reproductive period, as well as highly developed follicles from May to July.

FIGURA 2: NUMERO DE CAPTURAS



Monthly evolution of the total sample, including the 3 zones.

As we accumulated captures, it became increasingly clear that we had an opportunity to learn more about the horseshoe snake. Studying specimens in person, and not just through literature, has allowed us to learn more about how and when they reproduce locally, strengthen our knowledge of their feeding habits, and observe different patterns of color, shedding, size, and health status. Our long-term goal is always to evaluate whether the current eradication method is working. This is an important point, since the number of snakes will predictably decrease in areas where they are intensively trapped each year. However, perhaps beyond a certain number, the populations, although relatively controlled, may remain stable, even if the control system is not complemented with other types of capture and attractants, at the expense of an "artificial" balance between the number of active traps and the amount of food available in the environment. Another important factor to consider is the areas that may be acting as reservoirs for the species, as long as they do not have any controls in place. Only time and consistent, methodical work related to the behavior of colubrids on the islands of Ibiza and Formentera (for example, regarding their degree of dispersal in mountainous areas not frequented by people), and the long-term effectiveness of the current capture method, will be able to clarify this last point.

For our part, we do not yet have data from several years for the same area where we have worked with the same methodology, which would allow us to draw conclusions about population trends. However, as indicated above, we were able to record the biometric data of 51 specimens captured in 2022, from the three areas we used for sampling. We have already presented some data in this post, but the majority was collected in the second of the three parts into which we have divided this post. The third part will focus on accidental captures. the necessary participation of citizens (volunteering) and the role of public administrations and private companies in pest control; concluding with a brief anecdotal commentary on black rats (*Rattus rattus*) and their impact on snake control, and some brief general conclusions.

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Comparison between an adult and a juvenile horseshoe snake, both are located on the same plane.

But how can we differentiate females from males? In general, males can be larger, but size isn't a valid criterion since the difference isn't so clear, and there are many intermediate specimens that could correspond to both females and males. External appearance also doesn't help us differentiate them, since there doesn't seem to be sexual dimorphism, beyond a possible longer tail in males and a narrowing at the base of the tail in females. However, both characteristics may not be clearly seen, and in juveniles, they may even be imperceptible. Therefore, the only 100% reliable way is to look at the genitals. Females have an oviduct that empties into the cloaca, so externally, only one orifice is visible. Males also don't have external gonads, but they do have a hemipenis (in a cavity next to the cloaca), which they can extend when mating. There is a commonly used technique to determine the sex of snakes, which consists of pressing at a certain angle to extract the hemipenis, thus confirming whether it is a male or not. Another way is to insert a probe through the cloaca toward the tail, to see if there is a cavity inside where the hemipenis hides. If it doesn't fit, it means there is no cavity and therefore it is a female. Finally, the most reliable method is to locate the testes in males, and the oviductal follicles or eggs in females (obviously, this involves sacrificing the animal first).

Using a combination of all these techniques, we were able to see that the sex ratio appears to be unequal in early summer, while in later months it appears to equalize (Figure 3). In any case, comparisons with other years are needed to rule out a purely accidental outcome, and a larger sampling unit is needed to draw conclusions supported by more solid data.

Sexually active individuals were captured in all sampling areas. We identified highly developed follicles (diameters between 10.87 mm and 19.87 mm) in four females captured in subzones 1 and 2 of Zone A during the months of May, June, and July, indicating that they

are reproducing near the Natural Park in a consolidated manner (see part 1 of this entry for more information on the three sampling areas and subzones). The various physical barriers between subzones 1 and 2 of Zone A and the Natural Park are not sufficient means of containment, so control strategies for snakes in the Ses Salines protected area should include active control of the species in all areas adjacent to the park. Ignoring this need would be a big mistake, as all zones would likely act as reservoirs for each other if sufficient controls are not applied simultaneously in all adjacent spaces.



Hemipenes of a male horseshoe snake.



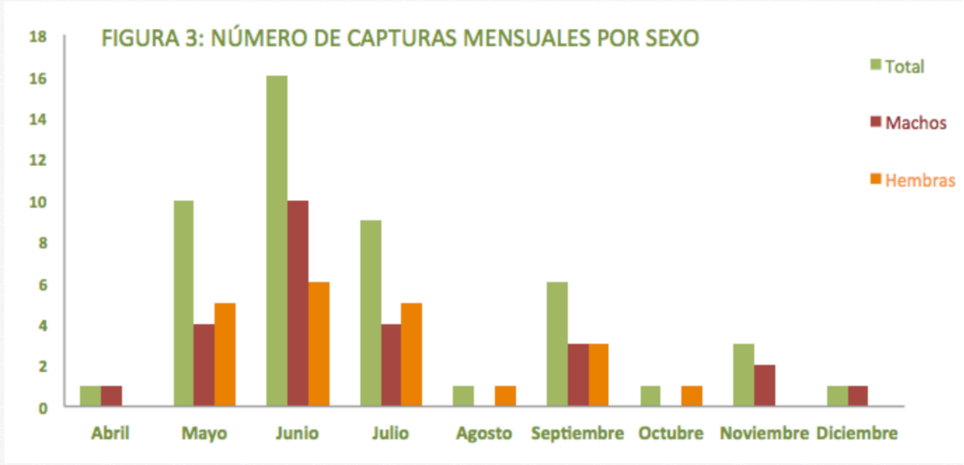
Eggs already developing inside a female horseshoe snake.



In this image, we can see both developing eggs and unfertilized follicles.

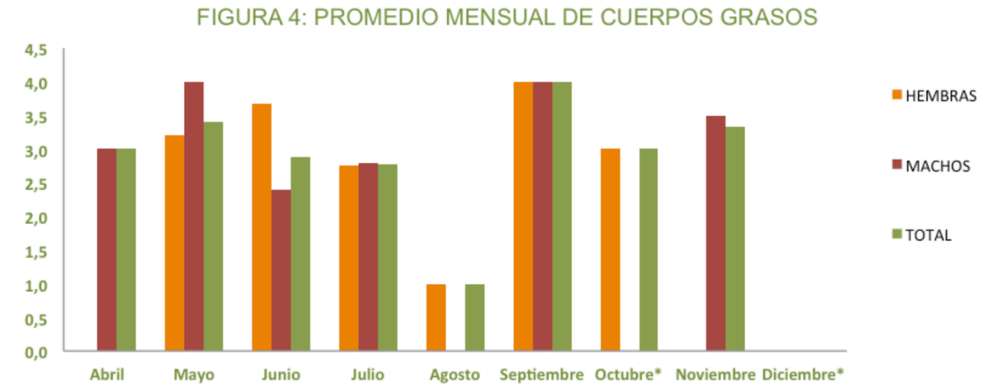


Narrowing at the beginning of the tail, typical of a female, however, this feature does not always have to be so noticeable, so it is not a particularly reliable method for sexing individuals.



Body Fat

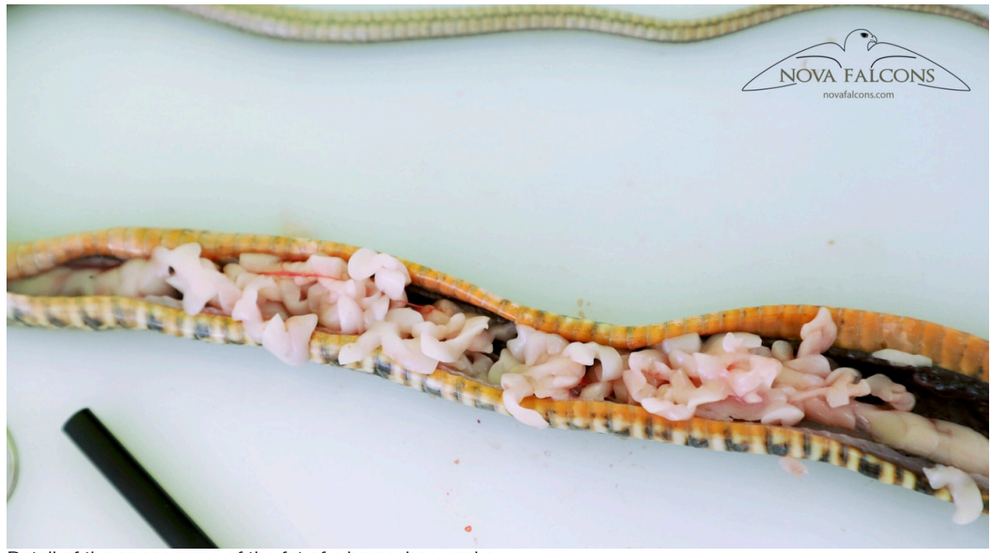
Another aspect that was particularly striking to us is the surprising amount of fat that some individuals can have. We measured the amount of body fat in all studied specimens, as has been done in other studies, using a 4-category scale, with 0 indicating the absence of fat bodies and 4 being the maximum, when fat bodies continuously and abundantly cover the internal viscera. Overall, the fat content was quite high, with an average of 3.08 out of a maximum of 4. There does not appear to be a relationship between body size (BSS) and the amount of fat bodies, but other studies have suggested that they may decrease in females during the reproductive period due to the cost of reproduction. In our case, the fat loss observed in the months of June and July is fairly equal between males and females (Figure 4). We can't take the August low as indicative, since, as with October and November, we only have one sample analyzed, and this might not be representative at all.



Evolution of fat bodies by month and sex, undoubtedly, the limited sample size does not allow for any solid conclusions to be drawn categorically.



General appearance and fat distribution in an adult horseshoe snake.



Detail of the appearance of the fat of a horseshoe snake.

Diet

Regarding diet, most of the captured animals had empty stomachs (87.5%). Only six individuals had stomach contents: five contained more or less digested remains of a Pityusic wall lizard (*Podarcis pityusensis*), and the sixth contained a field mouse (*Apodemus sylvaticus*).



The moment when a stomach full of contents finally appears; in this case, the victim was a field mouse.



Complete removal of the half-digested remains, note the absence of many of the mouse parts.

As in the third-party studies conducted to date, the proportion of empty stomachs was very high. This may be due to at least two factors. On the one hand, snakes can go many days without eating; and on the other hand, it is logical to think that those who fall into the traps are those attracted to the mouse while actively searching for food, that is, they are hungry and feel hungry because their stomachs are empty. Therefore, live-bait trapping does not appear to be the best capture system for analyzing stomach contents, although it is the most feasible to date. Consequently, the only option left is to take this possible methodological bias into account when interpreting the data.

In any case, we have confirmed predation of lizards by horseshoe snakes from a very early age, as a juvenile weighing less than 8 g had lizard remains in its stomach, which, given the size of the remains, could hardly have entered its mouth. On two occasions, we were able to practically confirm that the snake had fed on a lizard inside the trap, since, apart from the lizard remains (regurgitated or in the digestive tract), inside the stomach there were remains of straw exactly the same as that used inside the traps for live bait.

This predation inside traps has been previously suggested by some experts, and it is entirely plausible. It is also true that sometimes, it is possible to discern the time of ingestion based on the degree of digestion of the remains in relation to the last visit to the trap. That is to say, there are some cases of predation inside traps, it is true, but there are also cases of specimens that have hunted outside and entered the trap without having a completely empty stomach (this can be determined by the degree of digestion of the prey in relation to the date the snake entered the trap). The case of the juvenile in the previous photo, with a lizard in its stomach, was caught manually and therefore pretty much settles the matter: as soon as they hatch, horseshoe snakes can (and do) prey on lizards (this specimen weighed just 8 grams,



Juvenile caught by hand in Zone 3, with half-digested remains of lizard.

including stomach contents, and measured 29.8 cm LHC; it was within the range of a newborn).

On the other hand, the specimen that had eaten a field mouse was a roadkill. These two specific cases, compared to the total number of specimens with stomach contents caught in traps, raise the possibility that perhaps the proportion of empty stomachs is lower in roadkill or hand-caught specimens than in those caught in traps. This could be an advantage when conducting an in-depth diet study, since with fewer snakes, we would obtain more information.



Horseshoe snake with regurgitated lizard, subzone 2 of Zone A.

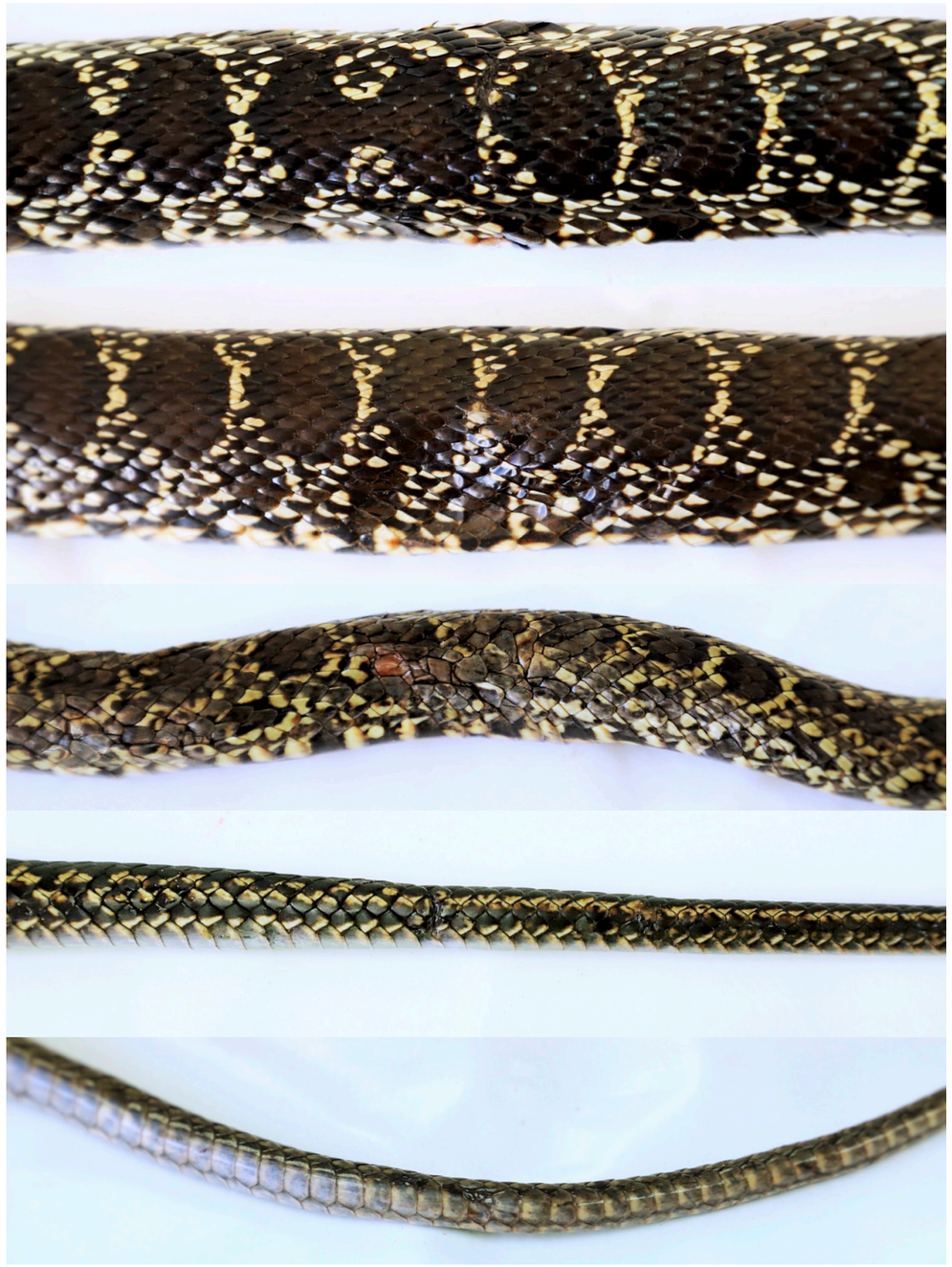

Another case of a regurgitated lizard inside the snake compartment, in this case 2 specimens, also in subzone 2 of Zone A (we did not record any cases in Zone B, but we did in a localization of Zone C close to Zone A).

Predation Pressure

To understand the success of this species in Ibiza and Formentera, it is also important to consider the scarcity of potential predators. Predation by genets or small birds of prey, the only potential natural predators on the island, has not yet been confirmed (or at most has been anecdotal). Furthermore, it is unlikely that domestic animals, feral or not (primarily cats), although presumably capable of hunting them, will be able to control the snake population on the island. This is especially true considering that snakes are, on the one hand, quite elusive prey, and, on the other, show a certain degree of aggression when threatened. One way to study the predation pressure on snakes in general is to analyze wounds on the tail or posterior third of the body, as these indicate that predation may have been attempted and therefore indicate the possible presence of potential predators, even if they were unable to hunt the snake on that occasion. In our case, the data continue to support other studies that claim there is hardly any predation in Ibiza, as we observed lesions or imperfections on the skin in only 11 individuals that could be considered signs of predation (which does not necessarily mean that such an attempt actually took place, as the injury could have been caused by factors other than strictly an attempted predation).

Some examples of these wounds or imperfections:





With this, we conclude the second part. The third part will focus on accidental captures; the necessary participation of citizens (volunteering) and the role of public administrations and private companies in pest control; concluding with a brief anecdotal commentary on black rats (*Rattus rattus*) and their impact on snake control, and some brief general conclusions.

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Notas sobre el control de serpientes en Eivissa y Formentera (3/3)

Notes on snake control in Ibiza and Formentera (3/3)

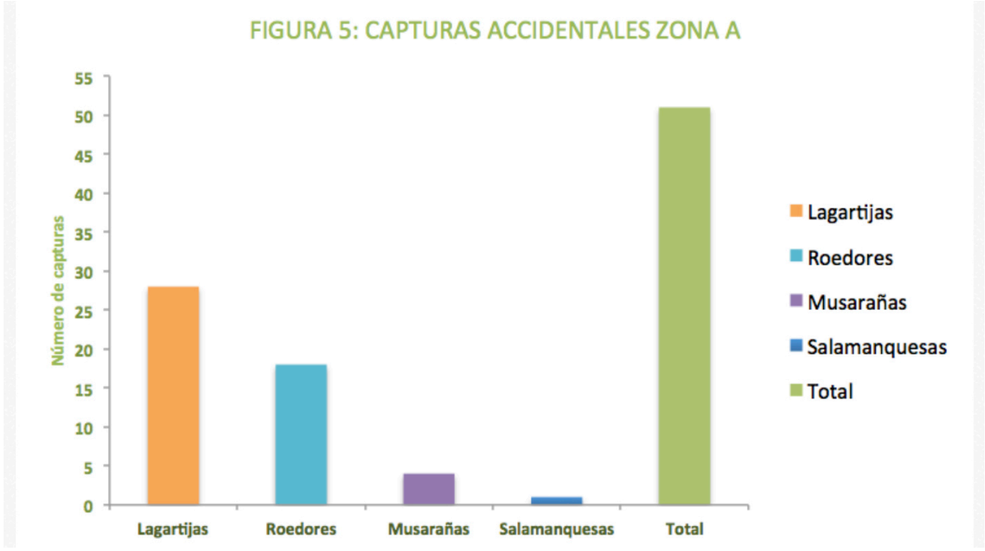
31-07-2023

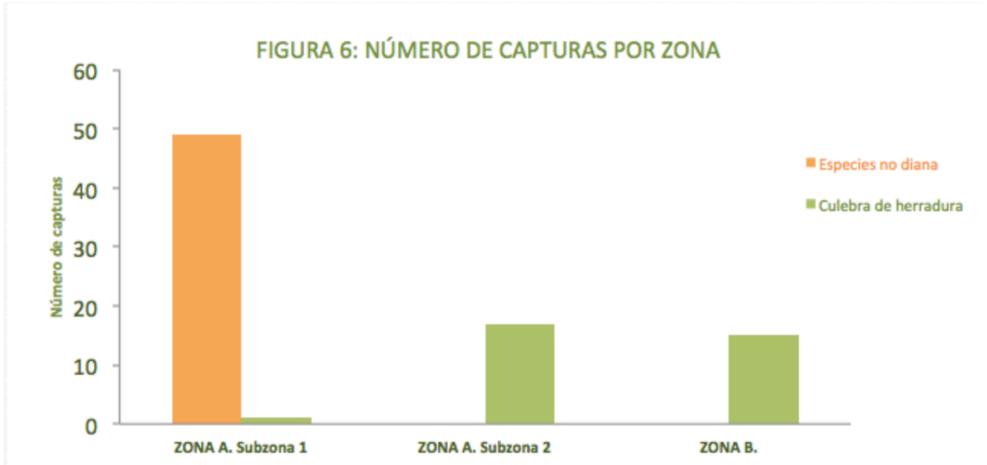
Captures of non-target species with the current trapping system for invasive snakes.

Although we made a low number of captures in Zone A relative to the number of traps (10 captures for 40 traps, in approximately 6 months), it appears that trapping with this system is, so far, the most effective capture method (for more information on the sampling areas and subzones, see Part 1 of this post). However, there is an additional complication regarding snake control: accidental captures.

Frequently, and especially when the number of snake captures is low, we found other species inside the traps: 28 lizards (*Podarcis pityusensis*), 18 rodents (*Mus* sp. and *Apodemos silvaticus*), 4 shrews (*Crocidura ichnusae*), and 1 gecko (*Tarentola mauritanica*).

A total of 51 incidental catches of non-target species were recorded, and they all have something in common: they were caught in Zone A, next to the Ses Salines de Ibiza and Formentera Natural Park, and they appear to increase significantly in those periods and subzones of Zone A where snakes were barely caught (Figure 6). The extreme case is August, when only one snake and 23 non-target species were captured. In other words, there appears





Because in Zone C not all traps were managed by us, it is excluded from the graph.

to be an inverse relationship between incidental catches and snake captures, at least in areas with low snake densities, either absolutely or in relation to food availability. This could be useful when interpreting incidental catch data, as they could indirectly indicate the abundance of snakes in the area and reflect the state of the ecosystem: fewer snakes, greater biodiversity, and vice versa. It could also indicate the degree of establishment of the pest in the area. That is, if we assume that the spread is coming from the northwest of the island, we could conclude that the environmental damage in the south of the island is still in a less developed phase.

Throughout the monitoring in Zone A, as already explained, it was crucial to check the traps at least twice a week. This significantly increased the monitoring effort we carried out for almost six months with 40 traps in that specific area, since the usual trap check frequency is once a week.







There were some casualties in the first accidental catches, as no accidental catches were expected, something we had not recorded beyond mere anecdotes in other areas of the island where the pest is more prevalent.

The importance of volunteering in controlling the invasive snake infestation.

The residents of Ibiza and Formentera appear to be increasingly aware of the importance of controlling the snake infestation, as the absence of lizards in the areas with the highest snake density is becoming evident. This has translated in recent years into an increase in public participation in the campaign to eradicate this invasive species during the spring and summer months. Participation that, although admirable, assumes part of a burden that should be borne to a greater extent by the public administration, whose insufficient reaction when it comes to addressing one of the main environmental problems of the island (late and partial limitations on the import of olive trees and other ornamental trees, scarce distribution of traps, little dissemination of public assistance to manage captures, in too many cases there is a lack of regulations, controls and regulations regarding invasive species and their entry routes...), contradicts the criteria of the IUCN (International Union for Conservation of Nature), the highest international authority at the level of environmental conservation: invasive species are one of the main causes of biodiversity loss in the world... and the Pityusic lizard is on the way to becoming another example of island extinction.





A specimens of the Pityusic wall lizard (*Podarcis pityusensis*), a species facing real threat of extinction due to predation by invasive snakes. Photos: Roberto Bustamante.

Of course, as a company, at Nova Falcons, we believe that the private sector must also do everything in its power to contribute to the control of this pest. This includes providing volunteer work, free technical assistance, and information on the various alternatives to contracting the service so those who don't want to hire it but want to implement it can do so. This includes implementing self-monitoring measures in workplaces, land, and establishments where it is appropriate.

Therefore, at Nova Falcons - Nova Control, in addition to providing snake control services in the private sector, we try to do our part by creating educational content, providing free technical assistance, and volunteering, to the extent of our resources.

The current situation in Zone A

During 2022, we operated 40 traps for approximately six months in the sampling area we called Zone A, based on voluntary work undertaken by Nova Falcons, which provided the necessary technicians and resources for their maintenance. This was possible thanks to the temporary loan (during the months of service provision) of 36 traps provided to us by the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), as has been done with other organizations and individuals who voluntarily participate in the control of this invasive species.

Given the location of Zone A, a public space adjacent to the Ses Salines Natural Park (with which it shares more than 3 km of border), we believe this was a very positive development. A total of 10 captures with 40 traps in Zone A is not many, it is true, but if we take into account that the total number of captures made in such a sensitive and locally important area as the Ses Salines de Ibiza and Formentera Natural Park that same year was only one specimen, things can be seen somewhat differently (apart from the other 6 that were collected by roadkill and the 3 by manual capture, that is, 19 snakes were removed from the area). Therefore, we



Traps stacked on 10/12/22, the day on which voluntary control in Zone A was declared complete, having begun control on 5/2/22.

consider that it was positive that this work was done, and the logical and natural thing would have been to continue it this year, preferably increasing the number of traps, to better cover those areas that were moderately covered.

Unfortunately, this year in Zone A we have installed only a symbolic number of four traps. This is far from the 50-60 we would have liked to manage (and this is what we tried to do this 2023, without success, from the end of April and throughout May). To properly cover the entire public space occupied by Zone A, at least 50-60 traps are necessary (i.e., 10-20 more than were used last year), but we cannot take them on ourselves, without involvement from any of the affected parties. We are talking about 50-60 traps, plus the work and resources to keep them active for six months at a rate of two weekly checks, in an area that is also public domain. Due to the lack of support and the obstacles we encountered when attempting to repeat last year's volunteer work, with the sole purpose of helping protect the Natural Park in particular and control the pest on the island in general, this year's control is not being carried out.

The Black Rat (*Rattus rattus*): The Not-So-Invisible Friend of Zone A

To conclude this third part of this post we called "Notes on Snake Control in Ibiza and Formentera" (and before moving on to some brief conclusions), we share with you, as an anecdote, an "annoying friend" that sometimes comes with snake control: rats. In Zone A, there is (or at least there was during the spring and summer of 2022) a population of rats, specifically the black rat (*Rattus rattus*).

The problem that rats pose to snake control basically stems from damage: gnawed water troughs (in a single trap, up to three different water troughs are completely destroyed in different inspections, with the risk of death due to lack of water for the live bait that this poses), accidental entry into the snake compartment... from which they are able to escape, but damaging the entrance trapdoor in the process. This means that it must always be checked to ensure it is in perfect condition, and then straightened or repaired if a rat has manipulated it trying to escape. But obviously, if a snake enters before this inspection is carried out, it may still manage to escape, negatively affecting the effectiveness and quality of snake control.

Also, true to their definition as rodents, they cause structural damage to traps through gnawing, attracted by the smell of live bait (mice) and the mice's food. They generally damage the area of the snake's entry mechanism, both from the internal and external side when trying to enter and exit the trap.

In one extreme case, they literally tore apart the bottom of the mouse compartment, including the wire mesh.

The rat population was so "lustrous" (we don't know the current status of the problem) that they even nested under one of the traps...

This allowed us to observe the development of the litter through visits: from the newborn stage with their eyes closed, to watching them scamper away when they were already beginning to roam around the nest.



General Conclusions

Although limited, the data collected appear to be consistent with the main conclusions obtained in the studies conducted to date on the horseshoe snake on the island (see references at the end of the text). Basically, we can reach the following conclusions:

- The density of snakes in Zone A, located around Ses Salines (south of the island), appears to be lower than in Zone B, located in the Roca Llisa-Jesús area (closer to the outbreak from which the infestation began); at least, based on the trap yield. However, as we have explained, this yield can be affected by the amount of food available and, consequently, reflect a "false" low density. Therefore, it would be most accurate to say that the Ses Salines area has very likely not yet reached peak snake numbers (they are increasing), resulting in a drastic reduction in certain snake prey (including lizards).

- Snake activity appears to decrease during August, largely due to the heat and drought. Also, as is normal for a cold-blooded animal, it decreases during the winter months due to the cold. Their peak activity occurs during the reproductive period and before the arrival of winter, with this second peak also coinciding with the hatching of eggs.

- In the case of the horseshoe snake, it is possible that they may reproduce for more months of the year than on the mainland (it is certainly important to continue gathering information on their reproductive cycle in Ibiza and Formentera).

- Horseshoe snakes feed primarily on lizards and rodents and appear to be under low predation pressure.

- Captures (or lack thereof) of non-target species could be indicators of the density, degree of dispersal, and absence of snakes in the area, as well as the state of the area's biodiversity with regard to snake prey, as these can also potentially be accidentally captured in traps.

- If technically feasible, it is advisable to check traps more than once a week, ideally 2-3 times, to avoid both deaths and accidental captures within the traps. This is especially true in areas where snake densities are not yet too high, at least in relation to the amount of food available. That is, if we place traps in areas where we still see lizards relatively frequently, there's a good chance one will get in at some point. To prevent their death, it's best not to wait a week to check the traps.

- To date, the ladder snake (*Zamenis scalaris*) is still much less widespread than the horseshoe snake (Hemorrhois hippocrepis) on the island of Ibiza.

It's impossible to know 100% how the snake infestation will interact with the different species that make up local ecosystems if the population continues to increase, because snakes not only alter the populations of the species they prey on: they also alter the populations of the species with which their prey interact. In other words, all species, plant or animal, with which the snakes' prey interact (whose populations the snakes are reducing) will, in turn, see their own natural balance within the ecosystem altered (which, in turn, can cause third imbalances or new balances in the ecosystem's relationships). In an ecosystem, all its elements are related and interact with each other directly and indirectly, and breaking or altering those

relationships may (or may not) bring about momentous changes.

If we agree with this reality, the question we must ask ourselves today is whether it is worth risking or not assuming consequences that could be irreversible. For example, in the event of the extinction of certain species that are then irrecoverable, is it worth the risk? If the answer is no, then it is obvious that greater action is needed, paying special attention to areas as sensitive as the Ses Salines de Ibiza and Formentera Natural Park and its immediate surroundings; something that is not currently happening.

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Geckos are other prey items that fall within the range of invasive snakes.



Small birds in general, but their eggs and chicks more specifically, and even more so when, as is the case with the common lark (*Calandrella brachydactyla*), they are ground-nesting species, are potential prey for snakes. Invasive snakes are generalist predators that currently focus their attention on the most common prey, the Ibizan wall lizard and rodents, but as the population of lizards in particular declines, the snakes will turn their attention to other prey within their reach. This nest was photographed this spring in Zone A, next to the natural park (or within it... depending on how you look at it), a location that has the most important breeding area for the common lark on the island of Ibiza.



06-08-2023 - IBIZA KURIER - Lizard hotels to protect the endangered species – workshop participants learn how to build shelters (control)

IBIZA KURIER
Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Eidechsen-Hotels zum Schutz der bedrohten Art – Workshop-Teilnehmer lernen, Schutzräume zu basteln

Lizard hotels to protect the endangered species – workshop participants learn how to build shelters



Workshop Participants Learn How to Build Shelters

Over two dozen people participated in the GEN-GOB workshop, where they learned how to build shelters for lizards. As part of the "Sargantes o Serps" ("Lizards or Snakes") project in Can Casals, participants built small houses out of bricks and mortar for the cute reptiles, whose populations have been severely decimated since the introduction of snakes to the island.

Over 40 hotels in Ibiza have also joined the initiative to build shelters for the Pityusic lizards on their properties. The shelters are set up in gardens and near stone walls, where the lizards like to live, but which have also become a favorite hunting ground for snakes.

The first shelter was inaugurated at a hotel in Es Canar. Inma Saranova of the Ibiza Preservation Fund (IPF) is pleased that many other hotels are willing to join the initiative. In collaboration with GEN-GOB and Amics de la Terra, and with funding from CaixaBank and Fundació Sa Nostra, it is part of the new project "Protegim Ses Sargantanes."

"It is a proven fact that the lizard has already been eradicated in a significant part of the island, and the rapid spread of the snakes raises fears that they will colonize the entire island in a few years," warns Jordi Serapio, project coordinator. According to him, urban areas serve as a "barrier" for the snakes, allowing small lizard populations to survive.

For this reason, the project aims to make urban spaces more lizard-friendly. The boxes, which serve as refuges and can be of "great importance for their conservation," Serapio emphasizes, play an important role in this. The IPF plans to build 100 shelters over the course of the year and is therefore seeking the participation of hotels and resorts on both Ibiza and Formentera.

Goodbye to innocence



Goodbye to innocence – The silent death and disappearing of the Ibiza wall lizard *Podarcis pityusensis* (Boscá, 1883) caused by introduced snakes.

Marten van den Berg and Mike Zawadzki, September 2023

Abstract

The Ibiza wall lizard *Podarcis pityusensis* (Boscá, 1883) is the only living endemic land vertebrate of the Pityusic Islands. It has not only become the symbol of these islands, but also plays a significant role in the sub-archipelago's ecosystem. For centuries, Ibiza was famous for being completely free of snakes. Unfortunately, this is no longer the case. The introduction of three snake species on Ibiza has changed the natural balance of the island. The horseshoe whip snake *Hemorrhois hippocrepis* is of particular concern as it is threatening to wipe out the native lizards. Not only does *Podarcis pityusensis* disappear at a worrying rate on Ibiza: the population from the little offshore island Illot de S'Oro, representing the subspecies *Podarcis pityusensis hortae*, has already become extinct due to this new predator.

Keywords: *Podarcis pityusensis*, *Hemorrhois hippocrepis*, extinction event.

DIARIO de IBIZA

El futuro de la lagartija pitiusa en manos de todos

The future of the Pityusic lizard is in everyone's hands

The conservation challenge for this species is enormous, but the seriousness of the situation should not discourage us from our efforts, but rather encourage us to redouble our efforts.



Specimen photographed more than 10 years ago in Pou des Lleó. Currently, this population appears to have completely disappeared due to snakes. Jordi Serapio / INMA SARANOVA

Inma Saranova

17 SEPT 2023 6:00 Actualizada 17 SEPT 2023 16:59

The preservation of the Pityusic wall lizard is surely one of the greatest and most urgent environmental challenges we currently face in Ibiza and Formentera, given the delicate situation of this emblematic species two decades after the first invasive snake was discovered on the island of Ibiza.

The proliferation of snakes is a challenging problem, and for this reason, this year the environmental foundation IbizaPreservation has focused on improving the situation by launching its project 'Protegim ses sargantanes' (Protect your lizards). This project seeks to support the actions initiated by other stakeholders in the preservation of lizards through a multidisciplinary approach based on improving the resilience of lizard populations on the one hand, and simultaneously containing the snake invasion on the other.

Thus, to date, thanks to a grant from Caixabank and Fundació Sa Nostra, Ibiza Preservation has built, in collaboration with GEN-GOB, one hundred artificial lizard sanctuaries, the majority of which have been installed in hotel gardens. The main objective of this initiative is to improve the ecological conditions of the species in urban and residential areas, as this habitat can be crucial for its conservation in the current context of lizard extinction in rural areas. This initiative is based on scientific evidence obtained last year by researchers from the CREAF Institute (affiliated with the Autonomous University of Barcelona), which suggests that urban and residential areas act as reserves for the species. Furthermore, the creation and installation of these sanctuaries also seeks to obtain data on the presence of lizards in urban areas, as well as the involvement of the tourism sector in this



The Cap de Barbaria area, like the rest of Formentera, is currently home to well-preserved lizard populations. Jordi Serapio / INMA SARANOVA

conservation challenge. In this regard, the sector's response has been very positive, with more than 40 resorts participating.

IbizaPreservation has also produced 100 smart traps, an initiative focused on producing a new prototype of selective traps that are useful for use in areas where the presence of lizards is still high. Part of this production will be donated to the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB) to support its trapping campaign, while the remainder has been installed in the same hotels selected as sanctuaries.

Likewise, at the end of May, IbizaPreservation launched its own pilot project, focusing on intensive snake trapping in the protected natural areas of Ses Salines Natural Park and Ses Feixes de Talamanca. This project involves managing a large number of traps in a small area. With this initiative, the foundation seeks to enhance the eradication efforts carried out by COFIB in these areas. Both sites are important biodiversity hotspots, but their current snake infestation status differs substantially.

While Ses Feixes is home to a high density of horseshoe snakes and there is still a small population of lizards that require conservation, in Ses Salines, on the other hand, the current presence of snakes appears to be still low, while the lizard density remains at normal levels for the time being. Currently, a total of 50 traps are being managed across both areas (20 in Ses Feixes and 30 in Ses Salines), and despite the small number, significant results have already been recorded. As of August 31, the total number of captures has been 75 (69 snakes in Ses Feixes, six in Ses Salines), a number that is expected to continue to increase during September and October.

These first preliminary results in Ses Feixes confirm a high density of snakes in the area. Therefore, preventing their spread to other areas and keeping predator pressure on lizards and other vulnerable wildlife low are the main objectives. Regarding Ses Salines, although only a few specimens have been removed there, the results obtained are especially beneficial for curbing the local establishment of snake populations in this recently invaded area. We could say that a single snake captured in Ses Salines is worth ten captured in Ses Feixes in terms of protecting the lizard populations in the natural park, since the data indicate that it is still possible to contain the snake invasion there and therefore protect the remaining lizard populations.

But all these efforts by the foundation, as well as those made for years by other entities on the island such as COFIB itself, 'Sargantanes o Serps' (Sargantanes or Serps) —formed by Amics de la Terra and GEN-GOB— or the Institut d'Estudis Eivissencs, will be in vain if the necessary biosecurity protocols are not effectively activated to prevent invasive snakes and other potentially dangerous species from continuing to reach the islands, something that, for the moment, is not being fulfilled, as well as to avoid impacts on other fauna groups in this natural area of high value. Although the Government Council approved the Decree Law on extraordinary and urgent measures for the protection of the Pityusic wall lizard (*Podarcis pityusensis*) last January, which established biosecurity measures to prevent the entry of snakes into the Balearic Islands and preserve the endemic lizard species of the Balearic Islands, the



Lizard sanctuaries installed at the AluaSoul hotel in Es Canar, one of more than 40 resorts involved in the initiative. IP / INMA SARANOVA

truth is that, eight months later, no quarantine zone has yet been established to prevent the entry of invasive species into the trunks of trees that could harbor snakes or snake eggs.

Invasive snake species are preying on native species such as lizards because they have no natural predators on our islands, and this can have a cascading effect on the entire ecosystem. In fact, these snakes are also a threat to the island's small rodents and to various bird species and their offspring. This means that the introduction of this new species could alter the structure of the Ibizan ecosystem, modifying biological patterns and the overall dynamics of the environment.

The situation in Ibiza demonstrates that, once invasive snake species establish themselves and spread in an island territory like ours, it is extremely difficult and costly to control their population and mitigate their impacts. Therefore, initial prevention is much more effective and cost-effective than subsequent control efforts. For this reason, IbizaPreservation wants to begin working on biosecurity in Formentera, where the situation is not yet as serious as in Ibiza but could undoubtedly become so.

The main naturalized species in the Pityusic Islands today is the horseshoe snake. This species is less aggressive and does not pose as great a threat to the endemic lizard population. Furthermore, according to current data, it appears to be restricted to the La Mola area. However, the consequences of a possible naturalization of the horseshoe snake for Formentera's biodiversity, and especially for its lizard populations, would be disastrous (as is currently the case in Ibiza). For this reason, a biosecurity protocol is necessary for the port of the Pityusic Islands based on early detection and rapid response systems to minimize the risk of accidental introduction of these snakes from Ibiza. Thus, IbizaPreservation has already made itself available to the Formentera Council to help promote this protocol.

This does not, under any circumstances, mean losing focus on the urgent problem we face in Ibiza. Therefore, an increase in snake eradication efforts by all stakeholders and an improvement in trapping seem necessary, a task that IbizaPreservation will also focus on, even though there is no guarantee of success. A scenario in which the total eradication of invasive snakes seems unrealistic, as external experiences invite pessimism, as was raised at the Herpetology Congress held in April in Santa Eulària. According to experts, to date, nowhere in the world has there been successful eradication of snakes in areas larger than one hectare.

Despite this, we cannot give up on our efforts to conserve our most emblematic species, which is why IbizaPreservation insists that a multidisciplinary effort can and should be made to support public projects and any other private initiatives aimed at this end.

Even darker: a case of complete melanism in *Podarcis pityusensis* from Na Gorra Island (Ibiza)

Ferran de la Cruz

CIBIO Research Centre in Biodiversity and Genetic Resources. InBIO. Campus de Vairão. Universidade do Porto. 4485-661 Vairão. Portugal. C.e.: delacruz.ferran@gmail.com

Fecha de aceptación: 21 de septiembre de 2023.
Key words: coloration, lizard, melanin, pigmentation.

Resumen: La pigmentación oscura de un animal producida por un exceso de melanina se conoce como melanismo. Existen varias poblaciones melánicas de lagartija de las Pitiusas (*Podarcis pityusensis*) en algunos islotes de Ibiza. Sin embargo, esta melanización no es completa porque los individuos presentan vientres y gargantas de color azul ultravioleta. En la presente nota se describe un caso de melanismo completo en un individuo de la isla de Na Gorra (Ses Bledes, Ibiza).

Melanism refers to the expression of high levels of melanin that results in dark pigmentation of the skin or other tissues. Within species, melanism can be found as discrete differences between individuals within a population (intraspecific polymorphism) or as a continuous color variation (True, 2003). Melanism is widespread in the animal kingdom, but it is more frequent in ectotherms, where it may serve several functions (Clusella-Trullas *et al.*, 2007). The so-called "thermal melanism hypothesis" is one of the most well-known hypotheses, which postulates that dark pigmentation has an adaptive advantage in cool climates because dark individuals heat up faster and can maintain a higher temperature (Watt, 1968; Clusella-Trullas *et al.*, 2008). However, melanism is also common in other environments, such as Mediterranean islands (Kramer, 1949; Eisentraut, 1954), where climatic conditions are dry and hot.

The Ibiza wall lizard (*Podarcis pityusensis*) is an endemic species of the Balearic Islands of Ibiza and Formentera and more than 30 surrounding islets. There is high variation in coloration between populations, and some islets harbor melanic populations of lizards (Cirer & Martínez-Rica, 1990; Buades *et al.*, 2013). However, melanism is not complete because green and blue can be observed underneath the dorsal black and the ventral region exhibits UV-blue colorations (Buades *et al.*, 2013). While blue coloration is considered as a form of melanism by some authors (Raia *et al.*, 2010), it arises from the interaction between melanophores and iridophores, and is therefore different from the production of melanin itself (Bagnara *et al.*, 2007).

On the 19th April 2023, while carrying out field work in Na Gorra Island (Ses Bledes, Ibiza, Spain; UTM 31S X341051 / Y4314832), we found a completely melanic female of *P. pityusensis* (SVL = 70 mm, mass = 8.57 g). The lizard belongs to the subspecies *P. pityusensis maluquerorum*, characterized by highly melanic colorations as mentioned above (Salvador, 2015). However, this melanization is barely described and mainly based on dorsal coloration (Mertens, 1921), while information about ventral coloration is scarce and only reported as light or dark blue (Buades *et al.*, 2013). In fact, this subspecies is composed by seven insular populations (Salvador,

DIARIO de IBIZA

Yincana en Ibiza: Conocer los secretos de las lagartijas tiene premio

Treasure Hunt in Ibiza: Discovering the secrets of lizards has its rewards

Santa Gertrudis hosts a recreational sporting event organized by IbizaPreservation, in collaboration with Ibiza Blue Challenge, dedicated for the first time to the Pitiusan snail and its habits.



Yincana Ibiza Preservation in Santa Gertrudis / TONI ESCOBAR



Bea Roselló

Santa Gertrudis 05 NOV 2023 18:01 Actualizada 05 NOV 2023 18:13

What lizards eat, where *Podarcis pityusensis* specimens can be found, when they mate, and what habitats are best for these reptiles were some of the ten questions that the more than 100 teams that registered yesterday for the second edition of the IbizaPreservation scavenger hunt had to answer.

It was just after 10:00 a.m. and the surrounding area of Santa Gertrudis was already welcoming the first teams participating in the sporting, fun, and educational event organized by the IbizaPreservation Foundation in collaboration with Ibiza Blue Challenge.

From 10 a.m. to 1 p.m., participants were able to solve the ten questions they would encounter along the route, which ran through the surroundings of Santa Gertrudis. The goal was to raise awareness about the importance of this reptile and promote its conservation.

The teams, mostly made up of one or two adults and several children, arrive at the start in stages. Juanjo Serra, from Ibiza Blue Challenge, tirelessly explains the game's methodology to each participating team. This is also done in English, for foreign families.

The director of IbizaPreservation, Inma Saranova, is pleased with the high participation in this second edition, the first dedicated exclusively to lizards.



Knowing the secrets of lizards has its rewards | / BEA ROSELLÓ

Javi crosses the starting line with his son Edgar. Minutes before, his wife and daughter did the same. In the end, this is an activity that serves not only to learn but also to entertain the little ones in a fun way. This isn't the first time Javi has participated in one of these scavenger hunts. He knows how it works, but Juanjo reminds him that answering incorrectly or leaving answers blank results in penalties.

David is also about to cross the starting line with his mother, Sandra. They are participating for the first time, but David has no doubt that he will do well and, in fact, he has no doubt that he will win. He has every reason to: "Today [yesterday] my lucky bracelet broke, and that means I won't need any more. Also, I wear number six and I'm six years old," he says.

Just after eleven in the morning, the group consisting of Carlos, Belén, and Nacho, the youngest, recharges at one of the tables. They were the first to cross the finish line, but they don't know if they've won because it's not just the time spent finding the clues and answering the questions that counts, but also whether the answers are correct.

Meanwhile, Claudio is ready to begin the test with four little companions: Lucía, Julia, and Elena. The fourth, a doll riding in a toy car, doesn't yet have a name.



Knowing the secrets of lizards has its rewards | / BEA ROSELLÓ

23-11-2023 - efe. Ibiza - An intensive trapping pilot project captures 93 snakes in Ses Salines and Ses Feixes (control)

DIARIO de IBIZA

Un proyecto piloto de trampeo intensivo captura 93 serpientes en ses Salines y ses Feixes

An intensive trapping pilot project captures 93 snakes in Ses Salines and Ses Feixes

The Protegim ses Sargantanes initiative is promoted by IbizaPreservation.



File image of a snake captured by a volunteer / DI

efe. Ibiza

23 NOV 2023 6:00 Actualizada 23 NOV 2023 8:46

The intensive trapping pilot project developed by Ibiza Preservation has concluded with 93 snakes captured in two protected areas of the island, the environmental organization reported yesterday in a statement.

The project, called Protegim ses Sargantanes, focused on the Ses Salines and Ses Feixes de Talamanca Natural Park, where 20 traps were placed along transects of approximately 250 linear meters, with weekly checks to remove any captured snakes.

In Ses Feixes, between May 22 and November 6, a total of 87 horseshoe snake captures were recorded, with an average of 3.6 per week, demonstrating the "enormous density" of this species in an area where a population of native lizards still exists, according to Ibiza Preservation.

In Ses Salines, between June 13 and November 6, six specimens were captured. The technician responsible for setting and checking the traps, Inés Roig, explained that, "although the number has been lower," this is an area where the snake population is not yet "as established" as in Ses Feixes.

"Therefore, these captures, even if they are few, can be key to protecting the emblematic Pityusic lizard and maintaining the biodiversity of this natural park in general," she emphasized.

In fact, according to the director of Ibiza Preservation, Inma Saranova, the objective in Ses Salines Natural Park is "to prevent snake colonization of this territory, where there is still room for maneuver."

Saranova also noted that they are studying the results of this pilot exercise to expand it next year and maximize trapping efforts in the island's protected areas.

EIVISSA

Captures de serps invasives realitzades durant el bienni 2021-2022 pel Voluntariat *SOS Sargantanes*

per Antònia Maria Cirer

Resum
El nom d'Eivissa, Ebusus, Ebesos, significa "Illa de Bes", deu que fa fugir les serps. Amb una marcada influencia cultural fenícia, en cap moment històric s'han observat ofidis a les Pitiüses. Aquesta absència i la gran densitat i diversitat de sargantanes (*Podarcis pityusensis*) és una de les característiques ecològiques assumides socialment com un senyal d'identitat. Per això, l'arribada d'ofidis a partir de 2003 alarmà a tota la societat. Conscients de l'escassetat de medis humans disponibles per fer front a un problema tan enorme, l'Institut d'Estudis Eivissencs propicià un grup de voluntariat que manté trampes per a colobres repartides per tota l'illa d'Eivissa, aprofitant la distribució dispersa dels habitatges per tot el territori insular. Es presenten les dades cartografiades de les captures obtingudes amb 334 trampes durant les campanyes de 2021 i 2022. S'aprecia el sentit de la colonització Est-Oest, amb una franja en el centre de l'illa on les captures van en augment. A l'Est, zona on fa més temps que es trampeja, les captures tendeixen a disminuir. En canvi a l'Oest d'aquesta franja s'observa una zona sense captures, indicant que les serps encara no han arribat.
Mots clau: serp invasiva, *Podarcis pityusensis*, trampa, captura, mapa.

Summary
The name Ibiza, Ebusus, Ebesos, means «Island of Bes», god who drives snakes away. With a marked Phoenician cultural influence, snakes have never been observed in the Pitiusas at historical time. This absence and the great density and diversity of lizards (*Podarcis pityusensis*) is an ecological characteristic, but assumed as a sign of personal and social identity. The arrival of snakes from 2003 alarmed the entire Ibiza society. Aware of the scarcity of governmental human resources available in front of the enormous problem of invasive snakes, the Institut d'Estudis Eivissencs in 2020 structured a volunteer group that maintains snake traps scattered throughout the island of Ibiza. Taking advantage of the dispersed distribution of housing throughout the island territory. To activate a trap requires to take care of a live mouse that has to be visited constantly, assumable task for a volunteer who lives in the area. The mapped data obtained with 334 traps during the 2021 and 2022 campaigns are presented. The sense of East-West colonization is appreciated with a strip in the center of the island with increasing catches. To the east, area where traps have been installed during longer time, catches tend to decrease. While to the west of this strip we can see an area, without captures, not yet colonized by invasive snakes.
Keywords: invasive snake, pitiusan wall lizards, traps, captures, map.

Introducció

Fins entrat el segle XXI no s'havia detectat la presència de serps ben establertes a les illes Pitiüses. Se sabia d'avistaments esporàdics que es repetien al llarg del temps, però sense que s'arribassin a naturalitzar. Cosa que alimentava la falsa creença que la terra d'Eivissa no permetia la vida dels ofidis.

Aquesta absència és molt notable, ja que durant l'Antiguitat els romans varen introduir colobres a totes les illes mediterrànies on s'establiren. Des d'aquells temps hi ha serps a Mallorca i Menorca, però no a Eivissa o Formentera, que mantingueren la tradició púnica de l'illa de Bes i evitaren la seua introducció. L'arribada del cristianisme, amb un forta component ofidiòfob, va preservar els nostres ecosistemes d'aquests tipus de rèptils.

Aquesta situació es va veure estroncada a la primeria del segle XXI amb el transport globalitzat de mercaderies roll-on i la nova moda d'utilitzar arbres centenaris per a usos ornamentals. Dins les cavitats dels arbres vells hi ha tot tipus d'organismes amagats, hivernant, en forma d'ou, espora o propàgul. Des del 2003 es té constància de la presència a l'illa d'Eivissa de la serp verda, *Malpolon monspessulanus*, que no sembla haver prosperat, de la serp blanca *Zamenis scalaris* i la colobra de ferradura *Hemorrhois hippocrepis* (Álvarez et al., 2010). L'alarma es va generalitzar a partir de la segona dècada del segle amb treballs molt fonamentats que evidenciaven l'establiment d'espècies amb comportament invasiu i amb greus conseqüències per al nostre camp (Pinya i Carretero, 2011; Mateo i Ayllón, 2012). El propi COFIB declarava, en un treball, el gran problema que representaven les serps invasores a les Pitiüses (Parpal et al., 2015).

De bon començament es varen emetre recomanacions científiques molt sòlides, auspiciades per l'Asociación Herpetológica Española (AHE, 2015), per tal d'afrontar el problema. I des del Consell d'Eivissa es va estructurar un programa pilot per al control de les

SOS Salvem sa Sargantana Pitiüsa

INFORME DE LA CAMPANYA de 2023
Tancat a 10 de desembre de 2023



INSTITUT D'ESTUDIS EIVISSENCS, Via Púnica, 29; Eivissa

PERIÓDICO de IBIZA Y FORMENTERA

El conseller Simonet ve muy complicado erradicar la plaga de serpientes en Ibiza

Minister Simonet believes it will be very difficult to eradicate the snake infestation in Ibiza

The Government intends to launch the Sa Rota irrigation pond in early 2024.



Simonet visited the Sa Rota irrigation pond yesterday with the president of the Ibiza Council, Vicent Marí, and the mayor of Santa Eulària, Carmen Ferrer | Photo: CAIB

Juan A. Torres | Ibiza | 14/12/23 0:31

The Balearic Government believes that eradicating the snake infestation on the island of Ibiza is "very complicated." This was stated yesterday by the Balearic Minister of Agriculture, Fisheries, and the Natural Environment, Joan Simonet, on the TEF program "Bona Nit Pitiüses." However, Simonet noted that his department will maintain the campaigns it has launched to control this snake infestation that has threatened the Ibizan wall lizard. "I don't dare say it can be eradicated, so the important thing is to keep the populations under control, see how they are moving, and make progress in improving management," Simonet stated.

Another epidemic that also concerns the Government is that of the pine processionary caterpillar. In this regard, the Ministry of Agriculture has carried out aerial spraying in the northeast of the island this year. Simonet announced that this treatment will continue in 2024 "because an expansion has been detected." It's a danger to forests because it weakens them and, in the event of a fire, causes much more damage. We need to reduce forest cover in Ibiza because it's a risk, and there are many people living near forests."

Irrigation

Another announcement Simonet made on the TEF political news program was the launch of the Sa Rota irrigation reservoir in Santa Eulària in early 2024. Joan Simonet, who visited the facility this morning with the president of the Ibiza Council, Vicent Marí, and the mayor of Santa Eulària, Carmen Ferrer, emphasized that, now that the works are complete, "we are in the process of completing the administrative procedures between the regional government, the irrigation association, and Abaqua to be able to inject desalinated water. In this way, we are confident of being able to supply it to farmers as soon as possible so they can use it for all their crops."

The Minister of Agriculture explained that the reservoir will need desalinated water because the treated water becomes saline when it enters the urban water system and is unsuitable for irrigation. "While Abaqua and the local authorities work to prevent this salinization, we will purchase desalinated water to mix with the treated water and reduce the salinity," Simonet noted.

Regarding the Formentera irrigation reservoir, the Minister of Agriculture explained that the construction part is already complete, "and now we need to obtain the concession for desalinated water. The problem is that the water flow is so low in winter that the reservoir never exceeds 25 or 30% of its capacity, so we find ourselves at the beginning of the season when farmers start irrigating and have to stop a month later because there is no more water." The Government's plan is to begin the irrigation season with the reservoir level at 80%, "because what farmers want is to be sure they will have water," Simonet noted.

Drought

Minister Simonet also spoke about the problems caused by the lack of rainfall for crops. "We will have more and more problems in this regard," noted Joan Simonet, who advocated optimizing the water already used for agriculture, investing in new crop varieties that adapt to situations of water scarcity, and reusing existing resources, such as the aforementioned irrigation ponds.

Sector Demands

Simonet explained the demands that Ibizan farmers send him every time he visits the island. "They tell me about the need to implement irrigation ponds, the need for investment aid, and the streamlining of this aid so that it is distributed on an appropriate schedule and is paid quickly," emphasized the Minister of Agriculture.

Other requests they convey to him are "the difficulties of installing agricultural facilities such as water tanks, the possibility of selling their produce directly, or the availability of agro-ranches."

Regarding the wood pigeon infestation, Simonet explained that this issue does not fall under his department but rather under the jurisdiction of Hunting, a responsibility that has been transferred to the island councils. "This must be regulated through hunting activities, and if we have to act as the Department of Natural Resources, we'll see about it," Simonet stated.

The fishing sector has expressed to the Balearic regional minister the need for more promotion, also complaining that "they are being criminalized when they are the most conservative. The primary sector must be structured and powerful. We must escape the paternalism of the Regional Ministry and ensure that they believe they are a sector and that, for example, they can process their grants."

Simonet also visited the s'Escorxador facilities yesterday. A few weeks ago, the Government, through the Balearic Islands Agricultural and Fisheries Guarantee Fund (FOGAIBA), approved direct aid of €500,000 to the Association of Island Public Services for the slaughterhouse renovation works. In this regard, it should be noted that the renovation and modernization project has a total budget of €1,385,153.55.

PERIÓDICO de IBIZA Y FORMENTERA

Organismo autóctonos se vuelcan en un bioprotocolo para controlar la entrada de serpientes en Formentera

Local organizations deploy a bioprotocol to control the entry of snakes into Formentera

IbizaPreservation has brought together eight public and private entities to collaboratively launch an ambitious project that seeks to minimize the infestation and define strategies.

R.I. | 21/12/23 16:48

The environmental foundation has brought together eight public and private entities to collaboratively launch an ambitious project that seeks to minimize the possibility of snakes being introduced from Ibiza and define strategies for their early eradication in the port of La Savina.

The situation of the Pityusic wall lizard (*Podarcis pityusensis*), a species endemic to Ibiza and Formentera, has been critical since the first specimen of an invasive snake was found in Ibiza two decades ago. Therefore, IbizaPreservation launched its "Protect Your Snakes" project earlier this year. Among other things, it seeks to ensure that the situation of the invasion of non-native snakes in Formentera does not become as critical as it currently is in Ibiza, where the lizard has already become extinct in some areas in the northeast of the island.

To this end, thanks to financial support from CaixaBank and the Sa Nostra Foundation, as part of its Environmental Call, IbizaPreservation has launched a project that seeks to combat the proliferation of snakes belonging to the Colubridae family sensu lato in the southern Pityusic region by establishing biosecurity measures in the port of La Savina in Formentera to minimize the possibility of access by these snakes from Ibiza, where the current density is particularly high. To this end, the environmental foundation has called on all the administrations, social agents, and public and private entities capable of doing their part to collaboratively undertake this ambitious mission.

The reception, according to Inma Saranova, director of IbizaPreservation, has been very positive:

"We are very happy to see that all the doors we have knocked on have been opened and that all the entities capable of participating in the development of a biosafety protocol in the Port and implementing the resulting measures are fully committed to this goal."

In fact, last week, a first meeting was held at the Formentera Nautical Sports Center. In addition to representatives from IbizaPreservation, representatives from the Balearic Government's Species Protection Service, the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), Formentera Civil Protection, officers from the Formentera Port Police, representatives of the main shipping companies operating in the port, environmental experts from the Ibiza and Formentera Councils, as well as the environmental councilors of both island institutions, were also present.

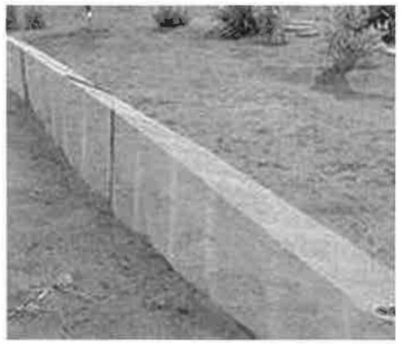
The objective is to develop a working process with the various relevant stakeholders to identify early eradication and biosecurity measures that minimize the entry of snakes from the port of La Savina and their spread to the entire island. To this end, several working meetings will be held between all these stakeholders in 2024, culminating in the creation of the aforementioned protocol.

The ultimate goal is to reduce the impact of the snake invasion on Formentera and protect the population density of the Pityusic wall lizard in an area of high ecological value such as the lesser Pitiusa.

EL PITIÚS 2024
ALMANAC PER A EIVISSA I FORMENTERA
INSTITUT D'ESTUDIS EIVISSENCS

CONSTRUCCIÓ D'UNA RESERVA DE SARGANTANES A CASA

Per Antònia Maria Cirer



Tanca que rodeja un espai on poden viure sargantanes i altres organismes protegits de la depredació de les serps

Tots sabem que fa vint anys que les serps han arribat a Eivissa. I si fa cinc anys encara confiàvem a poder revertir la situació erradicant les colobres, ara sembla que hem d'assumir que el problema va per llarg i que probablement no es resoldrà com voldríem. Estam en aquell punt que en diuen de «salvar els mobles». O sigui, que ja hem de pensar a fer una mena d'arca de Noè on poder preservar les poques sargantanes que encara ens queden.

És el moment de començar a fer Reserves de Sargantanes. Llocs on poder gaudir de la seva presència i, a la vegada, preservar un patrimoni biològic que ha constituït la senya d'identitat més clara de les Pitiüses d'ençà que els fenicis la nomenaren Illa de Bes, Ebusus, illa on no hi ha serps.

Així, si d'aquí a un temps, la cosa canvia i es pot arribar a controlar o erradicar les poblacions d'ofidis, tendrem petits reservoris de sargantanes que podran recolonitzar el territori. Però si deixam que la interacció serp-sargantana segueixi el seu procés natural, quan s'arribi al nou equilibri ecològic ja no hi haurà sargantanes a cap lloc de l'illa.

Us proposam que tot qui tengui l'espai i la possibilitat de fer-ho construeixi un «tancó de ses sargantanes».

Per construir una Reserva de Sargantanes ens hem de fixar en com era el «tancó de ses gallines» i agafar model, ja que farem un tancó similar. Es tracta de preservar un espai on sempre hi hem vist sargantanes, procurar no alterar gaire la vegetació i mantenir les roques o pedres preexistents. Tot l'espai ha de quedar rodejat amb una tanca antiserps, que no hi deixi entrar les serps de fora, ni sortir les sargantanes de dins.

A diferència d'un tancó per a gallines, el tancó de ses sargantanes, ha d'estar obert al cel per on entraran insectes, algun ocell, llavors, propàguls vegetals i la pluja que mantendrà el lloc amb el grau d'humitat natural i permetrà que la vegetació prosperi. Es poden aprofitar paret o tanques preexistents i fer un tancó de sargantanes adossat a la casa o a la paret del jardí, o bé un recinte aïllat de l'estil de les gàbies d'ocells que es posen enmig de la terrassa o jardí. I si és un lloc de nova instal·lació, hi afegirem una bona rocalla dins el recinte per proporcionar un hàbitat acollidor a les sargantanes i als múltiples invertebrats que viuen entre les pedres i que són els acompanyants imprescindibles del projecte.

DIARIO de IBIZA

Las 798 lagartijas de Ibiza del Museo de Ciencias Naturales

The 798 Ibizan lizards at the Museum of Natural Sciences

The skeleton of a 21-meter-long fin whale, an African elephant, the skeletal remains of a Megatherium americanum, meteorites... Madrid's Natural Sciences Museum houses astonishing, and in some cases colossal, objects, but also some of the smaller gems of the Ibizan animal kingdom. It houses 1,044 Ibizan amphibians and reptiles, including around 100 calàpets, 33 dragons, and almost 800 Ibizan wall lizards, most of them belonging to the collection captured by zoologist Alfredo Salvador almost half a century ago.



Three lizards that are part of Alfredo Salvador's collection. / J.M.L.R.



José Miguel L. Romero

Ibiza 25 FEB 2024 6:00 Actualizada 25 FEB 2024 10:29

In the heart of Madrid, between Vitruvio and Paseo de la Castellana, a space has been reserved for decades for one of the icons of the Pitiusas: its lizards. Between these two well-known Madrid streets is the Madrid Museum of Natural Sciences, a striking building with a brick and iron structure, cast iron columns, metal joist floors, and Polonceau-style roof trusses. Construction began in 1882 as the Palace of Arts and Industry and was adapted for its current function between 1909 and 1910. In its basement, right in the anteroom of the 19th-century Royal Cabinet and behind a metal hatch over which two stuffed crocodiles (one enormous) hang, lies the Ibizan treasure cave: there are 798 *Podarcis pityusensis* from all corners of Ibiza, placed in 79 airtight jars filled with alcohol for preservation. Of these, almost all (749) belong to the collection compiled almost half a century ago by the herpetologist Alfredo Salvador Milla (Madrid, 1950), whose work "underpins modern Spanish herpetology," as stated in the Enciclopèdia de Ibiza i Formentera. Following the research carried out by Eduard Boscà almost a century earlier, Salvador was the first scientist to compile an Iberian herpetological guide, which includes the reptiles and amphibians of our islands.

Salvador's Collection

On the museum's main floor, upon entering, visitors encounter two colossi: the complete skeleton of a fin whale, 21 meters long, hanging from the building's ceiling, and a huge naturalized African elephant. But one floor below, hidden from view and subject to strict temperature and humidity control (currently, the temperature in the facility is 21.2 degrees Celsius and the humidity is 38%), are the tiny *Podarcis pityusensis*. Marta Calvo Revuelta, curator of the herpetology collection at the Museum of Natural



Three jars with lizards from different islets and areas of Ibiza. / J.M.L.R.

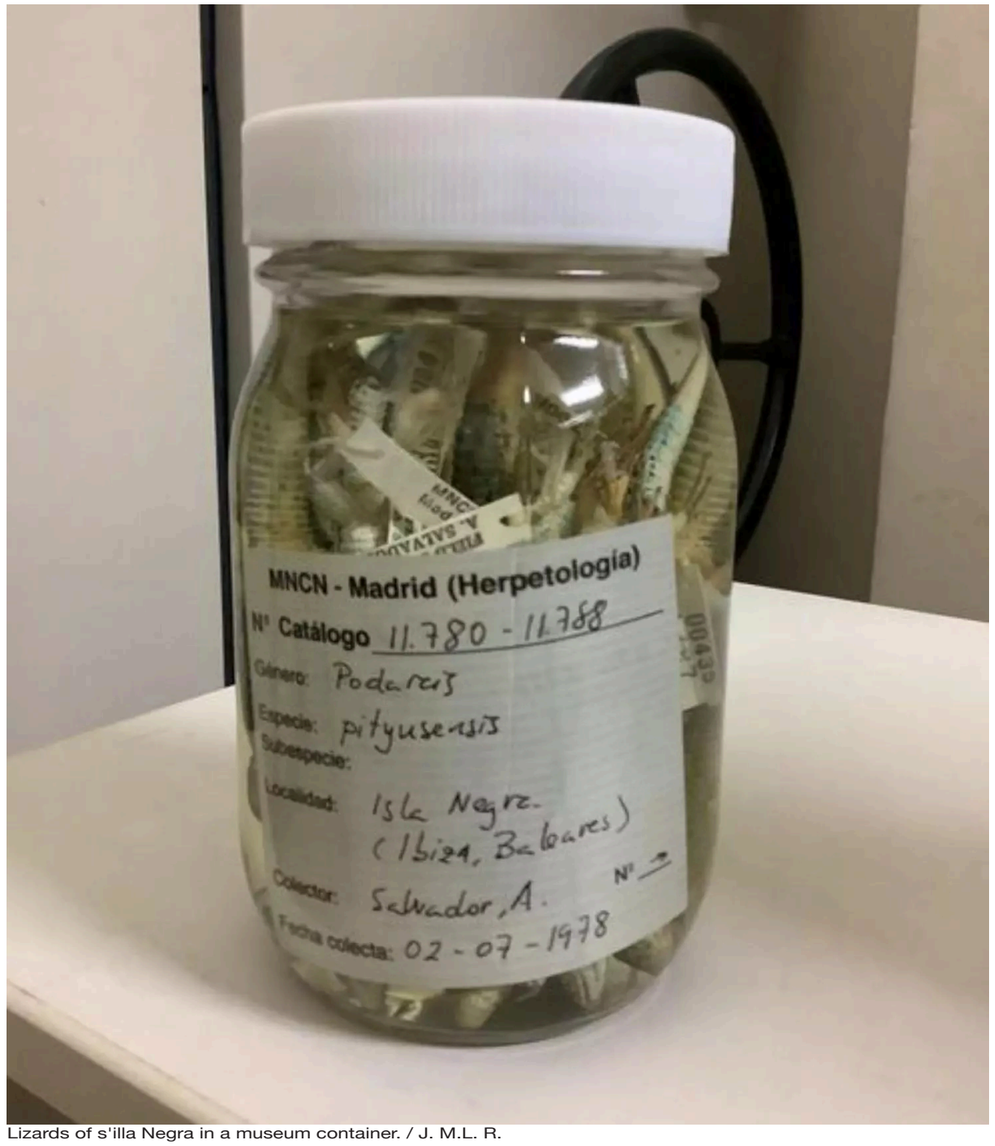
Sciences, and Alberto Sánchez, also a curator, open the heavy door behind which, on the shelves of compact cabinets, are hundreds of jars containing reptiles from all over Spain, including those from former colonies, arranged taxonomically by family, genus, and species. This is the room of the Applied Zoological Unit (UZA). Of these containers, 79 correspond to the 749 Ibizan lizards collected by Salvador between 1977 and 1978. Calvo turns a crank to move the heavy cabinet assigned to the lizards and allow access to its shelves. Then, after climbing a portable ladder, he searches the upper shelves, on the front of which are several blue labels identifying the Ibizan *Podarcis*: *Podarcis pityusensis negrae, Podarcis pityusensis vedrae, Podarcis pityusensis muradae*… He begins to pass Sánchez containers filled with clear alcohol, inside which there are anywhere from a couple to countless lizards, tightly packed and stretched out.

30 subspecies in jars

Although half a century has passed since they were introduced there, they still retain their vivid blueish or greenish colors, depending on the islet they come from. Some even retain orange touches on their backs. The enormous ones from Sa Bleda Plana are an intense black color, even more so than when alive; likewise, their bellies, normally indigo blue, have become sooty. The curator removes from the shelves containers filled with reptiles from the island of Penjats (in Es Freus), the island of Cala Salada, the island of Es Canar, Sa Conillera, S'Espardell, S'Espartar, the island of Gastaví, Ses Margalides, Sa Murada, Es Vedrà, and Es Vedranell… From a total of 30 Pityusic subspecies.

The bottles have double-sealed lids to prevent the alcohol from evaporating, keeping them almost intact. "Old-fashioned blown glass bottles are very beautiful, but the alcohol disappears more easily in them," explains Marta Calvo. As soon as they notice that one of the bottles they're handling has lost some liquid, they immediately refill it.

Each container bears a large label identifying the corresponding catalog number, its genus (*Podarcis*), its species (*pityusensis*), its place of origin, and the name of its subspecies or taxon. It also indicates the collector (Salvador A.) and the date of capture. Each lizard is identified by a pair of labels attached to its legs: one with the museum's catalog number (MNCN Madrid, printed on them) and another with the field number (the collector's, A. Salvador in this case). Tails, legs, and heads are interspersed inside the jar with numbered strips, two per reptile. Some *Podarcis* have their bluish bellies slit: they were gutted to study their diet.



Lizards of s'illa Negra in a museum container. / J. M.L. R.

Marta Calvo preserves another treasure from Alfredo Salvador's legacy: a copy of his field notebook, written and drawn in his own hand. On August 21, 1979, she captured specimens there weighing up to 12 grams: "Center of the belly sky blue and the sides of the belly [illegible]. Light cobalt blue sides. Yellowish green back," she describes one of them. The day before, she had been in Sa Bleda Plana, where the largest weighed 17 grams: "Dark ultramarine blue belly. Greenish back. Bluish sides." That month he also visited s'Escull de s'Espartar ("light green back. Grey sides with brown reticulation and green and blue ocelli. Cobalt blue markings on the external ventral wings"), es Vedranell ("Same colouration but slightly darker than those of es Vedrà") and Malvins ("brick-red belly, throat with reticulation the color of the belly"). In January 1976 he visited sa Conillera: "Under the stones there are many lizards, asleep but not in torpor. Between one and five lizards were found under each stone," the zoologist wrote about it five decades ago.


They fill a container in which some of the alcohol had evaporated. / J.M.L.R.

Their legacy remains intact in Madrid. Who knows, maybe in a few years, due to the proliferation of snakes, we'll have to go to this museum's collection (or the one in Berlin) to learn what the Pityusic lizards were like.


The entrance to the room where the Ibizan lizards are kept is in the basement, next to the Royal Cabinet. / J.M.L.R.

DIARIO de IBIZA

Una 'lacerta' y 176 'calàpets' de Ibiza de 1882

A 'lizard' and 176 'calápets' from Ibiza from 1882

The other 'Ibicencos' of the Natural Science Museum



A 'lizard' and 176 'calápets' of 1882

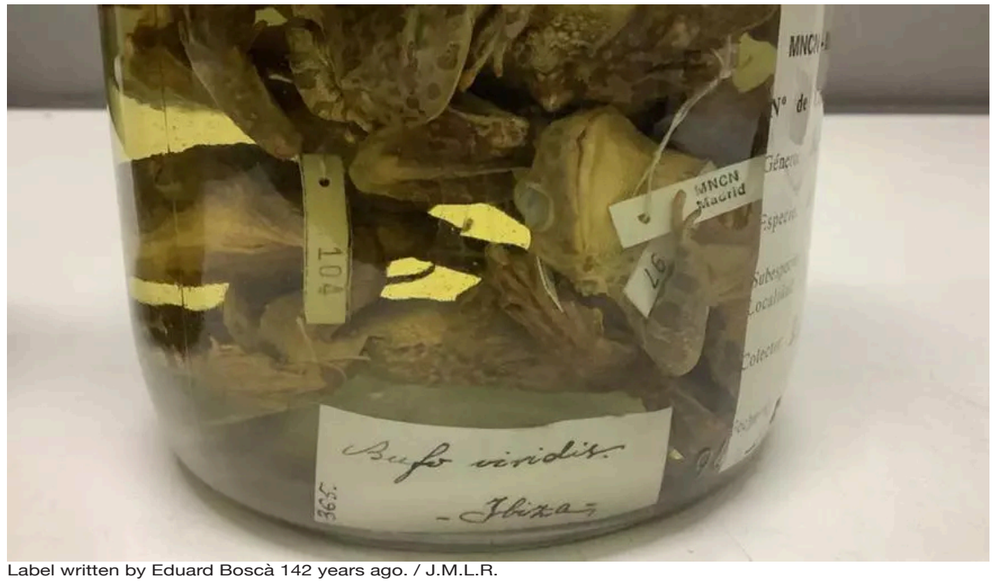
25 FEB 2024 6:00
Actualizada 25 FEB 2024 10:37

The Natural Sciences Museum in Madrid isn't just home to Ibizan lizards. There are also geckos (*Tarentola mauritanica*) and toads (*Bufote balearicus*), some of which were captured almost a century and a half ago. In the compact cabinets of the amphibian room (also located in the basement), there are up to 12 jars filled with *balearicus*. Their number suggests that they were not difficult to find at that time. They are currently in danger of extinction on the island of Ibiza. These containers contain 176 specimens, 35 of which were captured between 1881 and 1882 by Eduard Boscà, a physician and doctor of natural sciences considered the driving force behind Spanish herpetology.

Strips written by Boscà

Inside each jar is a strip of paper written by Boscà himself: on one side, with his name (twice, as a collector and as a collection), and on the other, with the name of the species (*Bufo viridis*) and its place of origin (Eivissa). The back of the calàpets specimens is brown, with even darker specks of the same color, and the belly is whitish, although it is possible that after 142 years its color bears little resemblance to the original. They have numerous blister-like bumps.

Marta Calvo shows another gem from Eduardo Boscá's legacy that she treasures: the file on 18 *Lacerta muralis* specimens, lizards captured at the "Castillo de Eivissa" in March 1882 and donated by the scientist to the Museum of Natural Sciences in 1914. *Lacerta muralis*? But aren't the ones from Eivissa



Label written by Eduard Boscà 142 years ago. / J.M.L.R.

Podarcis pityusensis? "In the 19th century, even up until the 1920s, all the lizards in Western Europe, including the *Podarcis*, were within a single species: *Lacerta muralis*. There are historical reasons, such as the influence of Darwinism. Starting in the 1930s, the trend toward dividing species began. That's where we are today," explains Valentín Pérez Mellado, professor of Zoology at Salamanca.

They also keep eight containers with Ibizan geckos in the same room as the Pityusic *podarcis*. One of them is a pink gecko (*Hemidactylus turcicus*), with a single specimen. The rest are common geckos (*Tarentola mauritanica*) and contain 32 specimens in total. Some were captured by Alfredo Salvador in July 1978 on the island of Penjats and in s'Espartar.



Three toads from the Boscà collection. They've been in a bottle of alcohol for almost a century and a half. / J.M.L.R.

DIARIO de IBIZA

Cuando se capturaban las lagartijas de Ibiza a gomazos

Nature: The 798 lizards of Ibiza at the Museum of Natural Sciences

When Ibizan lizards were captured with rubber bands

In the 1970s, they were trapped, sacrificed, and each specimen was injected with a fixative solution of formaldehyde and ethanol.



Maera Calvo and Alberto Sánchez in the herpetology laboratory of the museum. Below, card of '*Lacerta muralis*' caught by Eduard Boscà in 1882 in Ibiza. j.m.l.r. | J.M.L.R.

25 FEB 2024 6:00
Actualizada 25 FEB 2024 10:37

Valentín Pérez Mellado, professor of Zoology at the University of Salamanca and the foremost expert on *Podarcis pityusensis*, participated 46 years ago, alongside Alfredo Salvador, in the campaign to capture Ibizan wall lizards. Salvador was his friend, a classmate and classmate, but also his thesis advisor: "What happened was that he completed his thesis in a dazzling fashion, in two years, in the United States, and during those two years, I spent 14 months in the military and the rest in a Reserve in Salamanca as a contracted employee. When I began my thesis, he was already a doctor." Salvador began working in the Zoology Department at the University of León as a contracted assistant and suggested Pérez write his thesis on herpetology: "He would direct it for me, he told me. Great, I thought." They were very good friends. In Ibiza, they went from islet to islet aboard a Zodiac in search of reptiles.

Alfredo Salvador, explains Pérez Mellado, "was a March Foundation fellow, with whom he conducted a systematic review of all the subspecies of Ibiza. This collection is the one cared for by the Museum of Natural Sciences in Madrid. It's the most important collection of Ibizan lizards, the *pityusensis*, in the world." He asserts that it is "magnificent material," a "reference," with "very well-prepared" specimens.

What was done back then, no one even considers now: "It was a time, the 1970s, when everything was still collected and everything was slaughtered. I've never done anything like that again." Now, they are collected gently (with a lasso) and examined quickly on-site so as not to stress the animal. Then they



Jars with lizards from the Alfredo Salvador collection. / J.M.L.R.

are deposited back in the same place where they were collected. Not a meter further.

But in the 1970s, "they were caught and sacrificed." Each specimen was then injected with a fixative solution containing formaldehyde and ethyl alcohol (ethanol). They were then placed "in containers and left there until they dried and became like rocks, stretched out." They were later labeled, "to be studied later, with plenty of time in the world, in the laboratory," explains Pérez.

The way they captured the lizards was also peculiar: they used a wide, flat, closed rubber band, a centimeter and a half long, brown, which in the 1960s and 1970s students used to hold several books together or to keep folders, many of them made of cardboard, closed. "It was used," the zoologist explains, "like a slingshot, from a distance of about two or three meters. You put it on your left thumb



Lizards of es Porcs. / J.M.L.R.



Lizard of es Malvins. / J.M.L.R.

and stretched it out with your right hand to throw it. They were stunned or killed. With that system, I've even caught ocellated lizards [which can measure up to 70 centimeters]. We had great aim and skill. But that's history. I don't even like baiting them to catch them. I catch them with the lasso and then, after examining them, I return them alive to the place where I caught them. I've become increasingly purist about this."

A Decision

Salvador suddenly made a decision that affected his career and that of Pérez, according to Pérez: "His wife, a high school teacher, lived in Santander. They wanted to get together. He was fed up with traveling, moving from island to island, from one side of the Peninsula to the other. And in the end, they did it: they stayed in Guadarrama, near Madrid. And he said he'd never move from there again. He never returned to the Balearic Islands again. I told him I wanted to continue researching on the islands: 'Work whatever you want there. I don't want to know anything more about the Balearic Islands,' he told me. He stayed in the Guadarrama mountains and retired there. He didn't do anything else."



DIARIO de IBIZA

Los datos del Govern confirman que «las serpientes han Colonizado prácticamente toda Ibiza»

Government data confirms that "snakes have colonized practically all of Ibiza."

The Directorate General for the Natural Environment and Forest Management presents the results of the 2023 snake control campaign, in which 2,896 specimens were captured, 2,007 in Ibiza and 889 in Formentera.



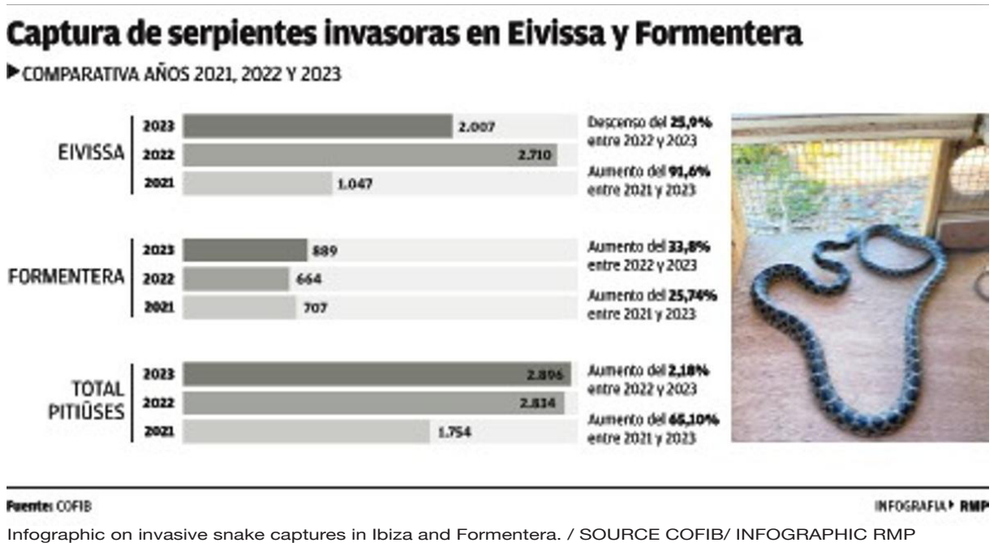
Moments before the start of the technical meeting at the Ibiza Council. / TONI ESCOBAR



Maite Alvite
Ibiza 11 MAR 2024 20:32

The Regional Ministry of Agriculture, Fisheries and the Natural Environment of the Government is increasingly clear that "snakes have arrived in the Pityusic Islands to stay, especially in Ibiza" and, given this reality, the only option left is to increase efforts to "ensure that their negative impact on biodiversity is as minimal as possible." This was stated this morning by the Director General of the Natural Environment and Forest Management, Anna Torres, at the Consell de Ibiza, following a technical meeting in which the results of the 2023 snake control campaign in the Pityusic Islands were presented.

According to data provided by the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), during the eight months of operation of the project (from April to November), 2,896 invasive snakes were captured in the Pityusic Islands, which represents a small increase of 2.18% compared to 2022. In the specific case of Ibiza, 2,007 specimens were caught (61 white snakes and 1,946 horseshoe snakes), almost 26% less than the previous year. In Formentera, 889 were captured in 2023 (888 white snakes and one horseshoe snake), 33.8% more than in 2022.



Infographic on invasive snake captures in Ibiza and Formentera. / SOURCE COFIB/ INFOGRAPHIC RMP

Control, not eradication

As Torres pointed out, these figures confirm that the horseshoe snake (*Hemorrhois hippocrepis*) has colonized practically the entire territory of Ibiza and also reveal that the white snake (*Zamenis scalaris*) has been detected, which is also present in Formentera. In this regard, the manager of the Cofib, Lluís Parpal, provided more information, explaining that the snakes have been expanding "from the northeast of Ibiza to the southwest of the island, reaching Sant Antoni and Sant Josep." The fact that the invasion has progressed so far means, in the words of the Director General of the Natural Environment, "that eradication on the island will be very complicated" and, therefore, "what we are trying to do is control it so that the snake population does not continue to grow." "None of the species detected is dangerous to people; however, there is concern about the effects they may have on the islands' ecosystems," she noted.

Torres was more optimistic about Formentera: "We have the most localized snake population there, and therefore, both human and material efforts will be made to try to eradicate this invasion; although we cannot yet guarantee that this will be possible, it will require continued efforts over the years."

Technical Reinforcement

The director of Cofib explained that seven technicians worked in the 2023 snake control campaign in Ibiza and "1,360 traps were in operation." In Formentera, they had "two technicians with occasional support from Ibiza and 350 cages." The intention for 2024, he announced, is to reinforce the staff with "two more technicians in Ibiza and one more in Formentera."

"Capture yields have decreased compared to 2022 for various reasons, but what's important to note is that the efforts being made with this project are paying off because researchers tell us that wherever work is being done to trap snakes, the density of lizards remains the same or they are returning to the area," he noted as a positive fact.

He also praised the measure the Government implemented last year to limit the entry of olive, carob, and ornamental holm oak trees to prevent the arrival of snakes to the Balearic Islands, "which seems to be working because most importers of these trees to the islands are asking the Administration about when and how they can transport them to the Community without problems." He acknowledged, however, that "a little more work needs to be done on the inspection protocols that must be carried out when the ornamental trees arrive at the port."



A moment from the technical meeting. / TONI ESCOBAR

Planning for 2024

At the technical meeting, in addition to presenting last year's results, the planning for this season was outlined. The Government's intention is to "continue the snake control project in the Pitiüses, which has been funded through the Sustainable Tourism Tax (STT) and ends in May 2024, and to launch a new plan with STT funds to finance all actions in the coming years." Parpal explained that "the new STT project being worked on will be four years in duration and will involve an investment of almost two million euros, three-quarters of which will be allocated to controlling invasive species in Ibiza and Formentera."

Regarding new strategies to curb the spread and density of snakes in the Pityusic Islands, Parpal explained that "we are working, in collaboration with the Canary Islands government, on a passive control system, looking for some type of cage with a product or scent that attracts snakes and that doesn't require a mouse inside as a lure or constant monitoring by technicians."

The Cofib manager and Torres also spoke about the importance of "informing, raising awareness, and encouraging citizen collaboration" to address this problem.

In addition to the Director General of Natural Environment and Parpal, today's meeting was attended by the Minister for Environmental Management of the Ibiza Council, Ignacio José Andrés; the Minister for Environmental Management of the Formentera Council, Verónica Castelló; representatives of the island's local councils; environmental agents (AMA), and researchers who have participated in studies monitoring the snake population.

The environmental foundation IbizaPreservation has reiterated its commitment to conservation initiatives for lizards, an endangered species in Ibiza, with the launch of a new project that seeks to protect populations of the *Podarcis pityusensis* snake by installing traps to capture them on agricultural land. The project was announced this Monday in honor of Earth Day.

According to the organization in a statement, the initiative launched a few days ago with the placement of eight traps in the garden of the House of WOW restaurant and plans to install a total of 250 on approximately 20 farms over the coming months.

Thus, the foundation aims to link the objectives of its Protegim Ses Sargantanes program with those of

Ibiza Produce, another IbizaPreservation program that promotes organic and regenerative agriculture.

According to Jordi Salewski, coordinator of Ibiza Produce, “The lizard is not only very important for biodiversity, but also plays an important role in maintaining crop health, providing natural pest control and contributing to the soil's nutrient cycle. Thus, by participating in this new initiative, the island's farmers are increasingly committed to sustainable and regenerative management of their farms, thus simultaneously improving the quality of their produce and the island's environment.”

Most of the traps will be installed as part of Ibiza Produce's Eivissa Sembra Futur program, under which the 12 farms selected to receive aid totaling €7,000 for the planting of more than 200 organic fruit trees of local varieties will also participate in this trapping initiative.

Furthermore, within the framework of its Protegim Ses Sargantanes program, IbizaPreservation will also expand its intensive trapping project this year in protected natural areas on the island of Ibiza, specifically in the Ses Salines Natural Park and Ses Feixes de Talamanca, with 80 traps between the two locations, thus doubling the number deployed in 2023, when around 100 snakes were captured with just 40 strategically placed traps.

Jordi Serapio, the program coordinator, highlights the challenges that this and other Ibizan environmental organizations face in preventing the extinction of this endemic lizard: “It is becoming increasingly clear that horseshoe and ladder snakes are here to stay, as has happened with many other invasive species around the world. However, it is essential that efforts continue to control their populations and minimize the negative effects they have on local biodiversity as a whole.”

In this way, IbizaPreservation seeks to improve its impact on the capture of invasive snakes and the enhancement of native lizard populations in various ecosystems on the island of Ibiza.



The foundation seeks synergies between its Protegim Ses Sargantanes and Ibiza Produce programs to promote the protection of the emblematic Pitiusan lizard. / IBIZAPRESERVATION

PERIÓDICO de IBIZA Y FORMENTERA

Sant Antoni cede 25 trampas para serpientes a la Sociedad de Cazadores del municipio

Sant Antoni donates 25 snake traps to the municipality’s Hunters’ Society



Sant Antoni donates 25 snake traps to the municipality’s Hunters’ Society

R.I. | Ibiza | 03/05/24 14:08

The Sant Antoni de Portmany Town Council has donated 25 snake traps to the Sant Antoni de Portmany Hunters' Association for snake control in the municipality.

The Councilor for the Environment, Beaches, Cleanliness, and Animal Welfare, Pepita Torres, delivered the cages, which aim to eradicate or reduce the number of snakes present on our island.

The Town Council has received the traps from the General Directorate of Natural Environment, through COFIB (Balearic Islands Wildlife Recovery Consortium), which plans to deliver a total of 100 traps to each municipality. The first 25 have been donated to the Sant Antoni Hunters’ Association, which will be responsible for their distribution and management.

Public institutions are working on a joint strategy and protocols to eradicate or reduce the number of exotic species on the islands through various actions, which are prioritized in areas where there is a greater risk to the conservation of threatened fauna, flora, or native habitats.

"Setting traps is a safe and selective method that guarantees the capture of only snakes, which is why the cages provided are specifically designed for this purpose," stated the Sant Antoni City Council.

INSTITUT D'ESTUDIS eivissencs

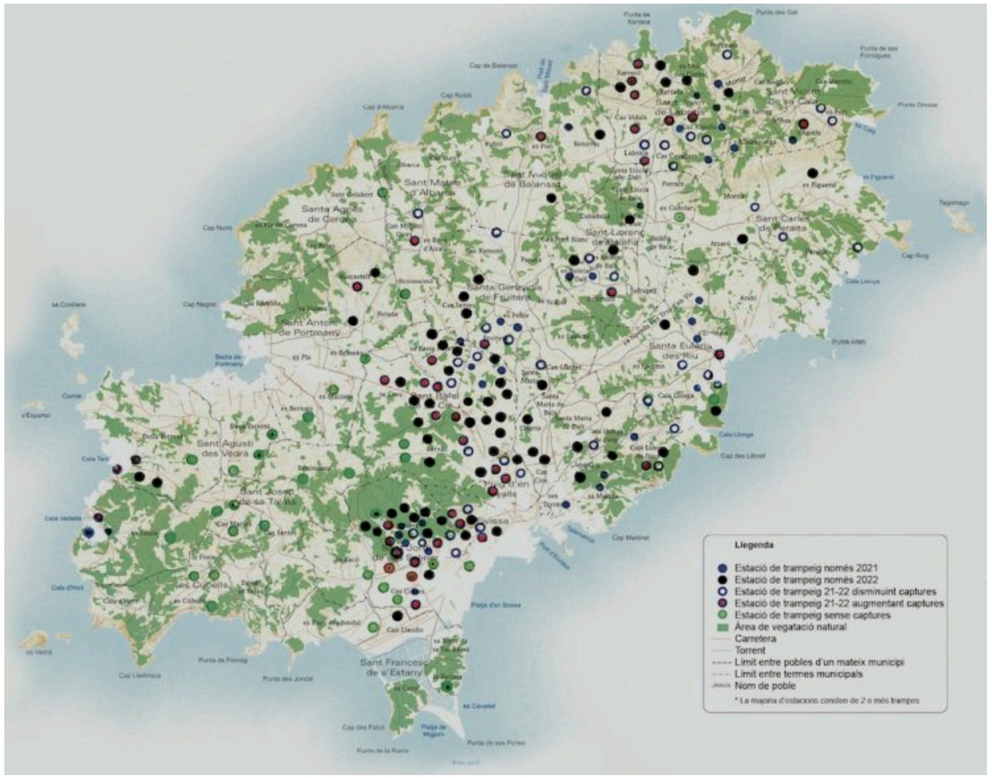
El blog de l'IEE

Com més serem, més força tendrem

Comunicat de l'IEE als socis i voluntariat SOS Sargantanes

Communication from the IEE to SOS Sargantanes members and volunteers

6 de maig de 2024 — Institut d'Estudis Eivissencs



After twenty years of presence of invasive snakes on the island of Ibiza, the time has come to reflect and rethink the situation: We at the Institut d'Estudis Eivissencs have repeatedly spoken out to demand that the administration take strong action, at least in the three aspects that we consider essential to establish a true plan for the eradication of invasive snakes and the protection of lizards:

1. Close the entrance door to invasive species through port controls. Partly resolved in the law RD 1/2023 on the protection of native fauna, but which arrives twenty years late and with few guarantees that it will be enforced.

2. Establish generalized and strategic trapping tasks throughout the territory, with massive distribution of free traps and mice.

3. Design lizard reserve areas, of the "Noah's Ark" type, in various places on the island of Ibiza. We still have time to do it and not lose the biodiversity heritage represented by the species *Podarcis pityusensis*.

Despite the many voices that have accompanied us in these demands and the more than 500 volunteers involved in the enormous task of eradicating an invasive species, we believe that the actions of public bodies with environmental responsibilities have not been successful enough, and that is why in 2024 the situation is almost unsolvable. It can now be assured that the horseshoe whip snake *Hemorrhois hippocrepis* is present throughout the territory of the island of Ibiza.

The faunal studies that are being carried out, and the statements of several regional environmental policy makers, assure that, for now, eradication is impossible and that it must be considered that the snakes “have come to stay”. In other words, we are not currently in a scenario of containment of an invasive species, but rather we have moved to the scenario of pest control.

In 2019, when the SOS Sargantanes volunteer network was structured (volunteering without any economic exchange so that the distribution of traps, mutual aid, mice, learning, information, etc., was as fluid as possible), perhaps a strategy for eradicating snakes could still be established by mobilizing all of Ibizan society to manage thousands of traps. Then, the Institut d'Estudis Eivissencs, through the SOS Sargantanes volunteer network, proposed to the local and regional authorities the massive and free distribution of traps among the properly informed, trained and accompanied rural population.

But this initiative was hampered by the lack of sufficient free traps for all citizens who voluntarily wanted to manage them and also by a distribution that was not always agile enough that did not allow them to reach all the interested population.

Five years ago it was a time of general alert, and that is how we explained it to the citizens who understood it perfectly and responded massively asking to participate in some way in dealing with such an unexpected emergency, requesting traps to be installed on their land and taking care of the mouse that acts as bait like another pet in the house.

But citizen volunteering is a specific action in time. Citizen participation can be used at a special moment, but not indefinitely. While the alert period lasts we have the hope of reversing the situation with everyone's participation, but when it stops being an emergency and becomes an ordinary situation, it is the competent administration that must manage this new reality. If the snakes have come to stay, it is the administration that must face their control.

In the Balearic Islands, this function currently falls to the Fauna Recovery Consortium (COFIB), a public-private joint venture that was created in 2004 to act on the fauna of Mallorca, and which later outsourced its actions for the other islands to the veterinary company Fundació Natura Parc.

A public service can be carried out by public workers, but it can also be outsourced to a private company. However, in this case, it is essential that there is an authorized and external control of the task to be carried out. Especially, when acting on a common and

intergenerational heritage asset such as the environment. It is a guarantee of good practices that the actions that are carried out in the environment, such as fauna control, are under the supervision of the competent scientific community and not of the same private company that carries it out.

In Spain there are several scientific entities competent in this area (such as the Spanish Herpetological Association or the CSIC —which has centers in Mallorca, such as IMEDEA) that can carry out this supervisory task, in addition to the Balearic Islands government officials themselves.

The regional administration has delegated (and relegated) its functions to external actors, it is time for environmental technicians to be responsible for all wildlife management; and for control, monitoring and evaluation to be carried out by scientists independent of the companies that carry out this management.

It is also time to assume responsibility for the fact that the lizard *Podarcis pityusensis* is a species at risk of extinction and to face everything that involves safeguarding it.

We understand that the function that the SOS Sargantanes volunteer network has performed so far has been of great value, but that it needs to be updated. The needs for help and supplies must now be met by public administrations, and all citizens should contact them. It is now up to the town councils and the Council to facilitate the distribution of traps and mice.

However, from SOS Sargantanes we will continue to accompany you and share information via the email sargantanes.eivissa@gmail.com.

The Institut d'Estudis Eivissencs will remain alert to face all the threats that our environment suffers.

Thank you all for your collaboration.

07-05-2024 - Redacción Digital - Snakes in Ibiza: the plague that has won the battle (control)

DIARIO de IBIZA

Serpientes en Ibiza: la plaga que ha ganado la batalla

Snakes in Ibiza: the plague that has won the battle

IEE calls for "widespread and strategic trapping operations throughout the territory" of Ibiza.



A snake captured in Ibiza. / JOSÉ MIGUEL L. ROMERO

Redacción Digital

Ibiza 07 MAY 2024 14:00 Actualizada 07 MAY 2024 15:39

All the campaigns to combat them and save the Ibizan wall lizard have been in vain. The snakes have won the battle, and according to the Institute of Ibizan Studies (IEE), the situation is "practically unresolvable." The IEE regrets that, despite the "multiple voices that have supported us in these requests and the more than 500 volunteers involved in the enormous task of eradicating an invasive species, we believe that the measures taken by public agencies (...) have not been sufficiently successful."

In fact, they point out that according to all the studies and statements from the islands' political leaders, it is "impossible to eradicate" this invasive species and we must consider that the snakes are here to stay. For this reason, the IEE believes that a scenario of "containment" has shifted to one of "pest control."

"It is now clear that the horseshoe snake (*Hemorrhois hippocrepis*) is now present throughout the island." Therefore, they urge the authorities to act from three different perspectives.

First, something that is already being done in theory, "closing the gateway to invasive species through port controls." This has been resolved "in part," the IEE points out, but nonetheless criticizes: "But it is twenty years late and with little guarantee that it will be enforced."

Second, it calls for "widespread and strategic trapping throughout the territory" of Ibiza, "with massive distribution of free traps and mice (which act as bait)."

Finally, they urge the creation of "Noah's Ark-type lizard reserves in different parts of the island." "We still have time to do this and not lose the biodiversity heritage that the lizard represents," they warn.

08-05-2024 - S. Ribas - Snakes in Ibiza: "It's possible that in 10 or 20 years we'll be able to implement a program to eliminate them." (control)

PERIÓDICO de IBIZA Y FORMENTERA

Serpientes en Ibiza: «Es posible que en 10 o 20 años sí podamos afrontar un programa para eliminarlas»

Snakes in Ibiza: "It's possible that in 10 or 20 years we'll be able to implement a program to eliminate them."

The IEE will host the presentation of "Els rèptils dels Països Catalans" this Thursday at 7:00 p.m., featuring Antònia Maria Cirer.



The doctor in Biological Sciences Antònia Maria Cirer, yesterday, at the headquarters of the Institute of Ibizan Studies | Photo: ARGUI ESCANDON

S. Ribas | 08/05/24 0:30

Many students and nature lovers will now be able to use the scientific guide "Els rèptils dels Països Catalans" (Reptiles of the Catalan Countries). This Thursday at 7:00 p.m. the book will be presented at the headquarters of the Institut d'Estudis Ibizas (IEE). Antònia Maria Cirer, PhD in Biological Sciences (Ibiza, 1957), is one of the co-authors of this major work, coordinated by Albert Montori.

—How did this interesting project, in which up to ten authors collaborate, come about?

—It's a project promoted by a Catalan publishing house that has prepared a collection called "Maluquer," after a great Catalan naturalist who also visited Ibiza. In fact, the first subspecies of lizard—the black lizard that lives in Ses Bledes—is called "*Podarcis pityusensis maluquerorum*." The publisher promoted this project to create a field guide to both the flora and fauna that inhabit the Catalan Countries. Its importance lies in the fact that, for the first time, they're not just focusing on the peninsular area where Catalan is spoken, but also including the islands, which is a deference and a sign of respect because in the Balearic Islands, we always tend to be neither one side nor the other when it comes to natural sciences. The beauty here is that they include us in every project. Specifically, when it comes to reptiles, instead of choosing a Mallorcan scientist—which would be the easy way—they've chosen an Ibizan scientist, and this underscores the importance of our reptiles, specifically the lizards. From the outside, everyone is clear that the most important reptiles in the Balearic Islands are the Pitiusan lizards. Everyone is crystal clear about this, but in Ibiza, they seem to be asleep, looking the other way, and we don't want to realize that we're losing an incomparable and invaluable treasure.

—Through your participation in the book, you detail the characteristics of the species found in the Pitiusas.

—It's a scientific work that discusses each and every species we'll find in any Catalan-speaking corner of the world and will be useful for anyone's study. Furthermore, the introduction explains very well what reptiles are like and their biology and ecology. I've often complained at conferences that people confuse a reptile with a mammal, and therefore, this book, in its first 100 pages, serves to study these things and to provide examples of specific reptiles that can be found where you live, because sometimes books on these topics talk about tropical boas or iguanas. It also includes a very interesting chapter I wrote on invasive species, the problems they cause for other species and for the invaded area. Regarding the Balearic Islands, there is a table that confirms that the vast majority of invasive species are introduced by humans, who have had a great impact on the islands' fauna. That's why each one has such different faunal conditions, although in Mallorca they've always overlooked this and don't want to see that in Ibiza we have different conditions because we have a different human history.

—Are invasive species a common problem in the rest of the Catalan Countries?

—It's completely different. On the Peninsula, there are always border zones for species, and this issue of invasions is more a matter of border confrontation, something that has always happened. On the islands, however, it's where the problems of invasions themselves arise because there's a barrier: the sea, and species can't overcome it unless they enter fortuitously, transported by humans. Then, it's the process of a new species arriving, like the "Normandy Landings": it first occupies a small area, expands when it has a bit of stability, and if it's successful, it reaches an explosive moment, just as happened in Ibiza with the snakes.

—And in these places, there are also species in danger of disappearing?

—Yes, almost all reptiles suffer from it because they have very limited, very specific habitats, and many predators. Therefore, most lizards on the Peninsula face survival and extinction problems, as do turtles, whose populations are truly in danger. The problem is that the tactics

and strategies that should be implemented with wildlife are completely different from those implemented in an archipelago, where each island is a specific, individual refuge, distinct from the next, including the islets. Unfortunately, the Balearic authorities, even though they are islanders, don't take this into account. They just steamroll over things, and what works for Mallorca works for Ibiza, and what works for Ibiza, they'll also apply to Formentera.

—In fact, the book launch coincides with a harsh statement from the IEE criticizing the lack of decisive action by the Administration to combat snakes.

—And this has been the big problem: the serious shortsightedness that Mallorca has when it comes to addressing Ibiza's problems. Every time environmental issues need to be discussed, Mallorca has a completely distorted view. They don't focus well, and because they don't, in the Pitiusas they push through completely ill-advised decisions.

—In the statement, they demand issues such as the control of goods entering through the port, something that was contemplated by law.

—The fact is that we don't know anything about the issue. In fact, control could also be carried out at origin or destination. There are various methods, but we have no news of how Law 1/2023 is being applied. When I know, I will assess it, but they haven't informed the public about its application, and when we've asked, there's been total secrecy. We have no guarantees as to whether it's being applied or not.

—How will the snake invasion be this season?

—Formentera is going in a different direction, and everything I've said about short-sightedness when looking at another territory, we must be very clear about when talking about this island, which has a different faunal structure than Ibiza, and therefore, I won't go into an assessment of the situation. In Ibiza, today, snakes have reached every corner of the island. I'd bet that if we went up to Sa Talaia, there would still be lizards, and I'm not sure if the snakes have reached there. There are areas of Sant Agustí or Sant Josep, the last parish where they have arrived, where refuges could be created to safeguard lizards. If we divided Ibiza's territory 10 kilometers by 10 kilometers, every square would have snakes. In Ibiza, we can't talk about eradicating them, but that doesn't mean we should abandon trapping.

—What would happen if we abandoned this mass trapping?

—Since there's a population boom, if we don't set traps to achieve the effect that a natural predator would have, the disaster for the Ibizan ecosystem would be enormous. We must ensure that the problem, even if we can't stop it, is as mitigated as possible, and we must try to prevent it. We can't talk about eradicating snakes now, but it's possible that in 10 or 20 years we could undertake a program to eliminate them and return to the previous situation, although to do so, it's extremely important that we preserve lizards in an area well surrounded by snake-proof fences, like a 'Noah's Ark'. Sometimes I think about koalas. If it weren't for zoos that preserved them, their reintroduction into their natural habitats wouldn't have been possible. Snakes are currently experiencing a population boom, and it's like trying to swat flies, but this boom will subside, and we must wait.

DIARIO de IBIZA

Serpientes, lagartijas, ratas y platos sucios

Snakes, lizards, rats and dirty dishes

Opinión



Verónica Carmona Acedo

10 MAY 2024 6:37
Actualizada 10 MAY 2024 14:30

In 2003, the first invasive snakes were detected, arriving as stowaways hidden in the centuries-old olive trees brought from the peninsula, which now adorn so many villas on our island. Measures to prevent the spread of the pest arrived late to Ibiza, both in port control and the installation of traps. By 2014, the horseshoe snake had colonized half the island. Ten years later, this snake is now present throughout the island.

For just over a year, I had one of these traps in a country house in Santa Gertrudis. Snakes kept falling in. My partner was in charge of catching and killing them, because if it were up to me, the poor creatures would have died of thirst and hunger before I could have mustered up enough courage to grab any of them and crush their heads, just as they explained I should do to end their lives quickly.

The trap also arrived late to my home. During the previous four years I lived in that house, I remember how the lizards constantly sneaked inside. I even found them in the bedrooms. They scampered everywhere. It was so easy to see them. But little by little, just as love disappears amid dirty dishes and an uncreased bed, they stopped coming. I don't know how or when, but one day they were gone, and I didn't realize until a large snake appeared near the front steps. We placed a hoe near where we had seen it to kill the animal on its next visit. But either it was very quick, or we were very cowardly, because we never caught it. We had the tool, but not the courage.

Only small snakes fell into the wooden box. I suppose that enormous reptile devoured almost the entire colony of lizards that inhabited the small fenced area of the property.

Shortly after, we abandoned the house, where, paradoxically, we had mice until the very end. Even a rat that came to eat the last remnants of the home that remained.

noudiari.es
Eivissa i Formentera

La alarmante realidad de la lagartija de Ibiza y su futuro incierto

The alarming reality of the Ibiza lizard and its uncertain future



Ibizan wall lizard. Image by Sebastián Candela.

Por **Redacción** — 11 mayo 2024

Samaj Moreno / The lizard, a silent witness to Ibiza's historical development, has witnessed the passage of countless cultures across the island. Since the arrival of the Phoenicians, followed by the Romans, Vandals, Byzantines, and later the Muslims and Christians. Over the centuries, the lizard has endured, adapting to change and surviving through the different cultures that have left their mark on the island. However, in the 21st century, this emblematic species faces a serious risk of extinction.

Today we speak with Antònia M. Cirer, Professor of Biological Sciences and PhD in Biology, about her research on lizards in the Pitiusas, which spanned from 1979 to 1987. Her focus was on research into German bibliography from the 1920s and 1930s. The University of Barcelona published her thesis in microfilm format. It is currently available online and accessible to all. It was a lengthy work, about 500 pages long, primarily aimed at academics and scholars interested in the subject.

Through her research, Antònia M. Cirer discovered the unique diversity of lizards on the different islets of Ibiza, each home to unique populations with their own characteristics. Her work significantly contributed to documenting the Pityusic lizard (*Podarcis pityusensis*). After her retirement in 2017, upon returning to Ibiza, she was faced with an alarming reality: the imminent threat posed to the survival of lizards by the invasion of species, especially horseshoe snakes. This challenge awakened in her a sense of responsibility and determination to protect this emblematic species. Her dedication reflects her unwavering commitment to protecting Ibiza's natural heritage and her determination to ensure a sustainable future for future generations.

How would you describe the research process and findings related to the genetic diversity of lizard populations on the islands of Ibiza?

We analyzed twenty different variables for each lizard, from head size to color, considering genetic and dietary factors that influence their hue. In the 1980s, we used a powerful computer at the University of Barcelona's computer center to apply modern statistical techniques, although access was limited and required time reserves. I prepared the data, entered it with help, and then received the results and graphs the next day. Despite the technological limitations of the time, these tools were essential for my doctoral research, which included both statistical analysis and genetic studies. In Montpellier, France, I compared lizards from Ibiza with each other and with those from the mainland, finding notable genetic differences that revealed the uniqueness of Ibizan populations. Furthermore, I observed a gradation in genetic differences between the different populations on Ibiza, suggesting subtle and overlapping evolutionary changes across the archipelago. Although there were no groundbreaking discoveries, each island held its surprises, such as the black lizards of Ses Bledes, whose almost metallic tone was remarkable. When the islands were connected and sea levels were lower, the lizards formed a single population, sharing a common genetic base. However, as sea levels rose, the islands drifted apart, leading to population fragmentation. Despite this geographic separation, the lizards retained genetic similarities due to their common origin when the islands were connected. Upon closer inspection, the Es Vedrà lizard is very similar to the one from Es Vedranell but distinct from those on Ibiza. In reality, there is no single lizard; rather, there are small variations that, when combined, form a mosaic or range of characteristics. This range presents gradations, so that between the extremes there is a great difference, but in the intermediate elements there are no abrupt leaps.

What is the current status of the lizard population on the island of Ibiza?

On the island of Ibiza, the massive lizard population, consisting of millions of individuals, faced a variety of natural predators, including birds such as hawks, seagulls, and herons. However, Ibiza is full of houses and human presence everywhere, which is not tolerated by birds of prey. Despite this, whenever there has been an opportunity for birds of prey from the mainland to come, they have. During the COVID era, birds of prey were observed, since from Montgó, any bird of prey can fly and doesn't distinguish between Denia and Ibiza; they see the same thing. Therefore, if there were a possibility, there would be birds of prey. The problem is that Ibiza's ecosystem doesn't adequately accommodate them. Predation plays a crucial role in the evolutionary game by driving natural selection, eliminating individuals less adapted to the environment. Predators, such as birds and other animals, exert negative selective pressure on those that are more conspicuous or less cautious in their behavior. This dynamic ensures that only the best-adapted individuals survive and reproduce, thus driving the evolutionary process. However, not all invasive species successfully establish themselves in a new environment. When I was a child, there was a ship coming from North Africa and heading to the south of France, stopping in Ibiza. During that time, it was common to see chameleons in Ibiza, but now not a single one is seen. It seems they were unable to survive

due to the lack of a suitable ecosystem, whether due to climate, shelter conditions, or other reasons. At the beginning of the 21st century, the horseshoe snake and other snakes arrived in particular. Although some species, such as the horseshoe snake and the ladder snake, have managed to establish themselves in Ibiza, others have not found the right ecological conditions to thrive.

Is there any information available on when and how the snakes arrived?

The snakes initially arrived at the Santa Eulària fish farms in 2010. This spread has been like a relentlessly advancing wave. There are still corners in areas like Sant Josep and Sant Antoni Bay where the snakes have not reached, but it is expected that they will soon, as the spread continues like a relentless wave. By deploying a large number of traps in the east, we have managed to capture many snakes, resulting in a decrease in their density in the area. This decrease is reflected in the number of snakes caught in the traps compared to previous years.

So, is trapping the proposed strategy to address the spread of snakes on Ibiza?

Since snakes lack natural predators on the island, it is crucial that humans exert balanced predator pressure. Traps play a key role in maintaining population balance. These traps, made locally by carpenters, have separate compartments for snakes and mice, thus preventing the mice from being consumed. Then, more than 500 of us volunteers participate in the lizard conservation effort, led by the Institute of Ibizan Studies. Captured snakes are euthanized as part of the conservation strategy. Although there are currently more than 3,000 traps on the island, there is a recognized need to significantly increase their number. If we manage to balance the population through the use of traps and the Balearic Government implements an effective eradication program, we could eventually control and even eradicate the problem completely.



A lizard saved at the last minute when a snake was about to eat it. Photo by Dean Gallagher.Candela.



Volunteer Dean Gallagher with a snake captured last year in Cala de Sant Vicent

13-05-2024 - IBIZA KURIER - The snakes are in for the kill – dead or alive: up to 30 euros per catch (snakes)

IBIZA KURIER
Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Den Schlangen geht es ans Leder – Tot oder lebendig: Bis zu 30 Euro gibt es pro Fang

The snakes are in for the kill – dead or alive: up to 30 euros per catch



Ibiza-based entrepreneur Julien Cosson wants to tackle the island's snake problem in his own way.

He plans to market fashionable snakeskin accessories under the name "Ibiza Genuine Snakeskin." He is founding a non-profit organization for this purpose. The skin of the reptiles caught by volunteers will be used for bags, belts, and jewelry.

"We must solve the terrible problem of invasive snakes on the island," Julien writes in a social media appeal. The campaign is intended to help protect Ibiza's endangered native animals. These include lizards (which make up about 60% of the snakes' diet), birds, and genets. "Snakes have no natural predators on the island, so their population is booming and uncontrollable."

Basically, anyone who lives on Ibiza and wants to participate in the trapping campaign can participate. "We pay between 10 and 30 euros in cash per snake, dead or alive. We also come and pick them up. If you catch ten snakes, that's a nice 300 euros in cash in your pocket."

Cosson plans to discontinue the project after a maximum of 24 months. This period should be sufficient to contain the snake population and reduce it to fewer than ten snake sightings per month.

He hopes that the lizard population on Ibiza will return to normal levels in two to five years. Anyone who wants to participate, has leather craftsmanship skills, or would like to sell the accessories at the market or in their shop can contact Julien Cosson on Facebook, Instagram, or LinkedIn.

PERIÓDICO de IBIZA Y FORMENTERA

Ya se han capturado 500 serpientes en Ibiza y Formentera este año

500 snakes have already been captured in Ibiza and Formentera this year

The regional government has activated 10 snake shelters in Ibiza, some of them in the heart of the city.



The Government has activated 10 shelters for sargantanes in Vila, some of them in the city center.

Gisela Revelles | Ibiza | 17/05/24 20:27 | Actualizado a las 22:17

Between January and May, a total of 460 snakes were captured on the islands of Ibiza and Formentera in traps set up to combat an invasive species that is seriously affecting the lizards on both islands. On Ibiza, 300 snakes were captured during this period, while on Formentera, 160 were captured. Last year, 6,500 specimens were captured on the two islands, according to Anna Torres, Director General of the Natural Environment of the Catalan Government.

Torres reported this data during the presentation of the snake shelters installed at various locations in Ibiza Town. The presentation took place in the gardens of Abel Matutes Boulevard, where these reserves have been created. These reserves are financed with European funds earmarked for the fight against invasive species in a project involving the Government, the regional councils of both islands, the town councils, and COFIB. "The snakes," Torres recalled, "are harming an emblematic species for the Pitiusas: the snakes."

These shelters aim to protect the snakes from both snakes and cats in a habitat created especially for them in these garden areas. Thus, the snakes can "live, breed, and hide" in these shelters, which are also surrounded by native vegetation. This vegetation is part of these animals' diet and also attracts insects, which are also part of their regular diet.

Along with the shelters, the Directorate General for the Natural Environment has launched an information campaign aimed at encouraging citizens to participate in the protection of the lizards. This invitation is also extended to businesses such as hotels and restaurants that have gardens where these shelters can be installed.

The lizards, Anna Torres pointed out, are currently in a "risk situation" because they are the main food source for snakes, an invasive species that arrived years ago in both Ibiza and



Formentera and has particularly affected these animals. In the fight against this species, the traps installed in numerous locations on both islands to control the snake population are notable, and so far they are yielding positive results. However, Anna Torres pointed out that it is necessary to achieve "a balance" that allows the lizards "to learn to defend themselves against these predators."

Initially, the largest snake population was located in the Santa Eulària area, but now, according to Torres, these animals have moved to the south of Ibiza. Hence the importance of projects like the shelters, in which a budget of nearly €100,000 has been invested. In total, 10 reserves will be established on Ibiza and one on Formentera.

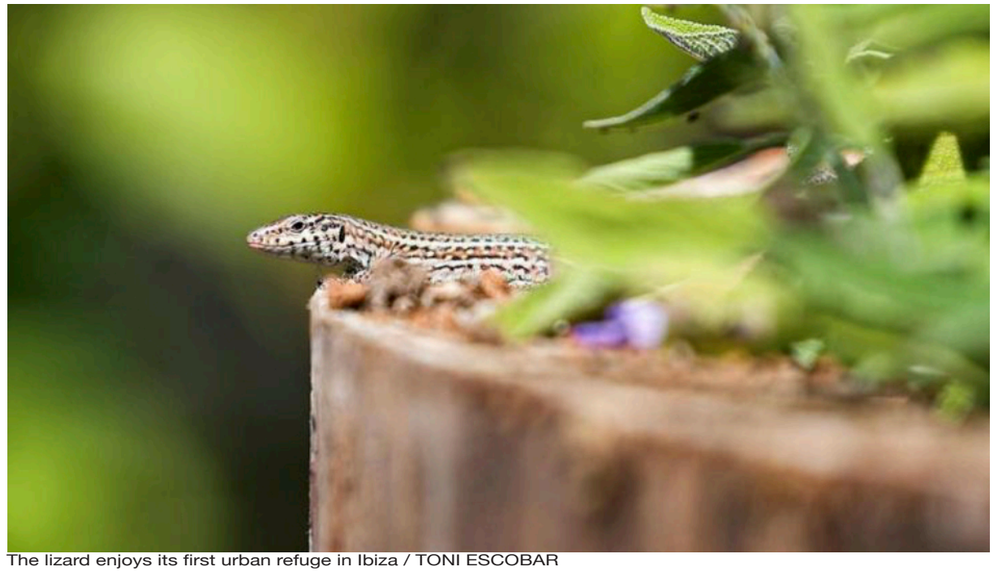


DIARIO de IBIZA

Impulsan la creación de reservas urbanas en Ibiza para proteger a la lagartija ibicenca

They are promoting the creation of urban reserves in Ibiza to protect the Ibizan wall lizard

The General Directorate of Natural Environment and Forest Management, through COFIB, has also developed a video and a manual of good practices to raise awareness of the importance and value of this native and endemic species.



The lizard enjoys its first urban refuge in Ibiza / TONI ESCOBAR

Redacción Digital

Ibiza 17 MAY 2024 12:16 Actualizada 18 MAY 2024 8:48

The Ministry of Agriculture, Fisheries, and the Natural Environment, in collaboration with the city councils of Ibiza and Formentera and with the support of the island councils, has promoted the creation of urban reserves to conserve and protect the Pityusic wall lizard (*Podarcis pityusensis*). With this initiative, the Directorate General of the Natural Environment and Forest Management, through the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), aims to establish measures to increase the density of this species and minimize the risks of predation it faces. During the presentation ceremony, which took place in Antoni Albert i Nieto Square in Ibiza, the Director General of the Natural Environment and Forest Management, Anna Torres, presented an example of an urban reserve, similar to the one that will now be available in all municipalities of Ibiza and Formentera.

In this regard, Torres emphasized that one of her goals "is to raise public awareness of the lizard and involve society in the understanding and conservation of this emblematic species." The Director General noted that the Pityusic lizard is a native and endemic species; that is, native and exclusive to the islands of Ibiza and Formentera. "It plays a crucial ecological role in insect control and also in seed dispersal. Furthermore, it has become a symbol of the coexistence of nature and human activities," Torres stated.

The Director General of the Natural Environment also explained that the lizard faces predation by introduced species, especially snakes, which eat them. Therefore, she insisted, "protecting them is essential to maintaining the natural balance and preserving the unique biodiversity of the Pityusics."

To carry out this project, the most suitable municipal parks have been identified, and the necessary and specific measures have been designed for each to support the biological requirements of the Pityusic wall lizard. Specifically, actions are being taken to increase safe refuges and the diversity of native vegetation; generate varied and attractive substrates; and enhance local biodiversity, especially that of invertebrates. Hazards to avoid have also been identified, such as waterlogged areas due to overwatering or pitfall traps where they can die (such as sinks or buckets), and the presence of predators such as snakes and cats.

Video and best practices manual

This methodology for protecting this species has been compiled in a best practices manual for the conservation of the Pityusic wall lizard in parks and gardens. Likewise, and for the first time, a video (and a short brochure) will be distributed to raise awareness of the importance and value of this species and to encourage private garden owners in urban areas, hotels, and schools to implement measures to protect the lizards.

These actions and the material to be disseminated are part of the Project to control and eradicate different invasive species in different habitats and geographical locations, which is funded by the PRTR-MRR through the Next Generation EU Funds, between 2022 and 2025. Furthermore, these lizard reserves contribute to the Urban Greening Programs of the European Biodiversity Strategy 2030, thereby providing gardens and parks with added nature conservation value.













Protect the lizard video / Govern Illes Balears.



IB3N Notícies

Refugis de pedra i fusta a jardins públics per salvar la sargantana pitiüsa

Stone and wooden shelters in public gardens to save the Pityusic lizard

17/05/2024



Esther De Miguel

The Balearic Government will launch a whole circuit of urban reserves in landscaped spaces to protect the Pityusic lizard, a native and endemic species. The first of these has been set up in the Plaça d'Antoni Albert i Nieto, in Vila. The reserve that has been created in this square is an example of the one that all the Pitiusas municipalities will have from now on. A total of 10 will be set up; 9 in Ibiza and one in Formentera. It consists of safe shelters, made of stone or wood surrounded by native vegetation. With this, the aim is to promote the diversity of local insects that will later be food for the lizards. Let us remember that these have been facing predation for almost a decade due to the introduction of snakes to the island.

Govern de les Illes Balears

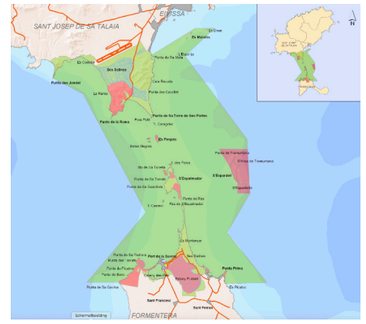
25è aniversari de la Reserva Marina dels Freus d'Eivissa i Formentera

25th anniversary of the Freus Marine Reserve of Ibiza and Formentera

27/05/2024



Parque Natural de ses Salines de Ibiza y Formentera



PERIÓDICO de IBIZA Y FORMENTERA

La plataforma 'Sargantanes o Serps' forma a unos 400 Voluntarios participantes en campañas contra las serpientes

The 'Sargantanes o Serps' platform trains around 400 volunteers participating in anti-snake campaigns



The 'Sargantanes or Serps' platform has highlighted that its network of volunteers now reaches every corner of Ibiza | Photo: Archive

Europa Press | Ibiza | 20/06/24 16:00

The 'Sargantanes o Serps' platform has provided assistance and training over the past three years to approximately 400 volunteers participating in snake-catching campaigns, delivering approximately 250 traps.

In a statement, the 'Sargantanes o Serps' platform emphasized that its network of volunteers now reaches every corner of Ibiza, currently focusing on the municipalities of Sant Antoni and Sant Josep, where the most captures are being recorded.

Among other activities, the group has promised to train and advise volunteers who want to collaborate in the campaign.

It is also carrying out activities to manufacture and distribute shelters for lizards and is collaborating on studies on the current status of the species in the Ses Salines Natural Park.

Regarding this last task, the platform has noted that it is "very important" work, providing data on lizard populations and their status. Last year, a species monitoring project was launched to accurately determine changes in the number of specimens.

For this work, areas such as the Camino de Can Blai, the Torre de sa Sal Rossa, and Cap des Falcó were explored.

Ibiza HEUTE

Ibiza: Viele Nattern und wenige Eidechsen

Ibiza: Many snakes and few lizards

Attempts to protect lizards on Ibiza and eradicate snakes continue. Various initiatives are fighting the spread of horseshoe snakes and ladder snakes. But the number of these lizards, once a symbol of the Pitiusas, is declining dramatically, at least on Ibiza.

24. JUNI 2024



The lizards typical of Ibiza are being decimated by the snakes. Photo: Rüdiger Eichhorn

Attempts to protect lizards on Ibiza and eradicate snakes continue. Various initiatives are fighting the spread of horseshoe snakes and ladder snakes. But the number of these lizards, once a symbol of the Pityusic Islands, is declining dramatically, at least on Ibiza.

Platform offers courses

One of the platforms that trains volunteers to set traps is "Sargantanes o Serps." Its members are environmentalists from "Amics de la Terra" and "GEN-Gob." Over the past three years, they have offered courses to 400 volunteers and distributed 250 traps to catch snakes.



This is how the trap works: The mouse lives in one part of the box. If the snake slips into the trap in search of prey, it can't get out. The mice are supposedly fearless. Photo: MBA

Protecting the Salines Natural Park

Currently, they're finding the most snakes in Sant Antoni and Sant Josep, but the snakes are found all over the island. Conservationists are trying to keep them away from the Salt Pans Natural Park. Many birds nest there, and the voracious snakes don't even stop at chicks.

What can you do?

What can you do? Anyone who wants to get involved can pay a deposit of €20 and receive a trap, mouse, food, a water dispenser, and, most importantly, a short training course. Here are the addresses: Amics de la Terra, Tel. 971 317 486 or WhatsApp 669 415 279. Hazel is English. info@amicsdelaterraeivissa.org, GEN-Gob phone: 971 390 674.

PERIÓDICO de IBIZA Y FORMENTERA

Aumenta el riesgo de extinción de la 'sargantana' pitiusa

The risk of extinction of the Pityusic lizard increases

International experts warn of the danger facing this endemic species



A 'sargantana' of the Pitiusas | Photo: R.I. - Archive

R.I. | Ibiza | 27/06/24 16:42

The Pityusic lizards have been under constant threat for years from the emergence of invasive species such as the horseshoe snake, which arrived from the Iberian Peninsula and has reproduced rapidly. Now, the International Union for Conservation of Nature (IUCN) has warned of the growing danger of extinction they face due to predatory activity on the islands.

In its Red List of Threatened Species, published this Thursday, the IUCN downgraded the status of the lizards endemic to Ibiza and Formentera. The lizard (*Podarcis pityusensis*) has dropped from "near threatened" to "endangered" after losing half its population in 2010.

IUCN experts point the finger directly at invasive species, naming the horseshoe snake. Snakes are thriving in Ibiza and Formentera due to the lack of predators to hunt them. This morning, news broke of a man with a nearly two-meter-long female snake in his home in Sant Joan.

DIARIO de IBIZA

Aumenta el peligro de extinción de la lagartija de Ibiza y Formentera

The Ibiza and Formentera lizard is becoming increasingly endangered

The IUCN publishes the annual update of its Red List of Threatened Species, which classifies them according to their greater or lesser risk of extinction.



The threat to the Ibizan wall lizard is increasing. / J.A. RIERA

EFE

Madrid 27 JUN 2024 13:57 Actualizada 27 JUN 2024 21:19

The Pityusic wall lizard, native to Ibiza and Formentera, is in increasing danger of extinction due to predatory activity by invasive species on those islands, the International Union for Conservation of Nature (IUCN) warned. The large lizard of Gran Canaria, the Gran Canaria smooth lizard, is also in danger.

The IUCN published this Thursday the annual update to its Red List of Threatened Species, which classifies them according to their greater or lesser risk of extinction. The status of the three species has worsened due to their habitual food supply for snakes not native to the Canary Islands or the Balearic Islands, which have decimated their populations.

In the case of Gran Canaria, the great lizard (*Gallotia stehlini*) has worsened its status from "minor caution," the lowest threat level, to "critically endangered," the lowest classification before being considered extinct in the wild.

noudiari.es
Eivissa i Formentera

La lagartija ibicenca ya es oficialmente una especie en peligro de extinción tras perder un 50% su población en 14 años

The Ibizan wall lizard is now officially an endangered species after losing 50% of its population in 14 years



Ibizan wall lizard. Image by Sebastián Candela.

Por **Laura Ferrer** — 27 junio 2024

The Ibiza and Formentera wall lizard (*Podarcis pityusensis*) has gone from being in the "Near Threatened" category to "In Danger" of extinction, with its population having fallen by 50% since 2010 due, above all, to the predation of the invasive horseshoe whip snake (*Hemorrhois hippocrepis*), according to the International Union for Conservation of Nature (IUCN), which periodically compiles the Red List of endangered species.

It should be remembered that the *Podarcis pityusensis* was already included on the IUCN Red List of Threatened Species in 2022, but its situation has worsened recently, according to the organization.

Thus, the great Gran Canaria lizard, the Gran Canaria mullet, and the Pitiusas lizard are the three species whose risk of extinction has been raised by the IUCN in the annual update of its Red List of Threatened Species. These three species have worsened their status due to being routinely eaten by snakes not native to the Canary Islands or the Balearic Islands, which have decimated their populations.

The list thus reveals the "astonishing" decline of endemic reptiles due to predation by invasive snakes.

A list of 163,049 threatened and endangered species

The Red List now includes 163,040 species, an increase of approximately 6,000 compared to last year.

Plant species such as the *Copiapoa* cactus, native to the coastal Atacama Desert in Chile, and the Bornean elephant are also among the threatened species, the IUCN revealed. Interestingly, in the case of the *Copiapoa* cactus, deforestation has a lot to do with it, as they have become popular on social media, where traders display and sell these cacti.

The 2024 update also highlights the Asian elephant in Borneo as an endangered species. It is estimated that only about 1,000 Bornean elephants remain in the wild, according to the IUCN analysis.

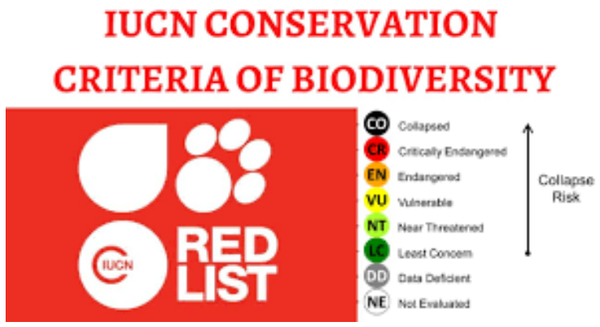
The population has declined over the past 75 years primarily due to extensive logging of Borneo's forests, destroying much of the elephants' habitat. Conflicts with humans, habitat loss due to agriculture and timber plantations, mining and infrastructure development, poaching, exposure to agrochemicals, and vehicle collisions also threaten the species, according to the IUCN.

The 'greatest recovery' of a species

In a more positive development, conservation efforts have brought the Iberian lynx back from the brink of extinction, increasing the population from 62 mature individuals in 2001 to 648 in 2022 and to more than 2,000 today.

Established in 1964, the International Union for Conservation of Nature's Red List of Threatened Species has evolved to become the world's most comprehensive source of information on the global conservation status of animal, fungal, and plant species.

The IUCN Red List is a critical indicator of the health of the world's biodiversity. Much more than a list of species and their status, it is a powerful tool to inform and catalyze biodiversity conservation actions and policy changes, which are critical to protecting the natural resources we need to survive.



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Editores:
Andreu Rotger y Roberto C. Rodríguez-Caro
C.e.: editor_bahe@herpetologica.org

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Manuel E. Ortiz Santaliestra

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EDITORIAL

Cambio de categoría en la Lista Roja de la IUCN para *Podarcis pityusensis*, *Gallotia stehlini* y *Chalcides sexlineatus*

El pasado 27 de junio, la UICN (Unión Internacional para la Conservación de la Naturaleza) actualizó las categorías de amenaza en su Lista Roja para 3 reptiles endémicos de nuestras islas.

Por un lado, la lagartija de las Pitiusas (*Podarcis pityusensis*) ha pasado de Casi Amenazada (NT) a En Peligro (EN), subiendo dos categorías. El cambio se ha producido a raíz de una petición de nuestra socia y vocal de Invasiones Biológicas Elba Montes, que fundamentó con dos publicaciones científicas que forman parte de su tesis doctoral. En estas publicaciones los autores describen los estragos que la invasión de la culebra de herradura (*Hemorrhois hippocrepis*) está provocando en las poblaciones de *P. pityusensis* en la isla de Ibiza, provocando una reducción poblacional que cumple con los criterios de la UICN para ser incluida en la categoría EN.

Por otro lado, la UICN también ha cambiado de categoría el lagarto gigante de Gran Canaria (*Gallotia stehlini*) y la lisa de Gran Canaria (*Chalcides sexlineatus*), cuyas poblaciones se han visto reducidas drásticamente debido al avance de la invasión de la culebra real de California (*Lampropeltis californiae*). Ambas especies estaban listadas como

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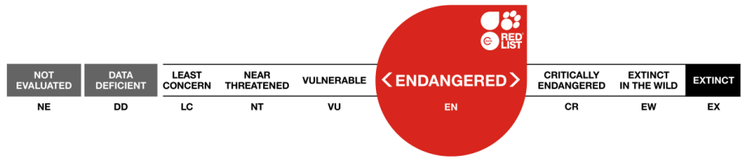
Podarcis pityusensis, Ibiza Wall Lizard

Assessment by: Bowles, P.



View on www.iucnredlist.org

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PERIÓDICO de IBIZA Y FORMENTERA

Los jardines públicos de Sant Josep, para el refugio y reserva de 'sargantanes'

The public gardens of Sant Josep are a refuge and reserve for lizards

Most of the municipality's green areas are suitable refuges for this endemic species.



Image of the Sant Josep Plenary Session this Thursday | Photo: Sant Josep City Council

R.I. | Ibiza | 27/06/24 17:15

The Sant Josep de sa Talaia City Council Plenary Session today unanimously approved declaring the municipal public gardens a refuge and reserve for lizards. The institution itself seeks to implement the necessary measures and actions to promote the presence and guarantee the protection and conservation of this native species.

The conservation of the Pitiusas lizard, a native and endemic species of our islands, is threatened by several factors, the City Council indicates. The disappearance of its natural habitats, climate change, territorial fragmentation, and the introduction of invasive species and predators can all affect its conservation status.

In fact, the accidental introduction of snakes led to the approval of Decree Law 1/2023, of January 30, on extraordinary and urgent measures for the protection of the Pitiusas wall lizard (*Podarcis pityusensis*) and the Balearic wall lizard (*Podarcis lilfordi*) in 2023. Among other measures, the decree establishes restrictions on the entry of certain trees into the Balearic Islands, in order to minimize the accidental arrival of snakes while they winter inside the trunks. It also classifies the Pitiusas wall lizard as threatened, in the "Vulnerable" category, although this morning the International Union for Conservation of Nature classified the Pityusic wall lizard as an "endangered" species.

The Sant Josep de sa Talaia City Council has joined the effort to protect the Pityusic lizard, carrying out several initiatives. One of these initiatives is collaborating with the Sant Josep Hunters Society to install snake traps in various locations throughout the municipality and distribute them to the public in recent years. At the same time, the city is in contact with several organizations that have joined forces to protect the Pitiusa lizard, such as the initiatives Sargantanes o Serps, SOS Salvem sa Sargantana Pitiüsa o Protegim ses sargantanes.

Recently, the City Council has been collaborating with the Species Protection Service of the Balearic Islands Government (COFIB) to create lizard refuges in public gardens and parks. To date, work has begun on three lizard refuges in the municipality's public gardens (in the areas of Can Raspalls, Caló de s'Oli, and Port des Torrent).

Future Vision

Additionally, the municipal green areas maintenance contract, which is currently being put out to tender, already includes the possibility of installing 80 lizard refuges and vegetation that favors this species, as well as the possibility of expanding to more units if necessary.

Even so, it has been found that most municipal gardens located on public roads, as well as the gardens and green areas of municipal or public facilities (schools, health centers, sports centers, etc.) are suitable locations that can act as lizard refuges. In some cases, small improvements can be made to incorporate more suitable vegetation or refuge areas.

For this reason, the gardens and public green areas of the municipality of Sant Josep de sa Talaia are considered to have great potential to become refuges and reserves for lizards. Many of the green areas would not require any changes or adaptations, but in some cases, it is anticipated that during 2024 and the following years, actions will be carried out to improve their condition to benefit the species and ensure its maximum protection and conservation.

IB3N Notícies

La sargantana eivissenca en imminent perill d'extinció

The Ibizan lizard in imminent danger of extinction

The horseshoe whip snake is eliminating them at a rapid pace and the only solution to save the species is to create small redoubts.

07/07/2024



Ivonne Arañó

The lizards of Ibiza are in danger of extinction. A decrease in the number of individuals has been noted for a long time, the cause: the horseshoe snake that was introduced to Ibiza in 2003.

In 2010 it was noted that the presence of the lizards had been reduced by half in just 8-10 years. This danger has been growing exponentially. The cause is the horseshoe snakes introduced to Ibiza in 2003 with the ornamental olive trees brought from abroad.

The only option to save this species is to do like Noah's ark and preserve small redoubts so that, once the snakes have disappeared, we can try to repopulate this species.

DIARIO de IBIZA

Las serpientes han colonizado ya los islotes de Santa Eulària

Snakes have already colonized the islets of Santa Eulària

The lizard population of S'illot de S'Or may have disappeared and that of S'illa de Santa Eulària has been reduced.resampling of lizards in Ibiza and Formentera.



S'illa de Santa Eulària from Caló des Gat. / CRISTINA AMANDA TUR @TERRITORIOCAT



Cristina Amanda Tur
07 JUL 2024 6:01 Actualizada 07 JUL 2024 9:00

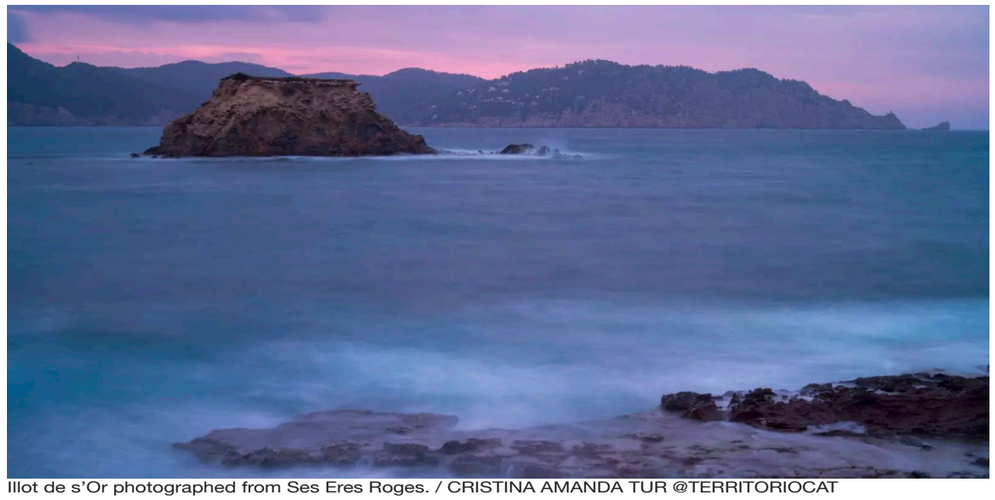
The worst predictions have come true. Snakes have reached some of Ibiza's islets and threaten the survival of the unique populations of endemic lizards that inhabit them. Not only that, but they also endanger the colonies of seabirds that nest on these small islands, as they can prey on their eggs and chicks. This is the latest in the chronicle of an invasion.

Snakes—specifically the horseshoe snake (*Hemorrhois hippocrepis*)—arrived a few years ago on S'Illot d'Or (S'Hort or S'Ora), and this small area, northwest of Tagomago, could be the first satellite island of Ibiza where we can declare a unique population of the Pityusic wall lizard (*Podarcis pityusensis*) extinct. "We have data on excellent abundance in 2017. In 2019, we returned to the islet, in very good condition, and we didn't see any more. We've been back a couple of times since then and haven't found a single lizard again. Neither time. And on that islet, the Cofib (Balearic Fauna Recovery Consortium) captured some snakes." This is explained by herpetologist Valentín Pérez Mellado, professor of Zoology at the University of Salamanca, who for decades has led work related to monitoring lizard populations in the Pityusics, Mallorca, and Menorca.

In an interview on IB3 radio's science and environment program, Nautilus, the specialist emphasized that the disappearance of the islet populations, which constitute what are known

as significant evolutionary units, represents a true tragedy for conservation. "It's extremely serious because these units are irreplaceable; they are evolutionary phenomena that have existed for hundreds, thousands of years in some cases, and the isolation in which they evolved has disappeared."

The next islet whose situation needs to be reported in this particular war report is Santa Eulària, a small island measuring 46,772 square meters located south of Punta Arabí. In this area, the Cofib has already carried out snake trapping operations. Recently, a team of researchers led by the Animal Demography and Ecology group at Imedea (Mediterranean



Illot de s'Or photographed from Ses Eres Roges. / CRISTINA AMANDA TUR @TERRITORIOCAT

Institute for Advanced Studies) visited the islet while monitoring gull populations and found three snakes there. "Just as we were there, we saw one swimming in," said researcher Ana Sanz Aguilar on the Nautilus. And she expanded the list of victims of the serpentine invasion with her experience: "They have also entered Malgrats (Calvià), and we have seen remains of storm petrels (*Hydrobates pelagicus*) in the stomachs of snakes captured on these islands. "It is a very serious threat to all the diversity of fauna we have on the islets."

Although the snakes are dispersing to islets in the east and north of Ibiza (some close to Portinatx), the first indication of the possibility of them colonizing the islets was recorded to the west, when a molt appeared on S'Espartar a few years ago. "Measures were immediately taken and traps were set," the herpetologist explains. "Annual monitoring is carried out on those islets, and the islet is rechecked year after year, and no further sign of a snake has appeared. We don't know if an individual actually crossed and then died there, but I've been there several times since that snake shirt was found and nothing else has been seen."

And it's no coincidence that the eastern islets are now being invaded by snakes. "The population has grown a lot, and that increases the chances of a snake reaching a beach, of a snake entering the water, and of it reaching an islet." Regarding this increase, Pérez Mellado's information on the situation in the Santa Eulària area and surrounding areas is also worrying:

"In 2017, we sampled the entire island, and there were wonderful populations of lizards there. Those populations have literally disappeared today; in other words, not a single specimen can be seen." And if the lizards have disappeared, it's because there are a large number of snakes, "and that has increased the chances that the islets visited were those in that area and not those in the western part."

However, despite all this, the fact that the snakes venture into the sea to reach the islets "is totally surprising." The horseshoe snake is a continental species, present in North Africa and the Iberian Peninsula, "and there, there was no evidence that it could swim to the islets, especially in the sea, in salt water. And yet, this phenomenon is occurring in Ibiza and Mallorca." At least for now, this dispersal can only be explained by a dramatic increase in the snake population on the main island.

Initially, when snakes began to be seen on the islets or in the water, experts thought they were perhaps sleeping in small boats on the shore and then, when they emerged from their hiding places, they vaguely jumped into the water to reach the smaller islands, which were closer. However, it has now been confirmed that these snakes arrive directly from the mainland.

And, at this point in the war report, it's worth highlighting that, although the invasion began with three different species of snake, the Montpellier garter snake (*Malpolon monspessulanus*) has not prospered, and the ladder snake (*Zamenis scalaris*) does not appear to pose a serious problem for the lizard populations. In other words, the horseshoe snake is the main concern. Valentín Pérez Mellado believes that the fact that Formentera still has very high densities of lizards is due—in addition to the intensive capture campaigns—to the fact that the white snake is the most prevalent on the smallest of the Pityusic Islands. "It seems to be a more crepuscular snake [more active at dusk] and is probably for that reason less inclined to hunt lizards."

Supporting this hypothesis that this species of snake is less harmful to other snakes, the herpetologist also points out that the snake has been present on the island of Menorca since time immemorial, where it coexists with the Italian wall lizard (*Podarcis siculus*) without any apparent problems. Furthermore, it also coexists with the Balearic wall lizard (*Podarcis lilfordi*) on l'Illa d'en Colom, northeast of Menorca, and there is no interaction that is harming either of the two reptiles. What's more, Menorcan wall lizards share territory with another snake, the hooded snake (*Macroprotodon mauritanicus*), which does capture lizards, but "doesn't seem to have been a problem for the Menorcan populations either."

In other words, if they were going to import a snake from the Peninsula, it seems that Ibiza has managed to bring in the one that could cause the most harm to its endemic and emblematic lizards.

And in this whole panorama, there's another factor to consider: the horseshoe snake, a snake of North African origin, has benefited from the high temperatures recorded in recent years. "It occupies a large part of the Iberian Peninsula, but especially the Mediterranean areas, although it is increasingly moving further north as a result of climate change. Global warming favors a thermophilic species like this," adds the herpetologist, who associates this snake with warm places and points out that with high temperatures "it can be active practically all year round, which means its metabolism is faster and it needs more food."

We mustn't forget that the fate of the hundreds or thousands of snakes caught in Ibiza and Formentera is immediate death, eliminated by clubbing or a blow to the head. It's fair to wonder if, in the 21st century, a less archaic way to end a biological invasion couldn't be found. In this regard, Valentín Pérez Mellado asserts: "It's a delicate matter. The solution would be to catch the snakes alive, keep them alive, and then release them on the Peninsula, but we have to consider what this entails logistically, organizationally, and costly, and consider whether that's feasible when hundreds and hundreds of snakes are being captured in Ibiza each season. We have to take that into account. This is a species protected by state law, and of course that would be desirable, but putting it into practice is very complex." The feasibility of relocating the snakes could have been studied when the invasion was in its early stages, but this aspect of the issue can also assess the response capacity of the crisis managers, who were already aware of the arrival of the first snakes in 2003 and have witnessed their formidable expansion, especially since 2010. In all these years, no biosecurity strategy has been established to stop the entry of olive trees and nursery plants, which continue to bring in snakes and reinforce the populations of those already born in Ibiza.

Experts believe that the possibility of eradicating snakes from Ibiza is fading away by the day, and the only hope is to control their populations. And Pérez Mellado affirms that we will only have a chance of achieving this control and saving the lizards if individuals from the Iberian Peninsula stop entering olive trees and ornamental plants, as they represent a "constant reinforcement" of the populations already born on the island. If legislation favors free trade over conservation, we must reconsider the planet's current priorities.

Regarding the possibility of restocking lizards on islands that lose their populations in the future, herpetologist Valentín Pérez Mellado emphasizes that these populations are irreplaceable. “The goal of conservation biology is to preserve evolutionary processes, and if the original population has disappeared, the evolutionary process has died. There's no point in reinforcing that population. It would mean starting from scratch, and with no guarantee of success, either.”



VALENTÍN PÉREZ MELLADO
PROFESOR EMÉRITO

“The goal of conservation biology is to preserve evolutionary processes, and if the original population has disappeared, the evolutionary process has died. There’s no point in reinforcing that population. It would mean starting from scratch, and with no guarantee of success, either.”

IB3 Notícies

La serp verda o "malpolon" ha aparegut per primera vegada en molts anys a l'illa d'Eivissa

The Montpellier snake has appeared for the first time in many years on the island of Ibiza

10/07/2024



PERIÓDICO de IBIZA Y FORMENTERA

Revientan jaulas para cazar serpientes en Ibiza

Snake cages burst open in Ibiza

Sant Josep City Council warns it will take action



One of the vandalized snake traps | Photo: Sant Josep City Council

Juan Gordillo Tur | Ibiza | 11/07/24 16:54 | Actualizado a las 18:15

Several snake traps have been vandalized in the municipality of Sant Josep, with their metal grilles broken and rendered completely unusable. The Sant Josep City Council condemns these acts, which endanger the snakes.

"This is an irresponsible act that we cannot allow," the council states on its Instagram account. The Sant Josep City Council warns that it will be vigilant against any such acts of vandalism through increased surveillance. It also reminds everyone that breaking the snake traps carries penalties.

Some users point out that the motivation behind these acts could be a desire to free the mice in the cages. However, it's worth remembering that the rodents are in a separate compartment, safe from the trapped snakes, and serve as bait to lure the snakes into the trap.
Its release, as the Sant Josep Hunters' Society pointed out after discovering a venomous Montpellier garter snake, involves providing more food for the snakes, encouraging them to survive and reproduce.

The Camí de sa Talaia, as another user points out, is reportedly full of vandalized cages.

The Government echoes this sentiment

The Regional Ministry of Agriculture, Fisheries, and the Natural Environment has expressed concern about this incident on social media, joining the Sant Josep City Council's awareness campaign. "The conservation of the Pityusic lizard is everyone's responsibility," the Regional Ministry states.

It also indicates that the emblematic species of Ibiza and Formentera "is facing predation by introduced species" on the islands, "especially snakes." "For these reasons," the Ministry concludes in its publication, "it is essential that the measures intended to protect" the lizards be respected.

noudiari.es
Eivissa i Formentera

Sant Josep promou la captura de serps per protegir la sargantana en col·laboració amb la Societat de Caçadors

Sant Josep promotes the capture of snakes to protect the lizard in collaboration with the Hunters' Society

Por **Redacción** — 16 julio 2024



The City Council of Sant Josep de sa Talaia is very aware of the need to protect the Pityusic lizard from the threats present in the municipality, including habitat loss, territorial fragmentation, climate change or the presence of invasive predatory species.
One of these invasive species has been snakes, which have been spreading across the island of Ibiza for almost two decades and are currently detected in almost the entire territory.

The Spanish Catalogue of Invasive Exotic Species (art. 64 of Law 42/2007 and Decree 630/2013) catalogues all snakes of the Colubridae family as invasive species for the islands of Ibiza and Formentera. Therefore, it is up to the administrations to carry out the necessary actions to avoid or reduce their presence and their impact on biodiversity.

Given the impact of the presence of snakes on the lizard population, in 2023 Decree Law 1/2023 was approved, on extraordinary and urgent measures for the protection of the Pityusic lizard (*Podarcis pityusensis*) and the Balearic lizard (*Podarcis lilfordi*). Among other measures, the decree establishes restrictions on the entry of certain trees into the islands, in order to minimize the accidental arrival of snakes while they hibernate inside the trunks. It also lists the Pityusic lizard as threatened, in the vulnerable category.

In line with the measures adopted by other administrations, the Sant Josep de sa Talaia City Council, through the Department of the Environment, Sustainability and Coast, also wants to collaborate in this fight to the extent of its possibilities.

The collaboration with the Sant Josep Hunters Society aims to take advantage of the experience and knowledge of this group of the municipality's territory and the availability of land from its members for the location of traps in strategic areas.

For this reason, snake traps have been installed in the rural areas of the municipality, on land owned by members of the hunting society, in order to capture as many snakes as possible during the time when they are most active.

The Hunting Society is a non-profit organization that manages the Sant Josep hunting reserve, the largest on the island of Ibiza. It has approximately 390 members and manages an area of about 9,500 hectares (95 km2) in the municipality of Sant Josep.

Task development

Between the months of May and November, the following actions are being carried out:

Review and repair of the traps.
Installation of 100 snake traps.
Review and maintenance of the traps and care for mice.
Removal and management of captured snakes.
Removal of the traps at the end of the campaign.
To carry out these tasks, the Hunters' Society has made available a person (field ranger) with a vehicle to be able to move around all the areas where the traps have been placed.

Results

Since 2021, the Sant Josep de sa Talaia City Council has collaborated with the Hunters' Society for the Sant Josep de sa Talaia Snake Control Campaign.

During this time, an annual campaign has been carried out and more than 800 snakes have been captured.

The cost of the campaign this year 2024 is €16,999.99 (VAT included).

DELEGACIÓ D'EIVISSA
Federació Balear de Caça

PERIÓDICO de IBIZA Y FORMENTERA

Un vecino de Ibiza lanza un 'crowdfunding' para salvar a la 'sargantana' ibicenca

An Ibiza resident is launching a crowdfunding campaign to save the Ibizan lizard



Image of a lizard | Photo: Gisela Revelles

Agencias | Ibiza | 24/07/24 16:21

An Ibiza resident has decided to join the numerous efforts being undertaken by organizations and authorities to save the Ibizan wall lizard by launching a crowdfunding campaign.

In a statement sent this Wednesday by the Go-fund-me platform, which collects donations, the resident, named Mike, pointed out that this native species is threatened by the invasion of snakes introduced to the island through the importation of foreign trees.

Faced with this critical situation, Mike has launched an initiative to raise funds and purchase state-of-the-art traps with the goal of eradicating the invasive snakes.

He explains that with his group of more than 1,700 members, he takes weekly walks around the island while setting and collecting these traps to protect the Ibizan wall lizard and preserve Ibiza's biodiversity.

In the statement, he explains that the "lack of free outdoor recreational activities" on the island led Mike to start the hikes, which have become a way to "connect" with nature and "raise awareness" about the importance of protecting native species.

Mike called for "solidarity and donations" to support this "urgent" cause and emphasized that community unity around this cause "is key" to saving the Ibizan wall lizard and ensuring the island's natural wealth for future generations.

DIARIO de IBIZA

Serpientes: un desastre por negligencia

Snakes: a disaster due to negligence

The insidiousness of the Balearic Government for two decades enabled the expansion of snakes throughout Ibiza.

Opinión | Editorial

DI

Editorial

28 JUL 2024 6:36

The colonization of the island of Ibiza by snakes is the consequence of the negligence and passivity of the Balearic Government, as it did not adopt measures to avoid the environmental disaster that the introduction of snakes represents for the Pitiusics. The first snake was found in Ibiza in 2003 and even then environmentalists warned that precautions had to be taken to prevent them from reaching the islands hibernating in the trunks of olive trees. The main victim of the expansion of snakes is the endemic Pitiusic lizard, *Podarcis pityusensis*, which has 22 cataloged subspecies that are not found anywhere else in the world.

Throughout these more than twenty years that have passed since the first snake was discovered, parties of different political stripes have been at the head of the Government - and the Ministry of the Environment - but the ineptitude when it comes to avoiding a catastrophe ecological situation like the one we now suffer has been common to all. It is possible that the Mallorcan vision and distance from the problems of the smaller islands that traditionally characterizes the Government explains the inaction that politicians and senior officials have shown regarding the serious problem of the expansion of snakes through Ibiza, Formentera and their islets. They cannot claim that they did not know: throughout these years we have had precise and permanent information on how the snakes were spreading to places where they did not exist before, and even swimming to the islets, whose ecological balance is extremely fragile, and where A predator like this is a danger for lizards but also for the birds that nest on them.

The towel has been thrown in for years: on the island of Ibiza it is now impossible to eradicate snakes and the only hope is to contain them with the distribution of traps. In Formentera the plague is more localized in the Mola area, but it is a matter of time before it spreads throughout the island. The latest data is very alarming, although it has not surprised anyone: in just four months almost as many snakes have been captured in Ibiza as in all of last year, a figure that measures the progression of this unstoppable invasive species that is decimating the population of lizards to the point of putting them in serious danger and, as it does not have any natural predator, it has developed gigantism (they are larger than the specimens from the peninsula). The notable increase in the number of captures is not explained solely by the greater number of traps distributed throughout the island: it is due to the fact that the snake population is growing exponentially, and will become larger, as the manager of the Consortium for the Recovery of the Fauna of the Balearic Islands (Cofib), Miquel Puig.

The person in charge of Cofib himself maintains that it is possible that on some of the islets the endemic subspecies of lizard has already disappeared due to the arrival of snakes. Now, the only thing left to do is try to contain with traps an invasive species that has become a pest that threatens the survival of an ecological jewel such as the Pitiusic lizard with its 22 subspecies. The disastrous and irresponsible environmental management by politicians and technicians has led us in just twenty years to a disaster that is no less terrible because it was announced by environmentalists and scientists.

PERIÓDICO de IBIZA Y FORMENTERA

Una experta aboga por sacar a las 'sargantanes' de Ibiza para conseguir que sobrevivan

An expert advocates removing the lizards from Ibiza to ensure Their survival

Elba Montes expresses her deep concern for the survival of the Ibizan lizard



Elba Montes, snake expert, shows one

Gisela Revelles | 04/08/24 0:30

If anyone knows snakes very well, it's Elba Montes (Santiago de Compostela, 1983). With a PhD cum laude in Biodiversity, she was one of the first experts to work against the invasion of these animals in Ibiza from the Consell (Spanish Consell). She did so alongside Jaume Estarellas during 2019 and 2020, when the regional government had not yet taken any action against these predators that have jeopardized the survival of the lizards. Montes, deeply concerned about the bleak future of Ibizan lizards, now works for the Spanish Herpetological Association, where she is a member of its board of directors and in charge of biological invasions.

— What are biological invasions?

— It's something that happens because of humans. Voluntarily or involuntarily, we move organisms into territories that are not necessarily their natural range. This causes problems. For an animal or plant to be considered invasive, it must not only have reached that point, it must have established itself, reproduced, and caused harm to biodiversity or the economy.

—At the national level, are there serious situations due to these biological invasions?

—Yes, we have, for example, the zebra mussel in the Ebro Delta, the water hyacinth in the rivers, the reeds... They cause many problems for biodiversity, for agriculture, for the economy...

—But there are cases in which they do take advantage of them, like crayfish or blue crabs.

—Yes, sometimes this economic profitability is achieved. But, although some cases are economically profitable, we can't forget that we are destroying the ecosystem. And that, in the end, means we lose a treasure that may only exist in that place. This is what we're seeing with the sargantans. They've already disappeared from an islet and they're not going back.

—In the case of Ibiza, the Montpellier snake has now been added to the other two types of snakes that had been detected. This has raised even more alarm bells.

—We must remember that this snake was already in Ibiza between 2003 and 2010. After that, it stopped being seen, and it seems there weren't enough specimens to establish a population. Now a new specimen has appeared, and we don't know if it's a one-time occurrence or if there is a population and more of them will start to be seen. It's a snake, not a viper. It's an opisthoglyphous snake, meaning it has fangs in its throat that help it finish off its prey. Those fangs are capable of injecting venom. If you were to pick up one of these snakes and stick your finger all the way into its mouth, it could inject that venom into you.

—You have to be a little bit clever to do something like that...

—Yes [laughs], but if someone were to do it, the sting would be similar to that of a wasp. We're not talking about the venom of a viper, which can cause serious problems. The viper, moreover, is a very large snake, with males reaching up to three meters long. But it's harmless as long as you don't confront it and start acting like a barbarian.

—Why aren't there usually snakes on island territories?

—It depends on the territories. In the case of the Mediterranean islands, when they were formed there was no connection to the mainland, and no snakes ever crossed. There have been historical introductions. It is known that, in Roman times, snakes moved between territories and were introduced to some Mediterranean islands. In the case of Ibiza and Formentera, this was not the case, and it's not entirely clear why. Legend has it that Pliny the Elder said the soil of Ibiza was sacred and repelled vermin. Perhaps that's why they weren't introduced. However, it seems that a dwarf viper arrived on Ibiza through the sediments that came from the Peninsula. But it's not entirely clear when this might have happened. There are indications that these vipers disappeared with the arrival of humans and the introduction of the garden dormouse, an animal that can eat them because it is resistant to viper venom.

—And at what point do they arrive now and become a problem?

—The first time was in 2003. It's the first snake recorded in a report by the Government's Environmental Agents. But some had already been seen in 2000. This coincides with the boom in the movement of olive trees from the south of the Peninsula. At that time, it wasn't known if they had already become an invasive species, if there was an established population, or if they were causing any harm. It was in 2010 that the boom began. They began to be seen everywhere, and farmers reported seeing fewer lizards. That's when we already saw the tangible impact of this invasion. In my thesis, I was able to study that where there are many snakes, there are no more lizards. Not only because they eat them, but also because the lizard

population is declining because they don't reproduce at the same rate.

—Do they eat the eggs?

—No, they eat the lizards very quickly. There are a lot of snakes, they eat quickly, and they wipe out the population.

—Without lizards, how serious would the appearance of snakes be in Ibiza and Formentera?

—It's hard to say. Snakes are surviving here because they feed on something. If there weren't lizards, they would feed on mice, rats, birds... Which species would fare worse? No way of knowing. They could go after the virot, the Balearic warbler...

—You're an expert on snakes, and I understand you like them. You must see something positive in a creature that most of us don't see any charm in.

—That's a very good question. The snake has the bad luck of having a very bad reputation. It's an animal that humans don't like. If we were talking about a beautiful and adorable mammal, everyone would scream if we said it should be killed. In Australia, for example, the rabbit was introduced, which is a little animal that everyone likes, but it's causing tremendous problems there. In the case of snakes, people don't like them, and it's easier to fight the invasion because we have everyone's help. However, the snake isn't to blame for anything. It's an animal that has a function in its native ecosystem and eats, for example, mice. With respect to humans, that is its most important function. But in its native habitat, it eats other types of animals and plays a role in the food chain of that ecosystem. Obviously, I like snakes; they're beautiful animals, and they're not to blame for anything. It's been very difficult for me to complete my doctoral thesis, which revolved around killing animals, and that's not pleasant at all.

—It's understandable that you like them enough to dedicate years of your life, effort, and work to studying them, and it seems contradictory that we're now seeking you out as an expert on how to eliminate them.

—Yes, it's contradictory, and it's sad that we have to deal with this now. I insist, since they're animals that people don't like very much, citizens get involved. That wouldn't happen with other animals. For example, cats cause a brutal amount of havoc to the biodiversity of the islands. Measures should be taken, but who dares?

—Another animal that generates a lot of disgust is cockroaches, and nothing is done about them.

—[Laughs] You're right. It's an animal that not even I like.

—There are places that invest huge amounts of money and resources to fight the snake invasion. Should we do the same in Ibiza?

—I was lucky enough to be able to go to Guam, a Pacific island belonging to the US that has the same problem as Ibiza. Snakes arrived there during World War II, and they didn't realize it until the 1990s. It's been a disaster because they've wiped out a lot of endemic species. You walk through the forest there and you don't hear any birds. It's incredible. The US spends a lot of money fighting this invasion. Plus, they're tree snakes that climb power lines and cause many power outages. The economic damage is significant, which is why they spend more money. There have even been cases of babies bitten. But the point is that they take it more seriously there than in Spain and the Balearic Islands. It's a matter of political priorities. The role of the media and scientists is to warn about what's happening and the seriousness of the issue, and the role of society and politicians is to say that this is a priority. We can't do

more.

—As an expert, what do you think would be the most effective solutions to eradicate snakes in Ibiza?

—Trapping efforts must increase and cannot stop. Although snakes can no longer be eradicated from the island, these efforts must be maintained and increased because it's the only way for snakes and lizards to coexist. There must be few snakes for the lizard populations to survive. On the other hand, in the past it would have been necessary to protect areas where there were no snakes, establishing action protocols that would be quickly activated at the slightest sighting. This wouldn't make much sense today because they're already everywhere. On the islets, things are getting out of hand because so many snakes are arriving.

—How do they arrive?

—By swimming. Snakes are animals perfectly designed for swimming. Their natural movement on land is perfect for swimming. The horseshoe snake, in particular, swims very well. On the islet of s'Ora, a subspecies of lizards had already become extinct. And it seems the same thing is happening on other islets as well.

—And what can be done?

—Seeing all this, the only thing left for us right now is ex situ conservation, that is, collecting lizards and placing them somewhere else off the island or in facilities that are equipped to preserve their genetic biodiversity. Otherwise, they'll disappear at an unknown speed. We're going to run out of them. Now we need to monitor all lizard populations and see what's happening in real time.

—They're also building shelters for lizards all over the island.

—Yes, and I think that's great. But we have to consider that snakes can also get there. We're not really protecting the lizard with this shelter if a snake can get in. We're protecting it a little, yes, but we're not doing much.

—On Guam, walls are built to make it difficult for snakes to get in. Should something like that be done here around the shelters?

—Indeed. And yes, it should be done. If you build a shelter for lizards, it has to be snake-proof. In Guam, they build walls with metal bars, and in ports and airports, they build quarantine areas surrounded by walls that end in overhangs that make it very difficult for the garter snake to get in. You have to keep in mind that snakes like the horseshoe snake are very good climbers. And we need to build protected enclosures with traps inside. Furthermore, the entry of olive trees in Ibiza should be controlled; it's essential. It should have been cut down years ago, at least during the times of year when we know that snakes can hibernate inside or that there may be eggs in those olive trees. I proposed it years ago, that olive trees could only be allowed in during spring, and they would have to spend a quarantine period in a snake-protected area filled with traps. They should be there as long as necessary.

—But it's something that depends on the State because the port and the airport are its responsibility.

—There's a Government regulation that stipulates that olive trees can only arrive in spring, but I don't know if it's being controlled. Without doing this, what we're seeing with the Montpellier garter snake will happen. And it could happen with other species like vipers or scorpions.

—Are these measures implemented in other parts of Spain?

—In the Canary Islands, they have a similar problem with a California garter snake. Someone had them in a terrarium, and it's unknown if they released them or if they escaped. They have a serious problem in Gran Canaria and have requested funding for a Life Project, and they carry out much more thorough captures than they do in Ibiza. I get the feeling they take it a little more seriously there.

—Here, in the end, it all depends on the volunteers.

—Look, the species protection service may have limited resources. The government does what it can. And the role of volunteers shouldn't be underestimated. Social involvement is very good and very important for cohesion in a project to eradicate an invasive animal. But that doesn't mean the administration doesn't take things more seriously.

—The COFIB has recently reported the vandalism of snake traps: they remove the mice, move the boxes, and even release the snakes. What can be done?

—Animal rights activists do this. I feel sorry for what's happening. Those mice live very well. They're separated from the compartment where the snake enters, they have food and water, they're cared for... I can think of few circumstances in which a laboratory mouse lives so well, really. It saddens me because the COFIB and the volunteers are doing extremely important work to try to save the biodiversity we have in Ibiza, which is unique in the world, and I don't know what they imagine the mouse is suffering. I'm very sensitive, and I see that the mouse is doing very well.

—What future awaits the lizards as things stand right now?

—Very bleak. That's all I can tell you. Furthermore, it's being proven that wherever snakes arrive, they wipe out the lizards more and more quickly. As the invasion advances, they eat them faster. So, we're at a point where we need to take much more forceful measures because, otherwise, we'll run out of lizards. And I wouldn't stop doing ex situ conservation, whether in Ibiza or off the island, somewhere they have experience with these types of measures. It's about having a lizard reservoir in a place where snakes can't enter.

—Finally, there's constant evolution in the animal world. Could lizards be destined to disappear due to the arrival of a stronger species and their inability to adapt?

—It's a question I like. There's an animal rights movement that thinks this way, that believes that humans are part of nature and that if they move animals, it's a natural process. The question we must ask ourselves, then, is whether genocide is also part of nature and, therefore, should be allowed to happen. This example opened my eyes a long time ago. I also thought that everything was part of nature. But humans have a conscience and responsibility. If, because of us, a species is disappearing that otherwise wouldn't be disappearing, I understand that we have a responsibility to repair that damage, or at least to try. It's a question of responsibility. If we think everything is a natural process, then we don't do anything and we don't worry about anything.

—I understand what you're saying, but perhaps we're fighting against the impossible, given that the lynx isn't capable of evolving in the face of this threat.

—But we have the example of the Iberian lynx. It was on the verge of extinction, and now we have established populations. This wouldn't have happened if humans hadn't intervened. In other words, we're taking actions that harm many species, and the least we can do is try to make up for it a little.

IBIZA KURIER
Die Lokalzeitung für Ibiza und Formentera in deutscher Sprache

Der “hypothetische Schaden nach einem Biss” ist bei jedem Körper anders

The “hypothetical damage after a bite” is different for each body

The horseshoe and ladder snakes are joined by the Montpellier garter snake



Cala Tarida – Until now, it was always said that the snakes in Ibiza are not poisonous – apart from the allergic reaction that their bite can trigger. Now a specimen of a species has been caught whose bite can cause certain health problems, although not life-threatening.

In fact, all snakes have some venom in their fangs. However, the amount is usually so small that it has no significant impact on humans. Until a few years ago, snakes were not found on Ibiza. They arrived on the island hidden in the root balls when olive trees were imported from the mainland. Since then, they have been happily reproducing, as Ibiza has no natural predators. The problem they pose to the native birds and lizards has become massive.

Since this summer , the horseshoe snakes (*Hemorrhois hippocrepis*) and ladder snakes (*Zamenis scalaris*) have had a new companion on Ibiza: Montpellier garter snake (*Malpolon monspesulanus*). Hunters from the Sociedad de Cazadores de Sant Josep, who are responsible for controlling over 200 traps to combat the snake plague, discovered a specimen of this species measuring over 120 centimeters in length in the Cala Tarida area, which they had never seen before.

Antònia Maria Cirer, a doctor of biological sciences and known for her tireless efforts in combating the snake plague that plagues Ibiza, explained that since 2010 it was assumed "that there were no snakes here". Unlike horseshoe and ladder snakes, the bastard field snake is venomous: “It has a fang on the underside of its mouth, which serves to immobilize prey when it bites it.” However, the experienced herpetologist gives the all-clear: "You'd have to put your finger in the reptile's mouth for its venom to affect a human," and that "the hypothetical damage after a bite is different for every body." But: "There are people who die from a bee sting."

There are now several groups and organizations on Ibiza setting up traps to combat the plague. The Sant Josep Hunting Association complains, however, that it repeatedly happens that unknown individuals open the traps to release the mice living inside (their scent serves as bait, but they are shielded from the area where the snake enters), supposedly to protect the animals.

DIARIO de IBIZA

Las ‘sargantanes’ de Ibiza tienen 30 nuevos refugios antiserpientes

Ibiza's lizards have 30 new snake shelters

The City Council highlights that they have received reports of snakes in Can Misses, ses Figueres and Platja d'en Bossa



Several lizards, on a wall. | SEBASTIAN CANDELA

efe

Ibiza 26 AGO 2024 17:56 Actualizada 26 AGO 2024 17:57

Lizards have around thirty new shelters in Ibiza town. This was announced this Monday by the Ibiza City Council, which has installed 30 protected areas for specimens of this native species. This action aims to preserve and promote the reproduction of the species, which is currently in a delicate population situation due to the arrival of snakes from the Peninsula in ornamental trees imported for the gardening sector, the City Council notes.

The first shelter was created by the Ministry of Agriculture, Fisheries and the Natural Environment in the gardens of Abel Matutes Boulevard, the City Council explains, and has now installed another 30 shelters spread across various green areas of the city.

Specifically, the shelters are located: two in the gardens of Plaza España, in Dalt Vila; one in es Revellí, another in sa Carrossa, two in the Parque de la Paz, three in the Parque Poeta Villangómez, two in the Parque Reina Sofia, another two in the gardens in front of the Can Misses aqueduct, four in the landscaped areas of the Paseo Marítimo (Juan Carlos I), two in the gardens of the recently renovated Plaza Bob Marley (formerly the bullring), six on Abel Matutes Boulevard, one in the recently planted olive tree in Vara de Rey, and four in the beachfront gardens in Platja d'en Bossa.

Likewise, the town hall-owned farmhouse has snake traps and has been monitoring them for months. The Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), as well as volunteers and residents of Ses Feixes de Talamanca, are also carrying out captures in the wetland. Reports of snake sightings have also been received in areas such as Talamanca and neighborhoods such as Ses Figueres, Can Misses, Platja d'en Bossa, and even in the Peace Park.

Finally, with the support of COFIB, the City Council is preparing a campaign to distribute more than 200 snake traps, in addition to continuing the installation of urban shelters for lizards.

Ibiza HEUTE

Ibizas Hauptstadt schützt Eidechsen

Ibiza's capital protects lizards

Ibiza Town Hall has installed 30 protective stones for lizards so that they can seek refuge from snakes in case of emergency and reproduce again. The horseshoe whip snake has massively reduced the number of lizards on Ibiza.



Lizards fit into these stones, but not snakes. Photo: Ibiza Town Hall

In squares and green spaces

The stones can now be found in many squares and green spaces throughout the capital. Among them are the olive tree recently planted on the Vara de Rey, the Juan Carlos I waterfront promenade, the Parque de la Paz and Parque Reina Sofía, the Old Town Hall in Dalt Vila, and the Es Revellí park opposite.

Snake Hunting in Ses Feixes

The town hall and the wildlife conservation agency COFIB will distribute 200 traps to encourage residents to catch snakes. Conservationists and volunteers will be conducting targeted hunts in the Ses Feixes de Talamanca wetland.

09-09-2024 - Redacción - A boat will monitor the status of lizard populations on the islets of Ibiza and the possible presence of snakes (control)

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Eivissa i Formentera

Una embarcación controlará el estado de las poblaciones de lagartija en los islotes de Ibiza y la posible presencia de serpientes

A boat will monitor the status of lizard populations on the islets of Ibiza and the possible presence of snakes.



The boat 'Podarcis' will monitor the status of the lizard populations on the islets off the coast of Ibiza.

Por **Redacción** — 9 septiembre 2024

The Ministry of Agriculture, Fisheries and the Natural Environment, through the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), has for the first time deployed a vessel dedicated to monitoring populations of the Pityusic lizard (*Podarcis pityusensis*) and more effectively detecting the presence of invasive exotic species on the islets, such as the garter snake and horseshoe snake, which entered ornamental olive trees years ago and are decimating the island's populations to the point of threatening the species' survival.

The presentation of the Podarcis (the boat's name, which means lizard in Latin), which took place this morning at the Sant Antoni Yacht Club marina, was attended by the Director General of the Natural Environment and Forest Management, Anna Torres, and the COFIB manager, Miquel Puig.

This project, financed with European funds, "is part of the various initiatives carried out by the Government for the conservation and protection of the Pityusic lizard," the Government emphasizes.

Thus, the acquisition of this vessel is part of the Project to control and eradicate various invasive species in different habitats and geographical locations, funded by the Recovery, Transformation, and Resilience Plan of the Recovery and Resilience Facility (PRTR-MRR), with funding from the Next Generation EU Funds.

During the presentation, General Director Anna Torres emphasized that "this vessel will allow COFIB staff to address various objectives related to invasive species, such as the eradication of rodents on islets in the Balearic archipelago or the early detection of the presence of these species in these natural spaces." Furthermore, Torres added, "it will facilitate research into new control systems, with special monitoring of the Pityusic lizard populations, as well as the control and elimination of invasive flora on the islets of the Balearic Islands." But, above all, she emphasized, "it is a new action for the conservation of the Pityusic lizard, an emblematic, native, and endemic species of Ibiza and Formentera."

Furthermore, the COFIB manager noted that the possibility of having this vessel "will help respond to the COFIB's various requests for environmental action and research." "It represents a major step forward in the quality of the service we provide to society for the preservation and conservation of the natural environment." Puig explained that it is a 5.10-meter-long semi-rigid inflatable boat with a 90-hp engine.

More projects and actions

During the month of July, the Government, through the Sustainable Tourism Tax Commission (ITS), approved the allocation of €1.93 million to control invasive species in the Pitiusas and the construction of a wildlife recovery and interpretation center in Ibiza. It should be noted that this project, assigned to the COFIB (Council of Biodiversity and Fisheries), also has the primary objective of addressing the threat of invasive species in Ibiza and Formentera and on their uninhabited islets.

On the other hand, last May, the Regional Ministry of Agriculture, Fisheries, and the Natural Environment, in collaboration with the city councils of Ibiza and Formentera and with the support of the island councils, promoted the creation of urban reserves to conserve and protect the Pityusic wall lizard. This initiative aims to establish measures to increase the density of this species and minimize the risk of predation. Furthermore, the methodology for protecting this species is outlined in a manual of best practices for the conservation of the Pityusic wall lizard in parks and gardens. Likewise, this year the COFIB (National Council of Fisheries and Natural Environment) has produced a video and a short brochure to raise awareness of the importance and value of this species. These actions are also part of the Project to control and eradicate various invasive species in different habitats and geographical locations.



Presentation of the boat this morning at the Sant Antoni Yacht Club.

IB3N Notícies

El COFIB compta amb una nova llanxa per al control de les poblacions de la sargantana pitiüsa als illots

COFIB has a new boat to control the populations of the Pityusic lizard on the islets

The presence of snakes has already been detected on five islets.

09/09/2024



Esther De Miguel

It is a semi-guided inflatable boat over five meters long, with which the aim is to count the number of lizards on the islets, as well as to place snake traps. Thanks to the help of other entities that lent them the boats, last summer COFIB already verified the presence of snakes on five of the sixteen islets they monitored. As for the island of Ibiza, the consortium has already captured 2,590 this year, that is, more than the previous year, although it must be taken into account that it has placed 25% more traps. The island of Formentera remains more stable, with 713 captures. In fact, COFIB's objective in Formentera is the eradication of snakes, while in Ibiza they see this as impossible, because the population arrived before and has already grown exponentially.



Ibiza HEUTE

Pityusen: Schlangenplage weitet sich aus

Pityusic Islands: Snake plague spreads

The snake plague on Ibiza and Formentera is spreading. Now the creatures have also discovered the small offshore islands as their habitat. But the government is not idle in its efforts to combat the invasion of these unwelcome guests, who are killing the native Pityusic lizards.

10. SEPTEMBER 2024



Ibiza's brown, green, and blue lizards used to be everywhere, but now they are food for snakes and are decimated. Photo: GOIB

New boat purchased with EU funds

A new motorized inflatable boat has now been purchased with European Union funds and will be made available to the species protection agency COFIB.

The agency will continue to intensively monitor the lizard population, detect and, if necessary, combat invasive, exotic species. These cause significant damage to the ecosystem on Ibiza and Formentera. The new boat will also be able to better reach the hard-to-reach islets.

Snakes already on eight "islotes"

Snake traps will now be set up on 16 of these offshore "islotes" off Ibiza and Formentera. "We have already discovered adders on half of these islands," said Miquel Puig, head of COFIB. "And on the other islets, we have found the reptiles' shed outer skins, which the animals leave behind when they shed their skin. But until we have actually caught a snake, we cannot confirm with certainty its presence there."

Govern
de les Illes Balears

Aniversari COFIB 20 anys

COFIB 20th Anniversary

28/09/2024



COFIB is the salvation of many species in the Balearic Islands. This year marks 20 years since this consortium was launched, through which more than 70,000 animals have already passed. An essential task, because we cannot protect what we do not love, nor love what we do not know.

noudiari.es
Eivissa i Formentera

Un influencer y el 'cazaserpientes' Dean Gallagher «tranquilizan» a los británicos sobre el peligro de las serpientes en Ibiza

An influencer and snake hunter Dean Gallagher "reassure" Britons about the danger of snakes in Ibiza



IBIZA SNAKE CRISIS (02-10-2024). Dwayne Muffin, a British influencer, with the horseshoe whip snake.

Por **Redacción** — 8 octubre 2024

Influencer Dwayne Muffin and snake hunter Dean Gallagher, one of Ibiza's leading specialists in the fight against this invasive species, star in a video aimed at the British public in which they address the situation of snakes on the island and the need to catch them, and deny that they pose a danger to people. "If you leave them alone, they won't bother you. They're not interested in humans," Gallagher assures.

Muffin explains that a few years ago he recorded a video with Gallagher in which they captured snakes in the north of Ibiza, an area rich in nature. This time, he explains how the situation has evolved. As the snake catcher explains, this species is moving southward due to the lack of food in the north.

Specifically, in the video, Muffin and Gallagher visit a home in Ibiza City, in an urbanized area, where the owner has captured a horseshoe snake using a trap she has in her garden. This allows the influencer and the snake catcher to talk about the problem on the island and the work being done to control it, while also emphasizing that the species does not pose a danger to humans.

"The horseshoe snake arrived on the island about 20 years ago, and since then, trapping programs have been implemented throughout Ibiza. The real concern?" "Snakes are wiping out the Ibizan wall lizard," explains the text accompanying the video posted on YouTube on October 2, which already has nearly 4,000 views.

In the video, Gallagher removes the captured snake from the trap, which continues to move and coil around his hand, and shows it to the camera. He estimates it measures approximately "one meter and twenty" centimeters. He explains that it is a horseshoe snake, the most common invasive species on the island, and clarifies in detail that it is not venomous and does not pose a danger to people.

"When we posted the last video, people were afraid to come to Ibiza because they were afraid of snakes," Muffin says, asking Gallagher for his opinion on the matter. "It's nonsense," he asserts, adding that snakes are found in almost every part of the world, some similar and more dangerous in England. He adds that the worst thing a snake like this horseshoe snake can do if it bites a person is scratch them.

In this regard, he adds: "They're terrified of humans. If you leave the snake alone, it won't bother you." He insists that they will only bite "if they feel truly threatened, if they're cornered, in a place they can't escape." For his part, Muffin dares to pick up the snake and hold it in his hand.

Gallagher explains the need to trap the snakes, given that they are causing "a terrible ecological situation." He points out that they are eating "all the lizards," which are important to the ecosystem and must be protected. He adds that there are already areas of the island where the lizards "have almost disappeared," such as in the north, and that this is causing the snakes to move south.

In this regard, he points out that since they lack natural predators, the humans who "caused the problem" must now get involved in trying to solve it. He maintains that although the problem cannot be completely eradicated, it is necessary to keep it under control.

To this end, he refers to the traps being used and the measures being adopted by the authorities, which include capturing the specimens and then slaughtering them. "Nobody wants to kill a wild animal, much less a beautiful snake. But it's: 'serps or sargantuans?' They can't coexist peacefully," he concludes.



IBIZA HAS A NEW PROBLEM (21-05-2021). Dwayne Muffin.

DIARIO de IBIZA

La procesionaria avanza en Ibiza gracias al retroceso de las 'sargantanes'

The processionary caterpillar advances in Ibiza thanks to the retreat of the lizards

The Balearic Ministry of Agriculture, Fisheries and the Environment has contracted a fumigation plan for the next four years at a cost of nine million.



File image of pine processionary caterpillars. / CIF



David Ventura
Ibiza 17 OCT 2024 18:12 Actualizada 17 OCT 2024 20:17

Where the lizards retreat, the pine processionary caterpillars advances. *Thaumetopoea pityocampa*, the stinging and unpleasant processionary caterpillar that lays its characteristic gray bag-shaped nests on pine branches, continues its advance across the island of Ibiza, although, unlike Formentera, it cannot yet be considered a pest. One of the reasons for this advance was explained this Thursday by Luis Núñez, head of the Forest Health Service of the Department of Agriculture, Fisheries and the Environment of the Balearic Government: "The maps of processionary moth captures clearly coincide with the areas with the highest incidence of snakes on the island."

The more snakes there are, the fewer lizards, the more processionary moths. This is because the lizards are the natural predators of the processionary moth larvae. This lepidopteran, which nests in the treetops during the months of December and February, descends to the ground to bury itself. There, they first become larvae, then chrysalises, and in May, they hatch into butterflies. And it's during these nearly three months of nesting on the ground that they are usually devoured by the lizards. "They are what have allowed us, so far, to prevent it from becoming a plague. Consider that each butterfly lays up to 200 eggs. Their range is the center of the island, the area of Santa Eulària and Es Amunts. This is a replica of where the lizards have been declining due to the presence of snakes," explained Núñez.

To address this increase in the presence of the processionary caterpillar, the Balearic Regional Minister

of Agriculture, Fisheries, and the Environment, Joan Simonet, has announced that this year a total of 18,500 hectares of forested land will be sprayed with a biological product, Belthirul-F, a biological insecticide that, he claims, attacks the processionary caterpillar larvae but is harmless to bees and compatible with organic farming.

"It is sprayed with a bacteria called *Bacillus thuringiensis*, which kills the larvae. It is a natural product, a microorganism," Simonet explained, adding that this biological pesticide is widely used to combat pests: "I myself, in my small vegetable garden at home, spray this product on my tomato plants twice a day."

With all possible resources

The regional ministry is strongly committed to this method and has announced an investment of nine million euros to carry out the fumigation campaigns over the next four years. The area targeted for action—18,500 hectares—represents, according to the regional ministry, an increase of 12,500 hectares compared to 2023. According to the yearbook of actions against the processionary caterpillar presented by the regional minister at the regional government headquarters, last year the helicopters carried out a total of 90 double-pass flights and released a total of 50,650 liters of Belthirul-F.

The use of this pesticide will be combined with population control of male caterpillar butterflies through the use of pheromone traps and the physical elimination of processionary caterpillar nests by cutting them down or using shotguns. Regarding pheromone traps, 8,180 were distributed throughout the island this summer, and the catch count is still pending. These traps attract male butterflies, confusing them into believing they can fertilize a female. In 2023, 35,123 butterflies were captured in the 8,299 traps installed.

Regarding the physical removal system, 25,500 processionary caterpillar bags were destroyed between January and March of this year, compared to 16,309 in 2023. Of these, 64% were cut and the rest were eliminated by shooting.

This figure marks a new record for bag removal and reflects the steady increase in the presence of these lepidopterans. According to data from the Ministry of the Environment, since the reappearance of the processionary caterpillar was detected in 2016 and 125 bags were removed, their number has steadily increased. Thus, 1,107 bags were removed in 2020, 4,813 in 2021, 7,957 bags in 2022, and 16,309 in 2023.

The Processionary Moth, the Other Threat

Along with the processionary moth, the other animal that worries the Government's Forest Health Service is the processionary moth, the destruens, a beetle that, like the red palm weevil, bores into pine trunks. "Unlike the processionary moth, the destruens is native," Simonet noted. This insect wreaks havoc by attacking pines weakened by drought and boring into them. If it detects an affected pine, the Ibanat cuts it down and removes it. It also removes pines killed by the destruens, not because it helps control the pest, but so that they don't become fuel for a potential fire.

"It's not our responsibility," is the repeated response from the Balearic Islands' Ministry of Agriculture, Fisheries, and the Environment and the Port Authority when asked how the control and surveillance of olive, carob, and holm oak trees with a trunk circumference greater than 40 centimeters in Ibiza, which could harbor snakes or their eggs, is carried out. When asked about the outlying Civil Guard Office in the Balearic Islands, they recommend speaking with the Nature Protection Service (Seprona) in Ibiza, which states that they are not responsible for controlling and monitoring the entry of these trees.

The entry of olive trees, carob trees and holm oaks into the Balearic Islands is limited to the periods between April 1 and June 15 and between September 15 and October 15, taking into account that during these periods there is no egg-laying, hatching or hibernation of invasive snakes that have threatened the survival of the Pityusic wall lizard and the Balearic wall lizard for years, but no one controls their entry during these periods.

Who exercises control?

These measures are established in Decree Law 1/2023, which also establishes that the Environmental

Administration and the Administration in charge of port infrastructure in the Balearic Islands are responsible, "in collaboration and coordination," for promoting "appropriate formulas" to ensure compliance with control and inspection measures.

How they do this is the big question. The regional government's department points out that the control and surveillance of entry points "is carried out by the Port Civil Guard in coordination with the Balearic Islands Port Authority (APB) and the Environmental Agents Service."

For its part, the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib) indicates that its work in this area consists of distributing cages to nurseries so they can assist in capturing snakes, in addition to disseminating information and answering questions. Regarding these issues, since the regulations came into force, Cofib has only received one request for information from a landscaper interested in bringing in a large number of these types of trees outside the timeframes allowed for the delivery of a landscaping project to a villa in Ibiza.

Apparently, the professional never submitted the request because, to date, the regional government has not received "any request for the entry of these trees outside the authorized period, nor any communication from the APB or the Civil Guard regarding irregular entries," explains Tomàs Bosch, head of the Government's Species Protection Service, who insists that they would act if they received a warning. The regional government's communications department concludes that since they have received neither warnings nor requests, "for the time being, the Decree Law is being respected and has achieved its intended purpose, which was to channel all imports during the months when there is no risk of snake entry."

How is this being done?

Unfortunately, it is unclear whether this is actually being done, because the APB also states that it has no authority over control or surveillance and that this task falls to the Civil Guard or the Seprona, "just as they have authority over the control of hazardous substances." For its part, the APB states that it would be responsible for reporting any unusual activity or would provide a space for the authorities if they requested it to conduct an inspection.

How this would actually happen remains unclear because when the Civil Guard is asked how control and surveillance of the entry of the aforementioned ornamental trees is carried out, it refers to the Seprona, which responds that they are not responsible. None of the authorities have been able to provide an answer as to how this surveillance is carried out or what devices are available for this, such as specialized canine units, as provided for in the Decree Law. Nor has there been any response as to how to proceed if one of the aforementioned trees is detected being brought in outside of the permitted periods, whether any such cases have occurred, and, if so, whether the tree contained snakes or their eggs.

Waste of Paper

For environmental associations in Ibiza, which have been criticizing the delay in responding to the snakes' spread for years, the lack of control is due to the lack of precision in the 2023 decree.

"It's a minimal regulation, and if it had been more ambitious, it wouldn't have been approved," says Jordi Serapio, coordinator of the Protect the lizards project at IbizaPreservation. "No one is ordered to control it," comments Joan Carles Palerm, president of the GEN of Ibiza, the association that promoted the Sargantanes or SERPS platform together with Amics de la Terra. Palerm also adds that the association has verified that no one exercises control after asking the Civil Guard when they have seen that "a large tree has entered outside the period," and they have not responded.

He appreciates the fact that this decree was passed, as does Antònia Cirer, a doctor in Biological Sciences and expert on Ibizan lizards, who indicates that the regulation had good intentions. However, Cirer also agrees: "A law that doesn't make it clear who has to do what is a dead letter."

The Ibiza Council also does not monitor or control the entry of the aforementioned trees, stating that "it is the responsibility of the competent authority."

Ibiza HEUTE

Pityusen: Kampf dem Prozessionsspinner

Pityusic Islands: Fighting the Processionary Moth

The processionary moth caterpillars, with their stinging hairs, are a plague on Formentera and widespread on Ibiza. The Balearic government is spraying a bio-poison from the air.

22. OKTOBER 2024



The caterpillars move through the area in long chains, like processions. Photo: GOIB

Lizards are missing

Where there are many snakes, processionary moth caterpillars are also more common. The reason: The snakes have consumed the lizards, and the lizards used to eat the pests' larvae. This is explained by Luis Núñez, head of the Forest Health Department at the Balearic Ministry of the Environment. On Ibiza, processionary moths are appearing more frequently in Santa Eulària and Es Amunts.

Biotoxin and Hormone Traps

The cost of eradication over four years is now estimated at 9 million euros. The Ministry of the Environment is having 18,500 hectares sprayed with the bacterium from the air using helicopters. The biotoxin is harmless to bees, explains Núñez.

At the same time, the Forestry Office has installed hormone traps to catch the male moths. The clearly visible nests are removed or, if they are too high, shot down. If the cocoon breaks, the insects freeze to death. This happens from January to March.

Santa Eulària Begins

The Santa Eulària Town Hall announced on Monday that the control campaign is beginning. The pine trees are being sprayed from small planes and helicopters. The city hall also states that the bacterium is harmless to humans and animals, including bees. Nesting boxes are also being installed for bats and birds to settle in and catch the moths.

Formentera also sprays

On Formentera, the processionary moth caterpillars were declared a plague in 2017. For a time, the previous island and Balearic governments rejected aerial spraying. Luis Núñez is now again including large-scale spraying in the control campaign.

Helicopters will spray 2,500 hectares of pine forest twice in October, November, and early December. The cost for 2024 is €555,000. The organic product is also being used here. More information: www.caib.es/sites/sanitatforesta

German Discovery

Bacillus thuringiensis was discovered by the German biologist Ernst Berliner around 1911. The original pathogen originated from a mill in Thuringia, hence its name. The "Kurstaki" variant does not harm bees and is permitted in organic farming.

Dogs at Risk

The insects were first discovered on the Pityusic Islands in 1975; they presumably arrived on the islands with ornamental plants. The caterpillars' fine, poisonous hairs can cause severe discomfort in humans and animals, such as dogs, if they come into contact with mucous membranes. They also damage trees.

Mediterranean pine shoot beetle

A second concern on the islands is *Tomicus destruens*, a native pine shoot beetle that bores into pine trunks and causes them to dry out when they are weakened by drought.



A nest in a pine tree on Ibiza. Photo: MBA

PERIÓDICO de IBIZA Y FORMENTERA

Las ‘sargantanes’ de Ibiza estrenan casitas seguras en Sant Josep

Ibiza's lizards open safe houses in Sant Josep

These are the first three such facilities in the municipality.



One of the information signs | Photo: Sant Josep City Council

R.I. | Ibiza | 20/11/24 11:08 | Actualizado a las 12:58

The Sant Josep City Council, through its Department of Environment, Sustainability, and Coastline, presented this Wednesday the new lizard refuges and reserves located outside the Caló de s'Oli auditorium. This is one of the three spaces chosen to launch this initiative in the municipality, in addition to those located in Can Raspalls and Port des Torrent.

The Balearic Ministry of Agriculture, Fisheries, and the Natural Environment, through the Consortium for the Recovery of Fauna (COFIB), in collaboration with the municipalities of Ibiza and with the support of the Consell, has promoted the creation of urban reserves to conserve and protect the Pityusic lizard.

With this initiative, the General Directorate of Natural Environment and Forest Management, through COFIB, "aims to establish measures to increase the density of this species and minimize the risks of predation it suffers," the Josepí City Council stated in a statement.

"As is well known, the Pityusic lizard is a very vulnerable creature, especially after the appearance of snakes, which pose a major threat, among other predators, and seriously endanger the survival of the species if we do not act decisively," explained Felicia Bocú, Councilor for Environment, Sustainability, and Coastal Affairs.

For his part, Víctor Colomar, a member of COFIB, defined these refuges and reserves as "the lizards' homes and neighborhoods," where "they have their own ecosystem, where they can hide and protect themselves from adverse temperatures and their predators." Among their characteristics, "most of them are made of straw and wood, which meet suitable climatic conditions and are lined with stone to make them resistant and waterproof."

It is worth remembering that last June, the ordinary plenary session unanimously approved declaring the municipal public gardens as a refuge and reserve for lizards, committing to implement measures to guarantee the protection and conservation of this native species. These garden areas, located in municipal office buildings, educational centers, health centers, and sports areas, are considered suitable habitats for lizards, with improvements planned for 2024 and the following years.

In fact, the municipal green areas maintenance contract, currently being put out to tender, provides for the installation of 80 additional refuges and more vegetation suitable for lizards. The ultimate goal is to promote the protection and conservation of the Pityusic lizard throughout the municipality of Sant Josep, according to the City Council.

Raül Luna, Environmental Officer for the Sant Josep City Council, emphasized that "to promote the presence of the lizard in our municipality, we are working to ensure that the garden areas, with native flora, meet the best conditions, both for its protection and for its feeding and, of course, reproduction."

These actions and the material that will be distributed are part of the project to control and eradicate various invasive species in different habitats and geographical locations, which is funded by the PRTR-MRR through the Next Generation EU Funds between 2022 and 2025.

Furthermore, these lizard reserves contribute to the Urban Greening Programs of the European Biodiversity Strategy 2030, providing gardens and parks with added nature conservation value.

At the same time, the Sant Josep City Council has joined the protection of the Pityusic lizard by carrying out other actions. One of these initiatives is the collaboration with the Sant Josep Hunters Society to install snake traps in several locations throughout the municipality and distribute them to the public in recent years. We are also in contact with some of the organizations that have joined forces to protect the Pityusic lizard, such as the initiatives Sargantanes o Serpientes, SOS Salvem la Sargantana Pitiusa o Protegim les sargantanes.

18-12-2024 - Redacción - Nearly 500 snakes captured in Ibiza in six months thanks to IbizaPreservation traps (control)

noudiari.es
Eivissa i Formentera

Casi 500 serpientes capturadas en Ibiza en seis meses gracias a las trampas de IbizaPreservation

Nearly 500 snakes captured in Ibiza in six months thanks to IbizaPreservation traps



Jordi Serapio, campaign coordinator, holds a snake trap.

Por **Redacción** — 18 diciembre 2024

IbizaPreservation's Protegim Ses Sargantanes project managed to capture a total of 499 horseshoe snakes (*Hemorrhois hippocrepis*) in 2024 in areas of high biodiversity value, thanks to the installation of 280 traps across Ibiza. "This initiative not only increases the number of traps placed by the foundation in 2023 in protected natural areas, but has also significantly expanded its reach by incorporating the collaboration of private properties," they emphasized in a statement.

The intensive trapping campaign, which seeks to curb the impact of this invasive species that seriously threatens the Pityusic wall lizard (*Podarcis pityusensis*), a reptile endemic to the Pitiusas in serious danger of extinction, was carried out between May and October. The actions took place in two protected natural areas, in addition to the collaboration of numerous private property owners who joined the initiative.

In Ses Feixes de Talamanca, the number of traps doubled compared to the previous year, installing 40 devices in 2024, compared to the 20 used in 2023. This increase resulted in the capture of a total of 98 snakes, surpassing the 87 captured the previous year. In the Ses Salines Natural Park, 40 traps were installed, double the number in 2023, and 39 specimens were captured, compared to the six captured the previous year. The project also included the collaboration of 48 private properties across the island, where 200 traps were strategically placed to cover the most affected areas, capturing a total of 362 snakes.

Jordi Serapio, coordinator of the Protegim Ses Sargantanes project, highlights the success of the collaboration with the island's farmers, as "the initial plan was to involve around 20 farms, but now 48 have been."

Protection of Native Wildlife

The horseshoe snake, an invasive species introduced to the islands in the early 2000s, represents a serious threat to the Pityusic wall lizard, a reptile that has inhabited the Pitiusas for more than 4,000 years. Without defense mechanisms against snakes, lizard populations have declined drastically, and studies warn of a high risk of extinction if measures are not taken.

“Completely eliminating snake populations that have been naturalized on the island for so many years is impossible, which is why, at IbizaPreservation, we are focusing on strengthening lizard populations in areas of high biodiversity value, supporting the work carried out by COFIB and other agents on the island,” explains the project coordinator, who points out that this reptile plays a fundamental role in the ecosystems of the Pitiüses, acting as a controller of agricultural pests by feeding on insects, as well as being a pollinator and disperser of seeds of native plants.

“The Pityusic lizard population on the island of Ibiza is in a very worrying state of conservation,” Serapio emphasizes, stressing that “the fight against this invasive species, the horseshoe snake and other snake species, is one of the most important biodiversity conservation challenges we currently face on our island.”

The results of the Protegim Ses Sargantanes project contribute to mitigating the pressure snakes exert on local wildlife, combining efforts with other ongoing eradication initiatives. “Initiatives like this are essential to reducing the pressure snakes exert on our local wildlife. The results obtained compel us to continue in 2025 and continue increasing the number of traps installed,” concludes Inés Roig, project technician.



Ibizan lizard in an image by Jordi Serapio.

noudiari.es
Eivissa i Formentera

Un vídeo para concienciar sobre la amenaza de las culebras invasoras para la lagartija pitiusa

A video to raise awareness about the threat posed by invasive snakes to the Pityusic lizard

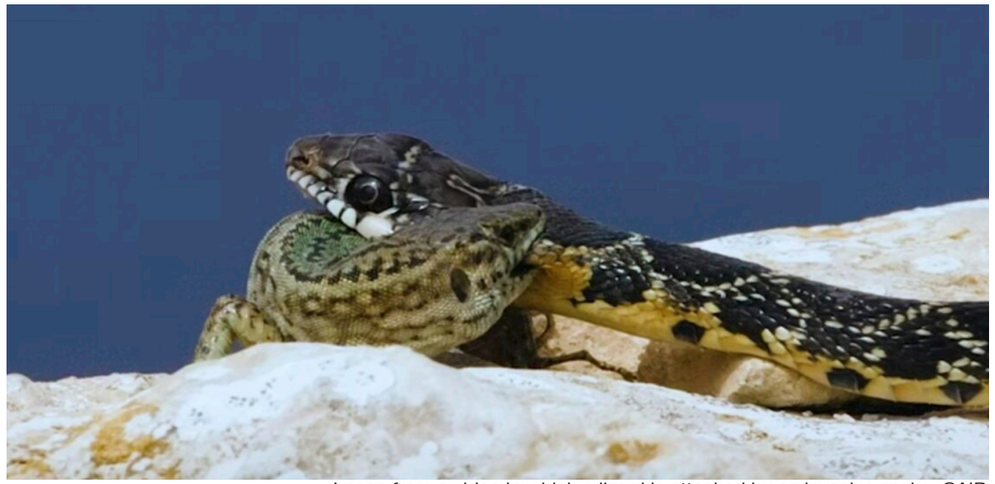


Image from a video in which a lizard is attacked by an invasive snake. CAIB

Por **Redacción** — 28 enero 2025

The Regional Ministry of Agriculture, Fisheries and the Natural Environment, through the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), which reports to the Directorate General for the Natural Environment and Forest Management, has launched a video to raise public awareness about the threat invasive snakes pose to the conservation of the Pityusic wall lizard (*Podarcis pityusensis*). The 2-minute, 15-second video aims to "raise awareness, among both residents and tourists, of the delicate situation facing this endemic and native species of Ibiza and Formentera, and also of the seriousness of the snake invasion, which is now reaching the islets where populations of these unique, ecologically valuable lizards live," the Government explains in a statement.

The publication, which is part of the various actions carried out by the Government for the conservation and protection of the Pitiusas wall lizard, is part of the Project to control and eradicate various invasive species in different habitats and geographical locations, funded by the Recovery, Transformation, and Resilience Plan of the Recovery and Resilience Mechanism (PRTR-MRR), with funds from Next Generation EU.

The video emphasizes the need to notify the COFIB if you observe the presence of snakes, using the Línea Verde COFIB – Invasive Species app (www.lineaverdecofib.es), in order to "prevent them from colonizing new areas."

This audiovisual publication, available in Catalan, Spanish, and English, was prepared with high-quality images by documentary filmmaker Rubén Casas, with subtitles. It should be noted that the filming was carried out under controlled conditions, under the supervision of COFIB technicians at all times.

Other measures implemented to control invasive species

Since 2022, within the framework of the aforementioned project, other actions have been carried out to control invasive species that threaten the fauna and flora of the Balearic Islands. These include biosecurity measures, which involve monitoring all the Balearic islets to ensure that no snakes or other invasive species (such as rodents) have arrived, and conducting visual censuses of lizards, thanks to a new vessel purchased with Next Generation EU funds. If invasive species are found, the Government's Species Protection Service is immediately notified, and urgent action is taken to control the invasion, as has happened on the Murada, Encalders, and Santa Eulalia islands, as well as on the islet of S'Ora. Some islets in Mallorca are also inspected and monitored, such as one of the Malgrats islands, where snakes have already arrived, or El Toro, where there is a high risk of them arriving.

Likewise, raccoon control has been intensified in the Tramuntana Mountains in Mallorca, with the acquisition of 150 cages and 85 photo-detection cameras, and the reinforcement of the field team with a full-time staff member and a vehicle. The welfare of captured animals has been improved through the application of an innovative methodology using remote cage-closing detectors, which alert technicians so they can immediately remove the animal. Knowledge of the population functioning of this invasive species has also been deepened, thanks to a study on abundance and population growth conducted by the IMEDEA-CSIC-UIB Animal Ecology and Demography Group.

Furthermore, seven urban reserves have been created for the Pitiusas lizards, thanks to the support of the city councils and island councils of Ibiza and Formentera. In each reserve, thirty artificial shelters for the lizards and explanatory signs have been installed, and 400 native plants have been planted, which they feed on and attract insects they also capture. Hazards to avoid have been identified, especially the presence of predators such as cats and snakes. The methodology for improving the urban environment to benefit the lizards has been compiled in a manual of good practices for the conservation of the Pitiusas lizard in parks and gardens. In addition, a brochure and a short video have been published to encourage private owners of gardens in urban areas, hotels, schools, etc., to implement measures to protect the lizards.

Actions planned for 2025

This year, a tender is being processed for the rat extermination of the islets of Tagomago, Es Vedrá, and Es Vedranell in Ibiza, and S'Espalmador in Formentera, to

improve the survival of the seabird populations that nest on these islets, especially the endemic Balearic shearwater. Actions are also planned to eradicate invasive flora on the islet of S'Espardell in Formentera, where there are 1.5 hectares of midday flower (Disphima sp.), 500 prickly pear plants (*Opuntia* sp.), several dozen agave plants (*Agave americana*), and approximately 70 square meters of lion's claw (*Carpobrotus edulis*).





DIARIO de IBIZA

Nadie vigila la entrada de serpientes a Ibiza dentro de los árboles

No one is monitoring the entry of snakes into Ibiza inside trees

Neither the Government nor the Port Authority of the Balearic Islands control the entry of olive trees, carob trees and holm oaks.



Horseshoe whip snake captured in a trap set in Ibiza. / CAIB.



Estela Torres Kurylo

Ibiza 18 FEB 2025 6:01 Actualizada 18 FEB 2025 7:45

"It's not our responsibility," is the repeated response from the Balearic Islands' Ministry of Agriculture, Fisheries, and the Environment and the Port Authority when asked how the control and surveillance of olive, carob, and holm oak trees with a trunk circumference greater than 40 centimeters in Ibiza, which could harbor snakes or their eggs, is carried out. When asked about the outlying Civil Guard Office in the Balearic Islands, they recommend speaking with the Nature Protection Service (Seprona) in Ibiza, which states that they are not responsible for controlling and monitoring the entry of these trees.

The entry of olive trees, carob trees and holm oaks into the Balearic Islands is limited to the periods between April 1 and June 15 and between September 15 and October 15, taking into account that during these periods there is no egg-laying, hatching or hibernation of invasive snakes that have threatened the survival of the Pityusic wall lizard and the Balearic wall lizard for years, but no one controls their entry during these periods.

Who exercises control?

These measures are established in Decree Law 1/2023, which also establishes that the Environmental Administration and the Administration in charge of port infrastructure in the Balearic Islands are responsible, "in collaboration and coordination," for promoting "appropriate formulas" to ensure compliance with control and inspection measures.

How they do this is the big question. The regional government's department points out that the control and surveillance of entry points "is carried out by the Port Guardia Civil in coordination with the Balearic Islands Port Authority (APB) and the Environmental Agents Service."

For its part, the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib) indicates that its work in this area consists of distributing cages to nurseries so they can assist in capturing snakes, in addition to disseminating information and answering questions. Regarding these issues, since the regulations came into force, Cofib has only received one request for information from a landscaper interested in bringing in a large number of these types of trees outside the timeframes allowed for the delivery of a landscaping project to a villa in Ibiza.

Apparently, the professional never submitted the request because, to date, the regional government has not received "any request for the entry of these trees outside the authorized period, nor any communication from the APB or the Guardia Civil regarding irregular entries," explains Tomàs Bosch, head of the Government's Species Protection Service, who insists that they would act if they received a warning. The regional government's communications department concludes that since they have received neither warnings nor requests, "for the time being, the Decree Law is being respected and has achieved its intended purpose, which was to channel all imports during the months when there is no risk of snake entry."

How is this being done?

Unfortunately, it is unclear whether this is actually being done, because the APB also states that it has no authority over control or surveillance and that this task falls to the Guardia Civil or the Seprona, "just as they have authority over the control of hazardous substances." For its part, the APB states that it would be responsible for reporting any unusual activity or would provide a space for the authorities if they requested it to conduct an inspection.

How this would actually happen remains unclear because when the Civil Guard is asked how control and surveillance of the entry of the aforementioned ornamental trees is carried out, it refers to the Seprona, which responds that they are not responsible. None of the authorities have been able to provide an answer as to how this surveillance is carried out or what devices are available for this purpose, such as specialized canine units, as provided for in the Decree-Law. Nor has there been any response as to how to proceed if it is detected that any of the aforementioned trees are being brought in outside of the permitted periods, whether any such cases have occurred, and, if so, whether the tree contained snakes or their eggs.

A dead letter

For environmental associations in Ibiza, which have been criticizing the delay in responding to the snakes' spread for years, the lack of oversight is due to the lack of precision in the 2023 decree.

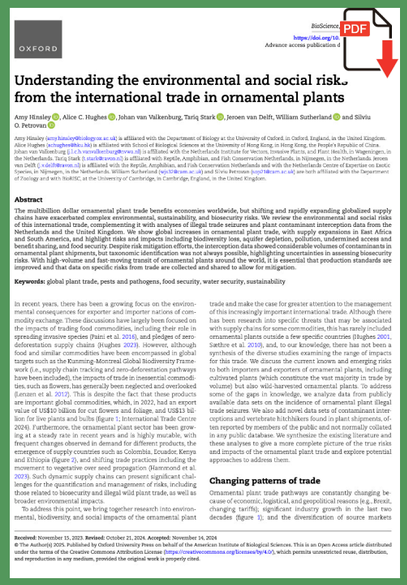
"It's a minimal regulation, and if it had been more ambitious, it wouldn't have been approved," says Jordi Serapio, coordinator of the 'Protegim ses Sargantanes' project at IbizaPreservation. "No one is ordered to control it," comments Joan Carles Palerm, president of the GEN of Ibiza, the association that promoted the Sargantanes o Serps platform together with Amics de la Terra. Palerm also adds that the association has verified that no one exercises control after asking the Civil Guard when they have seen that "a large tree has entered outside the period," and they have not responded.

He appreciates the fact that this decree was passed, as does Antònia Cirer, a doctor in Biological Sciences and expert on Ibizan lizards, who indicates that the regulation had good intentions. However, Cirer also agrees: "A law that doesn't make it clear who has to do what is a dead letter."

The Ibiza Council also does not monitor or control the entry of the aforementioned trees, stating that "it is the responsibility of the competent authority."

Snakes in potted olive trees are 'tip of the iceberg' of ornamental plant trade hazards




Understanding the environmental and social risk… from the international trade in ornamental plants

Amy Hinsley, Alice C. Hughes, Johan van Valkenburg, Tariq Stark, Jeroen van Delft, William Sutherland and Silvia O. Petrovan

Abstract

The multibillion dollar ornamental plant trade benefits economies worldwide, but shifting and rapidly expanding globalized supply chains have exacerbated complex environmental, sustainability, and biosecurity risks. We review the environmental and social risks of this international trade, complementing it with analyses of illegal trade seizures and plant contaminant interception data from the Netherlands and the United Kingdom. We show global increases in ornamental plant trade, with supply expansions in East Africa and South America, and highlight risks and impacts including biodiversity loss, aquifer depletion, pollution, undermined access and benefit-sharing, and food security. Despite risk mitigation efforts, the interception data showed considerable volumes of contaminants in ornamental plant shipments, but taxonomic identification was not always possible, highlighting uncertainties in assessing biosecurity risks. With high-volume and fast-moving transit of ornamental plants around the world, it is essential that production standards are improved and that data on specific risks from trade are collected and shared to allow for mitigation.

Ibiza HEUTE

Ibiza: Niemand kontrolliert „Schlangen-Bäume“

Ibiza: Nobody controls “snake trees”

18. FEBRUAR 2025



Sometimes a trip to the supermarket is an adventure, and not just because of the high prices: A horseshoe whip snake was spotted very close to a large supermarket in Ibiza (archive photo). Photo: Pixabay

No authority controls the import of trees to Ibiza and its sister islands in which snakes could potentially hide. Neither the government nor the port authorities monitor holm oaks, olive trees, or carob trees with a trunk circumference of more than 40 centimeters, in which reptiles or their eggs could be hidden.

"Not responsible"

"We are not responsible for that," says the administration. Even the nature conservation agency Seprona states that it does not monitor the introduction of such trees to the island.

At the same time, the snakes are spreading further and further on Ibiza. The problem is: the reptiles have no predators and find plenty of food on the island. They have a particular appetite for the native Pityusian lizard.

Will the Pityusian lizards survive?

This poses a massive threat to the population of this species. Some experts even believe that there may be no more of these lizards by 2030.

Since horseshoe snakes were introduced approximately 20 years ago, they have managed to spread throughout the island. The measures taken so far to contain the plague have not been sufficiently successful, according to the Institut d’Estudis Eivissencs (IEE).

In addition to the authorities, more than 500 volunteers have attempted to contain the invasive species, for example, through trapping campaigns.

DIARIO de IBIZA

Lucha contra las serpientes en Ibiza: «Si se nos deja trabajar, en 2040 habrá más lagartijas que ahora»

Fighting snakes in Ibiza: "If we're allowed to work, there will be more lizards in 2040 than there are now."

The Government official responsible for the fight against snakes "disagrees" with those who claim that *Podarcis pityusensis* is becoming extinct and asserts that its population in Formentera "has not decreased."



In the center, Víctor Colomar, and on the right of the image, Minister Joan Simonet, at a press conference yesterday. / MARCELO SASTRE



José Miguel L. Romero
Ibiza 19 FEB 2025 20:00

They are neither becoming extinct nor, as has been said, will the *Podarcis pityusensis* disappear by 2030. This is what Víctor Colomar, veterinarian and coordinator of the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), who has been leading the fight against snakes in Ibiza and Formentera for years, assures: "It was said that by 2030, if nothing was done, there would be no lizards left. By 2030, all the Cofib technicians have a personal commitment to ensuring that there will be more lizards. And by 2040, if we are allowed to work, there will be more lizards than now," he stated this Wednesday during a talk given at the Consell headquarters.

And what does he mean by letting them work? Colomar responded to this question shortly afterward during the press conference in which Joan Simonet, Balearic Minister of Agriculture, Fisheries, and the Environment, provided details of the snake

control campaign in the Pityusic Islands during 2024: "I mean that for us, for Cofib, technical opinion is very important. Often, there is a public opinion that proposes voluntary and well-intentioned lines of work, but they may not be the most appropriate or the most efficient in terms of budget. We have to let people who have specifically studied these specific cases, which are very difficult to resolve, work. They have to let us try it our way."

Colomar, despite having Minister Simonet at his side, didn't mince his words and added that letting them work also means having the equipment they request: "For example, the boats we request [to access the islets], or the traps we're requesting. And our opinion must be above that of other, less qualified, less experienced opinions," he reiterated. Colomar emphasized in this regard that "many times" things are requested that are "outside the budget or capacity."

"As a councilor," Simonet commented immediately, "I may know something about agriculture, but I don't understand snakes. More than ever, we must listen to the experts and their demands." The head of the Natural Environment recalled that a budget of 1.5 million euros has been approved for the coming years through the Sustainable Tourism Tax (ITS) funds "specifically for the fight against the snake plague in Ibiza. With this money, he indicated, "more traps" can be purchased and there can be "more technical support, whatever they [from the Cofib] ask for." "Last year," he clarified, "we provided the boat, and there are also staff allocations to reinforce the efforts." The boat allows access to the islets without having to depend on other entities, such as the Es Vedrà Nature Reserves or the Ses Salines Natural Park.

"The battle is not lost"

Regarding the more alarmist views of the situation, Colomar, without downplaying the seriousness of what is happening, assures that "the battle is not lost; there are still lizards. In S'Espardell, there are so many that they are even annoying. You go to some places in Formentera and it's a pleasure to walk and hear the noise the lizards make in the countryside, something that has been lost in Ibiza but can be recovered."

In his opinion, "it's becoming clear that there are areas where lizards are becoming safe from snakes." For example, in Santa Eulària, "which was the epicenter" of this initial snake expansion: "There are still some viable lizard populations within that municipality. That means there hasn't been an extinction there."

"They're not becoming extinct."

In this sense, he rejects the idea that the *Podarcis* are on the verge of extinction: "When people say the Pityusic lizard is becoming extinct, I disagree. The Pityusic lizard isn't becoming extinct: populations are being lost. That's different." He urges people to "use terms carefully" and reminds us that "es Vedrà, s'Espartar, ses Bledes, sa Conillera, Tagomago... all these islets are home to thousands of specimens of this species. And on Formentera, their populations haven't declined, even despite the snakes."

19-02-2025 - José Miguel L. Romero - The Government will monitor Ibiza's garden centers to prevent the arrival of more snakes (politics)

DIARIO de IBIZA

El Govern controlará los viveros de Ibiza para evitar la llegada de más culebras

The Government will monitor Ibiza's garden centers to prevent the arrival of more snakes

COFIB prefers "to allocate personnel to trapping snakes rather than monitoring the likelihood that a truck carrying trees that could contain snakes could enter."



Joan Simonet during the press conference. / MARCELO SASTRE



José Miguel L. Romero
Ibiza 19 FEB 2025 20:00

Is Decree Law 1/2023, of January 30, on extraordinary and urgent measures for the protection of the Ibizan wall lizard, effective? Is it useful or is it a loophole because no one effectively controls the arrival of trucks loaded with olive trees to Ibiza? Víctor Colomar, head of the Ibiza Consortium for the Recovery of Fauna of the Balearic Islands (COFIB) in the fight against snakes, recalls that COFIB collaborated in the drafting of this decree, with the direct involvement of himself and the former manager, Luis Parpall: "It's a very good decree. From my point of view, it has allowed olive trees to legally enter a 'low concern' range [the entry of olive, carob, and holm oak trees into the Balearic Islands is restricted to the periods between April 1 and June 15 and September 15 and October 15, taking into account that during these periods, snakes do not lay eggs, hatch, or hibernate]. Nursery growers can continue to market ornamental olive trees, and there have been no mass entries during the snake

hibernation periods, basically because nursery growers have preferred to wait 15 or 20 days rather than carry out all the necessary bureaucratic procedures to do so sooner.

Regarding the inspection of trucks loaded with olive trees, he points out that the COFIB lacks the "technical capacity to monitor" each vehicle that unloads on the islands: "We prefer to allocate personnel to trapping snakes rather than monitoring the likelihood that a truck with trees that may contain snakes could enter." One of the reasons is that many nurseries on the Peninsula already carry out their own sanitation of ornamental trees and quarantine them before shipping them to Ibiza, he comments. In this regard, Simonet, who noted that neither his regional ministry nor the Consell "have the authority to enter ports and monitor incoming shipments," announced that this year "a campaign will be launched to monitor compliance with snake regulations in the nurseries on the islands, carried out by environmental agents." Traps will also be provided to these gardening businesses to place on their premises.

Pioneer

The COFIB technician responsible for the fight against snakes in Ibiza also states that the decree "is a pioneer in Europe" and that they have received "congratulations at international conferences for this legislative initiative." He notes that it was "difficult to get it approved unanimously in Parliament, without political disagreements," and attributes the delays in drafting it "to the difficulties that arose from the lack of a reference."



19-02-2025 - Juan A. Torres - Nearly 4,000 snakes hunted in Ibiza and Formentera: "The lizards will not become extinct" (politics)

PERIÓDICO de IBIZA Y FORMENTERA

Cazadas casi 4.000 serpientes en Ibiza y Formentera: «La 'sargantana' no se extinguirá»

Nearly 4,000 snakes hunted in Ibiza and Formentera: "The lizards will not become extinct"

"The Pityusic lizard is not becoming extinct," say snake control experts.



Joan Simonet during his press conference on Wednesday | Photo: CAIB

Juan A. Torres | Ibiza | 19/02/25 12:21 | Actualizado a las 21:54

The 1,564 traps installed on the island of Ibiza, 201 more than the previous year, have led to the capture of 3,072 invasive snakes on the largest of the Pityusic Islands, which represents an increase compared to 2023 and 2022, when 2,007 and 2,710 specimens were captured, respectively. These figures were provided this Wednesday in Ibiza by the Regional Minister of Agriculture, Fisheries, and the Natural Environment, Joan Simonet, accompanied by the Director General of the Natural Environment and Forest Management, Anna Torres. "The problem of pressure on the lizards is serious and worrying, we are aware of this," Simonet noted.

On Formentera, snake captures have decreased, and in 2024, 806 specimens were captured in the 364 traps installed. Last year, there were 888 captures in 323 traps, while in 2022, 664 snakes were caught in the 394 traps installed.

To these more than 3,800 captures, we must add 400 more reported by individuals and hunters.

Simonet explained that in 2025, there is a 1.5 million euro ITS fund allocated to combat the snake infestation in Ibiza and Formentera, which will be used, among other things, to increase the number of traps distributed throughout the territory.

Territory

The main focus of snake presence in Ibiza is the Sant Antoni area. "The density of snakes in Santa Eulària and Sant Joan is lower and they are smaller, we assume due to the lack of food. They are advancing towards Sant Antoni. That's where the fight is, the front of their advance, while the southwest area is where there are fewer," Simonet noted. The councilor insisted that the situation in Ibiza "is serious; efforts must be strengthened with captures," and announced that "trials will be carried out to reintroduce lizards in Santa Eulària and Sant Joan to restore a certain balance."

Víctor Colomar, coordinator for Ibiza and Formentera of COFIB, the entity in charge of the campaign to control invasive snakes in the Pityusic Islands, pointed out that while in Ibiza the vast majority of captures are horseshoe snakes (*Hemorrhois hippocrepis*), in Formentera the ladder snake (*Zamenis scalaris*) is the predominant one, with the main focus in the La Mola area. However, last year four horseshoe snakes were captured in La Savina, so the plan is to "set up 300 traps around the port" to prevent another outbreak on the island, Simonet emphasized.

Contrary to more catastrophic voices, Colomar asserted that the Pityusic lizard is not becoming extinct, but rather is losing population. It is being shown that there are areas that are becoming safe from the snakes, and despite Santa Eulària being the epicenter, there are still some viable populations of lizards.

The head of the COFIB in the Pityusic Islands also noted that "if they let us technicians work, there could be more lizards in 2040 than we have today."

Another added problem is the snakes' excellent swimming ability, which has led to their presence being detected on islets such as Santa Eulària, where 43 horseshoe lizards have been captured, and on s'Illa Murada, in Sant Miquel, where four more were caught. "We have to be realistic, and the species' swimming ability is serious; the sea is no defense against snakes," Colomar noted. However, he noted that "es Vedrà, s'Espartar, ses Bledes, and Tagomago are home to thousands of lizards, while in Formentera they have not decreased despite the snakes." For the first time, the COFIB has had its own boat to visit the islets.

Collaboration with local councils has allowed the establishment of eight urban reserves for the Pityusic lizard, where the presence of snakes is less common. However, the danger in these areas is posed by cats, so Simonet called on local councils to do their part and intervene.

19-02-2025 - José Miguel L. Romero - Fighting the snake invasion in Ibiza: "The new battlefront is in Sant Antoni." (control)

DIARIO de IBIZA

Lucha contra la invasión de culebras en Ibiza: «El nuevo frente de batalla está en Sant Antoni»

Fighting the snake invasion in Ibiza: "The new battlefront is in Sant Antoni."

The snakes in Santa Eulària and Sant Joan, where there are already fewer lizards, "are now thinner."



Conference given yesterday in the Council's plenary hall on the results of snake control in 2024. | MARCELO SASTRE



José Miguel L. Romero
Ibiza 19 FEB 2025 20:00

"Battlefield." War slang permeates much of the speeches of the Balearic Councilor for the Environment, Joan Simonet, and the Ibizan leader of the fight against snakes, Víctor Colomar, when they talk about ophidians. The "fight," which has been going on for fifteen years, now has a new front: Sant Antoni, the new "extension of the battlefield" (as Michel Houellebecq would say), to the detriment of Santa Eulària and Sant Joan, which were the epicenters of this tsunami of snakes, whose menu was mainly based on lizards. Colomar himself saw how some he had captured on his own property regurgitated lizards due to overeating.

In Formentera, Simonet indicated during the press conference held yesterday at the Consell headquarters, "it seems that the population has stabilized in the Mola area. There's a front being controlled there where snakes coexist with lizards; there's interaction." But a problem has arisen on that island: the detection of four horseshoe snakes in the port of La Savina." This year "It is planned to place 300 specific traps around the port to prevent another

outbreak in that area of the island," he announced.

In Ibiza, "density has dropped significantly" in Santa Eulària and Sant Joan, where there were initially more: "The ones that are there are thinner. We assume it's because they have less food. And they're advancing in Sant Antoni, where there are now more red spots. That's where the battlefront is now. In the south and west, there are fewer. The situation on the island is serious, which means we have to strengthen our capture efforts," says Simonet, who announces that "tests will be carried out to try to reintroduce lizards in Santa Eulària and Sant Joan. The goal is to restore balance" after the losses suffered by the podarcis in their particular war for survival.

Colomar explained that all the snakes captured in 2024 have already been "processed," meaning that "after being sacrificed, their age, sex, size, weight, and location were analyzed." And from these analyses, they have drawn a conclusion: "The body condition of the individuals from Sant Joan and Santa Eulària is lower; they are thinner. We are beginning to think that they no longer have sufficient food supply from mice, rats, birds, and lizards there. The theoretical population dynamics curve we expected is already occurring there with the horseshoe snake," which accounts for 99% of the snakes found in Ibiza. Regarding the white snake (the ladder snake), present in 99% of Formentera, they are "reassured" by the fact that "the density of lizards is not decreasing. A collapse in their populations has not been detected."

Thousands of Snakes Captured

Joan Simonet, Regional Minister of Agriculture, Fisheries, and the Environment, describes the situation in Ibiza as "serious and worrying." In 2024, 3,072 snakes were captured (up from 2,007 in 2023, and 2,710 the year before), according to data he provided yesterday as a summary of the annual campaign to combat this invasive snake. Using the green line, individuals reported the capture of another 400.

"More traps than ever" were also set: 1,564 (200 more than in 2023, and 300 more than in 2022), while in Formentera, "with a couple more traps, captures remain at around 880." In 2025, the number of traps will increase: "For this campaign, the number of traps distributed to municipalities is expected to increase to 500. In addition, the traps will be replaced, and the number of traps installed by the regional government will significantly increase," Simonet explained.

In Formentera, 806 snakes were captured in a total of 364 traps. There, the average capture rate "remains the same compared to the results of 2023 (888 captures and 323 traps) and 2022 (664 captures and 394 traps)," according to Simonet.

According to the Director General of the Natural Environment, Anna Torres, the control campaign for the horseshoe snake (*Hemorrhois hippocrepis*) and the white snake (*Zamenis scalaris*) began in 2024 during the second half of March and ended at the beginning of November. A total of eight participants participated.

For the first time, in 2024, Cofib was able to use a boat so that technicians could go to the islets on their own, without depending on other institutions: "They visited 16 islets in Ibiza,

chosen for their proximity to the coast, in search of signs of snakes. As a result, control measures were implemented on four of them, and 43 horseshoe snakes were captured on the island of Santa Eulària and four more on Murada Island."

Marià Mayans (IEE): "There is neglect"

For his part, the president of the Institut d'Estudis Ibizasencs, Marià Mayans, told this newspaper yesterday that "more than negligence, there is neglect. One for another...," regarding the implementation of Decree Law 1/2023, of January 30, on extraordinary and urgent measures for the protection of the Pityusic lizard, which, when it came to its implementation, all administrations ignored: "When the decree was approved, it already gave the impression that it was a law meant to take advantage of others, to look good. If it doesn't say who should do the job and how, and no one is very interested in doing it, it's stuck there, like so many other laws." Despite skepticism, Mayans advocates "never throwing in the towel" on this matter.

The plague reaches the Senate

Yesterday, the Partido Popular (PP) demanded that the Spanish government implement the National Plan for the eradication of snakes in Ibiza. This was done through an amendment presented by Senator Miquel Jerez to a motion by the Confederal Left Group in the Senate, which "only proposes accelerating the General Plan for the Port of Ibiza for the construction of a building for the quarantine of ornamental species," according to a press release from the People's Party. Jerez recalls that "in 2018, the Ministry for Ecological Transition prepared a plan for the management, control, and possible eradication of invasive snakes on islands. This document establishes in detail the measures to be implemented and the specific programs with the aim of mitigating the negative effects on natural habitats and native species and preventing their spread to other islands."



IB3 Notícies

Augmenta el nombre de captures de serps invasores a les Pitiüses

The number of captures of invading snakes in the Pityusic Islands increases

19/02/2025



More than 3,800 in 2024, according to data from the Ibiza and Formentera ophidian control campaign.

DIARIO de IBIZA

Radiografía (a la espera) de los efectos de la invasión de serpientes en Ibiza

X-ray (pending) of the effects of the snake invasion in Ibiza

Valentín Pérez Mellado is waiting for the Balearic Government to commission them to carry out the complete resampling of lizards in Ibiza and Formentera.



Ana Pérez and Valentín Pérez Mellado during a visit to an islet in Es Freus. / J.M.L.R.



José Miguel L. Romero
Ibiza 20 FEB 2025 18:36 Actualizada 21 FEB 2025 6:01

The research team formed for years by Pérez Mellado and Ana Pérez Cembranos, a doctor and professor at the University of Salamanca, is waiting for the Balearic Government to entrust them, within the framework of the so-called Boscà Plan, with the complete resampling of lizards in Ibiza and Formentera—which was halted a couple of years ago pending that decision—in order to "diagnose the real situation" of these reptiles.

The regional Boscà Plan aims to recover and conserve amphibians and reptiles in the Balearic Islands: "One of the most important aspects is studying the conservation status of the two endemic lizard species, those of the Balearic Islands and those of the Pityusic Islands. In principle, we would be responsible for this study, because it's ultimately a follow-up that continues what we've been doing for 30 years. The issue is that we're not just investigating Pityusic lizards, but also birds, *Posidonia* meadows ... there are 80,000 things. It's extremely ambitious, with a very high budget and many

ramifications, and it's taking a long time to get off the ground." They hope it will be ready soon so they can begin sampling this spring and summer.

They are based on knowledge accumulated over 30 years and data from "dozens of locations across all the island's grid cells" obtained "on two different occasions and with two very different results." The first result "was very good, and the second, very bad." A third study would provide insight into the real situation and the current evolution of the populations: "The first good data is from 2017. At that time, there were lizards all over Ibiza and in all the coastal towns on all the islets."

The second piece of data was obtained between 2019 and 2021: "In that second study, we observed the absence of lizards on islets such as s'Illot d'Or (also called illot de s'Hort or s'Ora) or Portinatx, where there used to be magnificent populations." They initially studied the islet d'Or in 2013-14, sometimes swimming to it from the coast of es Figueral, which is just 200 meters away: "There was a population there, even the densities of which we had calculated. It was a magnificent site where, in addition, there is a described subspecies endemic to that islet. We returned in 2017, and that population had disappeared. We went back three or four more times and saw that nothing remains."

In Portinatx, there's a small islet "very, very close to the coast" (almost an isthmus) where they once calculated lizard densities: "We also stopped seeing them. The same thing happened to us on the main island, in areas like Balàfia, where there were excellent transects; but now you do them and it's not that you can't calculate densities, it's that you don't see a single creature, it's that nothing comes out. There aren't even one, in the middle of spring, a magnificent time of year. In Santa Eulària, it's the same. There are only lizards in the gardens there. They've also disappeared on the islet of Santa Eulària."

He admits that five years ago, "I didn't have such an extreme opinion" as I do now: "Now I have a truly grave concern. This is very serious. Above all, we must prevent the 're-feeding' of this snake population. If it continues to 'feed' from the Iberian Peninsula with the arrival of more olive trees, there's nothing we can do. Eradicating a population that only grows on its own is relatively feasible; but eradicating a population that is constantly feeding on individuals that keep coming in is impossible."

DIARIO de IBIZA

Las serpientes de Ibiza son más sauriófagas que en la Península

Snakes in Ibiza are more sauriophagous than those in the Peninsula



A lizard from Sa Bleda Plena after being examined by herpetologists. / J.M.L.R.



José Miguel L. Romero

21 FEB 2025 6:00 Actualizada 21 FEB 2025 6:01

The volume of horseshoe snake captures (*Hemorrhois hippocrepis*), almost 4,000 in 2024 in Ibiza, "is unparalleled," says zoologist Valentín Pérez Mellado, the leading expert on the Pityusic lizard (*Podarcis pityusensis*): "More have been captured than there are in all the scientific collections in the world, those in Berlin, Frankfurt, Bonn, Spain, London... If you add them all up, there might be 300, 400 snakes... I've seen in Ibiza, in a single season, 50 times more horseshoes than I've seen in my entire life, and I'm over 70 years old. In the Iberian Peninsula, and I say this as a herpetologist, not as an amateur, it's a creature that you see every so often there. In places where it's very abundant, if you see one in a week, then you've already seen enough. What's happening in Ibiza is incredible."

In Formentera, the problem isn't as serious: "In the last survey we conducted there, in 2022, the snakes were present only in the La Mola area, where there was a magnificent density of lizards. In other words, it's not a problem. The snake can be eradicated there because, fortunately, it's an animal that hasn't adapted as well as the horseshoe snake."

In this regard, he points out that the ladder snake (or white snake, *Zamenis scalaris*), the most common (99%) in Formentera, "is not as sauriophagous, that is, it doesn't attack lizards as much or feed on them as much." In the Iberian Peninsula, he states, "neither the ladder snake nor the horseshoe snake (the most common in Ibiza) are very sauriophagous:" Neither of the two feeds much on lizards. But here they are in the snakes' diet, when it's not their usual prey. Both are much more likely to feed on small birds in nests and mammals. But when they arrived in Ibiza, they found the poor lizards to be a bargain."

DIARIO de IBIZA

Opinión | Editorial

DI

Editorial

23 FEB 2025 6:35
Actualizada 27 FEB 2025 13:14

Serpientes y ‘sargantanes’, una catástrofe previsible La situación de la lagartija pitiusa es crítica, especialmente en el norte de Ibiza y algunos islotes

Snakes and lizards, a foreseeable catastrophe. The situation of the Pityusic lizard is critical, especially in the north of Ibiza and some islets

The spread of snakes on the island of Ibiza is the chronicle of a disaster waiting to happen. Twenty-two years have passed since the first snake was found, and since then it was already known that the proliferation of snakes was threatening the survival of the Pityusic lizard, a species endemic to Ibiza and Formentera of which 23 different subspecies have been described. From the beginning, it was known that the snakes' entry route was olive trees imported from the Peninsula, but inexplicably, over the course of two decades, their arrival was not prevented, and no measures were even imposed to control and regulate this trade to prevent a catastrophic plague on the islands' environment. The negligence and irresponsibility of political and technical leaders over these two decades have led us to the current situation, where it is now impossible to eradicate the plague and the only hope is to contain it through trapping. But at the same time that snake capture records are being broken (3,800 in 2024), olive trees continue to enter the island unchecked.

The Minister of Natural Environment, Joan Simonet, says that more specimens are being caught because more traps are being set, but scientists like Valentín Pérez Mellado, the leading expert on the Pityusic lizard (he has been studying it for 30 years), disagree. He asserts that the snake infestation in Ibiza "is unparalleled." This herpetologist is categorical and maintains that the import of olive trees to Ibiza and Formentera should be completely banned so that the fight against this colonization can be effective. But unfortunately, the Balearic regional government doesn't seem to be interested in this. It's incomprehensible. In fact, the decree-law on extraordinary and urgent measures for the protection of the Pityusic wall lizard, approved in January 2023, is a dead letter, as no institution oversees its enforcement: neither the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), which reports to the regional ministry; nor the Balearic Port Authority; nor the Civil Guard; they ensure that olive, carob, and holm oak trees only enter the islands between April 1 and June 15, and from September 15 to October 15, which are the periods when there is no egg-laying, hatching, or hibernation.
Everyone believes it is not their responsibility, and meanwhile, the snake invasion continues unabated. But even if the decree were enforced, the expert maintains that it would not be enough, and that the arrival of these trees must be radically prohibited. Pérez Mellado describes the situation of *Podarcis pityusensis* in the northern half of Ibiza as "disastrous" and also warns that the snakes have already caused the disappearance of the lizard in some areas and islets.

It is outrageous that, given this critical situation, no one is taking action to control the entry of olive trees into the port. Furthermore, it is also urgent that the Government give the green light to a complete resampling of the lizard population in the Pitiusas, a study that began two years ago and will allow us to definitively determine the species' conservation status. We have already endured 22 years of indifference and neglect by political and technical leaders while the disaster unfolded. The consequence of their incompetence is that a unique species, an icon of the Pitiusas, is disappearing at an alarming rate, despite the fact that it was clear how it could have been avoided. We cannot afford further negligence in managing this environmental catastrophe.

Ibiza HEUTE

Editorial von Dieter Abholte: Wie ich es sehe…

Editorial by Dieter Abholte: How I see it...

23. FEBRUAR 2025



The editor-in-chief of IbizaHEUTE looks at the issue of snakes on Ibiza and Formentera, which have already wiped out almost all of the cute native lizards. The fact that things have come to this is largely due to political failure...



Dieter Abholte

Dear Readers,

It's not often that I'm at a loss for words. But with the latest news, I really can't think of anything else. It's about the snakes on Ibiza. Everyone knows that years ago, they came to the islands from the mainland on old olive trees. The reptiles had hidden in them or laid their eggs. By now, every reasonable person, including every politician, should recognize the danger that more and more snakes are coming from the mainland in vans to Ibiza or Formentera. That's right, it's the import of old trees, whose sole purpose is to beautify the grounds of villas and hotels. And then the logical conclusion would have to be drawn. And that is: Ban the delivery of old olive trees from the mainland – or at least inspect the trees for snakes or snake eggs.

But that's not happening. For years, such trees have been coming to Ibiza unchecked – and with them, more snakes. Imports are only prohibited twice a year. From April 1st to June 15th and from October 15th to November 15th. Why these import bans? Probably because snakes hatch from their eggs in spring. And there are many of them. A female ladder snake, of which there are now hundreds of thousands on Ibiza, lays between 5 and 25 eggs. No wonder Ibiza and Formentera are teeming with snakes. Believe me, that's not an exaggeration.

We at IbizaHEUTE have been calling for a ban on the import of ancient olive trees from the mainland for years. We're probably not alone in this. Nothing has happened. The authorities declared: We're not responsible for this! And while politicians complained about the snakes, they also remained inactive. Instead, the students learned how to catch snakes and also built protected areas for the last lizards that hadn't been eaten by the snakes. For this purpose, property owners can obtain – often for free – snake traps in which a mouse serves as bait. The mouse is protected from the snake by a wire mesh, and experts assure that the mouse is stress-free and unafraid when the snake comes. Sorry, I can't imagine that. I think the mouse is under constant stress when the snake opens its mouth, protected only by a thin wire mesh. The fact that the mice are locked in a confined space for days and weeks, and have to be provided with drinking water and food, doesn't make the animals' lives any easier.

The fact is: There are hardly any lizards left on the island, but there are more and more snakes. I remember that just years ago, dozens of pretty green lizards would scamper across our natural stone walls, many of them arriving just in time for breakfast. They especially loved bouncing on melon rinds and licking the sweet juice. We gave the particularly beautiful and large lizards names, and they were so trusting that they came onto our hands. The smaller ones, too. There haven't been any lizards on my property for two years, but there are snakes. I've seen two. There must be more. Or they've moved away because they've eaten all the lizards and small birds. The situation is similar with neighbors and friends.

I spoke to an expert a few weeks ago. Her opinion: "The snakes will continue to multiply rapidly over the next ten years. Then the population will decline because they won't find anything to eat!" Great prospects – but probably the truth. And because that apparently isn't enough, more snakes are being caught in the imported old olive trees for every laboriously captured one. What could help? Of course, only an absolute ban on the import of old olive trees. That should have been in place when the first snakes appeared, which was in the north of the island.

Now, a renowned scientist, Professor Valentín Pérez Mellado, zoologist and Pityusic expert, has spoken out and pointed out the politicians' shortcomings. We wrote about it here in IbizaHEUTE-Online on Friday. The expert on native lizards says: "If we want to contain the snake plague on Ibiza and Formentera and ensure the survival of the Pityusic lizard, we must stop importing olive trees, St. John's trees, and holm oaks to the islands." He also calls for a general ban on the import of such trees. The scientist says: "If a complete import ban isn't imposed, the snake problem will never be solved. Political action is needed here."

Now, no tourist needs to fear snakes slithering into their hotel room. The ladder snake, which is prevalent here, tends to be found where it finds food—i.e., in the countryside. It's also not venomous, so it's relatively harmless to humans. Unfortunately, it is for the friendly lizards. And as long as trees continue to arrive from the mainland, there will be no shortage of snakes. Nature lovers can catch as many of these reptiles as they want...

A decree from the Balearic government would suffice, stating: "The export of trees from the mainland to Ibiza and Formentera is prohibited!" It can't be that difficult, surely...

Best regards, Dieter Abholte

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Eivissa i Formentera

Las serpientes invasoras en Ibiza buscan alimento en las alturas y ya van a por los geckos

Invasive snakes in Ibiza are seeking food at high altitudes and are now targeting geckos

Por **Laura Ferrer** — 25 febrero 2025

The snakes that have invaded Ibiza are learning to feed themselves however they can. While until now they were most commonly seen slithering along the ground, feeding on lizards and mice, they are now becoming more commonplace, searching for food among the beams and high walls of Ibizan homes. This is the warning given by Dean Gallagher, a well-known snake-hunting volunteer who promotes the danger of this pest and the importance of preserving the native lizard.

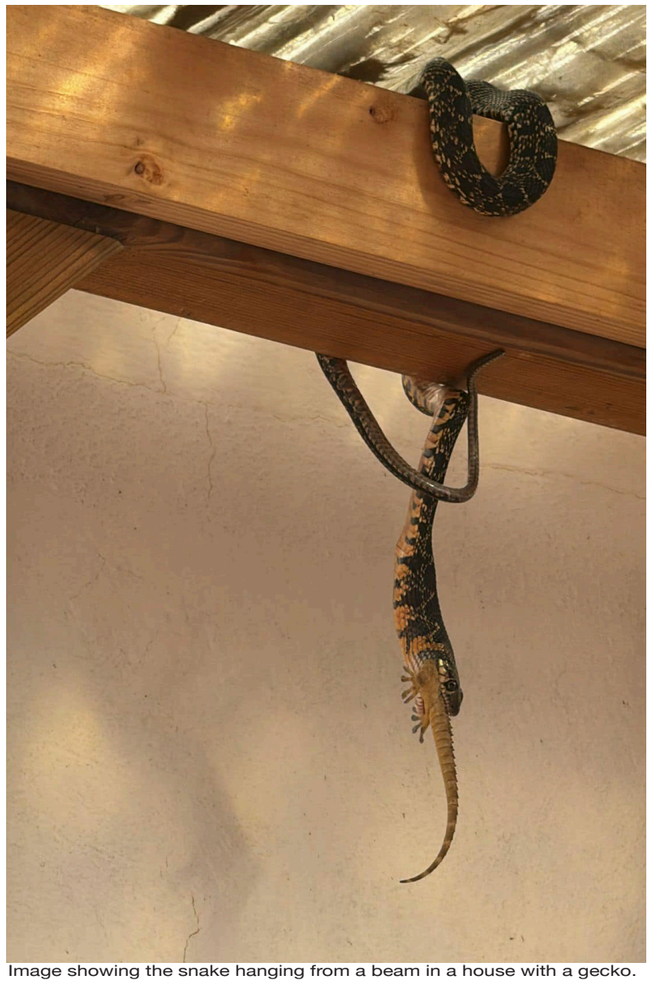

Image showing the snake hanging from a beam in a house with a gecko. Photo by Dean Gallagher.

The victims of this new hunting method are geckos, also known as salamanquesas and dragones, which live and shelter among beams and in the upper areas of houses.

A picture is worth a theory, and so in this photograph by Rafa, a neighbor of Jesús, provided by Dean Gallagher to Noudiari, we can see a large snake hanging from a beam and swallowing a gecko.

“Our lizards are in serious danger of extinction, and our ecosystem is already suffering. The *Tarentola mauritanica*, once fairly safe from the jaws of the horseshoe snake, now sees its elevated sanctuaries as vulnerable as the ground-level rock walls where the lizards lived in abundance… Now, tragically, we see far fewer of them in most places on the island,” explains Gallagher, who draws attention to an additional fact: the photo was taken in February, a month when snakes are supposed to

be hibernating and not as active in hunting.

"As we approach the end of February, some surprises have emerged, as well as certain things I predicted years ago regarding the ongoing fight against the snake invasion in Ibiza," Gallagher added in a social media post to raise awareness of the problem, which he also wanted to share on this medium to increase awareness.

"Fortunately, more and more residents are getting involved, and thanks to our combined efforts, we have made some progress in capturing these invasive snakes, although the fight is far from over," he warns.

He emphasizes that the snakes are highly adaptable to their environment and are even changing their eating habits. "Their search for protein is shifting to higher altitudes, reaching areas that were previously safe from these voracious creatures, which is demoralizing both the most dedicated snake catchers and volunteers," he adds.

"Why do we bother? How long will it take to end this?" some are asking. The problem is that if we didn't do what we're doing, the situation—without a doubt—would be horribly worse. It's a fact," he emphasizes.

"Public administrations, city councils, Cofib, etc., are doing everything they can, as are voluntary NGOs such as Amics de la Terra, Gen-Gob, Institut d'Estudis Ibizasencs, among others (forgive me if I forget anyone), as well as Timotheus Freytag and IbizaPreservation, who continue to do wonderful work," Gallagher applauds.

"The reality is that we need more help... With the almond blossom and the first signs of spring on our beautiful island, reptiles—and, tragically, snakes—will reappear," he warns about this time of year (spring) when hibernating animals emerge.

Gallagher is in the process of organizing several charity events in collaboration "with the good people of this island." "I'm looking for spaces to hold these fun but important activities. The more, the merrier!" he announces.

"If we can build hundreds more traps, train and educate volunteers, and provide ongoing support to the island's residents, we can keep moving forward," he concludes.



Ladder snake in the middle of winter in Sant Miquel. Photo by Dean Gallagher.

25-02-2025 - Ana Bianco - This is what would happen in Ibiza if snakes wiped out lizards (ecology)

DIARIO de IBIZA

Esto pasaría en Ibiza si las serpientes acabasen con las lagartijas

This is what would happen in Ibiza if snakes wiped out lizards

The uncontrolled proliferation of the horseshoe snake endangers the island's ecosystem and its most emblematic species.



The Pityusic wall lizard is unique in the world / SEBASTIÁN CANDELA

Ana Bianco
25 FEB 2025 5:01

Ibiza faces a new threat: the proliferation of snakes. The horseshoe whip snake, an invasive species, has spread throughout the island, endangering its native fauna, especially the Pityusic wall lizard, a symbol of Ibiza and a key element of its ecosystem.

The horseshoe snake is a voracious snake that feeds on small reptiles, such as lizards. The lack of natural predators in Ibiza and its high reproductive rate have led to a population explosion of this species, decimating the Ibizan lizard population.

What would happen if the lizards disappeared?

The disappearance of the lizards would have devastating consequences for Ibiza's ecosystem. These small reptiles play a fundamental role in controlling insect pests and dispersing seeds. Their disappearance would alter the food chain and could cause an irreversible ecological imbalance.

Furthermore, the Pityusic wall lizard (*Podarcis pityusensis*) is a symbol of Ibiza and a tourist attraction. Its disappearance would represent an irreparable loss to the island's natural and cultural heritage.

What is being done to solve the problem?

Authorities and environmental organizations have launched various initiatives to control the horseshoe snake population and protect the Pityusic wall lizard. Traps have been set up and snake-catching campaigns have been carried out. Efforts are also being made to raise public awareness about this problem and promote preventative measures.

DIARIO de IBIZA

Adiós, lagartijas

Goodbye, lizards

Opinión | Para empezar



Laura M. Expósito

27 FEB 2025 6:01
Actualizada 27 FEB 2025 9:55

I remember when I came to Ibiza for the first time. It was 2013. I had heard about the many wonders of this island and how beautiful it was. At that moment, I fell in love. The landscapes, the nature, the "Ibiza blue" sky, and, of course, its lizards. The ones that were on the sarongs, mugs, and keychains that people bought as souvenirs were also everywhere.

I was surprised to see how many there were. Of different colors and sizes. Back then, I would cross Ses Feixes after leaving my car in the park-and-ride parking lot, and they would cross right in front of me. Quickly, but fearlessly, letting themselves be photographed. They would also appear unexpectedly when we were preparing a picnic and eating on one of the island's typical piers.

It's been 12 years. Back then, my Ibizan, who used to tell me about some purple lizards that used to be found at his grandparents' house in Santa Eulària, was already telling me that snakes were eating them, and that what surprised me was nothing like what we'd seen years before.

How is it possible that nothing was done until just four or five years ago? In a decade, the lizard population has been cut in half. I can't imagine how much the snake population has grown.

Now, snakes are everywhere. The ones you come across on a walk in the countryside, they get into houses, and they swim in the sea. I can't remember the last time I saw a lizard cross my path or come to share my picnic.

The creation of platforms like 'Sargantanes o serps' demonstrates the public's interest in trying to reverse this situation. However, it's unacceptable that there is still no effective control of the trees that come from outside. The only animal endemic to these islands is disappearing. Who will take the blame and all that it entails?

Ibiza HEUTE

Brite in Aufregung: Schlange im Dachgeschoss

Brit in agitation: Snake in the attic



Uninvited lodger in Jesús. Photo: private

Briton Dean Gallagher won't soon forget this encounter in his Ibiza apartment: A "nearly 1.5-meter-long reptile" had nested between the roof beams of his laundry room. Only after a brief struggle, during which the island resident had to climb onto a washing machine, was the snake captured.

This isn't an isolated incident, reports Gallagher, who volunteers to combat the snake plague: "With the rise in temperature, the snakes are already becoming more active and emerging from hibernation." The animals' new tendency to move up to the upper floors of houses is worrying.

"Once they've finished with the lizards on the ground, they search for other food higher up," explains the amateur snake catcher. "Snakes seek these moist, warm areas both as hunting grounds for geckos and as shelter." In addition to roof beams, pool equipment rooms are also popular hiding places. The tricky part: "Even if you don't see any, that doesn't mean there aren't any," warns Gallagher.

Mice attract snakes

The Briton welcomes the preventative measures now in place across the island: "The sooner we set traps and take measures against mice, the better." The rodents attract snakes with their smell, he says, and they're at the top of their menu. Gallagher's tip: "All homeowners should have traps installed by the beginning of April at the latest."

Gallagher himself says he's set a good example. He claims to have taken appropriate precautions in his apartment – but apparently, it couldn't prevent the snake from entering.



Estimation of lizard density in *Podarcis pityusensis* island populations over time, with special attention to the correct naming of the islets

Antònia M. Cirer & Marten van den Berg, March 2025

Abstract:

In this study we compile data regarding lizard densities of the island populations of the Ibiza wall lizard, *Podarcis pityusensis*, which can serve as a baseline for future research and control of the invasive snakes, and in particular the horseshoe whip snake *Hemorrhois hippocrepis*, in the Pityusic Islands. Special attention has been given to the correct official spelling of 96 locations of which 89 are real rocks, islets and islands. For each island a short description, toponymy, faunal and floral aspects and some herpetological history is given, and a lizard density value was assigned. The results are very disturbing, with two confirmed- and three most likely extinct island populations of *Podarcis pityusensis*, and we call for coordinated action.

Keywords: Lizard density, *Podarcis pityusensis*, Pityusic Islands, *Hemorrhois hippocrepis*, extinction events.

Cover image: Natural park area of ses Salines d'Eivissa with a lizard density value of 4 (photo: Sebastian Candela).

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Denuncian ante la Guardia Civil a Amics de la Terra y GEN-GOB por «cazar serpientes a golpes»

Amics de la Terra and GEN-GOB have been reported to the Guardia Civil for "hitting snakes."



Horseshoe snake. Photo: Balearic Government.

Por **Redacción** — 21 marzo 2025

Partido Animalista PACMA has filed a formal complaint with the Civil Guard (SEPRONA Unit) "for an event scheduled for today, Friday, March 21, in Ibiza, in which the organizations Amics de la Terra and GEN-GOB plan to distribute live mice to be used as bait in traps intended to capture and kill snakes," it said in a statement. PACMA considers this practice to be "a serious violation of animal protection legislation, which encourages the elimination of snakes without control or scientific justification." Furthermore, it denounces that these animals will be handed over without any supervision regarding their fate, "which further aggravates the situation." "According to information available on the organizers' website and in published videos, the initiative exposes the mice to severe stress, as they are placed in traps where they are at the mercy of snakes with no possibility of escape. Furthermore, it is explained how, once the snake is captured, it is struck on the head and pierced with a sharp object to cause its death," the statement continues.

Partido Animalista reminds us that this activity could constitute administrative infractions and a possible crime of animal abuse, both towards mice and snakes, in accordance with Law 7/2023 on the Protection of Animal Rights and Welfare, Balearic regional legislation, and the Penal Code. Partido Animalista has requested that the Civil Guard immediately halt the event and open an investigation to determine possible legal liability. It has also called for the confiscation of the live mice.The political party emphasizes that any species management program must be carried out under scientific criteria and using non-lethal methods, avoiding the suffering of any animal. "The capture and elimination of snakes must be supervised by experts and not delegated to the public," the press release concludes.

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Sobre la denúncia de PACMA a les associacions GEN-GOB i Amics de la Terra, per Antònia Maria Cirer

About PACMA's complaint to the GEN-GOB and Amics de la Terra associations, by Antònia Maria Cirer



Snake in a stock image.

Por **Opinión** — 23 marzo 2025

I just read in your newspaper the unusual news of a complaint filed by an Animal Rights Party against two associations working to promote the installation of snake traps in the Ibiza countryside.

What I've read contains many errors and falsehoods, what is now called «fake,» so I believe some of the misconceptions still circulating about the problem of invasive snakes in Ibiza should be clarified.

Although we are all equal in front of the law and all deserve the same respect, allow me to point out that not all opinions carry the same weight. So that everyone knows where my opinion comes from, I will point out that I began studying herpetology (the science that studies reptiles and amphibians) in the late 1970s. Focusing on the study of the Pityusic lizard, its evolution and habitats, with a doctoral thesis on this species presented at the University of Barcelona in May 1987.

Environmentalism, the defense of animal rights, and raising awareness of the environmental problems facing the planet are necessary social, ideological, and humanistic endeavors, and the existence of environmental associations is commendable. But, Ecology is a very complex science, involving mathematics, models, predictions, and interactions. This isn't a description of the landscape. Sometimes there is a deliberate confusion between environmentalism and ecology. One thing doesn't necessarily imply the other; there are environmentalists who know nothing about ecology and ecologists who don't have an environmental point of view. Let me point out that this is like confusing feminism and gynecology. Feminists don't necessarily know anything about gynecology. Hence, I feel the need to clarify from a professional perspective and from a perspective of respect for all species.

- The Ibizan ecosystems have never had snakes. They are recently introduced species that behave as invasive, that is, like pests, disrupting the ecosystem they have reached. On the mainland, they are protected species; they provide stability to the ecosystem and are essential. But I repeat, in Ibiza, they are invasive.

- Snakes are causing the disappearance of lizards, the only endemic vertebrate to these islands. Furthermore, they are disrupting the rest of the native fauna, which negatively impacts all other living beings.

- Snakes here have no predators, so we must find a way to neutralize them. Traps are a good way until another solution is found.

- If the person who filed the complaint had informed themselves a little more, they would have noticed that each trap has two compartments. The snake never has access to the mouse compartment. The snake can never attack the mouse.

- If the person who filed the complaint had asked the person who owns the traps, they would have learned that they treat them like pets, that they are laboratory mice that live peacefully in their cage, unfazed by the fact that a snake is nearby. They are selected mice that don't recognize the danger a snake poses. And here are two considerations to make: First, if we release the mouse, it will soon fall prey to a predator; it doesn't even know how to find food for itself. Second, there are breeding pairs of mice that live inside the trap like the pets they are, and breed; if they were stressed, they wouldn't do it; and they count many captures, if they were stressed, their scent wouldn't attract the snake.

Let's move on to the euthanization of the captured snakes. No one likes to do it. That's why the volunteers are explained the various ways to minimize pain. A sharp blow is one of the quickest. There are others, such as cooling them to induce hibernation. These are different types of animal euthanasia, where speed guarantees freedom from suffering.

Finally, remember that snakes are reptiles, not mammals. Therefore, they have a nervous system and brain centers very different from mammals. Sometimes I read things about snakes (even by so-called experts) that lead to the mistaken belief that a snake has a brain and nervous system similar to that of a mouse. Nothing could be further from the truth. A mouse is a mammal, with a metabolism, nervous system, and emotional state similar to any other mammal (including us). This is not the case with a snake, which has a completely different metabolism and what in neurobiology is called a reptilian brain.

Antònia Maria Cirer,

Doctor in Biology and Herpetology



(Astonishing) Comment by “**oops**”:

I do **NOT** agree with Ms. Cirer. **NO**. I am tired of and disgusted by the hatred and harm being spread to the population and caused against snakes. Just as I hated the stupidity and barbarity of killing the goats of Es Vedrá with shotgun fire to "protect" other native species. Either we are an advanced civilization or we are not. Either we learn, or we do not learn with humility, to respect the planet and nature and its automatic functioning, which has existed for millions of centuries, without trying to manipulate it by playing God. We are not God. Nor is this land ours. The term "invasive species" is evil and erroneous.

Invaders of Ibiza, we humans come first, and that doesn't mean we are going to wipe them all out. (Some would say it would be the best!). We must respect Nature, its very life, its existence, and its future for all animals, including insects, no matter how much or how little brain they have. Every living being is important and worthy of respect.

Snakes, as everywhere else on the planet, would sooner or later arrive on the island floating on a log. It's a natural process, and they would colonize these lands. All living beings colonize areas, and new balances are created. At the expense of the lizards—probably most of them, yes, but the lizards were once also invaders. They weren't magically created on the island, and more than likely, they wiped out other species and insects.

Nature and its evolution must be respected. It balances itself. Sooner or later, new balances are automatically established. The lizards will continue, but less abundant; the snakes will continue, but less abundant. Furthermore, it's a malicious lie to say that snakes don't have local predators.

There are thousands of wild cats that happily eat them. And they need it, because we are the ones to blame for abandoning them and not caring for them, looking the other way. There are thousands of wood pigeons, seagulls, and field mice that happily devour them, especially their eggs. There are hundreds of wild dogs that also enjoy and need such a tasty morsel.

And surely more predators will emerge automatically. I heard that weasels and similar creatures are already recovering on the island. Now they'll have something to eat and will thrive. Nature is wise and knows what it's doing, much more so than we, who are very brutal and criminal. And snakes don't just feed on our lizards; they surely prefer the field mice, of which there are millions, a thousand times over, and will help control their population. These mice, if too many, can be dangerous to human health (feces and urine, bacteria and viruses), and to crops.

And snakes eat thousands of insects that damage flora and crops, and I wouldn't be surprised if they eat processionary caterpillars, spiders, cockroaches, beetles, snails, caterpillars, and ants. And they'll eat and clean the carrion of dead animals. They'll also eat sparrows and small birds, of which there are many, and their nests and eggs. And it seems they're already starting to swim in the sea, perhaps for crabs, small fish, mollusks, who knows.

DIARIO de IBIZA

Lagartijas azules (casi negras) de Ibiza en Berlín

Ibizan blue (almost black) lizards in Berlin

The Natural History Museum (Naturmuseum) houses a magnificent collection of Ibizan lizards collected by Martin Eisentraut 97 years ago.



SERGIO G. CAÑIZARES



José Miguel L. Romero

Berlín 30 MAR 2025 6:00 Actualizada 30 MAR 2025 13:57

Frank Tillack stops at the thick double gate and sets his cart aside. He becomes more serious (even more so than he already was) and looks at me intently:

Only accredited researchers are allowed in here. [For a moment I think I'm going to be left out.] But you can come in with me. Phew. Instructions. In this warehouse—he continues—only two people are allowed in at a time. You only enter here two at a time. If the alarm goes off, we have 30 seconds to escape before the door closes hermetically. Why only two at a time? For safety. And why can't just one person go in? So that if one of us gets into trouble, the other can drag us to the exit. But in that case, I remind you that you'd only have 30 seconds to get out. And then? You should wait inside to be rescued, but chances are you'll never get out of here alive. Needless to say, the white coat you just handed me is not fireproof.

When he opens the gate wide, I understand everything. Inside is the herpetological and amphibian collection of Naturkunde, Berlin's Natural History Museum, founded 215 years ago and home to gems like the remains of a Brachiosaurus brancai, the largest dinosaur skeleton in the world (it stands 13 meters tall), and an Archaeopteryx specimen, one of the most famous fossils. But what interests me isn't the sauropod or that prehistoric bird, but the dozens of lizards that the German naturalist Martin Eisentraut collected between 1928 and 1930 in the Pitiusas. They remain, 97 years later, housed in that museum. And they're there, right in that room, inside glass jars that the zoologist himself sealed with frosted stoppers after smearing the edges with Vaseline to prevent the alcohol from evaporating.

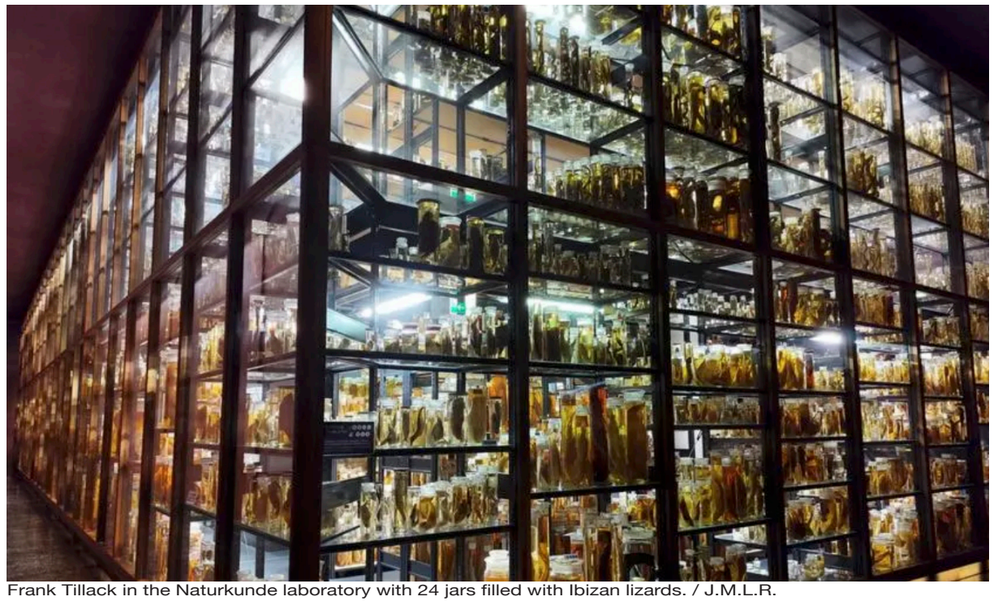
And such caution is precisely because of those alcohol fumes. Upon entering, I understand why Tillack, who is responsible for the Naturkunde's amphibian and reptile collection, is so concerned about security. In the room, there are thousands of jars containing all kinds of bugs, filled almost to the brim with 75% alcohol: "If the security systems 'smell' the ethanol, the alarm would go off and the gates would seal shut. And if a spark were to fly, boom," he explains without flinching. I'm sure he heard me gulp. To avoid that mishap, he wears special anti-static safety shoes. He's strapped cumbersome



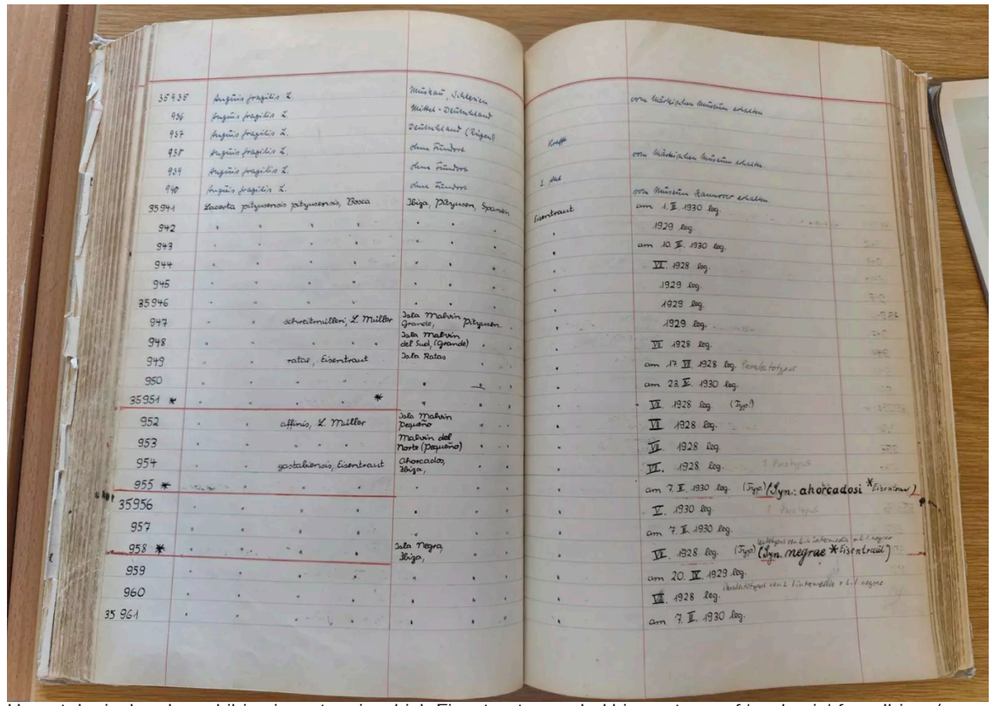
Frank Tillack in the Naturkunde laboratory with 24 jars filled with Ibizan lizards. / J.M.L.R.

straps around my feet that serve the same purpose. And for that very reason, you can't even enter with a cell phone, so you can't photograph the cabinets where the dozens of lizards Eisentraut captured in Ibiza and Formentera have been resting for almost a century.

All this material, along with the rest of the amphibians and reptiles, has been stored there "since the summer of 2010," explains Tillack: "It's a state-of-the-art, fully climate-controlled collection warehouse." And insulated. The floor is perforated, so you can see the lower floor, also filled with cabinets containing thousands of jars of species (in this case, snakes and large lizards: the crocodiles are in special tanks) that withstand the test of time soaked in alcohol. Tillack says that the museum



Frank Tillack in the Naturkunde laboratory with 24 jars filled with Ibizan lizards. / J.M.L.R.



Herpetological and amphibian inventory in which Eisentraut recorded his captures of 'podarcis' from Ibiza. / J.M.L.R.

houses one million species housed in some 233,000 jars and submerged in some 80 tons of alcohol. In the herpetology section, Tillack estimates there are about 160,000 specimens. The public can only see 1% of this immense collection, which has been organized taxonomically.

The Pityusic lizards are near the entrance, on the first shelves in the first aisles (there are a total of eight, each about 50 meters long). But before entering them, Tillack shows me one of the creatures that fascinates him most, a huge *Conraua goliath* frog, which is in danger, he says, because in Cameroon the females are indiscriminately hunted to eat them, to race them, or to sell them to collectors.

Soaked in Alcohol for Nine Decades

And there, placed on one of the upper shelves, are, almost all upside down, the Ibizan lizards that Eisentraut brought to Berlin almost a century ago. The earliest ones I see are those he collected on the island of Penjats in 1930. The jar has two labels. On one is written (Tillack believes it is Eisentraut's handwriting) "Isla Ahorcados Ibiza Spanien Eisentraut leg." On the other, placed almost at the base, "*Lacerta* [at that time, Pityusic lizards were still included in the genus *Lacerta*] *pityusensis gastabiensis*, Eisentraut," along with the location (also in Spanish) and the date ("5 [May] 1930"). In ‘Contribution to the lizard fauna of the Pityusic Islands and Columbretes’ (‘Beitrag zur Eidechsenfauna der Pityusen und Columbreten’, which appears in ‘Mitteilungen aus dem Zoologischen Museum in Berlin’), Eisentraut speaks specifically of them: “During my first stay in Ibiza in the summer of 1928, I had the opportunity to catch lizards on the small, elongated lighthouse island of Ahorcados, to the south, between Espalmador and Ibiza. Although the four animals captured at that time presented characteristic features compared to the other neighboring races, I did not yet dare to establish a new race due to lack of material, but placed them with the *L. lilfordi negrae* Eisentraut, from the nearby Negra Island. After capturing another 26 specimens [in 1930] and comparing them with 13 fresh specimens from Negra, I would now like to identify the Ahorcados lizards as a new race. He named it *Lacerta pityusensis ahorcadosi* subsp. and explained that, compared to those from Ibiza, those from Penjats were darker: “The upper part varies from dark green to dark brown. However, the brown is not as dark as in the case of the lizards from s’Espardell,” of which he had eight samples. “Some animals,” he commented at the

time, “bear a certain similarity to those from Tagomago.” And unlike those from Negra Island, “in which the markings on the upper part are very clearly resolved, the Ahorcados lizard still presents clear longitudinal stripes, although more or less interrupted.”

The Proof of Difference

He had before him those *Podarcis* that Eisentraut had described 95 years ago, inert but with all their characteristics intact. Time stopped in their small bodies a century ago thanks to the alcohol. Ever since. The ten inside the jar remain in the same position (upside down), some with their mouths open, pierced by the tail of another.

There is the evidence collected by Eisentraut over three years that, as he emphasized in that scientific publication, demonstrated that the Pityusic lizards were different from those of the rest of the Balearic Islands: "During my trip to Spain this year [1930], which was mainly dedicated to studying the variation of lizards on small islands, I had the opportunity to collect specimens on some islets where little or nothing was known about their lizard populations. These are some islands located to the west and south of the large Pityusic island of Ibiza, and also the Columbretes, which form an independent group." All of them, he specifies in that text, "are found in the Zoological Museum of the University of Berlin," the Naturkunde. In his opinion, the lizards of the Balearic Islands and the Pitiusas form "two morphologically easily distinguishable groups." The Balearic ones have "small, unkeeled scales," among other characteristics. The Pityusic, however, have "large, keeled scales." There are also, he emphasizes, differences in the shape of the head: those from Ibiza have "significantly more blunted than those from the Balearic Islands."

Eisentraut uses this detailed description to contradict herpetologist Lorenz Müller and establish, for the first time, that the Pityusic lizard was very special and different from the Balearic one: "[Müller] does not consider these differences sufficient to justify a separation of species. While I initially also united both groups under the common species name *Larcerta lilfordi*, I would now like to advocate separating the two into species, in view of the considerable differences, as has been done previously," he suggests.

Valentín Pérez Mellado, professor of Zoology at the University of Salamanca and the leading expert on *Podarcis pityusensis*, recounts that at that time there was "a real race" to describe the Pitiusan subspecies: "Eisentraut, who used to work in the tropics, saw at one point that it was a gold mine and competed directly with the herpetologist Lorenz Müller, although they had great mutual respect." He had to deal with the physiologist Karl F. Buchholz, who was "very aggressive and accused Eisentraut of being a Lamarckian, which is not strictly true." Everyone was fighting to establish and describe subspecies, and anything went to be the first, to go down in history: "The race was so brutal that they began to publish their descriptions in third-rate journals as long as they would be published quickly and thus be the first. They were magazines for aquarium hobbyists (like 'Aquarium') and terrarium hobbyists. There were populations of *Podarcis* from Ibiza that were published three times in the same year, in three magazines and by three different authors.

On the shelves of the herpetological collection at Naturkunde, where jars Eisentraut filled with Ibizan lizards mingle with others from other parts of the Balearic Islands, there are also several containers containing bugs from es Vedrà and es Vedranell. And the word "bugs" is because that word describes them perfectly: in both cases, they are so enormous, so thick, with such marked gigantism, that Eisentraut only put one specimen (a male, very dark, with a dark blue, almost black belly) of es Vedranell in a jar, in this case longer than it is wide. They can't fit any more in there.

Pulse with Müller

Eisentraut used that magnificent reptile he captured on es Vedranell in 1928 to contradict Müller: "In the brochures for terrarium and aquarium science, Müller describes the lizards from the island of es Vedranell, near es Vedrà, as a new race *vedranellensis*, characterized by lighter colors than those of the Vedrà race, not only on the upper part but also on the underside. During my first stay in the Pitiusas, I was able to visit the islands of es Vedrà and es Vedranell and collect lizard material, although only one adult specimen of the latter [the colossus that still rests in a jar in the Naturkunde]. The underside of this animal was much darker than that of the es Vedra animals I had at the time for comparison. "During my current visit [back in 1930] to both islands, I captured five specimens on each, two of which were juveniles. It now also turned out that the lizards from es Vedranell were slightly darker than the



Two giant specimens of ses Rates and es Vedranell. / J.M.L.R.

comparison animals captured on es Vedranell, i.e., exactly the opposite of the information provided by Müller," Eisentraut noted in his report. He caught those lizards on February 26, 1930, as he noted on one of the jars, which contains several small reptiles, not as enormous as the one from 1928. The naturalist warns in that publication that "apart from the fact that the color difference between the two populations of lizards [that he himself captured] is exactly the opposite of what L. Müller stated," he does not consider "a distinction in nomenclature" between the two lizards to be appropriate, "especially because of the considerable range of variation in the lizards from es Vedrà," where he compared "more than 100 specimens." "If you combine the findings I made on the lizards from es Vedranell (generally darker shades) with Müller's findings (generally lighter shades), it becomes clear that those from es Vedranell also vary from lighter to darker shades. Therefore, I would like to consider the reptiles of both islands as a single race, L. pityusensis vedrae," he explains.

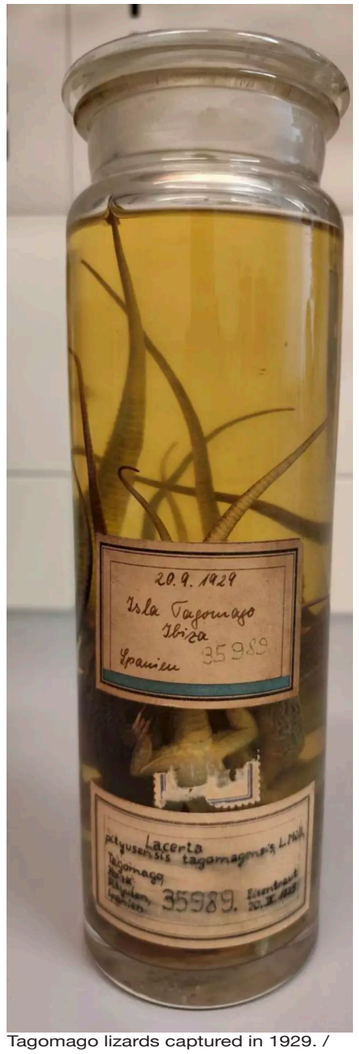
From that warehouse, we extracted 24 of the containers filled with lizards brought by Eisentraut to Berlin. There are many more scattered on those shelves. Tillack doesn't know the exact number of jars because they aren't organized "according to collectors, collecting events, or expeditions, but rather in a scientifically systematic manner." How many did



Specimens that have been submerged in alcohol since 1928. / J.M.L.R.

the German biologist bring back? He also doesn't know because, "unfortunately, this part of the collection (Lacertidae) has not yet been digitized." He believes that the collection "contains approximately 450 specimens of *Podarcis pityusensis*," of which Eisentraut collected "at least 160 (probably more)," he indicates.

We put them in the cart and head upstairs (we have to take a long detour because it's under construction), where Tillack has his office, where two turtle heads and several snake prints hang, and which he shares with a live rhinoceros snake (*Gonyosoma boulangeri*) slithering in a terrarium: "I'm a snakeman." He calls himself that because he loves snakes, of which he has described numerous specimens during his career, many of them from Southeast Asia and the Himalayas. He's also just described a gecko from Nepal: "Don't worry, it's not dangerous, it's not poisonous," he says about his pet. He hasn't given it a name ("never"), but it's his pet. There, peacefully and without fear of the ethanol turning us into barbecues, you can closely observe (part of) Eisentraut's incredible collection, such as the lizards he collected on the islet of Ses Rates (there is a single gigantic one in a jar that he captured in 1928 and which has a light blue belly). There are some from es Malvins (1929), from the islet of Cala Salada (caught in October 1928 and March 1930), from es Canar (September 20, 1929), from Murada (1928 and 1929), from sa Conillera (September 1929), from s'Espartar (July 1928) and from the Escull de s'Espartar, from na Gorra (1929, indigo blue, almost black), from Tagomago and from es Trocadors (very light, caught in Formentera in July 1928).



Tagomago lizards captured in 1929. / J.M.L.R.

"Announcement of Experiments"

And Eisentraut not only conducted research on each islet, but also did something that is strictly prohibited today: he conducted experiments on them. That 1930 publication contains a chapter entitled "Announcement of Some Natural Experiments." It is a public warning about the experiments he conducted on islets "with sparse vegetation" and which he believed did not harbor lizards. He conducted them, for example, on "the Escull de Tramontana rock, the northernmost of the ses Bledes group; on the high triple rock of Vechell [es Vaixell], between Gorra and es Bosc (...); on the elongated rocky islet of sa Galera, north of es Vedrà; in the southeast, on the Daus Gross rock, which is located in the port of Ibiza and has a separate lighthouse, and on the islet of Negra." On these small islands, "several breeds of lizards were released for experimental purposes," he specifies. For example, "lizards from Ibiza [the main island] on the first three islands mentioned (24 of them in Escui de Tramontana; 51 in es Vaixell, and 20 in Galera), 50 in Negra (...) and, finally, in es Dau Gross, eight males from Escull Vermell and 20 females from Ibiza [on the main island]." He announced these "natural interventions" in order to "avoid mistakes," that is, so that other researchers who saw these creatures scurrying around those islets would not believe that they had just discovered some new subspecies.

On es Vaixell, he made a mistake: there was indeed a native population, as Pérez Mellado demonstrated nine decades later after conducting genetic studies. The pairs Eisentraut released didn't thrive there, probably because he left them at the bottom, where the sea hits, not at the top of the islet. And perhaps for that reason, because he hadn't climbed to the top (something that requires ropes and alpine climbing methods), he didn't know that an endemic lizard already resided there. On es Dau Gross, he did succeed, and the resulting population, as the Salamanca zoologist recently confirmed, is, genetically, a mix of those from the northern islets and those from Ibiza, although the dark blue of the former prevails.


A giant *Podarcis* of Tagomago. / J.M.L.R.

Tillack believes the jar labels were written by Martin Eisentraut because that handwriting matches the one appearing in the inventory from that period ('Reptilien-Amphibien-Katalog Band 5'), which he presumably filled out with his own hand and quill. That book also displays the handwriting of many other scientists who duly attested to their catches. He treasures it, and no wonder those eight pages describe in detail Eisentraut's forays through the Ibizan islets (Rodona, s'Espardell, Portinatx, ses Margalides...), but also his trips to Menorca (Colom, Isla del Rey), Cabrera, Mallorca (Islet de los Frailes, Dragonera), and Columbretes. A legacy of a fascinating era that Naturkunde treasures like gold, and that has survived the historical vicissitudes it has endured.

From es Pouàs to Naturkunde: the lizard's bite 16,000 years ago

The importance of the Pityusic lizards preserved in Naturkunde lies in the fact that they are the types and holotypes of *Podarcis pityusensis*. That is, they are the original specimens with which Eisentraut described the subspecies of the Pitiusas. "Each type," explains Valentín Pérez Mellado, "is exactly the physical specimen with which the author made his description." This is the standard against which other models are compared: "When you describe a new subspecies, you are obliged to designate one specimen as the type. And a series (the specimens captured to make that description) as paratypes." Some jars in the collection contain precisely these designations, written in red. And several researchers are currently turning to that collection, such as Steffi Woodgate, a biologist at the University of Oxford who is preparing her doctoral thesis with Johannes Müller, a professor of Paleozoology who works on Naturkunde. Pérez Mellado and Dr. Ana Pérez are collaborating on that thesis: "It compares the current populations of Pitusa lizards with how they were 16,000 years ago. To do this, they are using, in collaboration with Josep Antoni Alcover, a paleontologist at Imedea, the remains from the s'avenc des Pouàs site," explains Pérez Mellado.

They are studying, for example, "the morphological characteristics of the lizards' jaws and skulls, which indicate, with a series of stable isotope data, what they ate in es Pouàs 16,000 years ago. And they compare that with what they eat and what lizards are like now in Ibiza, on the main island and on some islets." The result will give "a vision of how lizards have evolved over thousands and thousands of years." The lead researcher is Johannes Müller. He's the one who "coordinates everything." "They investigate," explains Pérez Mellado, "what the bite force was like in lizards 16,000 years ago. And they do this based on the morphology of the fossil bones they find, which they compare with X-rays and CT scans of modern lizards."

TEDx DaltVila

¿Lagartijas endémicas o serpientes invasoras?

Endemic lizards or invasive snakes?



What's happening in Ibiza with introduced snakes? Endemic lizards and other native species are becoming extinct. Lizards are the only vertebrate endemic to the Pityusic Islands, and when they disappear, new pests emerge in the trees, causing significant ecological imbalances.

Antònia Cirer is a biologist from Ibiza and has observed and studied the Ibiza wall lizard more than 50 years. This lizard is a great living evolutionary example. With that purpose she studied Evolution with Dr. Prevosti and Ecology with Dr. Margalef at Barcelona University. She finished her doctoral thesis in 1987, supervised by Dr. Martinez-Rica, on lizards populations in all the Pityusic Islands.

She have been Biology, Geology and Earth Science professor, but is now retired. This talk was given at a TEDx event using the TED conference format but independently organized by the local community.

Ibiza HEUTE

Freie Fahrt für Olivenbäume – und Schlangen?

Free ride for olive trees – and snakes?



A magnificent olive tree. Photo: GOIB

The quarantine for tree imports to the islands has been lifted as of today, April 1st. No joke. Olive trees, carob trees, and holm oaks with a trunk diameter of 40 centimeters or more can be brought to the islands from April 1st to June 15th and from September 15th to October 15th.

Snakes in the Root Balls

Imports are prohibited for the rest of the year because the root balls may contain snakes or their eggs. However, the Ministry of the Environment issues special permits outside of these times if it can be proven that transport poses no danger.

The import ban to the islands only applies to the three tree species mentioned and only if the trunk measures 40 centimeters in diameter. Thus, even 38 centimeters are allowed.

To protect the lizards

The Balearic Ministry of the Environment wants to protect the Pityusic lizard and the Balearic lizard. The import of decorative trees has been their downfall. The voracious snakes first arrived on Ibiza and Formentera 25 years ago with the import of old olive trees. They are multiplying rapidly and have almost wiped out the native lizards in many areas of the islands.

26-05-2025 - Redacción - Snakes arrive in the municipality of Ibiza and traps are delivered to hunt them (snakes)

noudiari.es
Eivissa i Formentera

Las serpientes llegan al municipio de Ibiza y entregan trampas para cazarlas

Snakes arrive in the municipality of Ibiza and traps are delivered to hunt them



Por **Redacción** — 26 mayo 2025

Ibiza City Council will hold a snake trap distribution event on Saturday, May 31st, distributing a total of 190 snake-catching devices, as the spread of the horseshoe snake continues to increase and has also reached this municipality. The council explains that it will provide interested parties with two types of cages: the traditional one with a mouse baited away from the snake's access, and the double-funnel trap.

The event will be held at the Can Tomeu summer camp in the Ca n'Escandell neighborhood. It is scheduled to begin at 10:00 a.m. and will include two technicians from the Consortium for the Recovery of Fauna in the Balearic Islands (COFIB), who will explain the use of traps and the protocol to follow if a specimen is found.

The Ibiza City Council encourages residents with green, agricultural, and forest areas, as well as those living on ground floors, to attend this event.

Manuel Jiménez, Councilor for Gardens and Animal Protection, is encouraging anyone who can help eradicate the proliferation of snakes. He also noted that the Department of Gardens has begun installing lizard shelters in various green areas. "Not only do we need to capture snakes and curb the species' population growth on the island, but we also need to promote suitable habitats for the lizards," which are threatened by snakes.

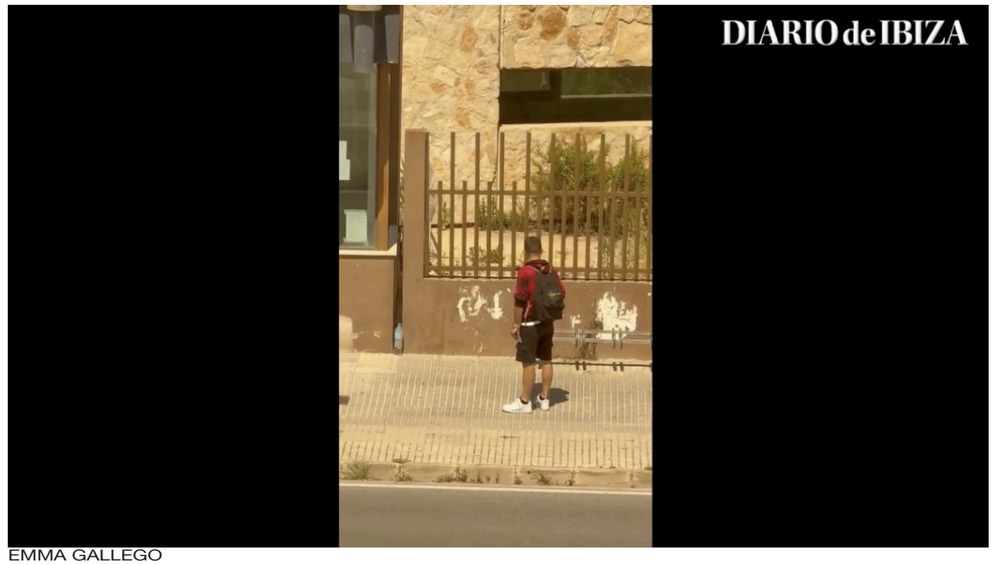
27-05-2025 - Redacción Digital - A neighbor: "I was very surprised to see a snake in the center of Ibiza." (snakes)

DIARIO de IBIZA

Una vecina: "Me ha sorprendido mucho ver una serpiente en pleno centro de Ibiza"

A neighbor: "I was very surprised to see a snake in the center of Ibiza."

The woman recorded a snake walking along the sidewalk.



EMMA GALLEGO

Redacción Digital

Ibiza 27 MAY 2025 16:58 Actualizada 27 MAY 2025 17:22

An Ibiza resident filmed a snake walking along the sidewalk on Avenida de la Pau, right in the city center, on Tuesday. "I was very surprised to see it right in the city center," she told Diario de Ibiza.

It's a horseshoe snake (*Hemorrhois hippocrepis*), an invasive species that is seriously affecting the local fauna, especially the lizards. In 2024, around 4,000 specimens were captured on the island.

This type of snake is larger here than on the mainland, as its natural predators don't live on the islands. Species measuring 188 centimeters have been captured.

Right now, both the island's institutions and many associations, such as Amics de la Terra, Gen-Gob, and IbizaPreservation, are distributing traps to try to control these reptiles and save the native lizards, but more is needed. *Podarcis pityusensis* is a species endemic to Ibiza and Formentera, with 23 subspecies described. It is a true biological gem that is also a traditional icon of the islands.

noudiari.es
Eivissa i Formentera

La lacra de las serpientes en Ibiza: cazan una de metro y medio con ocho huevos de perdiz en el estómago

The scourge of snakes in Ibiza: a five-foot snake caught with eight partridge eggs in its stomach



Screenshot from the video taken of the snake with eight partridge eggs in its stomach.

Por **Laura Ferrer** — 28 mayo 2025

This past weekend, during the Shooting Championship organized by the Hunters' Society, up to eight sizable snakes were spotted in the mountains of the Sant Rafel area, across from the gas station.

The hunters were able to catch and kill one of them, approximately one and a half meters long, and discovered it was carrying "eight or nine partridge eggs in its stomach."

The spokesperson emphasizes the "enormous work being done by the island's hunters" to curb the snake infestation. They regularly set and maintain traps for this invasive species throughout the island, which has allowed them to catch between 700 and 1,000 snakes each season.

Unfortunately, some traps appear vandalized, but they continue their efforts to control a pest that threatens the island's native species since they arrived from the peninsula, hidden in ornamental olive trees brought to the island to decorate hotel and villa gardens.

Over the years, they have preyed on numerous species, but the most vulnerable has been the lizard, seriously threatened with extinction as snakes have decimated populations, especially in the west and northwest of Ibiza. In 14 years, no less than half of the population of native Ibizan lizards has been lost. Unfortunately, the snakes have spread and reached the east of the island, even affecting the Ses Salines Natural Park.

“Our job is this: to try to put an end to this scourge that is destroying our lizards and everything else,” the Hunting Society emphasizes.

DIARIO de IBIZA

Un excursionista en Ibiza: “No sé qué es peor: la invasión de serpientes o la invasión de estúpidos humanos”

A hiker in Ibiza: "I don't know what's worse: the invasion of snakes or the invasion of stupid humans."

A man is stunned when he finds a jug of water in the forest to keep the snakes from going thirsty.



Marta Torres Molina
Ibiza 29 MAY 2025 13:27

“We found this today near Ses Torres d’en Lluc,” says Joan Micolau, surprised by the sight he encountered this Wednesday while walking through this wooded area near Cala Aubarca. In the image, which he shared on his social media, you can see the cut-out end of a water jug on the ground, on the pine needles, and above it, two messages.

The first, carved with a knife or other sharp object on the lower branch closest to the jug: “Keep water for snakes.” The second, written on a note, also in English, carefully balanced on the same branch, explains that it is summer and that these animals need water.

The worst part of the article, if Joan Micolau wasn't already sufficiently amazed, is that it describes them as "native animals." In other words, while most of Ibiza is in the midst of fighting snakes, an invasive animal that, according to experts, is decimating the lizards, a truly native animal of the Pitiusas, there are people calling for the snakes to be protected. All they need to mention in the article is that they are also "beings of God."

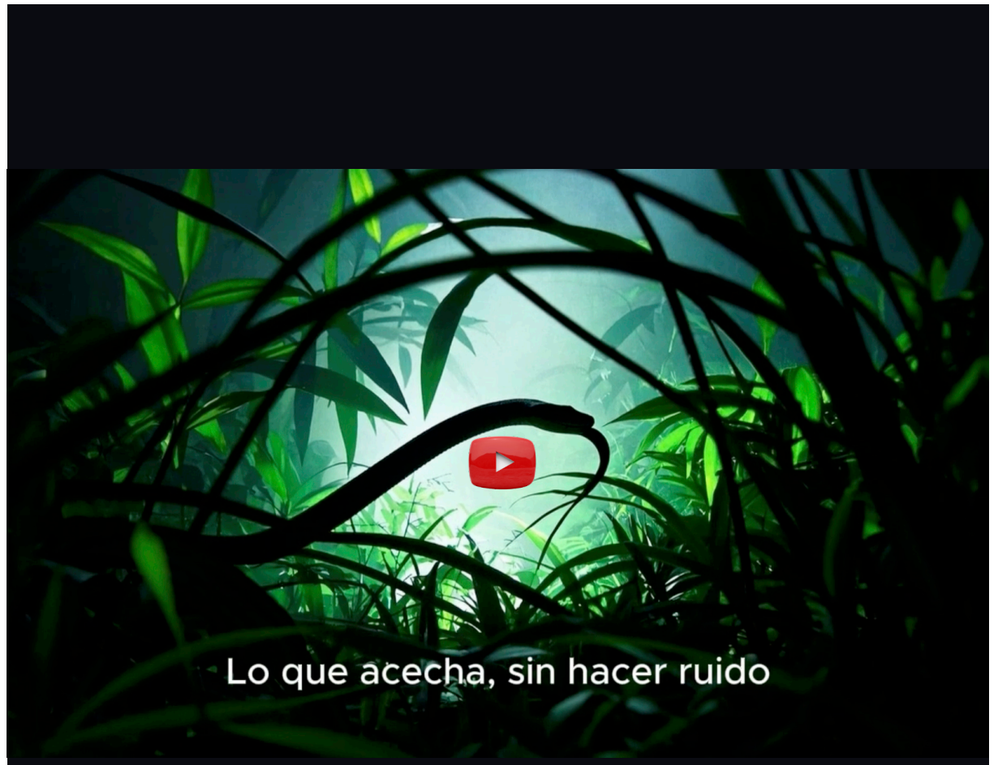
The worst part isn't just that, but everything surrounding the snake trough: "Nearby, the remains of a bonfire in a highly vulnerable area with no protective measures," describes Joan, who can't help but add a comment to the story: "I don't know what's worse now, the invasion of snakes or the invasion of stupid humans."



Photograph of the branch with the message in the Torres d'en Lluc area / JOAN MICOLAU

¿Y si las serpientes invadieran Ibiza? El paraíso bajo amenaza

What if snakes invaded Ibiza? Paradise under threat



The island of the sun, music... and now, snakes. In this fictional documentary, we explore a nightmare scenario: a silent reptilian invasion threatening the ecological and social balance of one of the world's most famous islands. From real facts about snakes in Europe to extreme hypotheses of biological colonization, discover how Ibiza would change forever. Could tourism survive? And the inhabitants? Are we prepared for a threat as silent as it is deadly?

DIARIO de IBIZA

Guerra contra las serpientes en Ibiza

War on Snakes in Ibiza

Experts warn that the island is experiencing the peak of the snake infestation, with its spread to Vila-real, Sant Antoni, and Sant Josep.



Gallery: Snake trap distribution in Can Tomeu / VICENT MARÍ/J.À COSTA/ IBIZA CITY COUNCIL



Josep Àngel Costa

Ibiza 31 MAY 2025 20:00 Actualizada 31 MAY 2025 20:06

The rivalry between Pep Ramis and his neighbor should be widely imitated. The two challenge each other to see who can catch the most snakes, a healthy confrontation to combat the snake plague in Ibiza. Therefore, Ramis didn't hesitate for a second to show up at the Can Tomeu municipal property in the Ca n'Escandell neighborhood to get his hands on one of the 190 traps distributed by Ibiza City Council. The day also includes an informative talk on how to maximize the results with this equipment.

Sofía López, a biologist with the Balearic Fauna Recovery Consortium (Cofib), made it clear to everyone present that their role is fundamental. Although this regional government agency manages 1,500 traps in Ibiza and another 400 in Formentera, they face a major obstacle: "We have a limit on private property," she warns. Hence these calls for citizen participation, even more so in the midst of the snake expansion.

The first sighting on the island occurred in 2003, of a reptile hiding in an olive tree trunk. For more than two decades, these ornamental trees imported from the Peninsula have been the entry route for this invasion. Nevertheless, their importation is still permitted. The only measure taken to reduce their impact is to establish a schedule to prevent the entry of olive, carob, and holm oak trees into the Balearic Islands during periods of hibernation, laying, or hatching.

Initially, the snakes spread through the northeast and center of the island, known by experts as the "core zone," where they seemed to remain confined for a long time. But the situation worsened a couple of years ago.



Volunteers carry snake traps. / V.M.

"In the core zone, the nucleus where it all began, the snakes have already eaten almost all the lizards, and fewer and fewer small mammals are being seen. "So, now they're spreading south and west, and in fact, the area where we've found the greatest number of captures is in Sant Antoni," explains the Cofib biologist.

As if that weren't enough, the snakes are surprising the scientific community in Ibiza with their swimming ability. They have already been captured on three islets, but evidence of their presence has been found on five. "There are other islets where we haven't detected any evidence of their presence, but where, from one year to the next, the lizard population has declined," laments López.

Annual Records

To make matters worse, last year records were broken, with 3,072 specimens trapped in Ibiza and 806 in Formentera. Could a more bleak picture be possible? From another perspective, the fact that more and more are being caught demonstrates that trapping works. Furthermore, the case of Formentera has yielded more positive results. There, so far, only one species has expanded, the ladder snake (*Zamenis scalaris*), while Ibiza is also being hit, mainly by the ladder snake (*Hemorrhois hippocrepis*).

On the smaller of the Pitiusas, the population has been limited to La Mola. "The invasive snake in Formentera behaves much less aggressively toward the lizard," explains the Cofib biologist. Nevertheless, the guard is not lowered and special attention has been paid to trapping the La Savina area. This is a preventative measure in case any reptiles are hiding in vehicles unloading at the port.

Lack of Traps

Recently, the environmental organization Amics de la Terra expressed its criticism on the occasion of European Natura 2000 Day, warning that "there aren't enough snake traps." Mariano Tur and Nieves Ribas, two residents of Sant Josep who came to Vila to take advantage of this opportunity, can confirm this.

"We've been on the waiting list for a year to get one from the Sant Josep City Council. It's unacceptable," they resign themselves. Even without traps, Tur has caught "five or six" snakes in the last year. "These don't appear in the records," he jokes.

Like them, they emphasize that everyone living in the countryside should collaborate in controlling the infestation, especially if, as in their case, they live surrounded by dry-stone walls, an ideal refuge for reptiles. "The worst thing is that no lizards appear there anymore. Before, we used to leave water for them to drink and we always saw them," Ribas laments.

Is there a shortage of these traps? For López, "the magnitude of the problem is so large and complex that there will never be enough." She gives a simple example: one of her colleagues, who is in charge of a group with 80 traps, removed "93 specimens in one morning" the other day. "There were boxes with more than one snake," she comments, surprised.

"This biological invasion is in the exponential growth phase. We can say that, right now, we are at the crest of the wave," López concludes. If it's any consolation, the stabilization phase would be next, "when the population has to stabilize because the snakes no longer have food resources."

The Can Tomeu estate itself, where the distribution takes place, is a clear example of the growing problem. "Ca n'Escandell is a neighborhood that borders the forest, so it has become the entry point into the municipality," recalls the Councilor for Gardens, Manu Jiménez Roig.

The City Council itself has distributed eight traps throughout this area, which includes several urban gardens for use by residents and civic organizations. "Last month, 14 were caught," explains Jiménez.

Vila has purchased 150 traps this year to distribute to individuals, in addition to another hundred donated by Cofib. "We will buy another batch to continue distributing to citizens and businesses that want to collaborate in stopping this spread of snakes."

In addition to country houses, the problem already affects urban areas like Can Misses. José Antonio López lives in a residential development in this neighborhood, where the community of owners has been committed for the past few years to trapping the gardens and the area around the pool. Just in case, he is taking some more to install there and also for a family home in Sa Coma.

The Bet

Although Pep Ramis doesn't live in Vila, he realized last year that the invasion had reached the city. "I was walking down the street that runs through here [in front of Can Tomeu] and saw a snake. I ran over it, reversed to finish it off, and it still escaped," he recalls.

However, he has never seen a single reptile running free at his country house in Can Frígoles, very close to an area as sensitive as the Ses Salines Natural Park: "I realized there were snakes because I was seeing fewer and fewer lizards."

So last year he decided to set the first traps, one with a mouse and the other without animal bait, the same models now distributed in Can Tomeu. "I left them outside and they got ruined," he explains. Now he's looking for replacements to confront his neighbor again: "Last year, I caught thirteen. He beat me by one."



A moment during the briefing, with Sofía López flanked by councilors Manu Jiménez and Jordi Grivé. / J.A.C.

31-05-2025 - Redacción - 200 snake traps distributed in Ibiza (control)

noudiari.es
Eivissa i Formentera

Reparten 200 trampas para serpientes en Ibiza

200 snake traps distributed in Ibiza



A moment from the trap delivery carried out today in Ibiza.

Por **Redacción** — 31 mayo 2025

Control of invasive snakes is increasing in Ibiza after specimens began appearing in urban areas and around the city. The expansion continues, and all the efforts made in recent years have not dramatically halted the proliferation of snakes on the island. This is significantly reducing the population of native species such as the lizard, which is on the verge of extinction on the island due to this predator.

Ibiza City Council, in collaboration with the Consortium for the Recovery of Fauna in the Balearic Islands (COFIB), held a trap distribution day today, as well as a training session at the municipal facilities in Can Tomeu, distributing almost 200 traps in total. The activity is part of the 2025 snake control campaign in the Pitiusas, promoted by the Balearic Islands Government, and its main objective is the protection of local biodiversity, especially the Pityusic wall lizard (*Podarcis pityusensis*), an endemic species threatened by the presence of invasive snakes.

During the day, specially designed traps for capturing snakes were distributed to volunteers and organizations who will actively collaborate in their installation and monitoring. COFIB staff provided a detailed explanation of their operation and the guidelines to follow in case of capture.

The Councilor for Animal Welfare, Manuel Jiménez, praised the high level of citizen participation and emphasized the importance of this type of initiative. “Today we saw how people respond when it comes to protecting our natural environment. Collaboration between institutions and residents is key to stopping the spread of invasive snakes and preserving our native fauna, especially the Pityusic lizard, a symbol of our environmental identity,” Jiménez noted.

Furthermore, the Fourth Deputy Mayor and Councilor for the Environment, Jordi Grivé, emphasized that this project is part of a long-term strategy to control invasive species, which includes the distribution of 500 traps among the different municipalities of Ibiza and the island of Formentera during this campaign, with a total investment of almost two million euros from the sustainable tourism tax.

02-06-2025 - Toni P. - The necropolis, heritage of the Pityusic lizard (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

La necrópolis, patrimonio de la sargantana

The necropolis, heritage of the Pityusic lizard

The Puig des Molins Museum celebrates Environment Day with art and conservation of the Pityusic lizard


Among the artistic offerings, the pop-up exhibition organized by the Art amb B collective in collaboration with Baleària and Can Púnic stands out | Photo: Toni P.

Toni P. | Ibiza | 02/06/25 15:06 | Actualizado a las 21:41

The es Puig des Molins necropolis will become the epicenter of the commemoration of International Environment Day. The Archaeological Museum of Ibiza and Formentera (MAEF) and its association of friends (AAMAEF) have prepared a program of activities that combines outreach, biodiversity conservation, and artistic offerings, with the Pityusic lizard as the absolute protagonist.

This reptile that characterizes the Pitiusas, *Podarcis pityusensis pityusensis*, has had a reserve at the site since 2021, which has been identified as an ideal habitat for the species. "Since 2021, the necropolis has been a lizard reserve. It's a perfect environment for this type of preventive conservation action, as it already had a significant lizard population," explained Maria Bofill, curator at the MAEF, during the presentation of the activities. "The commemoration of International Environment Day seemed to us the most appropriate context to explain the conservation efforts of the Necropolis's natural environment."

Among these efforts, the monitoring and population study program for the lizards stands out, directed

since 2024 by biologist Olivia López, who had previously participated in the development of the catalog of the site's fauna and flora. "In the catalog, we have compiled some 200 different species of fauna and flora," the biologist noted. Regarding the lizards, her assessment is optimistic: "We have detected areas with a considerable population concentration. The density, pending completion of this year's study, is stable and the population is healthy. We can find large, adult males with good coloration, and we have confirmed that reproduction is taking place; we have seen both eggs and young."

Heritage

The necropolis, declared a World Heritage Site by UNESCO as part of the "Eivissa. Biodiversity and Culture" property, is home to a surprising biodiversity right in the heart of the city. Birds such as teulats, xoriguers, and torcades, arthropods, hedgehogs, and even plant species linked to local folklore such as figueres de pic (a type of snail) and frigolars (a type of snail), coexist among the hypogea. But there are also threats, especially to the lizard. One of these is the entry of snakes, which has been combated since 2022 with the annual placement of traps. "Together with Cofib, we set up about 15 snake traps each year, however, we only captured one in 2023," stated Bofill. Another threat is urban cat colonies. "More awareness-raising work is needed," added López, noting that their presence can seriously disrupt the ecological balance of the area.

Art

Among the artistic offerings, the pop-up exhibition organized by the Art amb B collective in collaboration with Baleària and Can Púnic stands out. It will only be open to visitors on June 5th, from 9 a.m. to 3 p.m. Curated by artist and cultural manager Antoni Torres, the exhibition features 70 metal snails and 12 metal ants, created by local artists and artists from the eastern Iberian Peninsula. "We have selected artists including Ibizan artists Aphon Hengcharoen, Marga Guasch, Marga Juan, Aïda Miró, Toni 'Tirurit', José Fina Torres, and Ángel Zabala, as well as myself," explained Diana Bustamante, one of the participating artists.

The day will conclude with a children's painting workshop at 6 p.m., in which 15 children will decorate their own metal snails. This proposal, also conceived by Bustamante from Can Púnic, seeks to introduce children to the ecological and symbolic value of this reptile.

Photography

On Friday, June 7, photography will take center stage with a youth gymkhana led by photographer María José Guerra and educator Xavier Durán. "Xavier will begin the day by giving a talk on photography, then different groups will be formed around a topic and will go out to take photos with the cameras we will provide," Guerra explained in the presentation. After the photo outing, participants will share breakfast and analyze their images with a critical and constructive eye. The activity will culminate with a selection of images for a virtual exhibition.

The program will conclude on June 14 with a guided tour with biologist Olivia López, "who knows best where to go," who will show the public areas normally closed to the public and explain the biodiversity that inhabits this unique space. The activity, with free admission, will allow you to discover how archaeology and nature coexist in harmony in Puig des Molins, and how this historic site becomes a "natural island" within the city.

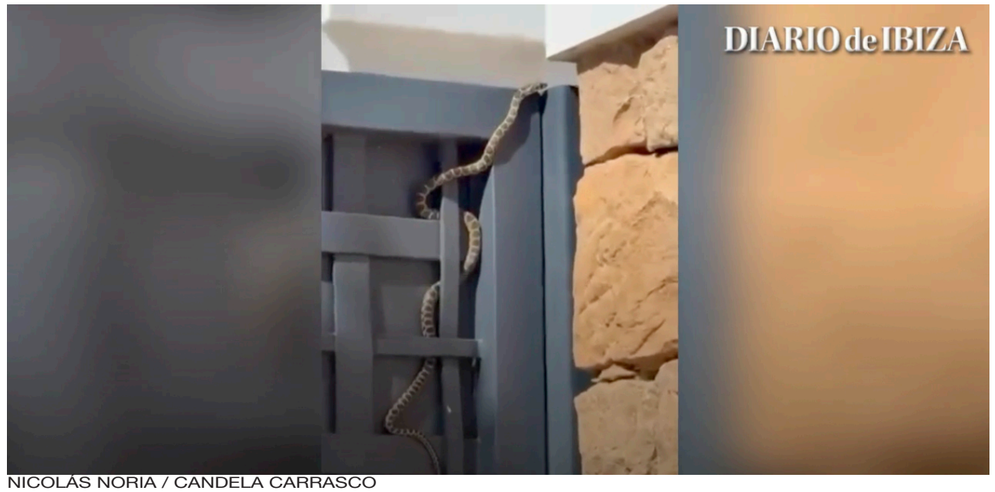
"The Necropolis is a privileged space for lizards," summarizes Maria Bofill. This June, it will also be a privileged space for art, environmental education, and ecological awareness.

DIARIO de IBIZA

Serpientes en Ibiza: esta es la razón por la que se meten en las casas

Snakes in Ibiza: This is why they get into homes

Many island residents have encountered this snake, both in their gardens and inside their homes.



NICOLÁS NORIA / CANDELA CARRASCO

Ana Bianco

Ibiza 03 JUN 2025 14:44

The proliferation of snakes in Ibiza is undeniable, and in addition to their growing size and their sudden ability to swim long distances, another striking feature is their lack of fear of humans and their interest in entering urban areas, especially homes and gardens.

The most common snake on the island is the horseshoe snake (*Hemorrhois hippocrepis*), and here it has found a habitat it will not abandon because it seeks warmth as its lifeblood. It is almost impossible to find it in regions with cold nights or harsh winters. It prefers sunny days and high temperatures to carry out its activity, which usually occurs mainly during the day. However, when summer reaches its peak, it is not uncommon to see it moving around at dusk or even at night. Its activity schedule is strongly influenced by the climate: while in much of the Iberian Peninsula it remains active between March and November, in the southern and eastern coastal areas it can be active year-round thanks to the mild winters.

Agile and swift, this snake is an expert climber. It scales walls, cliffs, and tree trunks with surprising skill, using crevices and overhangs as footholds. Although it usually avoids direct confrontation, if it feels cornered, it adopts a defensive posture: it coils,

widens its head, emits a threatening hiss, and, if necessary, attacks without hesitation. It is also capable of releasing a foul-smelling liquid as a deterrent. In extreme situations, it can even detach part of its tail to escape a predator.

Regarding its diet, this snake demonstrates great adaptability. It is an active hunter, exploring crevices and hiding places in search of food. Despite not being venomous, it captures and kills its prey by constricting its prey. Juveniles feed primarily on insects and small reptiles, while adults prefer warm-blooded animals such as rodents and birds. Its climbing ability allows it to access places inaccessible to other predators, making it an effective threat to lizards and geckos.

Why it gets into homes in Ibiza

The horseshoe snake isn't too particular about its habitat, as long as the environment offers warmth and plenty of sunlight. Open areas with sparse scrub or cultivated fields are fine for it. Thanks to its cliff-dwelling habits, it feels especially comfortable in rocky environments, stone walls, ruins, or old buildings. In fact, it has adapted well to living near humans, taking advantage of artificial structures that provide both shelter and food, making it a distinctly anthropophilic species.

This means they are capable of living very close to humans, even coexisting. That's why they often decide to enter homes, looking for nooks and crannies to hide inside.



EMMA GALLEGO

03-06-2025 - Redacción - A large snake appears in Sant Francesc de Formentera (snakes)

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Eivissa i Formentera

Aparece una gran serpiente en Sant Francesc de Formentera

A large snake appears in Sant Francesc de Formentera


Screenshot from the video shared by RàdioIlla.

Por **Redacción** — 3 junio 2025

RàdioIlla radio station reported today on the appearance yesterday morning in Sant Francesc, between the streets of Pla del Rei and Metge Vicent Riera, of a large snake that appears to be climbing a low wall.

Unfortunately, this is a plague that wipes out native species like the lizard, so emergency services, alerted by neighbors, responded and killed the animal.

Although to a lesser extent than in Ibiza—where the plague has been and continues to be devastating—Formentera has also recorded the presence of invasive snakes.

Data from 2024 indicate that more than 800 specimens were captured.

04-06-2025 - Redacción - A 1.5-meter snake is found run over in Sant Antoni (snakes)

noudiari.es
Eivissa i Formentera

Aparece atropellada una serpiente de 1,5 metros en Sant Antoni

A 1.5-meter snake is found run over in Sant Antoni



Por **Redacción** — 4 junio 2025

A snake measuring approximately 1.5 meters in length was found this morning after being run over on the Camí de Cap Negret in Sant Antoni, near Cala Gració and Cala Gracioneta.

Residents in the area expressed their surprise at seeing the body of this large snake, as its presence is unusual in this area of Sant Antoni.

It so happens that, near Camí de Cap Negret, there is a plot of land where olive trees from the Peninsula are being collected, which is usually the main route for snakes to enter the island of Ibiza.

04-06-2025 - R.I. - The Government and the Barcelona Zoo have a plan to save the Pitiusan wall lizard (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

Govern y el Zoo de Barcelona tienen un plan para salvar la lagartija pitiusa

The Government and the Barcelona Zoo have a plan to save the Pityusic wall lizard

The project involves the ex situ breeding of this endemic and endangered species and continues the collaboration agreement between the Regional Ministry of Agriculture, Fisheries and the Environment and the Barcelona Zoo Foundation.



Pityusic wall lizard | Photo: CAIB

R.I. | Ibiza | 04/06/25 14:27 | Actualizado a las 22:03

The Ministry of Agriculture, Fisheries, and the Natural Environment and the Barcelona Zoo have launched a pilot project for the ex situ breeding of the Pityusic wall lizard (*Podarcis pityusensis*). The creation of three populations outside their natural habitat (two from Ibiza and one from Formentera) aims to ensure the conservation of this endemic species and preserve the biodiversity of the Balearic Islands. Therefore, 17 healthy and genetically diverse specimens (10 from Ibiza and seven from Formentera) have been captured and transferred to the Barcelona Zoo. They will constitute the first breeders of the ex situ populations.

The Director General of the Natural Environment and Forest Management, Anna Torres, who will visit the zoo facilities and the terrariums housing the 17 specimens this Friday, emphasized that "this initiative promotes the preservation of the Pityusic wall lizard and allows us to work on the viability of restocking this species." Furthermore, to reverse the current trend, we will continue to promote actions to combat invasive snakes, which, without a doubt, currently constitute the most serious threat to lizards."

The project is part of the collaboration agreement between the Regional Ministry of Agriculture, Fisheries and the Natural Environment and the Barcelona Zoo Foundation for the conservation of protected wildlife in the Balearic Islands, which was signed in 2024. "The initiative is based on the commitment of both institutions to the conservation and preservation of the archipelago's native fauna for future generations. It thus complements the ex situ breeding project for the ferreret (*Alytes muletensis*), which Barcelona Zoo has been developing for years in collaboration with the Catalan government and which has allowed the creation of new populations in the wild, contributing to improving the conservation status of this endemic amphibian, classified as endangered," Torres explained.

In addition to establishing and maintaining a captive breeding program to preserve genetic diversity, the project will also conduct scientific studies to deepen our understanding of ecology, genetics, and conservation needs. It will also focus on the viability of restocking in the wild, ensuring informed and effective project management.

In this regard, Barcelona Zoo Director Sito Alarcón added that "it is an honor and a great responsibility for Barcelona Zoo to continue collaborating with the Government. Projects like this are essential within our goal of preserving biodiversity, consolidating our position as a benchmark in the conservation of Mediterranean fauna, which is particularly vulnerable to climate change. The Balearic lizard project, like the ferreret project, exemplifies how the Zoo goes beyond its boundaries to become directly involved in the protection of endemic species in the Mediterranean ecosystem."

The project is supported by herpetology experts from the Spanish Herpetological Association (AHE) and the Center for Ecological Research and Forestry Applications (CREAF). Technicians from the Government's Species Protection Service, the Barcelona Zoo, and the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB) are also participating.

It is worth noting that the lizard is one of the most emblematic species of the Pityusic Islands. Currently, the introduction of invasive species such as snakes threatens the survival of the species. Due to this situation, in 2023 the two species of lizards present in the Balearic Islands, the Balearic (*Podarcis lilfordi*) and the Pityusic, were included in the Balearic Catalogue of Threatened Species under the Vulnerable category.

Govern de les Illes Balears | Servicio de Protección de Especies

cofib Consorci de Recuperació de la Fauna, Illes Balears · CREAF · Excel·lència Severo Ochoa · AHE Asociación Herpetológica Española · Zoo Barcelona

04-06-2025 - EP - Barcelona Zoo will breed Pityusic lizards to protect them from snakes (conservation)

DIARIO de IBIZA

El Zoo de Barcelona criará lagartijas pitiusas para protegerlas de las serpientes

Barcelona Zoo will breed Pityusic lizards to protect them from snakes

A total of 17 healthy and genetically different specimens (ten from Ibiza and seven from Formentera) have been captured and taken to the zoo.



SERGIO G. CANIZARES

EP

04 JUN 2025 15:06 Actualizada 05 JUN 2025 13:09

The Ministry of Agriculture, Fisheries, and the Natural Environment and the Barcelona Zoo have launched a pilot breeding project for the Pityusic wall lizard, creating three populations outside their natural habitat to ensure the survival of this endemic species.

Specifically, according to the Ministry, 17 healthy and genetically different specimens (ten from Ibiza and seven from Formentera) have been captured and transferred to the Barcelona Zoo. They will constitute the first breeding stock for the ex situ populations.

The Ministry of Agriculture, Fisheries, and the Natural Environment and the Barcelona Zoo have launched a pilot breeding project for the Pityusic wall lizard, creating three populations outside their natural habitat to ensure the survival of this endemic species.

"Furthermore, to reverse the current trend, we will continue promoting actions to combat invasive snakes, which, without a doubt, currently constitute the most serious threat to lizards," she explained.

The project is part of the collaboration agreement between the regional government and the Barcelona Zoo Foundation for the conservation of protected wildlife on the islands, signed in 2024.

According to the director general, the initiative is based on the commitment of both institutions to the conservation and preservation of the archipelago's native fauna for future generations.

Specifically, according to the Ministry, 17 healthy and genetically different specimens (ten from Ibiza and seven from Formentera) have been captured and transferred to the Barcelona Zoo. They will constitute the first breeding stock for the ex situ populations.

This adds to the ex situ breeding project for the ferreret, which Barcelona Zoo has been developing for years in collaboration with the regional government. "It has allowed for the creation of new populations in the wild, contributing to improving the conservation status of this endemic amphibian, classified as endangered," Torres explained.

"Within the framework of the new project, scientific studies will also be conducted to deepen our understanding of the ecology, genetics, and conservation needs, while also working on the viability of restocking in the wild, in order to ensure informed and effective management of the project," according to the regional government.

> “
> The Balearic lizard project, like the ferreret project, exemplifies how the zoo is going beyond its boundaries to become directly involved in the protection of endemic species in the Mediterranean ecosystem.
>
> Sito Alarcón, director of the Barcelona Zoo.

For the director of the Barcelona Zoo, Sito Alarcón, "it is an honor and a great responsibility to continue collaborating with the Government." In his opinion, projects like this are essential within the framework of the zoo's goal of preserving biodiversity and contribute to consolidating its position as a benchmark in the conservation of Mediterranean fauna, which is particularly vulnerable to climate change.

"The Balearic lizard project, like the ferreret project, exemplifies how the zoo goes beyond its limits to become directly involved in the protection of endemic species of the Mediterranean ecosystem," Alarcón emphasized.

The project involves the collaboration of herpetology experts from the Spanish Herpetological Association (AHE) and the Center for Ecological Research and Forestry Applications (CREAF). Also participating are technicians from the Government's Species Protection Service, the Barcelona Zoo, and the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB).

The regional government has emphasized that the lizard is one of the most emblematic species of the Pityusic Islands and that invasive species such as snakes currently threaten its survival. In 2023, the two species of lizards found in the Balearic Islands and the Pityusic Islands, were included in the Balearic Catalogue of Endangered Species under the Vulnerable category.

05-06-2025 - IbizaHEUTE - Barcelona Zoo breeds Ibiza's lizards (conservation)

Ibiza HEUTE

Barcelonas Zoo züchtet Ibizas Eidechsen

Barcelona Zoo breeds Ibiza's lizards



Pityusic lizard in good hands. Photo: GOIB

A promising pilot project aims to prevent the extinction of the Pityusic lizards (*Podarcis pityusensis*). The Barcelona Zoo Foundation and the Balearic Ministry of the Environment are beginning to breed them "ex situ" in terrariums at the zoo. The experiment will begin with 17 healthy and genetically diverse specimens: 10 lizards from Ibiza and 7 from Formentera.

Good research work

At the same time, the Director General of the Environment, Anna Torres, wants to intensify efforts to combat the snakes, which are now the main predator of the lizards in the Pityusic Islands. And in Barcelona, the nimble Ibizan mini-dragons are being studied in depth to preserve their enormous genetic diversity. The zoo is known for its excellent research work.Scientists have already achieved considerable success in breeding the endemic Mallorcan midwife toad (*Alytes muletensis*). New populations of the endangered ferreret, as the toad is known on the islands, are now populating the wild.

Endangered Population

The Balearic (*Podarcis lilfordi*) and Pityusic lizards were listed in the Balearic Catalogue of Threatened Species in 2023 as "endangered." The inadvertent introduction of snake eggs and adders in plant pots 25 years ago triggered a plague on Ibiza and Formentera. The number of lizards is declining dramatically, especially on Ibiza.



Reader Nicole Strzysz sent this magnificent lizard photo from Formentera to IbizaHEUTE.

EL PAÍS

Ibiza's iconic wall lizards are being wiped out by an invasive snake that's already on 90% of the island

The rapidly advancing predator is a good swimmer and has also colonized Formentera and satellite islets in the Mediterranean. Scientists warn other micro-mammals that control the insect population are also disappearing.



Two Ibiza wall lizards with their characteristic color. GUILLEM CASBAS



ESTHER SÁNCHEZ

Madrid - JUN 06, 2025 - 16:38 CEST

There once used to be thousands of endemic lizards from the Pitiusas – a name for the Spanish islands of Ibiza and Formentera and their satellite islets. The species (*Podarcis pityusensis*), more commonly known as the Ibiza wall lizard, is unique and a a cherished icon of its privileged environment in the Mediterranean. But now an invasive predator, the horseshoe whip snake (*Hemorrhois hippocrepis*) is eating the lizards, especially in Ibiza, where the snakes have already made their way across almost 90% of the territory; only 30% of the island still has wall lizards left. The islets are not safe either, as the snakes have managed to swim and colonize those, too. Scientists estimate that in two years, these snakes will have a presence across the entire island of Ibiza.

The first of these invasive snakes were detected in 2003, in a plant nursery where they arrived incognito in the roots or trunks of ornamental olive trees. The danger was underestimated; they left the nursery and began to spread across the island. In 2024, 3,072 snakes were captured on Ibiza in the traps distributed by the Balearic authorities. The numbers have been multiplying since 2016, when traps began to be laid. In 2023 2,007 were caught, and in 2022, 2,710. The largest of these snakes are bigger than those on the peninsula: upwards of 180 cm (nearly six feet). "That's because they have a lot of food. As far as they're concerned, this is an all-you-can-eat buffet," explains Oriol Lapiedra, head of the research group at the Center for Ecological Research and Forestry Applications (CREAF), who has been studying their colonization for the past five years.

"They advance as if they were on the front of a battle zone," says Lapiedra. "You have to imagine the snakes as if they were an actual wave, devouring what they find." As time goes on, this front becomes



A horseshoe snake in Ibiza. GUILLEM CASBAS

stronger, and more snakes accumulate at an ever-increasing rate, making the lizards disappear. "There are very few strongholds left, the situation is dramatic," he says. The snakes have also entered the island of Formentera, and work is being done to control them with traps which caught 806 snakes last year. The ladder snake (*Zamenis scalaris*) predominates there, although some horseshoe snakes have also been caught.

The focus is on the Ibiza wall lizard because it is the only endemic vertebrate on the island, as well as being "a cultural icon." But there are other micro-mammals that have become extinct locally in areas where there are snakes, such as field mice, shrews and geckos. "We have found that their presence also affects bats and small birds such as sparrows, goldfinches, greenfinches," says Miquel Puig, manager of the Consortium for the Recovery of the Fauna of the Balearic Islands (COFIB).

The disappearance of these animals has a knock-on effect and can lead to other extinctions, because the ecosystem is made up of species, each with an essential role to play, "and when one arrives at the top of the food chain, this hierarchy is totally destabilized," Lapiedra adds. The mouse, for example, is eaten by owls or kestrels, which disperse seeds. The lizard pollinates many species of plants, especially on islets, "so if they disappear, you are also killing plants that have evolved along with them," says Puig. The disappearance of species that previously fed on insects can also trigger an explosion of pests that affect agriculture, leading to the use of more chemical substances.

The problem has become worse because snakes are colonizing the islets and, these islets being smaller, "a single specimen can wipe out an entire community and each one is unique because they

have evolved in isolation," warns Lapiedra. To the surprise of the researchers, the snakes can swim to the islets. "There are islets 30 to 40 meters from the coast, but others are hundreds of meters away and we know that they can swim in the open sea and cover great distances," explains Puig. Some snakes have been found a mile from the coast.

What will happen next? "There will come a point where, sadly, the snakes will have eaten almost everything on the island and there will no longer be room for more snakes, so their numbers could decrease," Lapiedra says. But "biology is full of surprises; snakes can survive in situations with very little food – they can feed only once every few months," he adds. This is what has been happening in parts of the island that have been invaded for years, where the snakes are snatching birds or rifling their nests, taking what they can. "Some have been seen trying to eat a rabbit, which is difficult for them because of their size."

The possibility of eradication

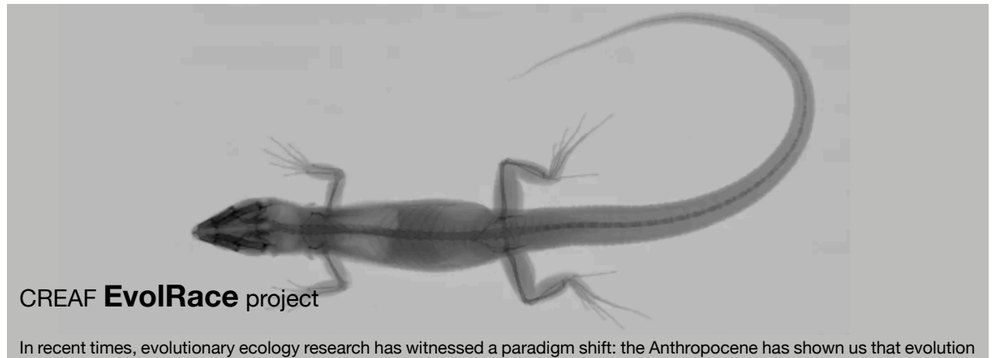
What is essential is to reduce the number of snakes, "to seek a coexistence between both species, because eradication is almost impossible with the numbers that exist now," says Puig. It is not uncommon to spot them on a wall sunning themselves. "They are not dangerous or poisonous. They usually escape if they hear someone and only become aggressive if they feel attacked," says Puig who also clarifies that we should not be influenced by the typical negative perception of snakes. "It's not their fault. They are simply fulfilling their function, which is to eat and reproduce – the more the merrier. The problem is that we have brought them onto islands where previously they did not exist."



X-ray of an Ibiza snake after eating a lizard. GUILLEM CASBAS/ORIOL LAPIEDRA

Snakes and lizards do coexist on mainland Spain. They have evolved together and the lizards have developed the mechanisms to escape from the snake. But the Ibiza wall lizard has not had any predators for thousands of years, and it is impossible for it to develop such mechanisms in the space of two decades. The lizard needs help from conservationists, to allow time for that balance to be produced, because "eradicating the snake is a utopia, though I hope I am wrong," says Puig.

The Ministry of Agriculture, Fisheries and the Natural Environment and the Barcelona Zoo have promoted a pilot project for the breeding of *Podarcis pityusensis*. After a genetic study carried out by CREAF, 17 healthy and genetically different specimens were captured – 10 in Ibiza and seven in Formentera – and transferred to the zoo. "The real objective is to see if they can be bred in captivity to maintain a gene pool while other measures are developed on a larger scale, such as creating refuges in Ibiza and trying to repopulate the islands with the specimens that are there," says Lapiedra.



CREAF **EvolRace** project

In recent times, evolutionary ecology research has witnessed a paradigm shift: the Anthropocene has shown us that evolution is not a gradual and slow process, as Darwin had predicted. In contrast, rapid human-induced environmental shifts have helped researchers understand that evolution can happen rapidly, in contemporary times.

The main objective of this proposal is to conclusively examine the ecological and evolutionary consequences of "island tameness" (the adaptive loss of effective antipredator behaviors in island populations), in a context of rapid environmental change. Specifically, our goal is to investigate whether rapid phenotypic changes (in behavior and morphology) of a native prey are a consequence of rapid evolution to adapt to a novel predator. We will then test the hypothesis that these new predators, in turn, may undergo rapid evolutionary changes (or, alternatively, phenotypic changes driven by plasticity) as a consequence of rapid changes in the most important prey.

To achieve this, we will take advantage of a unique "natural experiment" on the island of Ibiza. We will carefully investigate the evolution of behavior driven by predators through natural selection in endemic lizards, in the context of a recent and rapidly spreading invasion of predatory snakes.

We have already identified a number of replicate sites where snakes coexist with native lizards, and others where these new predators are not present. Preliminary results suggest that these lizards may have undergone rapid change in both morphology and behavior.

We will compare the phenotypes and genomes of lizards in these two different predation regimes using high-resolution morphological profiling and innovative behavioral tests to examine risk-taking behavior. We will then combine these data with cutting-edge genomic tools, novel molecular techniques, and a newly refined theoretical framework on the ecological relevance and evolutionary potential of interindividual variation in behavior. This will allow us to characterize potential phenotypic changes in native lizards in response to the new predator (OBJ 1), to invasive snake populations (OBJ 2), and to identify the genetic basis of these differences (OBJ 3).

Objectives

In this project, our goal is to obtain an integrative perspective on the consequences of predator invasion, from genetic modifications to ecosystem alterations caused by these invasions. The arrival of snakes could imply modifications in the way these lizards interact with their environment (for example, by consuming different prey).

This is especially important given that these lizards in Ibiza are not only key predators of arthropods, but also disperse and pollinate native plants. Therefore, changes in food niches could lead to deterioration in ecosystem functioning.

DIARIO de IBIZA

Sofía López, bióloga: «Me estalla la cabeza pensar que una serpiente se lance al mar a buscar un islote»

Sofía López, biologist: "It blows my mind to think that a snake would jump into the sea to seek out an islet."

The Balearic Islands Fauna Recovery Consortium (COFIB) has been working at full capacity these months, managing more than 1,500 snake traps in Ibiza and another 400 in Formentera. Cuenca biologist Sofía López has been working with this regional organization for three years to try to curb this invasion of snakes, which arrived in 2003 hiding in ornamental olive trees and have managed to reach islets such as S'Illa Murada and S'Illa de Santa Eulària.



Biologist Sofía López, in the gardens of Diario de Ibiza. | V. MARÍ



Josep Àngel Costa

Ibiza 08 JUN 2025 6:01 Actualizada 08 JUN 2025 9:02

Can we say that we are in the middle of peak snake season?

That's right. Every year we gain more information, more experience, and our technicians are going one step further. In this campaign, we're greatly helped by the information from Oriol Lapiedra's group at CREAF [Center for Research in Ecology and Forestry Applications] at the Autonomous University of Barcelona. We share our data with them, and they perform statistical analyses of the dispersal zones. They're studying the areas where the Pityusic lizard [*Podarcis pityusensis*] is present and share it with us. It's going very well because we have firsthand information about the snakes' advance front so we can set traps.

What is the snakes' advance front right now?

It descends from the Sant Antoni area and forms a strip through Sant Josep to the vicinity of Ses Salines. We're mapping an area where snakes and lizards now coexist, in the southwest of the island. The question now is what will happen when the snakes reach the sea. Are they going to regress, or what will happen next? There are no studies. In each place, circumstances are different, each population and each species has different behaviors. How long does it take for the Pityusic lizard to adapt to the presence of snakes, and can there be coevolution between the two species? We don't know. The main problem for the Pityusic lizard is that it had no predators; it's centuries of evolution without pressure. In other words, escape behavior wasn't part of its needs to continue living and evolving. On the Iberian Peninsula, there are lizards, and you hardly ever see them because they flee, as they're used to a multitude of predators.

The threat this plague poses to lizards is clear, but is there too little talk about the problem posed by wild cats?

Much more should be said. Wild cats cause tremendous damage to the environment, not only to lizards, but also to endangered bird populations, such as the Balearic shearwater and the Cory's shearwater. When we talk about this topic, people's response is usually that the cats were here before and the lizard was fine. The number of cats that were here 15 years ago isn't the same as it is now. Feral cat populations have skyrocketed, and everywhere. They're a public health problem and also impact lizard populations and the rest of the ecosystem. It's also very common to hear people say, "My cat is fed at home and doesn't need to hunt lizards." A cat doesn't hunt out of hunger; it hunts and brings you a mantis or a lizard as if it were game or a trophy.

Just as there is a front of snake advance, are there areas where their expansion began and where their presence has now declined?

Yes, we are detecting that in the areas where the invasion began, and where we have been trapping for many years, captures have been greatly reduced because they have devoured everything there. The snakes arrived there and had all the food they wanted in the form of lizards and small mammals, which have declined or almost disappeared. The behavior of these snakes is very voracious and aggressive. Oriol Lapiedra's team has also begun to study what is happening to the populations of these small mammals, such as mice and rats.

And are the lizards reappearing in these areas?

They are not reappearing because they cannot cross the snake barrier. The possibility of trying to transport lizards from one part of the island to another is being studied, but these are complex issues that are not up to COFIB to decide. But there are specific cases, such as the Santa Eulària Seafront Promenade, where lizards remain due to the city's barrier effect. Snakes don't cross the road as easily, because cars and pedestrians are waiting for them, and this stable population of lizards remains.

Are the urban shelters that have been promoted for the past two years being effective?

We've set up these shelters in urban areas, but also in high schools and colleges as an environmental education resource. At IES Xarc, the teacher wrote to me on Thursday because he had captured a snake, and said they have seven lizards in the garden. It's a good sign, and they may be finding a way to spread there. We've currently created nine shelters in parks, one of them in Formentera, and another nine in schools.

Is it essential for individuals living in the countryside to distribute traps on their land?

I think we're very fortunate, because we all adore and love the lizard as an icon of the Pitiusas. In the Canary Islands, they're suffering a similar invasion with the king snake, but the target species they're eating is quite hated. It's a lizard that affected the crop fields. On the other hand, here, citizens are very involved with the lizard, and it's wonderful. We need to work together across public organizations, entities, and individuals. The more people trapping, the more effective we can be against this invasion.

More snakes are caught every year. In 2024, there were more than 3,000 in Ibiza and 800 in Formentera. Although it's a tragedy, can there be any positive interpretation of these figures?

We can see that efforts are increasing, that experience supports us, and that we're improving our trapping. We hope we're doing a lot of damage to the snake population and creating some opportunity for the surviving *Podarcis pityusensis* to develop these escape behaviors. On the Iberian Peninsula, they have *Podarcis muralis* and *Podarcis liolepis* that coexist with snakes. But of course, they escape quickly, while ours is trusting.

In Formentera, only the ladder snake [*Zamenis scalaris*] has spread. Has the infestation been controlled there?



Sofia Lopez. / Vicente Mari

Its behavior is much less aggressive toward lizards than the horseshoe snake [*Hemorrhois hippocrepis*] in Ibiza. In La Mola, where the snake population is concentrated and all the traps are distributed, many lizards are seen. However, we are very concerned that, due to the number of vehicles moving between the Pitiusas, especially in summer, some *Hemorrhois* may sneak in. We have already had some captures, so we are preventing incidents by placing traps around the port of La Savina, among other locations.

What guidelines should individuals follow to maximize the results of traps, with and without bait?

Mouse traps should be properly placed facing the wall, and check that the trapdoor and doors are closed. Often, if the floor isn't flat, they'll be tilted with the trapdoor open, allowing the snake to enter and exit. Double-funnel traps should be placed right against the edge of the wall. If someone has seen snakes, sets a trap, and doesn't catch them within a week or two, it's advisable to move it and experiment. We know that snakes move a lot along the edges of walls and stone walls, but we don't fully understand their ethology.

The invasion began in 2003, which is too short a period for scientific research. Can we draw on the experience of other places? The case of Gran Canaria dates back to before that.

In the middle of the Pacific, we have the island of Guam, which is part of the Marianas. The tree snake arrived there during World War II, because all the US freighters stopped there. It wiped out many species of reptiles and birds. The United States government is investing and continuing to fight to control its invasion, because it's a heavily forested island and it's difficult to control as it's an arboreal species. In the Canary Islands, the king snake is completely different. It moves very slowly, and technicians pick it up by hand. The involvement of public organizations and the population is very different there, because eating lizards is frowned upon there. There are other areas where snakes are invasive, but the impact and management are completely different. We're constantly testing and innovating.

For example, has the horseshoe snake's ability to move through the sea baffled scientists?

Personally, it has been a huge surprise to me. Some videos have been recorded, and it's incredible. Their respiratory system is distributed along almost their entire body. They have a lot of air and float, they lift their little heads, and because it's fusiform, it generates less resistance when swimming. What makes my head explode, apart from them swimming, is thinking about the moment the snake reaches the cliff or the beach and dives into the sea, looking for an islet. Are they aware that there's an islet there? Do they see it? Do they sense it through their tactile sense? Why on earth do they dive into the water? And that they know there's land and food there. There's no answer; I haven't read about any other place where the invasion is affecting other islets.

Last year, they carried out surveys on 16 islets. How many showed signs of snakes?

Now, we're doing quite a few more. In Ibiza, we have 64 islets, but some are just large rocks without vegetation and with no chance of supporting a lizard population because, in stormy weather, the sea passes over them. We're currently trapping on six islets: on three of them, such as s'Illa Murada and s'Illa de Santa Eulària, we've also detected molting or a decline in the lizard population on three others.

In the Ses Salines Natural Park, some snakes have been caught, but lizards are still abundant. Is it under control so far?

There were sightings, but we haven't seen any last year or this year. In Sa Revista, residents have reported seeing them, and we're also seeing some captures near the airport, near the entrance to Ses Salines. There, we've set up a whole line of traps to try to stop them. However, in Ses Salines, they're already suffering from the cat problem, which is extremely serious for all birds and their chicks.

Aside from their swimming ability, have you been surprised by any other peculiarities that snakes have developed in the Pitiusas?

It's becoming clear that the snakes here are considerably larger than on the Iberian Peninsula. They're experiencing what in biology we call the island effect. It's a tendency for large animals to become smaller and small animals to become larger.

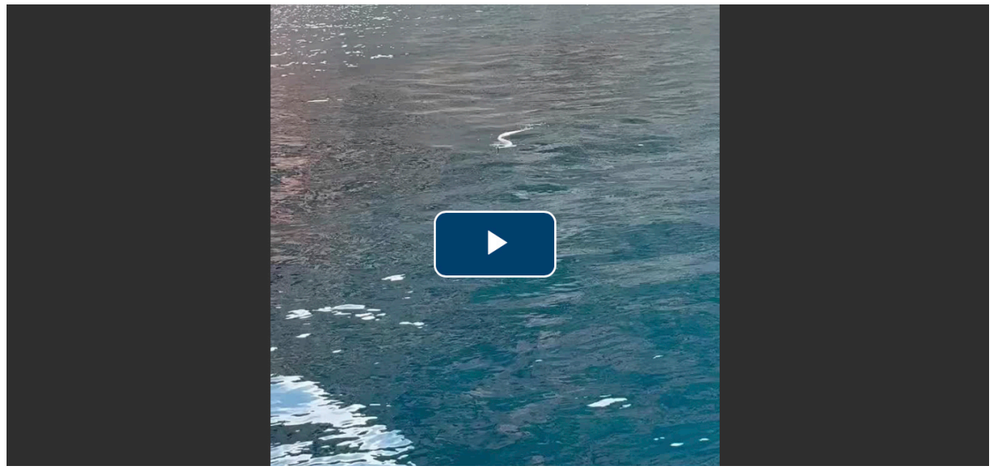
Is there any clue as to how long this phase of exponential growth in snakes might last?

I couldn't tell you, but I can sense that when the invasion that began in Santa Eulària reaches the sea from the southwest, they won't be able to advance further and won't have as many lizards or small mammals to feed on. We have a large number of traps to reduce the impact of this wave, although it's inevitable that it will continue to advance. That's our goal and what the Government expects of us. We're doing everything we can, but this species is truly complex and very well adapted.

PERIÓDICO de IBIZA Y FORMENTERA

«Decían que salir en barco en Ibiza era buena idea... hasta que te encuentras una serpiente nadando»

"They said going out on a boat in Ibiza was a good idea... until you find a swimming snake."



M. J. Real | 08/06/25 22:49

Stefanie Daub felt stupefaction on what seemed like it would be a relaxing and peaceful boat trip around Ibiza and Formentera. At one point during the trip, they looked out to sea and saw a snake swimming swiftly and swiftly, as if it were just another swimmer.

Stefanie recorded this unusual moment and shared it on the Facebook group "Ibiza Winter Residents," where she explained that the swimming snake was discovered in the Ses Balandres area.

"They are swimming the 700 to 1,000 meters toward Ses Margalides Island to eat lizards and peregrine falcon eggs. I pray that the birds on the islands protect themselves from the swimming snakes. Horrible," Timotheus Freytag expressed in a comment on this video.

Other users were amazed to see that snakes can swim: "Since when do snakes swim? How dangerous," comments Ana Belén. Other users declare that they will never "go into the water again."

The presence of the swimming snake has also prompted more humorous comments, such as "they are travelers on their way to the dance floor."

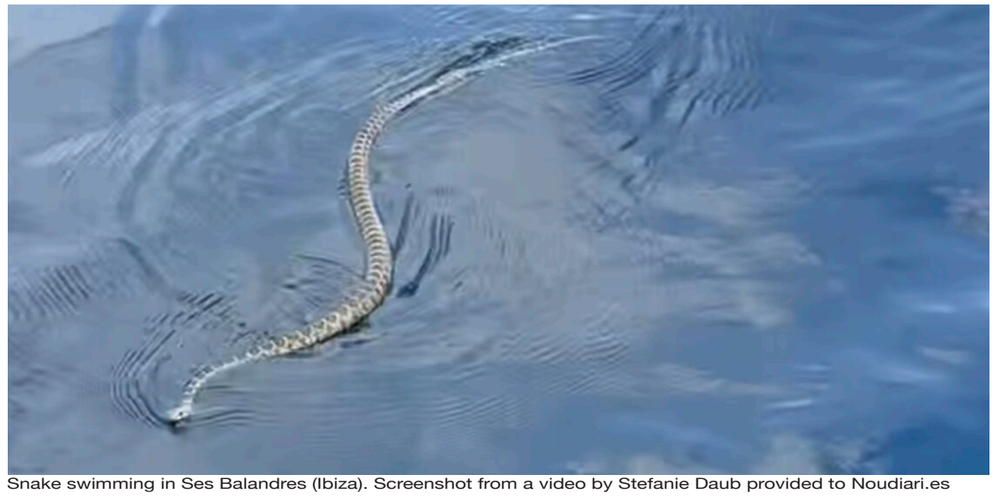
It's worth remembering that the most common types of snakes in Ibiza are the ladder snake and the horseshoe snake. Snakes in general, and especially the horseshoe snake, are excellent swimmers and can even cross large expanses of water, even colonizing islets. At this point, it's important to note that they are not venomous, but they can bite if attacked.

If you find a snake, whether on land or at sea, you can safely proceed to kill it, as it is considered an invasive species in the Pitiusas, islands where it continues to spread unchecked despite the proliferation of traps used to catch it.

noudiari.es Eivissa i Formentera

Una serpiente nadando en Ses Balandres de Ibiza desata la alarma

A snake swimming in Ses Balandres, Ibiza, has triggered alarm



Snake swimming in Ses Balandres (Ibiza). Screenshot from a video by Stefanie Daub provided to Noudiari.es

Por **Laura Ferrer** — 9 junio 2025

A video shared on social media by Ibiza resident Stefanie Daub shows a snake swimming in the Ses Balandres area, off the Ses Margalides islets of Santa Agnès (Sant Antoni).

The video's creator explains to Noudiari that the sighting occurred yesterday morning, Sunday, June 8, around 10:00 a.m. "We were near Ses Balandres and I thought I saw a big fish or some movement in the sea. Then we approached with the boat and saw it was a snake, which swam behind the boat, as if it wanted to climb aboard," she explains.

After sharing the video, she has received messages from other people who have seen snakes swimming in the sea and have tried to climb aboard their boats. "It seems like it's not that unusual for them to follow boats... I'm not afraid of snakes, but I was glad to be on the boat and not in the sea, or rather, that the snake was in the water and not on the boat," she jokes in conversation with Noudiari.

The video has generated a wave of reactions, with opinions ranging from humor to environmental concern.

One of the most powerful messages is that of Timotheus Freytag, a well-known activist fighting the snake infestation in Ibiza, who warns about the impact this type of reptile has on local biodiversity: “It's very important to kill it in the water. Why? Because Ibiza has exactly 24 subspecies of lizards. If this snake reaches a small island, it could wipe out a unique subspecies that's two million years old. A single snake could eat them all.”

Other comments reflect surprise, rejection, or disbelief: “Since when do snakes swim in the sea? What a danger for our island…”, “I never want to go in the water again!”, “It looks like my ex trying to come back into my life…”, “We saw a much larger one swimming in our pool a while back. We didn't go back in for a month.” and “Please don't say it was in the Port des Torrent area!”. “No, it was in Ses Balandres,” the video's creator clarifies.

PERIÓDICO de IBIZA Y FORMENTERA

Serpientes nadadoras en Ibiza acaban con subespecies de largatijas de islotes

Swimming snakes in Ibiza wipe out subspecies of island lizards

"Snake species have always been swimming, and some specimens are adapted to living in water," explains Ibizan biologist Antònia Maria Cirer.

S. Ribas | Ibiza | 10/06/25 4:00



The snake spotted in the waters of Ibiza and Formentera

For some years now, the arrival of snakes on certain islets of Ibiza and Formentera has become increasingly common. However, the fact that they have reached these areas does not mean they have colonized them, although they have most likely caused harm to other species that usually inhabit those territories, as explained yesterday by Doctor of Biological Sciences Antònia Maria Cirer.

Among the islets where the presence of snakes has been confirmed, the most notable is s'Illot de s'Ora, between es Figueral and Pou des Lleó, where snakes have wiped out the entire lizard population, even causing the disappearance of a subspecies that was only found in this area.

In the case of s'Illa Grossa de Santa Eulària, the presence of snakes was detected at one point, as well as on the islet of s'Espartar, where the molt of a snake measuring more than one meter was found. Cirer noted that there have also been sightings on s'Illa Murada and did not rule out the possibility that more specimens have been seen on other islets in the Pitiusas. Regarding the images circulating on social media in recent days showing a snake swimming in the Ses Balandres area, Cirer emphasized once again that it is not unusual for snakes to move in the marine environment. "A snake has a very long body, and when it falls into the water, it raises its head. This allows it to move in a zigzag pattern with a hydrodynamic proportion that allows it to swim much more effectively compared to other mammals," she explained.

Cirer reiterated that all snakes, "as always," can swim, and some are even perfectly adapted to living in the water. The doctor in biology insisted that in other parts of the country it will be more difficult to see them in the water, but not in places like Ibiza, where they often end up taking refuge on boats on land in winter. "When the boat is later returned to the sea, the snakes come out and swim until they reach the nearest land. It's their instinct. This situation is causing widespread alarm throughout the territory, and we can't focus on it," she stated.

Another point the expert wanted to clarify is that "a snake has no willpower and, therefore, doesn't decide to explore a territory. It also doesn't know if there will be lizards on an island to prey on." Therefore, with its "reptilian brain," it will simply follow its instinct in search of food or shelter. Thus, she denied that the snake recorded near Ses Balandres specifically headed to one of the islets to eat falcon eggs or lizards. "If they find them, they will logically eat them. But they won't go looking for them. Snakes eat what they easily catch, in this case, baby birds or lizards, which also don't interpret a snake as a predator," she concluded.

PERIÓDICO de IBIZA Y FORMENTERA

Culebrón electrónico

Electronic soap opera



Jorge Montojo | Ibiza | 11/06/25 4:00

I remember a Norwegian couple who stormed the Peponi bar in Lamu, thirstier than a Viking horde. After the fifth bottle of vodka, they were able to explain themselves. They had sailed their beautiful dhow for three days and three nights in the unsettling company of a six-meter-long python. Apparently, the snake occupied their bathroom (dhows don't usually have bathrooms; you just balance on the side of the boat, but this one was a luxurious gem straight out of Arabian Nights) and, in a sort of boat-hitch, used them to change islands in the Indian Ocean. The python was very considerate and didn't devour them, but neither the Norwegians nor the Chihuahua nor the two Omani crew members slept a wink until they smelled land and saw the python leap into the water and swim like Esther Williams.

This is already happening in the Pitiusas, thanks to the impressive negligence of those in charge of the eco-friendly business for more than twenty years. The cool invasion was known, but nothing was done. They preferred to set up a goat safari in Vedrà. Today, the lizards are paying the price, as the creatures are now proliferating as much as the clubbers. It's a soap opera.

While Formentera was known as Ophiussa (land of snakes), in Ibiza, the horny god Bes, the same one who gives the island its name and encourages the al·lotas to find a worthy lover, exterminated the poisonous animals. His blessed fame was such that Carthaginians and Romans loaded their ships with immense amphorae brimming with a sacred earth that they revered for its poison-killing properties. This saved them many drachmas and sesterces on long-suffering tasters. Today, it's essential that someone bring Ibizan soil to the poisoned Congress of Deputies, the accused and the defiled.

PERIÓDICO de IBIZA Y FORMENTERA

El Parlament pide recursos al Gobierno para controlar la entrada de serpientes invasoras en Ibiza y Formentera

The Parliament requests resources from the Government to control the entry of invasive snakes into Ibiza and Formentera

It calls on the Government to strengthen its support for agricultural insurance to ensure its effectiveness in addressing climate change.



Meeting of the Parliament's Economic Commission this Thursday | Photo: Parliament

Europa Press | Ibiza | 12/06/25 14:45

The Parliament unanimously urged the Ministry of Ecological Transition to support control efforts to prevent the entry of invasive snakes into Ibiza and Formentera by providing technicians, vehicles, and cages.

The Economic Commission of the regional Parliament approved at its meeting this Thursday a non-legislative motion (PNL) championed by PP MP Jacobo María Varela regarding the control and eradication of invasive species.

Thus, the MPs called on the Government to support compliance with the decree on measures for the protection of the Pityusic and Balearic lizards against snakes of the Colubridae family.

Specifically, the Parliament requested that the import of olive trees and other large plant species to the Balearic Islands be controlled by conducting inspections at the ports of origin; that coordination with the competent authorities be promoted; and that random inspections be encouraged on trees likely to transport reptiles, so that they can be quarantined if necessary.

He also called on the Government to provide technical support for snake control and eradication efforts in the Pitiusas, complementing those already carried out by the Ministry of Agriculture, Fisheries, and the Environment. Specifically, he requested that it fund a team of five technicians and two vehicles, as well as the purchase of 500 cages per year, for a period of two years.

Finally, it urged the central government to collaborate with the five municipalities of Ibiza and Formentera by providing 600 cages annually (100 per municipality) for the capture of invasive snakes, which can then be given to citizens and volunteers.

Boosting agricultural insurance

The Commission also debated another PNL this Thursday, this one championed by the Socialist Pilar Carbonero, regarding the promotion of agricultural insurance in the Balearic Islands. Its three points were approved with the votes of the PP and the left-wing parties, and were rejected only by Vox.

Thus, the regional parliament urged the government to strengthen support for agricultural insurance to ensure that it is truly useful and effective in the face of the effects of climate change and adverse weather conditions.

It also calls for specific measures to be implemented to ensure that the maximum number of agricultural and livestock farms can apply for the insurance through awareness campaigns, technical advice, and the provision of additional assistance to existing policies.

Furthermore, the Parliament has asked the Government to study the incorporation of more specific coverage for Mediterranean island regions that take into account their specific agronomic and climatic characteristics and to facilitate collaboration between Agroseguro and the Autonomous Communities to promote modules tailored to each territorial situation.



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Eivissa i Formentera

Aprobada en el Parlament una propuesta para proteger la 'sargantana'

A proposal to protect the lizards has been approved by Parliament



Image of a lizard from Ibiza. Photo: Sebastián Candela Martínez.

Por **Redacción** — 12 junio 2025

The Parliament has unanimously approved the non-legislative motion on the control and eradication of invasive species defended by the Partido Popular.

Following the initiative defended by MP Jacobo Varela, the Spanish Government has been urged to provide support and collaboration to implement the decree of extraordinary and urgent measures for the protection of the Pityusic and Balearic lizards, as well as for the prevention and eradication of invasive species, such as snakes. Technical support has also been requested to complement what the Government is already implementing.

Specifically, the Partido Popular member explained, "We have requested funding for a two-year period for a team consisting of five technicians and two vehicles, and the annual purchase of 500 snake-capturing cages and 600 for the municipalities of Ibiza and Formentera."

Varela, who thanked the groups for their support despite the lack of support from the local councils and the Consell, stated that "the presence of these species on the islands is highly worrying and poses a serious threat to the survival of native species. It has been confirmed that the route of entry for these invasive species is the involuntary introduction associated with the importation of olive trees and other large ornamental species from the Peninsula. Therefore, we are calling for increased control of shipments at the ports of origin and the guarantee of pretreatment to reduce the possibility of transporting snakes, among other measures, in order to minimize the causes of biodiversity loss in an ecosystem as sensitive as ours, the consequences of which could be irreversible."

PERIÓDICO de IBIZA Y FORMENTERA

La prensa británica ya alerta sobre la «invasión» de serpientes en Ibiza

The British press is already warning about a snake "invasion" in Ibiza

María José Real | Ibiza | 15/06/25 13:06 | Actualizado a las 13:39

The Mirror has published a story stating that Ibiza, one of the main holiday destinations for Britons, is experiencing a "snake plague" that has even led tourists to reconsider their vacations.

According to reports collected by this newspaper, several visitors say they are "too terrified to swim" after spotting snakes up to 1.8 meters long in Ibizan waters.

One of the most striking incidents occurred this week in the waters off Portinatx, in the north of the island. Two people out sailing in an inflatable boat were greatly surprised when they came across a snake measuring approximately 1.70 meters in length slithering through the sea.

The truth is that snake sightings are increasingly occurring in different parts of Ibiza, both in rural and coastal areas. In this regard, at the beginning of June, Andoni Valencia, a member of the AD Ibiza Half Triathlon club, encountered a snake approximately two meters long while cycling along the road between Sant Rafel and Santa Agnès, near Bucastell.

Another striking case was that of Manuel Ehrensperger of Ibiza Hike Station, who contacted Periódico de Ibiza y Formentera to show the enormous snake, measuring more than 1.5 meters, that he found during a day hike on the Corona coast, near Sa Penya Esbarrada. "I've been seeing a lot of snakes on our hikes for about two years now; they bask in the sun. I see quite a few in the northern region, especially around Cala Aubarca, Santa Agnès, Xarraca, Cap Mosson, and Cap Rubió," he explained to this newspaper. In the case of the snake in this video, "we were surprised by its size; it was very large."

Pep Ramis, a resident of Sant Josep, also told this newspaper that he is very used to finding snakes near his home. In fact, neighbors hold competitions to see who can find the longest snake. His surprise came at the beginning of June when he found a shed snake measuring almost two meters.

But why are snakes getting bigger and fatter in Ibiza? Basically, because they have no natural predators, as Antònia Maria Cirer, a doctor in Biological Sciences, explained to this newspaper.

What should you do?

If you find a snake, if you dare, you should catch it and kill it. Hitting it on the head with a rock is usually effective. If you don't dare, call 112.

The most common snakes in Ibiza are the horseshoe and ladder snakes, which, while not venomous, can bite.

If you find a snake in Ibiza or Formentera and want to share your experience, you can email redaccion@periodicodeibiza.es.

PERIÓDICO de IBIZA Y FORMENTERA

La prensa italiana da la voz de alarma sobre las serpientes nadadoras en Ibiza

The Italian press is sounding the alarm about swimming snakes in Ibiza

They report that "more and more tourists say they are 'too terrified to swim.'"

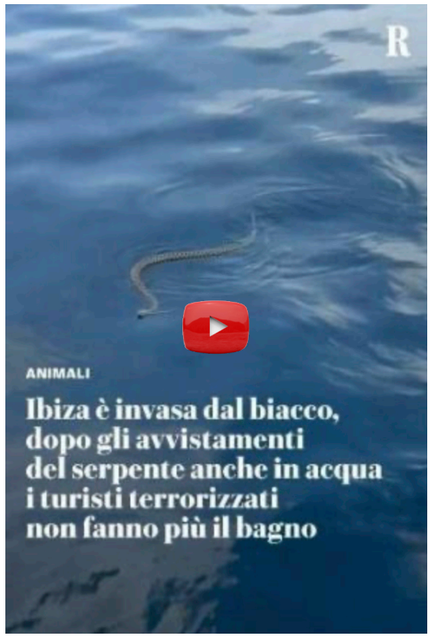
Jerónimo Marín | Ibiza | 16/06/25 20:32

The news of the swimming snakes in Ibiza, first reported by Periódico de Ibiza y Formentera, has already reached Italy, where the media is already warning of the danger they pose and delving into the causes of these reptiles' invasion and why they are becoming larger.

While yesterday we reported how the British press echoed the news and alerted its readers to this new ability that horseshoe snakes seem to have acquired, today it's the turn of the Italian press, one of the main nationalities of origin of tourists visiting the island as well as residents.

The article, titled "Ibiza, between crystal-clear waters and giant snakes: the island facing an ecological emergency," was published by the Turin-based media outlet La Stampa. In its nearly 800 words, it details step by step how the snake invasion came about, why they are getting bigger every day, how it threatens the survival of the Pitiusan wall lizard, what measures are being taken to reverse the situation, and what tourists' reactions are to the news.

For its part, the Roman newspaper La Repubblica echoed the news published by Periódico de Ibiza y Formentera and on its social media, they titled the video of the swimming snake: "Ibiza is invaded by the horseshoe snake. After sightings of the snake, also in the water, terrified tourists are no longer swimming." They claim in the post that "Ibiza [...] is today at the center of an ecological emergency. More and more tourists are saying they're 'too terrified to swim' after numerous sightings of enormous snakes—up to 1.8 meters long—swimming in the waters off their coast. They report the snake invasion, adding: "What started as sporadic sightings has become an out-of-control phenomenon. And now, they're swimming too."



The comments on the post have spiraled out of control. "It's not the snake that's infesting Ibiza, it's the tourists," "Showing the average Ibiza user that you can swim without becoming hysterical must be fun," and "Oh, but ... do they go swimming there?!" were some of the most liked comments. Other users, on the other hand, have left aside the sarcasm and responded honestly: "Harmless or not, I could die if I saw it," "It might be harmless, but I'd be dead if I saw it while I was in the water."

PERIÓDICO de IBIZA Y FORMENTERA

Marina Ibiza se convierte en un refugio especial para sargantanas autóctonas

Ibiza Marina becomes a special refuge for native lizards

The marina is promoting a pioneering project to protect this endemic species in collaboration with the Consell and the City Council of Ibiza, and IbizaPreservation.



Marina Ibiza becomes a special refuge for native lizards

Vanessa Hernández | Ibiza | 18/06/25 10:43

In 2025, Marina Ibiza launched a new environmental project to establish itself as a safe haven, and a very special one due to its characteristics, for the lizard, the emblematic Pityusic lizard. The initiative, developed in collaboration with the Consell and the City Council of Ibiza, along with IbizaPreservation, reflects the marina's commitment to local biodiversity and the conservation of protected species in danger of extinction due to the threat of invasive snakes.

Currently, a significant population of lizards inhabits the marina's stone walls, planters, and other structures, which, unintentionally, have become a truly useful refuge for this endemic vertebrate species, the last remaining representative of the native Pitiusan fauna prior to the arrival of the human population, a time when all other vertebrate species became extinct. Given its ecological importance and its status as a protected species in the Balearic Islands, Marina Ibiza has designed an action plan that includes active conservation measures.

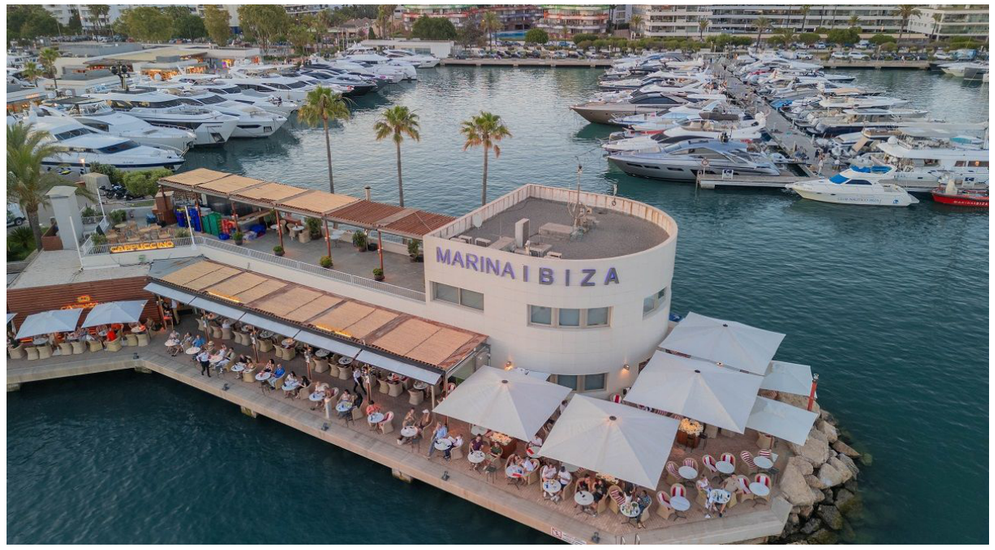
The Pityusic lizards have truly spectacular colorations. Some are completely green in all their varieties to blend in with the vegetation, but there are also populations with light beige colors. These have evolved to blend in with the sandy substrate.

Compared to other lizards found elsewhere, they are very large and robust, with a broad, tall head. Males can measure up to 20 cm from head to tail.

The initiative promoted by Marina Ibiza includes the installation of specific traps to capture snakes, the main threat to the lizards, in order to reduce their impact on the local population. These small shelters of stone and vegetation, located at different points in the marina, create safe spaces that favor the survival, growth, and reproduction of specimens in the area. The project also includes an awareness campaign aimed at customers and visitors, which seeks to inform about the presence of this species and promote responsible behavior to avoid disturbances or damage, such as accidentally stepping on them or altering their habitats, since any threat, including human threats, could lead to the escape of these animals so authentic to the islands.

This intervention takes on even greater relevance in a critical context for local wildlife. In recent years, Ibiza has seen an alarming increase in invasive snakes, especially the horseshoe snake (Hemorrhois hippocrepis), accidentally introduced with ornamental olive trees from the mainland. These snakes are currently estimated to occupy a large part of the island's territory, including several islets.

This situation seriously threatens the Pityusic wall lizard, which only inhabits Ibiza and Formentera, as well as some islets in the archipelago. Marina Ibiza's action, therefore, represents a direct response to a real and urgent environmental problem and an active contribution to halting the decline of this species. With this initiative, Marina Ibiza reaffirms its commitment to protecting native wildlife and promoting sustainable practices that enrich both the natural environment and the experience of those who visit the marina.



DIARIO de IBIZA

Marina Ibiza se convierte en refugio para 'sargantanes'

Ibiza Marina becomes a refuge for lizards

The marina is promoting a pioneering project to protect this species in collaboration with the Ibiza Council and City Council and IbizaPreservation.



A significant population of Ibizan lizards has found refuge in Marina Ibiza. | GROUP IPM

Redacción Ibiza

Ibiza 19 JUN 2025 6:00

In 2025, Marina Ibiza launched a new environmental project to establish itself as a safe haven, and a very special one due to its characteristics, for the Pityusic lizards, in collaboration with the Ibiza Council and the City Council of Ibiza, along with IbizaPreservation.

As explained by Marina Ibiza in a press release, "Currently, a significant population of lizards inhabits the stone walls, planters, and other structures of the marina, which, unintentionally, have become a truly useful refuge for this endemic vertebrate species, the last remaining representative of the native Pitiusan fauna prior to the arrival of the human population, at which point all other vertebrate species became extinct." Given its ecological importance and its status as a protected species, Marina Ibiza has designed an action plan that includes active conservation measures.

This initiative includes the installation of specific traps to capture snakes, the main threat to the lizards, in order to reduce their impact on the local population. These small refuges of stone and vegetation, located at different points in the marina, create safe spaces that promote the survival, growth, and reproduction of specimens in the area.

The project also includes an awareness campaign aimed at customers and visitors, seeking to inform them about the presence of this species and promote responsible behavior to avoid disturbances or damage, such as accidentally stepping on them or disturbing their habitats, since any threat, including human threats, could cause these reptiles to flee.

This intervention "takes on even greater relevance in a critical context for local fauna," emphasizes Marina Ibiza, who points out that, in recent years, Ibiza has seen an alarming increase in invasive snakes, especially the horseshoe snake (*Hemorrhois hippocrepis*), which is estimated to now occupy a large part of the island's territory, including several islets. Marina Ibiza's action, therefore, represents "a direct response to a real and urgent environmental problem, and an active contribution to halting the decline" of Ibizan lizards, the note emphasizes.

DIARIO de IBIZA

“Se cruza con una serpiente nadando en Benirràs: "Son señal de que debes repensar tu camino”

She comes across a snake swimming in Benirràs: "It's a sign that you need to rethink your path."

"Wonderful, aquatic medicine," one user responds to a video shared on social media.



The snake, swimming in Benirràs / A. NAGEL



Marta Torres Molina
Ibiza 24 JUN 2025 11:21 Actualizada 24 JUN 2025 11:22

"When snakes cross your path, it's usually a sign that you need to rethink the path you're currently taking." That's what Andreas, who describes himself as a "life coach" and "spiritual healer," thought when he encountered a snake while swimming in the waters of Benirràs. These are, in fact, some of the words he wrote when he shared the video on Instagram, in which the snake is perfectly visible.

The animal boasts excellent swimming skills and isn't afraid of people who, upon seeing it, surround it. It's like the Esther Williams of snakes. In the images, the snake is seen poking its head out of the water, held very high, as it snakes closer to the shore, where several people are watching the animal.

One of these people, with his cell phone practically at sea level, films it approaching and turning around to continue swimming parallel to the shore. At that moment, he raises the camera, and you can see the reptile from above, appreciating its size: very long and well-fed.

"Snakes are a symbol of transformation, wisdom, warning, and healing," continues the text accompanying the video. "Aquatic medicine," replies one follower regarding the images of this snake, which doesn't seem to frighten either the swimmers, the filmmaker, or the commenters.

DIARIO de IBIZA

La necrópolis de Puig des Molins, una «burbuja de biodiversidad»

The Puig des Molins necropolis, a "biodiversity bubble"

Biologist Olivia López considers it "a real privilege" to have a space like the Puig des Molins necropolis in Ibiza due to the wide variety of fauna and flora it houses, and she conveyed this yesterday to the people who attended the awareness and environmental education visit organized by the MAEF and Aamaef.



Visita al museo de Puig des Molins con la bióloga Olivia López

Visit to the Puig des Molins Museum with biologist Olivia López / J.A. RIERA



Maite Alvite
Ibiza 15 JUN 2025 6:01 Actualizada 15 JUN 2025 9:07

The historical and heritage value of the Puig des Molins necropolis is well known, but not so much the environmental wealth it houses. That's why initiatives such as the awareness-raising and environmental education tour that biologist Olivia López will offer in a few minutes to show the public the wide variety of fauna and flora that inhabit this five-hectare space located in the heart of Vila de Vila are so important.

This educational tour, he explains, is part of the program of activities designed by the Archaeological Museum of Ibiza and Formentera (MAEF) and its Friends Association (Aamaef) to commemorate International Environment Day, which was celebrated on June 5.

As this scientist says, to love and care for something, you must first know it, and with that goal in mind—to discover the environmental values of this area of Puig des Molins—Marta Pons and four friends signed up for the itinerary: Elise Gauthier, Andrea Floriach, Belinda Condado, and Encarna de las Heras. The popular storyteller, who is a member of Aamaef, was the one who suggested this original weekend plan to the rest.

The visit begins inside the Puig des Molins Monograph Museum, where Olivia López and MAEF curator Maria Bofill welcome the group. After welcoming them, the archaeologist introduces them to the biologist, who has been collaborating with the museum for five years to study in detail "the invaluable natural heritage" of the necropolis and to raise awareness about it through outreach activities like this visit. Since 2024, he notes, their work has also focused on conducting a census of the Pityusic lizard, *Podarcis pityusensis*, in this emblematic site.



A moment during the educational route on flora and fauna offered by biologist Olivia López at the Puig des Molins necropolis. / J.A. RIERA

"Given the great threat posed to this species by the entry of snakes into Ibiza, a collaborative project was launched in 2021 between the MAEF (Spanish Ministry of Environment), the Ibiza Council, the Can Marines training center, and biologist Antònia Cirer, through which the Puig des Molins necropolis was declared a lizard reserve, due to the ideal conditions it offers for their habitat and reproduction," says Bofill. What the museum has done, he continues, is launch "a preventive conservation program" that includes environmental education initiatives like this one, which is carried out annually; the installation of snake traps at different points in the necropolis managed by the Cofib; and the population study of *Podarcis pityusensis* that López is conducting.

The Itinerary

Before beginning the tour, the biologist explained to Diario de Ibiza that, for now, she cannot provide data on the approximate number of lizards that may be present in this area and that "we still need to continue collecting information for two more years to assess whether the *Podarcis pityusensis* population is growing, decreasing, or stagnating."

The information she does provide, later in the tour, is that in all this time, only one snake has been captured within the necropolis grounds, in 2023.

The group leaves the building to begin the educational walk through the necropolis. López shows the route they will follow on a map, which begins at the so-called "mule hypogeums" and includes, at the highest point of the hill, the area surrounding the Es Porxet farmhouse. She also points out that they will pass through areas of the necropolis that are not normally open to the public, such as the space where some powder magazines, a sentry box, and structures from what was once the military sector are still preserved.

The first animal species they encounter is a *Podarcis pityusensis* basking in the sun on the wooden walkway, a place that, according to the biologist, these reptiles really like because "it maintains the temperature well" and provides them with a hiding place. López takes the opportunity to share some details about how she's conducting the census of this species. "Since 2024, I've been coming to the necropolis once a month, except in winter. I come on sunny days and during certain time slots when I know I'll be able to locate them easily, because lizards are ectotherms, meaning their body temperature depends on the ambient temperature," she explains.



Olivia López shows the image of different species of Balearic orchids that can be found in the area. / J.A. RIERA

Birds and Butterflies

She then distributes two sheets to the attendees on which they have to write down the animal species they find. One has images of 22 types of birds that can be seen in this necropolis. The other contains almost thirty different butterflies from the Balearic Islands, some of which can be seen in this space, such as the King Butterfly, the Common Butterfly, the Common Butterflies, and the Cabbage White, which they locate along the way.

While they don't see many butterflies during the activity, they do spot a few birds, such as the kestrel, several swifts, sparrows, greenfinches, seagulls, and the occasional wood pigeon, the kind that drives Ibizan farmers crazy.

From Olive Trees to Orchids

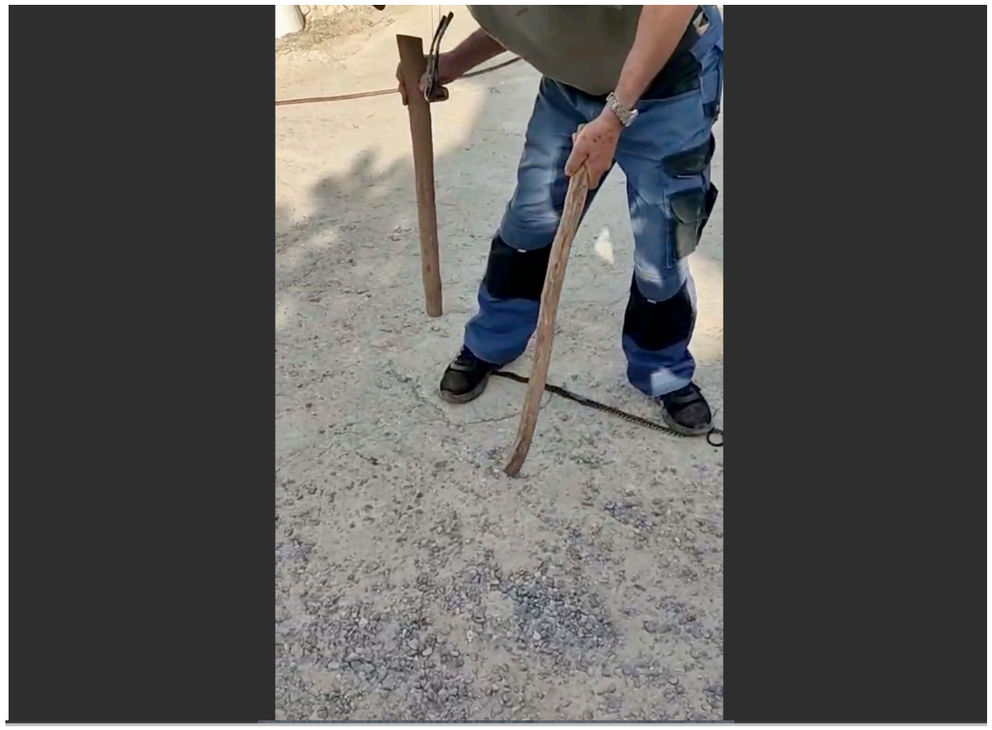
The plant diversity is important, as demonstrated throughout the educational route. The biologist recalls that this area was once used for agricultural and livestock farming, and to illustrate this, she shows an image from Diario de Ibiza from the 1930s showing sheep in the necropolis. This is why there are many olive trees here, as well as some almond, carob, and fig trees. Along the way, they encounter some of the herbs traditionally used in the herbes of Ibiza, such as fennel; thyme, now in bloom; rue; and the herb of Sant Ponç. They also see St. John's Wort, many capers, asparagus, castor oil plants, and species considered invasive, such as the fig tree, the agave (American agave), and the lantana (Spanish flag). In the more wooded areas they visit, they observe how pines, olive trees, junipers, and shrubs coexist in harmony. The biologist then displays a photo of five types of orchids native to the Balearic Islands, which can be found at this site starting in autumn.

After this educational tour, it's clear to all the members of the group that having a space like the Puig des Molins necropolis right in the city of Ibiza "is a privilege." And it is, as Olivia López emphasizes, "not only because of its great historical and cultural value but also because of its environmental value." This space, she says, "is a bubble of biodiversity" that offers multiple benefits: "It improves air quality; it provides protection, food, and rest for a wide variety of animals," and, if that weren't enough, "it acts as a natural barrier against noise pollution."

PERIÓDICO de IBIZA Y FORMENTERA

Así se acaba con las serpientes en Ibiza

This is how snakes end in Ibiza



María José Real | Ibiza | 16/06/25 13:35 | Actualizado a las 22:09

It's an undeniable fact that the snake invasion in Ibiza is increasing. Therefore, whenever you find a snake on the street or in a trap you've set in your home, it's vital to kill it.

Many properties in Ibiza have installed traps from COFIB, the organization responsible for managing them, to catch snakes.

This Monday morning, some residents of Ibiza found the trap in their home with snakes inside. In this case, they aren't very large or fat, but as can be seen in the video, their agility in trying to escape is incredible.

In the video, the snakes try to escape from the hands of the property owners, who then use two sticks to execute them. At this point, it's important to remember that snakes can be killed in Ibiza because they are invasive species that wipe out the island's native fauna, such as the lizards. Furthermore, they have no natural predator, which allows them to expand and grow in size and weight.

If you find a snake in your home, on the beach, or on the street and would like to share your experience, you can email us at: redaccion@periodicodeibiza.es

noudiari.es Eivissa i Formentera

De la trampa al refugio para salvar a las lagartijas de las serpientes invasoras

From trap to shelter to save lizards from invasive snakes



Por **Redacción** — 17 junio 2025

The Sant Josep City Council and the Pitiusa Mental Health Association have launched an initiative to protect the Pityusic lizard, an endangered endemic species, by creating shelters with recycled materials.

The shelters, built with recycled materials such as fruit crates, are filled with tree bark and dried leaves. They are covered with protective mesh and a layer of cement, following the recommendations of the Consortium for the Recovery of Fauna of the Balearic Islands, with the aim of providing a safe space for the lizards and protecting them from predators such as invasive snakes.

This project, part of a broader collaboration with Ibiza Green, aims to install 80 shelters in the municipality. In addition to its environmental impact, the initiative offers therapeutic value to the participants of the Ibizan Association for Mental Health, improving their psychomotor skills, attention, memory, and teamwork skills.

The Councilor for the Environment, Felicia Bocú, highlighted the importance of projects that combine environmental protection and social benefits.

PERIÓDICO de IBIZA Y FORMENTERA

Milka, la perra adiestrada para luchar contra la invasión de serpientes en Ibiza

Milka, the dog trained to fight against the invasion of snakes in Ibiza

This 13-month-old Belgian shepherd detects hidden reptiles in houses and gardens.



The dog Milka and Alejandro Vives, technical supervisor of Goldservice and responsible for Milka | Photo: Alejandro Mellon

Naroa Sánchez | Ibiza | 21/06/25 4:00

With the arrival of the heat, the alarm calls for the sighting of snakes have gone off in Ibiza. Every day, neighbors find snakes in gardens, swimming pools and even inside their houses. Faced with "the lack of effective institutional measures", the Ibizan company Goldservice has taken a step forward by training a dog to detect these reptiles.

Her name is Milka, she is less than a year old and she is the only dog in the peninsula and in the Balearic Islands dedicated to detecting snakes. She is a Belgian Malinois shepherd who works for Goldservice, a company specializing in pest control for more than 30 years. His training began when he was just three months old and has continued since then with weekly sessions at a high performance training center. Its genetic line comes from breeders who work with state security bodies in explosives and drug detection work.

Alejandro Vives, technical supervisor of the company and head of Milka, explains that the idea arose out of sheer necessity. "Snakes are a very serious problem on the island. It all started when he saw that in many homes the use of traps was not viable or not very effective and a more precise solution was needed," he says.

The dog detects snakes by smell, which it associates with a reward. He does not attack or bite them: he simply marks them with his body language, which allows the technician to act. "So far this season, he has already located several snakes. Every day we receive between 20 and 30 calls from individuals about sightings", adds the technician.

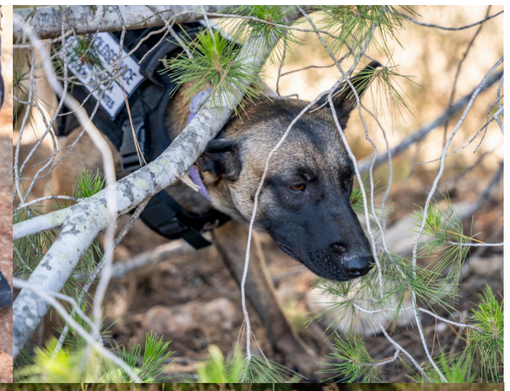
The massive presence of these reptiles, especially the horseshoe snake, represents a real threat to the Pityusic lizard, an indigenous symbol, as well as being a protected species. The lack of natural predators in Ibiza, such as foxes or snake eagles, aggravates the problem. In addition, the snakes detected on the island usually reach larger sizes than those found in the rest of Spain precisely because they have no natural predators. Snakes over one and a half meters long have already been caught this year.

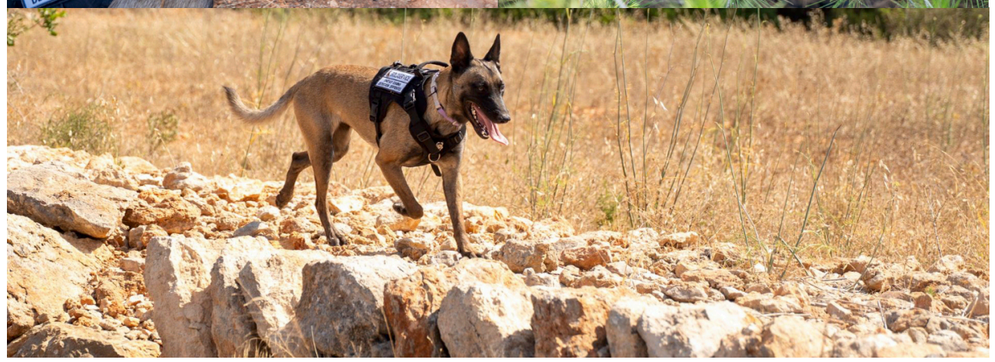
The service with Milka has been active for a month and has already established itself as an effective tool for locating snakes. The company does not rule out expanding the canine team. It is already providing services to hotels, large facilities, and private homes.

"Milka loves her job, because for her it's like a game and the more complex the environment, the better she does it", concludes Alejandro, with the satisfaction of knowing that, this time, the solution to an environmental threat has come with four legs and a really prodigious sense of smell.

Despite the magnitude of the problem, there is still no clear institutional strategy to stop it. Apart from some trapping campaigns, there is no coordinated action to contain the expansion of snakes on the island. Most of the notices end up being attended by private companies, which try to cover the demand with their own resources.







DIARIO de IBIZA

"Las serpientes merecen morir con respeto, no como algunas personas las están matando en Ibiza"

"Snakes deserve to die with respect, not like some people are killing them in Ibiza."

An Argentine influencer explains in a video from Ibiza that these animals are a threat to the island's ecosystem, but not to humans.



Belén Guerra, in the video recorded in Ibiza about snakes / @VIAJERA_INDEPENDIENTE



Marta Torres Molina
Ibiza 26 JUN 2025 11:49

"I don't like snakes, but they are animals and they deserve to die with respect and care, not like some people are killing them." This is the statement made, both in writing and verbally, by Belén Guerra, a travel influencer on her Instagram profile. In one of her videos, published a few days ago, the young woman attempts to briefly address the "snake plague," as some British and Italian newspapers have dubbed the proliferation of these animals on the island.

"Someone at work asked me the other day if it was real that there was a snake plague in Ibiza," the Argentinian content creator comments before admitting that she had "no idea" what was happening, so she started looking for information. Yes, she explains that before being asked the question, she had had an encounter with one of these snakes: "It happened to me while trekking, I saw a snake and had to run away because I was really scared. But it was in the middle of the mountains."

The influencer explains that these reptiles were imported to the island via olive trees. She claims this happened a year ago, a mistake she later clarifies in the text accompanying the video, where she explains that it was more than a year ago but that they are now proliferating.

As much as she was frightened when she came across one, Belén is opposed to the way some people are killing them: "What they're doing to these little creatures is disgraceful; they're killing them in an ugly way." "These snakes aren't a threat to humans," she says, before emphasizing that they are a "significant threat to the island's terrestrial and marine ecosystems."

DIARIO de IBIZA

Una vecina de Ibiza: "Intentamos salvar crías de pajarito, pero muchas no sobrevivieron después de estar en la boca de las serpientes"

A resident of Ibiza: "We tried to save baby birds, but many didn't survive after being in the snakes' mouths."

The woman, from Santa Agnès, tells how snakes have destroyed many bird nests and caused the lizards to disappear from her home.



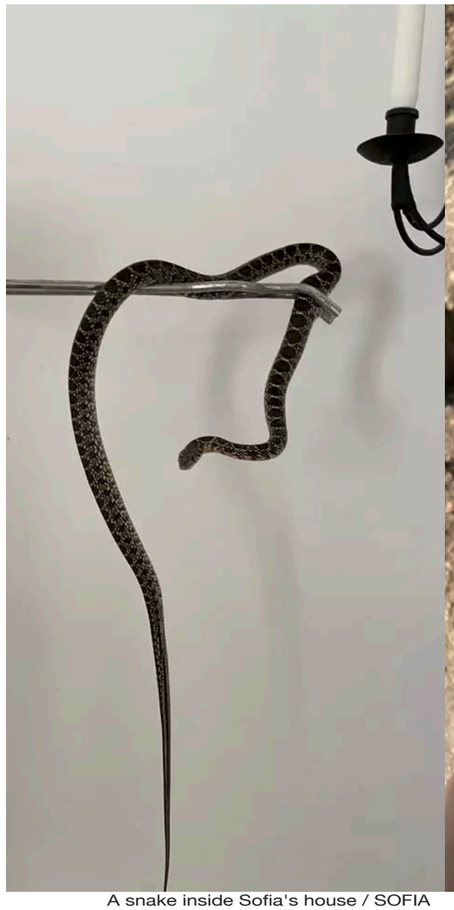
Sofia with one of the snakes found in her home / SOFIA

Arual Martínez
Ibiza 29 JUN 2025 12:04 Actualizada 29 JUN 2025 12:15

"We catch snakes frequently," a resident of Santa Agnès told Diario de Ibiza. Sofía lives in a house surrounded by nature. Before, it was common to see lizards wandering freely in her garden, "but they've almost disappeared. There used to be so many of them and they were very friendly," she says.

This family has two snake traps set up on their property, but they still manage to catch more snakes on their own. "We've caught them in the garden, near the house, and also a couple of times inside," Sofía says. The last two, caught this week, measured 1.20 and 1.60 meters.

The proliferation of these snakes in the area has caused not only the disappearance of lizards, but also birds. "They still fly, but they don't build nests in the walls of the house like they used to, because last summer the snakes destroyed many nests," this





A snake inside Sofia's house / SOFIA

A snake caught in her garden / SOFIA

neighbor explains. "We tried to save baby birds, but many didn't survive after being in the snakes' mouths," she explains.

She says they have managed to rescue numerous geckos, birds, and lizards before they were devoured by these snakes. Snakes search for food everywhere, and now that there are fewer and fewer lizards, they try to hunt other animals.

The horseshoe snake (*Hemorrhois hippocrepis*) has become a threat to the environment and the ecosystem, as it is endangering an endemic species, the Pityusic wall lizard (*Podarcis pityusensis*), which is an icon of Ibiza and Formentera.

The fact that they have no predators on the island allows some snakes to reach much larger sizes than they do on the Peninsula. Here, they have plenty of prey and food and aren't worried about saving their lives from the threat of other species. According to experts, these snakes' strategy is based on intraspecific competition, growing larger to fight off their peers and hunt more prey.

DIARIO de IBIZA

Serpientes en Ibiza: de la trampa al saco

Snakes in Ibiza: From Trap to Sack

A group of enthusiasts designs a new type of snake trap with an exterior door that leads the snakes directly into a sack.



File image of a horseshoe snake. | DI



Aarón Benet

Ibiza 30 JUN 2025 18:54 Actualizada 01 JUL 2025 9:07

"We are a group of enthusiasts concerned about the snake problem in Ibiza." Toni Villalonga, despite admitting "not being an expert on the subject," is seeking measures to put an end to the "serious environmental consequences" caused by the increase in snakes on the island. In response, Villalonga and a group of friends have designed a new trap to catch these types of reptiles.

Villalonga speaks about the need to address the snake problem: "They are animals that kill lizards [an endemic species] and, furthermore, they can pose a risk to human health." Similarly, he is convinced that "it is a problem that will only get worse, as it was detected too late." This is why Villalonga indicates that "traps should be provided to all residents who request them." Although he defines himself as "simply a person concerned about the reality of snakes," Villalonga dares to predict that "at least 1,000 traps are needed."

Trap with an Exterior Door

The snake traps provided by the Ibiza Council are designed as a closed box. The traps created by Villalonga, on the other hand, operate differently: "The snake enters the trap to



Image of the design conceived by Toni Villalonga. | TONI VILLALONGA

catch the mouse, but since it can't eat it, it goes outside, unlike the ones provided by the Council, and enters a sack placed just outside the box. Afterwards, you must ensure that the snake is inside the sack."

Villalonga states that the trap's exit through the exterior door is intended to "prevent people from having direct contact with a dangerous animal such as snakes." He explains that "although the species of these reptiles found in the Pitiusas are not poisonous, they can cause harm due to their bites."

The injuries that snakes can cause to people means that "many residents choose not to buy traps for fear of having to touch them," says Villalonga, adding, "We consider this factor to be an advantage."

"So far, they're working well."

As a group of hobbyists, Villalonga explains that "they are open to comments and criticism." He also explains that they are "incorporating small improvements to the designs, as it is not yet a completely final project."

The traps cost 30 euros each. Villalonga confesses that the purpose of this project is "not" to make a profit: "We set a price, since making the traps takes time, and the materials to build them also cost money. The most important thing is to encourage people to get traps, since they are so necessary."

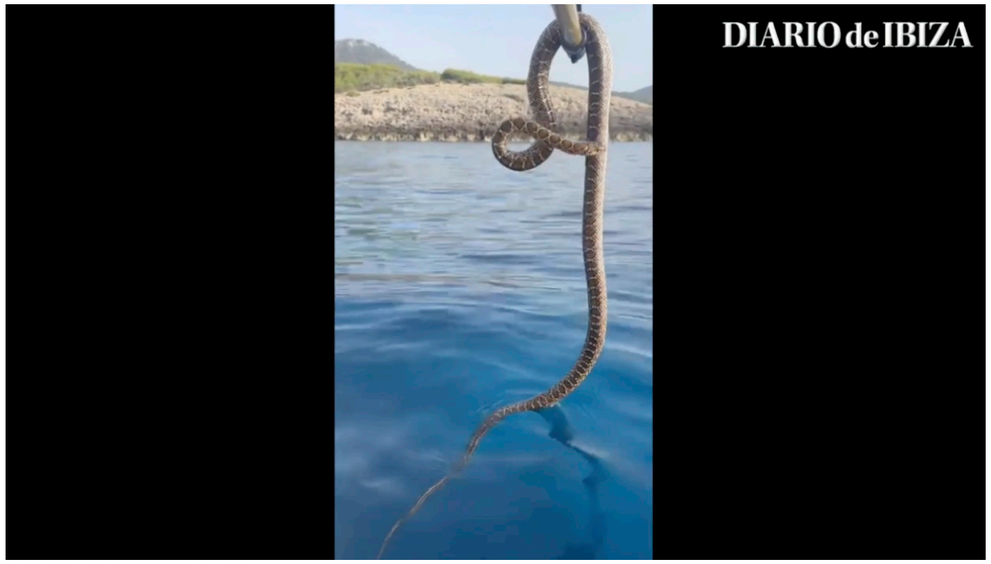
Aside from selling traps, Villalonga, along with his group of friends, manages the Facebook account @capturaserpientesibiza. They also publish information on the current snake situation in Ibiza. In addition, Villalonga announced one of the posts they will publish on the account soon: "We will publish the design plans for our traps, which have worked in the various tests we have conducted. This decision is due to the fact that we want to encourage people to build traps in their own homes."

DIARIO de IBIZA

¿Peligro real o alarma infundada? Lo que dicen los expertos sobre mordidas de serpiente en Ibiza

Real danger or unfounded alarm? What experts say about snakebites in Ibiza

The appearance of snakes on the island has raised concerns among residents and tourists.



THEIBIZAPHOTOGRAPHER.



Marisol Plaza Sánchez

Ibiza 30 JUN 2025 17:33 Actualizada 30 JUN 2025 17:47

In recent months, some British media outlets have published alarming reports about the supposed danger of snakes in Ibiza. Countries like Italy have also reported on the invasion of these reptiles in the Pitiusas, a threat that particularly affects Ibiza and Formentera and is seriously endangering the islands' endemic lizards. But are they dangerous to humans?

The protagonist of this situation is the horseshoe whip snake, a non-venomous species that arrived in Ibiza about 20 years ago. Since then, strategic capture programs have been implemented in different areas of the island, with the aim of halting its spread and protecting the local fauna.

YouTuber Dwayne Muffin has addressed this topic in his latest video, in which he interviews Dean Gallagher, a volunteer actively involved in the control of this invasive species. During the conversation, Gallagher shows one of these snakes while explaining that, despite their appearance, they don't pose a real danger to people.

"We can see it's not venomous simply by looking at its eyes, which are round," Gallagher points out. "If we open its mouth, we'll see it's not trying to bite us, and its teeth are very small." He also explains that these teeth are curved inward, so they function like a hook that traps its prey, similar to the mechanism of Velcro.



Throughout the video, Muffin asks his opinion on the fear some tourists have of traveling to Ibiza because of the presence of these snakes. Gallagher responds clearly: "I think it's silly. Snakes are everywhere, even in England, and many of them are more dangerous than these." The expert assures that, in the event of a bite, the most serious injury is a minor scrape. "Just wash with warm water and soap. If you want, you can apply a little alcohol, and in case of an allergic reaction, you should see a doctor."

However, Gallagher warns that, like any animal, the horseshoe snake can bite if it feels threatened. “It's best to stay still and let it pass. If it feels cornered, it may retreat and hiss as a warning,” he explains.

The National Health Service (Seprona) also reminds people that if they suspect the snake has lost a tooth during the bite, they should take the person to the hospital so doctors can examine the animal's teeth and determine if any have remained inside the person.

Although the ecological impact of this species is undeniable (they are a threat to the endemic lizard of the Pitiüses), they do not pose a risk to humans. These snakes do not attack tourists nor do they pose a real threat to those visiting the island.

02-07-2025 - Laura Ferrer - Extraordinary discovery of five enormous snakes in the same trap on a farm in Sant Llorenç (snakes)

noudiari.es
Eivissa i Formentera

Hallazgo extraordinario de cinco enormes serpientes en la misma trampa de una finca de Sant Llorenç

Extraordinary discovery of five enormous snakes in the same trap on a farm in Sant Llorenç



The five snakes caught in the same trap, measuring between 1.10 and 1.75 meters long.

Por **Laura Ferrer** — 2 julio 2025

The plague continues unabated. No fewer than five snakes, two females and three males, some of them enormous (the largest was 1.75 meters and the smallest 1.10 meters), have appeared inside the same small trap. This is the exceptional discovery made this week in a trap installed by InsectIbiza on a property in the Sant Llorenç area (municipality of Sant Joan, Ibiza).

Upon making the discovery, the affected owners, unable to deal with the mass of snakes in the trap on their own, contacted Timotheus Freytag, one of the most active voices in the fight against snakes, who, in turn, contacted the well-known Ibiza snake hunter, Dean Gallagher, who has been working against the infestation since 2019.

Another company, LizzardSield, was already working on the property and is taking on this type of snake removal service due to the high demand, especially from foreigners who find snakes on their properties. In other words, we are increasingly seeing more cases of professionalization of the "hunt," which until recently only relied on volunteers to work against it (Cofib of the Balearic Government, Institut d'Estudis Ibizasencs, Amics de la Terra, Gen-Gob, etc.).

Gallagher explains that this crowding of snakes into a single (and small) trap is "exceptional, extraordinary," and that it may be due "to one of the females being in her reproductive period and thereby attracting males to mate."

The trap was battered, heavy, and the snakes had even broken open the mouse's bait compartment. And another interesting fact: this happened in one week, meaning they caught all five snakes in just seven days.

Gallagher took the trap and carried it under a shaded area so he could work carefully and calmly, "because it was necessary to remove them one by one and make sure none of them escaped," he explains.

"I'm happy to see that there are more people, even private companies, working on this because we have to team up and learn from each other, as we have to once and for all put an end to this terrible plague that is going to destroy the island's ecosystem. We have to share information, and I myself want to continue learning from all of this and from all the people who collaborate," Gallagher emphasized in conversation with Noudiari. It's important to remember that these snakes are not venomous and don't attack humans on their own, but they must be handled with care, and their main danger is that they wipe out the island's native lizards.

Over the years of fighting the plague of invasive snakes (mainly ladder snakes and horseshoe snakes) that began entering Ibiza in 2003, more than 20 years ago (hiding in the root balls of large, already grown ornamental olive trees brought from the mainland for villas and agrotourism), the island has witnessed a dramatic evolution of the species in Ibiza, accompanied by intense extermination campaigns that have not been sufficient to control the proliferation of this species, which has no predators in Ibiza.

The main focus from the beginning was on the Sant Llorenç area, precisely where the trap covered in this article is located, and later on Sant Joan and the Santa Eulària area. From there, it has already reached the west coast of the island, although there are areas where its presence has not yet been so clearly confirmed, such as in areas of Sant Josep and Sant Antoni. It's frustrating for the volunteers and workers involved in this battle to see increasingly larger specimens being found.

The Ibiza wall lizard (*Podarcis pityusensis*) evolved without these predators, and now populations could disappear completely from the island due to the predatory action of snakes, which even slither through the sea and have reached small islands.



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Original Research Article

Urban refugia enhance persistence of an endangered endemic keystone lizard threatened by the rapid spread of an invasive predator

Marc Vez-Garzón [a,b,1], Sandra Estela Moreno-Fernández [a,1], Guillem Casbas [a,b], Víctor Colomar [c], Oriol Lapiedra [a,*]

[a] Centre for Ecological Research and Forestry Applications (CREAF), Catalonia, Spain
[b] Autonomous University of Barcelona (UAB), Catalonia, Spain
[c] Consortium for the Recovery of Fauna of the Balearic Islands (COFIB), Government of the Balearic Islands, Santa Eugènia, Balearic Islands, Spain

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ABSTRACT

Urbanization shapes global patterns of biodiversity. While often driving biodiversity loss and biotic homogenization, urban areas could paradoxically act as refugia for species threatened by other global change drivers, such as biological invasions. Despite growing interest in their conservation potential, a lack of robust empirical studies unveiling how urban refugia emerge and contribute to species persistence hinders our ability to leverage urban areas to minimize global biodiversity loss. Here, we examined whether and how urban areas promote the persistence of a keystone, endangered endemic Mediterranean island lizard (*Podarcis pityusensis*) threatened by a rapidly spreading invasive snake (*Hemorrhois hippocrepis)*. By integrating field transects, citizen science data, snake trapping, and population dynamics models, we show that invasive snakes drive rapid lizard extirpation in natural areas, but urbanization buffers this effect, enabling local persistence. Intensive snake trapping revealed that urbanization hinders snake spread, acting as an ecological filter. Finally, population dynamics models show that, contrary to a source-sink model, urban lizard populations can persist in the mid-term without immigration, as surrounding peri-urban populations have collapsed under sustained predation pressure by the invasive snake. Our findings provide empirical evidence of how urban areas can effectively act as refugia for threatened species, emphasizing their importance in global biodiversity conservation strategies.

1. Introduction

The destruction and fragmentation of natural ecosystems due to urbanization shapes patterns of biodiversity distribution worldwide (McKinney, 2002, 2008). In addition to habitat transformation, urbanization often entails the introduction of non-native species, genetic isolation of populations, or their exposure to new diseases (Dickman, 1996; Fusco et al., 2021; Sol et al., 2013). Altogether, these factors hinder biodiversity preservation of native biological communities and spur biotic homogenization across urban areas

* Corresponding author.
E-mail address: o.lapiedra@creaf.uab.cat (O. Lapiedra).
[1] Both authors contributed extensively to this work

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05-07-2025 - Laura Ferrer - Litter, the other enemy of Ibizan lizards (conservation)

noudiari.es
Eivissa i Formentera

La 'basuraleza', el otro enemigo de las lagartijas ibicencas

Litter, the other enemy of Ibizan lizards



The lizard rescued from a discarded can in the Cala d'Hort area. Photo D. Gallagher.

Por **Laura Ferrer** — 5 julio 2025

In addition to suffering predation from invasive snakes and wild cats, the endangered Pityusic lizard has to deal with another enemy that humans are also responsible for: garbage. This is the opinion of volunteer Dean Gallagher, known for his tireless work capturing snakes to protect this reptile.

"I was collecting trash in the Cala d'Hort area when I found a can with a lizard trapped inside," Gallagher explains. "It couldn't get out and was about to die. It's an example of the impact of mass, uncivilized tourism and the lack of respect for the island. I'm shocked by the amount of trash I found from people who come to see the views and the sunset," he reflects, deeply saddened by the discovery.

Near the viewpoint, the volunteer points out, the accumulation of cans, plastic bottles, and other debris is alarming. Gallagher has set up snake traps in the area to prevent the spread of snakes.



06-07-2025 - José Mguel L. Romero - The Snake Whisperer of Ibiza (control)

DIARIO de IBIZA

El hombre que susurra a las serpientes en Ibiza

The Snake Whisperer of Ibiza

Half English, half Australian, and now half Ibizan, Dean Gallagher has become Ibiza's most famous snake hunter. An English teacher and former nightclub host who specializes in calming drunks and drug addicts, he talks to the snakes before finishing them off: "I apologize, I tell them it's not their fault, I'm sorry..."



Dean Gallagher at the Ibiza Diary headquarters. / TONI ESCOBAR



José Miguel L. Romero
Ibiza 06 JUL 2025 6:01 Actualizada 06 JUL 2025 9:30

He wears a beaded necklace around his neck, not one with sharp alligator (or poisonous snake) teeth, which is what I expected from Dean Gallaguer, the Ibizan Crocodile Dundee. Nor does he carry a machete or a wide-brimmed Australian hat, although he does sport one in his WhatsApp profile picture. He wears RayBans and a tuxedo that, judging by the volume of his biceps, shows that he must have been impressive when he was a nightclub bouncer, a time when his nasal septum surely transformed into his current appearance. But the local snake hunter, the Frank de la Jungla of Ibiza, the Tarzan who selflessly captures horseshoe snakes (mostly), the Englishman who feels Aussie and received the 2021 Amic de la Terra Award given by the Amics de la Terra for his work against invasive snakes, also has a candid side. Although he has a rough appearance, his sensitive and good-natured side emerges in conversation.

Among other things, because he talks to the snakes before killing them, an act he performs with a precise blow to the head to stun them, first, and render them unconscious before finishing them off with a rock. But beforehand, he unburdens himself to them, asking for their forgiveness in whispers: "I like talking to the snake, even though I know it doesn't understand me. I notice it calms down, and it calms me down too. That makes the job much easier. I apologize, I tell them it's not their fault, that I'm sorry..." And as he tells this to this editor, the executioner, a wardrobe with a deviated nasal septum, is moved, his eyes moisten.

—Do you apologize in Spanish or English?

—Sometimes in Catalan.



As a child in Melbourne, with a python. / DEAN GALLAGHER PERSONAL ARCHIVE.

“Unfortunately, I was born in England,” he says. He was a baby when his family emigrated to Australia, to Victoria, on the coast of Melbourne: “To the Great Ocean Road.” Beautiful landscapes. To a town called Warrnambool. “I grew up there, always thinking I was Australian. Until one day my mom told me, no, you're English. You were born in England. I'm a mix of British, Australian, and Ibizan.”

Life-saving lessons for Australian children

It was at school that he had his first contact with snakes: "They taught us how to deal with them. And with all types of animals, like scorpions and things that can sting you and cause harm. For example, if a copperhead crosses your path, the advice is to take slow steps. Don't scare the animal. You have to respect the animals." He was eight years old when he grabbed the first one, of that very species: "It was under my bed. I grabbed a towel and grabbed the snake's tail with it. Then I threw it at the neighbor's house. My dad, who was there smoking a cigarette and drinking a beer on the terrace, said to me, 'Why did you do that? Are you crazy? What if it bites you?' Because I thought it was a harmless snake, but no, it was a Lowland copperhead (*Austrelaps superbus*)." Which is like a crawling bomb with poison, in this case neurotoxic and capable of killing an adult (it would definitely kill a child).

He first visited Ibiza in 1998. The typical holiday trip of "a young fool who went out to party and danced until seven in the morning at Amnesia with fluorescent lights in his hands." He had long since returned to England with his family, where, in London, he worked as a nightclub bouncer and DJ. As a nightclub bouncer and member of St. John Ambulance ("which is like the Red Cross here"), he specialized in caring for those suffering from fainting spells and "calming down drunks and drug addicts": "I was sent to give first aid, to stabilize those unconscious from drug or alcohol overdoses. And on top of that, as a bouncer, I had to calm people down in difficult situations." Sometimes they tried to hit me... Well, sometimes they succeeded, sometimes I came home with black eyes. But 90% of the time I used brainpower, not force." He always carried a pack of gum and another of tobacco with him, with which he calmed and attracted those who were overexcited by drugs or alcohol. The gum was for drug addicts: "To chew." It was his way of getting them out of the club without using force: "With a little psychology."

How to learn Andalusian in Torremolinos

He was even close to working as a bobbie for the Metropolitan Police: "But just as they were taking my uniform measurements, I decided to go to Spain to learn Spanish, because I thought a Spanish-



"Can Dog's (former) owner trying to scare me with a python," he explains about this photo.

speaking police officer in London would have a lot more responsibilities and perhaps more money." And he went to Andalusia to learn Spanish: "Well, Andalusian. I went to Malaga. I met some people at the airport who told me, 'Come with us to Torremolinos, you'll find a job easily.' But what I found in Torremolinos was a bunch of English bars. I hadn't come to Spain for that. And, just one day, I was having a drink in Torremolinos when a pretty big fight broke out between two guys. When I saw that no one was doing anything, I jumped in and broke them up. The manager of that bar, who was Spanish, seeing what I did, offered me a job as a bouncer. He convinced me because most of his customers were Spanish, from Malaga. It was better for me, because that way I learned Spanish." I did it very, very quickly, although the Andalusian accent is a little difficult to understand."

It was shortly after that he ended up in Ibiza, invited by a friend to oversee the construction of a villa he had just bought: "I thought they were trying to scam him." At the airport, a woman who owned a handling company offered him a job the very day he arrived: "I had contracts with EasyJet, Britannia, Jet2... so I had to change my tie sometimes five times a day." In the winter, he worked as an English teacher.

A fight to the death between a cat and a snake

And how did he become Ibiza's snake hunter? "It was 12 years ago. I was in a villa, working on its maintenance, which is my job, when I heard a commotion. I saw the neighbor's cat, with its paws in the air, twirling around with a large snake wrapped around its body. The cat was trying to bite it, and the snake was trying to bite the cat." He didn't know what to do. In a surreal scene, while the cat was fighting for its life, he called the Consell (Spanish regional government) for advice. They ignored him and weren't even moved when he warned them that the snake was trying to kill the cat. So he had no choice but to intervene for the first time: "I put on my gardening gloves and managed to separate them."

From that day on, he began to take an interest in the consequences of the snake invasion and noticed that there weren't as many lizards and geckos in his house as before: "Like when, in the morning, one would climb up my pants so I'd feed it while I ate breakfast." He began volunteering to capture snakes that snuck into homes or those caught in traps that, out of aversion, few dared to remove: "Many of them panic, they get nervous, they're terribly afraid. Don't worry, I'll get there, I tell them." He says he was influenced by his father, Allan: "He was very altruistic. I like to help people in difficulty; it's part of my nature... thanks to him."

He doesn't enjoy killing snakes; on the contrary, he claims it causes him a moral and spiritual "conflict": "But there's no other legal way to do it. I don't get pleasure from slaughtering them. In fact," he explains, "it causes me trauma because it's an animal that has its rights and is not to blame for this situation. But we have no other option. I prefer to do it right, so the animal doesn't suffer, properly, following the veterinarians' advice, and not, as some do, cutting their bodies in half with gardening tools, or their heads with a knife. That way, the animal suffers, when it's not necessary." He would also prefer to "rescue" them and transport them to the Peninsula, "but it's not possible, according to the authorities."

—"How many have you caught since you started?"

—Hundreds and hundreds.

—And this year?

—Two or three a day. The other day, seven. Five in a single trap. Big, very big.

Reptilian Orgy

One, over two meters long: "I opened the trap. Inside, it looked like a plate of spaghetti. Where am I going to start?" I asked myself. I had to find the head of the largest one. I pulled out the first one, struggling. I pulled out a meter of it first, then another... It was two meters long. Another, 1.75 meters." There was a female accompanied by males, all in heat. A full-blown reptilian orgy.

Her arms are covered in bites from horseshoe snakes, wounds still healing, not a big deal, although they've left their mark. One has even left a tooth inside her left hand. She explains that if they bite and remain attached to the skin, you shouldn't pull on them, or they would lose their teeth. You have to open their mouths slowly. And if they still remain stuck, you have to remove them with tweezers: "They're very, very thin, like fish bones."

He's decided to start charging—"with an invoice and everything, VAT included"—for capturing them due to the expenses incurred by traveling all over the island, including tires, engines, gasoline, and so on: "Some clients are very understanding and help me with the costs, but there are many people who aren't; they don't understand; they think I'm a civil servant for the Catalan government or the Consell." The fee will be around 40 euros per visit: "But only to those who can pay, not to those with financial problems or the elderly. I won't charge the people of Ibiza, only the wealthy villa owners. A villa owner, for example, shouldn't have any trouble paying. I don't want to take advantage financially, because money isn't the reason I do this. I do it because I want the lizards to return and to protect nature."

Music and wine. Beyond snake hunting

DJ, viticulturist, and trap designer with a "panic room"

When he's not hunting snakes, Dean Gallagher pursues two of his passions. One is creating his own wines: "I release a few barrels of wine in September with the Monastrell grapes left for me on a farm in Talamanca. When I go back to see my family in Australia, I also do the same with my brother. He works in a vineyard. There's good wine in Victoria thanks to the soil, full of minerals. And because of its climate, which has winters like those in Europe and very dry summers."

And then he has a vinyl collection that he plays, for example, at The Standard hotel: "Old school, R&B, rhythm and blues, funky house, Joyce Sims ('Coming to My Life')..." He says he does it for fun. He'll soon do a session at The Garage "to make a little money." He's also designed a special snake trap, with a "panic room" for the mouse, so it doesn't get stressed when the snake is in front of it: "In this trap, the snake sees the rodent through a tiny window, but it can't get to it or eat it. And the mouse, if it really panics, as animal rights activists say, which I doubt, can hide behind the window and not see it. And that's it. There's its nest, its things, its water."

07-07-2025 - S. Ribas - The Government controls the presence of snakes in the Pityusic islands with active trapping in six enclaves (control)

PERIÓDICO de IBIZA Y FORMENTERA

El Govern controla la presencia de serpientes en los islotes pitiusos con un trampeo activo en seis enclaves

The Government controls the presence of snakes in the Pityusic islands with active trapping in six enclaves

From now on, citizens will be able to ask COFIB technicians to kill the specimens they have captured in their private traps.



Map of the traps in Ibiza

S. Ribas | Ibiza | 07/07/25 4:00

The Balearic Ministry of Agriculture, Fisheries and Natural Environment has intensified this season its efforts to stop the expansion of snakes towards the west of the island. To achieve this objective, he has installed a greater density of traps in the area between Santa Agnès de Corona and the municipality of Ibiza itself. In Formentera, the actions are concentrated in La Mola.

According to Ministry sources, this year the Pitiusas will have 2.5 million euros - of which 1.9 million come from the Sustainable Tourism Tax - to fight the invasion of reptiles. Between the years 2020 and 2023, these items amounted to 853,000 euros. A total of 13 COFIB technicians will be dedicated this season exclusively to snake population control.

Among the key actions to reinforce this fight, the Ministry has installed a total of 2,611 traps this year in Ibiza and Formentera, 35% more compared to 2024, when 1,928 cages were placed. Government sources say that if the data is compared with the 2020 exercise, the increase is 350%.

In addition, and for the first time, not all traps will be removed at the end of the season, but some will be left in place throughout the winter. Some factors have caused the ophidians to modify their biological cycle, even eliminating or shortening the hibernation period. Therefore, the technicians will leave sentinel traps installed throughout the year to test this hypothesis.

Among other striking measures, from now on individuals who catch a snake in Ibiza on their own will be able to take the trap to the facilities in Sant Antoni of the COFIB (Consorcio para la Recuperación de la Fauna de les Illes Balears) and the technicians will be in charge of euthanizing the reptile.

Captures

As highlighted by the Ministry, so far this year more than 2,000 specimens have been caught in Ibiza, which indicates the population volume of this species.

Aware of its presence in numerous islets of Ibiza, the Balearic Council has also chosen to increase activities in these enclaves. In 2024, lizard populations were monitored in 16 islands, also trying to confirm the presence of snakes in these territories. As a result of these works, protocols were activated in three of these enclaves capturing a total of 48 horseshoe snakes: 44 on Santa Eulària Island and four more on Murada Island.

In relation to this summer, 24 islands have already been prospected, with the technicians carrying out an active snake trap in six of them, those in which populations of lizards with very low densities were detected or in which the presence of snakes was found. At the moment, 52 traps have been set up on these islands, capturing around 20 horseshoe snakes in places like s´Illa Rodona, s´Margalides or s´Illa des Canar.



Map of the traps in Formentera

07-07-2025 - S. Ribas - "The total eradication of snakes in Ibiza, today, is unfeasible" (control)

PERIÓDICO de IBIZA Y FORMENTERA

«La erradicación total de las serpientes en Ibiza, hoy por hoy, es inviable»

"The total eradication of snakes in Ibiza, today, is unfeasible"

The management of the inheritance of invasive exotic species is one of the priority axes of the General Directorate of Natural Environment and Forest Management.



The Ibizan Anna Torres is the general director of the Government's Medio Natural y Gestión Forestal.

S. Ribas | 07/07/25 4:00

The director general of Medio Natural y Gestión Forestal is the Ibizan Anna Torres (Sant Francesc de ses Salines, 1972). This year, the Government is allocating more economic resources than ever to combat the invasion of snakes, with a total of 2.5 million euros. Also, more human resources with 13 technicians from the Consortium for the Recovery of the Fauna of the Balearic Islands (COFIB) dedicated exclusively to the control of these reptiles.

—Does the fight against snakes mainly focus its activity on the General Directorate?

— The management of invasive exotic species is, without a doubt, one of the priorities of this Directorate General. Among them, the fight against the ophidians, especially in the Pitiusas, has an outstanding relevance. However, our work covers many more areas and the seven services that make up this Directorate General work in key areas such as the conservation of natural spaces, environmental education, species protection, health and forest management and we also work on the prevention and extinguishing of fires.

— The Government has introduced important novelties this season in the fight against snakes and, among other things, will leave a large number of traps installed all year in Ibiza.

—We find ourselves in a scenario in which the behavior of snakes differs markedly from that of their places of origin. Factors such as the abundance of food, the absence of competitors and natural predators and certain climatic conditions, could be causing them to modify their biological cycle, even going so far as to eliminate or shorten the period of hibernation. Therefore, sentinel traps will be installed throughout the year to test this hypothesis.

- Will it be in some specific areas?

—Yes, they will be placed primarily in the areas with the highest population density of snakes. The objective is to verify if they have really stopped hibernating or if their lethargy has been reduced. We try to anticipate and have operational traps when they re-emerge after the winter.

-Another novelty is that individuals who capture a snake with their own trap can go to the COFIB facilities in Ibiza so that the technicians annihilate the reptile. What motivated you to introduce this possibility?

-Citizen collaboration is essential in this fight. We know that many people have reservations when it comes to euthanizing an animal, especially if it is a snake that can measure up to two meters. Therefore, we offer you the possibility to hand over the specimen caught in your trap and our COFIB technicians will be responsible for its management in an ethical and safe manner.

—Are you worried about the impact that the presence of snakes in Ibiza is having in international media?

—The introduction of invasive species by human action is a phenomenon inherent in globalization, but always worrying. Cases like that of the snakes in Ibiza serve as an example to sensitize citizens to the risks involved in certain practices. It is vital to avoid actions that could facilitate the establishment of invasive exotic species, especially in ecosystems as fragile as island ones.

—In the port of Ibiza there was talk of building a quarantine zone for merchandise, although it still hasn't been created. How then can you limit the entry of certain elements that can introduce invasive species?

—The limitation is contemplated in Decree-Law 1/2023, of January 30, which establishes extraordinary measures to protect the Pityusic lizard and the Balearic lizard. The introduction of ornamental trees capable of carrying ophidians is only allowed between April 1 and June 15 and between September 15 and October 15. Outside of these periods, it will be necessary to comply with at least one of the three established requirements, including the monitoring of a quarantine. Therefore, it is one of the authorized measures, but not the only one.

—In places like the Ibizan islands, is it time to end the invasion?

— Eradication in the islands is more feasible due to their smaller surface area, although access is usually more complicated. Once the presence of reptiles is detected, intensive trapping is carried out to attempt their total elimination. However, this does not guarantee that they will not be able to recolonize these spaces in the future since the snakes are able to swim up to them.

—They are planning to build up to four lizard shelters in Ibiza soon.

- That's right. We are going to create four completely inaccessible shelters for snakes that will function as reservoirs for lizards. In these spaces, specimens bred 'ex situ' will be moved thanks to the agreement with the Barcelona Zoo Foundation, as well as others captured on the island. The objective is to ensure the conservation of the species in places free of predators.

—How do you think your battle against the snakes in the Pitiusas will evolve? Are they confident in reducing or even eliminating populations?

— The total eradication of snakes in Ibiza, today for today, is unfeasible. Our objective is to reduce their populations to levels compatible with the survival of lizards and other prey species, avoiding significant changes in ecosystems. In Formentera, on the other hand, we do contemplate the real possibility of eradication. In addition, we trust that the lizards develop defense mechanisms against snakes since they are not currently identified as predators. We hope that, with time, they adopt escape behaviors in his presence.



FP GESTIÓN FORESTAL y del MEDIO NATURAL A 5-minute course.

09-07-2025 - Europa Press - Historical: the first 'lizards' of Ibiza were born outside the island (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

Histórico: nacen fuera de la isla las primeras 'sargantanes' de Ibiza

Historical: the first lizards of Ibiza were born outside the island



First hatchlings of Pityusic lizard | Photos: CAIB

Europa Press | Ibiza | 09/07/25 11:19

The first Pityusic lizard ('*Podarcis pityusensis*') hatchlings have already been born as part of the 'ex situ' breeding pilot project promoted by the Regional Ministry of Agriculture, Fisheries and the Natural Environment in collaboration with the Barcelona Zoo.

As reported by the Ministry in a press release, these are 12 specimens, from five different plants, incubated for 42 days. They are the first captive breeding groups of this endemic species of Pitiusas.

This initiative seeks to guarantee the conservation of the Pityusic lizard, whose survival is threatened by the introduction of invasive ophidians. The objective is to create stable populations outside their natural habitat and thus preserve the biodiversity of the Balearic Islands.

For this, 17 healthy and genetically diverse specimens were captured last month (ten from Ibiza and seven from Formentera) which were transferred to the zoo to start the breeding program.

The general director of Natural Environment and Forest Management, Anna Torres, has stressed that "initiatives like these allow us to work on the viability of repopulations with this species", within the global strategy against invasive species.

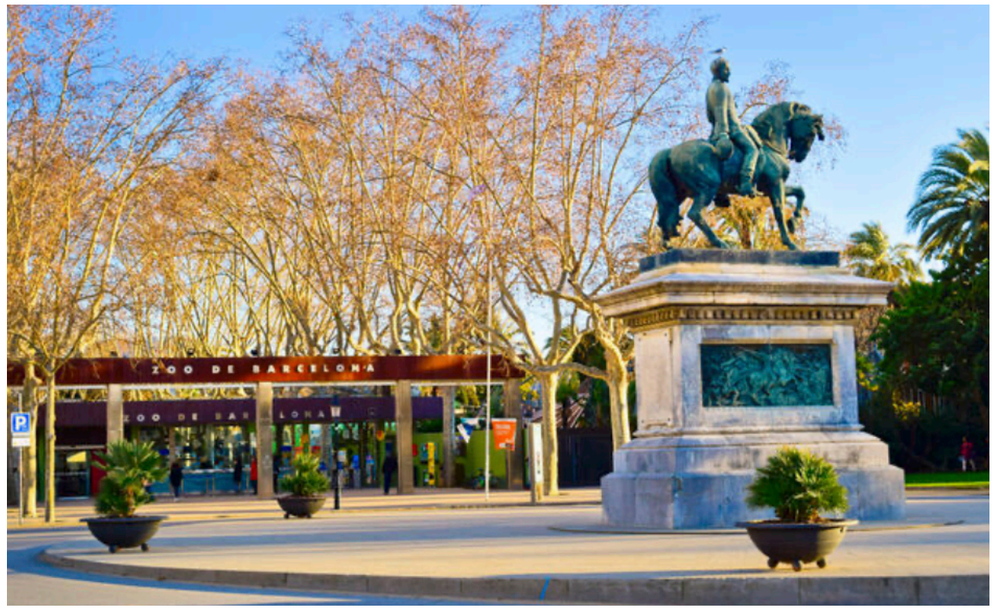
Torres has announced that this year the creation of four refuges in the Pitiusas is foreseen, where the specimens bred in captivity will be introduced. These spaces will be protected against snakes and will have the necessary resources to ensure the development of the lizards.

The hatchlings, which weighed between 0.6 and 0.8 grams at birth, have been identified by Barcelona Zoo's technical staff and transferred to adapted terrariums. According to Tomàs Bosch, head of the Government's Species Protection Service, they have shown 'a quick adaptation to the environment and a good general state of health'.

This project is part of the agreement signed in 2024 between the Conselleria and the Barcelona Zoo Foundation and joins other similar initiatives such as the captive breeding of the 'Ferreret' ('*Alytes muletensis*'), another Balearic endemic.

In addition, the initiative includes scientific studies to deepen knowledge of the ecology, genetics and conservation of the species, with the participation of the Spanish Herpetological Association (AHE), the Center for Ecological Research and Forestry Applications (Creaf), Cofib technicians and specialists from the Government and the Zoo.

The Pityusic lizard, symbol of the fauna of Ibiza and Formentera, was included in 2023 in the Balearic Catalog of Threatened Species in the category of 'vulnerable', together with the Balearic lizard ('*Podarcis lilfordi*'), due to the pressure of invasive species such as snakes.



09-07-2025 - Redacción - The first Pityusic lizard offspring are born in Barcelona: a key step in saving the species (conservation)

noudiari.es
Eivissa i Formentera

Nacen en Barcelona las primeras crías de lagartija pitiusa: un paso clave para salvar la especie

The first Pityusic lizard offspring are born in Barcelona: a key step in saving the species



Por **Redacción** — 9 julio 2025

Twelve Pityusic wall lizard (*Podarcis pityusensis*) hatchlings have been born at Barcelona Zoo as part of a pioneering conservation project promoted by the Balearic Islands Government in collaboration with the Barcelona Zoo Foundation. This milestone marks the beginning of captive breeding for this endemic species of the Pitiusas, which is seriously threatened by the proliferation of invasive snakes in Ibiza and Formentera.

The hatchlings, from five different clutches and after 42 days of incubation, are part of the first ex situ breeding groups of the species. In June, 17 healthy and genetically diverse specimens were captured (10 from Ibiza and 7 from Formentera) and brought to the zoo to begin this controlled breeding program.

By 2025, the Catalan government plans to create four protected refuges in Ibiza and Formentera, where captive-bred lizards will be reintroduced. These spaces will be designed to prevent access by snakes, offering optimal conditions for the reptiles' development.

This is a crucial measure against the spread of invasive snakes, which are massively preying on this native species and have caused a serious decline in its natural populations.

At birth, the lizards weighed between 0.6 and 0.8 grams and have already shown signs of good health and adaptation to their new environment. They now live in adapted terrariums monitored by technicians at the Barcelona Zoo.









A collaboration for biodiversity

This project is part of a conservation agreement between the Regional Ministry and the Barcelona Zoo Foundation, which also works with the ferreret (*Alytes muletensis*), another symbol of the Balearic fauna in danger of extinction.

In parallel, scientific studies on the genetics and ecology of the Pityusic lizard are being conducted, with support from institutions such as the AHE (Spanish Association of the Basque Country), CREAF (Spanish National Research Council), COFIB (Spanish National Council of the Basque Country), and government technicians.

Listed as Vulnerable since 2023, the Pityusic lizard represents not only an ecological asset but also an emblematic symbol of Ibiza and Formentera. Its conservation is more urgent than ever given the real threat of its extinction in the wild.

IB3N Notícies

Neixen al Zoo de Barcelona les primeres cries de sargantana Pitiüsa

The first baby Pityusic lizards are born at Barcelona Zoo

19 specimens born in five litters, as part of a pioneering conservation project.

09/07/2025



Redacció

For the first time outside the Pitiusas, 19 specimens of endemic lizards from Ibiza and Formentera have been born. They have done so at the Barcelona Zoo, as part of a pilot breeding project promoted by the Ministry of Agriculture, Fisheries and the Natural Environment and the zoo in the Catalan capital. In total, there are up to 19 specimens that have emerged from five clutches, which have had an incubation time of 42 days. The main objective of this pioneering project is to guarantee the conservation of this endemic species and preserve the biodiversity of the Balearic Islands. For this reason, last month 17 healthy and genetically diverse specimens (ten from Ibiza and seven from Formentera) were captured and transferred to the zoo.

These first offspring have been identified by the technical staff of the Barcelona Zoo and, once their good state of health has been verified, they have been transferred to terrariums adapted for reptiles of this size and in a controlled environment that ensures their well-being and development. At the time of birth, the lizards weighed between 0.6 and 0.8 grams. The technicians have highlighted that they have been very active and have accepted food immediately. “This behavior is indicative of a good general state of health and a rapid adaptation to the conditions of their new environment”, has pointed out the head of the Government's Species Protection Service, Tomàs Bosch.

PERIÓDICO de IBIZA Y FORMENTERA

La Línea Verde de Sant Josep ya incluye una categoría para comunicar la presencia de serpientes invasoras

The Línea Verde of Sant Josep already includes a category to report the presence of invasive snakes

This new functionality was born with the objective of improving the detection and monitoring of the distribution of these reptiles in the municipality.

R.I. | Ibiza | 10/07/25 15:30

The City Council of Sant Josep has become the first municipality on the island to enable a specific category within the Línea Verde application to report the presence of invasive snakes in the territory.

This new functionality has been created in collaboration with the Consortium for the Recovery of the Fauna of the Balearic Islands (COFIB), with the objective of improving the detection and monitoring of the distribution of these reptiles in the municipality. Notices sent by users through this new category will go directly to COFIB, facilitating a more efficient response and better coordination between administrations.

This pioneering action complements the set of measures that are already being carried out both at municipal and island level to control the proliferation of invasive species, such as now:

Massive traps carried out by the COFIB throughout the municipality

Collaborative traps between the City Council and the Society of Hunters of Sant Josep

Distribution of traps by the Consistory: 80 traps were distributed in 2024 and it is expected to maintain this figure for the year 2025

Creation of shelters for lizards in municipal gardens, some in collaboration with COFIB and others within the municipal gardening service

Likewise, the City Council wanted to express its gratitude to the private initiatives that offer traps at affordable prices, thus promoting better citizen involvement and reserving free traps for those with less resources.

To report the presence of snakes, all you have to do is download the municipality's Línea Verde application on your mobile or access the website www.liniaverdasantjosepdesatalaia.com and select the option 'Invasive snakes' in the incident notification section.



noudiari.es
Eivissa i Formentera

Activan una nueva vía para alertar sobre la presencia de serpientes en Ibiza

A new way to alert people about the presence of snakes in Ibiza has been activated



Por **Redacción** — 10 julio 2025

The Sant Josep de sa Talaia City Council has become the first municipality in Ibiza to enable a specific category in the Línia Verda app so that citizens can report the presence of invasive snakes in their area. This initiative, developed in collaboration with the Consorci per a la Recuperació de la Fauna de les Illes Balears (COFIB), aims to improve the detection and monitoring of these reptiles in the municipality. Reports sent by users through this new feature will be sent directly to COFIB, allowing for a faster and more efficient response to sightings.

A key tool against invasive species

This new digital measure adds to the range of actions the council is already carrying out to combat the proliferation of invasive species. These include: Mass trapping organized by the COFIB throughout the municipality. Joint campaigns with the Sant Josep Hunters Society. Free distribution of traps: 80 units were distributed in 2024, a figure that will remain the same in 2025. Creation of snake shelters in municipal gardens, some in collaboration with the COFIB and others through the municipal gardening service.

The City Council also wanted to recognize the work of various private initiatives that offer traps at affordable prices, allowing free traps to be reserved for people with fewer resources and promoting greater citizen involvement in this environmental fight.

How do I report a snake?

To report the presence of invasive snakes, simply download the Línia Verda de Sant Josep app on your mobile phone or visit the website www.liniaverdasantjosepdesatalaia.com. Once there, select the "Invasive Snakes" option in the incidents section. With this measure, Sant Josep reinforces its commitment to biodiversity, relying on technology as an ally in protecting the environment and native fauna of Ibiza.

PERIÓDICO de IBIZA
Y FORMENTERA

Capturan una decena de serpientes en una propiedad de Santa Agnès

They capture a dozen snakes on a property in Santa Agnès



R.I. | Ibiza | 10/07/25 14:36

The Facebook profile Ibiza Snake Trappers Community has echoed the latest captures of Stop Ibiza Serpientes Jos Kleissraps. In the publication this Wednesday afternoon, the social network account shared a total of 14 images of snakes that had been captured in a property located in Santa Agnès de Corona.

As they continue to explain, Jos Kleissraps has become a key figure in this "cleaning" of snakes in the area, managing to capture around 200 specimens since last March.

From the account they recommend to the neighbors who live in the south of this area of the municipality of Sant Antoni de Portmany to urge "the City Council to put up fences and special barriers against ophidia, if they still have lizards in the area" and that "they give more traps to the owners of large land".

Ibiza Snake Trappers Community states that "the snakes are moving from Sant Mateu and Santa Gertrudis and before they did so from the municipality of Sant Joan" and warn that "they will continue to move".

On the other hand, this Facebook community explains that ophidians stay away from properties that are under construction. "It is at the moment when the machines are removed that the traps begin to hunt again".

noudiari.es
Eivissa i Formentera

Una serpiente aparece dentro de una furgoneta en el puerto de Ibiza: “¡Menudo susto nos llevamos!”

A snake appears inside a van in the port of Ibiza: "What a scare we got!"



The drivers were about to get into the vehicle when they discovered a horseshoe snake inside.

Por **Laura Ferrer** — 10 julio 2025

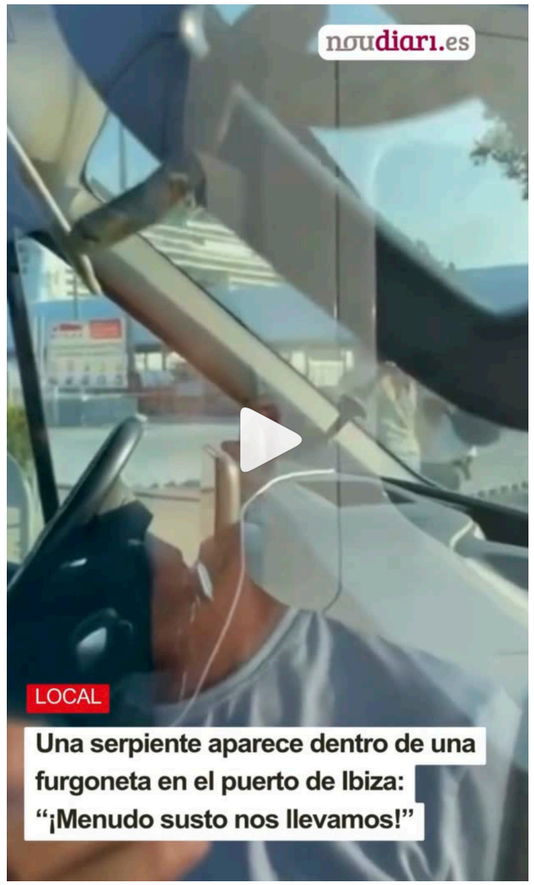
Herwin and Cristina, two professional drivers in the occasional transport sector from the Verónica Ibiza Transfer company, received a huge surprise this Wednesday as they were preparing to start their workday at the port of Ibiza. Upon opening the door of their van, the last thing they expected to find was a horseshoe snake coiled around the vehicle's frame, probably sheltering from the heat or looking for a safe place to hide.

The discovery, which was recorded on video, has once again highlighted the growing problem posed by snakes on the island, where their uncontrolled spread is seriously affecting the native fauna. Accidentally introduced years ago, mainly through the transport of goods in ornamental olive trees, these snakes find few natural predators in Ibiza and have become a threat to protected species, such as the Pityusic wall lizard, a symbol of the Balearic Islands' biodiversity.

“When we opened the door, we saw something move and we froze. We'd never encountered a snake this close before,” explains Herwin, still shocked by the experience. Cristina, for her part, recounts: “I tried to pick it up to put it in a bag and call the environmental agents, but it got away and we didn't hear anything more from it. We never saw it again.”

The episode highlights that the presence of these reptiles not only affects natural ecosystems, but is also beginning to become visible in urban areas and busy places like the port of Ibiza, where vehicles and goods from the mainland are unloaded daily. The Consell d’Eivissa and environmental and/or protectionist organizations such as GEN-GOB, Amics de la Terra, the Institut d’Estudis Ibizasencs, and COFIB have been warning of the serious impact of these invasive species and the need to strengthen control campaigns, as well as improve protocols at ports and cargo entry areas, to prevent the arrival of more specimens.

Meanwhile, Herwin and Cristina's surprise visit adds to a long list of unexpected encounters with snakes that, unfortunately, are already part of everyday life on the island. It should be remembered that they are not venomous or potentially dangerous to humans, although if threatened, they react by biting. Their threat is to the species they feed on.



IBIZA KURIER

Was wurde aus dem Olivenbaum-Importstopp?

What happened to the olive tree import ban?

IImplementation failed at the Spanish Ministry of the Environment, instead lizards are to be bred.



The invasive horseshoe snake (*Hemorrhois hippocrepis*) remains a major problem in the Balearic Islands, especially on Ibiza. As early as 2021, Vicent Roig, then head of the environmental department of the Consell Insular d'Eivissa, called for a ban on importing olive trees from the Spanish mainland. Snakes often live unnoticed in their root balls, and their eggs thus reach the island. Roig explained in an interview with Diario de Ibiza that the introduction of the snakes was largely due to the import of olive trees.

The trees, often from Andalusia, are used for landscaping and gardening on Ibiza. Roig emphasized that an import ban could only be implemented by the Spanish Ministry of the Environment (Ministerio de Transitión Ecológica), since trade between the mainland and the Balearic Islands is a supra-regional matter. The Consell Insular announced at the time that it would submit a corresponding request to the ministry.

Roig also supported the proposal by environmental scientist Elba Montes to breed lizards in captivity to prevent the disappearance of the native Balearic lizard (*Podarcis pityusensis*), a main prey of the snakes. Neither the Spanish Ministry of the Environment nor the Balearic Government have publicly confirmed that an import ban on olive trees will be introduced. The request was a promising approach, but without concrete implementation, the snake plague remains an unsolved problem.

DIARIO de IBIZA

Colapso en las Pitiusas

Collapse in the Pityusic Islands

Opinión | Tribuna



Esteban Morelle-Hungría

15 JUL 2025 6:30

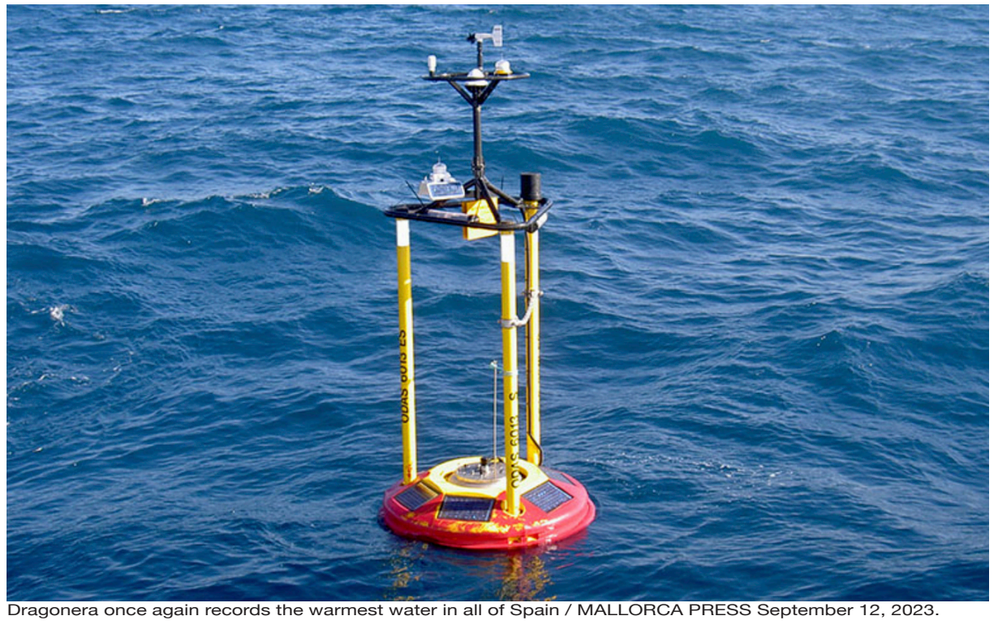
Without wishing to become catastrophic, it is urgent to admit that the Pityusic Islands are undergoing a process of progressive collapse, a process we are witnessing year after year, and which we are experiencing with increasing severity. The main themes are recurrent: scarcity of fresh water, vehicle overcrowding, real estate speculation, loss of biodiversity, overwhelming tourist pressure, collapsed infrastructure, lack of decent housing, and exorbitant prices that are even driving residents away. All of these are interconnected manifestations of an unsustainable model whose transformation we have been postponing for decades.

And yet, despite the evidence repeated every year, public policies remain "pure cosmetic." Decisions are postponed, debates are staged, and formulas are insisted upon that are doomed to failure due to their ineffectiveness. Meanwhile, the deterioration of the islands continues exponentially. And as I've mentioned, this is not a new issue. I wrote about this two years ago in this same newspaper: "We have an emergency situation now, in which more effective and efficient measures should have been adopted in the past."

The current situation confirms that not only are we late, but we are continuing to move, and increasingly rapidly, in the wrong direction.

According to the latest data from the IbizaPreservation Sustainability Observatory (2025), the average temperature in Ibiza has increased by 1.26°C since the mid-20th century, and in the last two decades it has risen by 0.36°C. Maximum temperatures—the most dangerous—are increasing at a faster rate. We must also take into account the scarcity of rainfall: the annual average has decreased by 78 mm, and the decade 2015–2024 was the driest since 1975. And this is not a natural climate fluctuation: it is the advance of climate change in an island territory that has been identified as particularly vulnerable to events of this type.

In addition, the problem is exacerbated by the warming of the Mediterranean Sea, which already records temperatures above 30°C in mid-June, as in the case of the Sa Dragonera buoy (Gallego, 2025). The western Mediterranean is warming 20% faster than other seas, thus becoming a heat reservoir that fuels extreme events. Here's a lesson for deniers: the warmer the sea, the greater the amount of water vapor in the atmosphere, and the greater the



Dragonera once again records the warmest water in all of Spain / MALLORCA PRESS September 12, 2023.

likelihood of torrential rains and catastrophic flooding, especially when the autumnal storms arrive. This lesson is clear and well-known not only to experts but also to high school students: a warming sea can be an accelerator of collapse.

As Fuentes Osorio (2021) points out, "all human activity pollutes, and that pollution already leaves a mark on nature itself." But in Ibiza, this mark multiplies immeasurably every summer. Seasonal anthropogenic pressure increases water, energy, and land consumption, and even triples the island's actual population. However, the prevailing model continues to operate in an extractive mode; politicians seem to focus more on immediate returns than on prioritizing resources for future generations.

As we progress, reality has shown that institutional responses have not been up to par. The timid traffic restrictions in the latest regulations came too late, and the recent declaration of a water emergency also came late and without a systemic strategy. Announcing new measures is not enough if the very model that generated this crisis is not questioned, and this impacts the effectiveness of the measure itself.

A profound political shift is needed that places ecological sustainability as the foundation of any economic, urban planning, or tourism policy, especially on our islands. This urgently involves limiting summer carrying capacity, converting land uses away from anthropocentric approaches, transforming island mobility, and rethinking urban planning based on social justice. The formula is clear: it's not about renouncing progress, but rather avoiding collapse. Denial of climate change will not make its effects disappear, and ignoring them condemns us.

The Pityusic Islands are not just a destination: they are a fragile, valuable territory on the brink of collapse that requires addressing the damage already done, and priority ecological prevention policies.

16-07-2025 - IBIZA KURIER - Snake hunter Dean Gallagher sets record: 1.80-meter monster caught in Ibiza (snakes)

IBIZA KURIER

Schlangenjäger Dean Gallagher stellt Rekord auf: 1,80-Meter-Monster auf Ibiza gefangen

Snake hunter Dean Gallagher sets record: 1.80-meter monster caught in Ibiza



San Carlos – Dean Gallagher, known as a snake catcher in Ibiza, has set a new record.

In the municipality of San Carlos, he caught a 1.8-meter-long horseshoe whip snake (*Hemorrhois hippocrepis*), one of the largest specimens ever captured.

Gallagher, a language teacher at the Big Ben Academy, has been a volunteer in snake control for years. The captured snake was discovered in one of the numerous traps set in collaboration with the Consorcio para la Recuperación de la Fauna de las Islas Baleares (Cofib) and the municipality of Santa Eulalia.

Gallagher emphasizes that the horseshoe snake, although non-venomous, poses a serious threat to the local fauna, as it preys on lizards, birds, and other small animals.

The snake plague remains a problem, as the animals, originally introduced through the importation of olive trees, are constantly adapting and multiplying almost uncontrollably. Gallagher again called for increased support from the public to minimize the impact of the invasive species through more traps and education.

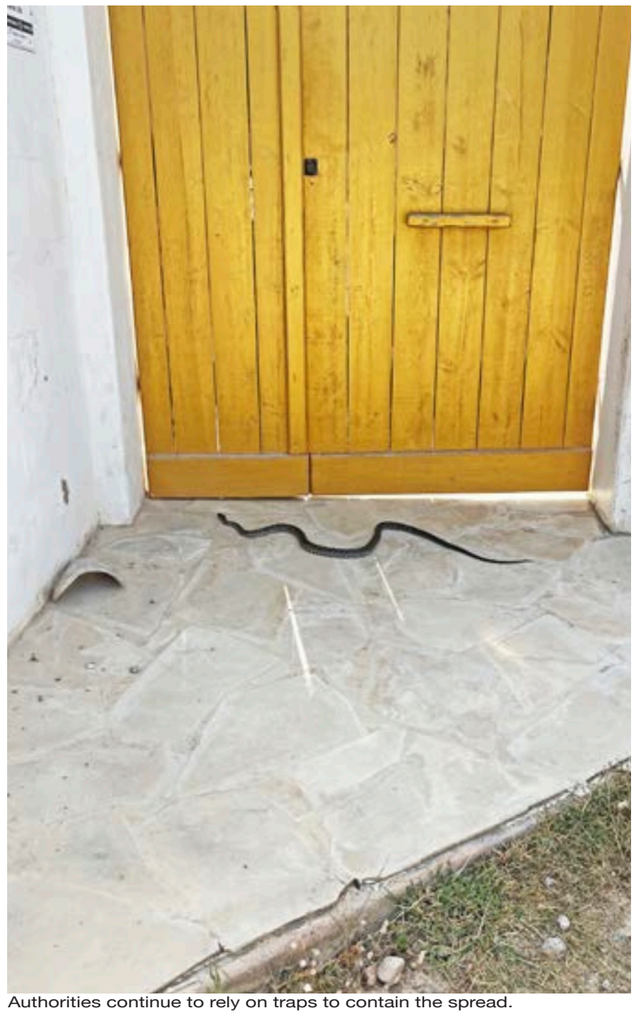
IBIZA KURIER

Santa Eulalias Geschütze gegen die Schlangenplage

Santa Eulalia's Weapons against the Snake Plague

Over 1,000 trap boxes and a trap management app

Santa Eulalia - In 2021, the municipality of Santa Eulalia achieved its goal of distributing 1,000 snake traps to private individuals to combat the spread of invasive reptiles (especially horseshoe snakes). This is part of a comprehensive program to control the snake plague. In addition to distributing the traps, the program includes an information event at the Palau de Congressos in collaboration with the organization SOS Sargantana. Educational workshops for citizens and students were also held, and a collaboration was initiated with a pest control company that sets up traps in urban areas and at public facilities. The traps distributed to the hunters' association (Federacion de Caza) are to be recorded using an app to optimize "trap management" in collaboration with COFIB (Consorcio para la Recuperación de la Fauna de las Islas Baleares).



Authorities continue to rely on traps to contain the spread.

A person was hired specifically for this purpose by the city of Santa Eulalia. Since then, the situation has not improved at all; on the contrary: the snake plague in the Balearic Islands, including Ibiza, continues to be a problem.

An article from May 2025 reports that the invasive horseshoe snake is even spreading to Sa Dragonera Island near Mallorca and the small rocky islets of the Pityusic Islands because of the abundance of food there in the form of bird eggs. They are skilled swimmers and easily cover long distances. Authorities continue to use traps to contain the spread, but there is no specific new data on the number of traps deployed in Santa Eulalia since 2021. While other municipalities lag behind, Santa Eulalia remains a leader in snake control and is heavily involved in education, community participation, and professional control.

DIARIO de IBIZA

Serpientes en Ibiza: los vecinos de es Fornàs dan caza a 227 ejemplares en un mes

Snakes in Ibiza: Residents of Es Fornàs hunt 227 snakes in one month

The president of the Residents' Association points out that the 'torrent' has become a "highway for snakes."



Gallery: Images of the snakes captured in es Fornàs / AAVV ES FORNÀS



Laura M. Expósito
Ibiza 16 JUL 2025 12:24

The fact that snakes have invaded the islands has been a reality for years. There are increasingly fewer and fewer lizards. More and more people are joining forces to hunt this invasive species and try to save the Ibizan lizard.

The residents of Es Fornàs, in Sant Antoni, are an example of this struggle. In their homes, most are prepared to act. They have traps, although sometimes it's their pets that catch the snakes.

The president of the es Fornàs Residents' Association, Pere Juan, confirms that it's a pest. "I think they started arriving here with the biomass dumping and have been reproducing. In addition, the stream is a freeway for snakes," he points out.

227 specimens caught in one month

The residents of es Fornàs have captured a total of 227 snakes in June alone. "The property that captured the most snakes is right next to the stream, which caught 26," explains the association.

The data comes from a survey conducted among the neighborhood community to determine the number of snakes captured in the area, in which 26 residents participated. Of all these snakes, seven were caught by pets: neighbors' dogs or cats. The rest were caught with mouse traps.

The Es Fornàs Residents' Association points out that "these captures have been possible thanks to the initiative of individuals who have managed the trapping resources privately," although they have also received traps from Ibiza Preservation and the Sant Antoni City Council. "We have a WhatsApp group with residents, and through it we manage the distribution among interested parties," explains Pere Juan.

IBIZA KURIER

Kaum vorstellbar: Igel fressen auch Schlangen

Hard to believe: Hedgehogs also eat snakes

First bite the neck and then eat the head

Many people can hardly imagine that such a small animal as a hedgehog is capable of hunting and killing snakes – and yet that is exactly what has happened. Hedgehogs are nocturnal animals, and their encounters with snakes occur almost exclusively after dark. This behavior shows that "hedgehogs are defensive predators – another good reason to protect them," says animal rights activist Adila from "Can Hog," the hedgehog rescue center on Ibiza. When it encounters a snake, the hedgehog uses its spines to defend itself: As soon as the snake attacks, the hedgehog curls up, causing itself to injure itself further with each attempt. With each attack, the snake inflicts more wounds until it is eventually too weak to continue attacking. This is exactly what the hedgehog was waiting for: It bites the snake's neck repeatedly until its spine is so badly damaged that it dies. Then the hedgehog eats the head first. The feeding process can take several hours, as hedgehog teeth are more specialized for insects and smaller prey. The entire snake is usually not eaten.



Cats also like to hunt them, but they usually do not kill them.

PERIÓDICO de IBIZA Y FORMENTERA

Greenpeace advierte: 32 playas pitiusas reducirán su superficie a la mitad por la subida del nivel del mar

Greenpeace warns: 32 Ibizan beaches will be cut in half due to rising sea levels

They denounce the reactivation of the real estate bubble, this time in the luxury sector



File photo of Cala Bassa, one of the beaches that will be affected by rising sea levels | Photo: Editorial Staff

Jerónimo Marín | Ibiza | 17/07/25 11:59

Greenpeace has published its annual report "Destruction at All Costs 2025," a report published annually since 2000 to monitor the destruction of the Spanish coastline and analyze its causes and consequences. This year's report features chilling headlines: rising water temperatures and rising sea levels will halve the surface area of 32 Ibizan beaches, and native aquatic animals will perish due to unbearable living conditions and species invasions.

How is this phenomenon related to rampant urbanization? Greenpeace warns that coastal ecosystems are essential for protecting the Earth's surface from the ravages of climate change. "Almost 40% of the Spanish population lives in coastal municipalities. This represents increasing pressure on natural resources in areas already at the limit of their capacity and that have suffered for decades from the impacts of activities in the form of pollution, loss of ecosystems and biodiversity, and overexploitation of water resources," they cite in the report. This coastal degradation exacerbates the effects of climate change due to the lack of a natural barrier that fosters balance between the marine and terrestrial

ecosystems. The discharge of water into the sea, water stress, the loss of biodiversity, the destruction of *Posidonia*, and the overexploitation of natural resources are direct causes that foster this imbalance and leave us defenseless against the consequences they have on the climate and the island's very habitability.

"Rising sea levels, increased water temperatures, increased frequency and intensity of extreme weather events, coastal erosion, and the loss of coastal and marine biodiversity are some of the consequences already being felt in various coastal regions of the country," Greenpeace cites in the report. "Extreme events such as the DANA (Earthquake Damage) that occurred in October 2024 are a clear example of the risk to which people, homes and infrastructure, and economic activities are exposed when these events occur in urbanized areas, on flood-prone areas, or on areas with increasing erosion, after having destroyed the coastal ecosystems that precisely protect against these impacts," the organization lists.

The New Real Estate Boom

"Faced with an artificial coastline, vulnerability increases dramatically, and with it, the consequences." Greenpeace warns of the revival of the real estate boom experienced by both the Balearic and Canary Islands as evidence that the administrations are not going in the right direction to reverse this process, but quite the opposite. They portray both archipelagos as victims of luxury tourism and emphasize that the construction of new homes on the coast is in line with the promotion by local governments of high-end tourism, regardless of the consequences for the future. They cite several luxury hotels on the island, as well as luxury



residential developments being built in Ibiza, as examples of how the administrations turn a blind eye to the destruction of the ecosystem and are busy building homes and hotels worth millions on rural land.

"Along the entire Mediterranean coast, there is an urban revival reminiscent of the years of the real estate bubble. According to a recent study, in Mallorca alone there has been a 263% growth in construction on rural land between 2015 and 2023, according to a study by the organization Terraferida, for the construction of luxury villas on plots at million-dollar prices," the organization points out. They also cite the urban planning amnesty promoted by the PP and VOX government, through which hundreds of homes that were previously illegal will be regularized but which will be legalized through a decree-law presented by the governing team in the Balearic Islands: "Faced with this reality, the Balearic government approved a decree-law in 2024 that, through reforms to 50 regulations, allows the regularization of illegal constructions on rural land, facilitating procedures and extending statutes of limitations, favoring those who have broken the law and promoting an unsustainable urban development model."

They also cite the PP and VOX decree that will allow rural construction as one of the reasons confirming the return of the urban development boom, this time for luxury housing. "Very recently, they have proposed the legalization of hundreds of homes in irregular situations and want to allow construction on rural land without depleting the developable land in municipalities with more than 10,000 inhabitants." They point out that, meanwhile, "chaos and saturation of transportation, streets, and services, as well as the cost of housing, are growing in the face of a new tourist season with expectations, once again, of an increase in visitors."

Greenpeace denounces that tourist saturation is not only a land-based phenomenon: "The Balearic Islands continue to lead the way in recreational boat registrations due to the increasing demand for boat rentals, which is booming, both with and without a boating license." They warn that the current Merchant Marine regulations allow boat rentals for three months a year, which has triggered advertisements on platforms by individuals seeking to monetize their vessels.

They warn that vessel control is insufficient and that they are crowding coves and beaches, such as the Es Freus Strait, "multiplying the environmental impact of anchoring on marine habitats, especially *Posidonia oceanica* meadows." They also mention that "excessive vessel speed generates excessive noise, waves, and sediment movement on the coast, affecting marine life and endangering the safety of swimmers, a situation denounced by the GOB."

The Balearic Islands are digging their own grave. Following warnings from the College of Architects and reports from the Balearic Sea, Greenpeace points out that the destruction of the coastline will bring economic ruin to islands that have always thrived on their natural charm, and now will lose it: what is known as 'dying from success': "Coastal management is not advancing in parallel with this reality, accelerating, as necessary, mitigation and adaptation measures that reduce the vulnerability of the coast and its population," the NGO points out. "In fact, in many areas, actions are being taken in the opposite direction, with new construction further increasing the urbanized area, even in at-risk areas," they denounce.

To prepare this report, Greenpeace analyzed the worst impacts of climate change: it is estimated that sea level rise by 2050 will be between 16 cm and 33 cm on average. By the end of the century, the increase could reach between 40 cm and one meter, which would reduce the surface area of beaches by half. Sea level rise is influenced by rising water temperatures, which have increased by 1.6°C over the past four decades. Models predict that water temperatures will continue to rise by between 1.2°C and 3.6°C, increasing the intensity and duration of marine heatwaves and their consequences.

These data suggest that pitiful beaches will lose much of their surface area. Areas with greater impact of permanent flooding by 2050 due to sea level rise and weather events are mainly associated with existing or urbanized wetlands, stream influx areas, and sandy beaches.

In the case of Ibiza, the beaches that will be flooded by sea level rise are the following: es Codolar, beach of Santa Eulària, cala Pada, cala Martina, es Figueral, Aigües Blanques, cala Portinatx, ses Salines, es Cavallet, plaja d'en Bossa, ses Figueretes, Racones de Cacador Espart, Olivera cove, Sol d'en Serra cove, Llonga cove, Blanca cove, Niu Blau, es Canar beach, Nova cove, Mastella cove, Boix cove, Sant Vicent cove, Gracio cove, s'Arenal beach and Bassa cove.

In Formentera, the beaches that will be flooded are Illetes, Llevant beach, Roqueta, Pujols and Arenals beach.

Solutions for the Coast

Greenpeace has listed the actions that could mitigate or reverse the devastating effects of climate change in the Balearic Islands. They emphasize that "with just a moderate reduction in greenhouse gas emissions, 40% of the decline in the world's beaches could be avoided." They estimate that "by 2050, protecting and conserving beaches would be 150 times more beneficial than allowing them to continue to deteriorate."

The solutions they propose include "urgent and ambitious climate action" to protect biodiversity and design a new energy system that replaces fossil fuels and uranium with renewable energy.

Another action proposed by Greenpeace is to "protect, restore, and re-naturalize the coast." They argue that nature has its own way of regenerating itself, and its natural processes are its best allies in mitigating the impacts of rising sea levels, flooding, and storms. "Nature-based solutions, which use natural processes as a remedy for negative impacts, are effective and less costly than traditional gray infrastructure measures," they emphasize.

In addition to regenerating stretches of coastline affected by human activity, they point out that it is essential to "preserve the surviving stretches of pristine coastline, especially wetlands, beaches, and dunes that act as protective barriers."

Another solution they propose is "reducing risk exposure: avoiding rebuilding and inhabiting areas severely affected by flooding or maritime storms." This would include halting urban development projects underway that contemplate building in areas at risk of flooding and preventing the use of structural measures aimed at mitigating flood risk as an excuse to



create developable spaces. "We must also prohibit the designation as developable land whose hazards have been mitigated after the construction of a structural structure," they add.

But without a doubt, the most significant measure would be "putting a stop to touristification, relying on community participation." For archipelagos that have emerged from the strictest autarky and ostracism during the years of the dictatorship, tourism is a driver of economic growth that translates into social well-being. Even so, the environmental group warns that "the tourism sector is a determining factor in coastal management. It is urgent to abandon the quantitative discourse and the culture of continuous growth, in favor of a qualitative one that leads to a structural reform that combines the needs of the resident population and environmental limits in order to develop in balance."

To this end, they propose that "we must advance regulation with moratoriums on tourist housing, eradication of illegal supply, reduction of airport activity, limitation of vehicle entry to the islands, reinforcement of public transportation, and capacity control in sensitive areas." Some of these measures, such as limiting vehicle entry to the islands, have already been adopted by the authorities, although they are now being challenged by the National Competition Market Commission, as reported in this article.

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Original Article

Microgeographic diversity does not drive macroevolutionary divergence in bite force of the Ibiza wall lizard, *Podarcis pityusensis*

Stephanie Charlotte Woodgate [1,2], Ana Pérez-Cembranos[3], Valentín Pérez-Mellado [3], Johannes Müller[1,2]

[1]Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Berlin, Germany
[2]Institute of Biology, Faculty of Life Sciences, Humboldt-Universität zu Berlin, Berlin, Germany
[3]Departamento de Biología Animal, Universidad de Salamanca, Salamanca, Spain

Corresponding author: Faculty of Life Sciences, Humboldt-Universität zu Berlin, Unter den Linden 6, 10099 Berlin, Germany.
Email: stephanie.woodgate@mfn.berlin

Abstract

Despite extensive research, it is still poorly understood how microgeographic phenotypic variation translates to the macroevolutionary level. Here, we use the Ibiza wall lizard, *Podarcis pityusensis*, an endemic species of the Balearic Islands, to study microgeographic variation across different scales of evolutionary isolation. We quantify bite force and morphology alongside biotic and abiotic environment in 11 populations, which have been variably isolated from one another over the Quaternary period. While we generally find increasing divergence in form and function as populations become more isolated from each other, this is not true when isolation is the highest; phenotypic differences between the 2 major clades of *P. pityusensis* are negligible, despite populations being isolated for over 100,000 years. Our results show that how environmental selective pressures drive form–function evolution differ by sex. Natural selection appears the most important driver of female evolution, while male phenotypes are apparently driven by both natural and sexual selection, but precise drivers of form–function evolution vary according to the scale of isolation investigated. Our study demonstrates incongruence in form–function–environment relationships within a constrained geographical area, highlighting how convergence at greater evolutionary scales can obscure microevolutionary diversity.

Keywords: bite force, environmental drivers, evolutionary scales, sexual dimorphism, Lacertidae, Balearic Islands

Introduction

Adaptation of populations to their surroundings generates genomic and phenotypic diversity, which act as the building blocks of speciation, cumulating to form large-scale macroevolutionary changes observable in the fossil record (Arnold et al., 2001; Dietrich, 2009; Gould, 1994; Hendry & Kinnison, 2001; Li et al., 2018). Therefore, to elucidate the true diversity of life on Earth, it is important to understand how adaptation translates across scales, from populations up to the species level and beyond. This topic, known as "evolutionary scaling," has witnessed significant empirical and theoretical advances in recent years, yet whether evolutionary trajectories scale consistently across taxonomic ranks or geological timescales remains controversial (see Rolland et al., 2023; Schluter, 2024; Tsuboi et al., 2024, and references therein). Studying the smallest scale of evolution, i.e., adaptations of individuals within a population, is hugely powerful in this context (Simon et al., 2025; Taverne et al., 2021), as it confers opportunities to investigate how environmental selective pressures drive different selective regimes, which may lead to diverging phenotype, as is often observed between males and females (Dawson & Geber, 1999; Herrel et al., 1996, 1999; Shine, 1989). Investigating whether patterns of sexual dimorphism at the population level can be scaled up to the species or genus level is highly valuable for our understanding of how environmental selective pressures drive natural and sexual selection across micro- and macroevolutionary scales.

Bite force is a useful trait through which to study sexual dimorphism within the context of form–function–environment questions due to the roles biting serves in feeding, predator defense, and intraspecific combat (see Anderson et al., 2008, and references therein). These multiple roles mean that bite force can be used as a proxy for fitness, with direct links between bite performance and reproductive success (e.g., Lappin & Husak, 2005). Eco-evolutionary dynamics of bite force have been studied extensively in reptiles; in most species males bite more strongly than females (Herrel et al., 1996, 2007; Li et al., 2023), but in some taxa, such as chameleons (Silva et al., 2014) and turtles (Herrel et al., 2018), females bite more strongly than males. Herrel et al. (1996) suggest that in groups where males bite more strongly than females, sexual dimorphism may be driven by either natural selection, i.e., by niche divergence, or sexual selection, either male–male combat for mates or intersexual combat during mating, i.e., copulatory bites. There may also be an interplay between both factors (see Gvozdík & Van Damme, 2003; Herrel et al., 1996, 1999, and references therein). Studying the evolution of bite force within populations is therefore an excellent way to shed light on

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Agencia Estatal Consejo Superior de Investigaciones Científicas

Museo Nacional de Ciencias Naturales de Madrid

Calle de José Gutiérrez Abascal, 2,

E-28006 Madrid

autoridadcites@mncn.csic.es

Eivissa, Minden, Zuidoostbeemster, July 28, 2025

Dear members of the Spanish Scientific Committee CITES,

We would like to bring the following to your attention:

Introduction

Long ago, during our youth, and far for CITES, you saw them everywhere outside the Pityusic Islands, in almost every pet shop; Pityusic wall lizards, often presented in the shop windows, always under miserable conditions. When you spoke about these lizards in terrarium circles you could often hear: "Oh, you mean snake food", referring to the always ample supply and associated low prices.

We now live in more responsible times, with adapted legislation, international agreements, and a completely changed image of what we should regard as pets. The lizards on and around Ibiza have survived these dark times remarkable well, as we have been able to establish from our own research.

But not for much longer, old times are revived, and in recent years we can speak of *Podarcis pityusensis* as snake food again, what coincides with an unprecedented rapid collapse of *Podarcis pityusensis* populations.

The Spanish government had a duty to intervene, which was left to the regional government in Mallorca. They decided that something had to be done about the invasive snakes, and in particular the horseshoe whip snake. They commissioned COFIB-Ibiza to do this, an organization that previously mainly was occupied with the care of wild animals in need and restoration work on threatened ecosystems, although on a slightly different scale than the new threat.

COFIB-Ibiza (*Consorci per la Recuperació de la Fauna de les Illes Balears*) is not a civil service agency of the Balearic Government. It appears to be an outsourced service provided by the Natura Parc Foundation, a private company. Moreover, COFIB-Ibiza has no oversight on the island of Ibiza itself, but is only accountable to the Regional Minister of the Environment, currently located on the island of Mallorca, Joan Simonet.

PERIÓDICO de IBIZA Y FORMENTERA

«La velocidad de empeoramiento de la invasión de serpientes en Ibiza es exponencial»

"The speed of the worsening snake infestation in Ibiza is exponential."

Ophidian expert Elba Montes analyzes urgent courses of action to ensure the survival of the lizards.



Jerónimo Marín | Ibiza | 31/07/25 9:41 | Actualizado a las 10:32

The Pityusic wall lizard (*Pordacis pytiusensis*) is threatened with extinction by snakes that arrived around the year 2000, hidden in ancient, gnarled, centuries-old olive trees brought from the south of the peninsula to decorate rural areas of the island. A decade later, in 2010, alarm bells began to ring. Today, a quarter of a century later, many challenges remain to ensure its continued existence as a species. Elba Montes (Santiago de Compostela, 1983) has dedicated a good part of her career to studying and combating the presence of invasive species, especially snakes. With a cum laude doctorate in Biodiversity, she was one of the first professionals to address the problem of its expansion in Ibiza, working for the Consell in 2019 and 2020, when there was still no institutional response from the Government. Today, Montes serves on the board of directors of the Spanish Herpetological Association, where she coordinates efforts focused on invasive species, a concern that continues to guide her work given the uncertain future of the lizards.

In Ibiza and Formentera, there is only one entity with the authority to manage the snake invasion: the COFIB, which reports to the Balearic Government. We have seen many of its volunteers overwhelmed and facing funding problems. Do you think the Government should allocate more money and resources to the snake invasion?

-My opinion is yes. I also think that government agencies have limited resources, and it's the politician who decides what the priorities are, and therefore, it's the voter who decides what the priorities are. But, of course, this is what worries me. I think more resources should be allocated.

-Political will. You already mentioned this in the interview we had last year.

-Yes.

-Furthermore, in Ibiza, there isn't a wildlife recovery center as such. The closest thing is a veterinary clinic that has an agreement with the COFIB. It's an office that works with this veterinary clinic, which lends them space so they can have an operating room, a place to dissect, etc. But it's not a wildlife recovery center like there are in other places.

-Correct.

-Why is it important to have a wildlife recovery center on an island like Ibiza?

-Well, Ibiza is an island, so the territory is naturally limited, and no matter how small the island is, certain resources are needed. It's like asking: why do we need a hospital in Formentera? Because people live there, right? It doesn't matter that it's a small island and that there's already another hospital in Ibiza. The point is that it's necessary for urgent matters, if you'll pardon the parallel.

In the end, you need resources, you need facilities in the area where the problems occur. So, regardless of the size of the island, its population, or all the circumstances surrounding the island of Ibiza, the point is that resources and actions are needed.

-Since last year, when you gave your last interview, the future prospects for the *Pordacis pityusensis* lizard were somewhat bleak. From last year to this year, do you think its survival prospects have improved a bit?

-No, I don't think so.

-So you think they've worsened?

-Yes, I think the situation is worsening, and what's more, the speed of deterioration is exponential. In other words, it's getting worse faster and faster.

-Despite all the announcements and warnings, could it be said that the public authorities are doing enough?

-From the perspective of the ecological problem, no. From the perspective of public



resources, perhaps they are doing everything they can.

I also don't want to cast the government's actions in a bad light, when the Species Protection Service is probably doing everything in its power, with the resources they have, to help with this problem. The reality is that this isn't enough. But how much would be enough? Well, perhaps a lot.

-Do you think the public authorities don't have enough money to work on this?

-Yes, there is money, but there are also a thousand other problems. So, I don't know. From the perspective of the ecological problem, what is being done is not enough.

-A reservoir has been created in Barcelona to guarantee the lizard population. A reservoir has also been created at the Puig des Molins Museum.

-Barcelona isn't exactly a reservoir. The one in Barcelona is a zoo that has set up terrariums to breed lizards ex situ.

-Do you think that population of lizards will one day return from Barcelona to Ibiza?

"Honestly, I don't know. I think with the resources being allocated right now, no, because the snake invasion is advancing and occupying the entire island.

So, if things continue like this, bringing back lizards wouldn't make sense, because it would basically be giving the snakes more food. If things changed, well, yes, I think it would make perfect sense. But as long as things remain the same, I don't see the point."

"In the case of Puig des Molins, they tell us that snakes don't come there, which is very good, but there are still a lot of cats that come in to eat snakes. I wanted to single out the cats here because everyone loves them very much, but the truth is they don't even eat them; sometimes they just kill them to play with. Who kills more lizards, the snakes or the cats?"

"Let's see, in the specific case of Puig des Molins, probably the cats." In the case of the island of Ibiza, cats have historically been around for many years; humans brought them here, and the lizards have lived alongside them.

Now snakes have arrived, and in 20 years, they've devoured them all. So, in my opinion, snakes are more dangerous than cats because of this. I don't mean to say that cats aren't a worrying threat, but they certainly are for the biodiversity of the islands' endemic fauna. Cats are the worst there is. But in this specific case, snakes have shown they have a much greater potential to wipe out the lizards than cats.

Do you think the authorities should work harder on adoption and sterilization campaigns for stray cats to curb the killing of lizards?

One hundred percent. Furthermore, snakes can easily enter the Puig des Molins enclosure. If nothing has changed, there's no problem with snakes entering the enclosure, unless they've put up special fences, which I don't think they have.

Just because they don't see them doesn't mean there aren't any or that they can't get in when a snake gets there and wants to. There are no measures to prevent snakes from entering, and if they haven't done so up until now, it must have been a coincidence or because they haven't seen them, but they can get in.

We know that the first snakes arrived hidden in olive trees around the year 2000. These olive trees were planted in villas and public spaces. Why do we depend on the peninsula to bring these olive trees? Do you think Ibiza should have a plant nursery so it doesn't

depend on foreign producers?

- Well, that would be ideal. The thing is, the olive tree is a very, very, very slow-growing tree, and to have such old olive trees with such thick, knotty trunks and the characteristics that give them such beauty, it takes more than 20 years. An olive tree takes many years—I'm talking hundreds of years—to grow a tree of that size.

So, of course, it would be ideal not to import olive trees, but the point is that if you want an olive tree like that, you can't have it in a nursery in Ibiza. Well, you can have one or two, but you can't have enough production to meet the demand I understand there is.



"So, you're saying we've sacrificed biodiversity for an aesthetic change, and when we found out, we continued importing olive trees?"

"Yes."

"Okay. In last year's interview, you said that stopping the snake invasion is a matter of political priorities. Do you think stopping the snake invasion is a priority for the Catalan government right now?"

"Look, what I see is that they're starting to take the issue a little more seriously, but I see that it's still not enough."

Numerous cases of snakes have been reported in the Ses Salines Natural Park area. What could be the consequences of the invasion in this protected area of the island? Are other species in danger?

Of course, there are endangered species. I would say that, beyond the lizard, horseshoe snakes can easily eat birds. We have some bird species that live in the Ses Salines Natural Park, but they also live on the rest of the island and are beginning to be threatened, especially chicks.

They can easily prey on some adults, but especially chicks. So, we have a safe haven there for waders, both nesting and migratory, for all birds in general, and we are endangering it, threatening it with the invasion of snakes. And that could mean that the Natural Park will no longer serve as a protective and safe haven for many species.

-Apart from continuing trapping and stopping the import of olive trees, what other measures should we consider?

-I think increasing trapping would be very positive. I know we're already talking about very large numbers of resources and traps, but the more volunteers who set traps at home—in other words, the more traps there are in the area—the better. Because that could mean that, even though snakes exist throughout the area, there could even come a time when coexistence with lizards could become possible, if we can reduce the number of snakes sufficiently.

On the other hand, stopping their entry is vital. It's something that isn't yet being controlled and we're already arriving very late, but the sooner it's done, the better.

Then, controlling the entry of snakes into the island of Formentera would also be extremely important, because we're already seeing that these movements can occur between Ibiza and Formentera.

And finally, the creation of ex situ breeding of larger numbers of lizards with the widest possible diversity. I see this as extremely important in order to preserve the genetic diversity that exists within the lizard species itself.

-That is, creating a larger reservoir off the island, perhaps in Mallorca, for example.

-Or the same thing being done at the Barcelona Zoo. I think that, but with a higher number of lizards, would be extremely interesting.

And then also creating truly snake-free spaces that guarantee the non-entry of snakes into the natural ecosystem of the island of Ibiza.

-Through special fences or walls, right? Like they tried to do in Australia.

-Well, you don't have to go to Australia. On the island of Guam, for example, where there's an invasion, they create enclosures where a snake can't enter or leave.

For example, in quarantine areas at the port or in natural areas where they want to study what's happening to the snakes themselves and the endemic reptiles themselves. And there are already prototype fences that guarantee that a snake can't enter or leave those enclosures. The fences haven't yet arrived in Ibiza.

In 2020, COFIB set 570 traps and captured 1,400 snakes. In 2024, four years later, it set 2,000 traps and captured almost 4,000 snakes. In other words, the number of traps is increasing, but the number of captures is not proportional to the number of traps. What could this mean? Are the snakes spreading to areas of the island where trapping isn't taking place, or is the snake population actually being reduced?

This is a very good question, and it also dispels doubts, because people then make assumptions that aren't necessarily the case.



This should be asked to COFIB, because they have the data. But, as a general rule, of those 2,000 traps that have been set, it may be that many of these traps were set in places where the snakes have not yet arrived or are just beginning to arrive, and this could be useful for detecting the direction of the invasion front. Therefore, these traps are not expected to capture as many snakes as in areas where we already know there is a very high density of snakes.

We're talking about an area of 570 square kilometers, where the presence of snakes is not homogeneous across the island. There may be areas where the snakes are arriving and there aren't that many yet. Then, there are areas where there are a lot of snakes, and there are areas where there may have been a lot of snakes at one point, and now, because there's less food for them, there are fewer snakes. You can't expect the snake capture rate per trap to be homogeneous and therefore proportional to the number of traps, because it also depends a lot on where you place the traps... In short, there are a thousand factors that influence whether these captures are not linear.

-Finally, we know there are no magic solutions, but could you summarize the measures that will allow us to stop the invasion?

-People shouldn't expect the government to do everything either. If you have a private property where the government isn't involved, set traps yourself, as a citizen. Take responsibility for what happens in the area, help things improve on your island. The more traps, the better.

Then, stop the entry of snakes. We're already way too late for this, and it should be implemented already.

And then, the issue of ex situ breeding of more lizard specimens, to ensure the genetic diversity that currently exists in the populations and is being lost.

Asociación Herpetológica Española

Today Elba Montes serves on the board of directors of the Spanish Herpetological Association (AHE), where she coordinates efforts focused on invasive species.

NATIONAL GEOGRAPHIC ESPAÑA

Esta serpiente está dejando a Ibiza sin uno de sus reptiles más preciados

This snake is leaving Ibiza without one of its most prized reptiles

Horseshoe whip snakes have spread throughout Ibiza, posing a serious threat to the only vertebrate endemic to the Pitiusas.



Sergi Alcalde

PERIODISTA ESPECIALIZADO EN CIENCIA, SOCIEDAD Y MEDIO AMBIENTE

Actualizado a 02 de agosto de 2025, 15:59



A horseshoe whip snake slithers among the leaves of a tree. PEDRO LUNA/SHUTTERSTOCK

Just over two decades ago, finding a Pityusic wall lizard (*Podarcis pityusensis*) in Ibiza or Formentera was common, while stumbling upon a horseshoe snake (*Hemorrhois hippocrepis*) was impossible. This was mainly because these snakes didn't yet exist on the island. Now, the situation has changed completely.



The only vertebrate endemic to Ibiza and Formentera is one of the most colorfully diverse on Earth. Their colors vary depending on the islands they inhabit and many other factors. SHUTTERSTOCK

While the only vertebrate endemic to Ibiza and Formentera is gradually disappearing from these islands, garter snakes have colonized practically the entire island, reaching 90% of their distribution area, according to the latest estimates.

AN UNIQUE SPECIES IN IBIZA

The Pityusic lizards are one of the most extraordinary reptiles in Spain. Not only because they are the only vertebrate endemic to Ibiza and Formentera. They are also one of the most colorful on the planet, a characteristic they have maintained for millions of years, long before they even separated from their sister species: the Balearic lizard (*Podarcis lilfordi*).

A unique species that could soon disappear as a result of the spread of snakes introduced to the Pitiusas more than 20 years ago; it is unknown whether this was accidental.

At some point in the Pleistocene, a geological period spanning between 2.59 million and 11,700 years ago, a catastrophic event occurred that wiped out all vertebrates in the Pitiusas, except for these lizards, which survived, probably hiding in rock crevices. When the situation improved, they found themselves in a perfect situation, completely devoid of predators. And so it remained for thousands of years... until today.



The absence of predators allowed the Pityusic lizards to thrive in their ecological niche. However, the arrival of an invasive snake about 20 years ago ended their isolation. SHUTTERSTOCK

Oriol Lapiedra, a biologist at the Center for Ecological Research and Forestry Applications, explains to National Geographic Spain that this catastrophic event may have created an ideal situation for these reptiles, which were deprived of predators.

“It's possible that they became very abundant at the same time as a niche expansion occurred, eventually taking on a more generalist role,” the expert says. He also emphasizes the ecological importance of these lizards, reptiles that play a fundamental role in seed dispersal, “which helps, among other functions, to keep arthropod populations, their main prey, in check.”

However, that favorable outlook for these reptiles changed dramatically at the beginning of the 21st century when the first horseshoe whip snakes were introduced to the island. Initially, there were only a few specimens, but little by little, the snakes have occupied the entire ecological niche, reaching nearly 90% of the island of Ibiza. There are more and more snakes. .. and fewer lizards.

"Snakes have occupied 90% of the island," says Lapiedra, who emphasizes that there are still places where these two species coexist, although there will inevitably come a time when the snakes prey on all the lizards, something that occurs, he says, as a consequence of the high density of predators at the front of the invasion.

Tomàs Bosch, head of the Species Service of the Balearic Islands' Ministry of Agriculture, Fisheries, and the Environment, explains the seriousness of the situation: "The horseshoe whip snake population now occupies more than three-quarters of the island, even reaching nearby islets, thanks to their ability to swim. This is a serious problem for the lizard populations, which are unique and different on each islet." And that's not all. According to the expert, environmental authorities have confirmed the presence of other snake species, both on Ibiza and Formentera.

These reptiles play a very important ecological role, and their disappearance would be a problem for everyone. According to Lapiedra, the reduction in the number of lizards on the Pityusic Islands has a direct impact on changes in insect communities, some of which could grow in number enough to become an agricultural pest. "The disappearance of a key element of the ecosystem has a significant cascading effect, affecting the entire ecosystem," he concludes.

Are these reptiles doomed to extinction? Faced with such a difficult outlook, authorities have joined forces to try to save this emblematic species. It's no easy task, given that eradicating snakes seems impossible.

"Coexistence now seems to be the most realistic goal," notes Bosch, who affirms that trapping campaigns to control snake populations can help prevent the proliferation of snakes, but eradicating them is very difficult. The most effective measure, according to the expert, is to act directly in the most environmentally valuable areas: the islets.

The key: keeping the main lizard sanctuaries free of snakes and establishing new lizard reserves in urban parks and gardens. All this is to ensure that the most emblematic reptile of the Pityusic Islands can once again thrive in a habitat that once belonged to it.



Oriol Lapiedra, biologist at CREAF

DIARIO de IBIZA

El National Geographic se hace eco de la plaga de serpientes en Ibiza

National Geographic reports on the snake plague in Ibiza

The prestigious publication dedicates a report to the serious consequences of the arrival of snakes on the island.



Horseshoe whip snake in Ibiza. / GUILLEM COSTA

Redacción Digital

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"Just over two decades ago, finding a Pityusic lizard (*Podarcis pityusensis*) was common, while finding a horseshoe whip snake (*Hemorrhois hippocrepis*) was impossible." This is the opening line of an article published in the prestigious National Geographic magazine dedicated to the snake plague affecting the Pityusic Islands. Horseshoe snakes are now widespread throughout Ibiza, posing a serious threat to the islands' only endemic vertebrate.

Throughout the report, the journalist discusses the uniqueness of the Pityusic lizard, which until twenty years ago was untouched by such a ferocious predator.

Experts such as Oriol Lapiedra, a biologist at the Center for Ecological Research and Forestry Applications, and Tomàs Bosch, head of the Species Service at the Department of Agriculture, Fisheries, and the Environment of the Balearic Government, speak about the seriousness of the situation. The horseshoe snake population now occupies more than three-quarters of the island, even reaching nearby islets.

According to Bosch, the presence of other snake species, in addition to the horseshoe snake, has been confirmed in both Ibiza and Formentera.

These snakes arrived in the Pitiusas hidden in the centuries-old olive trees that adorn the gardens of some Ibizan villas. Traps, created a decade ago to alleviate the problem, have been insufficient to stop the invasion of a species that can live up to 20 years and lacks large predators to deplete its population in the Pitiusas.

Lapiedra highlights the important role of lizards in controlling insect communities and their role as seed carriers.

IBIZA KURIER

Geschütze gegen die Schlangenplage: Über 1.000 Fallen und eine App zur "Fallenverwaltung"

Weapons against the snake plague: Over 1,000 traps and a "trap management" app



Over 1,000 traps and a trap management app

Santa Eulalia – In 2021, the municipality of Santa Eulalia achieved its goal of distributing 1,000 snake traps to private individuals to combat the spread of invasive reptiles (especially horseshoe snakes).

This is part of a comprehensive program to control the snake infestation. In addition to distributing the traps, the program includes an information event at the Palau de Congressos in collaboration with the organization SOS Sargantana. In addition, educational workshops for citizens and students were held, and a collaboration was initiated with a pest control company that sets traps in urban areas and at public facilities.

The traps distributed to the Hunters' Association (Federacion de Caza) will be recorded using an app to optimize "trap management" in collaboration with COFIB (Consorcio para la Recuperación de la Fauna de las Islas Baleares). A person has been hired by the city of Santa Eulalia specifically for this purpose.

Since then, the situation has by no means improved; quite the opposite: the snake plague in the Balearic Islands, including Ibiza, continues to be a problem.

Read more…

PERIÓDICO de IBIZA Y FORMENTERA

«Las serpientes ya han colonizado toda la masa forestal de la zona de ses Salines»

"Snakes have already colonized the entire forest in the Ses Salines area."

We interviewed Borja Pérez and Lara Abascal of Nova Falcons about wildlife control at the airport, bird banding, and the spread of the snake invasion in Ibiza.present.



Jerónimo Marín | Ibiza | 07/08/25 13:09

Borja Pérez is the manager of Nova Falcons and Nova Control, both wildlife control companies based in Ibiza. Together with him and Lara Abascal (Madrid, 1991), a Nova Falcons employee and biologist specializing in biodiversity and environmental conservation, we will unravel the intricacies of the complex work of environmental conservation and the fight against invasive species on the island.

QUESTION: What work do you do at Nova Falcons and Nova Control, exactly?

BORJA: We carry out all types of work related to environmental health, wildlife, and environmental consulting.

Q: You're also responsible for the wildlife control service at the airport. What type of wildlife typically causes problems in that environment?



B: Mainly birds, but we also work with domestic animals, such as dogs and cats. Occasionally, one escapes during the boarding or disembarking process, although this doesn't happen very often. It can also happen that one sneaks in from outside if, for some reason, the fencing has suffered some damage that has gone unnoticed.

Q: But mainly birds.

B: Yes. At other airports, you have problems with roe deer, wild boar, foxes... here, you don't have any of that. The largest land mammal we have is the genet, and there are two historical records within the airport grounds, so it's not a relevant species from the perspective of its impact on airport operations.

Q: But seagulls...

B: Yes, depending on the time of year, they can become problematic if no action is taken.

Q: So you have the falcon trained to scare away the seagulls. How do you work? How do you prevent the animal from leaving on its own?

LARA: There's a team of raptors; it's not just a falcon. The training focuses on getting the bird to fly within the airport grounds, which are also next to a natural park. That way, wild birds near the airport identify the area as the territory of a bird of prey, which is a predator. On the one hand, it helps prevent other birds from entering, and they are also specifically trained to scare away other birds. Their mere presence helps keep them out.

B: Training follows a few steps. First, you tame the animal and get it used to you. Then you

start by making it jump on the fist, short distances, then you move on to longer distances, then you introduce it to the decoy, to live prey... until you gain confidence with the bird. At the same time, you demand more from it and, through positive reinforcement, you reinforce what you are interested in extracting. Depending on the bird of prey, you will look for one thing or another. Working with a Harris eagle is not the same as working with a falcon; they have different working methodologies.



Q: What species do you have?

L: Peregrine falcons, which are the local species, different types of hybrids, such as peregrine-gyrfalcon, peregrine-saker, gyrfalcon-saker... and Harris's eagle, which is a type of eagle that adapts very well to working in urban environments.

Q: Where do you keep them?

B: The raptors are either in their work area or resting in the zoo, a facility that has the necessary authorization and characteristics to house these types of animals.

Q: What is it like working with falcons? Is it difficult? Are there moments of despair? I mean, I imagine there are times when the falcon doesn't do what you tell it and you go a little crazy. Don't you miss any?

L: Well, it's training. When you improve, it's very rewarding because you get motivated, you see that the bird is moving more smoothly, and that's very motivating. But hey, some are also easier to train than others, and you have to be very patient. As Borja said, training works through positive reinforcement: you wait for them to do what you want them to do so you can reinforce them positively.

That can happen on the first day, and you reinforce it and everything goes very smoothly, or it can take a while for that situation to arise so you can reward them. So you have to be very patient and know how to interpret the nonverbal language with which the bird of prey constantly communicates, to advance little by little but steadily, like in a long-distance race. But it's very interesting. Each bird is very different, too.

Q: Where do you get them from?

B: They're bred in captivity. Some of the equipment we have was born here, we've raised it ourselves. Others come from abroad. But they're all always captive-bred.

Q: Aside from working with falcons, you also do scientific banding of wild birds.

B: Scientific banding is a way to study bird populations, whether migratory or local. The bands have codes with an official number, which is unique to each individual, in addition to a whole series of biometric data that is collected each time you capture it. Obviously, behind each banding process there are a whole series of permits and regulations that must be complied with before banding a bird. Capturing or handling wild species is prohibited; it must always be done with the corresponding permits.

Q: Does the band have a chip inside?

L: That is another specific type of marking, which also exists, but it is much more expensive and limited, and is much less used. Banding with metal bands is the most common.

Q: Why is scientific banding so important?



B: Because it allows you to identify each marked individual. If you see a blackbird wearing a leg band, you have two ways to read it: from a distance, if the type of band allows, or by recapturing it. But in either case, you can identify it as that one and not another. Then you can quantify it and gather scientific information about that individual, for example, see how its plumage changes, how it has gained weight, how it has grown, whether it is reproducing or not, and you can study the physiology of feather change.

Furthermore, by marking each individual you capture as you work in the same area, you can monitor the bird's longevity, population density, and reproductive cycle. Banding is an extremely useful tool for understanding the health of an ecosystem's avifauna.

Q: Can a ring made here be read anywhere in the world?

L: Of course, each ring has a code that acts as a sender, to which you can request and report information. Using PVC rings, we can know, without having to capture the individual, which part of the Sandwich Terns we see each winter in the port have their breeding grounds in Scotland, for example.

In addition, it allows you to estimate the population size of a species and know whether it is declining or not, how long they can live, etc. When they tell you that a certain species is declining, how do they estimate the size of a population and whether there are more or fewer of them than before? One of the fundamental tools for establishing these statements are scientific ringing stations and the data they have been collecting for years.

B: If you take data from different stations and cross-reference decades of data, you can detect trends. If you see that they match across all stations, then you already have a repeating



pattern, and you can begin to look for the cause. It's true that more could probably be done with everything collected, but it's a lot of work and it's not usually highly valued by the authorities.

Q: Do you think there should be a public body in charge of this?

B: Well, everything related to conservation and wildlife, except for specific cases with a certain amount of media attention, tends to have quite a few shortcomings in terms of government involvement. It's definitely not a priority on any government's agenda. Ibiza is a perfect example of this: Ses Salines is closer to being a theme park than a protected natural area that also represents the most important wetland in the Pitiusas.

Q: Do you have public funding right now?

B: No, everything we do today related to scientific ringing is self-funded and is done more out of vocation than because there is a funded project, either from the public or private sector.

Q: Do you think it should be this way? Because we're at a time when politicians are talking a lot about ecology and sustainability, and at the same time, you're telling me they don't have any control over the bird population either.

B: Well, neither is there any control over the population of invasive species, for example. In Ibiza, there isn't even a wildlife recovery center; its funding is supposedly already approved, but they've been messing around with this for years, and it's a disgrace that it still doesn't exist. Not a week goes by that we don't receive a call from someone who thinks we have a public contract to collect injured wildlife, remove snakes for free, and perform other functions



typical of public administration.

In these cases, all we can do is inform them that they should report these types of situations to 112 and that they will give them more information. Or not.

Q: What other shortcomings are there in Ibiza regarding wildlife management?

B: For example, regarding snakes, systematic lizard surveys should have been conducted throughout the island's habitat since the identification of an invasive species that massively preys on them. Furthermore, this data should be available for public review.

Q: A lizard refuge is currently being built at the Puig des Molins necropolis. The problem is that cats get in and eat them. And they're also bringing lizards to Barcelona.

B: If that's the case, it's good that they're doing it, because it's better than doing nothing. But more should be done.

Q: Like what?

B: The endemism of the Pityusic lizard varies greatly depending on where you locate it. It's not the same in Ibiza as in Formentera as it is on the islets. All the populations on the islets, all that genetic variety, are under real threat of being irretrievably lost. Where snakes arrive, lizards disappear.

Among the services we provide is the control of all types of pests. There are areas of the island where, no matter how hard you search for the pest you've found, you'll find dragons



and all kinds of insects, but not a single lizard. This is something that keeps happening. Dragons are also common prey for snakes, but unlike lizards, they seem to be more able to coexist with snakes.

Without population censuses or systematic fieldwork, you can't say anything, but seeing the pattern repeated in many areas of the island is a terrible indicator that there is a real threat of extinction. Especially on the islets, where the size is much more limited. Either you control the invasion in a radically different way than is being done on the island of Ibiza, or they wipe everything out in the space of a few years.

L: The extinction of an endemic species is a brutal loss of biodiversity. That's the natural heritage of the islands. It's quite serious to think that this could be happening right now before our eyes.

Q: Snakes arrived on the island 20 years ago, hiding in olive trees brought from the mainland to be transplanted here. They've now become naturalized after years of running rampant. The authorities have recently begun to do something, although it's clearly insufficient, as there are more and more snakes, and they're now all over the island. So, what is the regional government doing to tackle the snake issue?

L: The regional government has jurisdiction over wild and invasive species, but they delegate it to the Consortium for the Recovery of Fauna of the Balearic Islands, COFIB.

B: It's best to ask whoever has all the facts about what the government is or isn't doing.

What I can tell you is that there are things that are worrying, at least from the outside, without



even having full knowledge of everything that is being done or not done. For example, we can see a considerable increase in the number of snakes around Ses Salines. We can see this in the control we carry out at the airport, where we have been reporting captures since 2019, when we began working there, although the snakes were already there.

It is also noticeable in pest control at private homes in the Ses Salines area. This year we are seeing a considerable increase in activity. The lizard population in this sensitive area, which until now was still abundant, will most likely disappear… Or not, depending on who you ask.

The question is whether it is worth risking a hypothetical extinction and whether there is any scientific evidence to indicate that somewhere on the island, a healthy population of lizards and snakes currently coexist harmoniously in the same ecosystem. Is this the case? After 20 years of invasion, field work to confirm or deny this fact is long overdue. Needless to say, such work should be made public.

The area surrounding Ses Salines was not an area with a high capture density, let alone a high population density, because you can't tell the snake population from the captures you've made. Many factors come into play: the number of traps you have; the amount of food available that might be more palatable, accessible, or reliable than the food you're putting in the trap; the way those traps are managed, etc.

Even so, based on captures, the rate was relatively low between 2019 and 2024, although unacceptably high considering that this is an invasive species in a protected area.

Regarding the distribution area in that environment, we have traps located in the flat area, but also in private areas higher up in the mountains. And adult snakes are being caught.



In other words, the snakes have already colonized the entire forest in the Ses Salines area, from the base to the upper reaches, and this isn't something that happened yesterday. Now we have to see how this will affect the lizards, but also the birds, especially the small ones that nest in bushes or even on the ground, micromammals, and the balance of the park's ecosystem in general.

Q: What is the capture process like? If someone calls you now and says, "I have snakes in my house, help me." How do you proceed?

B: We don't have public funding, so the service has to be contracted. So basically, you give the client a quote, and if they accept it, you do the work under the stipulated conditions.

Q: Is there not enough funding from the authorities, nor is there an eradication plan in the short, medium, or long term?

B: Well, that's best asked by the authorities or whoever has the greatest capacity to affirm or deny such a thing. But what anyone with even the slightest interest in biodiversity and the environment can see is that snakes aren't the only invasive species in the Pitiusas. Snakes are the most serious case, but if we're talking about plants, there are areas where you can see invasive species that remain there year after year. It's also hard to understand why invasive species, classified as such by the authorities themselves, continue to be sold as ornamental plants in nurseries, or even why some are present in public gardens.

Obviously, we don't know where snake management is headed in the long term, only that eradication has already been recognized as unfeasible by those responsible. Many questions arise. What is the plan, then? Is it to achieve a sustained artificial balance in the use of traps?



If so, how many traps and where will they be distributed? Which areas will be considered lost and which ones won't? How extensive and distributed would these hypothetical "safe zones" be? How will this control and management be articulated over the long term? Is there even any scientific fieldwork that guarantees that this is feasible?

In other words, is there any evidence to suggest that, in the long term, lizards can survive in areas with traps even if they are in direct contact with areas without traps that act as a constant entry point?

Q: Where are we in the invasion? Have we passed the point of no return?

L: It seems to depend on the area, but right now there's a lack of available data to know for sure.

Studies like that of Elba Montes, who has studied the snake invasion in Ibiza the most, estimate that there's a high probability that the lizards will become extinct, at least temporarily, at the population level.

Furthermore, since 2023, there has been a decree regulating the entry of olive trees on certain dates to prevent them from bringing in eggs or hibernating snakes.

In short, it's not that nothing is being done to stop the snake invasion, but it remains to be seen whether that's enough. Above all, there's still a lot of scientific work and transparency needed regarding their management to be able to make scientifically rigorous statements.



PERIÓDICO de IBIZA Y FORMENTERA

Antònia Maria Cirer presenta el ciclo de conferencias 'L'invasió silenciosa' sobre la plaga de serpientes en Ibiza

Antònia Maria Cirer presents the lecture series "The Silent Invasion" on the snake plague in Ibiza

The PhD in biology will give two lectures on August 13 and 20 at the Casino des Moll.



Poster of the lecture series 'The Silent Invasion' by Antònia Maria Cirer | Photo: Editorial

R.I. | Ibiza | 11/08/25 15:11

Antònia Maria Cirer Costa, PhD in biology and expert on the snake invasion in the Pitiusas, will offer a series of lectures at the Casino des Moll Cultural Society, in the port of Vila, to discuss the future of the Pityusic lizard in the face of the snake invasion that threatens its extinction.

The lectures will take place on August 13 and 20 at 8:00 p.m. and will focus on snakes and lizards, respectively. Under the title "The Silent Invasion," the expert will present in two sessions open to the public the main problems and threats we have faced since snakes began arriving on the island around the year 2000.

PERIÓDICO de IBIZA Y FORMENTERA

La ‘sargantana’ de Ibiza prácticamente desaparece de ses Salines

The Ibizan lizard has virtually disappeared from Ses Salines

The environmental organization has published a study on the population sampling of lizards from 2023 to the present.



File photo of a *Podarcis Pityusensis* lizard | Photo: Editorial Staff

R.I. | Ibiza | 13/08/25 11:04 | Actualizado a las 21:43

The nature conservation organization GEN-GOB has published the results of an annual survey conducted in four areas of the Ses Salines Natural Park since 2023 to accurately determine the population status of the lizards.

This study, which has been carried out in collaboration with the beach concessionaires of the Sant Josep de sa Talaia City Council and with the support of the Regional Ministry of Environment and Territory, includes the first monitoring data on the Pityusic lizard population in different areas of the natural park during the years 2023, 2024, and 2025.

The goal is to obtain a clear picture of the situation of these populations that can serve as a reference for accurately understanding the changes occurring in relation to various factors, such as the snake invasion in Ibiza or the predation of the island's cats.

According to the environmental organization, "it is not easy to specify the direction of their expansion or quantify their impact on lizard density." They argue that, to understand the current and future impact as the snake invasion progresses in the Joséfí municipality, "it is essential to have data on lizard communities and, at the same time, to compare them with snake captures and sightings in the municipality." This information is vital for decision-making regarding efforts to combat invasive species.

For the study, four fixed transects were designed, where visual censuses were conducted on foot monthly from April to July, in the morning, replicating the methodology used for amphibian and reptile monitoring censuses under the SARE program of the Spanish Society of Herpetology. To ensure maximum uniformity of conditions, only two routes were conducted on the same day, with data collection occurring within the same week. Every effort was made to maintain consistent conditions to obtain comparable data, avoiding days with unfavorable weather conditions for reptiles.

Fortunately, according to this study, the presence of lizards has been documented in all the surveyed areas. This means that all the studied areas have suitable conditions for lizards, such as the presence of stone walls for their habitation or the presence of insects that serve as their food.

The areas chosen for sampling were Carreró de Can Blai, Cap des Falcó, es Codolar, and the area from Torre des Carregador to La Xanga.

Regarding Carreró de Can Blai, the data for 2023 and 2024 are very similar, although during June and July there was a considerable decrease in the number of specimens sighted, probably due to high temperatures. In 2025, however, there was a decrease of almost 90% compared to the same period in previous years.

Cap des Falcó is the area where the fewest lizards have been sighted. Although initially a suitable habitat for lizards, the number of specimens found is alarmingly low, especially this year. Environmentalists state that "the situation is worse than we expected." This is the area with the worst results, according to this study.

The situation described above has been repeated in the surveys carried out along the es Codolar route: significant numbers of specimens were found during the spring months and a drastic drop during the summer months. As in the other sampled areas, 2025 saw a significant decrease in sightings, with 70% fewer lizards compared to the previous year.

As for the last sampled area, which stretches from Torre des Carregador to La Xanga, the decrease was also 70% compared to 2024.

GEN-GOB

DIARIO de IBIZA

Alertan de la desaparición de hasta nueve de cada diez lagartijas en el Parque Natural de ses Salines de Ibiza

Up to nine out of ten lizards are missing in Ses Salines Natural Park in Ibiza

The GEN has been sampling four areas of the park since 2023, and all have shown a drastic decline in the population of this endemic species.



Pityusic wall lizard in Ses Salines. / CAT

Redacción

Ibiza 13 AGO 2025 12:04 Actualizada 13 AGO 2025 12:23

The population of the Piyusic wall lizard (*Podarcis pityusensis*) in the Ses Salines Natural Park has declined by between 70% and 90% this year in the areas sampled by GEN-GOB in this area since 2023.

The environmental organization obtained this data from visual surveys it conducted monthly on foot in the morning from April to July in Carreró de Can Blai (near the Waterbird Observatory), es Cap des Falcó, es Codolar, and the area from Torre des Carregador (end of Platja d'en Bossa) to La Xanga.

The study, in collaboration with the beach concessionaires of the Sant Josep City Council and the Balearic Ministry of Environment and Territory, aims to obtain a snapshot of the status of lizard populations to accurately determine their changes in relation to factors such as the impact of cats or, especially, predation by snakes.

Species Status

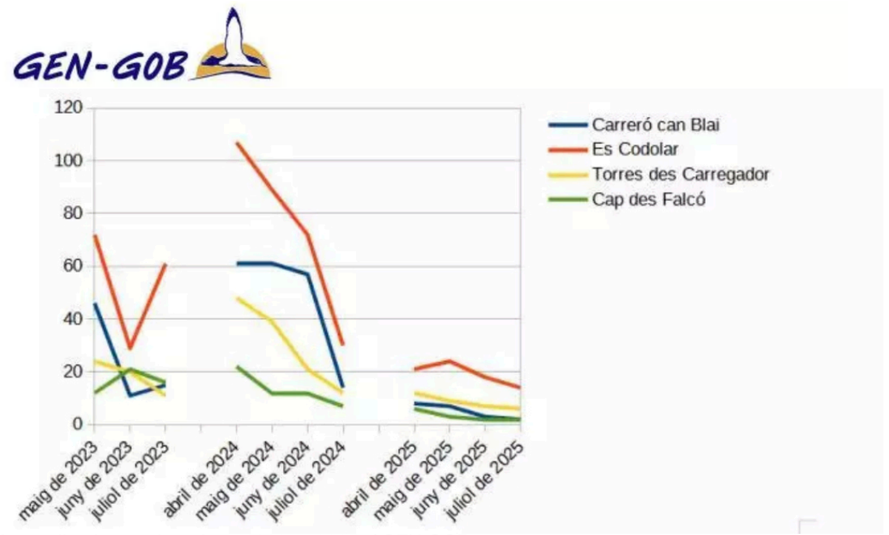
As explained by the GEN in a statement, the surveys are intended to collect data on lizard communities and compare them with snake captures and sightings in Sant Josep to help inform decisions regarding the fight against invasive snakes. "Although no one doubts the changes occurring as a result of the strong pressure exerted by snakes and the widespread declines in the lizard population across the island of Ibiza, it is not easy to determine the direction of their expansion or quantify the impact on lizard density," the statement states.

Thus, the sampling carried out, which replicates the methodology of the amphibian and reptile monitoring censuses of the SARE program of the Spanish Society of Herpetology, provides reference data to determine what changes have occurred in the lizard populations in the years 2023, 2024, and 2025.

Can Blai and Cap des Falcó

Of the years studied, 2025 was the worst in terms of the Pityusic lizard population data in all the selected transects, despite the fact that, according to the GEN, all the studied areas present suitable conditions for the lizards. These include: the presence of stone walls and other suitable shelter areas, abundant herbaceous vegetation, and the presence of ants and other insects.

On the Can Blai street, the sightings in 2023 and 2024 were very similar, although in June and July, "there was a considerable drop in the number of sightings, probably due to the high temperatures." However, in 2025, the nearly 90% drop in lizard sightings compared to previous years is striking.



Evolution of sampling by sections from 2023 to 2025. / GEN GOB

Thus, the environmental organization also confirmed that the situation in Cap des Falcó was "worse than expected." This area, in comparison to Can Blai, is considered "suitable for lizards" due to its "natural vegetation in transition and the large number of stone walls and shelters available."

In Es Codolar, more lizards were also seen in spring between 2023 and 2024 than in summer, when a drastic drop in sightings was recorded. However, again in 2025, 70% fewer lizards were seen than the previous year, as was also the case in the area from Torre des Carregador to La Xanga.

GEN-GOB



INFORME DE SEGUIMENT DE LA SARGANTANA PITIÜSA

PARC NATURAL DE SES SALINES

2023 - 2024

DIARIO de IBIZA

Más trampas de serpientes en Ibiza

More snake traps in Ibiza

Opinión | Para empezar



Verónica Carmona

21 AGO 2025 6:01
Actualizada 21 AGO 2025 7:39

Eight years ago, I moved to a country house in Santa Gertrudis. Lizards scurried all over the house and the plot. When I spotted the first snake, a huge one hiding under a staircase among stones, it was already too late. There were hardly any lizards left. So I set a trap. Many snakes fell, but I was late. Like everyone else. Snakes have already colonized the island, and there are still country houses that haven't set traps because they haven't seen them. Are there any lizards left? I ask. Because if the answer is no, you're also late.

The *Podarcis pityusensis* plays an important role in pest control in the Ibizan countryside, as well as as a pollinator. The balance of the island's ecosystem is in danger, and public institutions have been unable to stop the entry of snakes to the island for 20 years, when the first snakes arrived hiding in ornamental olive trees on the Peninsula. Nor have they been competent in controlling a plague they've already given up on. Soon we'll have to go to the Barcelona Zoo to see the Ibizan wall lizard, a souvenir that will only be available in stores in a few years.

With the island infested with snakes, the lizards have no choice but to seek refuge in sanctuaries to avoid extinction. They are a species that adapts to everything, as evidenced by the evolutionary differences they have experienced on the different islets of the Pitiusas. But to survive such a voracious predator, they need our help.

As Ibizans and island residents, we can only do two things: set traps and demand accountability from the public administration regarding how the control of this invasive species is being managed.

I haven't lived in that country house for more than two years. My trap, which was provided to me by the Santa Eulària City Council, was taken by a man who bought some garden furniture that I couldn't bring to an apartment. I don't know if the new tenant bothered to install another trap. But I'm sure the lizards won't be sneaking into his house anymore.

21-08-2025 - S. Ribas - "Mallorca experts believe that snakes and lizards will coexist in Ibiza, but that will never happen." (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

«Los técnicos de Mallorca creen que convivirán serpientes y lagartijas en Ibiza y eso nunca sucederá»

"Mallorca experts believe that snakes and lizards will coexist in Ibiza, but that will never happen."

Antònia Maria Cirer, PhD in Biology, emphasizes that the lizard is "an example of very high biodiversity" that provides an important ecological service.



Snake captured in Ibiza | Photo: CAIB

S. Ribas | Ibiza | 21/08/25 4:00

This Wednesday afternoon, the Casino des Moll hosted the second lecture given by Antònia Maria Cirer, PhD in Biology, as part of the Silent Invasion series. While last week the expert focused on snakes, this Wednesday she spoke about lizards and their importance to the islands' ecosystem, as well as the particularities of the *Podarcis pityusensis*, the endemic species of the Pityusic Islands.

"We often haven't recognized their value because we lived with them and they weren't a nuisance, nor did we really understand their role. It turns out that lizards have great biological value, something that many didn't know until they began to disappear," she noted.

At the conference, Cirer referred specifically to the ecological services these animals provide to the Pityusic Islands ecosystem.



A moment from the lecture given this Wednesday by Antònia Maria Cirer. Credits: Jésica López.

"We must also understand that it is an endemic species exclusive to the Pitiusas, and if it disappears, it's not just that we lose a symbol; it's that the whole world will lose a species that is a very high exponent of biodiversity because each islet has a genetically different endemic species," she stated.

In this regard, the doctor stated that there may currently be more than 40 Significant Evolutionary Units on the Pityusic islets. "When a population is lost, an islet can be repopulated, but it will never be an ancestral population," she stated.

What an individual can do in this "state of maximum alert" to collaborate in the preservation of the species was another topic discussed by Cirer. Among other actions, she suggested that anyone with land or a garden reserve a small space to create a lizard refuge, enclosing that piece of land with a snake-proof fence and placing dry stone walls or a small earth mound inside.

"The administration is really sitting on its hands and looking the other way. There will be no turning back if the snakes are allowed to continue. The technicians in Mallorca hypothesize that there will come a time when snakes and lizards will coexist, and they only talk about controlling the snake infestation, achieving that balance in their coexistence. This is a huge shortsightedness on their part, and it shows they have understood nothing of what is happening to us," he took the opportunity to point out.



Cirer stated that it's not just that snakes prey on lizards. Furthermore, they have expelled them from their shelters, and therefore, such coexistence will never be possible.

While the density of the snake population on the Peninsula is minimal, in Ibiza these densities "are enormous, multiplied by 1,000," he also stated.

"You have to imagine what it means when, every day, thousands of lizards go out to look for food such as aphids, insect larvae, or spiders. With this, our countryside was perfectly balanced, with no obvious pests. In Ibiza, until recently, pesticides had never been used, and this fumigation work was done by the lizards," she noted.

Regarding the project to breed *Podarcis pityusensis* specimens at the Barcelona Zoo, Cirer recommended also carrying it out in other terrariums in the country, or even in Europe, for greater safety, creating these "little Noah's Arks." "These projects should be supported, but it's very important to attempt breeding on the island itself and keep the area snake-free. Lizards can only be released again on Ibiza if the presence of snakes is first eradicated or limited. Incidentally, the Government—or the COFIB—doesn't have a short-, medium-, or long-term strategic plan. Lizards are bred in Barcelona, but do they know for what purpose ," she insisted.

Last June, 12 specimens from five clutches were born in Barcelona to ensure the conservation of this endemic species and preserve the biodiversity of the area.

IBIZA KURIER

Ibizas Eidechsen stehen vor dem Aussterben: Schlangen fressen Sargantanas, während Geckos entkommen

Ibiza's lizards face extinction: Snakes eat lizards while geckos escape

Snakes eat lizards while the geckos escape



The cute little lizards, known locally as "sargantanas," are facing extinction on Ibiza.

The blame lies with invasive snakes that were introduced from mainland Spain with imported olive trees, but also with cats that don't eat them but "play them to death."

While the ground-dwelling lizards (*Podarcis pityusensis*) are easy prey for the horseshoe snake (*Hemorrhois hippocrepis*), geckos that climb walls often escape their predators.

The snakes have been spreading on Ibiza since 2003. The ecological imbalance is destabilizing the entire ecosystem, as the "SOS Salvem sa Sargantana Pitiüsa" initiative, launched in 2021 by organizations such as Amics de la Terra, GEN-GOB, and the Institut d'Estudis Eivissencs, warns.

Hundreds of volunteers set traps, monitor populations, and conduct awareness-raising activities. In 2023, the Ibiza Preservation Fund (IPF)'s "Protegim Ses Sargantanes" project introduced innovative measures, such as the construction of shelters for lizards in urban areas. Nevertheless, the situation remains critical: According to observers, the snakes have already colonized 90% of Ibiza and are even swimming to the surrounding small islands, where the lizards have no escape route.

DIARIO de IBIZA

Los días contados del 'virot' y la garduña en Ibiza

The days of the virot and the marten in Ibiza are numbered

The urbanization of areas that had been their habitat and the emergence of new predators are threatening the survival of species in Ibiza and Formentera. Beyond the risk to the iconic sargantana due to the introduction of snakes on the island, other species could soon disappear from our landscape.



A virot flies over the waters of Formentera. / JORDI SERAPIO



David Ventura

Ibiza 25 AGO 2025 6:00 Actualizada 25 AGO 2025 7:33

The virot's days could be numbered, and the stone marten, probably not even that. Unfortunately, the sargantana isn't the only native species in danger of extinction. Speaking of fauna, there are a dozen threatened amphibians, reptiles, birds, mammals, and invertebrates, although not all of them are as symbolic or media-friendly.

The next species that could join the list of extinct species in Ibiza and Formentera is the marten (*Martes foina*), a carnivorous mammal from the Mustelid family that is nocturnal. Although it's not an endangered animal in Europe and Asia, on the island of Ibiza it's considered practically extinct.

"In the 20th century, the marten existed in the Ibizan countryside. The last time a marten was seen on the island was in the late 1990s or in 2000, when one was found run over on a road. "The news even made the press," explains Joan Carles Palerm, biologist and president of GEN-GOB.

Since then, nothing more has been heard about this mustelid, so it appears to be extinct: "In principle, a species cannot be declared extinct until 50 years have passed without any observations. Perhaps there are still some specimens in the Es Amunts area, but there are no records of any roadkill." Therefore, if no more specimens appear in the next 25 years, we can officially declare it extinct.

Too many enemies for the 'virot'

We don't know how many tears will be shed for the disappearance of the stone marten, but surely far fewer than for the virot or Balearic shearwater (Puffinus mauretanicus), an animal that has been part of the culture and sentimental landscape of the Ibizan people, and which is even the malnom by which the inhabitants of El Pilar de la Mola are known, due to the large number of virots that lived on the cliffs in this area of Formentera.

The virot is listed as a critically endangered species (CR level) and is also included in the Spanish Catalogue of Threatened Species. The Consortium for the Recovery of Fauna in the Balearic Islands (Cofib) estimates that there are currently 1,317 pairs of virots in the Pitiusas: 585 in Ibiza (Illa des Bosc, s'Espartar, es Vedrà, es Vedranell, Tagomago, sa Conillera, and ses Bledes) and 732 pairs in Formentera (s'Espalmador, s'Espartell, Punta Prima, Cap de Barbaria, and la Mola).

Although this seems like a significant number, experts are very pessimistic. "It's normal for there to be no more virots left in less than fifty years," acknowledges Joan Carles Palerm, who explains that this bird lays few eggs, so it's important for the young to reach adulthood to maintain the life cycle: "Virots should live between 30 and 40 years, but since many die before reaching sexual maturity, there aren't as many young as there should be."

"Demographic analyses conducted in S'illa des Bosc and Sa Conillera indicate an annual population decline of 14%," confirms Tomàs Bosch, head of the Government's Species Protection Service.

The main mortal threats to the virot are the accidental death of adult specimens caught in



A virot in its nest in es Freus. / DAVID GARCÍA

longline fishing nets; the predation of eggs by carnivores new to their habitat, such as rats, snakes, or feral cats; and the confusion caused by light pollution in the coastal zone, which causes many young specimens, in their first flights, to approach urban areas and suffer impacts and collisions.

Less conspicuous animals

Other endangered species, which, if they disappear, will do so much more discreetly, are the endemic Formentera beetle (Akis bremeri) and the calàpet, or Balearic toad (*Bufotes balearicus*). In the case of the beetle, and according to the Ministry of Ecological Transition and Demographic Challenge in its catalog of threatened species, it lives in an extremely small area (1.2 square kilometers, north of Es Pujols), next to the salt lakes, and any change in the environment "would significantly affect the species' population, potentially leading to its complete disappearance."

Regarding the calàpet, its chances of survival are complicated: "It is not clear whether it is already extinct or is on the verge of extinction. There were small populations in Aubarca, Sant Mateu, sa Talaia de Sant Joan... but it is possible that it has already disappeared," admits Joan Carles Palerm, who recalls that, during his childhood, "thousands" of these amphibians could be found in the ponds that formed after rain in Es Puig des Molins.

Why has this toad disappeared from Ibiza, yet frogs are still very present in wetlands? On the one hand, there's the progressive drying up of the island's wetlands, but the calàpet's habits have also worked against them: "The calàpet spend the winter and much of the spring out of water. Changes in agriculture, especially since the introduction of sulphur dioxide, have particularly affected amphibians that live out of water. This isn't the case for frogs, which don't leave wetlands year-round."

Species That Aren't So Badly Doing So

While some species are in sharp decline, others are refusing to disappear. One example is the loggerhead sea turtle (*Caretta caretta*), listed as "vulnerable" in the Spanish Catalogue of



A specimen of the endemic beetle of Formentera. / D.I.

Endangered Species, whose presence has increased along our coasts in recent years, as it has begun to use the beaches of the Balearic Islands as a nesting area.

"In 2019, the first confirmed egg laying was detected in Ibiza, and in 2020 another nest was located on the island. In 2023, three nests were found: on the beaches of es Figueral, the mouth of the Santa Eulària River, and in ses Salines," explains Tomàs Bosch, who points out that "the loggerhead sea turtle used to nest in the eastern Mediterranean, while the western part was its feeding ground. Now this is changing." However, Bosch is cautious about the reasons for this change in habits. If the loggerhead sea turtle now nests on our coasts, it may be because "climate change and rising sea temperatures have caused this shift." In other words, just because they're more visible doesn't mean their numbers have increased.

In the case of the sea turtle, its main threats are habitat destruction due to coastal development and the degradation of the beaches where they nest; accidental capture; trauma from collisions with boat propellers; and marine pollution, especially the ingestion of plastics.

One species that seems invisible but is among us is the genet (*Genetta genetta*). Just because we don't see it doesn't mean it doesn't exist. On the contrary, it's a species in a very healthy state of conservation.

"It is distributed in the mountainous areas of the island of Ibiza, mainly in Es Amunts and the Serra Grossa de Sant Josep. In Es Amunts, it is considered abundant, and the population appears to have been increasing in recent years, although its nocturnal habits make it difficult to detect," notes Tomàs Bosch.

"There are a lot of genets," confirms Joan Carles Palerm, "what happens is that we don't see them. Before, in the countryside, almost everyone had a chicken coop, and it was common to encounter a genet that would come and prey on the chickens. Now this hardly ever happens, but just because we don't see them doesn't mean they aren't nearby."



Release of loggerhead turtles on Es Cavallet beach. | DANIEL ESPINOSA

DIARIO de IBIZA

A la caza de la serpiente en Diario de Ibiza

Snake Hunting at Diario de Ibiza

Expert Dean Gallagher captures a snake on the newspaper's premises



Dean Gallagher catches a snake in a trap at Diario de Ibiza / CÉSAR NAVARRO



Guillermo Sáez
26 AGO 2025 6:00 Actualizada 26 AGO 2025 9:16

Snakes have long since transformed Ibiza into a haven where they can happily thrive. One of the biggest obstacles to their meteoric expansion on the island is Dean Gallagher, who stopped by Diario de Ibiza this Monday to once again verify the success of a trap strategically placed in the garden outside his premises.

Half English, half Australian, and now half Ibizan, the snake expert offers a brief lesson on this pest that is becoming increasingly worrying to Ibizans, especially those living in rural areas.

"Now they're also going into the city, it's not normal," Gallagher warns as he walks toward his new victim, having been conveniently warned that something was hissing inside the trap and that, well, it was better to let an expert handle it...

A privileged spectator is the mouse that acts as decoy, in a trap where, in reality, the snake can never truly access its prey.

Isolated from its potential predator and hydrated by a small water tank installed in the device, the rodent enjoys the stream of light that floods his small apartment when Gallagher opens the upper door to grab the snake that has taken the bait.

The winner of the 2021 Amic de la Terra Award, with his left hand protected by a glove in case of bites, makes a quick movement and, on the first try, catches the snake by the neck, as dictated by the manual of the perfect crawling animal hunter.

"It's about seven months old and measures about 70 centimeters," he estimates with a rough estimate. Without letting go of the animal, he tries to sex the creature and estimates it's probably a female, although he adds that, due to the young age of the subject being examined, it's impossible to say for sure.

The young specimen of '*Hemorrhois hippocrepis*,' the scientific name for the horseshoe snake, writhes restlessly, probably sensing its fate, while Gallagher explains what to do if he encounters one.

No venom, but with teeth

Since grabbing one by the neck the first time is almost impossible for a neophyte, he explains that the best thing to do is to grab it by the end of its tail and walk backward to move it to another location. It lacks venom, which makes it almost harmless, but it does have small teeth with which it can bite anyone who disturbs its peace.

Once the sacrifice is complete, which is best left unsaid out of respect for the victim and also for Gallagher, who suffers through the most unpleasant part of his job, the expert asks if it's possible to bury the snake in the Es Diari garden.

It's better not to, he's told, and then he takes out a small black plastic bag and carefully places the animal inside: "I'll bury it in the field." He then records it on a mobile phone app with hundreds of snakes in his history.

And immediately he sets off, heading for another place where another one awaits him. He leaves the trap and the mouse behind, oblivious to all the drama unfolding around him and pointing to new chapters.



DIARIO de IBIZA

De los púnicos al siglo XXI, la evolución de las serpientes en Ibiza

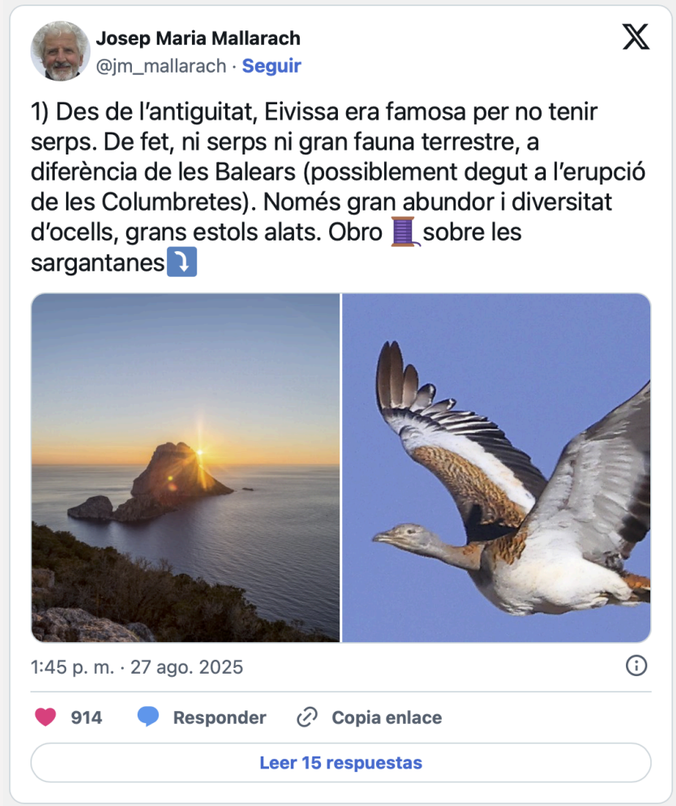
From the Punic period to the 21st century, the evolution of snakes in Ibiza

From a sacred, snake-free island to an invaded territory: two thousand years of altered natural history.

Redacción Ibiza

27 AGO 2025 19:53 Actualizada 27 AGO 2025 20:25

For centuries, Ibiza was an island without snakes. As naturalist Josep Maria Mallarach recalls in a thread posted on the social network X, in ancient times the island was known precisely for its lack of these reptiles, as well as large land mammals, unlike the rest of the Balearic Islands. "The explanation could lie in a geological phenomenon: the eruption of the Columbretes Islands, which would have limited the arrival of terrestrial fauna to the Pitiusas," explains Mallarach.



The faunal wealth was concentrated in birds and the emblematic endemic lizards: the Pitiusan wall lizard (*Podarcis pityusensis*) and the Balearic wall lizard (*Podarcis lilfordi*), sociable, agile species adapted to the island ecosystem, where they had no natural predators.

A sacred symbol for the Punic people

"The Punic civilization, impressed by the purity of an island without snakes and populated by birds, considered Ibiza a sacred place. They built salt flats, a large commercial port, temples with pilgrimages, and necropolises such as Puig des Molins. The island remained snake-free for centuries," writes Josep Maria in his thread on X.

The modern invasion: ornamental olive trees with a surprise

It wasn't until about twenty years ago that the first snakes were detected on the island. They were horseshoe snakes (Hemorrhois hippocrepis), a non-native species that accidentally arrived in the root ball of large ornamental olive trees imported for landscaping, according to Mallarach.

At the time, there was a debate about whether intervention was necessary. The then-head of the Balearic Government's section chose not to act, trusting that the lizards would adapt. "He was wrong," the naturalist notes: "The snakes not only adapted, but they multiplied uncontrollably and began to massively prey on the lizards," he adds.

"Starting in 2010, the snake population expanded throughout the island, even swimming to some islets," he details in the post. Without natural predators, they have reached sizes of up to 1.90 meters.

For this reason, Mallarach asserts that "the Balearic Government's measures have come too late and have failed to halt the spread. Traps have been set (more than 1,500 in 2024) and more than 4,000 specimens were captured last year. Even so, the population continues to grow." He adds that "the government has announced an investment of €2 million over the next four years, from the sustainable tourism tax, to combat invasive species."

Lack of structural measures

However, according to Mallarach, the root causes have not been addressed: "The import of ornamental trees with soil is still not prohibited, and the quarantine area planned in the port of Ibiza has not been implemented. The buck is being passed between administrations, while olive trees containing possible snakes continue to arrive."

In his thread, Mallarach also mentions several environmental organizations that have mobilized to stop this chaos, such as the Institut d'Estudis Eivissa, GEN-GOB Eivissa, and Amics de la Terra Eivissa.

28-08-2025 - Laura Ferrer - "Ibiza's lizards are dying from tourists' trash." (conservation)

noudiari.es
Eivissa i Formentera

«Las lagartijas de Ibiza están muriendo por la basura de los turistas»

"Ibiza's lizards are dying from tourists' trash."



Several dead lizards and a live one trapped in a discarded glass bottle. A double threat to nature: the glass can cause a fire, and the animal can become trapped and die. Photo by Dean Gallagher

Por **Laura Ferrer** — 28 agosto 2025 en **Local**

Environmental activist Dean Gallagher, known in Ibiza for his fight against the extinction of native lizards and his role as a "snake hunter" on the island, has issued an urgent warning about the impact of uncivil tourism on local biodiversity.

"Urgent: we need help. The lizards are dying from tourists' trash," Gallagher denounces, after finding several lifeless specimens trapped inside bottles, cans, and other waste abandoned in natural areas.

Invasive snakes are not, therefore, the lizards' only enemy. One of the most affected areas is the former Es Vedrà viewpoint (s'Era des Mataret, in Cala d'Hort), currently closed and protected by a fence, as it is part of an area designated as a nature reserve. However, numerous visitors continue to gain illegal access, breaking the fence and leaving behind piles of waste. “Even with signs offering alternatives and imploring people to take their trash away, the situation persists,” he laments.

Gallagher points out that the viewpoint has legal and well-equipped access just three minutes away, with parking and infrastructure, which makes the uncivil behavior of those who flout the ban even more incomprehensible. "It's no longer a question of agreeing or disagreeing with the closure. It's the law; it's a nature reserve and also private property," he emphasizes.

The Pityusic wall lizard (*Podarcis pityusensis*), popularly known as the sargantana, has largely disappeared from its original habitat and finds one of its last refuges in enclaves like Cala d'Hort, as there are fewer snakes in these areas. "We're facing a red line: these lizards are already in serious trouble, and garbage is putting them in mortal danger. It's a tragedy that could be avoided," warns the activist, while holding a bottle with dead lizards trapped inside.

In a social media post he shared with Noudiari to give it maximum visibility, Gallagher called on Ibizan society and institutions to strengthen protection of the area and raise awareness among visitors. “This is our island, our pride, and our home. We cannot allow it to be abused. Preserving these sacred places and saving the sargantanas means thinking not only of the present, but also of the future.”

This isn't the first time Gallagher has warned about the danger of trash in nature, but now he's launching a more radical and forceful message in light of the reality he encounters every day when he goes to clean up the area.

"It's not tourismophobia, it's reality. I pass through this area almost every day, all I do is take trash, and the next day it's worse, and it's the tourists who leave it that way. Not everyone behaves badly: I saw a Spanish visitor coming down from the Torre d'es Savinar who took not only his own trash but also whatever he found along the way; a hero in that sad story," Gallagher concludes.



A lizard trapped in a glass bottle, containing other dead specimens. Photo courtesy of Dean Gallagher.

PERIÓDICO de IBIZA Y FORMENTERA

Exigen el cese del máximo responsable técnico de la lucha contra las serpientes en Ibiza

They demand the dismissal of the top technical officer in charge of snake control in Ibiza



Snake hunted in Ibiza | Photo: Archive

María José Real | Ibiza | 29/08/25 18:11

Those affected by the snake invasion in Ibiza have launched a petition on Change.org to demand the dismissal of Víctor Colomar, coordinator for Ibiza and Formentera of Cofib, the entity in charge of the campaign to control invasive snakes in the Pitiusas. Colomar stated last February at a technical conference held in the largest of the Pitiusas that "the Pityusic lizard is not becoming extinct," among other things.

The petition, which opened this Thursday, has already reached nearly 800 signatures and has been shared on social media groups such as the "Ibiza Snake Trappers Community." Colomar expresses his "deep concern about the ineffective management of the fight against the snake invasion in Ibiza, a problem that has put the Ibizan wall lizard (*Podarcis pityusensis*) at serious risk." In this regard, they state that despite the efforts made, "the situation has worsened considerably, demonstrating a lack of effective results from the current technical manager of the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib) in Ibiza."

They go on to explain that Joan Simonet, the Balearic Minister of Agriculture and the Environment, stated last February that more than 4,200 snakes were caught in the Pitiusas throughout last year, "with a notable increase in Ibiza, where captures increased by a thousand compared to the previous year."

They describe this increase as "alarming" and point out that it demonstrates that the strategies being followed to eradicate the snakes "have not been effective in controlling the proliferation of these snakes." In this regard, they recall the words of Elba Montes, a doctor in Biodiversity, who on more than one occasion has expressed her "deep concern for the survival of the Ibizan lizard, even suggesting the need to relocate specimens off the island to ensure the preservation of the species."

"This situation reflects the seriousness of the problem and the urgency of adopting more effective measures," according to the petition. Therefore, they demand the "immediate replacement of the current technical manager of the Cofib in Ibiza and the appointment of a new team of experts with proven experience in controlling invasive species. It is imperative to implement more effective strategies adapted to the reality of our island to protect our biodiversity and ensure the survival of our native species," they conclude.



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Sustitución del máximo responsable técnico de la lucha contra las serpientes en Ibiza

El responsable del Govern en la lucha contra las serpientes «discrepa» de quienes afirman que la 'Podarcis pityusensis' se está extinguiendo y asegura que en Formentera su población «no ha decrecido»

807 Verified signatures

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The Issue

Petición para la Substitucion del maximo responsable tecnico de la lucha contra las serpientes en Ibiza

Estimados ciudadanos y autoridades competentes,

Nos dirigimos a ustedes para expresar nuestra profunda preocupación por la ineficaz gestión en la lucha contra la invasión de serpientes en Ibiza, una problematica que ha puesto en grave riesgo a la lagartija Ibicenca (Podarcis pityusensis).

A pesar de los esfuerzos realizados, la situación ha empeorado considerablemente, evidenciando una falta de resultados efectivos por parte del actual responsable tecnico del Consorcio para la recuperación de la Fauna de las Islas Baleares (Cofib) en Ibiza.

Según declaraciones recientes del conseller balear de Agricultura y Medio Natural, Joan Simonet, en 2024 se capturaron mas de 4.200 serpientes en las Pitiusas, con un incremento notable en Ibiza, donde las capturas aumentaron en un millar respecto ano anterior . Este alarmante aumento demuestra que las estrategias implementadas hasta la fecha no han sido efectivas para controlar la proliferación de estos ofidios.

Además, expertos como la doctora en Biodiversidad Elba Montes han manifestado su profunda preocupación por la supervivencia de la sargantana Ibicenca, sugiriendo incluso la necesidad de trasladar ejemplares fuera de la isla para garantizar la preservación de la especie . Esta situación refleja la gravedad del problema y la urgencia de adoptar medidas mas efectivas.

Por lo tanto, solicitamos la substitucion inmediata del actual responsable tecnico del Cofib en Ibiza y la designación de un nuevo equipo de expertos con experiencia demostrada en el control de especies invasoras.

Es imperativo implementar estrategias mas eficaces y adaptadas a la realidad de nuestra isla para proteger nuestra biodiversidad y garantizar la supervivencia de nuestras especies autóctonas.

Fuente:https://www.diariodeibiza.es/ibiza/2025/02/19/lucha-serpientes-ibiza-deja-trabajar-114476895.html

Atentamente,



Marilina Serra Cardona
1 d ·

THIS TECHNICIAN CANNOT CONTINUE ONE MORE MINUTE AS RESPONSIBLE FOR THE FIGHT AGAINST SNAKES

El responsable del Govern en la lucha contra las serpientes «discrepa» de quienes afirman que la 'Podarcis pityusensis' se está extinguiendo y asegura que en Formentera su población «no ha decrecido»

CHANGE.ORG

Firma ahora 👉 Sustitución del máximo responsable técnico de la lucha contra las serpientes en Ibiza

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PERIÓDICO de IBIZA Y FORMENTERA

Ecologistas de Ibiza defienden la labor del máximo responsable en la lucha contra las serpientes en la isla

Ibiza environmentalists defend the work of the island's top official in the fight against snakes.



A snake captured in Ibiza | Photo: Archive

R.I. | Ibiza | 30/08/25 12:49

After those affected by the snake invasion in Ibiza began a petition to demand the dismissal of Víctor Colomar, coordinator in Ibiza and Formentera of the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), environmentalists on the island have expressed their support and defended the work of the person in charge of the fight against snakes in Ibiza.

In this regard, GEN-GOB published this Friday on social media the article in Periódico de Ibiza y Formentera in which they outlined the petition of those affected and explained that, from the association and the Sargantanes or Serps platform, of which they are a part along with Amics de la Terra Ibiza, "we want to support the work being carried out by the Cofib staff, taking into account the limited resources available to them to combat this infestation."

In this same publication, they denounce that "while the snakes multiply and reach every

corner of the island and the population of 'sargantanes' decreases alarmingly, we continue without decisive measures to stop their entry" and add that "decades of institutional indifference that have only resulted in a purely cosmetic decree from the last legislative period have led us to the current situation."

The petition, which opened this Thursday, has been shared on social media groups such as the 'Ibiza Snake Trappers Community,' which expresses its "deep concern in the fight against the snake invasion in Ibiza, a problem that has put the Ibizan wall lizard at serious risk." In this regard, the community states that, despite the efforts made, "the situation has worsened considerably, demonstrating a lack of effective results from the current technical manager of Cofib."

For their part, environmental associations believe that "it is misplaced to focus criticism on its employees."



DIARIO de IBIZA

Coses Nostres | Los velociraptores de sa Conillera

Coses Nostres | The velociraptors of Sa Conillera

The lizards on the largest islet in Ponent are tending toward gigantism, and a stable and healthy population remains without imminent danger.



Lizard photographed on June 21 during a visit to Sa Conillera with the Ibanat Environmental Education Service. / CAT

Cristina Amanda Tur | **@territoriocat**

31 AGO 2025 6:01

When you look at a Sa Conillera lizard, you think you're looking at a velociraptor, and then it becomes a little more difficult to understand that both birds and reptiles are part of the same group, the sauropsids, and that they all date back to the dinosaurs. It's clear that the lizard is more reminiscent of a velociraptor than any pigeon, sparrow, or flamingo, although the story changes somewhat when you remember that there is fossil evidence that raptors had feathers. In any case, perhaps the traditional vertebrate classification system proposed by Carl Nilsson Linnaeus based on appearance has become somewhat outdated.

On the largest island in the Ilots de Ponent, there are large lizards with tails as thick as gorilla fingers, displaying blue and green colors of spectacular intensity. In fact, within the same territory, the variety of patterns is great, but some stand out, combining turquoise blue and lake green—the shades where the two colors meet—and, above all, displaying unique black geometric patterns that, unlike most varieties of *Podarcis pityusensis*, often do not form

marked bands on the reptile's back, but rather the spots are more dispersed. Seen up close, the bodies of all the lizards resemble a mosaic of pegs, a board on which a child has tried to design original Greek fretworks. If someone were to study these drawings, they would probably discover that each individual can be identified by its unique pattern, like the spots of giraffes or jaguars (to name species in which these particular 'fingerprints' have already been extensively studied).

The Sa Conillera lizards are often described by experts as robust, with long legs and tails, a high number of dorsal fins (scales), and a white or light blue belly, lighter than the rest of the body. And, over the years, according to periodic counts by the Department of Animal Biology at the University of Salamanca, their population has been very stable, with a density of about 600 individuals per hectare (the islet measures just one square kilometer).

There are many references that cite the subspecies as *Podarcis pityusensis cunicularia* (after the name from which the Conillera species originates), but this variety is actually registered as *P. p. carlkochi*. Since researchers began to focus on the wide variety of colors of Pitiusan lizards in the first decade of the 20th century, the list of subspecies has been revised and changed, although not without some controversy. Currently, however, researchers such as Valentín Pérez Mellado, from the aforementioned Department of Biology, prefer to speak of evolutionarily significant units rather than subspecies in order to support the conservation of valuable populations that have undergone a distinct evolutionary history due to their isolation. In any case, evolutionary uniqueness always deserves special attention.

Snake Molts

There is no evidence that the snakes have reached the islet of Sa Conillera. The only sign of their existence in the Vedrà, Vedranell, and Ponent Islands nature reserves are two snake molts found in S'Espartar at different times, which, according to the most widely accepted hypothesis, may have been brought there by the seagulls. The islets off the west coast are currently the areas in the Pitiusan archipelago where the famous lizards appear to be safest.

DIARIO de IBIZA

La mirada de Joan Costa | Serpiente para cenar

Joan Costa's Gaze | Snake for Dinner

A selection of images from Ibiza and Formentera by the Ibizan photographer.



A hermit crab eating the remains of a horseshoe snake on the islet of Sa Ferradura in Sant Miquel. / JOAN COSTA



Joan Costa
Ibiza 31 AGO 2025 6:01

A hermit crab eating the remains of a horseshoe snake on the islet of Sa Ferradura in Sant Miquel. The arrival of horseshoe snakes to Ibiza is causing disruption to our environment. They have settled on our island, so much so that it's now common to see them in our fields. Drowned specimens are also beginning to appear in the sea. In this image, a hermit crab, a scavenger species, feeds on the remains of a snake carcass. July 13, 2025, Balearic Islands, Ibiza.

DIARIO de IBIZA

Santa Eulària denuncia la vandalización de sus trampas para capturar serpientes

Santa Eulària reports vandalism of its snake traps

Since the start of this year's trapping campaign, three traps have disappeared and four more have been destroyed.



AJUNTAMENT DE SANTA EULÀRIA

Redacción Digital
Ibiza 03 SEPT 2025 12:31

Technicians from the Santa Eulària City Council's Environment Department have detected a significant increase in vandalism of snake traps placed mainly along the town's seafront promenade. Since the start of this year's trapping campaign, three traps have disappeared and four more have been destroyed, according to a statement from the City Council. Furthermore, despite having placed padlocks to prevent the cages from being opened to release the mice, on up to five additional occasions, the mouse used as bait has been found to have been thrown into the street.

In order to collaborate with the Government in controlling invasive snakes and protecting native species such as the lizard, the City Council has installed traps throughout the municipality for several years. The success of this initiative is crucial, as snakes have colonized 90% of the island of Ibiza, and the presence of this invasive exotic species poses a major threat to the native fauna, especially the Pityusic lizard (*Podarcis pityusensis*).

During this same campaign, 28 specimens have been captured, mostly horseshoe snakes (*Hemorrhois hippocreis*). The flowerbeds on the Santa Eulària seafront promenade have been

declared a reserve and refuge area for lizards, where habitats have been created for these reptiles to shelter and reproduce, making the presence of snakes there even more worrying, according to the City Council.

The City Council has called for common sense and civic responsibility in protecting the environment. "It is important to emphasize that the mice used as bait in the traps are bred specifically for that purpose, without suffering harm or stress during their time in the traps. However, releasing them into the street is harmful, as these animals, due to their maladaptation to the free-living environment, face a certain doom to survival," the statement explains. It also reminded residents that if a tampered or damaged trap is observed, they should not intervene and should immediately report it to the Department of the Environment.



Broken trap. / A.S.E.

03-09-2025 - R.I. - Snake traps explode in Ibiza. (control)

PERIÓDICO de IBIZA Y FORMENTERA

Revientan trampas para cazar serpientes en Ibiza

Snake traps explode in Ibiza



Snake trap | Photo: Santa Eulària City Council.

R.I. | Santa Eulària | 03/09/25 11:45

Technicians from the Santa Eulària City Council's Environment Department have detected a significant increase in vandalism of snake traps placed mainly along the town's seafront promenade. Since the start of this year's trapping campaign, three traps have disappeared and four more have been destroyed. Furthermore, despite having placed padlocks to prevent the cages from being opened to release the mice, on up to five additional occasions the mouse used as bait has been found to have been thrown into the street.

In order to collaborate with the Government in controlling invasive snakes and protecting native species such as the Pityusic lizard, the council has installed traps throughout the municipality for several years. The success of this initiative is crucial, as snakes have colonized 90% of the island of Ibiza, and the presence of this invasive exotic species poses a major threat to the native fauna, especially the Pityusic lizard (*Podarcis pityusensis*).

During this same campaign, 28 specimens were captured, mostly horseshoe snakes (*Hemorrhois hippocreis*). It's worth remembering that the flowerbeds on the Santa Eulària seafront promenade were declared a reserve and refuge area for lizards, creating habitats for these reptiles to shelter and reproduce, making the presence of snakes there even more worrying.

Therefore, the council calls for common sense and civic responsibility in protecting the environment. It's important to note that the mice used as bait in the traps are bred specifically for that purpose, without suffering any harm or stress while in the traps. However, releasing them into the street is harmful, as these animals, due to their maladaptation to the wild, face a certain doom to survival. Please note that if you notice any tampered or damaged traps, do not intervene and report them immediately to the Department of the Environment.

noudiari.es
Eivissa i Formentera

Sabotean las trampas de control de serpientes invasoras en Santa Eulària

Traps to control invasive snakes in Santa Eulària are sabotaged



Por **Redacción** — 3 septiembre 2025 en **Local**

The City Council of the Ibizan municipality of Santa Eulària reported this Tuesday a worrying increase in acts of vandalism against snake traps installed in the municipality. Technicians from the Department of the Environment have detected multiple incidents, especially on the seafront promenade, where some traps have been stolen, destroyed, or tampered with to release mice used as bait.

Since the start of the current campaign to control invasive snakes, three traps have disappeared, another four have been destroyed, and in five more cases, the bait mice have been found thrown into the street, despite safety locks being installed to prevent them from opening. These traps are part of a joint effort with the Balearic Government to protect native fauna, especially the Pityusic lizard (*Podarcis pityusensis*), which is seriously threatened by the spread of invasive snakes, especially the horseshoe snake (*Hemorrhois hippocrepis*), whose presence has already colonized 90% of Ibiza's territory.

So far this campaign, the City Council has managed to capture 28 snakes, mostly in areas where control devices are concentrated. It's worth remembering that the Santa Eulària seafront promenade has been declared a refuge area for the lizard, so the presence of snakes in this area represents an even greater risk.

Furthermore, the City Council warns that releasing bait mice into the street is irresponsible. These animals are bred specifically for this purpose and do not suffer harm or stress during use, but they are not adapted to life in the wild, so releasing them is a sure death sentence for their survival.

The City Council calls for public responsibility and reminds everyone that tampering with the traps or releasing the bait can seriously hinder a key effort to preserve the island's biodiversity. If you notice any damaged or altered traps, it is recommended that you do not intervene and that you immediately notify the Department of the Environment.

PERIÓDICO de IBIZA Y FORMENTERA

El coordinador del COFIB en Ibiza defiende que no debería haber ni un gato comunitario en la isla

The COFIB coordinator in Ibiza argues that there shouldn't be a single community cat on the island

In a message on social media, he addresses the "cat god morons" and claims to know how to build traps for "invasive carnivores on the islands."



The COFIB coordinator in the Pitiusas, Víctor Colomar | Photo: Editorial Staff.

S. Ribas | Ibiza | 03/09/25 4:00

That relations between the COFIB coordinator in the Pitiusas, Víctor Colomar, and the volunteers involved in caring for Ibiza's feline colonies are anything but cordial is no secret to anyone involved in animal rights organizations defending cats in Ibiza.

In a message posted on his personal account, open to all users of a popular social network, Colomar addresses the "cat god morons" and, referring to a petition campaign launched to demand his dismissal, asserts that "if I lose my job, I'll have all the time in the world to dedicate to cats and related matters." "In more than 15 years of work, whenever I've wanted to be discreet or undetectable, I've been. If I hypothetically wanted to do some paramilitary work, I wouldn't have too much of a problem," he writes.

Colomar explains that he knows how to build and set traps "for many types of animals," especially for "invasive carnivores on the islands of the western Mediterranean." "By the time you suspected there were animals missing in your area, you would be too late," he insists.

In his surprising message, which is circulating among animal rights groups on the island, Colomar

clearly refers to the island coordinator of PACMA, Olivier Hassler, whom he calls a "Frenchman." He claims to be well-versed in current legislation, asserting that it could complicate the recovery process for "the animals for which you supposedly take responsibility."

As a reflection, he believes that on an environmentally healthy island, there shouldn't be a single cat roaming the ecosystems. Pursuing this objective, he says he will continue to express his opinion and "act accordingly."

This controversy is not the only one Colomar is currently facing. It's worth remembering that those affected by the snake invasion in Ibiza have started a petition on Change.org to demand the dismissal of the Ibiza and Formentera coordinator of COFIB, the entity in charge of the campaign to control the invasive snakes. Recently, these individuals expressed their "deep concern over the ineffective management of the fight against the snake invasion in Ibiza, a problem that has put the Ibizan wall lizard (*Podarcis pityusensis*) at serious risk." In this regard, they stated that, despite the efforts made, "the situation has worsened considerably, demonstrating a lack of effective results from the current technical manager of the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB) in Ibiza."

Europa Press | Ibiza | 02/09/25 11:44 | Actualizado a las 12:57

Animal rights activists warn: eight out of ten cats that enter this Ibiza protection center end up dying.

The animal rights group Pacma warned this Tuesday that, according to data provided by Sant Josep City Council, of the 146 cats that entered the Ibiza Domestic Animal Protection Center between January 2023 and June 2024, 118 died, representing a mortality rate of 80.8 percent. Pacma emphasized in a statement that this situation had already been inspected by the Seprona (National Service for the Protection of Domestic Animals), although no evidence of abuse at the center was confirmed.

The group warned that some of these deaths could be related to the confinement of community cats carried out by the City Council. These animals are sometimes unable to adapt to life in captivity, and the municipality does not have a program for the capture, sterilization, and return of colonies, despite it being mandatory under Law 7/2023 on the protection of animal rights and welfare, they explained.

They lamented that Sant Josep insists on considering community cats (*Felis catus*) as "abandoned animals," thus justifying their capture and subsequent confinement, practices that the group considers "illegal." They also pointed out that these decisions are being made based on the criteria of a veterinarian from the Ibiza Domestic Animal Protection Center (Cepad), a collaborator with invasive species management organizations, who is opposed to the presence of community cats.

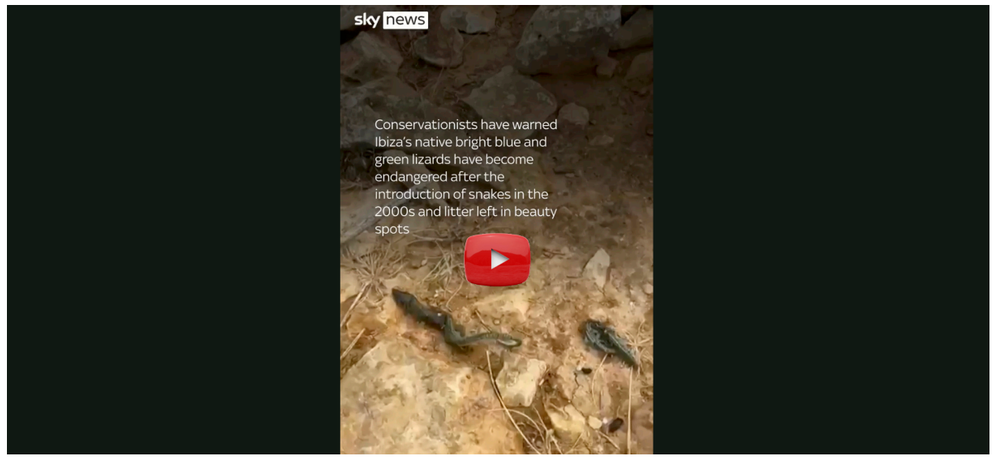
"Their technical criteria are outdated, they satisfy no one, and they are already making it extremely difficult to register cat colonies in Sant Antoni de Portmany," added PACMA. This blockage, they stated, has even led to a contentious procedure that is currently underway. They also explained that this same situation is repeated in municipalities such as Santa Eulària.

The party has demanded an immediate cessation of these captures and the implementation of ethical management programs for cat colonies, in collaboration with local animal protection organizations, thus ensuring compliance with current legislation.

sky news

Ibiza lizards 'near extinction' due to invasive snakes and mounting litter

The Ibiza wall lizard is endemic to the island and vital to the ecosystem, experts say, for pollinating plants and controlling pests. But the species has become endangered in recent years following the introduction of snakes in the early 2000s - and now litter left in beauty spots.



The Ibiza lizards facing extinction



Gemma Peplow
Culture and entertainment reporter @gemmapeplow

Saturday 6 September 2025 03:35, UK

Conservationists in Ibiza are warning the island's native bright blue and green lizards are coming ever closer to extinction due to the mounting threats of invasive snakes and tourists' litter.

The Ibiza wall lizard is endemic to Ibiza and neighbouring Formentera and is vital to the ecosystem of the islands, experts say, for pollinating plants and controlling pests.

Since the 2000s, the small, colorful reptiles, which are harmless to humans, have become endangered due to the proliferation of invasive snakes that first arrived in imported trees.

Conservation foundation IbizaPreservation says snakes are now present on up to 90% of the island, while the lizard population has decreased massively, believed to have disappeared from about 70%.

But there is also another issue affecting the species - litter left mainly by tourists at beauty spots.

Dean Gallagher, a snake catcher on the island, says he is constantly finding the bodies of dead lizards stuck inside discarded bottles and cans at Es Savinar, a southerly viewpoint where people often gather for sunset.



Conservationists say Ibiza lizards are endangered. Pic: Dean Gallagher

"I'm finding these lizards trapped in cans and bottles," he tells Sky News. "Once they get inside their feet get wet from the drink inside, the beer or the Red Bull, and they can't get out. Sun comes up, heats up the bottle, the can, and just fries a lizard inside. It's absolutely devastating."

Tourism accounts for about 84% of Ibiza's economy and is vital for the island, with tourist spending reaching 4.3bn euros in 2024, according to the Balearic Institute of Statistics (IBESTAT) - an increase of 62% since 2016. The number of tourists reached a record high of more than 3.7m for Ibiza and neighbouring Formentera in 2023 - an increase of almost 25% since 2016.

The land Dean looks after at Es Savinar is private, he says, but people ignore signs and fences which were replaced at the beginning of the summer.



Dean Gallagher has lived in Ibiza for more than 20 years



Signs have been put up around the private land. Pic: Dean Gallagher

"We do rubbish collections probably once or twice a week," he says. "We clear the whole area of bottles and cans then the next time, we go back and there's even more.

"Bottles can cause bush fires. The forests are really dry at the moment, just one spark can set this place alight. And [litter] is also killing our lizards. They're marvellous, beautiful creatures, they're not aggressive and they keep the bugs away. The ecological value is really important."



Gallagher says he is constantly finding the reptiles trapped in glass bottles and cans

Dean lives near Santa Eulalia, where he says numbers are scarce. "Lots of parts of the north of the island now, they've completely diminished and it's very sad," he adds.

"And the very southwest corner of the island where this viewpoint is, this is the last place where they are in stable numbers. But the excessive rubbish, tourism, snakes, are gonna wipe them out completely."

Visual surveys of areas of Ses Salines Natural Park by environmental association GEN-GOB have found the population there has decreased by between 70% and 90% since 2023.

GEN-GOB, Friends Of The Earth Ibiza and IbizaPreservation are among several organizations that have been working to save the species in recent years.

noudiari.es
Eivissa i Formentera

Sky News pone de nuevo a Ibiza en el foco, ahora por la desaparición masiva de lagartijas

Sky News is putting Ibiza back in the spotlight, now due to the mass disappearance of lizards.



In the image, a snake attacks a lizard in Ibiza.

Por **Vicent Ribas** — 6 septiembre 2025 en **Local**

After exploring the shanty towns of Ibiza last June, the British media outlet Sky News has now published a report on the critical situation facing Ibizan lizards, whose survival is threatened by the proliferation of invasive snakes and the accumulation of garbage in natural environments. These two factors are pushing this native species to the brink of extinction, as the measures taken by local institutions are not having the desired effect.

Sky News highlights that Ibizan lizards, a symbol of local biodiversity, are disappearing at an alarming rate due to several human-caused factors. One of the main ones is the uncontrolled spread of invasive snakes, especially the horseshoe snake (*Hemorrhois hippocrepis*), which arrived on the island in the 2000s through imports of ornamental olive trees. Since then, this species has multiplied uncontrollably and is now present in nearly 90% of the island's territory, according to experts.

The third major factor threatening this species is the accumulation of waste in natural spaces, caused primarily by tourist pressure. Plastic bottles, cans, and other containers abandoned in the countryside or on the coast act as death traps for these small reptiles.

Often, when searching for shelter or food, the lizards become trapped inside these objects and die from dehydration and excessive heat, with no way to escape. This combination of predation, habitat loss, and pollution turns their situation into a true ecological emergency.

Conservationist Dean Gallagher, quoted by both Sky News and NouDiari in a previous report, has repeatedly reported that lizards die trapped in abandoned plastic bottles and cans: "They fry to death in the heat, unable to get out," he explains.

Sky News warns that, in addition to the threat to local wildlife, the problem is exacerbated by mass tourism, which accounts for 84% of Ibiza's economy and increases the pressure on the natural environment.

Decline

Visual surveys conducted by the environmental association GEN-GOB in the Ses Salines Natural Park reveal an estimated population decline of between 70% and 90% since 2023. Organizations such as GEN-GOB, Friends of the Earth Ibiza, and IbizaPreservation have been working for years to conserve this species.

For Jordi Serapio, coordinator of the Protegim Ses Sargantanes project (IbizaPreservation), bottles and cans remain "death traps" for these reptiles. The presence of the horseshoe snake, the most common and dangerous, is expanding from the northeast to the southwest, marking what he calls the "invasion front."

Interestingly, where lizards have already become extinct, the density of snakes is lower, reflecting that their presence, far from adapting, coincides with the disappearance of their prey. Furthermore, Serapio points out an additional problem: predation by domestic and feral cats, whose pressure further aggravates the situation of these lizards.

Adding to this serious problem is the fact that the lizards have disappeared from at least 70% of their natural habitat, a figure that demonstrates the rapidity of their decline. Researchers and conservationists warn that, if urgent measures are not taken, local extinction could be imminent.

PERIÓDICO de IBIZA Y FORMENTERA

Serpientes en Ibiza: no es ilegal trasladar hasta el COFIB las capturas de trampas particulares

Snakes in Ibiza: It is not illegal to transport catches from private traps to the COFIB

Amics de la Terra stated that transporting wildlife is not permitted.



File image of a snake trap in Ibiza

S. Ribas | Ibiza | 08/09/25 4:00

The Balearic Government's Department of Agriculture, Fisheries, and the Natural Environment clarified this week that the transport of snakes captured in private traps to the facilities of the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB) is strictly permitted, as the purpose of such transport is to eradicate the reptile and is part of the Department's own projects or actions. Furthermore, snakes are considered invasive alien species on the islands.

This is how the Government responded to the concerns raised in recent weeks by the environmental organization Amics de la Terra (Friends of the Earth) on social media. In an interview with this newspaper by Anna Torres, Director General of the Natural Environment and Forest Management, it was announced that from now on, individuals who capture a snake in one of their traps will be able to hand it over to COFIB technicians so they can handle its disposal.

"We know that many people have reservations about euthanizing an animal, especially a snake that can measure up to two meters," Torres stated.

Amics de la Terra later asserted that transporting captured snakes to the COFIB facilities could be illegal "since transporting wildlife is illegal."

They also wondered what a volunteer could do if a police officer decided to fine them for this reason. "Who will be legally responsible?" Amics de la Terra questioned.

Sources from the Regional Ministry recalled the legislation affecting horseshoe snakes and white snakes, the two species currently hunted in the Pitiusas. Although Royal Decree 630/13, of August 2, regulating the Spanish Catalogue of Invasive Alien Species, emphasizes the prohibition on transporting live specimens of this type, this prohibition would be waived when transport is necessary for research purposes or, as in this case, for control or eradication purposes within the framework of strategies, plans, or campaigns of the competent authorities.

In this specific case, the Regional Ministry clarified that this transfer of invasive alien species is carried out precisely within the eradication actions promoted by the relevant authority, in this case the Regional Ministry of the Natural Environment.

Regarding the considerations of Amics de la Terra, these same sources clarified that horseshoe snakes and white snakes are included in the same decree, no longer being considered wildlife and therefore subject to the generic Law 42/07 of December 13, on Natural Heritage and Biodiversity.

"Amics de la Terra may be right in referring to wild species included in the List of Wild Species under Special Protection Regime derived from Law 42/07, but never in the case of invasive exotic species included in Royal Decree 630/13, since the exception contained in its Article 7.1 protects us from carrying out this transport operation in Ibiza," they concluded.

DIARIO de IBIZA

Los ecologistas insisten en controlar la entrada de mercancías para frenar la invasión de serpientes en Ibiza

Environmentalists insist on controlling the entry of goods to curb the snake invasion in Ibiza

The arrival of snakes from the Iberian Peninsula to the islands puts the Pitiusas lizard, a species endemic to the Balearic Islands, at risk of extinction.



Horseshoe snake. / DI

E.P.

Ibiza Actualizada 11 SEPT 2025 13:36

The GOB has warned that the recent "invasion" of snakes arriving from the mainland in Ibiza and Formentera is putting the Pityusic lizard, a species endemic to the Balearic Islands, at risk of extinction.

The efforts of the authorities to control the spread of these snakes, especially the horseshoe snake, are proving "insufficient," and the future of the lizard "looks very bleak," the organization noted in a statement.

However, the problem between snakes and lizards, the GOB has pointed out, is not exclusive to the Pitiusas, but is also affecting the Cabrera archipelago and some islets in Mallorca and Menorca where the endemic species lives.

Up to 25 subspecies have been described, of which five live on islets in Mallorca, ten in Menorca, and another ten in Cabrera. One of them is exclusive to the Malgrats Islands, located off the coast of Calvià.

According to the GOB, the snakes arriving from Mallorca to Malgrats could have already wiped out all the lizards on the Conills islet, while the population on es Malgrat has already suffered a significant decline.

If this trend continues, this subspecies of the reptile will eventually disappear from both islets and, therefore, will lead to global extinction in the wild.

Recovery and Conservation Plans

According to the organization's count, the Balearic Islands have 149 small islands or islets containing terrestrial fauna and flora, whose physical separation from the rest of the archipelago has made them unique in the world.

The best-known case is the sargantanas, but they also contain some endemic invertebrates and plants. They also often serve as refuges where seabirds rest and breed.

Although 80% of these islets are protected by some form of protection, 40% of the total do not have approved management plans that establish the limitations and conservation measures necessary to preserve their biodiversity.

Addressing this "very obvious" need has so far been neglected by the regional environmental administration, the GOB lamented.

On the other hand, the organization has criticized the fact that, unlike what happens in other island territories around the world, in the Balearic Islands these issues are only addressed when an invasive species could affect sensitive economic sectors such as agriculture.

Controls to prevent the entry of invasive species, however, are "insufficient," so in the opinion of the GOB, a coordinated biosecurity strategy would be necessary.

This could monitor and anticipate the arrival of invasive species, generate regulations and protocols, control entry points for agricultural goods and gardening establishments, eradicate these species once they are detected, and inform the public.

Something like this, the entity has pointed out, is already included in the amendment to the law for the conservation of areas of environmental importance that was approved last term, but "unfortunately, it has not made it past paper."

Environmental legislation also establishes that species classified as endangered must have recovery or conservation plans.

Right now, however, of the 88 endangered or vulnerable species in the Balearic Islands, 20 still do not have a plan approved by law, including lizards. Of the 68 that do have a plan, 58 have already completed their implementation deadline, most of them more than a decade ago.

"It is urgent to draft and approve the species conservation and recovery plans that are still pending, as well as to update those that have already expired. Without them, action is taken reactively to the impacts, but planning for potential threats is necessary to make progress on the problem," the GOB stated.

The entity also criticized all the regional governments for not giving the conservation of the Balearic Islands' biodiversity "the importance it deserves due to its uniqueness."

Although the GOB has acknowledged its "lack of confidence" in the current government's ability to resolve this problem, it has called for a "change of direction to avoid irreparable losses to our natural heritage."



Pityusic wall lizard in Ses Salines. / CAT

11-09-2025 - Europa Press - Environmentalists warn of the serious risk of extinction for the 'sargantana' of Ibiza and Formentera: "..... (control)

PERIÓDICO de IBIZA Y FORMENTERA

Ecologistas alertan del riesgo serio de extinción de la 'sargantana' de Ibiza y Formentera: «Está cerca de desaparecer»

Environmentalists warn of the serious risk of extinction for the 'sargantana' of Ibiza and Formentera: "It is close to disappearing."

To date, there is no comprehensive plan to combat the snake invasion on the islands.



File photo of a snake trapped in Ibiza | Photo: Editorial Staff

Europa Press | 11/09/25 12:32

The GOB has warned that the recent invasion of snakes arriving from the mainland in Ibiza and Formentera is putting the Pityusic lizard, a species endemic to the Balearic Islands, at risk of extinction.

The efforts of the authorities to control the spread of these snakes, especially the horseshoe snake, are proving "insufficient," and the future of the lizard "looks very bleak," the organization noted in a statement.

However, the problem between snakes and lizards, the GOB has pointed out, is not exclusive to the Pitiusas but is also affecting the Cabrera archipelago and some islets in Mallorca and Menorca where the endemic species lives.

Up to 25 subspecies have been described, of which five live on islets in Mallorca, 10 in Menorca, and another ten in Cabrera. One of them is exclusive to the Malgrats Islands, located off the coast of Calvià.

According to the GOB, the snakes arriving from Mallorca to Malgrats could have already wiped out all the lizards on the islet of Conills, while the population on es Malgrat has already suffered a significant decline.

If this trend continues, this subspecies of the reptile will eventually disappear from both islets and, therefore, lead to global extinction in the wild.

Conservation Plans

According to the organization's count, the Balearic Islands have 149 small islands or islets containing terrestrial fauna and flora, whose physical separation from the rest of the archipelago has made them unique in the world.

The best-known case is the sargantanas, but they also contain some endemic invertebrates and plants. They also often serve as refuges where seabirds rest and breed.

Although 80% of these islets are protected by some form of protection, 40% of the total do not have approved management plans that establish the limitations and conservation measures necessary to preserve their biodiversity.

On the other hand, the organization has criticized the fact that, unlike what happens in other island territories around the world, in the Balearic Islands these issues are only addressed when an invasive species could affect sensitive economic sectors such as agriculture.

Controls to prevent the entry of invasive species, however, are proving "insufficient," so in the opinion of the GOB, a biosecurity strategy would be necessary.

This could monitor and anticipate the arrival of invasive species, generate regulations and protocols, control entry points for agricultural goods and gardening establishments, eradicate these species once they are detected, and inform the public.

Something similar, the organization has pointed out, is already included in the amendment to the law for the conservation of areas of environmental importance that was approved last term, but "unfortunately, it has not made it past paper."

Environmental legislation also establishes that species classified as endangered must have recovery or conservation plans.

Currently, however, of the 88 endangered or vulnerable species in the Balearic Islands, 20 still do not have a regulatory-approved plan, including the sargantanas. Of the 68 that do have a plan, 58 have already passed their implementation deadline, most of them more than a decade ago.

"It is urgent to draft and approve the conservation and recovery plans for species that are still pending, as well as to update those that have already expired. Without them, action is taken reactively to the impacts, but planning for potential threats is necessary to make progress on the problem," the GOB stated.

The organization also criticized all regional governments for failing to give the conservation of the Balearic Islands' biodiversity "the importance it deserves due to its uniqueness."

Although the GOB has acknowledged its "lack of confidence" in the current government providing a solution to this problem, it has called for a "change of direction to avoid irreparable losses to our natural heritage."

11-09-2025 - Por Redacción - The snake invasion in Ibiza is terrorizing residents and tourists and threatening the island's species (control)

EL OBSERVADOR

La invasión de serpientes en Ibiza que aterroriza a residentes, turistas y asedia a las especies de la isla

The snake invasion in Ibiza is terrorizing residents and tourists and threatening the island's species

The appearance of these reptiles is worrying the population and endangering the endemic species that only exist in the Balearic Islands.

11 DE SEPTIEMBRE 2025 - 13:16HS



The horseshoe whip snake, one of the species that invades Ibiza.

A conservation group in the Balearic Islands has issued an alarming warning about the "invasion" of horseshoe snakes that have reached Ibiza and Formentera from the mainland. This phenomenon, in addition to being a major concern for the population, is threatening the extinction of the Pitiusas lizard, an endemic species that only exists in the Balearic Islands. Despite the efforts of public authorities to control the spread of these reptiles, especially the horseshoe snake, the future of the lizard looks bleak. Conservation organizations have pointed out that current controls are "insufficient" and the situation is becoming irreversible for many species.

An Out-of-Control Invasion

The threat of snakes, which have arrived mainly from Mallorca, is not only affecting the Pitiusas, but also other islands such as Cabrera, Menorca, and Mallorca. On the islet of Conills, for example, it is already feared that the snakes have completely exterminated the local lizard. In Malgrats, the lizard population has suffered a drastic decline. If this trend continues, the extinction of this subspecies will be imminent, and with it, the global disappearance of a unique species.



The endangered species, the Sargantana de las Pitiusas

Conservation is overwhelmed

Despite the existence of 149 islets in the Balearic Islands, many of which are home to endemic flora and fauna, 40% of them lack approved management plans to preserve their species. The regional government has been heavily criticized for neglecting this serious situation. The lack of decisive action to protect the biodiversity of the Balearic Islands leaves species that depend on these islets for survival at risk. This failure has generated widespread concern among the entire population about their safety and environmental management in the region.

88 Species in Danger

Of the 88 species in danger of extinction in the Balearic Islands, 20 still do not have an approved conservation plan, and of the 68 that do, 58 have let their implementation deadlines expire. This means that most conservation measures are no longer active, and the situation is being managed reactively rather than preventively. The GOB emphasizes the urgency of drafting and updating species conservation and recovery plans before it is too late, as the Pityusic lizard and other endemic species face an existential threat.

14-09-2025 - Toni P. - "100,000 snakes need to be eliminated each year in Ibiza." (control)

PERIÓDICO de IBIZA Y FORMENTERA

«Hay que eliminar 100.000 serpientes al año en Ibiza»

"100,000 snakes need to be eliminated each year in Ibiza."



Tim Freytag is a German snake hunter from the area.

Toni P. | Ibiza | 14/09/25 4:00

For almost two decades, German resident Timotheus, "Tim," Freytag has become one of the most active voices in the fight against the spread of snakes in Ibiza. Based on the island since 1985, this citizen has spent 18 years studying the phenomenon, organizing awareness campaigns, and disseminating information under the slogan "Snakes on Ibiza, no thank you." "I've been working on this issue for 18 years, researching and sharing on social media," he explains. "I try to educate people however I can, as a volunteer and citizen. I'm passionate about the logistics. It's complicated, but if we want to, we can act."

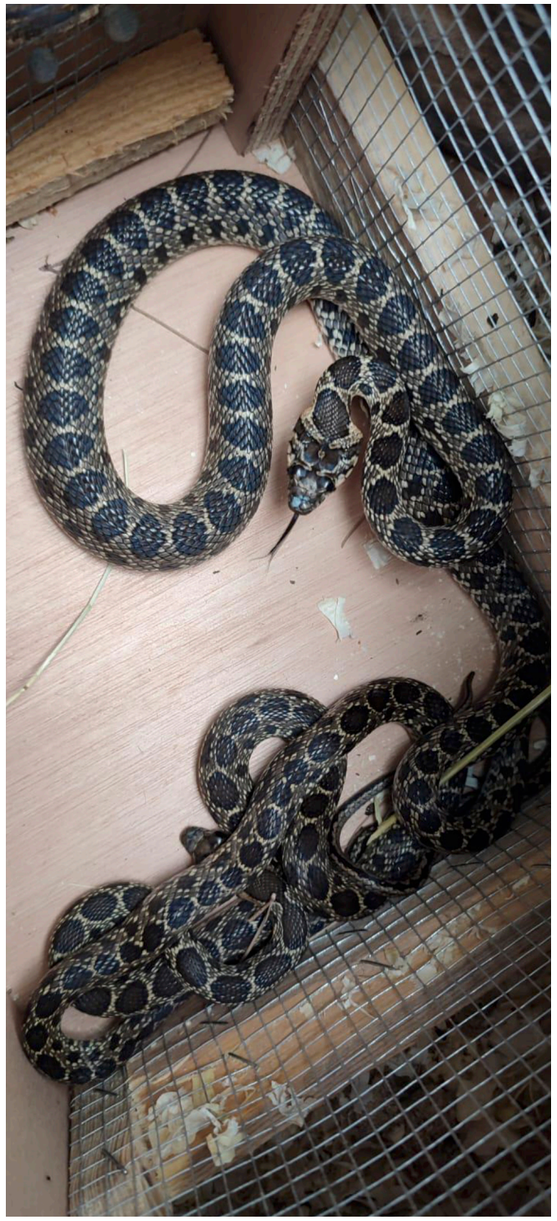
Freytag points out that a large part of his audience is foreigners living on the island, whom he considers key in this battle: "My main audience is foreigners who have already bought half of the island. They can participate much more in the well-being of Ibiza, in my opinion."

The Problem

The proliferation of snakes is directly linked to the introduction of imported centuries-old olive trees with eggs and specimens in their roots. "Lizards have been evolving here for three million years. We need to act at the appropriate level to protect them. It was a big mistake to bring in centuries-old olive trees with snakes and eggs inside," he says, recalling that naturalists like David Attenborough have warned of the fragility of island ecosystems.

The impact of these invasive species on local fauna is devastating. "A snake, in nine of its 25 years of life, can eat about 500 lizards. And when they reach 1.5 meters in size, they begin to hunt for rats, rabbits, and many birds and eggs. Males reach 1.80 meters, and females up to 2.5 meters," he explains.

Furthermore, their presence is more invisible than it seems: "The three species of snakes we have are completely hidden from humans. Some people may have between 30 and 100 around their home, but only see three to 10."

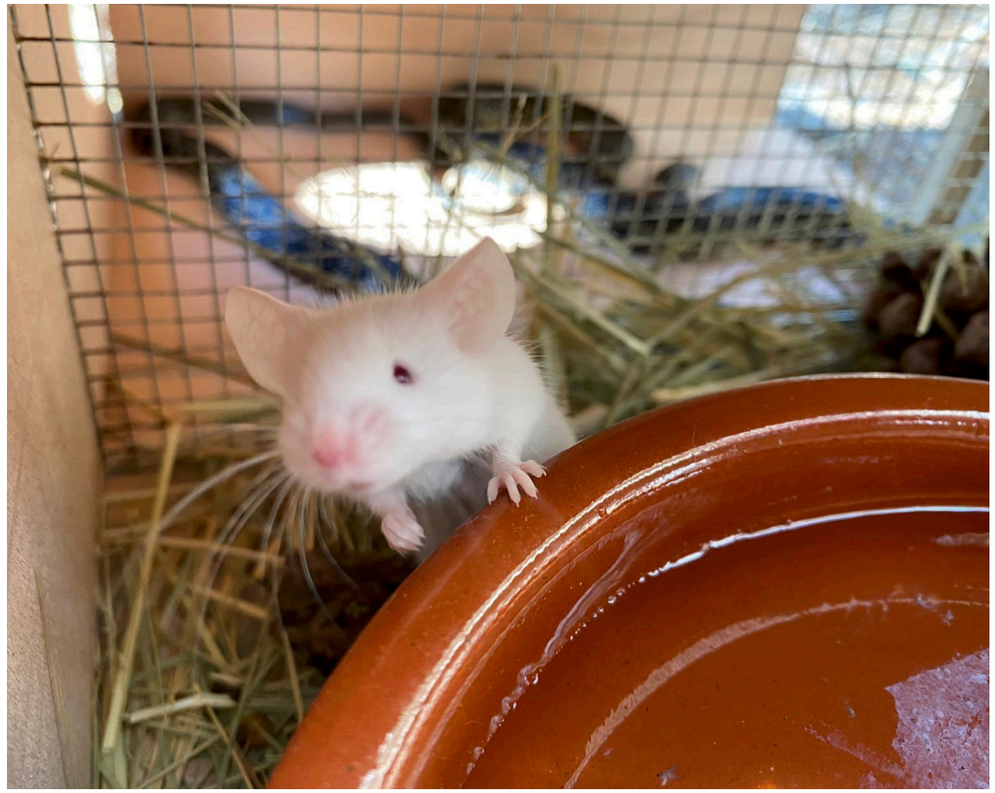


According to Freytag's calculations, the magnitude of the problem demands a much more forceful response. "We need to eliminate 100,000 snakes a year, not just thousands, because we're talking hundreds of thousands on the island. We need a strong strategy, with numbers, statistics, and logistics." In his opinion, the government should get more involved: "The government could distribute between 30,000 and 40,000 traps to citizens, or, failing that, have the people who live on the island finance them privately. But now there are only between 5,000 and 7,000 traps in all of Ibiza, and that's not enough. With that, we only catch thousands, when hundreds of thousands are needed."

The experience of volunteer groups shows that residential areas are especially effective for trapping snakes. "Our homes have almost become a preferred ecosystem for them. More snakes are caught in inhabited areas than in wild areas. That's why we can eliminate more snakes around homes," he explains.

He cites numerous examples: "This year, our group has a house with 45 captured snakes near the Benirrás intersection. And Gold Services, as a pest control company, is doing a great job: in a house in Sacaroca, in Sant Jordi, with just four traps, they also captured 45 snakes this season."

In Portinatx, he states, "a house with 10 traps last year eliminated 100 snakes in a single season." And in Sant Mateu, "three years ago, a single trap in a house caught 45 snakes in a single season." In Santa Agnès, he adds, "this year four houses already have about 20 snakes each, thanks to their traps."



A collective solution

Freytag's proposal calls for coordinated action across the entire island. "The season starts in late March or April and lasts until the end of October. In August, with the intense heat, activity slows down. If we ensure that every house has traps, we can reduce a large proportion of the snakes. Each cottage needs four to eight traps."

For him, this isn't a competition or an ideological confrontation, but rather a matter of practical organization: "For me, it's not a competition. It's simply logistics: correcting a huge mistake we humans made on the island. And if we caused it, we can also find a solution."

He concludes with a call for collective action: "What I want to see is the entire island involved in eliminating the snakes, not just a few."

Conselleria d'Agricultura,
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CONTROL DE ESPECIES INVASORAS EN LAS PITIUSAS

ITS 2019-077
ITS 23-114



Illes Balears
Sostenibles

PERIÓDICO de IBIZA
Y FORMENTERA

IbizaPreservation lanza una nueva campaña para implicar a la ciudadanía en la protección de la lagartija pitiusa

IbizaPreservation launches a new campaign to engage the public in protecting the Pityusic lizard.

The communication initiative raises awareness about the threat of invasive snakes and offers practical resources to the public.



File image of a lizard | Photo: PIF

R.I. | Ibiza | 16/09/25 13:09

The IbizaPreservation Foundation has launched a new communications campaign to raise awareness among the local community about the risk invasive snakes pose to the Pitiusan lizard (Podarcis pityusensis), a critically endangered species endemic to the Pitiusas. The initiative, supported by GEN-GOB and Amics de la Terra, aims to "offer informative and practical tools so that citizens can get involved in its protection," explains IbizaPreservation.

The campaign provides the public with a website in three languages (Catalan, Spanish, and English), available at www.protegimsessargantanes.org, which offers up-to-date information on the situation of the Pityusic lizard and the threat posed by invasive snakes. It also includes instructions on what to do if you spot a snake, how to properly handle an authorized trap, and how to collaborate with local control initiatives.

In addition, graphic materials and specific publications have been developed for social media to "facilitate the dissemination of the message and reach all sectors of society," according to Ibiza Preservation. The infographics and resources are designed to be easily shared and adapted to different audiences, from residents to visitors.

The objective of this initiative is also to raise awareness about the ecological importance of this species, which plays a key role in the natural balance of the islands. "Lizards contribute to the biological control of pests and the nutrient cycle in the soil, so their disappearance would have direct consequences for the health of local ecosystems and crops," emphasizes Inma Saranova, director of Ibiza Preservation.

Amics de la Terra and the GEN-GOB emphasize the need to involve society in this challenge. In this regard, the president of Amics de la Terra, Hazel Morgan, states that she highly values "the involvement of a significant portion of the public, a key element in the conservation of lizards." For her part, Agnès Vidal, from GEN-GOB, emphasizes that "there are many people in Ibiza who want to get involved in snake control, because they understand that such an intense task can only be carried out with the collaboration of everyone: citizens, associations, and institutions."

The collaborating organizations emphasize that the spread of invasive snakes, partly fueled by the transport of ornamental olive trees, has had a devastating impact on the lizard populations in the Pitiusas. This campaign, they explain, seeks to strengthen and complement the institutional actions already underway, offering the public clear and accessible tools to act in an informed and effective manner. "The conservation of the Pityusic lizard depends on collective commitment," they conclude.

DIARIO de IBIZA

Nuevas medidas para la conservación de la sargantana pitiusa

New measures for the conservation of the Pityusic lizard

This is a PP initiative to protect the Pitiusan species. The PSOE denounces a lack of resources and calls for greater institutional involvement.



Pityusic wall lizard in Ses Salines. / CAT



Nuria García

Actualizada 18 SEPT 2025 14:05

The Balearic Parliament approved this afternoon a Non-Law Proposal (PNL) presented by the Partido Popular urging the Balearic and central governments to implement new conservation measures for the Pityusic wall lizard, a species endemic to Ibiza and Formentera that has lost 50% of its population in the last 14 years, according to the International Union for Conservation of Nature's Red List.

Partido Popular representative Marta Pereira defended the initiative and emphasized that "it is essential to conserve the islands' biodiversity, unique in the world, to preserve the natural balance." Pereira emphasized that the progressive disappearance of the species also has direct consequences for public health, as the lizard contributes to the control of insects and the pine processionary moth.

The approved PNL proposes the creation of urban reserves in collaboration with Ibizan institutions, predator surveillance, and the continuation of awareness campaigns. It also calls on the central government to strengthen the control of large ornamental trees, restore protections for the dune systems of Ibiza and Formentera, and promote agreements with hunting associations for the strategic placement of snake traps.

Socialist Criticism

The PSOE, for its part, called today in the Parliament's Economic Commission for greater involvement from all administrations—the Government, the Regional Council, and city councils—in the face of what they consider an "ecological emergency." Socialist MP Marco Guerrero lamented that his group's proposal to assign a species protection specialist to Ibiza failed due to the PP's negative vote.

"We cannot continue to depend on a centralized structure in Mallorca when the emergency is here. We need a permanent figure who can provide an immediate response to Ibizan society," Guerrero stated.

The Socialists also insisted on the need to activate the Ibiza Wildlife Recovery and Interpretation Center (COFIB), planned in 2019 in Sa Coma and still pending construction. This point was approved by the parliamentary committee.

Guerrero warned that "one-off campaigns aren't enough," but rather that budget, personnel, and a strategic plan are needed. He also called on city councils to exercise their powers to control cat colonies, manage beaches, and implement urban planning "responsibly."

The MP concluded that the Pityusic lizard "is not just a symbol, but a key part of the ecosystem. If we let it disappear, we lose part of our identity and our natural heritage."



Marta Pereira (PP). Member of Parliament, Secretary of the Committee on Tourism, Trade, Labor, Culture and Sports, and member of the Committees on Social Affairs and Education and Universities.



Marco Guerrero (PSOE). Member of Parliament.

PERIÓDICO de IBIZA Y FORMENTERA

Luz verde en el Parlament a medidas para salvar a la lagartija de Ibiza y Formentera

Parliament gives green light to measures to save the Ibiza and Formentera wall lizard

Partido Popular MP Marta Pereira argued that "the wall lizard plays a crucial ecological role in insect control and seed dispersal."



R.I. | Ibiza | 18/09/25 13:32

The Balearic Islands Parliament approved this afternoon a Non-Law Motion from the Partido Popular (PP) calling on the Balearic and Spanish governments to take "conservation and protection measures for the Ibizan lizard, which is in danger of extinction after losing 50% of its population in the last 14 years," as reflected in the Red List of endangered species published by the International Union for Conservation of Nature.

PP MP Marta Pereira, who defended the initiative, stated that "it is essential to conserve the islands' biodiversity, unique in the world, to preserve the natural balance. The lizard plays a crucial ecological role in insect control and seed dispersal, and its progressive disappearance contributes to a lack of control of the pine processionary moth, which poses a serious public health risk and can even cause the death of pets."

The proposal requests the regional government to collaborate with Ibizan institutions to create urban reserves to conserve and protect the endemic and native species, establishing and monitoring safety perimeters for predators, as well as to "continue leading awareness and information campaigns that seek to engage society in their understanding and conservation."

The text includes among its measures a request to the Spanish Government, through the State Ports Authority, to activate the necessary mechanisms to control and inspect ornamental trees with trunks measuring more than 40 cm, and also to restore protections for natural dune systems in Ibiza and Formentera. Finally, the initiative urges regional councils and town councils to promote agreements with hunting societies or similar entities, in order to leverage the experience and knowledge of these groups for the strategic placement of snake traps.

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Alerta natural: la sargantana ibicenca pierde el 50% de su población y se activa un plan parlamentario

Natural alert: The Ibizan lizard loses 50% of its population, and a parliamentary plan is activated.



An Ibizan lizard, a species threatened by the snake plague.

Por **Redacción** — 18 septiembre 2025 en **+ Pitiüses**

The Balearic Islands Parliament approved this afternoon a Non-Law Proposal (PNL) presented by the Partido Popular aimed at halting the decline of the Ibizan lizard (*Podarcis pityusensis*), an emblematic species of the Pitiusas, which has lost 50% of its population in the last 14 years, according to the most recent data from the International Union for Conservation of Nature (IUCN) Red List.

Popular Party MP Marta Pereira, who was in charge of defending the initiative, stressed the urgency of addressing this major environmental problem: "It is essential to conserve the biodiversity of our islands, unique in the world, to preserve the natural balance." Furthermore, he pointed out that the progressive disappearance of the lizard has consequences beyond the ecological level, as this native reptile plays a crucial role in insect control and seed dispersal, in addition to helping curb pests such as the pine processionary caterpillar, a direct threat to public health and pets.

One of the key points of the approved text is the request to the Balearic Government to establish, in collaboration with the Island Councils and the municipalities of Ibiza and Formentera, urban reserves where the lizard can develop safely. These areas would allow for the maintenance of controlled habitats free of invasive predators, especially snakes, and minimize the fragmentation of their natural environment.

The initiative also calls for active surveillance of security perimeters in areas of special ecological value for the species. This seeks to curb the spread of invasive predatory species, such as the horseshoe snake (Hemorrhois hippocrepis), accidentally introduced to the island through the ornamental plant trade and one of the main causes of the population collapse of the Pityusic lizard.

🏫 Environmental education and awareness campaigns

The Parliament has also urged the Government to strengthen information and social awareness campaigns, with the aim of ensuring that citizens understand the value of this species and become involved in its protection. The initiative includes the development of educational materials, school workshops, exhibitions, and outreach activities in the media and social media. "The lizard is a symbol of our islands, and we must involve all sectors in its conservation," Pereira emphasized.

🌳 State control of tree imports

At the state level, the proposal urges the Spanish Government, and specifically the State Ports Authority, to establish rigorous controls on the entry of ornamental trees with trunks exceeding 40 centimeters in diameter, as this type of vegetation can harbor eggs or specimens of invasive snakes. This is key to preventing further accidental introductions of predators.

🏝️ Restoration of Dune Systems

The Parliament also included in the approved text a request to restore and protect the natural dune systems of Ibiza and Formentera, habitats that play a fundamental role as refuges and vital environments for the sargantana. Urbanization and tourist pressure have progressively reduced these spaces, so the Government and the State are asked to activate specific restoration and conservation plans.

🎯 Agreements with hunting societies

Finally, the agreement includes a call to establish collaboration agreements between public administrations and hunting societies, or other entities familiar with rural areas, to facilitate the strategic installation of snake traps. The PP representative argued that these groups can provide "valuable local knowledge" to locate key points and assist in the eradication of invasive predators.

🌍 A unique species on the brink of extinction

The Ibizan lizard is a species endemic to the islands of Ibiza and Formentera and their islets. Its genetic diversity, isolation, and historical presence make it one of the natural symbols of the Pitiusas. However, its current situation is critical, with numerous populations collapsed or extinct due to the action of unnatural predators, especially invasive snakes.

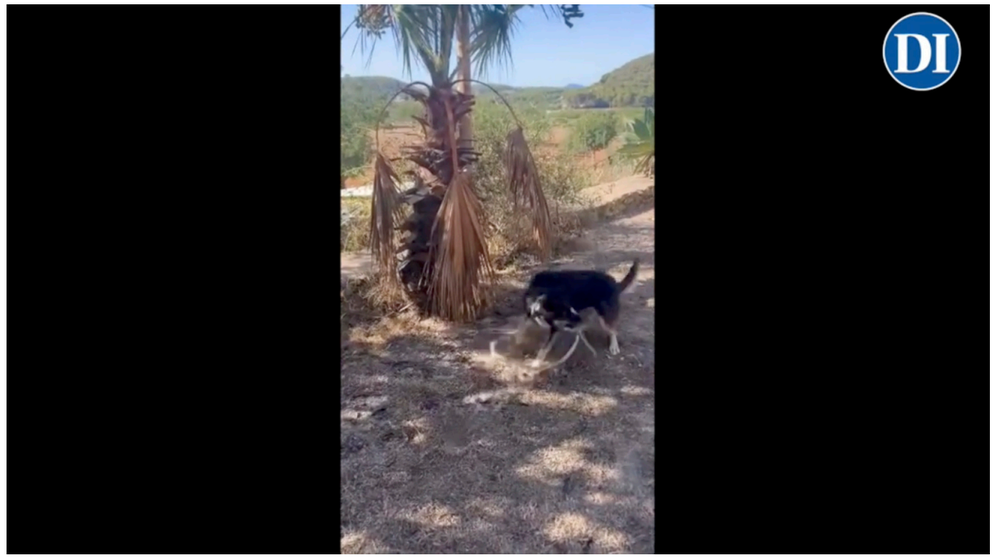
The agreement approved by the Parliament represents an important step, although many environmental groups warn that time is running out to save it and that real, sustained, and well-resourced involvement from all public authorities is necessary.

DIARIO de IBIZA

La perrita Boira, el terror de las serpientes de Ibiza

Boira the dog, Ibiza's snake terror

The animal has been trained to eradicate the snake problem in Can Daifa and has already caught more than 70 snakes in three years.





Marisol Plaza Sánchez
Ibiza 20 SEPT 2025 12:55

Boira, a German Shepherd and, most likely, Border Collie mix, has earned a curious name: the snake terror of Ibiza. She lives in Can Daifa, a traditional Ibizan estate located in Sant Mateu, and at five years old and with a tireless character, she has already hunted more than 70 snakes since learning how to do it three years ago.

Her owner, Tomás, says the dog wasn't born a snake hunter, but quite the opposite: "At first, she was very scared. She would see them and move away," he explains. However, he decided to take advantage of her natural hunting instinct and try to direct her toward snakes, a common problem on his farm. Training began in June 2022. As he recalls, on June 3, Boira began showing interest, and just thirteen days later, on June 16, she caught her first snake on her own.

The process was meticulous and gradual. Tomás explains that at first they worked with dead snakes that still had nervous reflexes, moving on the ground, to awaken the dog's curiosity. Little by little, and always rewarding her for each advance, Boira went from fear to action.

"From the moment she began to show interest until she caught the first one, 13 days passed," explains her owner.

Since then, Boira has become an expert. She always attacks from behind, never from the head, and shakes the reptile vigorously until it is neutralized. She learned the technique after a few "war wounds," as her owner claims he's sustained a few bites, especially when there was more than one snake in the same trap. "We talked to her vet about it, and he told us it didn't pose a serious danger, beyond a possible infection. Just clean the wound well," explains Tomás. Over the past three years, the dog has caught more than 70 snakes, most of them in traps set on the farm, although she has also surprised some in the fields, but "it's less common," he points out.

In addition to hunting snakes, Boira also herds animals and helps with the chickens. However, he doesn't attack other animals or insects. "Snakes give off a very distinctive odor, and he only attacks them," says Tomás.

Her owner concludes the interview with this newspaper by stating that, a few years ago, he read about a pilot plan from some institution to eradicate the snake problem on the island by training dogs, but the project didn't take off. Boira, on the other hand, has succeeded. Today, three years after that June 16, 2022, she continues to walk around the estate with the same courage, determined to protect her home and consolidating her reputation as a true snake hunter.



Boira is 5 years old and has caught 70 snakes in 3 years. / CD

22-09-2025 - Antonia Cirer - Letter to Marga Prohens, Joan Simonet, Vicent Marí and the 5 mayors of Ibiza (conservation)

Ibiza, September 19, 2025

Very Honorable Madam President of the Balearic Government:

As is widely known, since 2003, several species of invasive snakes have appeared on the island of Ibiza and, recently, on some of the Pityusic islets.

This irruption is considerably distorting terrestrial ecosystems, as it is causing the disappearance of the Pityusic lizard, an endemic species with a fundamental ecological function to maintain the balance of the environment of our Islands.

We know of the great economic effort that the Ministry of Agriculture, Fisheries and the Environment is making, but sometimes money is not the key to success if the actions are poorly directed: more money without an appropriate strategy can worsen the problem. And this is precisely what is happening in the Pityusic Islands with the problem of invasive snakes: that there is an error in approach and diagnosis from its origin, in addition to a lack of control over the tasks carried out from the island of Ibiza itself, which makes it difficult to solve.

Initially, the impact caused by invasive snakes was incorrectly assessed, despite the reports of the Spanish Herpetological Association (AHE, 2010) recommending work to eradicate invasive species as soon as possible. Instead, the Ministry of the Environment favored some **optimistic and amateurish diagnoses**, but not very realistic, such as the forecasts of Dr. Valentín Pérez-Mellado who bet on a possible adaptation of the lizard to coexistence with snakes, alleging supposed anti-predator adaptations and the perspective of the evolution of the species *Podarcis pityusensis* towards a new ecological reality.

These changes cannot occur in the course of the time considered, since evolution works with much longer times than those contemplated in this hypothesis. **It was also convenient**, but without corresponding to the reality of the Ibizan countryside, that Joan Mayol predicted that a new ecological balance would be achieved in which the new introduced species and the native lizards would coexist, as happens on the continent. But let us remember that this coexistence has never occurred in Mallorca, neither with the native lizard *Podarcis lilfordi*, nor with the introduced *Podarcis pityusensis*, which lives confined to the city walls without having had the capacity to colonize rural areas.

This hypothesis that will become the new equilibrium does not consider that island ecosystems are different and not comparable to continental ones. Neither are the density counts of lizard populations carried out by the team from the University of Salamanca, which in 2019 ventured that there were no significant decreases in the densities of the "studied populations". These studies only included lizard populations from the west of the Pityusic Islands, where the snakes had not yet arrived in 2019, therefore, there could not have been any decrease yet. Regarding the eastern areas, they indicated that there were no lizards, but that there were none before either. This before referred to 2010-2012, at which time the populations in the Sant Carles area were already extinct. In 2022, even this team denied the risk of extinction of *Podarcis pityusensis* (Diario de Ibiza, 27-03-2022).

At different times in the 20th century, from 1980 to 1994, I surveyed the Pityusic Islands extensively without detecting any decline in the lizard population, in any area of the island of Ibiza. Something that I did confirm with multiple surveys from 2012 onwards. The pattern repeats itself:

• First sighting of an invasive snake. The lizard population does not seem to have changed.

• After two to three years, there was a continued decline in lizard density.

• Disappearance of any presence of lizards in less than five years.

Observed throughout the island of Ibiza: from the moment the first invasive snakes arrive, the lizards in the area take about 5 years to disappear completely.

With these initial errors, the successive departments of the Balearic Government that manage the environment have opted to carry out "pest control" tasks, instead of promoting a strategic plan for the eradication of invasive species.

After **fifteen years lost** waiting for the arrival of this new balance, in which thousands of snake captures have been made by COFIB-Ibiza, Ibiza Preservation, Hunters' Associations, SOS-Sargantanes volunteers, GEN-GOB, Friends of the Earth, Ibiza Snake Trappers, and other non-affiliated volunteers; Every year the number of snake catches increases and the affected territory increases, with the realization that the pest control strategy is a failed action that swallows up all the economic and human investment without obtaining results that benefit the ecosystems or the endemic fauna. On the contrary, where there used to be lizards, there are now snakes and nowhere has the coexistence of the two species been observed, therefore, it does not seem that we can expect the balance advocated at the beginning of the 21st century by the successive Environment teams of the Balearic Government.

23-09-2025 - Laura Ferrer - Ibiza's countryside loses its natural ally to snakes: without lizards, insects are free to roam. (ecology)

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El campo de Ibiza pierde a su aliado natural por las serpientes: sin lagartijas, los insectos campan a sus anchas

Ibiza's countryside loses its natural ally to snakes: without lizards, insects are free to roam.



In the image, a snake attacks a lizard in Ibiza.

Por **Laura Ferrer** — 23 septiembre 2025 en **Local**

The Ibizan countryside is going through a difficult time, marked by the pressure of invasive species and the effects of climate change. Toni Tur, Secorrat (Eivissa, 1988), president of the Sant Antoni Agricultural Cooperative, warns of an unwanted effect of the snake plague on crops: "There are no more lizards to eat insects, and crickets are taking over." Thus, in the absence of their natural predator on the islands, crickets are targeting leaves, stems, and roots of crops, especially attacking young plants.

The impact of snakes on agriculture is indirect but devastating: by feeding on lizards, they have depleted the population of this endemic reptile, which played an essential role in insect control. "Lizards played a role in the ecosystem, within the insect circuit, that is no longer being fulfilled," says Tur. The result: an abnormal proliferation of crickets in the last two years. “We're having problems with crickets, and ultimately it's because we've introduced so many alien species that an imbalance has arisen.”

Added to this situation is one of the most serious problems farmers have experienced in recent years: the wood pigeon. “The wood pigeon infestation was terrible in 2024,” Tur recalls. That year's drought—when “there was zero grain, a completely exceptional event; there was no grass all year round”—turned the crops into the only green oasis available. The wood pigeons indiscriminately attacked olive trees, fig trees, watermelons, vines, and almond trees. “They ate everything,” he emphasizes.

In 2025, the situation has been somewhat more bearable thanks to the March rains, which favored the emergence of cereals and grass. “That has allowed us to have a slightly calmer summer,” explains the farmer, although he warns that the pressure from this bird is still present. The wood pigeon, which was traditionally migratory, has found an ideal location in Ibiza: with no natural predators and mild winters, it no longer needs to leave and reproduces continuously throughout the year.

For Tur, the solution cannot be limited to hunting. “It's true that they must be hunted to balance the current population level, but it's not a sustainable measure in the long term,” he maintains. The proposal is to encourage the return of birds of prey and other natural predators. “If good work is done at the agro-environmental level, it's a cheaper and more sustainable measure than hunting them forever.”

This imbalance is not limited to specific pests, but is exacerbated by climate change. The alteration of rainfall and temperature cycles, coupled with human pressure on rural land, has reduced the presence of fauna essential for maintaining ecological balance. “By occupying a large part of the rural land, we have expelled from the ecosystem a lot of fauna necessary for pest control,” laments the cooperative's president.

There has, however, been a respite in terms of fungal infestations. “Because it was such a dry year, there have been fewer fungi, fewer pests in general because there has been less humidity,” he explains.

Regarding air pollution, Tur clarifies that, unlike other regions on the peninsula, worrying levels of pollutants have not been detected in Ibiza's agricultural soils. “The most polluted area is GESA, because it operates 24 hours a day, seven days a week. The airport is also affected, but it's not a determining factor,” he points out. Analysis shows that the island's soils, in terms of nitrates and pesticides, are in better condition than in areas of intensive agriculture or livestock farming such as Murcia or Lleida.

Toni Tur's vision is that of someone who lives with the land every day and notices changes before anyone else. "What we farmers have is that, being skin to skin with the land, we notice them immediately. Most of us have been observing changes for a long time," he says. And these changes are not minor: they reflect an unbalanced ecosystem in which the future of agriculture depends as much on rainfall as on the ability to recover the lost balance.

In Ibiza, snakes and wood pigeons are just the most visible symptoms of a broader problem. A problem that requires "urgent, sustainable, and coordinated measures," says Tur, all to prevent the countryside from being left, literally, defenseless and with a bleak future.



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“Inoperancia y negligencia”. Durísima carta de una bióloga al Govern por la desaparición de las ‘sargantanes’ en Ibiza

"Incompetence and negligence." A biologist's harsh letter to the government regarding the disappearance of the lizards in Ibiza.



Archive image of lizards in Ibiza.

Por **David Ventura** — 23 septiembre 2025 en **Local**

Biologist Antònia Maria Cirer Costa, one of the leading specialists in the ‘*Podarcis pityusensis*’, the typical lizard of Ibiza and Formentera, has publicly called on Balearic and Ibizan institutions to take measures to prevent the disappearance of the “only vertebrate endemic to our islands; aware that we are probably in the last few years in which a sample of specimens can still be preserved in the wild.”

In extremis, with time running out and the need to take urgent and effective measures immediately before it is too late, Cirer vehemently urges policymakers in a letter she sent to the president of the Balearic Government, Marga Prohens, the Balearic Minister of Agriculture, Fisheries, and the Environment; and to the president of the Ibiza Council and the mayors of the island's five municipalities. The letter denounces the “lack of action that has led us to the current situation.”

Cirer pulls no punches and speaks of the “ineffectiveness of technicians, gross management negligence, and gross ignorance of the basic principles of ecology, reptile biology, and evolutionary mechanisms demonstrated by wildlife managers.” The serious shortsightedness of the organizations located in Mallorca and the lack of oversight by the Ibizan institutions are evident.

Disastrous Measures

He particularly harshly criticized the initial response to the appearance of snakes: “Despite reports from the Spanish Herpetological Association recommending the eradication of invasive species, the Ministry of the Environment opted for optimistic and delusional diagnoses, such as the predictions of Dr. Valentín Pérez-Mellado, who predicted the adaptation of the lizard and recommended coexistence with snakes.”

“With these initial errors, successive departments of the Government that manage the environment have opted to carry out ‘pest control’ efforts instead of promoting a strategic plan for the eradication of invasive species,” explains Cirer, who adds that “after 15 lost years, during which thousands of snake captures have been made, each year the number of captures increases and the affected area increases, proving that the pest control strategy has failed.”

Before it's too late

In the face of this disaster, Cirer proposes the following priority measures: developing a short-, medium-, and long-term strategic action plan; creating in-situ breeding areas for lizards, protected by snake-proof fences; promoting ex-situ breeding sites in several zoos, such as the one that already exists at the Barcelona Zoo; and establishing a real and efficient coordination mechanism for all the volunteers and organizations currently capturing snakes, since "each one acts independently and without any real coordination or assistance."

Finally, she calls for the exploration and implementation of efficient snake eradication mechanisms, since so far only pest control efforts have been carried out.



Image of a lizard from Ibiza. Photo: Sebastián Candela Martínez.

24-09-2025 - Verónica Carmona - A biologist alerts the Balearic government in a letter to the "extremely serious situation"..... (conservation)

DIARIO de IBIZA

Una bióloga alerta al Govern en una carta de la “situación extremadamente grave” de la lagartija pitiusa

A biologist alerts the Balearic government in a letter to the "extremely serious situation" of the Pityusic wall lizard

"We are probably in the last years in which a sample of individuals can still be preserved in the wild," laments Antònia Maria Cirer.



Biologist and professor Antònia Maria Cirer. / J.A. RIERA



Verónica Carmona

Ibiza Actualizada 24 SEPT 2025 8:22

Biologist and professor of Natural Sciences Antònia Maria Cirer Costa has sent a formal petition to the main institutions in the Balearic Islands and Ibiza calling for urgent measures to prevent the disappearance of the Pityusic wall lizard (*Podarcis pityusensis*), whose situation is "extremely serious." She also emphasized that this unique vertebrate endemic to the islands plays a "fundamental ecological role" in maintaining the balance of the Ibizan countryside.

In her letters, addressed to the president of the Balearic Government, Marga Prohens; the regional minister of Agriculture, Fisheries, and the Environment, Joan Simonet; and the president of the Ibiza Council, Vicent Marí, as well as to the island's five municipalities, the scientist warned that "we are probably in the final years in which a sample of individuals can still be preserved in the wild."

Criticism of Current Management

"Money is not the key to success if actions are poorly directed. More money without a strategy ends up worsening the problem," the biologist noted. To date, the government has focused on

"implementing pest control measures, rather than promoting a strategic plan to eradicate invasive species," the scientist lamented. "The pest control strategy is a failed effort," according to Cirer.

She also denounced the ineffectiveness of technicians, negligence in management, and the lack of knowledge about reptile ecology and biology on the part of wildlife managers. She also accused the agencies located in Mallorca of "short-sightedness" in their management and criticized the lack of oversight by Ibizan institutions.

In the letter, dated September 19, Cirer denounced that institutional management since the arrival of the first snakes has been based on erroneous diagnoses and ineffective measures. He recalled that in 2010, the Spanish Herpetological Association recommended the immediate eradication of invasive species, but that the Ministry of the Environment opted for "optimistic and unrealistic" scenarios.

"These changes cannot occur in such a short time; evolution works over much longer periods," stated Cirer, who also criticized the possibility of achieving a "new ecological balance" between introduced species and the native lizard, something that—he noted—has never occurred in Mallorca, neither with the *Podarcis lilfordi* nor with the *Podarcis pityusensis* itself, confined within the walls of Palma.

An Endangered Species

The biologist points out that the Pityusic lizard was classified as an endangered species (EN) by the IUCN in 2024, but that to date, "it does not have a conservation plan, does not benefit from any LIFE project, and lacks effective protection status," beyond the regional law approved in 2023, which "has not yet been implemented and is already insufficient."

The pattern observed in the surveys carried out since 2012 is clear: after the first sighting of snakes in an area, the lizard population begins to decline within two to three years, until it disappears completely in less than five. "Where there were once lizards, now only snakes remain," Cirer summarized.

The actions she has called for include:

- The development of a short-, medium-, and long-term strategic action plan.
- The creation of in-situ breeding areas protected with snake barriers.
- The promotion of ex situ breeding in zoos, as is already the case at the Barcelona Zoo.
- Effective coordination of volunteers and organizations that currently capture snakes, "since each one acts independently and without real coordination."
- The implementation of snake eradication mechanisms, beyond current pest control efforts.

In her letters, Cirer urged that these proposals be studied "to try to prevent the definitive extinction of the lizard population in Ibiza."

23-09-2025 - Jerónimo Marín - Biologist Antònia Maria Cirer demands a plan to protect the lizard of Ibiza and Formentera (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

La bióloga Antònia Maria Cirer exige un plan para proteger la lagartija de Ibiza y Formentera

Biologist Antònia Maria Cirer demands a plan to protect the lizard of Ibiza and Formentera



File photo of one of the first lizards born at the Barcelona Zoo | Photo: Editorial Staff

Jerónimo Marín | 23/09/25 19:10

Antònia Maria Cirer Costa is a staunch defender of the *Podarcis pityusensis*, the lizard endemic to the Pitiusas. Since the publication of her doctoral thesis on this species, the biology professor has not ceased in her efforts to protect this species, which, in her own words, represents the cornerstone of the islands' ecosystem.

In this letter, addressed to the President of the Catalan Government, Marga Prohens, the biologist reviews the actions taken by institutions to curb the snake invasion and protect the Pityusic lizard.

"As is widely known, various species of invasive snakes have appeared on the island of Ibiza since 2003, and recently on some of the Pitiusan islets," the letter begins. "This intrusion is significantly disrupting terrestrial ecosystems, as it is causing the disappearance of the Pitiusan lizard, an endemic species with a fundamental ecological function in maintaining the environmental balance of our islands."

In the following paragraph, Antònia Maria Cirer acknowledges the financial efforts being made in this regard by the Ministry of the Environment, "but sometimes money is not the key to success if the actions are poorly directed," she notes in the letter. "And that is precisely what is happening in the Pitiusan Islands: there is an error in focus and diagnosis from the outset, in addition to a lack of oversight of the tasks carried out on the island of Ibiza itself, which makes a solution difficult."

This is not the first time that the biology professor has denounced this situation, which she describes as "unsustainable." In the letter, she reviews the actions of this regional government. "Initially, the impact of invasive snakes was erroneously assessed, despite reports from the Spanish Herpetological Association recommending working to eradicate them as soon as possible," recalls Antònia. "Instead, the regional government favored some optimistic and dilatory, but unrealistic, diagnoses, such as the predictions of Dr. Valentín Pérez-Mellado, who predicted a possible adaptation of lizards to coexistence with snakes, citing supposed anti-predator adaptations." She described this as "unrealistic," since these anti-predator adaptations, such as the acquired ability of lizards to hide from snakes, are necessary, since "evolution works on much longer timescales than those contemplated in this hypothesis."

She also details other unrealistic predictions that the regional government accepted at the time, such as Joan Mayol's prediction that a new ecological balance would be reached in which newly introduced species and native lizards would coexist, something that has not yet occurred.

She describes as "unrealistic" the lizard population density counts conducted by the University of Salamanca team, which in 2019 predicted that "there were no significant declines in the densities of the lizard populations studied." She attributes this to the fact that these studies only included lizard populations from the western part of the Pitiusas, where snakes had not yet arrived in 2019. "In the eastern areas of Ibiza, they indicated that there were no lizards, but they hadn't been there before either." According to the biologist, at the time of the study, the lizards in the San Carlos area had already become extinct. "In 2022, this team even denied the risk of extinction of the *Podarcis pityusensis*," she denounces in the letter.

According to the biologist, the problem has been exacerbated by these initial reports. Based on these reports, "successive departments of the Government that manage the environment have opted to carry out 'pest control' tasks, instead of promoting a strategic plan to eradicate invasive species," a fact that, according to her, has contributed to the chronic nature of the problem and, ultimately, irrevocably condemns the Pityusic lizard to extinction.

"After fifteen years lost waiting for the arrival of a new equilibrium [...], each year the number of snake captures increases and the affected area increases, proving that the pest control strategy is a failed initiative that swallows up all the economic and human investment without achieving results that benefit the ecosystem or the endemic fauna," the biologist states in her letter to the President of the Government. "On the contrary, where there were once lizards, there are now snakes, and the coexistence of the two species has not been observed anywhere."

Colomar, was recently the subject of controversy over a social media post in which he attacked "the idiots of the cat god" and boasted of his ability "to build traps for many types of animals," referring to felines. "By the time you suspected there were animals missing in your area, you would be too late," he wrote in the post. The post came days after various environmental organizations began a petition on change.org demanding his dismissal. Colomar even stated last February at a technical conference held on the largest of the Pitiusas that "the Pitiusan 'sargantana' is not becoming extinct," among other alarming statements.

For Antónia Maria, these statements are nothing more than "excuses to cover up ignorance of the problem and the ineffectiveness of the measures, and to conceal the fact that the real causes of what is happening in the field are not being investigated." In her letter, she points out that the Pityusic wall lizard "is currently an endangered species and a Conservation Plan for the species has never been implemented."

To conclude, the biologist leaves a lapidary phrase: "We are probably in the last decade in which we will still be able to observe the Pityusic lizard in its natural habitat" and leaves a line of action to avoid this dire scenario, which includes the creation of breeding shelters in situ and ex situ, the drafting of a Strategic Action Plan that includes a consensus of all responsible administrations and volunteer citizens involved in this cause, the coordination of the efforts of all actors dedicated to hunting snakes and the exploration of other eradication mechanisms such as pheromone traps or training dogs to hunt snakes when they leave their nest, among others.

"I ask you, Madam President, to kindly study these proposals in order to improve the situation and make an effort to prevent the extinction of the lizard population on the island of Ibiza," the biologist concludes in the letter.



Marga Prohens, leader of the PP and President of the Balearic Islands | Isaac Buj

DIARIO de IBIZA

Refuerzos para la lucha contra las serpientes en Ibiza: más control y bioseguridad en el puerto

Reinforcements for the fight against snakes in Ibiza: more control and biosecurity in the port

The Directorate General of Natural Environment and Forest Management has provided training sessions to Port Police officers.



The Government strengthens training for Ibiza port personnel to prevent the entry of invasive snakes / CAIB

Redacción Ibiza

Ibiza Actualizada 25 SEPT 2025 14:44

Management, concluded its training sessions for staff of the Port Authority of the Balearic Islands this Thursday in Palma. The courses, taught by technicians from the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), provided Port Police officers with practical tools to recognize trees affected by the regulations, identify possible presence of snakes in transported cargo, and understand the operating periods and exceptions established by Decree-Law 1/2023, which regulates the protection of the Pityusic wall lizard (*Podarcis pityusensis*) and the Balearic wall lizard (*Podarcis lilfordi*).

Regional Minister Joan Simonet noted that port control and inspection measures are the responsibility of the Civil Guard, responsible for border control, and also of the Port Authority of the Balearic Islands, as the entity responsible for managing the public port domain: "Collaboration with the Port Authority is key to protecting the biodiversity of our islands. These training activities are essential to strengthen the knowledge of port personnel in this area, so that they can detect and prevent the entry of invasive species in a timely manner." For this reason, the regional minister explained, workshops were held on all the islands: on September 4 in Ibiza, on September 11 in Menorca, and on September 18 and 25 in Mallorca, with the participation of personnel from the ports of Palma, Alcudia, Mahón, Ibiza, and La Savina.

The Government reminds that the second period for the entry of olive trees, carob trees, and holm oaks with a basal perimeter of more than 40 centimeters into the ports of the Balearic Islands ends on October 15. Outside of these periods (April 1 – June 15 and September 15 – October 15), the entry of these trees is prohibited (it can only be authorized exceptionally and with certification of biosecurity measures).

Along these lines, the Director General of Natural Environment and Forest Management, Anna Torres, also pointed out that "in addition, nursery owners and commercial establishments are required to install snake traps between April 1 and October 30, as a preventative measure to reduce the risk of spread." Thus, Torres explained, the Government's Environmental agents carried out an inspection campaign this summer to ensure compliance with the regulations, reviewing both the entry of trees outside the operating period and the installation of traps in nurseries.

Comprehensive Strategy

As part of the comprehensive snake control strategy developed by the Directorate General for the Natural Environment and Forest Management, the regional government has allocated €2.5 million (the largest investment to date) to combat invasive snakes in Ibiza and Formentera, almost triple the amount invested between 2020 and 2023. This effort has resulted in the installation of more than 2,600 cages, 35% more than in 2024 and four times more than five years ago, as well as an increase in the COFIB staff, with a total of 13 technicians dedicated exclusively to this task. Minister Simonet emphasized that "all these actions are part of the comprehensive strategy being implemented by the Regional Ministry, with a plan that includes more actions and resources than ever to address the fight against invasive species."

Furthermore, within the framework of the strategy, 18 urban reserves for the Pityusic wall lizard have been created in parks and educational centers, and a joint project has been launched with the Barcelona Zoo Foundation to ensure the ex situ conservation of the Balearic Islands' endemic lizards. The construction of four safe havens for the reintroduction of captive-bred lizards is planned for the public estates of Can Marines and Sa Coma.

Furthermore, for the first time this year, the campaign will be extended, with some of the traps remaining active year-round, both on the main islands and on the islets. Action on the islets has also been strengthened with the Ministry's own vessel, increasing surveys in these areas to detect the possible presence of snakes or changes in lizard populations, with the installation of more than 60 capture traps.

PERIÓDICO de IBIZA Y FORMENTERA

Refuerzan la formación del personal portuario para prevenir la entrada de serpientes invasoras en las Islas Baleares

Port personnel training strengthened to prevent the entry of invasive snakes into the Balearic Islands

The Directorate General of Natural Environment and Forest Management has provided training sessions for Port Police officers to ensure compliance with the decree regulating the protection of the Pityusic and Balearic lizards.



R.I. | Ibiza | 25/09/25 14:52

The Regional Ministry of Agriculture, Fisheries, and the Natural Environment, through the Directorate General for the Natural Environment and Forest Management, concluded its training sessions this Thursday in Palma for staff of the Port Authority of the Balearic Islands (APB) to ensure and strengthen control and biosecurity measures in response to the risk of invasive snakes entering the ports.

The courses, taught by technicians from the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib), provided Port Police officers with practical tools to recognize trees affected by the regulations, identify possible presence of snakes in transported cargo, and understand the operating periods and exceptions.

The regional minister, Joan Simonet, emphasized that control and inspection measures at ports are the responsibility of the Civil Guard, responsible for border control, and also of the APB, as the entity responsible for managing the public port domain.

"Collaboration with the APB is key to protecting the biodiversity of our islands. These training activities are essential to strengthening the knowledge of port staff in this area, so that they can detect and prevent the entry of invasive species in a timely manner," stated Simonet.

For this reason, the Minister explained, the workshops were held on all the islands with the participation of staff from the ports of Palma, Alcudia, Mahón, Ibiza, and La Savina.

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Along these lines, the Director General of Natural Environment and Forest Management, Anna Torres, also pointed out that nursery owners and commercial establishments are also required to install snake traps between April 1 and October 30, as a preventative measure to reduce the risk of spread.

Thus, she added, the Government's Environment agents carried out an inspection campaign this summer to ensure compliance with the regulations, reviewing both the entry of trees outside of the operating period and the installation of traps in nurseries.

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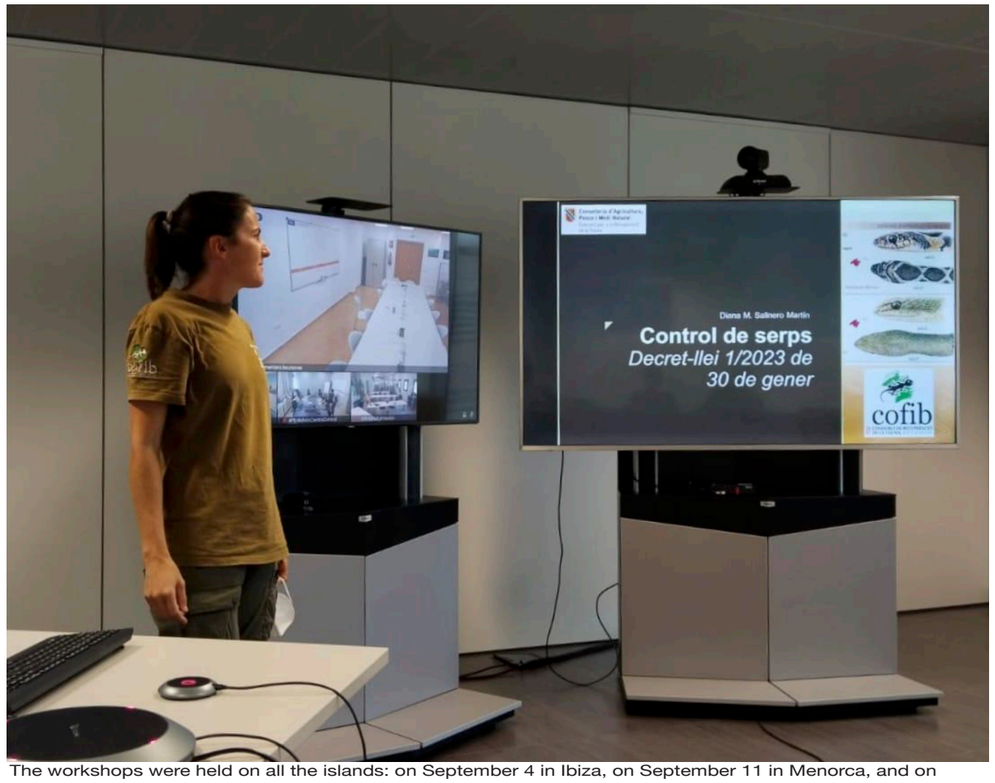

The workshops were held on all the islands: on September 4 in Ibiza, on September 11 in Menorca, and on September 18 and 25 in Mallorca, with the participation of personnel from the ports of Palma, Alcudia, Mahón, Ibiza, and La Savina. Photo: CAIB

The construction of four safe havens for the reintroduction of captive-bred lizards is planned on the public estates of Can Marines and Sa Coma.

Furthermore, for the first time, the campaign will be extended this year, and some of the traps will remain active year-round, both on the main islands and on the islets.

Actions on the islets have also been strengthened with the Ministry's own vessel, increasing surveys in these areas to detect the possible presence of snakes or changes in lizard populations, with the installation of more than 60 capture traps.

Regarding Mallorca, the Government has increased trapping and monitoring efforts, focusing efforts on areas of special biological importance, such as islets and protected natural areas, where a total of 375 traps have been installed during the current campaign.

27-09-2025 - Toni P. - Fifty people protest in Sant Josep in defense of cats (control)

PERIÓDICO de IBIZA Y FORMENTERA

Medio centenar de personas protestan en Sant Josep en defensa de los gatos

Fifty people protest in Sant Josep in defense of cats

The protest calls for greater transparency and enforcement of regulations.



During the demonstration in front of Sant Josep Town Hall | Photo: Toni P.

Toni P. | Ibiza | 27/09/25 6:48

Around fifty people gathered this Friday at noon in front of Sant Josep City Hall to demand compliance with Law 7/2023 on the protection of animal rights and welfare, especially regarding the management of feline colonies. The protesters demanded "more transparency and real enforcement of the regulations" from the local government.

During the protest, shouts of "Resignation, Víctor Colomar!" were heard, referring to the coordinator of the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB) in Ibiza. Colomar recently posted several controversial comments on social media. He referred to community cat advocates as "cat god morons" and stated that "on an environmentally healthy island, there shouldn't be a single cat wandering around the ecosystems." His statements were considered offensive by animal rights groups and were the trigger for this Friday's protest.

Among the attendees were numerous colony feeders, who also criticized the management of Natura Park, the entity in charge of the Ibiza Domestic Animal Protection Center (CEPAD) in Sant Josep. According to Olivier, one of the spokespersons, "80% of the cats that enter Natura Park end up dying, while in Sa Coma, 80% were adopted." He also called for "more transparency in the numbers and management," asserting that "the contractual obligation to have volunteers is not being fulfilled."

The groups recall that, according to data reported by PACMA, between January 2023 and June 2024, 118 of the 146 cats admitted to this center died, representing a mortality rate of nearly 81%.

Another criticism was directed at the Sant Josep City Council. "According to them, there is no registered feline colony in the municipality, but we have documented up to 25," stated Olivier. The lack of an official census of colonies is, according to the protesters, a sign of non-compliance with Animal Welfare Law 7/2023, which requires local councils to apply the CER (capture, sterilize, and return) method as a population control system.

Regarding the impact of cats on the Ibizan lizard, an endemic species endangered by the spread of snakes, opinions among those gathered varied: from those who assert that "if cats are well-fed, they don't attack lizards" to those who maintain that "cats and lizards have always coexisted in harmony until the snakes arrived."

Maximum tension

The most tense part of the protest came when the issue of sterilization was addressed. Some of the protesters argued that "it's the only ethical way to prevent reproduction and ensure the colonies gradually disappear," while another group flatly rejected this measure. At one point in the discussion, they accused each other of "stealing cats to neuter them," and cries of "murderers" were heard, reflecting the divisions within the feline advocacy movement.

The City Council of expressed its respect "because we live in a democratic country where everyone has the right to demonstrate freely."

Partido Animalista PACMA

Party for the Animals
International movement

27-09-2025 - David Ventura - Opposition from Consell technicians frustrated a campaign to eradicate snakes in Ibiza in 2015. (control)

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Eivissa i Formentera

La oposición de técnicos del Consell frustró en 2015 una campaña para erradicar serpientes en Ibiza

Opposition from Consell technicians frustrated a campaign to eradicate snakes in Ibiza in 2015



Miquel Vericad, during his time as island councilor for the Environment. / CIE

Por **David Ventura** — 27 septiembre 2025 en **Local**

Who killed the *Podarcis pityusensis*? The easy answer is "snakes." Now, in 2025, no one doubts that not acting in time to confront the snake invasion had a very high cost. However, ten or fifteen years ago, not everyone was so sure.

This week, biologist Antònia Maria Cirer published a long letter in which she bitterly lamented all the wasted time and the erroneous policies pursued on this issue by the Balearic Ministry of the Environment, which initially downplayed the arrival of the snakes and later ignored all the warnings of the devastating impact they would have on our lizards.

Another person who experienced and suffered this was Miquel Vericad, who served as Minister of the Environment on the Ibiza Council from 2015 to 2018. Vericad currently lives in Mallorca, where he works as an environmental agent. He recalls the internal and external opposition he encountered in his fight against the snake invasion, and the futile struggle he waged with the Balearic Government to restrict the entry of olive trees into Ibiza.

“The first snake captures occurred in the early 2000s, when there was a radiation of these animals around some of the island's nurseries. The origin and mechanism of their entry into the island are clearly known. Measures were not taken until 2012 because snakes were protected at the state level,” Vericad recalls.

When the Balearic snake populations were removed from the list of protected species, the Consell was given a clear path to action. But this is where the drama begins: “In 2015, we attempted a snake eradication campaign, and I encountered enormous internal opposition from some Consell technicians who refused to assume their responsibilities regarding hunting,” Vericad explains.

In his opinion, this refusal made no sense: "We have scientific literature stating that snakes cause damage to game. We have hunting jurisdiction. But prominent officials issue various reports, contrary to all legal and regulatory logic, stating that we are not competent, which caused me enormous disappointment."

“The hunting law allows for the control of non-game species that cause harm to game species. Since snakes have no longer been protected since 2012, we can act. The horseshoe snake's diet includes partridges and rabbits. There is scientific literature to support us, we have the authority, we have the articles of the hunting law that allow us to carry out snake control, but those technicians flatly refused,” Vericad explains.

The clash with the workers at the same facility reached very tense moments, as the former minister recalls: “One day I was about to bring them a snake and throw it on the table. Imagine how upset I was.”

What solution did the then Minister of the Environment find? He tells us himself, and it basically boils down to just getting by: “I found ways to act, and halfway through my term, I began to take action in my own way. I acted as if I had never read that report.” Vericad also points out that despite opposition from some Consell technicians, the Department of Environment supported their point of view: "The Consell's Environmental technicians developed the first snake trap, perfected it, and we began distributing them to farmers' cooperatives. We distributed the first traps through the Consell."

The Mallorcan Friend

These weren't the only setbacks Vericad suffered during his stormy tenure in the Consell. As if that weren't enough, he had to battle the incomprehension of the Balearic Ministry of the Environment. For years, he tried unsuccessfully to get the regional government to approve a restriction on the entry of olive trees into the Pitiusas. Using the excuse that European regulations prevented barriers to commercial products, no one moved. However, in 2023, mysteriously, these obstacles disappeared, and the regional government finally imposed the first restrictions. Wonderful news that, unfortunately, came a little too late.

“Between 2015 and 2018, we repeatedly asked the Balearic Government to exercise its powers to control invasive species. Very late, efforts to capture snakes were initiated through Cofib (Consortium for the Recovery of Fauna of the Balearic Islands), and an exceptionally high number were caught. The problem is that there is no strategy. I think the Government is unclear about whether it is pursuing an eradication or containment policy.”



Three snakes caught in a trap. / Photo courtesy of Dean Gallagher

Regarding the delay in implementing regulations to control the arrival of olive trees, Vericad believes this shortsightedness has a very clear explanation: “It's Mallorcan centralism. When do they start taking measures? Well, at the moment when the snakes also appear in Mallorca and they get scared. That's when they realize we're facing a serious problem.”

Despite the necessity of the measure, Vericad believes that limiting the entry of olive trees has little practical effect: “The control mechanisms are very lax. There is no traceability of the olive trees arriving at the nurseries. The degree of compliance with this decree has not been verified.”

The former regional minister shares Antònia Maria Cirer's pessimistic analysis, but, as Gramsci said, in contrast to the pessimism of intelligence, it is necessary to provide the optimism of will. “There are many people involved, providing resources, setting traps, many associations and individuals. We have an Ibizan woman, Aina Torres, who is now the Director General of Natural Environment and Forest Management for the Catalan government, and who is very aware of the problem and is doing everything in her power to prevent the entry of snakes. Many people have gotten involved and fought this, but there have been others, fewer in number, who haven't helped,” he comments, although he can't avoid a hint of bitterness: “Everything costs more now. When action should have been taken, it wasn't. In biological invasions, the first moments are very important. We arrived too late.”

DIARIO de IBIZA

El Govern y el Zoo de Barcelona refuerzan la cría en cautividad de la lagartija pitiusa ante la amenaza de serpientes invasoras

The Government and Barcelona Zoo strengthen captive breeding of the Pityusic wall lizard in the face of the threat of invasive snakes

The presence of invasive snakes on the islets of Ibiza puts the species at risk, and the Government is expanding the conservation project with Barcelona Zoo.



The Government and the Barcelona Zoo expand the conservation project for the Pityusic wall lizard.

Redacción Ibiza

Ibiza Actualizada 29 SEPT 2025 14:59

The Regional Ministry of Agriculture, Fisheries, and the Natural Environment, through the Directorate General for Natural Environment and Forest Management, and the Barcelona Zoo Foundation agreed today to take another step forward in the protection of the Pityusic wall lizard (*Podarcis pityusensis*). Both institutions will begin a new phase of the breeding project, which involves the ex situ breeding of specimens from the islets of Ibiza, which are particularly threatened by the presence of invasive snakes. The decision, taken during a technical meeting held today at the Zoo, consolidates a pioneering strategy that combines conservation, research, and direct action on the territory.

It is worth noting that this pilot project for the ex situ breeding of the Pityusic wall lizard aims to ensure the conservation of this endemic species and preserve the biodiversity of the Balearic Islands. Therefore, 17 healthy and genetically diverse specimens were captured (ten from Ibiza and seven from Formentera), which were transferred to the Barcelona Zoo and constituted the first breeders of the ex situ populations. Thus, the first offspring were born last July: twelve lizards from five different clutches and with an incubation period of 42 days. A success that confirmed the viability of the project.

In this regard, Anna Torres, Director General of Natural Environment and Forest Management, who attended today's meeting in Barcelona, stated that "the detection of invasive snakes on islets near the coast of Ibiza poses a serious threat to the Pityusic wall lizard, which has no defense mechanisms against this predator. This new scenario has prompted the expansion of the project, with the aim of preventing the loss of particularly vulnerable populations."

Thus, Torres emphasized that "the expansion of the project allows us to act early in the face of a real threat and do so with the support of a leading institution like the Barcelona Zoo." The Director General also emphasized that "the Pityusic wall lizard is much more than an endemic species: it is a symbol of the Pitiusas and a key component of the island's ecosystems. Therefore, preserving it is not only an environmental issue, but also a cultural and identity issue."

Torres emphasized that we are facing an unprecedented challenge: "With this project, we reinforce the idea that conservation is possible if there is political will, scientific knowledge, and institutional collaboration."

For his part, the director of the Barcelona Zoo, Sito Alarcón, praised the agreement and reiterated the center's commitment to managing lizard populations, emphasizing that this is one of the most significant conservation programs the Zoo is currently developing outside of Catalonia.



Anna Torres and Sito Alarcón. Source BSM.

29-09-2025 - R.I - Barcelona Zoo will also breed lizards from the islets of Ibiza to combat the threat of invasive snakes (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

El Zoo de Barcelona también criará 'sargantanes' de los islotes de Ibiza ante la amenza de las serpientes invasoras

Barcelona Zoo will also breed lizards from the islets of Ibiza to combat the threat of invasive snakes

The two institutions will begin a new phase of action within the framework of this pilot plan, which includes the ex situ breeding of lizard specimens from the islets of Ibiza.



The decision, taken during a technical meeting held this Monday at the Barcelona Zoo, consolidates a pioneering strategy that combines conservation, research, and direct action on the territory. | Photo: CAIB

R.I. | Ibiza | 29/09/25 14:24

The Regional Ministry of Agriculture, Fisheries, and the Natural Environment and the Barcelona Zoo Foundation agreed this Monday to take a further step in the protection of the Pityusic wall lizard (*Podarcis pityusensis*). The two institutions will begin a new phase of the breeding project, which includes the ex situ reproduction of specimens from the islets of Ibiza, which are particularly threatened by the presence of invasive snakes. The decision, taken during a technical meeting held this Monday at the Zoo, consolidates a pioneering strategy that combines conservation, research, and direct action on the territory.

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ZOO Barcelona

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El Govern y el Zoo de Barcelona intensifican la protección de la ‘sargantana’ después de lograr el nacimiento de 12 crías

The Government and Barcelona Zoo are stepping up protection for the sargantana after the birth of 12 babies



Por **Redacción** — 29 septiembre 2025 en **Local**

The Pityusic wall lizard (*Podarcis pityusensis*) conservation project takes a decisive step with the start of a new phase of ex situ breeding, which seeks to ensure the survival of this endemic species threatened by invasive snakes.

The Regional Ministry of Agriculture, Fisheries and the Natural Environment, through the Directorate General for the Natural Environment and Forest Management, and the Barcelona Zoo Foundation agreed today to expand this pilot plan, which combines research, conservation, and direct action on the ground. The decision was made during a technical meeting at the Zoo facilities, consolidating a pioneering strategy for protecting the biodiversity of Ibiza and Formentera.

The project has already shown promising results. After capturing 17 healthy and genetically diverse specimens—ten from Ibiza and seven from Formentera—and transporting them to the Barcelona Zoo, the first twelve hatchlings from five different clutches were born in July, with an incubation period of 42 days. This initial success confirmed the viability of the program and



Project presentation at the Barcelona Zoo. / CAIB

underscores its importance in preserving the species.Anna Torres, Director General of Natural Environment and Forest Management, noted that "the presence of invasive snakes represents a serious threat to the Pityusic wall lizard, which lacks natural defenses against this predator. Expanding the project allows us to act early and protect particularly vulnerable populations."

Torres also emphasized that "the Pityusic lizard is not just an endemic species: it is a symbol of the Pitiusas and a key element of our island ecosystems. Preserving it is an environmental, cultural, and identity responsibility." He emphasized: "This project demonstrates that conservation is possible when political will, scientific knowledge, and institutional collaboration are combined."

For his part, Sito Alarcón, director of the Barcelona Zoo, reiterated the center's commitment to managing these populations and hailed this program as one of the most significant the Zoo currently operates outside of Catalonia.



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Escuela Politécnica Superior de Gandia

Plan de recuperación de la lagartija de las Pitiusas (Podarcis pityusensis)

Trabajo Fin de Grado

Grado en Ciencias Ambientales

AUTOR/A: Marín Guasch, Jordi

Tutor/a: Lucio Puig, Juan Pablo

CURSO ACADÉMICO: 2024/2025

DIARIO de IBIZA

Un experto en serpientes de Ibiza recomienda revisar trasteros y garajes tras las fuertes inundaciones

An Ibiza snake expert recommends checking storage rooms and garages after the severe flooding

Dean Gallagher finds a 1.70-meter snake in a home's laundry room after the flood.



Dean Gallagher with a 1,70 m. snake / D.G

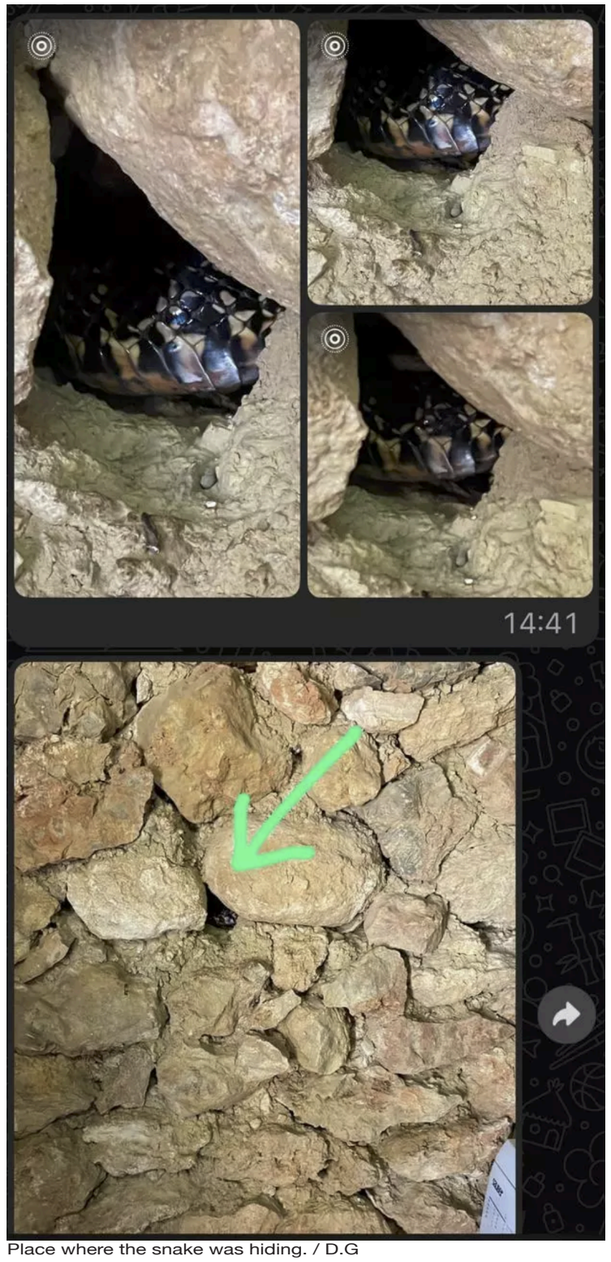


Marisol Plaza Sánchez

Ibiza Actualizada 04 OCT 2025 10:11

A country house laundry room provided refuge for a 1.70-meter snake after the Ibiza raid. Snake expert Dean Gallagher went to the home this Friday after being alerted to the snake's presence and now warns of the possibility that some snakes are seeking refuge in unusual places such as laundry rooms, storage rooms, garages, or exterior structures of homes.

Gallagher shared his experience with this newspaper after receiving a call from a woman who lives on a rural property near Sant Miquel, in northern Ibiza. According to him, she spotted a large snake, specifically 1.70 meters long, inside the house's laundry room. When surprised, the animal burrowed deep into a wall, leaving only part of its tail visible. "When we arrived, we could barely see it. We had to carefully remove a stone to get to the snake," explains the specialist, who adds that the extraction was "particularly delicate."



Place where the snake was hiding. / D.G

Gallagher, who has been involved in wildlife rescue and management on the island for years, explains: "I have a theory that snakes are looking for places like laundromats to take refuge after heavy rains. It would be a good idea for people to check their storage rooms, garages, and outbuildings."

If you encounter a snake, the expert advises: "You have to stay calm, not make any noise or bang on the wall, and wait for us to arrive to try to remove it."

The presence of snakes in domestic environments is not common, but it does increase after extreme weather events, when the animals seek refuge in dry, sheltered areas. Therefore, Gallagher emphasizes the importance of checking and securing low-traffic areas in the home to avoid unexpected encounters.

04-10-2025 - Vicent Ribas - A nearly two-meter-long snake was caught on an Ibiza golf course: it attacked a player before being shot. (control)

noudiari.es
Eivissa i Formentera

Cazan una serpiente de casi dos metros en el campo de golf de Ibiza: atacó a un jugador antes de ser abatida

A nearly two-meter-long snake was caught on an Ibiza golf course: it attacked a player before being shot



Por **Vicent Ribas** — 4 octubre 2025 en **Local**

A nearly two-meter-long snake was caught this Friday at the Ibiza golf course in Cala Llonga, after causing a tense situation with several users of the course. The reptile, far from fleeing upon noticing the human presence, became aggressive and even attempted to bite a man, who eventually beat it to death with a golf club.

The incident occurred on one of the course's fairways, where several witnesses observed the large specimen slithering through the grass. The animal's sudden attack on one of the players sparked panic and ended with a confrontation between the man and the snake.

📸 The images accompanying this text clearly show the unusual size of the specimen, a length uncommon for this species in other areas of Spain.

🏝️ The proliferation of snakes in Ibiza, a growing threat

This event once again puts the spotlight on the increasing presence of snakes in Ibiza, an environmental problem that seriously affects the local ecosystem. Lacking natural predators on the island and with abundant food, these reptiles reach exceptional sizes and become increasingly aggressive.

One of the most alarming effects of this invasion has been the drastic reduction in the population of native lizards, especially the endangered *Podarcis pityusensis*.

🔍 The proliferation of snakes in Ibiza has been the subject of multiple warnings from biologists and conservation associations, who warn of the lack of effective control over this invasive species.

⚠️ A problem that goes beyond a scare

Although this incident has not left anyone injured, it once again demonstrates that coexistence with invasive wildlife in public or sports spaces on the island represents a real risk to safety. In addition to the ecological impact, more and more encounters are being reported in urban areas, gardens, schools, and, as in this case, sports facilities.

📌 The snake was finally killed on-site, but the debate over its control and eradication in Ibiza remains open.



08-10-2025 - Redacción Digital - The fight against snakes in Ibiza and Formentera is a model for the Government to eradicate snakes ..... (control)

DIARIO de IBIZA

La lucha contra las serpientes en Ibiza y Formentera, modelo del Govern para erradicar los ofidios en Mallorca y Menorca

The fight against snakes in Ibiza and Formentera is a model for the Government to eradicate snakes in Mallorca and Menorca

All snakes introduced into the Balearic Islands will be declared invasive.



White snakes have also arrived in Mallorca. / DM

Redacción Digital

Ibiza Actualizada 08 OCT 2025 18:51

The Balearic Government has proposed to the Ministry for Ecological Transition and the Demographic Challenge that it amend the Spanish catalog of invasive alien species so that all introduced snakes are considered invasive species throughout the Balearic Islands.

The objective, according to the Ministry of Agriculture, Fisheries, and the Environment, is to technically and legally strengthen the control measures already underway in Mallorca, so that they can be integrated into the eradication plans and campaigns currently being implemented in Ibiza and Formentera.

The Directorate General for Natural Environment and Forest Management has allocated €2.5 million, the largest investment to date, to the fight against invasive snakes in Ibiza and Formentera, almost triple the amount invested between 2020 and 2023. This effort has allowed the installation of more than 2,600 traps, 35% more than in 2024, and the expansion of the Cofib team by 13 specialized technicians.

Furthermore, 18 urban reserves for the Pityusic wall lizard have been created in parks and educational centers, and a joint project has been launched with the Barcelona Zoo Foundation to ensure the conservation of endemic lizards outside the islands. The construction of four safe refuges for the reintroduction of captive-bred specimens is also planned on the public estates of Can Marines and Sa Coma.

The proposal excludes the islands' native species: the garrigue snake (*Macroprotodon mauritanicus*) and the water snake (*Natrix maura*), present in Mallorca and Menorca, as well as the white snake (*Zamenis scalaris*).

Major ecological impact

A decree already included invasive snakes in the catalog in 2013, but only applicable to Ibiza and Formentera, where they arrived at the beginning of the century through the importation of olive trees and other ornamental trees. Since then, their expansion has caused a major ecological impact, especially on the Pityusic wall lizard (*Podarcis pityusensis*), an endemic and highly vulnerable species.

The regional government has intensified control efforts in Mallorca, where 375 traps have currently been set up in areas of special biological value, such as islets and protected natural areas.

Although densities on the largest island have not yet reached the levels detected in the Pitiusas, the proliferation of snakes—primarily the horseshoe snake (*Hemorrhois hippocrepis*), but also the white snake (*Zamenis scalaris*), the Montpellier snake (*Malpolon monspessulanus*), and the green and yellow snake (*Hierophis viridiflavus*)—represents a growing threat to the native fauna.

The regional government warns that their prey range is very wide, ranging from small mammals to birds, and that they could affect protected species such as the Balearic wall lizard (*Podarcis lilfordi*), the ferreret (*Alytes muletensis*), and the European storm petrel (*Hydrobates pelagicus*).

In September, the Ministry opened the prior public consultation period for the future Ministerial Order that will amend the catalog. This process will continue until October 20th before it is submitted to the public information process and final approval in the Official State Gazette (BOE).

PERIÓDICO de IBIZA Y FORMENTERA

El Govern solicita al Estado ampliar la catalogación de las serpientes introducidas como especies exóticas invasoras en Baleares

The Government requests the State to expand the classification of introduced snakes as invasive alien species in the Balearic Islands

The objective of the request to the Ministry is to strengthen the control measures already carried out by the Regional Ministry in Mallorca, both technically and legally, and to integrate them into control and eradication plans and campaigns, as is the case in Ibiza and Formentera.



A captured snake | Photo: CAIB

R.I. | Ibiza | 08/10/25 12:18

The Government has proposed to the Ministry for Ecological Transition and the Demographic Challenge that it amend the Spanish Catalogue of Invasive Exotic Species so that all introduced snakes from the colubrid family are considered invasive throughout the Balearic archipelago, with the exception of the already recognized native species: the garrigue snake (*Macroprotodon mauritanicus*) and the water snake (*Natrix maura*) in Mallorca and Menorca, and the white snake (*Zamenis scalaris*), also in Menorca.

Expanding the cataloging to all the islands would allow the control actions already carried out by the Government in Mallorca to be further strengthened technically and legally. In this way, they would be integrated into control and eradication plans and campaigns, as is already the case in Ibiza and Formentera, which are also being developed within the framework of the

Strategy for the management, control, and possible eradication of invasive snakes on islands, approved by the Ministry for Ecological Transition and the Demographic Challenge in July 2018.

Royal Decree 630/2013, of August 2, already included these species in the Catalog, but only applicable to Ibiza and Formentera, where they arrived at the beginning of the century through the importation of olive trees and other ornamental trees. Since then, invasive snakes have caused a serious ecological impact, especially on the Pityusic wall lizard (*Podarcis pityusensis*), an endemic and highly vulnerable species. It should be noted that this regulation also granted them invasive species status on the uninhabited islets off the Balearic coast, but not on the islands of Mallorca and Menorca.

In Mallorca, although the density levels observed in Ibiza and Formentera have not yet been reached, the proliferation of snakes—especially the horseshoe snake (*Hemorrhois hippocrepis*), but also the white snake (*Zamenis scalaris*), the Montpellier snake (Malpolon monspessulanus), and the green and yellow snake (*Hierophis viridiflavus*)—represents a growing threat. The predatory pressure of these species can seriously affect native wildlife, including protected species such as the Balearic wall lizard (*Podarcis lilfordi*) on the islets, the ferreret (*Alytes muletensis*) in the Serra de Tramuntana, and the European storm petrel (*Hydrobates pelagicus*) in breeding colonies. However, the prey spectrum of invasive snakes is very broad and can range from small mammals to passerine birds.

However, the Government has already increased trapping and control activities in Mallorca, concentrating efforts in areas of special biological importance, such as islets and protected natural areas, where a total of 375 traps have been installed during the current campaign.

Process underway

Last September, the Ministry opened the prior public consultation period on the draft Ministerial Order that will amend the Catalogue, a period that will end on October 20th. Subsequently, the public information process will be opened before final approval and publication of the regulation in the Official State Gazette (BOE).

Comprehensive control and conservation strategy

The fight against invasive snakes is part of a comprehensive strategy that not only includes their control, but also specific actions for the protection and conservation of lizards.

In this regard, within the framework of this strategy developed by the Directorate General for the Natural Environment and Forest Management, the Government has allocated €2.5 million—the largest investment made to date—to the fight against invasive snakes in Ibiza and Formentera, almost triple the amount invested between 2020 and 2023. This effort has resulted in the installation of more than 2,600 cages, 35% more than in 2024 and four times more than five years ago, as well as an increase in the COFIB staff, with a total of 13 technicians dedicated exclusively to this task.

Eighteen urban reserves for the Pityusic wall lizard have also been created in parks and educational centers, and a joint project has been launched with the Barcelona Zoo Foundation to ensure the ex situ conservation of endemic Balearic lizards. The construction of four safe havens for the reintroduction of captive-bred lizards is planned on the public estates of Can Marines and Sa Coma.

Furthermore, for the first time, this year the campaign will be extended, and some of the traps will remain active year-round, both on the main islands and on the islets. Actions on the islets have also been strengthened with the Regional Ministry's own vessel, increasing surveys in these areas to detect the possible presence of snakes or changes in lizard populations, with the installation of more than 60 capture traps in the Pitiusas and more than 100 on the islets of Mallorca.

All these actions reinforce and reaffirm the Government's commitment to the fight against invasive snakes, placing the conservation and protection of biodiversity as one of the central pillars of its environmental policy.

Opinión | Es Mirador



Es Mirador

Es Mirador | Ibiza | 10/10/25 3:58

The Regional Ministry of Agriculture, Fisheries and the Natural Environment has asked the Ministry for Ecological Transition to amend the Spanish Catalogue of Invasive Alien Species so that some introduced snake species, all from the colubrid family, are considered invasive in the islands. This is intended to prevent the serious environmental damage that these snakes have already caused among the lizard population in the Pitiusas. A request that, by all accounts, is at least a decade late. And the Ministry's response is still pending.

Waiting to see how the umpteenth irresolvable PP-Vox crisis ends

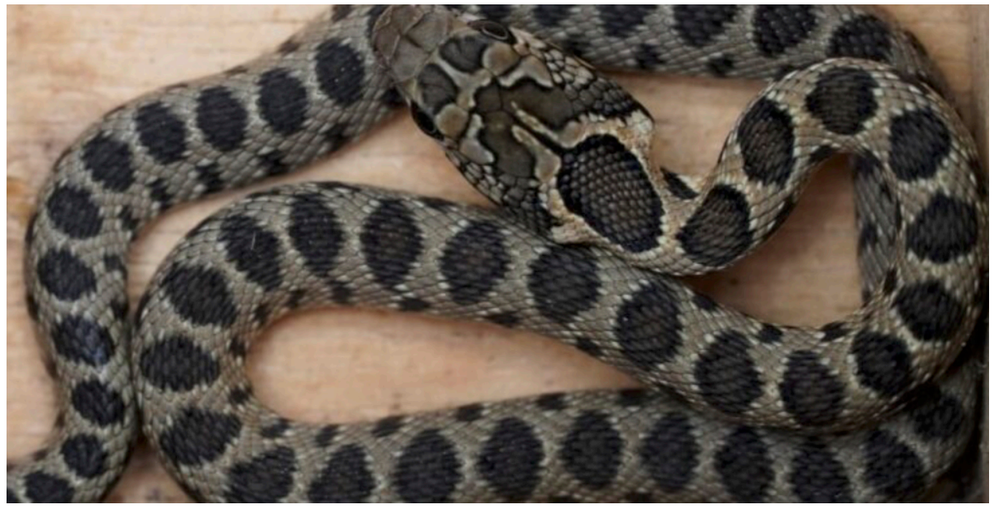
Less than two and a half years into the legislature, it is difficult to calculate the irreconcilable crises that have erupted between the PP and Vox. The two parties do not trust each other, and Vox has acted disloyally on almost every occasion, as has now happened with the language. This time, it seems there will be no solution, and it's likely the government won't be able to pass the budget. It's also true that, so far, they've managed to get all the crises under control. We're waiting to see what happens with this one.

08-10-2025 - Redacción - The Government asks the State to expand the cataloging of invasive snakes to stop their spread. (control)

noudiari.es
Eivissa i Formentera

El Govern pide al Estado ampliar la catalogación de serpientes invasoras para frenar su expansión

The Government asks the State to expand the cataloging of invasive snakes to stop their spread



Horseshoe whip snake.

Por **Redacción** — 8 octubre 2025 en **+ Pitiüses**

The Balearic Government has requested that the Ministry for Ecological Transition and the Demographic Challenge extend the classification of introduced snakes as invasive alien species to all the islands of the archipelago. The objective is to technically and legally strengthen the control measures already carried out in Mallorca and consolidate them within official eradication plans and campaigns, as is the case in Ibiza and Formentera.

The request includes all introduced snakes from the colubrid family, with the exception of the native species: the garrigue snake (*Macroprotodon mauritanicus*) and the water snake (*Natrix maura*), present in Mallorca and Menorca, and the white snake (*Zamenis scalaris*), also found in Menorca.

Royal Decree 630/2013 already declared these species invasive, although it only applies to Ibiza and Formentera, where they arrived at the beginning of the century through the importation of olive and ornamental trees. Since then, invasive snakes have had a significant ecological impact, especially on the Pityusic wall lizard (*Podarcis pityusensis*), an endemic and vulnerable species currently in danger of extinction.

In Mallorca, the proliferation of snakes such as the horseshoe snake (*Hemorrhois hippocrepis*), the Montpellier snake (*Malpolon monspessulanus*), and the green and yellow snake (Hierophis viridiflavus) is of increasing concern to environmental experts, who warn of the risk to protected species such as the Balearic wall lizard, the ferreret, and the European storm petrel. The Government currently maintains 375 active traps in areas of special ecological value.

Administrative process underway

In September, the Ministry opened the prior public consultation period to modify the Spanish Catalogue of Invasive Alien Species. This process, which ends on October 20, precedes the public information process before final approval and publication in the Official State Gazette (BOE).

Comprehensive strategy against invasive snakes

The fight against invasive snakes is part of a comprehensive government strategy that combines population control with the conservation of native lizards. In Ibiza and Formentera, the government has allocated €2.5 million—its largest investment to date—to strengthen snake trapping and monitoring, quadrupling the resources from five years ago. Currently, more than 2,600 trap cages are installed, and a team of 13 COFIB technicians is working exclusively on the campaign.

In addition, 18 urban reserves for the Pityusic wall lizard have been created in parks and educational centers, and a project is being developed with the Barcelona Zoo Foundation to breed and reintroduce specimens in safe havens in Can Marines and Sa Coma.

For the first time, some of the traps will remain active year-round on both the main islands and the islets, where more than 160 capture devices have been installed. These actions consolidate the government's commitment to the protection of the Balearic Islands' biodiversity and, especially, to the preservation of the native fauna of Ibiza and Formentera.

PERIÓDICO de IBIZA Y FORMENTERA

El IES Xarc impulsa proyectos ecoambientales para conservar la lagartija pitiusa y el entorno marino

The Xarc High School promotes eco-environmental projects to conserve the Pityusic lizard and the marine environment



Students working on the project | Photo: IES Xarc

R.I. | Ibiza | 16/10/25 19:56

The Eco-Environmental Projects at IES Xarc have completed a series of significant initiatives, with the direct participation of students from secondary school, high school, and vocational training courses. These efforts focus on fostering respect for the school environment and promoting good environmental practices, as well as protecting the Pityusic wall lizard (*Podarcis pityusensis*).

Much of the work has been devoted primarily to protecting this endemic lizard, which is threatened by invasive snakes. The goal is to increase population density and raise awareness about the danger of invasive species.

The actions carried out include, first, the construction of artificial shelters to promote the survival of the Podarcis pityusensis. These shelters were made using recycled fruit boxes filled with plant matter and covered with a layer of cement that insulates and protects. They have 12-millimeter diameter perforations that allow the lizards access, protecting them from potential predators such as the horseshoe snake and the white snake.

The shelters have been installed in selected areas in the municipalities of Santa Eulària and Sant Antoni. In the future, camera traps will be used to evaluate the shelters' effectiveness, and the data will be evaluated by students in the fourth year of secondary school and first year of high school.

In addition, to improve the lizard's food resources, a project has been carried out that includes the planting of aromatic plants and the construction of an insect hotel, thus promoting biodiversity and food availability. The lizard's diet is primarily omnivorous, including small insects and plant foods such as nectar, pollen, fruits, leaves, and seeds.

Finally, the construction and installation of double-funnel traps has been proposed to promote the survival of the sargantana in the face of the threat posed by snakes.

Marine Awareness and Sustainability Projects

The IES Xarc has also addressed the issue of pollution and sustainability through several initiatives such as 'Here Comes the Sea, No More Fish' and 'The Cystoseira as a Bioindicator'.

The project has the collaboration of the Santa Eulària City Council, COFIB, the environmental commission of the IES Xarc, the CEP of Ibiza, the Sant Antoni City Council, the APS Salvem Sa Badia de Portmany, and the school's students.



26-10-2025 - Vincent Ribas - Horseshoe snakes are changing their prey in Ibiza and are now attacking domestic birds. (snakes)

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Eivissa i Formentera

El Govern pide al Estado ampliar la catalogación de serpientes invasoras para frenar su expansión

Horseshoe snakes are changing their prey in Ibiza and are now attacking domestic birds



Por **Vicent Ribas** — 26 octubre 2025 en **Local**

The number of horseshoe snakes continues to grow in Ibiza, and with it, their presence is increasingly close to homes. After wiping out a large portion of the island's lizards, their main food source, they are now looking for new prey: birds.

Last Friday, around 1 p.m., a resident of the Can Mariano d'en Fita neighborhood in Sant Jordi, got a big scare when she went out onto her terrace and discovered that her canary wasn't singing. As she approached the cage, she saw a snake eating it. They managed to kill the reptile with broomsticks, although the bird could not be saved. Since then, traps have been set up on the property to try to capture more specimens.

Similar cases have also occurred in the Sant Antoni area, where several people have lost their canaries to attacks by these invasive snakes.

According to Dean Gallagher, an expert in the control of this species in Ibiza, known as the island's "snake catcher," garter snakes find no obstacle in the cages of domestic birds. "They can squeeze through the bars without difficulty, and are also capable of climbing smooth walls or lowering themselves from ceilings," Gallagher points out.

The specialist insists that traps are the only effective method for capturing these reptiles and recommends that residents not remove them in winter, as the snakes remain active due to the unusually high temperatures for this season.

The spread of this invasive species also poses a danger to the island's wildlife. With fewer lizards available—their population has fallen by more than 50% in the last 14 years—the snakes are increasingly attacking small birds, putting species that live in protected areas such as Ses Salines and Ses Feixes at risk.

The arrival of horseshoe snakes to Ibiza dates back to the early 2000s, when they began entering the island hidden among ornamental olive trees imported for country house gardens. Since then, they have found the island an ideal breeding habitat, with no natural predators to control their population.

Gallagher emphasizes that he continues to offer his help to neighbors in need, both by setting traps and by advising them on what to do if they detect snakes on their properties.

PERIÓDICO de IBIZA Y FORMENTERA

Experta en biología alerta: la desaparición de lagartijas en Ibiza acarrea un aumento del peligroso escarabajo perforador

Biology expert warns: the disappearance of lizards in Ibiza is leading to an increase in the dangerous bark beetle

The snake invasion is decimating the lizard population, natural predators of this dangerous beetle.



Archive image of the wood-boring beetle *Tomicus destruens* | Photo: CAIB

Jerónimo Marín | Ibiza | 31/10/25 17:05

Dr. Antònia Maria Cirer Costa (Ibiza, 1957), a biologist, is a leading authority on the natural environment of the Pitiusas Islands, particularly the common lizard (*Podarcis pytiusensis*). Since writing her doctoral thesis on this species, Dr. Cirer Costa has become a staunch advocate for the natural balance of Ibiza and Formentera.

In an interview with the Periódico de Ibiza y Formentera, Dr. Cirer Costa explained the connection between the declining population of endemic lizards, severely threatened by the invasion of snakes, and the increase in the dangerous *Tomicus* beetle, a species that endangers the island's pine forests.

The *Tomicus* beetle damages pine trees by boring galleries under the bark, where the female lays her eggs. The larvae feed on the subcortical part of the pine, disrupting the flow of sap,



which can lead to the weakening or even death of the tree. Young adults feed on the pith of the terminal twigs in the crown, causing them to fall. The proliferation of this beetle poses a serious threat to the forests of the Pitiusas Islands.

“The ecosystem is a network: when you remove one piece, that piece stops doing certain things, and these things can become a problem,” the biologist explains, referring to the disappearance of the lizards and the proliferation of the beetle.

“Or, it stops doing those things, and another species takes its place, so there’s a change in roles. Especially in ecosystems that are, let’s say, limited, like an islet. There are species that until now weren’t dominant in the ecosystem and, suddenly, become key players. For example, the *Tomicus* beetle.”

The biologist explains that the lizards “eat larvae of all kinds of invertebrates,” including the larvae of the *Tomicus* beetle. “*Tomicus* beetles have always been around, but they weren’t a problem.”

The explanation is simple: “For the lizards, the beetle is a meal they’ll never give up.” "If you have hundreds of lizards that come out every morning looking for food, as soon as there are *Tomicus* larvae, the lizards will wipe them all out; for them, it's a feast." The proliferation of invasive snakes, brought from the Iberian Peninsula and hidden in ornamental olive trees for more than a decade, has ended up severely decimating the lizard population, now included on the International Union for Conservation of Nature (IUCN) list of Endangered Species.

The complete lack of oversight by the authorities regarding these ornamental imports has played a key role: institutional negligence has crystallized into the invasion of a species that is now difficult to eradicate.

"There are always some larvae that eventually become adults, and there have always been *tomicus* beetles, but it's one thing to have populations at different trophic levels that are in balance with each other—which is what an ecosystem is—and quite another when the organism that controlled the populations disappears, and this quickly leads to uncontrolled populations that become a plague," explains the biologist, referring to the proliferation of the *Tomicus* plague as a result of the imbalance caused by the disappearance of lizards, which this biologist describes as the "cornerstone" upon which the delicate natural balance of the Pitiusas Islands and the surrounding islets rests.

The authorities, for their part, have tried to address this crisis by deploying pheromone traps to attract the beetles. “In the end, humans have to intervene with chemical solutions. But any intervention is always more harmful than the natural balance,” warns Cirer Costa. “We could end up depending on these stopgap measures permanently, both the pheromone traps for the *tomicus* and the traps for snakes,” she cautions.

“If there isn’t a clear strategy for the present, the medium term, and the long term, the only thing that can be done is traps, traps, and more traps. Individuals can do this. Any more serious action can’t be carried out by the average citizen; it has to be done by a more or less organized institution. That’s what we pay taxes for, by the way,” Cirer Costa reminds us.



06-11-2025 - Redacción Digital - A "decisive" step to save the lizard from the threat of snakes. (conservation)

DIARIO de IBIZA

Paso "decisivo" para salvar a la sargantana frente a la amenaza de las serpientes

A "decisive" step to save the lizard from the threat of snakes

The initiative seeks to coordinate captive breeding and the creation of safe havens for this endemic species.



Two specimens of the Pityusic lizard / CAIB

Redacción Digital

Ibiza Actualizada 06 NOV 2025 15:00

The Balearic Government has launched a working group to coordinate the ex-situ (off-island) conservation of the Ibiza and Formentera lizard (*Podarcis pityusensis*), an endemic species seriously threatened by the spread of invasive snakes.

The first meeting was held this Thursday at the Sa Coma Island Park, with the participation of public administrations, scientific centers, and specialized organizations. The meeting served to review the results of the pilot captive breeding program, discuss the next steps for creating safe havens, and present a risk analysis that will guide future actions.

Institutional and scientific coordination

The Director General of Natural Environment and Forest Management, Anna Torres, highlighted that “the creation of the working group is a decisive step to unify efforts and offer a solid and well-structured response to a threat that affects the entire Pitiusan archipelago.”

Representatives from the Balearic Government, the Ibiza Council, and the Formentera Council participated in the session, along with leading organizations such as the Barcelona Zoo Foundation, the Centre for Ecological Research and Forestry Applications (CREAF), the University of the Balearic Islands (UIB), and the Consortium for the Recovery of Fauna of the Balearic Islands (COFIB).

The Bioparc Foundation also attended as a guest organization. The Ministry of Agriculture, Fisheries, and Natural Environment will soon sign a collaboration agreement with this foundation to incorporate it into the project currently being developed in conjunction with the Barcelona Zoo Foundation.

Results and Next Steps

During the meeting, the results of the ex-situ breeding program were presented. This program aims to establish reserve populations and reinforce the most vulnerable ones. In May, 17 specimens were transferred to the Barcelona Zoo to form the first breeding group outside their natural habitat. So far, 32 healthy and genetically diverse offspring have been born.

Another topic discussed was the design of safe havens for the conservation of the species. The first four are scheduled to be built before the end of the year: two on the Can Marines public estate and two more on the Sa Coma estate.

Expansion of the program

The group also addressed the expansion of the breeding program to include new lines from islets threatened by the arrival of invasive snakes. In the first phase, the Barcelona Zoo will incorporate five additional lines selected after a risk analysis study.

The meeting concluded with a commitment to maintain inter-institutional collaboration as a fundamental pillar of the program and with the planning of the next actions within the ex situ conservation project of the Pityusic lizard.

06-11-2025 - Redacción - The plan to recover the Pityusic lizard results in the birth of 32 offspring. (conservation)

noudiari.es
Eivissa i Formentera

El plan para recuperar la lagartija pitiusa logra que nazcan 32 crías

The plan to recover the Pityusic lizard results in the birth of 32 offspring



Ibizan lizard in an image by Jordi Serapio.

Por **Redacción** — 6 noviembre 2025 en + **Pitiüses**

The Balearic Government established a working group on Thursday to coordinate the captive breeding of the Pityusic lizard, a project underway at the Barcelona Zoo that has already resulted in the birth of 32 hatchlings. The group comprises representatives from public administrations, scientific centers, and specialized organizations.

In a statement released Thursday, the Government explained that the group's objectives, which held its first meeting at the Sa Coma Island Park in Ibiza, are to guarantee the preservation of this endemic Pityusic species, which is seriously threatened by the expansion of snake populations, and to strengthen institutional and scientific coordination to safeguard the biodiversity of the Balearic Islands.

At this initial meeting, members of the group reviewed the results of the pilot captive breeding program, discussed the next steps for creating safe havens, and presented a risk analysis to establish new courses of action.

The Director General of Natural Environment and Forest Management, Anna Torres, has stated that the creation of this group “is a decisive step to unify efforts and provide a solid and well-structured response to a threat that affects Ibiza and Formentera.”

The inaugural session was attended by representatives of the Balearic Government and the island councils of Ibiza and Formentera, as well as leading organizations and centers, such as the Barcelona Zoo Foundation, the Center for Ecological Research and Forestry Applications (CREAF), the University of the Balearic Islands (UIB), and the Consortium for the Recovery of Wildlife in the Balearic Islands (COFIB).

The members of the working group also presented the results of the pilot program, which has so far produced 32 offspring and has now been expanded to the threatened populations of some of the Pityusic Islands' islets.

Regarding the creation of refuges, they anticipate that the first ones can be built before the end of the year on the Can Marines public estate and two more on the Sa Coma public estate.

CENTRE DE PROTECCIÓ ANIMAL DE SA COMA
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CIFP CAN MARINES

07-11-2025 - Europa Press - The conservation plan for the lizard has resulted in the breeding of 32 specimens. (conservation)

PERIÓDICO de IBIZA Y FORMENTERA

El plan de conservación de la 'sargantana' consigue la cría de 32 ejemplares

The conservation plan for the lizard has resulted in the breeding of 32 specimens

Safe havens for lizards will be created in Sa Coma and Can Marines.



Sargantana pitiusa | Photo: CAIB

Europa Press | Ibiza | 07/11/25 3:58

The Ministry of Agriculture, Fisheries and Natural Environment has established the first working group on the ex-situ conservation of the Pityusic lizard (*Podarcis pityusensis*) with the aim of guaranteeing the preservation of this endemic species of the Pityusic Islands, threatened by the spread of invasive snakes.

According to a statement from the Director General of Natural Environment and Forest Management, Anna Torres, the creation of the working group is "a decisive step to unify efforts and provide a solid and well-structured response to a threat that affects the entire Pityusic archipelago."

The inaugural meeting, held in Sa Coma, was attended by representatives of the Balearic Government, the Ibiza Council, and the Formentera Council. Also in attendance were entities and reference centers such as the Barcelona Zoo Foundation, the Center for Ecological

Research and Forestry Applications (CREAF), the University of the Balearic Islands (UIB) and the Consortium for the Recovery of Fauna of the Balearic Islands (Cofib).

The Bioparc Foundation also participated in the event as a guest organization. The Ministry of Agriculture, Fisheries and Natural Environment will soon sign a collaboration agreement with the Foundation, allowing it to join the project currently being developed jointly with the Barcelona Zoo Foundation.

During the meeting, the ex-situ (outside its natural habitat) breeding plan for the Pityusic lizard was presented and reviewed for conservation purposes. The plan aims to establish reserve populations and help reinforce the most vulnerable natural populations.

The results of this pilot program were also presented, highlighting the number of offspring born and the populations of origin, as well as the technical and scientific challenges that must be addressed in future phases of the project. It is worth noting that last May, 17 healthy and genetically diverse specimens were transferred to the Barcelona Zoo facilities to form the first ex-situ breeding group for the species, which has so far produced 32 offspring.

Another point discussed was the project to create safe havens for the conservation of lizard populations, explaining their characteristics and design. It is anticipated that the first two will be built before the end of the year: two on the Can Marines public estate and another two on the Sa Coma public estate.

The expansion of the ex-situ breeding program to include new lines from threatened populations on certain islets of the Pityusic Islands, selected through a risk analysis study, was also addressed. Initially, five more lines from these islets, threatened by the arrival of invasive snakes, have been incorporated into the Barcelona Zoo program.

The working group meeting agreed on a plan and timeline for the upcoming actions to be carried out within the framework of the ex-situ conservation project for the Pityusic lizard.

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16-11-2025 - Redacción Ibiza - Joan Carles Palerm, president of the Grup d'Estudis de sa Naturalesa (GEN-GOB Eivissa): "We ..... (conservation)

DIARIO de IBIZA

Joan Carles Palerm, presidente del Grup d'Estudis de sa Naturalesa (GEN-GOB Eivissa): "Llevamos 20 años avisando del grave riesgo de las serpientes en Ibiza"

Joan Carles Palerm, president of the Grup d'Estudis de sa Naturalesa (GEN-GOB Eivissa): "We have been warning about the serious risk posed by snakes in Ibiza for 20 years."

The president of GEN-GOB denounces the fact that the organization must leave Can Casals and reiterates that they have been warning about the danger of snakes in Ibiza since 2003.



Two snakes mate at a rural tourism establishment in Ibiza / DI

Redacción Ibiza

Ibiza 16 NOV 2025 13:00

The environmental group GEN-GOB Eivissa is facing a difficult situation after the Eivissa City Council issued a notice forcing them to vacate their headquarters in Can Casals, the building the council granted them in 2021. According to the organization's president, Joan Carles Palerm, "People are telling us we're being evicted from Can Casals because of our stance."

Palerm emphasizes that GEN-GOB's activities have revitalized the Cas Serres neighborhood, especially thanks to visits from hundreds of schoolchildren, an educational program that has now had to be suspended due to the municipal notice. The organization, along with Amics de la Terra (Friends of the Earth), leads the platform "Serps or Sargantanes" (Snakes or

Sargantanes) and points out that both groups have been "warning since 2003" about the serious risk posed by the arrival of snakes to the island, hidden in the ornamental olive trees.

In the interview with this newspaper, Palerm highlights the collaboration with Antoni Marí, known as Carraca, despite previous clashes. They explain that Marí "understood the seriousness of this matter from the beginning" and that he pressured the Balearic Government "unsuccessfully." Faced with the lack of regional initiative, Marí sought to use hunting powers to take action against the snakes. Regarding this collaboration, GEN-GOB states that "we joined forces with them."





16-11-2025 - Josep Àngel Costa - "People tell us that we are being kicked out of Can Casals because of our stance." (politics)

DIARIO de IBIZA

«La gente nos dice que nos echan de Can Casals por nuestro posicionamiento»

"People tell us that we are being kicked out of Can Casals because of our stance."



Joan Carles Palerm during the interview with Diario de Ibiza. / J.A. RIERA



Josep Àngel Costa
Ibiza 16 NOV 2025 6:00

How do they find out that you have to leave Can Casals?

In mid-August, the City Council summoned us, and two colleagues met with the Councilor for the Environment, Jordi Grivé. He told them that the transfer agreement had already expired. In fact, it had ended two years earlier, during the previous administration, and we were simply maintaining the status quo. They told us that the space could be better utilized, without informing us specifically about the changes. We had to vacate Can Casals, although not immediately. Two weeks later, we received a letter informing us that we had a month's notice and, in theory, we should have left in October, but we can stay until the end of November. Now, all our equipment is packed away in boxes, and we can't organize any activities.

Has the City Council offered you any alternatives?

They've promised to help us find another location and that, like any other association, we can use municipal facilities to hold meetings, such as for distributing snake traps. But there's no

headquarters for us or for other organizations in the municipality that are also requesting one. I think we've done good work at Can Casals, not just institutionally. We tried to make it a vibrant space, which was one of the requirements for its transfer. We've managed to get a lot of people involved in our activities.

Can Casals became an outreach center that was part of the school curriculum.

This has been its main function and was the key condition we agreed upon for its transfer. We don't need Can Casals to meet; a laptop connection from home is enough. Until then, our educational offerings consisted of workshops in schools about the genet, the snake invasion, the lizard problem, and the loggerhead sea turtle (*Caretta caretta*). So, we started organizing our own activities to attract schools, such as an escape room about *Posidonia* seagrass in two rooms at Can Casals, or a classroom that recreated the nighttime forest of Ibiza, complete with flora and fauna. The children left delighted and grew fond of native animals they didn't even know existed.

Will schools lose this GEN offer?

These activities were canceled in September, after they had already been sent to all the schools. We can carry out other, simpler workshops, the ones we used to take to schools for 40 minutes, but they don't offer as much learning or have the same impact on students as the interactive sessions at Can Casals.

Will any jobs be lost?

There are two or three instructors who collaborate with us on a supplementary basis who will have less work and income. We also have one environmental educator on staff.

Although GEN was already aware of the situation, the closure of Can Casals became public knowledge following a question submitted by the Unidas Podemos councilor, Guadalupe Nauda, at the Vila plenary session. Grivé responded that GEN could also use Can Tomeu.

But we wouldn't be able to use it permanently either. Nor could we move our nighttime forest classroom there, with all the animal figures, for school visits. We'll see if we can host these activities next year at Can Toni d'en Jaume Negre [the estate that GEN manages in Sant Llorenç]. However, the number of students who can get there by bus won't be as high as those who used to walk to Can Casals from the schools in Vila. In fact, we didn't know this issue was going to be raised at the plenary session, nor that Podemos had contacted anyone on the board. The PSOE did contact us, but that agreement could have been renewed for another four years when they were still in power, and it wasn't. On the other hand, we assumed it would be extended.

Does Can Toni d'en Jaume Negre now have to be used as a storage facility for all of Can Casals' equipment?

No, because we have so much equipment that it would overwhelm part of the house and prevent the activities we carry out in Sant Llorenç. Last week we finished the move; we've

temporarily transferred the equipment to storage facilities belonging to me and other members.

And what about GEN now?

We're trying to find a suitable space, but very few organizations can afford market-rate rent without losing money. The cost is enormous, and we wouldn't have the advantages that Can Casals offered, with its own garden and location within Vila. A ground-floor space won't work for us. We've tried to get the City Council to reconsider its decision, but we couldn't easily reach the mayor, and in the end, we contacted Grivé, who was as helpful as he could be. I imagine it wasn't pleasant for him. We understand that we're no better than anyone else and that this is a municipal space, but we also don't think it's acceptable that it takes two months for Triguero to meet with us.

GEN, although far from the activist stance it had 20 years ago, is clearly opposed to unchecked development and this year participated in the Canviem el Rumb demonstrations. Do you think you're being punished for this position?

That's what people tell us. It's true that our relationship with the administration is much smoother now, even though we make public complaints, than it was 20 years ago, when they wouldn't even give us an appointment. Now there's a much stronger democratic culture. However, I don't know if they'd kick us out of Can Casals if we were a cancer association instead of GEN. It's quite possible that most of Triguero's voters won't be upset about us being kicked out, and that's sad, because we work to achieve a better island for everyone. Without a doubt, Ibiza would be worse off without us, Amics de la Terra, and other platforms.

On the scientific side, GEN works for the Administration, primarily monitoring *Posidonia* seagrass. Does this work also continue with the Ibiza Town Council?

Yes, with all the town councils. With Vila, we monitor Talamanca Bay. We currently have a problem with our underwater equipment, which occupies six square meters in an outdoor room at Can Casals. All this equipment needs to be stored under special conditions and doesn't fit in our temporary storage facilities. The Town Council has tried to find a space where we can at least store this equipment safely, with a freshwater tap to clean the divers' gear and prevent it from being damaged by the salt. What they've offered, like a metal container, doesn't meet these needs because in summer the internal temperatures get too high and would damage the equipment.

Will this underwater work now face any setbacks?

If we can find a suitable space, there shouldn't be any problems. We've finished the season now, and these trips won't resume until spring. I hope we'll have it sorted out by then.

In Talamanca, their assessments have revealed that 40% of the *Posidonia* seagrass is dead, while in Cala Vedella this percentage reaches 55%.

It's a disaster, because on all the beaches we monitor, which are the ones under the most pressure, we find that half of the *Posidonia* is affected, except in Cala d'Hort. The Vila Town

Council itself believes it's time to close Talamanca to free anchoring, regulate it with eco-friendly buoys, and limit the areas where anchoring is permitted.

Next year, the central and Balearic governments are preparing ten eco-friendly buoy fields on as many beaches in Ibiza. Are they effective?

They are, as has been demonstrated for some time in Cabrera, where it's necessary to reserve anchorages in advance. There, the *Posidonia* and mother-of-pearl are preserved in good condition, and the same should happen here.

Returning to our relationship with the Administration, the Balearic Government even enlisted GEN to coordinate the team of volunteers for the turtle nesting event at Es Cavallet.

They are aware of our commitment. More than 70 volunteers participated, and it was a resounding success. There are other, even more serious, issues that we also lead: with the Balearic Government, we carry out discreet work in the marine sector, acting as mediators and facilitators to reach agreements between the various stakeholders in the fishing industry. We have addressed the expansion of fishing reserves and fishing schedules and methods. In these meetings, the Ministry of Agriculture and Fisheries delegates the role of moderator to us. I believe that in Formentera we have earned the trust of both the professional and recreational fishing sectors.

Although it may seem that Ibiza has reached its limit and there is discontent with the saturation, the Canviem el Rumb demonstrations, in which GEN participates, drew a maximum of a thousand people in September in Peace Park. In contrast, years ago, some 10,000 people mobilized against the Cala d'Hort golf course or against the highways. What has changed?

It's easier to get people to mobilize against specific threats. With Canviem el Rumb, many problems become blurred. This is the case with housing, which is affected by various factors. You don't know where to start. It becomes difficult to convey the message that we need to mobilize to improve 50 different aspects in order to achieve results in access to housing. Saying no to a golf course, a marina, or a road widening project is much easier when it comes to getting a public response.



22-11-2025 - Toni P. - The terror of snakes in Ibiza is called Boira. (control)

PERIÓDICO de IBIZA Y FORMENTERA

El terror de las serpientes en Ibiza se llama Boira

The terror of snakes in Ibiza is called Boira



Toni P. | Ibiza | 22/11/25 3:58

Boira is barely five years old and has already become a pioneer in the fight against the snake invasion in Ibiza. This German Shepherd-Border Collie mix has earned a prominent place as the first dog trained to hunt snakes on the island, a role she began to perform almost entirely thanks to the dedication and perseverance of her partner, Tomás Planells Struse.

Adopted at the end of 2020, when she was just a puppy, Boira came into Tomás's life "on the cusp of a major change." A year later, a cancer diagnosis resulted in a work disability that forced Planells to give up his job as a taxi driver. "From then on, I started having free time that I dedicated to the countryside, where I live, and where I was struck by the number of snakes," he recalls.

The Idea

It was during a conversation with biologist and lizard expert Maria Antònia Cirer that the final



push came: “Maria Antònia told me that it had been attempted before without success, and since Boira was at the perfect age to learn, I decided to give it a try.” Thus began a completely self-taught learning process.

“I learned from scratch; I had no prior knowledge, watching many videos and tutorials online,” Planells explains. Even so, he acknowledges that progress wasn't immediate: “It took quite a while from when we introduced him to the first snake until he overcame his fear and began to show interest. Months.”

Biological Advantages

One of the factors that facilitated Boira's training is directly related to the biology of snakes. “Because of their nervous system, snakes continue to move for about two hours after they die,” Planells points out. This peculiarity proved crucial: "Once he overcame his fear, we began presenting him with still-moving dead snakes along with an action word and the corresponding reward." From that point on, his progress was astonishing. "From that moment until he started killing snakes on his own, barely a week passed. It was practically automatic."

Another helpful characteristic is the strong odor these animals give off. "It's a factor that makes Boira's job easier when it comes to locating them on her own," explains Tomás. "Many times she's able to detect them hidden in a wall, but not be able to flush them out."

Teamwork

In addition to tracking and locating snakes, Boira accompanies Tomás whenever he checks the traps set on his property. The agility of these animals means that escapes are common when they're being removed. "If Boira is nearby, she makes sure it doesn't escape and kills it herself," says Planells. To date, the dog has already killed more than 70 snakes.



Their joint efforts have become an unexpected support for the protection of the Pityusic lizard, an emblematic species whose decline is directly linked to the proliferation of invasive snakes. However, Tomás insists that everything they do is "always as a hobby." "I'm far from being a professional trainer, and Boira is still just a pet," he emphasizes.

First collaborations

This past Friday, Boira and Tomás toured the Bibo Park facilities accompanied by its manager, Eduardo Mayol, in search of snakes. The drop in temperatures prevented them from finding any, but the experience marked a small milestone: "This is the first collaboration we've done outside of home, and for the moment I haven't considered dedicating myself to it professionally. In the end, it's about working for the common good of Ibiza. It's another matter entirely if there's suddenly a great demand that makes me reconsider, both in terms of making visits and helping to train other animals."

Sharing knowledge

That spirit of service to the community is also reflected in the way Tomás shares his experience. Through his Instagram profile, @can_daifa, he offers information and answers questions about Boira's training and about domestic control of these invasive reptiles. "Anyone can ask me any questions about it," he says.

The story of Boira and Tomás reflects how individual initiative and a willingness to learn can contribute new ideas to the defense of Ibiza's fragile natural balance. And, although their work is humble, it is nonetheless a real contribution: constant, patient work driven by a deep connection to the island and its smallest creatures—including those that don't bark, but do nibble and are part of our identity.

25-11-2025 - R.I. - Boira, the snake-hunting dog, inspires an unprecedented alliance in Ibiza to protect biodiversity ..... (control)

PERIÓDICO de IBIZA Y FORMENTERA

Boira, la perra cazadora de serpientes, inspira una alianza inédita en Ibiza para proteger la biodiversidad frente a las serpientes invasoras

Boira, the snake-hunting dog, inspires an unprecedented alliance in Ibiza to protect biodiversity from invasive snakes



Eduardo Mayol, César Mayol, Tomás Planells and Boira, the snake-hunting dog | Photo: R.I.

25/11/25 15:35

Tomás Planells, owner of the well-known dog Boira, and representatives of two Ibizan organizations—Eduardo Mayol on behalf of the Ibiza Botanical Biotechnology Center (BIBOPARK) and César Mayol, representing the organic farm IBIZALOE—have formalized a collaboration agreement aimed at preserving natural spaces and protecting Ibiza's lizard populations from the growing threat of invasive snakes.

The presence of these invasive species poses one of the greatest current risks to the island's native fauna, especially to the emblematic pityusensis lizards. Aware of the seriousness of the situation, the three parties have decided to join forces and resources to contribute, within their means, to the eradication and control of snakes, as well as to the promotion of safe spaces where the lizards can live freely.

Agreement commitments

Tomás Planells will contribute his experience and dedication training dogs —including

Boira— with the aim of developing specific skills for the detection and control of snakes in rural and natural areas.

For their part, BIBOPARK and IBIZALOE, along with their scientific committee and several biologists specializing in Podarcis pityusensis—such as Antònia Cirer, among others—have spent several years researching and testing different protection methods to safeguard lizard populations from predation by invasive snakes.

The three parties are committed to collaborating with each other, sharing information, and coordinating actions in their respective areas to keep them as free of snakes as possible, thus promoting biodiversity and the natural balance.

A community effort to protect Ibiza

This agreement was inspired by Boira, a dog known for her natural ability to detect the presence of these vertebrates. Her behavior has motivated a novel approach: integrating canine training into conservation strategies.

The alliance represents an example of cooperation between private initiative, specialist scientists and agro-ecological projects on the island, all aligned around the same objective: to protect native fauna and stop the advance of invasive snakes.

