

## Data on the distribution of herpetofauna of southern Niger with comments on Termit & Tin Toumma National Nature Reserve

Duarte Vasconcelos Gonçalves, Francisco Álvares & José Carlos Brito

CIBIO/InBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto. Instituto de Ciências Agrárias de Vairão. Rua Padre Armando Quintas, 11. 4485-661 Vairão. Portugal. C.e.: duartegoncalves@cibio.up.pt

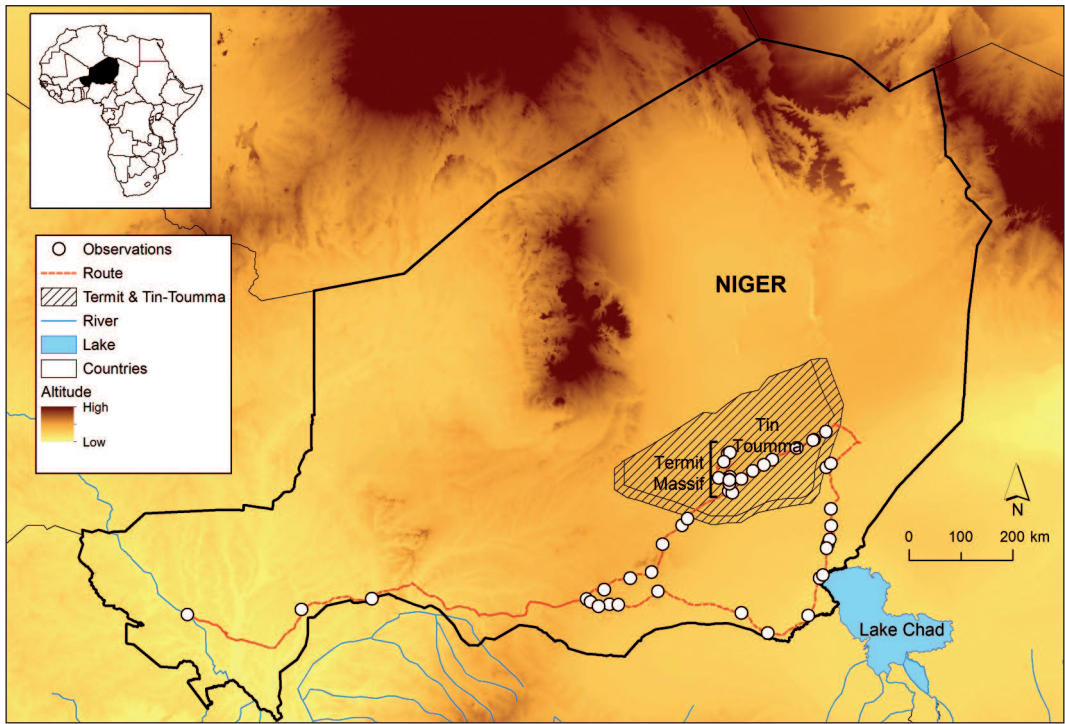
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**Key words:** Sahara, Sahel, mountains, overland expedition, dry season.

**RESUMEN:** Se aportan los resultados herpetológicos de una expedición científica realizada en abril-mayo de 2012 al sur de Niger, una remota zona que incluye la Reserva Natural de Termit & Tin Toumma. Se observaron 27 especies de reptiles y tres de anfibios. Debido al elevado desconocimiento herpetológico de la región, muchas de las nuevas citas aumentan o cubren grandes vacíos en la distribución de las especies halladas.

North Africa presents a wide variety of landscapes and habitats which harbours many amphibian and reptile species (Schleich *et al.*, 1996; Chippaux, 2001; Trape & Mané, 2006; Sindaco & Jeremcenko, 2008; Trape *et al.*, 2012). The degree of knowledge varies considerably depending on the region, however. While some areas like Morocco and Western Sahara, or the region near Egypt and the Red Sea are better explored, with atlases available on the distribution of herpetofauna (Baha El Din, 1996; Bons & Geniez, 1996; Geniez *et al.*, 2004), general remoteness is responsible for large exploration gaps. Added socio-political instability and occasional armed conflicts render some areas, like the central Saharan mountains, particularly difficult to access. Niger is one of such cases. Distribution data for the country can be found in classical references (e.g. Angel & Lhote, 1928; De Witte, 1930; Angel, 1950; Guibé, 1950), naturalist work in the second half of the 20<sup>th</sup> Century (e.g. Heu, 1962; Papenfuss, 1969; Joger, 1981; Kriska, 2001) and broad-scale field guides (Trape & Mané, 2006; Sindaco & Jeremcenko, 2008; Trape *et al.*, 2012). Recently, several works have been published which started to include molecular data (e.g. Crochet *et al.*, 2003; Harris *et al.*, 2007;

Rato *et al.*, 2007; Froufe *et al.*, 2009; Fujita & Papenfuss, 2011; Geniez *et al.*, 2011; Gonçalves *et al.*, 2012; Mediannikov *et al.*, 2012). Still, the geographic distribution of many species is poorly known. Here we report our recent observations of amphibians and reptiles during an expedition to Southern Niger, and compare them with published data. Special emphasis is given to the Termit & Tin Toumma National Nature Reserve, created on March 6, 2012 and totalling almost 100,000 km<sup>2</sup>. This reserve was primarily aimed at the protection of addax (*Addax nasomaculatus*), dama gazelle (*Gazella dama*), Barbary sheep (*Ammotragus lervia*) and Northwest African cheetah (*Acinonyx jubatus hecki*), as well as supporting the local nomadic people ([www.saharaconservation.org/?Termit-Tin-Toumma-Niger](http://www.saharaconservation.org/?Termit-Tin-Toumma-Niger)), and encompasses the Termit Massif, as well as a vast portion of Tin Toumma desert and part of the Great Bilma Erg ([www.ass-niger.org/-termit-tin-toumma-](http://www.ass-niger.org/-termit-tin-toumma-)). Twelve reptile species are reported for the approximate area of the reserve (Trape & Mané, 2006; Trape *et al.*, 2012). Additionally, an online checklist produced by ASS-Niger (Anonymous, 2012) refers 17 reptile species. All species repor-



**Figure 1:** Transect (line) and geographic locations (white dots) of collected observations.

**Figura 1:** Transecto (línea) y localizaciones geográficas (puntos blancos) de las observaciones recogidas.

ted to occur have widespread distributions, and both relict populations (e.g. *Agama boueti*, *Latastia longicaudata*) and Sahara endemic species (e.g. *Acanthodactylus longipes*) can be found.

The study area covered southern Niger and the overland expedition spread over 15 days, between April, 28 and May, 13 of 2012 (Figure 1). The sampling strategy involved a transect covering various Sahara and Sahel ecosystems and habitats such as sand deserts (erg), firm ground deserts (reg), rocky plateaus (hammada), dry river beds (oued), semi-arid grasslands, savannas, steppes, and thorn shrublands (Figure 2). Sampling points were selected along transect based on the diversity of biotopes. A total of 102 observations for 27 reptile species and seven observations for three amphibian species were recorded (see Supplementary Material). Identification of the species was based on

published taxonomic keys (Geniez *et al.*, 2004; Trape & Mané, 2006; Trape *et al.*, 2012) and posteriorly reviewed by Philippe Geniez (EPHE-UMR 5175) and Pierre-André Crochet (CNRS-UMR 5175) based on photographs. Observations with available photographic data were uploaded to Observado.org (Supplementary Material). It should be noted, however, that due to the website's restriction regarding species names, some records may appear identified differently from this work. For each captured specimen photographs were taken prior to release. The spatial location of specimens was georeferenced by a Global Positioning System (GPS), using the WGS84 coordinate system, and downloaded into a database with an interface for a Geographical Information System (GIS). Comments are made for occurrences expanding distribution



**Figure 2:** Typical habitats at Termit Massif mountain (a) and Tin Toumma sandy desert (b).

**Figura 2:** Hábitats típicos en el Macizo de Termit (a) y el desierto de arena de Tin Toumma (b).

limits, taking Trape and Mané (2006) and Trape *et al.* (2012) as reference, or adding information to the knowledge of the natural history of a species (marked with \* in Supplementary Material).

### Reptiles

- *Agama agama* Linnaeus, 1758 – Zinder, Gouré, Mainé-Soroa and Diffa. Found mostly on human settlements. Although the species complex is referenced for Niger and Chad, these records fill a gap of hundreds of kilometres.
- *Agama boueti* Chabanaud, 1917 (Figure 3) – Diffa and Kélakam. These specimens were found in the characteristic shrubland habitat, filling a distribution gap in Niger.
- *Agama paragama* Grandison, 1968 – Diffa and Nguigmi. These records add to the northern distribution of the species.
- *Chamaeleo africanus* Laurenti, 1768 – Gouré and Nguigmi. Distribution slightly extended to the East within Niger.
- *Tropicolotes steudneri* (Peters, 1869) - Dioura Auouranga, Termit. This is the first record for the reserve, expanding the known distribution more than 250 km to

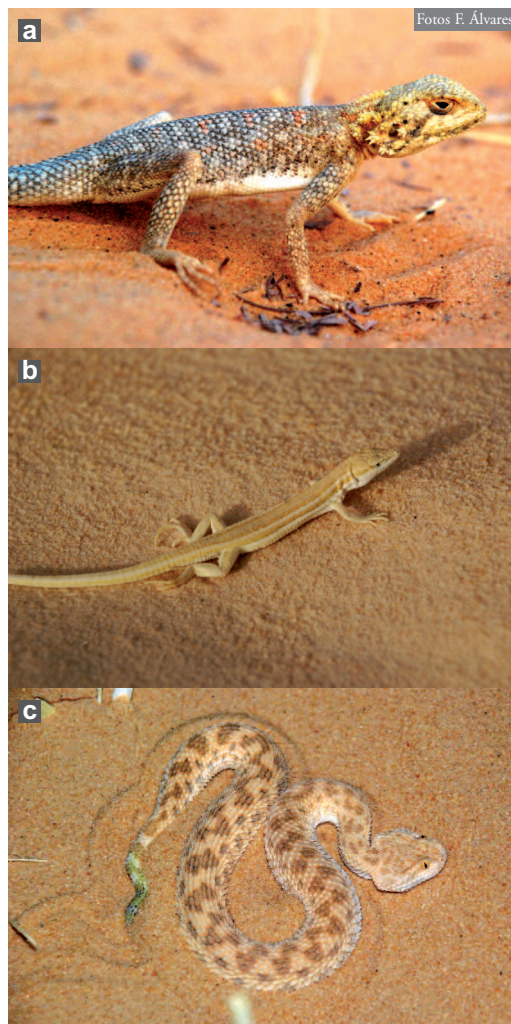
the East, since in Niger it was only known from Air Mountains (Trape *et al.*, 2012).

- *Acanthodactylus cf. senegalensis* – Nguigmi and Ngourti. Known species distribution is expanded to the South and East, at about 50 km from Lake Chad.
- *Acanthodactylus longipes* Boulenger 1921 – Ngourti, Koussa Arma and Tin Toumma. These records expand the distribution in Niger to the East. A huge gap still persists between these observations and the published occurrence in Chad.
- *Mesalina pasteuri* (Bons, 1960) (Figure 3) – Tin Toumma. First report for the Reserve and the third record for Niger, although not significantly adding to the species' known distribution.
- *Scincopus fasciatus* – Kélakam and Tasker. The first point adds to the southern distribution of the species, whereas the second falls in the centre of a previous large gap in Niger.
- *Scincopus fasciatus* / *Scincus albifasciatus* – Madaranga, Termit and Louli Agadem Nga, Termit. Identification of these two records was based solely on tracks. Although it is not possible to distinguish among the species based on the tracks, they

are proof that at least one of them is present in the reserve. Both species are reported for Niger, but assessing their presence in the reserve is dependent on future surveys.

- *Pelomedusa subrufa olivacea* Schweigger, 1812 – Zinder. This record adds to the area of occurrence in the Sahel. This terrapin is also present in Air Mountains (Trape *et al.*, 2012), but there is no information whether there is a suitable habitat connection to Sahelian populations.
- *Varanus griseus* – Ngourti and Tin Toumma. Slightly expanding known distribution in Niger to the East, sightings were far more frequent in Tin Toumma.
- *Cerastes vipera* (Linné, 1758) (Figure 3) – Nguigmi. Known distribution in Niger is expanded to the South and East, to less than 50 km from Chad.

During the expedition we registered two confirmed new species, *Mesalina pasteuri*, *Tropicolotes steudneri*, for the Termit & Tin Toumma National Nature Reserve. Additionally, one other new species for the area is highly likely, *Scincopus fasciatus* or *Scincus albifasciatus*, but still need confirmation (see above). For a total of 18 species reported for the reserve, we observed eight inside reserve limits plus three more in the near premises. We include *A. boueti* in the confirmed species, given that the referenced *A. impalearis* (online list) is a clear misidentification. The latter species is restricted to the western Maghreb (Trape *et al.*, 2012). The other species not detected in our survey but known from the reserve (Anonymous, 2012) are: *Eryx muelleri* (Synonym: *Gongylophis muelleri*), *Hemidactylus brooki*, *Psammophis schokari*, *Spalerosophis diadema*, *Tropicolotes tripolitanus*, *Stenodactylus petrii*, and *Latastia longicaudata*. The latter two are concordant with published



**Figure 3:** (a) *A. boueti*, Termit (observation 6727); (b) *M. pasteuri*, Tin Toumma (observation 6692); (c) *C. vipera*, Nguigmi (observation 6658).

**Figura 3:** (a) *A. boueti*, Termit (observación 6727); (b) *M. pasteuri*, Tin Toumma (observación 6692); (c) *C. vipera*, Nguigmi (observación 6658).

data (Trape *et al.*, 2012). According to Trape and Mané (2006), *Echis ocellatus* also occurs in the reserve, although it was neither observed by us nor listed online.

The main reason that could explain the lack of observation of several species is the fact that the expedition was performed during the peak of the dry season, when most animals are less acti-

ve (Cowles & Bogert, 1944). One illustrative example of the unfavourable conditions for animal activity is that the only active *Acanthodactylus* found at Tin Toumma were juveniles, and were only observed until 11am. This is totally opposite to their behaviour in autumn, when they are active during 10am-16pm (Duvdevani & Borut, 1974; Pérez Mellado, 1992).

All of the species present in the reserve have widespread distributions across the Sahara and/or the Sahel, and most of them are also reported for major mountain systems in Sahara. Actually, most of the reported species are present in Aïr. Such observations raise the possibility that other species may have also been able to survive until the present around the Termit Massif. Confirmation of this hypothesis requires however additional survey efforts.

This note provides additional data to the poorly known distributions of amphibians and reptiles in Niger and is at the same time the first

published list of herpetofauna species present in the Termit & Tin Toumma National Nature Reserve. This constitutes however just another step for the comprehensive mapping of biodiversity in the area and further investigation should ensue.

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## New data on the distribution range of *Hemidactylus turcicus* in Portugal

Pedro A. Salgueiro<sup>1,2</sup>, Denis Medinas<sup>1,2</sup>, Carmo Silva<sup>1,2</sup>, Alexandra Silva<sup>3</sup> & António Mira<sup>1,2</sup>

<sup>1</sup> Centro de Investigação em Biodiversidade e Recursos Genéticos - CIBIO-Évora. 7000-890 Évora. Portugal.

<sup>2</sup> Department of Biology, University of Évora. 7002-554 Évora. Portugal.

<sup>3</sup> SECIL - Companhia de Cale e Cimento, S.A. Centro Técnico Corporativo CTEC-CTBD. 2901-864 Setúbal. Portugal. C.e.: projecto.secil@gmail.com

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**RESUMEN:** En Portugal, la salamanquesa rosada *Hemidactylus turcicus* solamente está presente en la costa sur y en zonas interiores del sudeste. En este trabajo se describe la existencia de una nueva población que expande la distribución de esta especie por la costa portuguesa. El hallazgo ocurrió en primavera y verano de 2010 durante los inventarios de fauna realizados en una cantera restaurada en Setúbal. La nueva localidad se halla a 70 km de la población más cercana hasta ahora conocida y se especulan dos posibles hipótesis para su aparente aislamiento: (1) un deficiente esfuerzo de prospección en la zona, o (2) una dispersión a larga distancia debida al transporte humano involuntario.

The Turkish gecko (*Hemidactylus turcicus*) is native to countries surrounding the Mediterranean Sea and is very frequently associated to humanized habitats (Arnold & Oviden, 2002). They live in warm, dry areas and often thrive in anthropogenic landscape including rock piles, stone walls, cliffs, ruins and around or inside houses (Mateus & Jacinto, 2008; Lisičić *et al.*, 2012). In Portugal, its known distribution range is until now restricted to the south coast and

southeastern inland territories, generally below 400 masl (Mateus & Jacinto, 2008). In this study we describe a recent location of the Turkish gecko in Portugal far from the nearest known locations.

We surveyed geckos in spring and summer of 2010 at SECIL-Outão cement plant (38°29'48"N / 8°56'24"W; UTM 10 x 10 km NC06) as a part of an inventory of faunal communities occurring at SECIL-Outão's property. Two sampling techniques were carried out: diur-