Genus *Podarcis*

The validity and delimitation of this genus of „Wall lizards" is still in discussion as morphological and biochemical characterizations are partially contradictory.

Podarcis hispanica (Boulenger, 1905)

Pl. 37/105,106

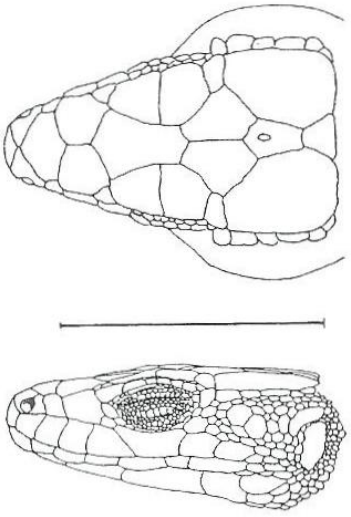


Fig. 1. *Podarcis hispanica*

Etymology: lat hispanicus: Spanish.

Synonyms: *Lacerta muralis var. vaucheri* Boulenger, 1905
Lacerta (*Podarcis*) *bocagei vaucheri* Mertens & Müller, 1940
Lacerta hispanica vaucheri Klemmer, 1959
Podarcis hispanica „vaucheri" Arnold, 1973

e: Moroccan rock-lizard, Iberian wall-lizard
f: Lézard hispanique
g: Spanische Mauereidechse

The Maghrebian „*Podarcis hispanica*" is probably a species complex with forms which are very difficult to separate by morphological criteria.
The denomination of all N-AFR forms of this group as „*Podarcis hispanica vaucheri*" goes back to Boulenger (1905) who classified specimens from Tangiers as this „variety". In the following decades this denomination was uncritically applied for the whole MAG.
According to Blasco (1980) we should refrain from using subspecific denominations. The extreme variability between specimens and populations shown by this author for Spain, and by Blanc (1979) for TUN, supports the view that the taxonomic situation is very complicated.

Identification
Morphology: A relatively small Wall lizard with a flat and pointed head and without a palpebral disk.

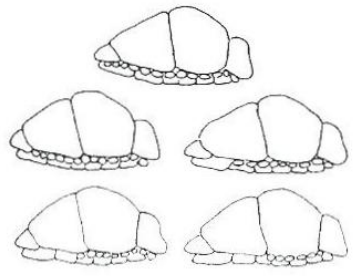


Fig. 2. Variability of the supraocular row of granules in TUN. See text opposite and next page

Measurements: Very variable between populations; max. SVL in Tlemcen (W-ALG) 60 mm; tail of twice the SVL, pileus 12x5.5 mm.
Specimens from TUN are larger.

Pholidosis: Head sides: 4 (5) supralabials in front of subocular
In a series of 17 specimens from N-TUN, Blanc (1979) found the following variations (number of varying specimens in brackets):
a) Anterior end of the supraciliary granule row extending anteriorly (fig. 2)
to the anterior end of the 1st supraciliary (2).
to the center of the 1st supraciliary (1),
to the posterior border of the 1st supraciliary (12),
to the posterior end of the 2nd supraciliary (1),
to the anterior border of the 3rd supraocular (1).

b) The interrelations between the interparietal and occipital may be as follows (fig. 438/1):
both scutes in contact (14),

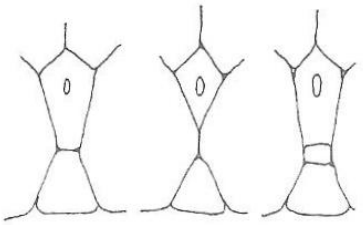


Fig. 1. Relations of interparietal and occipital

both separated by the suture between the parietals (1),
both separated by a small scute (2).

c) The relations between rostral and internasal vary as follows (fig. 2):
both are separated by the supranasals (16),
both are in contact (1).

d) Relations of internasal and frontal (fig. 3):
both are separated (15),
both are in contact in a point (1),
both are in contact with a suture (1).

e) The supralabial following the postocular (nr. 6) has a straight or convex upper margin (fig. 4). In the latter case the posteriorly adjoining subocular is relatively small.

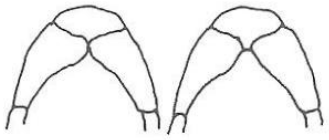


Fig. 2. Contacting and separated supranasals

Dorsals granular, very small, smooth or weakly keeled, 40-68 around midbody. In Oran the lowest value is 55, in TUN counts are lower.
Ventrals in 6 rows, the 1st and 3rd being narrower than the 2nd. In some specimens from Tangiers the 2 median rows are extremely narrow.

Coloration: Ground colour green, yellow or brown with a pattern of light and dark lines.
These are distinct in juveniles and females, but show a strong tendency towards reticulation in males.
In the var. *unicolour* the pattern lacks entirely.
In specimens from N-TUN (BLANC, 1979) ground colours are very variable from green and black with vivid blue lateral lines to light beige and bluish grey with fine brownish lines. Venter from pure white to brick-red.

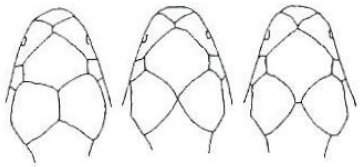


Fig. 3. Contacting and separated prefrontals

The basic pattern shows three types of elements:
1. 7 light longitudinal lines (middorsal, laterodorsal, lateral, ventrolateral)
2. 2 rows of ocelli on each side of the light lateral line
3. dark markings: 2 dark stripes bordering the light dorsolateral stripe; 3 rows of black dots on the (middle and) lateral ventrals (fig. 439/2); in rare cases there may be a middorsal line which is accompanied by some nuchal dots.

Stripes become reticulated with age. This is particularly true for males.
Colours are evidently not correlated with ecological conditions.

Colour change, developmental: Juveniles with turquoise tail and dark vertebral stripe which subsequently disappears or becomes fragmented.

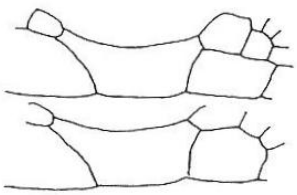


Fig. 4. Supralabial following subocular with straight/convex border

Sexual dimorphism: Males with larger SVL, larger head, longer legs and more distinct femoral pores. In some populations they have brick-red venters with striking blue marginal shields.

Similar species: Can possibly be confounded with the striped form of *P. perspicillata (pellegrini)* as both may live on rocks. The palpebral disk allows undoubted the identification of *P. perspicillata*, though.
In the Haut Atlas a confounding of juvenile *P. hispanica* and adult *Lacerta andreanskyi* is possible (see key p. 403).

Ecology and general behaviour
Habitat: Less dependent from water and rocks than its relative *P. perspicillata,* but preferring the vicinity of watercourses.

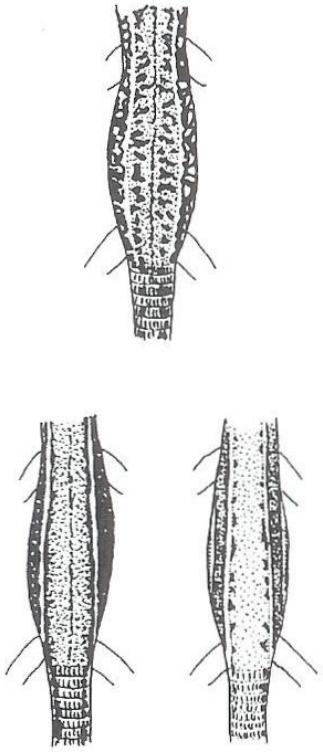


Fig. 1. Male (top) and two females

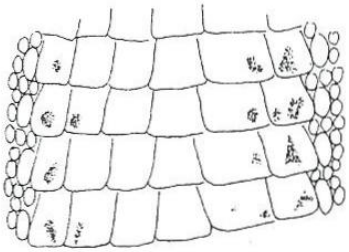


Fig. 2. Ventral scalation and pattern

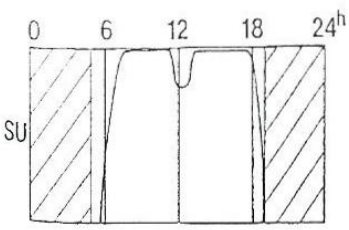


Fig. 3. Activity pattern, Dj. Toubkal (Haut Atlas)

On mountain slopes with debris and boulders, especially with accumulations of soil between them; rock outcrops on alpine meadows; tree trunks; in TUN in the humid zone with *Quercus faginea* (Zeen oak) woods: Open woods with large boulders, on clearings, in stone rain gutters (gaviones) near roads. In semiarid regions on rock faces.
One population at 1000 m altitude in the Moyen Atlas near Sefrou lived on a cereal field and the lizards hid and retired under small and even tiny stones on the ground.
Doumergue (1901) mentions the curious fact that a population from Oran „digs tunnels like *Chalcides ocellatus*".
In the Haut Atlas observed at 3100m, common between 1700 and 2200 m; together with the gecko *Quedenfeldtia trachyblepharus* one of the N-AFR reptiles with the highest altitudinal distribution.

Activity pattern, diel: In summer some activity up into dusk.
Annual activity: At low elevations activities are mainly restricted to spring and autumn. During the summer only hatchlings and yearlings forage intensely.
Many, but not all populations are active in winter, e.g. in the Rif (Chechaouen) or the Atlas of Blida (ALG).

Thermal behaviour: Shuttling heliotherm. A population living on a northern slope in the Moyen Atlas started its activities around noon. In the Haut Atlas they are active close to snow fields.
In Spain they form winter aggregations in localities with especially favourable microclimates allowing intensive basking.

Locomotion: Climbing excellently, but less strictly adapted to a life on vertical rock faces than the following species. *P. hispanica* apparently spends more time among the vegrtation.

Population density: Very high in favourable places .

Social behaviour: Not very aggressive towards conspecifics. Spanish males have small territories and do not defend them vigorously.
Individual distance is especially reduced in winter when the lizards can be seen basking in groups.

Herpetological community: 5.5 lizard communities; profiles 1 (Lixus), 2 (Zâd), 4 (Oukaimedene), 5 (Rheraia).

Food spectrum: In Spanish specimens (prey in order of commoness: spiders, dipters, aphids, beetles, especially weevils *(Curculionidae)*, ants, grasshoppers.
Prey size ranges between 1 and 25 mm (mostly 2-5 mm).

Predators: *Coluber hippocrepis, Coronella girondica, Malpolon monspessulanus, Vipera latastei;* ext. *Athene noctua, Bubo bubo, Strix aluco, Tyto alba, Mycteria ibis, Ciconia ciconia, Milvus milvus, Falco naumanni, Falco tinnunculus, Lanius excubitor, Pica pica.*

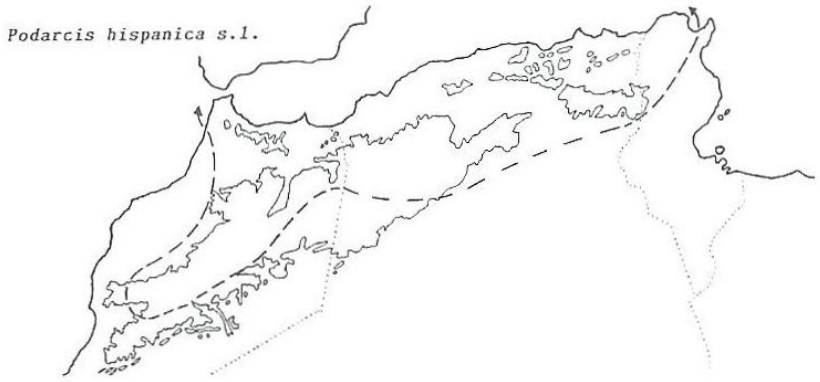
Antipredator behaviour: Fleeing distance from humans only 1.5 m or less, even allowing a close-up photograph.
Specimens from El Hajeb (N-MOR) living along a small brook fled through the water when approached. Those living at high altitudes flee into thorn cushions (*Ptilotrichum spinosum, Bupleurum spinosum, Cytisus balansae, Ononis atlantica, Astragalus ibrahimianus*).

Reproduction: Spermatogenesis of mixed type
Mating: (observations in Spanish specimens) The female is only motivated to copulate for a few days.
The male display preceeding copulation may be omitted if both mates are familiar with each other. The female answers with nods and sometimes also with treteln. This appeasement behaviour is reduced at the peak of female receptivity. The male takes a bite-hold at the tail, sometimes also on the neck and then shifts to the flank. Genital contact was observed to last from 5.5 to 59 min. Male holds female with forelegs during copulation. Normally other attempts to copulate are rejected for some time after copulation.

Oviposition 13 days after mating. Eggs elongate, 11.7-12x 7 mm. 2-3 clutches per yr with up to 5 eggs each.

Incubation: In 63 d at 20-30°C.

Hatchlings: SVL 23-25 mm, tail 28-43 mm. In Oran the first hatchlings appear in July, in Tlemcen (W-ALG) in beg. August.
Juveniles stay predominantly on the ground.



Geographic range, Northern Africa: Widely distributed in the Mediterranean part of the MAG, mainly in humid mountain regions.

Other regions: Southern France and southern Iberian Peninsula.

Zoogeography: W-Mediterranean.

Systematics: The traditional classification of this lizard as *Podarcis hispanica vaucheri* suggests a general close relationship with Iberian forms and a southward immigration across the Gibraltar passage. This view is considered one-sided by MATHON (1979) who discusses a Tyrrhenian invasion route as well, with perhaps several speciation centers in the MAG.
This view was already pronounced by CAMERANO at the end of the last century who identified specimens fom Tunis as *„Lacerta muralis* var. *tiliguerta"*.

References: BONS (1972, 1973), BONS & GIROT (1962b), BOULENGER (1891), BONS & SAINT GIRONS (1980), DESTRE et al. (1989), DOUMERGUE (1901), DUSEJ (1993), JOGER & BISCHOFF (1989), MALKMUS (1981, 1983), MARTIN & LOPEZ (1990), MATEO (1990), MATHON (1979), MELLADO (1985), MELLADO & OLMEDO (1987), PASTEUR & BONS (1960), SAINT GIRONS (1953), SALVADOR (1985b), SCHÄTTI (1993), STEMMLER (1965a,b,c, 1966a,b1972a), STEMMLER & HOTZ (1972), VALVERDE (1967), VERBEEK (1972), WERNER, F. (1929, 1931a,b).