

- Joger, U. (1984): Morphologische und biochemisch-immunologische Untersuchungen zur Systematik und Evolution der Gattung *Tarentola* (Reptilia: Gekkonidae). Zool. Jb. Anat. **112**: 137-256.
- Koenig, A. (1892): Die Kriechthierfauna Tunesiens. S.B. NiedeL. Ges. 3-26.
- Mayet, V. (1903): Catalogue raisonné des Reptiles et Batraciens de la Tunisie. In: Exploration scientifique de la Tunisie, Paris: 1-32.
- Mosauer, W. (1934): The reptiles and amphibians of Tunisia. Publ. Univ. Calif. Biol. Sci. **1** (3): 49-64.
- Mosauer, W., Wallis, K. (1928): Beiträge zur Kenntnis der Reptilienfauna von Tunesien. I. Über die Sandspuren einiger Kleintiere der Sahara und ihre Deutung aus dem Bewegungsmechanismus. Zool. Anz. Leipzig **79**: 195-207.
- Olivier, E. (1896): Matériaux pour la faune de Tunisie. I. Catalogue des Reptiles. Rev. Sci. Bourbonnais Centre France **9**: 117-128.
- Pasteur, G., Girod, B. (1960): Les tarentes de l'Ouest africain. II. — *Tarentola mauritanica*. Bull. Soc. Sc. nat. phys. Maroc **40** (4): 309-322.
- Salvador, A. (1982): A revision of the lizards of the genus *Acanthodactylus* (Sauria: Lacertidae). Bonner Zool. Monogr. **16**: 1-167.
- Thilenius, G. (1897): Herpetologische Notizen aus Süd-Tunis. Zool. Jahrb. Abt. Syst. Geogr. Biol. Tiere (Jena) **10**: 219-237.

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Notes on distribution and expansion of the range of the lizard *Psammodromus algirus* in Northern Spain

Dirk Bauwens^{1,2}, Freddy Hordies³, Raoul Van Damme^{1,2}, André Van Hecke⁴

Introduction

The lacertid lizard *Psammodromus algirus* is distributed over the major part of Iberia, a small adjoining area of southern France and extensive parts of Morocco, Tunisia and Algeria (Arnold & Burton, 1978; Böhme, 1981). Böhme (1981) has recently compiled locality records which indicate that the northern limit of this lizard's range runs parallel to the Cantabrian and Pyrenean mountains in Iberia, and along the Mediterranean coast in France, where the species is restricted to the area west of the Rhone river. Though commonly considered as an inhabitant of the Mediterranean climatic zone, this lizard has also been encountered in the Pyrenean region, where it occurs up to an altitude of 1000 m and approaches the Spanish-French frontier in some areas (Böhme, 1981; Martinez-Rica, 1983). Böhme (1981) mentioned that this lizard is expanding its range in the Pyrenean region, but does not provide empirical support for this statement.

¹ University of Antwerp (U.I.A.), Field Biological Station, Verbindingsweg, B-2180 Kalmthout, Belgium

² University of Antwerp (U.I.A.), Department of Biology, Universiteitsplein 1, B-2610 Wilrijk, Belgium

³ Pierstraat 168 B, B-2550 Kontich, Belgium

⁴ Eglantierlaan 39, B-2630 Aartselaar, Belgium

In this note we report some new locality records of *P. algirus* which extend the known range of this species in northern Spain. Our major aim is to provide evidence for a recent expansion of this species' distribution in the Pyrenean region by comparing our records to those of an older account of the herpetofauna in part of this area (Maluquer, 1956).

Results and Discussion

We gathered data on the distribution of *P. algirus* during various visits to the Spanish provinces of Huesca and Lerida during the period of 1976 until 1985. Lizards were not collected, but most of the captured individuals were photographed at the site of observation for verification of our identification.

Localities (numbers refer to fig. 1) within each province (Huesca, Lerida, Barcelona), date of capture and initials of observer(s) are the following:

(1) Salinas de Jaca (H), 11.5.1976, AVH; (2) Sta. Cilia de Jaca (H), 4.5.1981, AVH; (3) Atarés (H), 12.8.1978, DB; (4) Bernués (H), 23.8.1978, DB; (5) Seira (H), 4.8.1984, DB; (6) Murillo de Liena (H), 9.8.1984, DB; (7) Perarrúa (H), 9.8.1984, DB; (8) Graus (H), 13.8.1984, 6.8.1985, DB; (9) Capella (H), 15.8.1984, DB; (10) Laguarres (H), 3.10.1985, RVD; (11) Litera (H), 19.4.1981, AVH; (12) Ager (L), 31.7.1981, DB; (13) Llimiana (L), 17.6.1985, FH & AVH; (14) Pobla de Segur (L), 24.7.1981, DB; (15) Desfiladero de Collegats (L), 23.7.1981, DB; (16) Sort (L), 8.7.1980, DB; (17) Rialp (L), 30.6.1980, DB; (18) Boixols (L), 16.6.1985, FH & AVH; (19) Caserras (B), 15.6.1985, FH & AVH.

Figure 1 also shows the approximate locations of the sites indicated by Böhme (1981) and Martinez-Rica (1983) (the latter author only gives positions on the UTM-grid).

The following localities where we did not encounter *P. algirus* despite extensive searches, are also indicated on Figure 1:

Viella, Valle de Aran (L); Senterada (L); Espúy, Capdella (L); Ribera de Cardos, Tabescán (L); Espot (L); Vilamur, Rubio (L); Prullans, Bellver de Cerdaña (L).

Our observations establish that *P. algirus* has a far more widespread occurrence in the Pyrenean region than is indicated by the existing distribution accounts of this species (Salvador, 1974; Böhme, 1981; Martinez-Rica, 1983). Most of the localities reported here are situated in river valleys, through which the lizard seems to penetrate into the mountainous area. This is illustrated by the localisation of observation sites in the valleys of the rivers Rio Esera and Rio Noguera Pallaresa.

The occurrence of *P. algirus* in the valley of the river Rio Noguera Pallaresa merits some further consideration. Based on extensive searches made during a long-term residence in the city of Pobla de Segur, Maluquer (1956) published an account of the amphibians and reptiles occurring in this neighbourhood. He considered the presence of *P. algirus* there as doubtful as his observations of this lizard were restricted to a single individual, which could not be identified with certainty. Considering the numerous observations that Maluquer (1956) reports of other reptiles, including the rather secretive species *Anguis fragilis* and *Coronella girondica*, it seems save to conclude that *P. algirus* was absent, or at least very rare in that area when he made his observations. In contrast, this lizard seems at present to be quite abundant and widespread in

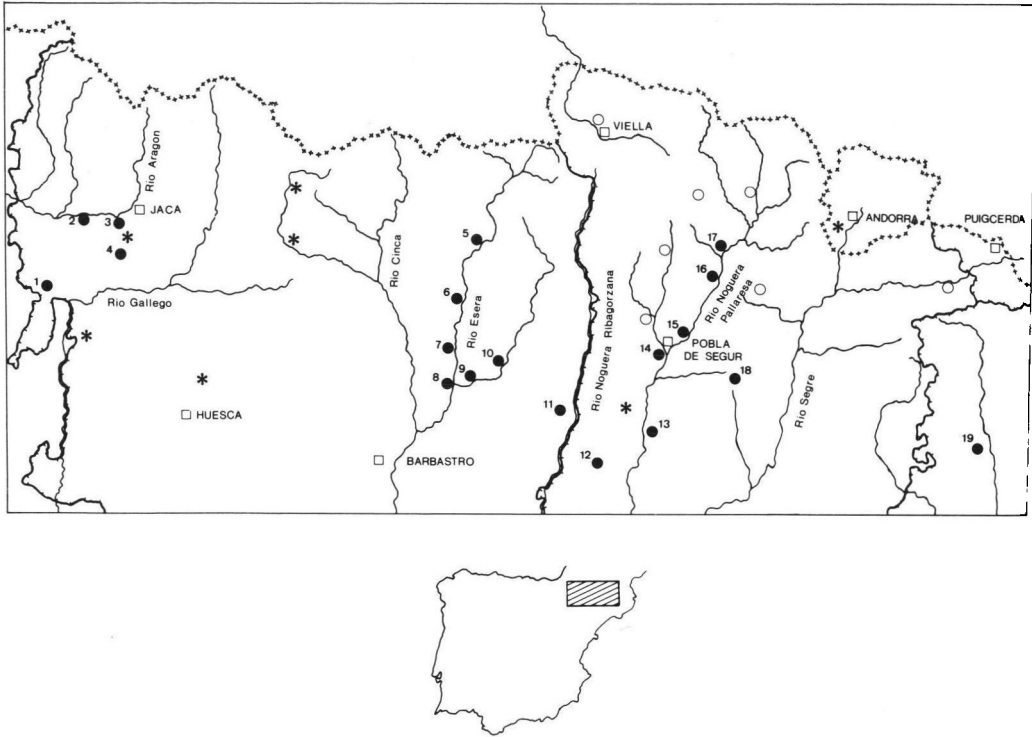


Fig. 1. Map of the central Pyrenean area in northern Spain. Main localities (squares) and rivers are indicated for orientation. Numbered solid circles (see text) indicate localities where we encountered *P. algirus*, stars show the approximate location of literature records. Open circles indicate visited sites where the lizard was not encountered.

the immediate neighbourhood of Pobla de Segur: during a two-day stay, we identified 8 individuals at two different sites. Comparison of our data with those of Maluquer (1956) strongly suggests that this lizard has only recently colonised this region. In the valley of the Rio Noguera Pallaresa, we located *P. algirus* north of Pobla de Segur at three different sites. One of these (Desfiladero de Collegats) was also visited by Maluquer (1956), without noting the presence of this lizard. The northernmost population of *P. algirus* that we encountered in this valley was located at Rialp, 32 km north of Pobla de Segur. Assuming that this site was recently colonised, we can infer that *P. algirus* has expanded his range at least 30 km to the north during the past 30 odd years (Maluquer, 1956 did not indicate the exact date of his observations). This is a surprisingly high rate, which suggests that a rather profound change in climatic conditions took place during the past decades, and/or the origin of lizards which are better adapted to the conditions in this mountainous region. We believe that a study of the geographic variation in thermoregulatory demands of eggs, young and adults of *P. algirus* would be a valuable undertaking.

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References

- Arnold, E.N., Burton, J.A. (1978): A field guide to the Reptiles and Amphibians of Britain and Europe. London, Collins.
- Böhme, W. (1981): *Psammodromus algirus* (Linnaeus 1766) — Algerischer Sandläufer. In: Handbuch der Reptilien und Amphibien Europas. Band 1, p. 479-491. Böhme, W., ed., Wiesbaden, Akademische Verlagsgesellschaft.
- Martinez-Rica, J.P. (1983): Atlas herpetológico del Pirineo. Munibe Soc. de Ciencias Aranzadi 35: 51-80.
- Maluquer, S. (1956): Anfibios y Reptiles de la Poble de Segur. Pirineos 12: 45-53.
- Salvador, A. (1974): Guía de los Anfibios y Reptiles españoles. Madrid, ICONA.

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