

Genus *Malpolon*: New distribution area in Algeria

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The snakes of the genus *Malpolon* are distributed in the circum-Mediterranean region, and comprise two species *M. monspessulanus* (Hermann, 1804) (with two recognised subspecies in northwestern Africa, *M. monspessulanus monspessulanus* and *M. monspessulanus saharatlanticus*) and *M. insignitus* (Geoffroy de St-Hilaire, 1827) (Carranza et al., 2006). Both species appear in northwestern Africa, but *M. insignitus* occupies the eastern part of region, in Algeria, Libya and Tunisia and possibly also occurs in eastern Morocco (Geniez, 2015). In Algeria *M. insignitus* has been recorded in the mesic regions of the northeast of the country, between the wilaya of Constantine and the Tunisian border, its presence being progressively scarcer towards the arid regions of the south, reaching its limit in the region of Aurès (approximately at 35.30°N, 6.48°E; Sindaco et al., 2013).

In June 2015 female of a *Malpolon* species (Fig. 1) was found by the first author in activity among some riparian bushes. The site was located in the vicinity of the town of In Amguel (Tamanrasset, southern Algeria), at the coordinates 23.6930278° N, 5.1436389° E (WGS84 datum), elevation = 966 m (Fig. 2). The females of the two *Malpolon* species are difficult to differentiate, although those of *M. insignitus* show a pattern of 2–3 longitudinal discontinuous stripes on the flanks (Fig. 1), which in *M. monspessulanus* are not usually aligned (except in the southern form *M. monspessulanus saharatlanticus*; Geniez 2015). Nevertheless genetic studies of this population would be required to determine the species. The area of In Amguel is situated in the BWh (tropical desert) climate belt (Köppen-Geiger classification), with an average annual precipitation of 28 mm and annual average temperatures of 23.3°C. The habitat is formed by scattered patches of riparian trees (date palm trees) and bushes in a wadi (oued Tekouiat), close to a small town and cultivated lands. This new record significantly extends the southerly distribution of *Malpolon* in Algeria (approximately 1300 km) and is, together with those located in the Western Sahara, the southernmost of the genus. This observation adds another reptile species of Mediterranean origin found in the Hoggar Mountains. Species found previously include the skink *Chalcides ocellatus* and the snake *Macroprotodon* sp. (Sindaco & Jeremcenko, 2008; Sindaco et al., 2013). These reptile populations may be relics of a more humid period in the central Sahara (Neolithic subpluvial, 7000–3000 years ago; Hays, 1972), persisting in this hyperarid region favoured by the milder conditions offered by the Hoggar mountains (Cuesta et al., 2010).



Figure 1. Female of the *Malpolon* sp. (dorsal, ventral and head detail), preserved specimen from Amguel, southern Algeria. Photographed by B. Bakhouché.

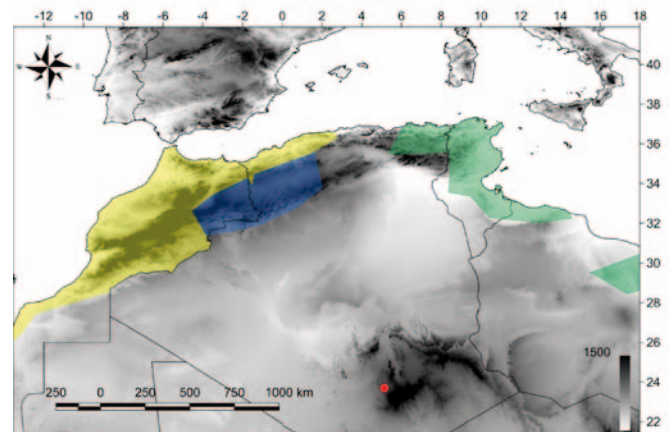


Figure 2. Map of north-west Africa showing the known distribution of *M. insignitus* based on Sindaco et al., 2013 (green area), possible distribution of *M. insignitus* without genetic evidence (Carranza et al., 2006; blue area), distribution of *M. monspessulanus* (yellow area), and the new location (red dot).

REFERENCES

- Carranza, S., Arnold, E.N. & Pleguezuelos, J.M. (2006). Phylogeny, biogeography, and evolution of two Mediterranean snakes, *Malpolon monspessulanus* and *Hemorrhois hippocrepis* (Squamata, Colubridae), using mtDNA sequences. *Molecular Phylogenetics and Evolution* 40: 532–546.

- Cuesta, J., Lavaysse, C., Flamant, C., Mimouni, M. & Knippertz, P. (2010). Northward bursts of the West African monsoon leading to rainfall over the Hoggar Massif, Algeria. *Quarterly Journal of the Royal Meteorological Society* 136: 174-189.
- Geniez, P. (2015). *Serpents d'Europe, d'Afrique du Nord et du Moyen-Orient*. Paris: Delachaux et Niestlé 384 pp.
- Hays, T.R. (1975). Neolithic settlement patterns in Saharan Africa. *The South African Archaeological Bulletin* 30(117/118): 29-33.
- Sindaco, R. & Jeremcenko, V.K. (2008). *The Reptiles of the Western Palearctic*. 1. Latina: Belvedere 579 pp.
- Sindaco, R., Venchi, A. & Grieco, C. (2013). *The Reptiles of the Western Palearctic*. 2. Latina: Belvedere 544 pp.

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