

Agama boueti CHABANAUD, 1917:
new to the herpetofauna of Morocco
and the northwesternmost record
of the species

Several species of the genus *Agama* DAUDIN, 1802, are known in the Mediterranean and adjacent Saharan regions: *Agama impalearis* BOETTGER, 1874, present in Morocco and Algeria (BONS & GENIEZ 1996; SCHLEICH et al. 1996), *Agama spinosa* GRAY, 1831, present in eastern Africa, including Egypt and Sudan (BAHA EL DIN 2006; GOODMAN & HOBBS 1994; HUSSEIN & DARWISH 2000; WAGNER et al. 2013). To the south, *Agama tassiliensis* GENIEZ, PADIAL & CROCHET, 2011, is limited to an area between Algeria, Mali, Niger, Libya and Chad (GENIEZ et al. 2011; TRAPE et al. 2012), whereas *Agama boulengeri* LATASTE, 1886, is restricted to Mauritanian mountains and to south-western Mali (WAGNER et al. 2009; GONÇALVES et al. 2012; VALE 2012). The *Agama agama* (LINNAEUS, 1758) species complex is present along West Africa, from Mauritania to Cameroon (CHIRIO & LEBRETON 2007; WAGNER et al. 2009), while *Agama boueti* CHABANAUD, 1917, is present in Mauritania, Mali, Niger and Chad (GENIEZ et al. 2011; GONÇALVES et al. 2012). Another species (*Agama castroviejoi*) closely related to both *A. impalearis* and *A. boueti* was described from the Mauritanian Adrar mountains by PADIAL (2005), but later synonymized with *A. boueti* (GENIEZ et al. 2011; GONÇALVES et al. 2012; MEDIANNIKOV et al. 2012).

In Morocco, from the Mediterranean coast to the Mauritanian border, only *A. impalearis* has been documented (BONS & GENIEZ 1996; SCHLEICH et al. 1996; GENIEZ et al. 2004; TRAPE et al. 2012). This is a very abundant species in the north of its range, becoming scarce in its southern limit at the towns of Laayoune, Smara and Tarfaya (VALVERDE 1957; SCHOUTEN & THÉVENOT 1988; BONS & GENIEZ 1996; GENIEZ et al. 2000). An isolated population is found at some rocky outcrops around the city of Dakhla (SALVADOR & PERIS 1975; GENIEZ et al. 2000). The origin of this population is uncertain, but it could be the result of a recent introduction. Its occurrence in



Fig. 1: Habitat of *Agama boueti* CHABANAUD, 1917, at Koudiet Laghnem (Adrar Settouf, southern Moroccan Sahara). Photograph by M. Mediani.

Mauritania and the central Sahara Desert was claimed (BRITO 2003; PADIAL et al. 2005; TRAPE et al. 2012), but these observations were subsequently re-identified and assigned to other species of agamas (see GENIEZ et al. 2011; GONÇALVES et al. 2012; TRAPE et al. 2012). For the southernmost Moroccan Sahara (Oued Ed-Dahab Lagouira region), no observation of this or other species has been reported.

During their 2011-2014 field studies, the authors found a few individuals of *A. boueti* in the Moroccan Atlantic Sahara, in the Oued Ed-Dahab Lagouira region, about 241 km in a straight line south of the town of Dakhla, and 126 km west of Mauritania (22.1625° N, 15.3379° W; WGS 84). The habitat is a fossil river in the stony desert ("reg" in Arabic) with a few specimens of *Acacia* sp. trees, enclosed by rocky outcrops on a relatively small mountain named Koudiet Laghnem in Adrar Settouf (Fig. 1).

Bouet's Agama *A. boueti*, differs from *A. impalearis* by a number of morphological

features: i) The maximum total length of adults is 27 cm whereas 32 cm for *A. impalearis*. ii) The third finger is the longest in *A. boueti*, while equal to or smaller than the fourth finger in *A. impalearis*. iii) The dorsal scales are homogeneous and arranged in 50 to 60 longitudinal scale rows at mid-body in *A. boueti*, while they form 70 to 80 scale rows in *A. impalearis*; and iv) in general, the color pattern of the dorsum is yellowish in *A. boueti* and dark brown in *A. impalearis* (BOETTGER 1874; CHABANAUD 1917; SCHLEICH et al. 1996; TRAPE et al. 2012).

Seven individuals of this species were examined: two adults were photographed during the activity period (22.162889° N, 15.338611° W; Fig. 2a), the third adult was found dead in January 2014, near a rocky outcrop, probably attacked by a raptor (22.16252° N, 15.33792° W). From this latter individual, tissue samples were taken for future genetic analysis. During April-May 2014, three juvenile individuals were ob-



Fig. 2a: *Agama boueti* CHABANAUD, 1917, adult, photographed at Koudiet Laghнем (Adrar Settouf, Southern Moroccan Sahara), 31 May, 2013. Photograph by F. Chevalier.



Fig. 2b: *Agama boueti* CHABANAUD, 1917, juvenile, photographed northwest of Koudiet Laghнем (Adrar Settouf, Southern Moroccan Sahara), 31 May, 2013. Photograph by M. Mediani.

Table 1: Species and coordinates (Decimal degree, datum WGS 84) of reptiles observed at Koudiet Laghnem (Adrar Settouf, Atlantic Sahara, Morocco).

Species	Date	Latitude (° N)	Longitude (° W)
<i>Tarentola annularis</i>	06-Jan-2014	22.16252	15.33792
<i>Tarentola annularis</i>	06-Jan-2014	22.03507	15.44913
<i>Tarentola annularis</i>	30-Apr-2014	22.24925	15.31159
<i>Tarentola annularis</i>	01-May-2014	22.20532	15.46315
<i>Tropicolotes tripolitanus</i>	02-May-2014	22.25375	15.31420
<i>Trapelus boehmei</i>	31-Mar-2013	22.20567	15.46303
<i>Trapelus boehmei</i>	31-Mar-2013	22.16289	15.33861
<i>Uromastyx dispar</i>	31-Mar-2013	22.18798	15.31407
<i>Uromastyx dispar</i>	31-Mar-2013	22.16289	15.33861
<i>Uromastyx dispar</i>	31-Mar-2013	22.20107	15.33285
<i>Uromastyx dispar</i>	01-Apr-2013	22.07806	15.35469
<i>Uromastyx dispar</i>	30-Apr-2014	22.15688	15.29543
<i>Uromastyx dispar</i>	30-Apr-2014	22.18582	15.33985
<i>Uromastyx dispar</i>	30-Apr-2014	22.20489	15.33152
<i>Acanthodactylus dumerili</i>	05-Jan-2014	22.25322	15.31104
<i>Acanthodactylus dumerili</i>	06-Jan-2014	22.16252	15.33792
<i>Acanthodactylus dumerili</i>	01-May-2014	22.16465	15.36463
<i>Acanthodactylus dumerili</i>	01-May-2014	22.17183	15.31740
<i>Mesalina guttulata</i>	01-May-2014	22.15970	15.36481
<i>Mesalina guttulata</i>	01-May-2014	22.17413	15.29057
<i>Varanus griseus</i>	06-Jan-2014	22.22045	15.43651
<i>Hemorrhois algirus</i>	01-May-2014	22.18204	15.32692
<i>Psammophis schokari</i>	06-Jan-2014	22.16254	15.33794
<i>Cerastes cerastes</i>	30-Apr-2014	22.16465	15.36463

served in the surrounding areas (22.17390° N, 15.36402° W; 22.1686° N, 15.36055° W; 22.15656° N, 15.35431° W) and another juvenile southwest of these at Koudiet Laghnem (22.24925° N, 15.31159° W, Fig. 2b). Based on the above morphological characters, all seven specimens were assigned to *A. boueti*. The species is present at similar latitude in El Beyyed, Mauritania, where it occurs in similar habitats (J. C. BRITO and D. V. GONÇALVES personal comments). Several other expeditions have been made in the surrounding areas to assess the distribution of this species in the southern Moroccan Sahara, but apparently this species is absent in other rock formations. This finding suggests that *A. boueti* is rare, localized and of fragmented distribution in the region of Oued Ed-Dahab Lagouira. This goes in accordance with what is expected for a species at the limit of its distribution area.

The concomitant herpetofauna includes *Acanthodactylus dumerili* (MILNE-

EDWARDS, 1829), *Tarentola annularis* (I. GEOFFROY DE SAINT-HILAIRE, 1827), *Uromastyx dispar* HEYDEN, 1827, *Hemorrhois algirus* (JAN, 1863), *Cerastes cerastes* (LINDAEUS, 1758), *Mesalina guttulata* (LICHTENSTEIN, 1823), *Trapelus boehmei* WAGNER, MELVILLE, WILMS & SCHMITZ, 2011, *Tropicolotes tripolitanus* PETERS, 1880, *Varanus griseus* (DAUDIN, 1803) and *Psammophis schokari* (FORSKÅL, 1775). The first five species have already been cited in the surrounding localities (GENIEZ et al. 2000, 2004), while the last five species are newly observed for this locality (Table 1).

The region of Oued Ed-Dahab Lagouira remains among the least studied regions of the Moroccan Atlantic Sahara, not only for reptiles but also for other taxonomic groups. The only atlas of reptiles dedicated to the Moroccan Atlantic Sahara (GENIEZ et al. 2004) was far from being complete. Other atlases that include the region (SINDACO & JEREMCENKO 2008; TRAPÉ et al. 2012) are also lacking details.

Although new presence data for reptiles in the region were published only recently (e.g., MATEO et al. 2006; ESCORIZA et al. 2011; MEDIANI et al. 2013, 2015), more comprehensive sampling is clearly needed.

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