

First Record of the Lacertid *Acanthodactylus boskianus* (Sauria: Lacertidae) for Iran

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Abstract.- The first record of the lacertid lizard *Acanthodactylus boskianus* for Iran is presented based on material collected by the author in 1995 and 1996 from 2 km west of Harsin, Kermanshah province, western Iran, on the *Astragalus*-covered sandy hills at about 1420 m elevation. Systematics and distribution of this lizard are discussed and its conventional known subspecies are questioned.

Key words.- *Acanthodactylus boskianus*, Lacertidae, Subspecies, New record, Western Iran, Kermanshah province, Harsin, Systematics, Distribution.

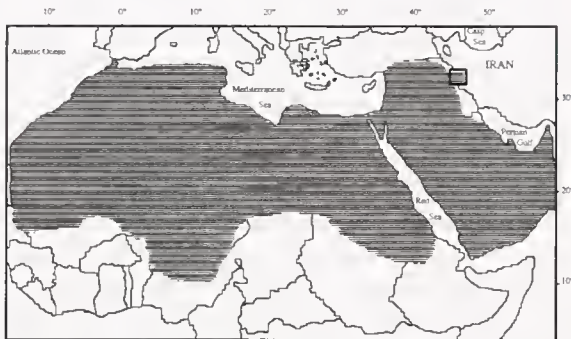


Figure 1. The distribution of *Acanthodactylus boskianus* in north Africa and the Middle East.

Introduction

The lacertid genus *Acanthodactylus* Wiegman, 1834 consists of about 30 species, distributed from Spain and Portugal across the Sahara desert and its periphery to the Red Sea, over most of Arabia and as far north as Cyprus and the Syrian-Turkish border; it also extends through Iraq, southern, and eastern Iran, southern Afghanistan, Pakistan and northwestern India (Arnold, 1983).

Apart from the present record, four additional species of this genus occur in Iran, mainly in southern and eastern parts of the country (*A. micropholis*, *A. grandis*, *A. schmidti*, and *A. blanfordi*) (Anderson, 1974; Anderson, in press; Salvador, 1982). As well, *A. ophiodurus* Arnold, may occur in lowland southwestern Iran (Anderson, in press). The genus is Saharo-Sindian in its affinities and distribution and does not penetrate to a great extent into the Iranian Plateau and only two species go beyond the plateau as far east as Afghanistan, Pakistan, and northwestern India (*A. cantoris* and *A. micropholis*) (Clark, 1990;



Figure 2. The locality of *Acanthodactylus boskianus* specimens collected by the author from Harsin, southeast of Kermanshah Province, western Iran. (■) = Harsin, (□) = Locality of *A. boskianus* specimens.

Salvador, 1982). This genus has recently been revised by Salvador (1982) and Arnold (1983) who divide it into 9 species groups. Among these groups is the "*A. boskianus* and *A. schreiberi*" group defined by several distinguishing characters (Arnold, 1983: 315).

So far, there is no record in the literature for the occurrence of *A. boskianus* in Iran. In this paper, I report this taxon for the first time inside Iranian territory based on three specimens (two adults and one juvenile) collected from Kermanshah province, western Iran during my two long-term excursions on the Iranian Plateau in 1995 and 1996.

Acanthodactylus boskianus (Daudin, 1802)

Lacerta boskiana Daudin, 1802, 3: 188, Pl. 36, Fig. 2 (type locality: Egypt).

Bosc's fringe-toed lizard.

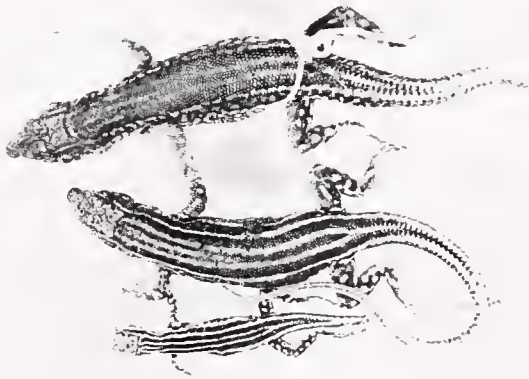


Figure 3. *Acanthodactylus boskianus*, top to bottom: male, female, juvenile.

Definition: Usually 4 entire supraoculars, occasionally the 1st divided; anterior border of ear pectinate; temporal scales more or less keeled; eyelids slightly denticulated; conspicuous gular fold; 3 series of scales around fingers; ventrals usually in 10 (and sometimes 12) straight longitudinal rows; usually large, keeled, imbricate dorsals (sometimes small, slightly keeled and imbricate); granular scales on flanks; moderate to strong fringe on 4th toe; upper surface of tail with large, imbricate, sharply keeled scales.

Distribution: *A. boskianus* is the most widespread species of the genus and occupies a large area from north Africa (Mauritania, Morocco, Algeria, Mali, Niger, Tunisia, Libya, Chad, Nigeria, Sudan, Ethiopia, Egypt) eastward into the Middle East (Israel, Lebanon, Jordan, Iraq, Syria, Turkey, and Arabian peninsula) (Salvador, 1982). It is also reported for the first time from Iran [(present paper) (Figs. 1-2)].

Collecting of *A. boskianus* specimens

I conducted two long-term excursions and field work in various parts of the Iranian plateau in 1995 and 1996. On July 8, 1995, I surveyed the area around Harsin, a small town in southeastern Kermanshah province, western Iran to collect *Trapelus ruderatus* and *Laudakia nupta* for ongoing research. In 2 km west of Harsin (34° 17' N, 47° 24' E) on the sandy hills covered by various species of *Astragalus*, I collected a lacertid specimen incidentally. It was an adult male of *A. boskianus* (GNHM Re. ex. 5142). I surveyed this locality several times in 1995, but I could not find more specimens of *A. boskianus*. Again, on August 29, 1996, and during my second field trip to Iran, I surveyed the same area and collected two other specimens of *A. boskianus*, an adult female and a juvenile (GNHM Re. ex. 5143-4) (Fig. 3). I collected all specimens on an *Astragalus*-covered sandy hill,



Figure 4. *Acanthodactylus boskianus* on the top of an *Astragalus* bush, 2 km west of Harsin, Kermanshah Province, western Iran.

among or under the *Astragalus* bushes. It seems that they have acquired special adaptations for living among and on the spiny bushes of *Astragalus* (Fig. 4).

Remarks

The three specimens which I collected 2 km west of Harsin, Kermanshah province, western Iran, have the general characteristics of most other *A. boskianus* specimens except that the dorsal scales are relatively small, as is the case in the Iraqi and Syrian populations. The main characteristics of these specimens are as follows:

Maximum SVL (Snout-Vent Length) = 65.5 mm; maximum TL (Tail Length) = 134 mm; scales across mid-dorsal region 43-48; ventral plates in 10 longitudinal rows with an extra row of smaller plates on each side; four entire supraoculars; temporal region slightly keeled, subocular does not reach the mouth and is wedged between the 4th and 5th supralabial; 7 / 7 upper and 7 / 7 lower labials; temporal scales feebly keeled; anterior edge of tympanum feebly serrated; feeble to moderate pectination of eyelids; 5 / 5 supraciliaries; 22-25 femoral pores; dorsal scales relatively small and feebly keeled; 3 rows of scales around fingers; 8-9 collar plates; distinct gular fold; 25-27 scales in a longitudinal row from symphysis of chin shields to collar; 21-23 keeled lamellae under the forth toe which is not exceptionally pectinate; ventral plates in 25-30 transverse rows; 13-15 scales between hindlegs; 25-26 scales on the 5th caudal whorl behind the vent.

Coloration and color pattern: In the male specimen dorsum sandy grey with two light dorsolateral stripes on each side enclosing a broad brown band with light reticulations, also a weakly visible dark-brown vertebral stripe present; base of tail with two light lateral stripes, distal 4 / 5 of tail uniformly grey dorsally, upper surface of limbs greyish-brown with numerous light spots; upper surface of head olive-brown; all of the ventral surfaces whitish.

In the female specimen dorsum is dark brown with 7 narrow, light stripes, the two dorsolateral ones on each side being lighter and in strong contrast with the dark-brown pattern of back, the three vertebral and paravertebral ones duller, proximal 1/4 ventral part of tail whitish, distal 3/4 pink or bright-red, other ventral surfaces whitish.

In the juvenile specimen, upper surface of head is light olive, dorsum dark-brownish-black with 6 strongly contrasting light lines, vertebral stripe whit-

ish on neck, disappears towards the posterior part of back.

Systematic account

As pointed out before, *Acanthodactylus boskianus* is the most widespread species of its genus. It occurs throughout a wide range which is extended from north Africa into the Middle East. It is a polytypic taxon and very well represented in most museum collections and shows obvious geographic variation in different parts of its range. Traditionally, *A. boskianus* has been divided into three subspecies; *A. b. boskianus* (Daudin, 1802) in the Nile delta and some parts of Sinai, *A. b. euphraticus* Boulenger 1919, from Ramadieh (central Iraq), and *A. b. asper* (Audouin, 1829) which covers almost the whole of the species range (Arnold, 1983; Boulenger, 1919, 1921; Salvador, 1982).

Boulenger (1919, 1921) divided the populations of *A. boskianus* into three varieties (subspecies):

The first subspecies, *A. b. boskianus* (forma typica), characterized by the lack of subocular contact with the lip, the common division of the first supraocular, and the small and numerous dorsal scales (34-52). The second subspecies, *A. b. asper*, characterized by a subocular which does not border the lip, an undivided first supraocular, and the large, relatively few dorsal scales (23-38). And the third subspecies, which I have examined the syntypes, *A. b. euphraticus* (described based on 8 specimens collected at Ramadieh on the Euphrates Front, central Iraq, in 1918 by Boulenger's son Capt. C. L. Boulenger), is characterized by a subocular which is usually bordering the mouth (in 7 out of 8 specimens = 87.5%), 38-43 scales across middle of body, 14-16 scales between hind limbs, and 23-37 femoral pores on each side.

This simple tripartite division is not satisfactory, for some of the supposedly distinctive features of *A. b. euphraticus* are not consistent and there is some differentiation within the populations assigned to *A. b. asper* (Arnold, 1983).

As the separation or contact of subocular with the lip is not a fixed character, it can not be considered of taxonomic value. As well, scale counts which were once thought typical for subspecies proved to be clinal and are therefore not apt to discriminate subspecies (Schleich et al., 1996).

On the other hand, Salvador (1982) divided various populations of *A. boskianus* into four groups; north African populations, Egyptian populations, Arabian populations, and Iraq, Syria, and Jordan populations. According to this author, the populations of

north Africa are relatively uniform, suggesting a recent invasion to this region. There is a progressive degree of variation towards the eastern part of the range, in the Middle East. As the position of the subocular greatly varies in individuals throughout this species entire area of distribution (this being especially so in Iraq), the taxonomic value of this character is greatly reduced (Salvador, 1982). According to Arnold (1983), over most of north Africa, the number of dorsal scales in a transverse row at mid-body varies from 26-41. I have examined specimens of *A. boskianus* from Sudan, Morocco, and Libya (see under material examined). All of these specimens have 35-37 scales across mid-body and, apparently, belong to *A. b. asper*. As well, Arnold (1980) regards all populations of this lizard in the Arabian peninsula as *A. b. asper*. In the Nile delta and north Sinai, populations assigned to *A. b. boskianus* have high dorsal scale counts (34-52). Populations with high dorsal counts (38-48) also occur in northeast of Jordan, northern and central Iraq, east Syria and adjoining Turkey. In one specimen from Jordan (GNM.Re. ex. 4799) which I have examined, there are 40-43 scales across middle of dorsum. Arnold (1983) believes that geographic variation in *A. boskianus* reflects differences in niche across its range. This species is often associated with dense vegetation and large dorsal scales may well be protective when shrubs are rigid and spiny. The fine-scaled populations occur in relatively mesic areas where vegetation is less damaging than in more arid regions. Reed and Marx (1959) reported *A. schreiberi*, based on having numerous dorsal scales, from Jarmu, Kirkuk Liwa, northern Iraq, in an isolated area far from the nearest known localities for this taxon in Lebanon. Salvador (1982) examined these specimens and attributed them to *A. boskianus*. Due to scarcity of material, the presence of *A. schreiberi* in Iraq needs more confirmation. I have studied three specimens of *A. schreiberi* (GNM.Re.ex. 4646 [1-3]) from Cyprus. They have 51-59 small, rather granular, smooth, or weakly keeled, scales across widest part of dorsum and 12 ventral plates across the widest part of venter. As well, the temporal scales are smooth and the anterior edge of tympanum is not serrated or very weakly so. According to Khalaf (1959), both *A. b. asper* and *A. b. euphraticus* occur in Iraq without specifying their exact localities. Also, Leviton et al. (1992) regard *A. b. asper* as the subspecies found in Iraq.

Based on the fore mentioned discussion, and with respect to characteristics of specimens collected by the author, it is evident that these specimens belong to a form with fine and numerous dorsal scales which are

weakly keeled, intact first supraocular, and lack of subocular contact with the mouth. These specimens do not entirely fit into the Boulenger's tripartite key (Boulenger, 1919, 1921). Since there is no more material at hand, it may be difficult to say if they represent the fourth form of *A. boskianus* or not. An adequate intraspecific treatment of *A. boskianus* is beyond the scope of this paper. Thus, I have chosen not to use a subspecific name for my own material, pending a thorough and knowledgeable revisionary work on this widespread and polytypic taxon. In spite of the considerable variation which occurs in *A. boskianus*, as mentioned above, there is as yet no definitive evidence that it consists of more than one species. It appears that *A. schreiberi* has originated as an isolate of *A. boskianus* (Arnold, 1983).

Material examined

Acanthodactylus boskianus (n = 3): GNHM. Re. ex. 5142-44, from Harsin (34° 17' N, 47° 24' E), Kermanshah province, western Iran.

Acanthodactylus boskianus euphraticus (n = 8): BMNH 1946. 8. 4. 83-90, from Ramadieh, Iraq (33° 25' N, 43° 17' E).

Acanthodactylus boskianus asper (n = 4): GNHM. Re. ex. 3333, 3346, 4799, 4937, from Sudan, Morocco, Libya, and Gaza respectively.

Acanthodactylus schreiberi (n = 3): GNHM. Re. ex. 4646 (1-3), from Cyprus.

Abbreviations

BMNH = British Museum (Natural History); GNHM. Re. ex. = Gothenburg Natural History Museum, Reptilia exotica.

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