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Acanthodactylus harranensis, a new species of lizard from southeastern Turkey (Reptilia: Sauria: Lacertidae)

ABSTRACT

Description of the new lacertid *Acanthodactylus harranensis* from Harran (SE Turkey). The new taxon shares many features in common with *A. grandis* but differs from it in having the dorsal proximal tail scales smooth or hardly keeled, the 4th supraocular more fragmented and a characteristic dorsal pattern. It is also easily distinguishable from all congeners with no keeling on proximal dorsal caudal scales (*A. tristrami, A. orientalis, A. robustus*) in having anterior border of the ear opening pectinate, subocular not reaching the mouth (often separated from the lip by a small scale only in *A. robustus*), ventrals usually arranged in 14 oblique longitudinal rows (instead of 10-12), 4 longitudinal continuous rows of scales on the fingers (instead of 3; a rudimentary, discontinuous 4th row sometimes occurs in *A. robustus*), tail more than 1.5 times the snout-vent distance (at least in the juveniles and subadults), and a different pattern, lacking the two rows of large ocellar or dark markings along the back. The description includes also some juveniles, up to now undescribed and/or unknown within the *A. grandis* complex and the *A. tristrami* group. Some data on the ecology and habitat of the new species are given.

Key Words: Reptilia, Sauria, Lacertidae, *Acanthodactylus harranensis* n. sp., *A. grandis* complex, *A. tristrami* group, Turkey.

INTRODUCTION

Acanthodactylus is a large genus of lacertid lizard including about 40 species widespread in the Iberian Peninsula, all of North Africa (south-

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ward to Sahel and eastward to Eritrea), and in the Arabian Peninsula, the Middle East (northward to S Turkey, including Cyprus), S Iran, Pakistan, Afghanistan, and NW India (Anderson, 1999; Arnold, 1983; Leviton et al., 1992; Salvador, 1982). Following Salvador's (1982) and Arnold's (1983) revisions, listing respectively 30 and 26 species, many new ones have been described (*Acanthodactylus tilburyi* Arnold, 1986; *A. taghitensis* Geniez & Foucart, 1995; *A. nilsoni* Rastegar-Pouyani, 1998; *A. beershebensis* Moravec *et al.*, 1999; *A. ahmaddisii* Y. L. Werner, 2004).

Until 1998 only a single species of *Acanthodactylus* was known for Turkey, the Saharo-Sahelo-Arabian *A. boskianus* (Daudin, 1802), where it inhabits the sandy banks of the Euphrates and Tigris rivers in SE Anatolia (Böhme, 1973; Başoğlu and Baran, 1977; Baran and Atatür, 1998; Salvador, 1982; Sindaco *et al.*, 2000). In the same year Franzen (1998; cf. also Sindaco *et al.*, 2000) reported the E Mediterranean *A. schreiberi* Boulenger, 1878 as occurring in Hatay Province (SE. Turkey). Finally, we discovered in SE Turkey a third *Acanthodactylus* that we consider to be a new species and describe hereafter.

DESCRIPTION OF THE NEW SPECIES

Acanthodactylus harranensis n. sp.

Material examined. *Acanthodactylus harranensis*. Holotype: adult ♂ [ZDEU (Zooloji Anabilim Dalı, Ege Üniversitesi, Fen Fakültesi) 65/2001: 1], obtained at Harran (36° 51' N – 39° 00' E), near the ruins of the ancient university, ca. 75 km as the crow flies from Şanliurfa (or Urfa; Urfa = 37° 08' N - 38° 46' E), altitude 380-390 m, Şanliurfa province, SE Turkey; leg. İ. Baran, Y. Kumlutaş, Ç. Ilgaz, A. Avcı, 01.V.2001. Paratypes: 3 adult ♂♂, 8 adult ♀♀ [ZDEU (Zooloji Anabilim Dalı, Ege Üniversitesi, Fen Fakültesi) 65/2001: 2-12] same data as for holotype; adult ♀ [MZUF (= Museo Zoologico dell'Università di Firenze) 39575 (ex NHCL = New Herpetological Collection Lanza 5027)], subadult ♀, young ♀ [MZUF 39576, 39577 (ex NHCL 5028, 5029)], subadult ♀ [SRSC (= Società Romana di Scienze Naturali) 928], young ♀ [MZUR (= Museo Zoologico dell'Università di Roma "La Sapienza") R-1425], young ♀ [CZRS (= Collezione Zoologica Roberto Sindaco, Museo Civico di Storia Naturale, Carmagnola (Turin) R-1041], leg. P. Crucitti, 30. VIII. 2001. Other data as for holotype.

Material compared. *Acanthodactylus grandis*. 3 adult ♂♂, 2 adult ♀♀, 2 subadult ♂♂, 4 subadult ♀♀ [HUJ-R (The Hebrew University of Jerusalem Zoological Museum-Herpetological Collection) 10382-10392], SYRIA, small salt lake East of Homs, leg. H. Zinner, Spring 1966; adult ♂, adult ♀, 2 subadult ♀♀ [HUJ-R, 2940-2943] Syrian desert, leg. J. Aharoni, first half of April 1931; subadult ♀ [HUJ-R, 10538] SYRIA, saltlake on Palmyra road, leg. H. Zinner, Spring 1966; adult ♂ [HUJ-R, 10566] SYRIA, 75 km E of Homs, leg. H. Zinner, Spring 1966.

Additional material not included in Tab. I.

Acanthodactylus grandis. 1 adult ♂ [NMW (= Naturhistorisches Museum Wien) 11839], Transjordan (now JORDAN), Hissah – Wadi Mussa, leg. G. Haas, 28.III.1936; 1 pregnant ♀ [NMW 16772:1], El Widian, 10.V.1910; 1 adult ♂ [NMW 16772:2], IRAQ, Kalat Schergat bei (= near) Assur am (= on the) Tigris; 1 juv. [MNHN (= Muséum National d'Histoire Naturelle, Paris) 1935.246], SYRIA, Dayr az Zawr, 3 miles West of T-2 pipeline pumping station); 1 adult ♂ [MNHN 1966.45], IRAN, Kash; 2 adult ♂♂ [MNHN 1966.41, 1966.44] and 1 adult ♀ [MNHN 1966.43], SYRIA, Palmyra; 4 adult specimens [MZUT (= Museo di Zoologia dell'Università di Torino, now in the Museo Regionale di Scienze Naturali, Torino) R3809 (1-4), SYRIA, Damascus, E. Festa leg.; 1 specimen [MZUT R2284], SYRIA, Mzerib, 1893, E. Festa leg.; 1 adult ♀ [MZUF 32142], JORDAN, Petra, 24.VI.1963, S. Bruno leg. (locality probably erroneaus).

Acanthodactylus tristrami. 2 specimens [MZUT R2402], LEBANON, Coelesyria (= Beq'a Valley), 1893, E. Festa leg.

Acanthodactylus orientalis. 1 specimen [CZRS R394], SYRIA, Palmyra, 9.VIII.1990, R. Sindaco leg.

Acanthodactylus robustus. 1 specimen [MNHN 1935.245], SYRIA, Palmyra.

Diagnosis. A relatively large and stout-bodied *Acanthodactylus* with smooth dorsal scales on trunk and proximal tract of tail, 3-6 more or less enlarged scales forming a fringe on anterior border of ear opening, subocular not reaching the mouth, 4 upper labials anterior to subocular (occasionally 3 or 5 at least on one side), 1st supraocular broken into a large scale and 2-7 (mean 3.2) (in eighteen specimens) minute fragments, 2nd and 3rd supraoculars intact, 4th supraocular very fragmented, ventrals usually in 14 longitudinal rows (arranged in three nearly regular straight longitudinal series medially, staggered and disposed obliquely otherwise), 51-65 (mean 57.3) (in eighteen specimens) midbody scales, 4 longitudinal continuous rows of scales on fingers, toes weakly denticulated, 16-22 (mean 19.7) unicarinate and trimucronate lamellae beneath 4th toe; 18-25 (mean 21.8) femoral pores on right side; tail more than 1.5 times the body length, at least in young and subadult animals; dorsal pattern consisting of more or less irregular, longitudinal dark and light stripes or series of spots in juveniles, of a dark reticulation with light roundish spots in adults and subadults; premaxilla not abruptly narrowed.

Description of the holotype (Measurements in mm; left/right. Figs. 1-5). Habit robust, body not depressed. Head about 1.5 times as long (22.58) as broad (15.18) (head length measured from snout tip to posterior edge of squamosal bone located without breaking the skin), its length approximately 25% of snout-vent distance, its depth equal to the distance between the anterior corner of the palpebral fissure and the anterior margin of the ear opening; snout obtusely pointed, with strong, obtuse canthus and feebly concave posterior loreal; perinarial region distinctly swollen; nostril situated between a postnasal, a supranasal and the first upper labial, which is broad above and narrow below. Pileus (anterior margin of internasals to posterior margin of parietals) twice as long (20.26) as broad (10.02). Hind limb reaching the axil, its length 54.3% of snout-vent distance. Tail not regenerated. Total length 230.3 mm.

Upper head-shields more (frontonasal, prefrontals, supraoculars) or less (frontal, frontoparietal) convex; interparietal and parietals flat; a shallow depression in the right parietal, interparietal and the posterior half of the frontal. Interparietal rhombic, a little shorter than the common suture of frontoparietals, with a clear parietal foramen. No occipital scale. First supraocular broken up into one large and 4/4 minute fragments (supraciliar granules excluded); 2nd and 3rd supraoculars intact; 4th supraocular broken up in 8/11 fragments, one of which clearly larger than others (supraciliar granules excluded); 6/6 supraciliaries, first longest; supraciliary granules in a single, continuous row on each side, 11/11 contacting the inner border of supraciliaries, 8/8 contacting both supraciliaries and 1st to 3rd supraoculars.

Upper labials 8/7, 4/4 of which anterior to centre of eye, 4th longest; 6/6 lower labials (as last lower labial has been considered that touching the posterior inframaxillary); subocular with a sharp keel close to its upper margin, running forward on to the presubocular, not entering the lip, wedged between 4th and 5th upper labials. Two supratemporals, the anterior obtusely keeled, their dorsal surface a little less than 0.5 mm below the parietal table; other temporals small, polygonal, almost granular and flat above, progressively larger and convex ventrad; tympanic scale small, anterior margin of the ear opening with 5/5 denticulations, 4/3 of which larger and subtriangular. Reflection of the eyelid margins weakly developed, slightly and obtusely serrated only in the posterior tract of the lower eyelid; scales in middle of lower eyelid somewhat enlarged and translucent. Scale in anterior corner of orbit not much enlarged. Row of small scales running along upper edge of subocular not prominent, followed by 6/6 larger scales, the first of which the largest and partly contacting the subocular, the last one in contact with postocular; postocular conical, higher than long, in contact with 4th supraocular and anterior supratemporal, separated from last supraciliary by a few granules.

Five pairs of submaxillaries, the three first in contact in the middle; 28 gular scales in a straight line between the symphysis of the submaxillaries and the median collar-plate, juxtaposed in front, enlarged and imbricate towards the collar; gular fold absent. Collar free, curved, composed of 12 plates.

Dorsal scales granular and juxtaposed on the nape, becoming larger, rhomboidal, flat, perfectly smooth and subimbricate caudad; lateral scales smaller, almost granular, becoming larger and flat ventrad, the lower ones often grading into ventrals; 54 scales around the middle of the body;

enlarged ventrals in 14 longitudinal (at the level of the widest transversal row) and 30 transverse rows, arranged in three rather regular straight longitudinal series medially, staggered and disposed obliquely otherwise; about 22 more (medially) or less large scales in a transverse row between the hind limbs; 4 enlarged preanal plates in a longitudinal row between anterior cloacal margin and the gap between the two series of femoral pores.

Two continuous rows of 21/20 femoral pores, the two series separated by one scale medially and extending quite close to the knee. Four longitudinal rows of scales on the fingers; pectination along the posterior surface of the fingers inconspicuous, that of the toes weak. 21/20 unicarinate and trimucronate subdigital lamellae under the 4th toe (last and penultimate lamellae respectively tri- and bicarinate, and without mucrons).

Dorsal tail scales proximally smooth, except for those of the vertebral row which are mostly very weakly and obtusely keeled, becoming a little more carinate caudad; tail scales rhomboidal and disposed in straight longitudinal line on the vertebral row, rectangular and arranged obliquely otherwise; tail ventral plates with the same disposition but unkeeled; all tail scales longer than broad.

Anterior and dorsal surfaces of forelimb covered with large, smooth, imbricate scales, becoming rather abruptly very small on the entire ventral surface of upper arm and of forearm, along a narrow (8-9 scales wide) band. Scales of thigh all smooth and imbricate, very large anteriorly and progressively smaller otherwise, almost granular behind the femoral pores. Upper surface of tibia with smooth, imbricate, rounded to obtusely pointed scales as large as posterior dorsal ones; under surface of tibia with 4-5 rows of enlarged scales, the smallest ones at least two times as large as those on the posterior side of tibia.

Coloration. Head dorsally dark brown and blackish, laterally with four vertical black bars on a light background, the longest light stripe running from the 2nd supraciliary to the 4th submaxillary. Neck, trunk, forelimbs and hind limbs with a rather regular black and brownish network dorsally whose rounded meshes include whitish spots, sometimes transversely confluent, particularly on the flanks. Tail dorsally light brownish with transverse, continuous or discontinuous black bands. Ground colour of the underparts off-white; submaxillaries with black marbling; gulars with thick blackish spots and/or dots and light margin; ventrals with scattered blackish dots; tail almost unspotted medially and with blackish dots laterally.

Variation in the paratypes (Figs. 6-9). Apart from some ontogenetic variations, the paratypes, twelve adults, two subadults and three juveniles, do not differ substantially from the holotype except for their pattern.

Head length approximately 22-30% of snout-vent distance, a little shorter in subadults and youngs; tail 1.3-1.6 (in adults) to 2.5-2.7 times (subadults and juveniles) the SVL length. Frontonasals always broader than long; common suture of frontoparietals straight; a vestige of occipital present only in MZUF 39577. First supraocular broken in 2/2 (seven times), 3/3 (three times), 4/4 (four times) or 5/3, 5/7, 7/7 fractions; supraciliaries 5-8 (mean 6); supraciliary granules 10-16 (mean 12.1), always in a single continuous series (shortly interrupted at left only in MZUF 39576); first loreal shorter than second loreal and usually about as high as long; second loreal usually higher than long; upper labials 6-8 (mean 7.6), usually 4 anterior to subocular (3 and 5 on the left side in four animals); 1-3 large, smooth scales on posterior edge of orbit separated from postocular by some smaller ones; lower labials 5-7 (mean 6.2); subocular never reaching lip; supratemporals 2/2; second supratemporal about $^1/_3$ to $^1/_2$ length of first one; tympanic scale small; ear denticulation involving 3-5 (mean 4) blunt scales, 2-4 more developed than the others, submaxillaries 5/5 in eleven and 6/6 in six animals, the first three always in contact; no gular fold; gulars 25-33 (mean 28.9); collar 10-12 (mean 10.6); midbody scales 51-65 (mean 57.5); longitudinal series of ventrals (at the level of widest transversal row) 14 in 13 paratypes, 15 in 2 paratypes, 13 in 1 paratype, 12 in 1 paratype; 28-33 (mean 31) transverse series of ventrals between collar and hind legs; 4-5 (mean 4.5) enlarged preanal plates on mid-line; femoral pores 18-25 (mean 21.6), fourth toe with 16-22 (mean 20.4) unicarinate and unimucronate subdigital lamellae.

Colour and pattern of the adults in both sexes are similar to that of holotype. Head dorsally light brown more or less dark marbled, with four dark vertical lateral bands, indistinct in some specimens. Upper part of neck, trunk, forelimbs and hind limbs brown with light and dark spots; the light spots included in the dorsal reticulation sometimes are transversally confluent. Tail dorsally light brown with transverse continuous or discontinuous black bands. Ground colour of ventral parts whitish; submaxillaries with black marbling; gulars off-white, sometimes with black spots and/or dots; ventrals with more or less scattered black dots, thicker laterally. Colour pattern of the two subadults similar to, but dorsally more contrasting than in adults: trunk, tail and limbs dorsally with very numerous, more or less irregularly arranged, light, roundish spots on a blackish-brown ground colour (Fig. 8, MZUF 39576). Young specimens with back and flanks more or less irregularly striated, with 7 narrow, more or less discontinuous, light stripes on a brown ground colour (Fig. 8). Juveniles MZUR R-1425 (Fig. 8 and 9) and CZRS R-1041 (Fig. 9) with a pattern consisting in longitudinal light stripes regularly interrupted by blackish brown spots (the latter almost absent along the vertebral stripe) on a light brown background. Underparts always off-white, with a reduced dark pigmentation confined to the sides of belly and throat.

In the 6 specimens (MZUF, CZRS, MZUR, and SRSN) studied radiographically, we found: 24-25 (mean 24.8) presacral vertebrae (N = 6); a little more than 50 postsacral vertebrae (N = 6); 7-8 (mean 7.8) non-autotomic caudal vertebrae (N = 4); 4 autotomic caudal vertebrae, each with two pairs of transverse processes, arranged according the Arnold's (1983) pattern C (N= 1, subadult ♀).

Comparison with other species. This new taxon shares many features with *Acanthodactylus grandis*. In order to compare *A. grandis* and *A. harranensis*, 17 specimens of *A. grandis* from Syria were examined. The most important difference between *A. grandis* and *A. harranensis* is the number of longitudinal series of ventrals (Tab. 1) (coefficent of difference = 1.18; G-test, corrected according to Williams, 16.028; P<0.02). The number of fourth toe subdigital lamellae is higher in *A. grandis* than in *A. harranensis* (Tab. 1). The head length and the greatest head width are higher in *A. harranensis* than in *A. grandis*. The total length of the biggest specimen in *A. harranensis* is 230.3 mm. While 4th supraoculars broken up in 6-13 (mean 9) in *A. grandis*, this value ranges from 7 to 14 with a mean of 11.3 in *A. harranensis*. Also *A. harranensis* differs from *A. grandis* in having the dorsal proximal tail scales smooth or hardly keeled.

Acanthodactylus harranensis also shows differences from Syrian *A. grandis* in terms of colour (in alcohol) and pattern. Head dorsally light brown or greyish, seldom with dark brown or black spots; dorsal ground colour light to dark grey, usually with 4 longitudinal series of light or dark spots in adults, relatively smaller and more evident in subadults. Belly off-white to greyish white, unspotted.

Up to now only three species of *Acanthodactylus* were known to have keeling on proximal dorsal caudal scales: *A. tristrami* (Günther, 1864) from Syria, Lebanon, Israel and Jordan (Günther, 1864; Haas, 1951; Salvador, 1982; Arnold, 1983 and 1986; Disi, 1991; Disi and Amr, 1998; Sindaco, 1998; Disi *et al.*, 2001), *A. robustus* F. Werner, 1929 from Iraq, Syria, Jordan and extreme N Arabia (Werner, 1929; Haas and Werner, 1969; Arnold, 1980 and 1983; Salvador, 1982; Disi and Amr, 1998; Sindaco, 1998; Disi *et al.*, 2001), and *A. orientalis* Angel, 1936 from Iraq and Syria (Angel, 1936; Salvador, 1982; Arnold, 1983; Sindaco, 1998; Disi *et al.*, 2001).

The new taxon is easily distinguished from the above-mentioned species at least in having anterior border of the ear opening pectinate, subocular not reaching the mouth (often separated from the lip by a small scale only in *A. robustus*), ventrals usually arranged in 14 oblique longitudinal rows (instead of 10-12 in straight ones), 4 longitudinal continuous rows of scales on the fingers (instead of 3; a rudimentary, discontinuous 4th row sometimes occurring in *A. robustus*), tail more than 1.5 times snout-vent distance (at least in the juveniles and subadults), and a different pattern, lacking the two rows of large ocellar or dark markings along the back.

	A. harranensis n.sp.				*A. grandis*				
Parameter	N	Mean±SE	SD	Range	N	Mean±SE	SD	Range	CD
1	13	84.9±1.4	5.1	76.5-94.8	8	79.5±3.3	9.3	70.9-94.1	0.37
2	10	120.5±4.2	13.4	105.0-141.0	5	120.6±6.2	13.9	100.0-135.0	0.00
3	13	9.2±0.2	0.6	8.2-10.0	8	8.9±0.5	1.3	7.7-11.1	0.15
4	13	18.6±0.3	1.2	17.0-20.3	8	18.4±0.9	2.5	15.9-22.6	0.05
5	13	20.6±0.4	1.4	18.4-22.6	8	20.5±0.9	2.8	17.8-25.8	0.02
6	13	13.6±0.3	1.1	12.2-15.2	8	11.1±0.7	2.0	8.9-15.1	0.80
7	13	10.3±0.3	0.9	8.8-11.4	8	9.1±0.5	1.5	7.3-11.8	0.50
8	13	26.9±0.4	1.5	24.4-29.4	8	26.2±1.2	3.3	22.1-31.5	0.14
9	13	43.9±0.9	3.1	39.9-49.1	8	44.8±1.5	4.2	38.4-50.6	0.12
10	13	49.3±0.4	1.5	46.9-52.5	8	48.1±0.5	1.4	45.9-50.3	0.40
11	13	24.2±0.3	1.1	22.3-26.7	8	25.8±0.3	0.9	24.8-27.6	0.80
12	18	12.1±0.3	1.2	10-15	17	12.1±0.4	1.6	9-16	0.00
13	18	12.0±0.4	1.6	10-16	17	12.0±0.4	1.5	10-16	0.00
14	18	4.0±0.2	0.8	2-5	17	4.4±0.1	0.5	4-5	0.57
15	18	57.3±0.9	3.9	51-65	17	53.9±1.0	4.2	46-63	0.41
16	18	71.2±0.9	3.8	66-79	17	69.8±1.1	4.6	61-81	0.16
17	18	28.9±0.4	1.9	25-33	17	30.1±0.4	1.8	27-33	0.32
18	18	10.7±0.2	0.8	9-12	17	10.4±0.3	1.2	8-12	0.15
19	18	30.9±0.3	1.1	28-33	17	30.8±0.3	1.0	30-33	0.04
20	18	13.9±0.0	0.2	12-15	17	15.9±0.4	1.5	14-18	1.18
21	18	4.5±0.1	0.5	4-5	17	5.4±0.2	0.9	4-7	0.64
22	18	21.4±0.4	1.9	18-25	17	23.2±0.7	2.9	18-28	0.37
23	18	21.8±0.4	1.7	18-25	17	23.4±0.7	3.0	18-28	0.34
24	18	19.7±0.4	1.5	16-22	17	22.4±0.4	1.7	19-25	0.84

Table 1 - Quantitative characters of adult specimens of *Acanthodactylus harranensis* n. sp. from Harran, SE Turkey, and adult *Acanthodactylus grandis* from Syria (measurements in mm; N: Number of specimen; SD: Standard deviation; SE: Standard error; CD: Coefficient of difference). **1**. Body length (snout – vent distance). **2**. Tail length, when intact. **3**. Pileus width (largest distance between outer margins of supraoculars or parietals). **4**. Pileus length (anterior margin of internasals – posterior margin of parietals). **5**. Head length (snout tip – posterior edge of squamosal bone located without breaking the skin). **6**. Greatest head width. **7**. Head depth (head top – lower margin of lower jaw). **8**. Fore limb length (excluding claw). **9**. Hind limb length (excluding claw). **10**. (Pileus width/Pileus length)x100. **11**. (Head length/Body length) x100. **12**. Supraciliary granules on the left side. **13**. Supraciliary granules on the right side. **14**. Number of the more developed anterior auricular denticulations. **15**. Midbody scales. **16**. Midbody scales + longitudinal series of ventrals. **17**. Gulars (in a straight line between the symphysis of the submaxillaries and the median collar-plate). **18**. Collar. **19**. Transverse series of ventrals. **20**. Longitudinal series of ventrals (in longest row across belly). **21**. Enlarged preanal plates (in a longitudinal row between anterior cloacal margin and the gap between the two series of femoral pores). **22**. Femoral pores on the left side. **23**. Femoral pores on the right side. **24**. Fourth toe subdigital lamellae.

E t y m o l o g y. The species is named after the ancient town of Harran (in province Şanlıurfa, SE Turkey), an old Mesopotamian city that had the first university in the world.

H a b i t a t and e c o l o g y. The Harran plain is one of the driest areas of SE Anatolia, with annual rainfall ranging approximately from 300 to 600 mm, largely depending on altitude. There are no climatic data for Harran: temperature data are available for the cities of Akçakale, less than 20 km SSW of Harran, and Urfa, about 40 km NNW of Harran. The nearest localities with available rainfall data are Gaziantep and Diyarbakir, about 140 km W and 150 km NE of Harran, respectively (Tab. 2). The rainfall data are only indicative and almost surely overestimated if applied to Harran, since Gaziantep is halfway between Urfa and the Mediterranean sea, and both Gaziantep and Diyarbakir are higher in elevation than Harran, thus with a less dry climate. According to the Gaussen & Bagnoul index there are 4-5 months of aridity between May and September.

Akçakale (*ca*. 36.70°N-39.00°E. Height *ca*. 375m a.s.l.)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
A °C	1.3	2.3	5.3	9.3	13.8	18.3	21.3	20.6	16.6	11.3	5.8	2.4	10.6
B °C	6.0	7.6	11.5	16.4	21.9	27.0	30.3	29.8	25.8	19.6	12.7	7.5	17.9
C °C	10.6	13.0	17.8	23.5	29.9	35.7	39.3	38.9	35.0	27.9	19.5	12.4	25.1

Urfa (*ca*. 37.13°N-38.70°E. Height *ca*. 547m a.s.l.)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
A °C	1.8	2.8	5.8	10.1	15.0	20.1	23.7	23.5	19.8	14.2	8.1	3.7	12.4
B °C	5.3	7.1	10.4	15.8	21.6	27.6	31.5	31.1	26.7	19.9	12.8	7.2	18.0
C °C	9.5	11.6	16.1	21.7	28.1	33.9	38.1	37.7	33.5	26.3	18.2	11.6	23.8

Average Rainfall

Diyarbakır (*ca*. 37.88°N-40.10°E. Height *ca*. 686m a.s.l.)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	75.0	67.8	64.5	71.4	45.7	9.8	0.7	0.5	2.5	31.2	54.4	71.5	495.9

Gaziantep (*ca*. 37.08°N-37.29°E. Height *ca*. 855m a.s.l.)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	98.5	78.0	72.0	41.8	30.5	6.2	1.6	0.9	2.6	31.1	65.8	88.6	520.3

Table 2 - Climatic data of nearest climatic stations. Temperatures (A: Average minimum temperature, B: Average temperature, C: Average maximum temperature).

The Harran's plain south of Urfa is characterized by arid prairies and semi-desert vegetation, intermixed with pastures and cultivations. The steppe vegetation is progressively replaced by fields following the completion of the GAP project ("Güneydoğu Anadolu Projesi", or "Southeastern Anatolia Project"), the biggest project of the Turkish Republic and one of the most important in the world. The main threat for the new species and more generally biodiversity in this area is the loss of natural arid habitats owing to irrigation and cultivation. The centerpiece of the GAP, the gigantic Atatürk Dam, was completed in 1990; upstream, the valleys of the Euphrates and its confluents have been submerged under an 800 square-kilometer lake. Downstream, the irrigation of the Harran plain started in 1995 and 151,000 hectares of steppe turned green. To date, only 8% of the irrigation projects have in fact been completed. Wherever one looks in this region, cotton dominates; the planners of GAP decided that 25% of the irrigated lands would be used for cotton production by 2005 (in 1996, it was only 2.8%).

Terra typica is characterized by the ruins of the Ancient University, in an area covered by hardened grey sand with intermixed blocks of sedimentary fossiliferous rocks. The vegetation is a steppe, with scattered shrubs mostly less than 50 cm high. The new *Acanthodactylus* was collected while running on the ground, near the border of the archaeological site; some specimens usually took refuge among the roots of the zygophyllaceous *Peganum harmala* L. Other amphibians and reptiles were collected or observed at these ruins: the bufonid *Bufo viridis* Laurenti, 1768, the gekkonid *Asaccus elisae* (F. Werner, 1895), the lacertid *Ophisops elegans* Ménétriés, 1832, the scincids *Mabuya* (or *Euprepis*) *aurata* (Linnaeus, 1758) and *Eumeces schneideri* (Daudin, 1802), and the colubrid *Malpolon monspessulanus* (Hermann, 1804).

DISCUSSION

Salvador (1982) and Arnold (1983) allocate the *Acanthodactylus* of the northern Middle East (Turkey, Lebanon, Syria, N Iraq) in three species groups: *boskianus*, *tristrami* and *grandis*, including in the area, respectively, the species *A. boskianus* (Daudin, 1802) and *A. schreiberi* Boulenger, 1878 (*boskianus* group), *A. tristrami* (Günther, 1864), *A. orientalis* Angel, 1936 and *A. robustus* Werner, 1929 (*tristrami* group), and *A. grandis* Boulenger, 1909 (the only species of the *A. grandis* group).

At first we interpreted the new species as belonging to the *tristrami* group since it was provided with unkeeled proximal dorsal caudal scales, a character that, according to Arnold (1983: 318 and 332) is just confined to the above-mentioned group. But a deeper analysis led us to a different opinion because the new species disagrees in many features from members of the *tristrami* group in having anterior border of the ear opening pectinate, subocular not reaching the mouth, ventrals usually in 14 oblique longitudinal rows, 4 longitudinal continuous rows of scales on fingers, tail more than 1.5 times snout-vent distance (at least in the juveniles and subadults). Actually our specimens appear to be closer to the *A. grandis* group in sharing with it the main distinctive features, i.e. 4 rows of scales on fingers and more ventrals in the longest row across the belly, arranged in oblique rows. The new taxon is distinguishable from *A. grandis* in having dorsal proximal tail scales smooth or hardly keeled, a more fragmented 4th supraocular, a distinctive dorsal pattern as well as, at least judging from our specimens, conspicuously dark pigmented underparts.

Salvador (1982) and Arnold (1983) highlight the variability of *A. grandis* within its range. According to Salvador (1982) the western populations (Syria and Jordan), which are geographically close to *A. harranensis*, have 16 ventrals in the longest row across the belly (usually 14 in our specimens), and dorsal pattern with «four dorsal rows of large black spots»; in any case within this area also occur populations with four dorsal longitudinal rows of blotches, sometimes confluent longitudinally and/or transversally [as for instance in a small series from Damascus seen by us: MZUT (= Museo Zoologico dell'Università di Torino) R-3809] or with more or less distinct longitudinal rows of black dots (Boulenger, 1909, 1923; Disi *et al.*, 2001). Salvador (1982) mentions populations from NE Iraq, never recognized at a taxonomic level, with a «very conspicuous and amply reticulate colour pattern». Regarding the southeastern Iraqi *A. fraseri* Boulenger, 1918, usually treated as a synonym of *A. grandis* (Salvador, 1982; Arnold, 1983), it is a form clearly different from *A. harranensis*, at least in having dorsal body and tail scales strongly keeled, ventrals in 16 longitudinal rows, a smaller size, and a different colouration: "Greyish above, with four longitudinal series of small darker spots on the back and a rather indistinct darker network on the body, white beneath" (Boulenger, 1921).

We are aware that when describing congeneric allopatric taxa, especially if pertaining to a difficult genus as *Acanthodactylus*, it is possible to consider as discriminant some characters that further researches could explain as a clinal variation. However in our specific case the possibility of a clinal variation in *A. grandis* seems to be unlikely on the basis of our as well as Arnold's observations (Arnold, 1983), according to whom «the pattern of variation appears to be irregular and sometimes animals of adjacent localities show considerable differences in such features and adult size, strength of keeling in dorsal scales, and pattern». Also our examination of the *grandis* samples coming from the localities closest to the *A. harranensis* range, i.e. from the Syrian desert and the Euphrates River valley, confirms the Arnold's conclusions.

The rather slight scalation difference appears to be usual also within other groups of species, as observed in the *A. pardalis* group (Moravec et al., 1999; Y. L. Werner, 2004) and in the *A. scutellatus* group (Arnold 1983; Crochet *et al.* 2003).

In our opinion *A. grandis* is most likely a composite species, a possibility already suggested by Arnold (1983), and the real taxonomic value of the groups *grandis* and *tristrami* should be evaluated by means of modern molecular techniques, since the aforesaid groups appear to be mostly founded on derived and possibly converging characters.

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Fig. 1 - *Acanthodactylus harranensis* n. sp. Lateral view of the holotype (adult male ZDEU 65/2001:1). Photo S. Üçüncü.

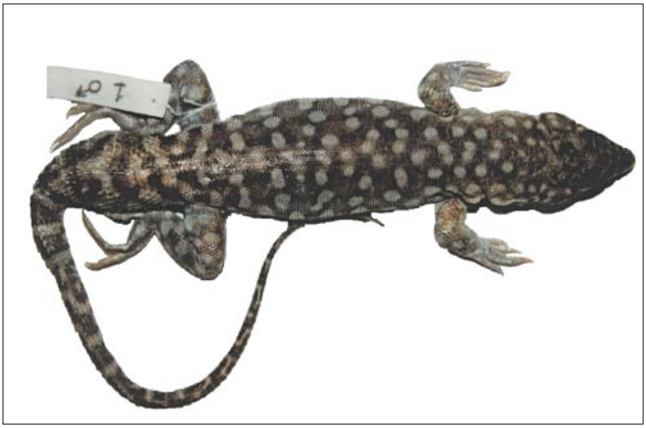

Fig. 2 - *Acanthodactylus harranensis* n. sp. Dorsal view of the holotype (adult male ZDEU 65/2001:1). Photo S. Akalın.

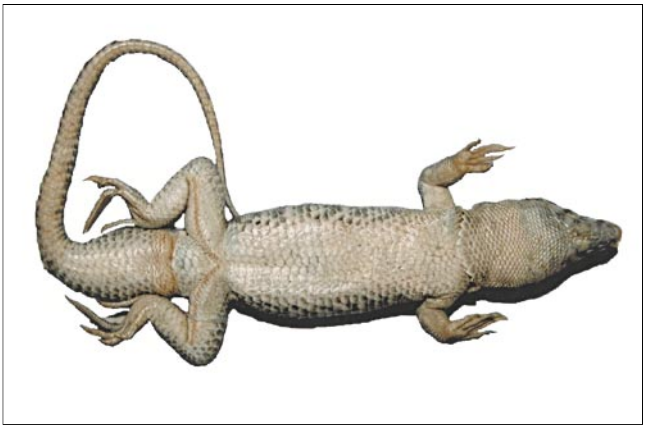

Fig. 3 - *Acanthodactylus harranensis* n. sp. Ventral view of the holotype (adult male ZDEU 65/2001:1). Photo S. Akalın.

Fig. 4 - *Acanthodactylus harranensis* n. sp. Dorsal view of the head of the holotype (adult male ZDEU 65/2001:1). Photo S. Akalın.

Fig. 5 - *Acanthodactylus harranensis* n. sp. Left lateral view of the head of the holotype (adult male ZDEU 65/2001:1). Photo S. Akalın.

Fig. 6 - *Acanthodactylus harranensis* n. sp. Dorsal view of the head of a paratype (adult female ZDEU 65/2001:6). Photo S. Akalın.

Fig. 7 - *Acanthodactylus harranensis* n. sp. Left lateral view of the head of a paratype (adult female ZDEU 65/2001:6). Photo S. Akalın

Fig. 8 - *Acanthodactylus harranensis* n. sp. Dorsal view [Above. Paratype: subadult female MZUF 39576 (ex NHCL 5028). Below. Paratype: young female MZUR Museo Zoologico Roma R-1425]. Photo S. Bambi.

Fig. 9 - *Acanthodactylus harranensis* n. sp. Dorsal view [Above. Paratype: young female MZUF 39577 (ex NHCL 5029). Below. Paratype: young female CZRS R-1041]. Photo S. Bambi.

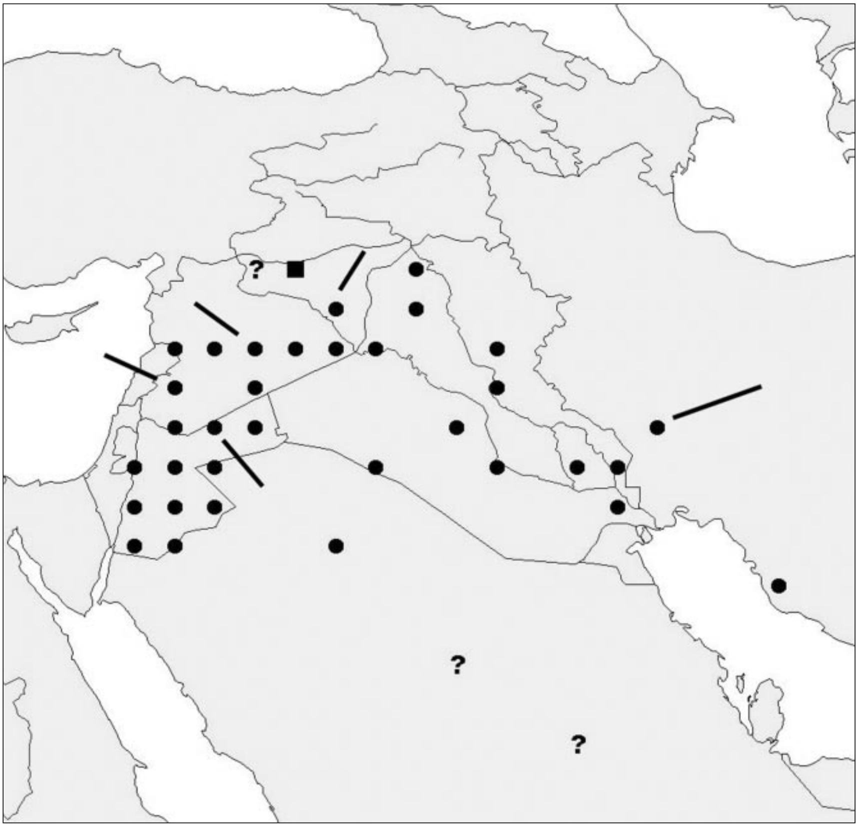

Fig. 10 - Distribution of *Acanthodactylus grandis* (circles) and *A. harranensis* (square) on a grid of 1 degree of longitude x 1 degree of latitude (sources: Anderson, 1999; Angel, 1936; Arnold, 1980, 1983, 1986; Bischoff and Schmidtler, 1994; Boulenger, 1909, 1920, 1921, 1923; Disi and Amr, 1998; El-Wailly and Al-Uthman, 1971; Haas and Werner, 1969; Haas, 1943; Haas, 1952; Kennedy, 1937; Peracca, 1894; Salvador, 1982; Schmidt, 1941; Werner, 1971; Werner, 1998). The question marks indicate (north to south) the Angel's locality of Tell Abyad (Syria; dubtfully located), and the doubtful records of Anayza (= Unayzah, Saudi Arabia) by Schmidt (1941) and from the Riyad area (Saudi Arabia) by El-Wailly and Al-Uthman (1971). Arrows indicate the origin of examined specimens.