

A NEW SPECIES OF *Eremias* (SAURIA: LACERTIDAE) FROM FARS PROVINCE, SOUTH-CENTRAL IRAN

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A new species of the lacertid genus and subgenus *Eremias* is described based on material collected by the senior author from 150 km northeast of Shiraz, Fars province, south-central Iran at about 1800 m elevation. It differs from all other Iranian species of the typical subgenus (*E. persica*, *E. strauchi*, *E. velox*, and *E. laezharica*) in that it has a very distinctive and unique color pattern, unmistakable in this character: the wide dorsolateral stripe is uniformly black without light spots and there is no ocelli on the upper surface of limbs; the third pair of submaxillary shields are separated by 4 granular scales; and the tympanic shield is rudimentary and almost absent. The new species is sympatric with *Eremias persica* and apparently restricted in distribution to the steppes and open plains in the northern regions of Fars province, south-central Iran.

Key words: *Eremias (Eremias) nigrolateralis*, *E. (Eremias) persica*, Lacertidae, New species, Shiraz, Fars province, South-central Iran.

INTRODUCTION

The lacertid genus *Eremias* Fitzinger, 1834, encompasses about 32 species distributed throughout the desert and semi-desert regions from northern China, Mongolia, Korea, Central and southwest Asia to southeastern Europe. According to Anderson (in press), 14 species of the genus *Eremias* occur on the

Iranian Plateau. These species mainly occur on the northern, central, and eastern parts of the Plateau. However, the knowledge of the Iranian Plateau *Eremias* is, to a great extent, anecdotal and there are still large gaps in available material from various parts of the Plateau. Szczerbak (1974) revised *Eremias* and

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Fig. 1. Location of Fars province on the Iranian Plateau.

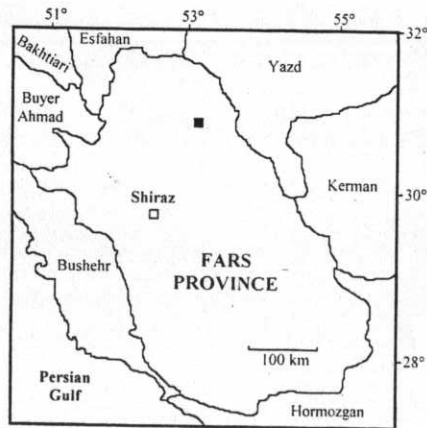


Fig. 2. Type locality of *Eremias (Eremias) nigrolateralis*, 150 km northeast of Shiraz, Fars province, south-central Iran. (■) Type locality.

distinguished two distinct genera based on several important morphological characters (see under *taxonomic account*).

In this paper we describe a new species of *Eremias* belonging to the typical subgenus from the steppes and open plains of Fars province, south-central Iran at about 1800 m elevation. This province is one of the largest provinces of Iran, extending in a northwest–southeast direction (Fig. 1) and a major part of it is occupied by the Zagros Mountains (in the west) as well as steppes and open plains (mainly in the central and eastern regions).

The type locality of *Eremias (Eremias) nigrolateralis* (sp. nov.) is an open plain of silt and gravel with steppe and desert vegetation (e.g., *Artemisia*, *Astragalus*, and *Zygophyllum*), 150 km northeast of Shiraz (53°9' E, 30°52' N), Fars province, south-central Iran (Figs. 2–3).

Eremias (Eremias) nigrolateralis sp. nov. (Figs. 4–8)

Holotype and type locality. An adult female, GNHM Re. ex. 5147, collected by the senior author on 16 August 1996, from 150 km northeast of Shiraz (53°9' E, 30°52' N), Fars province, south-central Iran, at about 1800 m elevation.

Paratypes. An adult male, GNHM Re. ex. 5148, other informations as for the holotype.

Diagnosis and comparison. A large-sized lacertid, maximum Snout-vent length (SVL) = 84 mm, tail length (TL) = 127 mm, with 14–17 longitudinal and 31–32 transverse rows of ventral plates, converging posteriorly; 64–69 scales across middle of dorsum.

A species belonging to the subgenus *Eremias* [subocular bordering mouth, only one frontonasal, two supraoculars, femoral pores separated by a very short space (Szczerbak, 1974)]. It differs from all other species of its relevant subgenus based on having



Fig. 3. Habitat of *Eremias (Eremias) nigrolateralis*, an open plain with steppe vegetation (e.g., *Artemisia*, *Astragalus*, *Zygophyllum*, *Euphorbia*), 150 km northeast of Shiraz, Fars province, south-central Iran.

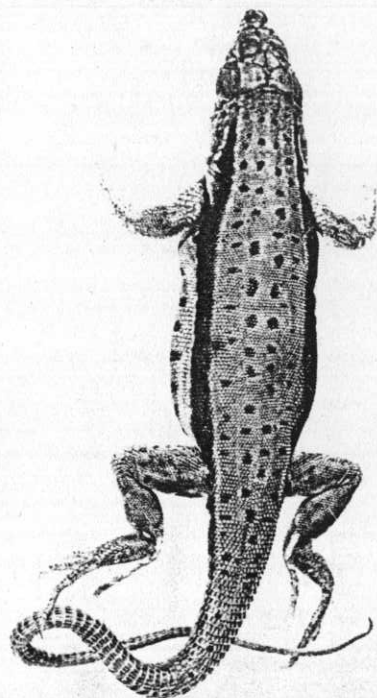


Fig. 4. *Eremias (Eremias) nigrolateralis*, holotype. Dorsal view (right); Ventral view (left).

several species-specific characters; the color pattern is unique and it is easily distinguishable from all other species in this character, i.e. a wide and uniformly black dorsolateral stripe strongly in contrast with dorsum and lack of ocelli on the body and limbs; the third pair of submaxillary shields are separated by a series of 4 narrow granular scales; the tympanic shield is rudimentary and almost absent; the two series of femoral pores just fail to reach the knee.

Furthermore, it differs from each species of the typical subgenus in the following character combinations (Bischoff and Böhme, 1980; Böhme and Szczerbak, 1991; Szczerbak, 1974):

From *Eremias persica* Blanford, 1874, in separation of the third pair of submaxillary shields by granu-



lar scales (100% versus 1.8%), in having a much smaller and rudimentary tympanic shield (100% versus 3%), higher count of gulars (41–42 vs. 28–38), numerous scales (more than 125) on each temporal region (100% vs. 14%), the absence of distinctly keeled upper caudal scales (100% vs. 75%), fail of femoral pores to reach the knee (100% vs. 9%), and distinct differences in color pattern.

From *E. velox* (Pallas, 1771) in a higher count of gulars (41–42 vs. 19–33), separation of the third pair of submaxillary shields by granular scales (100% vs. 0%), rudimentary tympanic shield (100% vs. 3%), the absence of distinctly keeled upper caudal scales (100% vs. 0%), and in color pattern.

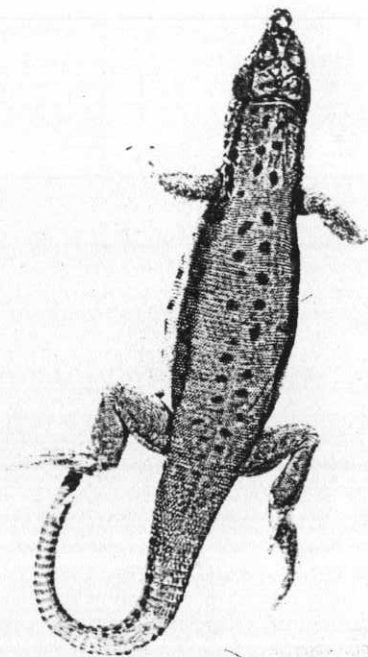


Fig. 5. *Eremias (Eremias) nigrolateralis*, paratype.

From *E. strauchi* Kessler, 1878, in a higher number of gulars (41–42 vs. 21–33), the absence of distinctly keeled upper caudal scales (100% vs. almost 0%), separation of the third pair of submaxillary shields by granular scales (100% vs. 2%), and in color pattern.

From *E. lalezharica* Moravec, 1994, in having five pairs of large submaxillary shields (instead of four), higher count of dorsals (64–69 vs. 54–59), no contact of gulars with the second pair of submaxillary shields, lack of a small scale between prefrontals, rudimentary tympanic shield, and distinct differences in color pattern.

From *E. afghanistanica* Böhme and Szczerbak, 1991, in a much higher count of dorsal scales (64–69 vs. 44–46), higher count of gulars (41–42 vs. 25–28), separation of the third pair of submaxillary shields by 4 granular scales, and in color pattern.

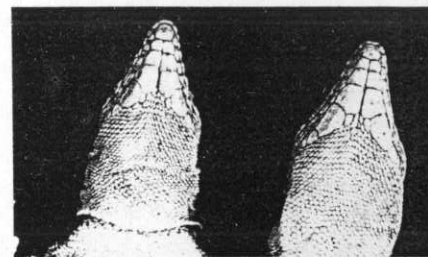


Fig. 6. *Eremias (Eremias) nigrolateralis*, the gular regions of holotype (left) and paratype (right). Note the separation of the third pair of submaxillary shields by elongated granular scales.

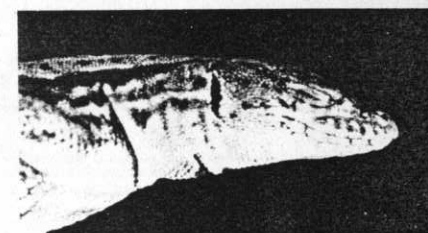


Fig. 7. *Eremias (Eremias) nigrolateralis*, side view of the holotype head. Note the rudimentary tympanic scale and numerous sculation of the temporal region.

From *E. nikolskii* Bedriaga, 1905, in a higher count of dorsals (64–69 vs. 45–59) and gulars (41–42 vs. 20–28), separation of the third pair of submaxillary shields by granular scales, and in color pattern.

From *E. regeli* Bedriaga, 1905, in a higher count of dorsals (64–69 vs. 43–61) and gulars (41–42 vs. 14–24), higher number of scales in the 9th–10th caudal annulus (29–31 vs. 17–25), the absence of distinctly keeled upper caudal scales (100% vs. 0%), separation of the third pair of submaxillary shields by granular scales (100% vs. 0%), and in color pattern.

Description of the holotype. An adult female preserved in 70% ethyl alcohol in good condition; body stout and distinctly depressed; a species of the subgenus *Eremias* (Szczerbak, 1974) sharing with the other species of this subgenus: subocular bordering the mouth, single frontonasal, two supraoculars, separation of the two series of femoral pores by a very

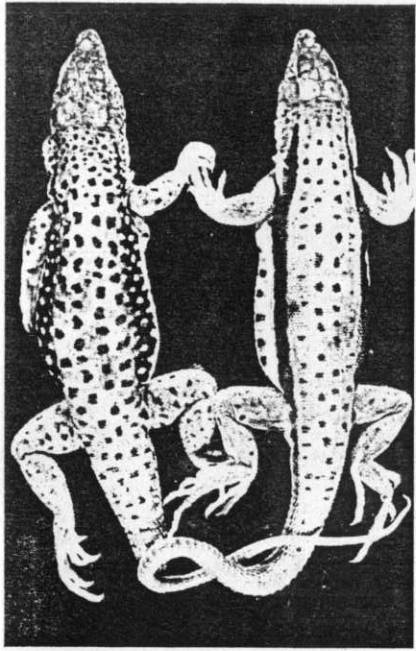


Fig. 8. The comparison of *Eremias (Eremias) nigrolateralis* (right) and the sympatric *Eremias (Eremias) persica* (left).

short space; five pairs of submaxillary shields, first two pairs in contact, third pair separated by a series of four long granular scales, fourth and fifth pairs widely separated; first submaxillary pair smallest and in contact anteriorly with mental, laterally with first and second sublabials; the last pair (the fifth) each surrounded by seven scales and anteriorly in contact with the fourth pair; 10–10 supralabials, six of which anterior to subocular which borders the mouth; 6–7 infralabials; two large, swollen nasals broadly in contact medially and anteriorly with rostral, laterally with the first, second, and third supralabials, and posteriorly in contact with frontonasal which is single and broader than long and laterally in contact with the first loreal, and posteriorly with prefrontals; two prefrontals each smaller than frontonasal and longer than broad and laterally in contact with the second loreal and posteriorly with frontal and granules of supraocu-

lar region; both prefrontals and frontonasal with strong concavity; frontal longer than prefrontals and frontonasal together, widened anteriorly, and laterally in contact with the first and second supraoculars, and posteriorly with frontoparietals; two frontoparietals almost as large as the second supraocular, laterally in contact with the second and third supraoculars and posteriorly with interparietal and parietals; interparietal small, lozenge-shaped, and surrounded by frontoparietals and parietals; two large, plate-like parietals, almost as long as broad and broadly in contact behind the interparietal; occipital absent; two loreals, first one small and in contact with the third and fourth supralabials, frontonasal and prefrontal and the second loreal, the latter more than twice as large as the first; 6–8 supraciliaries, separated from supraoculars by one or two series of 20–24 granules; postocular small and surrounded by granules; temporal region covered by small, granular scales, more than 125 on each side, becoming enlarged towards the anterior border of tympanum; tympanic scale rudimentary and obliquely elongated, more pronounced on the left side; tympanum vertically elongated, almost as large as orbit; no pronounced supratemporals; subocular with a prominent ridge and extensively in contact with the lower edge of eye; lower eyelids with a translucent membrane, made of about 20 enlarged scales; collar pronounced, not serrated or very weakly so, made of 10–11 scales, the medial one the largest; gular fold prominent, 41–42 gulars from symphysis of chin shields to median gular, becoming enlarged posteriorly; 14–17 longitudinal and 31–32 transverse rows of almost squarish ventral plates from collar to hind limbs; anterior series of ventrals to some extent irregular, median ventrals distinctly longer than broad; dorsal scales distinctly juxtaposed, smooth, granular, almost the same size throughout, except the nape region in which the scales are slightly smaller, 64–66 scales across the middle of dorsum, and about 170–175 scales in a single row from occiput to a point just above the vent; proximal upper caudals not exceptionally larger than posterior dorsals, and the change is gradual; caudals becoming large, elongate, and slightly keeled distally, arranged in distinct whorls, 29–30 scales in the 10th whorl behind the vent; upper forearm covered dorsally by enlarged and slightly keeled plates; lower forearm covered with granules; upper hind limb covered externally by granules, internally by large plates; tibia covered dorsally

by small, and to some extent, pointed granules, and ventrally by very large plates, two plates in a transverse row; 26 uni- and bi-carinate lamellae under the fourth toe, which is not fringed or very weakly so; 19–19 femoral pores, the two series separated anteriorly by a narrow space consisting of two pointed scales and just fail to reach the knee posteriorly by a space corresponding to two or three scales; no exceptionally large preanal plate, 7 plates in a longitudinal row from the space between femoral pores to the anterior edge of vent, enlarging posteriorly.

Coloration and color pattern (in life and immediately after death). Dorsum light tan suffused by pale greenish-brown with four series of longitudinal dark spots, smaller on nape, being larger on the middle of dorsum, then decreasing in size posteriorly, disappearing on the 1/4 proximal part of tail; dorsolateral region with a wide, uniformly black stripe without light ocelli, beginning from the upper temporal region, being strongly in contrast with the ground color of dorsum, continuing on the lateral part of the tail but with much less intensity, disappearing on the 1/3 distal part of tail; upper surface of tail sandy gray; upper surface of fore limbs uniformly sandy grayish-tan without light or dark spots, of the hind limbs the same but with a few irregularly scattered small, dark spots; no light ocelli on limbs or body; upper surface of head olive-brown, with two dark-brown blotches on the parietal region; temporal and labial regions light-brown with dark blotches; ventrolateral region bluish-gray with a series of 8–9 longitudinal dark spots; venter whitish-blue-cream; lower surfaces of tail and gular region whitish cream.

Measurements (in mm). SVL = 78, TL = 122, Head length = 19, Head width = 12.3, Head depth = 9.6, Length of fore limb = 29, Length of hind limb = 51.

Description of paratype. The paratype, which is an adult male, is essentially similar to the holotype and only the features in which it differs from the holotype are mentioned here:

Slightly larger than holotype; 67–69 scales across dorsum; 16–17 ventral plates across widest part of venter; 12–12 upper and 9–7 lower labials; 20–20 femoral pores on each side; tympanic scales smaller on both sides; 42 scales from symphysis of chin shields to collar; 24–25 lamellae under the fourth toe; submaxillary shields in 7 pairs (e.g., a small sixth pair behind the fifth, and the seventh pair,

which is still smaller, located medially and in contact with the third and fourth pairs laterally and anteriorly); 30–31 scales on the 10th whorl of tail.

Coloration and color pattern. Generally as the holotype with the following differences:

Only two longitudinal series of dark spots on dorsum, disappearing between hind limbs; dorsolateral stripe almost uniformly dark-brown with traces of some light spots; ventrolateral region with 5–6 large, dark spots; upper surface of limbs uniformly sandy-grayish-tan without ocelli or dark spots;

all of ventral surfaces as in the holotype.

Measurements (in mm). SVL = 84, TL = 127, Head length = 21, Head width = 14, Head depth = 10.3, Length of forelimb = 30, Length of hind limb = 50.

HABITAT

During my second long-term excursion and field work on the Iranian Plateau in 1996, I (senior author) surveyed the south-central parts of the plateau to collect *Trapelus* and *Laudakia*. In 150 km northeast of Shiraz, Fars province, I found two lizard specimens incidentally, belonging to the genus and subgenus *Eremias*, described here as a new species. The habitat is a wide and open silt and gravel plain. The vegetation is luxuriant open steppe *Artemisia herba-alba*, *Astragalus*, *Zygophyllum*, and *Euphorbia* association (Fig. 3). The two *Eremias* specimens were foraging among and around the base of shrubs apparently looking for insects, when alarmed running directly for the nearest large shrub, taking refuge. They were shy and wary and difficult to capture. I found them active when the air temperature was 35 °C and the surface temperature about 37.5 °C. Their biotope is similar to that of *Eremias persica* and both species occur in localities very close together. I collected several specimens of *E. persica* from the same area (see under *material examined*). The new species (*E. nigrolateralis*) is relatively larger than the sympatric *E. persica* in comparing adult specimens. As well, *Trapelus agilis* and *Phrynocephalus scutellatus* were found to be sympatric. When alarmed, the former mainly took refuge into the underground holes and the later under the shrubs.

I investigated the area within a limited time, but could not succeed in finding more specimens of the new species. Whether it is a rare species, confined only to the type locality, or it has a relatively wide

distribution in the south-central plains of the plateau is not known. More extensive surveying in future would throw light on the different aspects of biology of this lizard.

TAXONOMIC ACCOUNT

As already noted, the lacertid genus *Eremias* has a wide distribution range. Various species of this genus are distributed from southeastern Europe, southward to the Iranian Plateau and eastward into the Central and northeastern Asia as far east as eastern Mongolia and Korea. In a monographic work, Szczerbak (1974) revised the former more inclusive genus *Eremias* and divided it into two distinctive genera:

1. Genus *Mesalina* Gray, 1838 as a north African and lowland southwest Asian clade containing about 13 species, which is characterized in having a smaller size, lower nasal in contact with first supralabial only, and abdominal plates in parallel longitudinal rows. Two species of this genus occur on the Iranian Plateau (Anderson, in press).

2. Genus *Eremias* (*sensu stricto*) Fitzinger, 1834, as a Palearctic clade, encompassing about 52 species, which is defined by the following distinguishing characters: nostril between 3 or 4 nasals and, as a rule, not touching labial; lower nasal resting on 2 or 3 supralabials; ventral scales in converging longitudinal rows; femoral pores always present (except in *E. aporosceles*). About 15 species of this genus occur on the Iranian Plateau.

Arnold (1986) followed the Szczerbak's taxonomic decisions on this group and supported the holophyly of *Mesalina* Gray, by the study of hemipenial characters. This author also regards *Eremias* (*s.s.*) as the sister taxon of the clade containing *Acanthodactylus*, *Mesalina*, and *Ophisops-Cabrila* (Arnold, 1989).

Szczerbak (1974) also divided the Palearctic *Eremias* into five subgenera as follows: *Eremias*, *Rhabderemias*, *Ommateremias*, *Scapteira*, and *Pareremias*. Except the latter, which is a Central and East Asian group, all of the other subgenera are represented on the Iranian Plateau (Anderson, in press). The typical subgenus, *Eremias*, is defined based on several distinguishing characters: subocular bordering mouth, only one frontonasal, two supraoculars, femoral pores series separated by a very short space (Szczerbak, 1974).

Of the Iranian Plateau species (about 15 species), *E. persica*, *E. velox*, *E. trauchi*, and *E. lalezharica*

[a recently described species from Kerman province, southeastern Iran (Moravec, 1994)] belong to the typical subgenus *Eremias* (Anderson, in press). As well, *Eremias afghanistanica* from Afghanistan belongs to this subgenus (Böhme and Szczerbak, 1991).

Also, the new species (*E. nigrolateralis*) belongs to this subgenus based on having all of the above-mentioned distinguishing characters. Geographically and morphologically, the most closely related species to *E. nigrolateralis* (*sp. nov.*) is *E. persica*. The latter species is widely distributed on the central and eastern parts of the Iranian Plateau, extending east and south through southern Afghanistan and Baluchistan to Waziristan, Pakistan. In southeastern Iran, Kerman province, *E. persica*, is sympatric with *E. lalezharica*; in the northern and western parts of the range it is sympatric with *E. velox*. It is also sympatric with *E. trauchi* in northeastern Khorasan and perhaps in Kopet Dagh (Anderson, in press).

In south-central regions of the Plateau, *E. persica* is the most abundant species of its relevant genus. The new species (*E. nigrolateralis*) is sympatric with *E. persica* in south-central Iran, 150 km north of Shiraz about 10 km from the road to Esfahan. As mentioned before, the two species (*E. persica* and *E. nigrolateralis*) occur in localities very close together (less than 1 km) and I (senior author) collected 4 specimens of *E. persica* in the same region as *E. nigrolateralis*. As well, we have examined and compared many other specimens of *E. persica* as well as other species of *Eremias* from various parts of the Iranian Plateau and Central Asian countries (see under *material examined*). The new species is distinguishable from all other species of *Eremias* based on having several species-specific characters (see above). The most distinguishing character of the new species, however, is its unique color pattern which makes it easily distinguishable from other species of the typical subgenus.

The new species may first have originated as an isolate of *E. persica*.

Etymology. *Eremias* (*Eremias*) *nigrolateralis* is so named as it is distinguishable from all other species of the subgenus *Eremias* by the presence of a wide, and uniformly black dorsolateral stripe.

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MATERIAL EXAMINED

Eremias nigrolateralis (*n* = 2). GNHM Re. ex. 5147 – 5148, from 150 km northeast of Shiraz, Fars province, south-central Iran.

Eremias persica (*n* = 4). GNHM Re. ex. 5159 – 5162, from 150 km northeast of Shiraz, Fars province, south-central Iran.

Eremias persica (*n* = 28). GNHM Re. ex. 5163 – 5190, from 45 km east of Arak on the road to Qum, Markazi province, north-central Iran.

Eremias persica (*n* = 4). GNHM Re. ex. 5191 – 5194, from 65 km west of Tehran, between Eshtehard-Saveh, Tehran province, northern Iran.

Eremias persica (*n* = 2). GNHM Re. ex. 5195 – 5196, from 45 km east of Golpaygan, Esfahan province, central Iran.

Eremias persica (*n* = 4). GNHM Re. ex. 5197 – 5200, from 50 km north of Delijan on the road to Qum, Markazi province, north-central Iran.

Eremias persica (*n* = 1). GNHM Re. ex. 5201, from 50 km north of Abadeh, Fars province, south-central Iran.

Eremias persica (*n* = 1). GNHM Re. ex. 5202, from 50 km east of Hamedan on the road to Qazvin, Hamedan province, western Iran.

Eremias persica (*n* = 3). GNHM Re. ex. 5203 – 5205, from 5 km west of Takestan on the road to Zanjan, Zanjan province, northwestern Iran.

Eremias sp. (*n* = 3). GNHM Re. ex. 5206 – 5208, from around the Siah-Darreh Village (about 2000 m elevation), 60 km northeast of Kermanshah city, Kermanshah province, western Iran.

Eremias velox (*n* = 4). GNHM Re. ex. 5122 (1 – 4), from around the Carin River, 250 km E-SE Almaty (Alma Ata), Kazakhstan.

Eremias velox (*n* = 2). GNHM Re. ex. 5120 (1 – 2), from Mulali Kurozek, eastern Kazakhstan.

Eremias velox (*n* = 2). GNHM Re. ex. 5121 (1 – 2), from the Taldi Korgau District, northeastern Kazakhstan.

Eremias velox (*n* = 2). GNHM GK 18881 (1 – 2), from Archenjan Village (1), and 30 km north of Mary (2), Turkmenistan.

Eremias trauchi (*n* = 3). GNHM Re. ex. 4411 (1 – 3), from Golestan National Park, Mazandaran province, north-eastern Iran.

Abbreviations. GNHM Re. ex.) Gothenburg Natural History Museum, Reptilia exotica; GNHM GK) Gothenburg Natural History Museum, General Catalogue.

REFERENCES

- Anderson S. C. (in press), *The Lizards of Iran*, Society for the Study of Amphibians and Reptiles.
- Arnold E. N. (1986), "The hemipenis of lacertid lizards (Sauria: Lacertidae): structure, variation and systematic implications," *J. Nat. Hist.*, 20, 1221 – 1257.
- Arnold E. N. (1989), "Towards a phylogeny and biogeography of the Lacertidae: relationships within an Old-World family of lizards derived from morphology," *Bull. Brit. Mus. Nat. Hist. Zool. Ser.*, 55(2).
- Bischoff W. and Böhme W. (1980), "Der systematische Status der türkischen Wüstenrenner des Subgenus *Eremias* (Sauria: Lacertidae)," *Zool. Beitr. N. F.*, 26, 297 – 306.
- Böhme W. and Szczerbak N. N. (1991), "Ein neuer Wüstenrenner aus dem Hochland Afghanistans, *Eremias* (*Eremias*) *afghanistanica* sp. nov. (Reptilia: Sauria: Lacertidae)," *Bonn. Zool. Beitr.*, 42, 137 – 141.
- Moravec J. (1994), "A new lizard from Iran, *Eremias* (*Eremias*) *lalezharica* sp. nov. (Reptilia: Lacertidae)," *Bonn. Zool. Beitr.*, 45(1), 61 – 66.
- Szczerbak N. N. (1974), *Yashchurki Palearktiki* (Palearctic Species of *Eremias*) [in Russian], Kiev.