



Eremias papenfussi sp. nov., a new lacertid lizard (Sauria: Lacertidae) from Tehran Province, Iran

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Abstract

We describe a new species of *Eremias* lacertid from the Alborz Mountain range in northern Iran (Tehran Province). *Eremias papenfussi* n. sp. is part of the *Eremias* subgenus (or morphotype) by virtue of lacking lateral fringes on the fourth toe and color pattern. It can be further differentiated from previously described species assigned to this morphotype by the absence of distinctly keeled upper caudal scales, gular scales that do not extend to the second inframaxillary scales, color pattern, and scale counts. *Eremias papenfussi* is found on rocky mountain slopes of the Alborz where it is presumed to have a much broader distribution than demonstrated by the available specimens. Of the 15 species of *Eremias* known from Iran, *E. papenfussi* is the fifth species known to inhabit rocky mountain slopes along with *E. strauchi*, *E. lalezharica*, *E. montanus* and *E. novo*.

Key words: Reptilia, Alborz, Endemic

Introduction

The lacertid genus *Eremias* Fitzinger 1834 consists of 32 species endemic to Eurasian Palearctic deserts (Anderson, 1999; Uetz, 2011). Fifteen species of *Eremias* are known from Iran (Rastegar-Pouyani *et al.* 2008; Rastegar-Pouyani *et al.* 2010), five of which are restricted to Iran (Anderson, 1999; Uetz, 2011). We report and describe a sixth endemic species of *Eremias* from Iran. This distinctive new species is currently known from a few localities in the Alborz Mountains near the capital city Tehran (Fig. 1).

Institutional abbreviations: PHIM, Pars Herpetologists Institute Museum (Tehran, Iran); ZFMK, Zoologisches Forschungsmuseum Alexander Koenig (Bonn, Germany).

Description

Eremias Fitzinger 1834

Eremias papenfussi Mozaffari, Ahmadzadeh, and Parham sp. nov.

Figures 2 and 3.

Etymology. According to Arnold *et al.* (1978), “*Eremias* is a Greek noun meaning solitary devotee, and is related to *Eremia*, signifying an isolated place or desert.” (Arnold *et al.* 1978; Mozaffari and Parham, 2007) The epithet *papenfussi* is for Theodore Johnstone Papenfuss of the Museum of Vertebrate Zoology at the University of Califor-

nia, Berkeley, in honor of his extensive contributions to the field of herpetology through the collecting of new specimens and the training of herpetologists around the world.

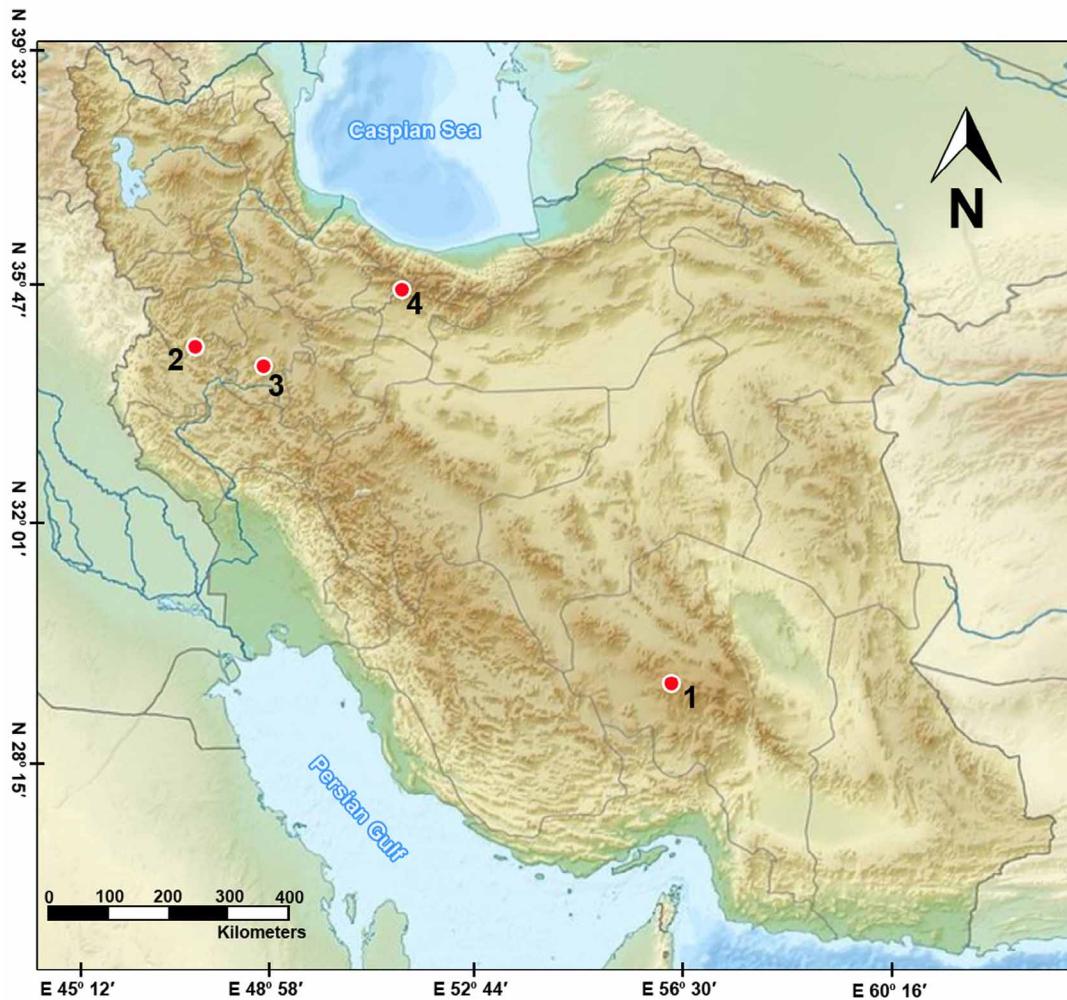


FIGURE 1. Distribution map for endemic *Eremias* species known from the rocky mountain slopes of Iran. 1: *E. lalezharica* 2: *E. montanus* 3: *E. novo* 4: *E. papenfussi*.

Material examined. Holotype: ZFMK 91701 (♂), 59 mm snout-vent length (SVL), collected 14 April 2009; Paratypes: PHIM171 (♀), 62 mm SVL and ZFMK 91702 (♂), 57 mm SVL, collected 14 April 2009; PHIM177 (♀), 62 mm SVL and PHIM178 (♀), 60 mm SVL, collected 1 May 2004. All specimens were collected from Tehran Province in the Alborz Mountain Range by OM. The Holotype, ZFMK 91701, as well as PHIM171 and ZFMK 91702 were collected from the type locality in the Soolehgan Mountains (N35° 47' 44.9" E51° 14' 20.2" Elevation: 1794m). PHIM177 and PHIM178 were collected from Vardavard region (N 35° 47' 56.48", E 51° 7' 34.40") (Fig. 1).

Differential diagnosis. By having movable eyelids, a lower nasal shield that rests on two supralabials, and ventral plates arranged in oblique longitudinal rows, we assign this new form to the genus *Eremias*. Iranian *Eremias* can be assigned to four morphologically-defined subgenera (Szczerbak 1974; Anderson 1999): *Scapteria*, *Ommateremias*, *Rhabderemias*, and *Eremias*. Whether these subgenera represent monophyletic groups or not remains to be tested with molecular phylogenetics, but as morphologically-defined taxa they are useful bins for comparing and diagnosing our new species. *Eremias papenfussi* can be excluded from the subgenus *Scapteria* by lacking the lateral fringes on the fourth toe (Fig. 2F) and by a subocular scale that is in contact with the edge of mouth (Fig. 2C). The latter character also excludes it from the subgenus *Ommateremias*. It can be excluded from the subgenus *Rhabderemias* by its large size and by having longitudinal dorsal stripes that are broken into a spotted pattern (Anderson, 1999). Within the Iranian members of the subgenus *Eremias*, *E. papenfussi* can be differentiated from *Eremias strauchi* Kessler, 1878 by having a smaller size (57–62 mm SVL versus 68–76), the absence of distinctly keeled upper caudal scales (Fig. 2D), and color pattern (having dark and light marks on upper labials and

lacking the color ocelli on flanks). It can be distinguished from *Eremias suphani* (Basoglu and Hellmich, 1968) by lacking the extension of gular scales to the second inframaxillary scales (the second and third pair of submaxillary shields are in contact) (Fig. 2A). It can be distinguished from *Eremias laezharica* Moravec, 1994 by having fewer gular scales (24–28 versus 33–40), fewer collar scales (10–12 versus 13–15), and more femoral pores (19–26 versus 16–18). It can be distinguished from *Eremias novo* Rastegar-Pouyani and Rastegar-Pouyani, 2006 by having fewer mid-dorsum scales (56–63 versus 63–67), more transverse rows of ventral plates (30–33 versus 27–30), and more gular scales (24–28 versus 23–24). It can be distinguished from *Eremias montanus* Rastegar-Pouyani and Rastegar-Pouyani, 2001 by having fewer mid-dorsum scales (56–63 versus 63–67), more transverse rows of ventral plates (30–33 versus 27–28), and more gulars (24–28 versus 23–25). It can be distinguished from *Eremias velox* (Pallas, 1771) by having more mid-dorsum scales (56–63 versus 46–56) and lacking lateral dark-margined blue ocelli. It can be distinguished from *Eremias persica* Blanford, 1875 by having fewer gular scales (24–28 versus 28–39) and its juvenile coloration (ventral surface of tail reddish versus bluish).

Description of Holotype (ZFMK 91701). Size: A medium-sized *Eremias* with a SVL of 59 mm and a short tail (85 mm). In life, the dorsum is dark cream to light brown with a series of five longitudinal dark brown or black stripes starting anteriorly at the parietals. The medial stripe disappears a quarter of the way down the body, but the others extend to the base of the tail. The two lateral stripes extend to the dorsum surface of the tail and meet at the first one-fifth of the tail. The rest of the tail is a solid cream to light brown. White dots in four longitudinal rows are scattered among dark spots. A chocolate brown to brownish-orange stripe containing irregular dark spots and dark-margined light ocelli start at the tympanum, cross the lateral sides and continue along entire tail length. The dorsal side of the limbs has light ocelli and spots. The venter and ventral side of tail are white (Fig. 3).

Scalation (Fig. 2): Subocular bordering mouth; eight supralabials, five anterior to subocular; lower nasal rests on first and second supralabials as well as the frontonasal; lateral scales of the fourth toe do not form distinct fringes; row of 22 or 23 femoral pores that reaches knee, two series of femoral pores separated by two scales; five submaxillary shields, first three pairs in contact; 26 gular scales between submaxillary shields and collar; collar made up of 10 scales; 58 scales across middle of dorsum; 14 longitudinal and 31 transverse rows of ventral plates; 26 scales in 10th caudal annulus; upper caudal scales smooth and without distinct keel.

Variation among Paratypes (Table 2). Snout-vent length 57 to 62 mm; femoral pores 19 to 26; two series of femoral pores separated by one or two scales; five to six submaxillary shields; 24 to 28 gular scales between submaxillary shields and collar; collar made up of 10 to 12 scales; 56 to 63 scales across middle of dorsum; 14 to 15 longitudinal and 30 to 33 transverse rows of ventral plates; 23 to 28 scales in 10th caudal annulus; in some specimens the lateral stripe is inconspicuous. In juveniles, the coloration is different from adults. In juveniles, the dorsal coloration is uniform dark brown with four longitudinal light stripes the ventral side of the tail is reddish.

TABLE 2. Variation among the type series.

Characters	ZFMK 91701	PHIM171	ZFMK 91702	PHIM177	PHIM178
Snout-vent length (mm)	59	62	57	62	60
Scales across middle of dorsum	58–59	60–61	56–57	58–59	62–63
Longitudinal rows of ventral plates	14	15	15	15	14
Transverse rows of ventral plates	31	33	30	33	31
Number of submaxillary shields	5	5/6	5	5	5
In contact submaxillary shields	3	3	3	3	3
Number of supralabials	8	8	8	8	8
Supralabials anterior to subocular	5	5	5	5	5
Subocular borders the mouth	yes	yes	yes	yes	yes
Gular scales	26	24	24	27	27–28
Collar scales	10	12	10	11	10
Scales in 10 th caudal annulus	26	23	27	24	28
Femoral pores	22/23	19–20	22/24	22/24	26
Scales between femoral pores	2	2	1	2	2

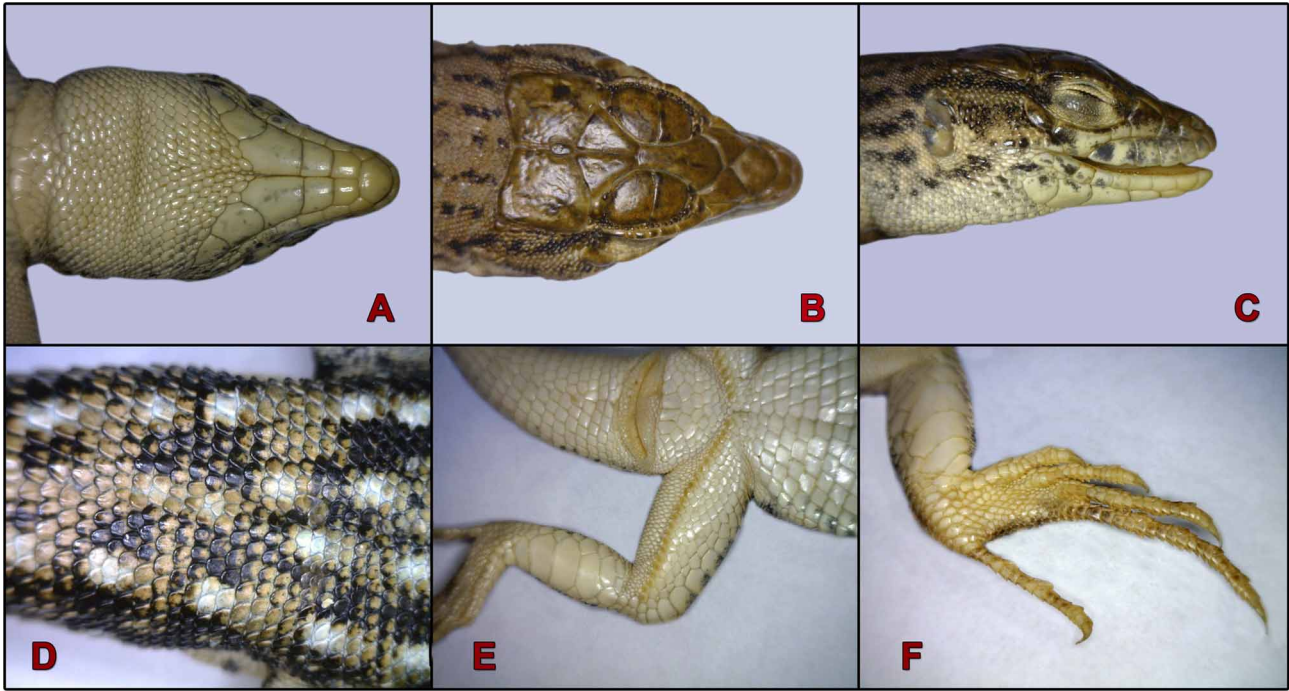


FIGURE 2. Morphology of *Eremias papenfussi* sp. nov. (PHIM171). A: Ventral view of head; B: Dorsal view of head; C: Lateral view of head; D: Caudal scales in 10th annulus; E: Ventral view of hind limb; F: Ventral view of hind foot.



FIGURE 3. *Eremias papenfussi* sp. nov. in its natural habitat.



FIGURE 4. Habitat at the type locality of *Eremias papenfussi* sp. nov.

Remarks. All specimens were collected from the southern slopes of the central Alborz Mountains. The habitat in this part of the Alborz consists of mild rocky slopes. The dominant vegetation is *Amygdalus*, *Astragalus*, and annual grass (Fig. 3). Whereas many parts of central Alborz are similar, we expect that *Eremias papenfussi* is distributed throughout the central Alborz.

The other reptile species that are syntopic with *Eremias papenfussi* are *Laudakia caucasia*, *Ophisops elegans*, *Cyrtopodion spinicauda*, *Trachylepis aurata*, *Typhlops vermicularis*, *Eirenis collaris*, *Natrix tessellata*, *Platyceps najadum*, *Telescopus fallax* and *Macrovipera lebetina*. *Eremias papenfussi* is the fifth *Eremias* species known from the rocky mountain slopes of Iran along with *E. strauchi*, *E. lalezharica*, *E. montanus* and *E. novo*.

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