

A checklist of lizards from southeastern part of the Sistan and Baluchestan Province in southeastern Iran

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During herpetological fieldwork from April 2013 to March 2014 on the herpetofauna of the counties of Saravan, Sib and Suran, Zaboli, Sarbaz, and Chabahar in south east of Sistan and Baluchestan Province, Southeastern Iran a total of 97 specimens of lizards belonging to 19 species and five subspecies, 16 genera, and six families were collected and identified as follows: *Calotes versicolor*, *Laudakia nupta nupta*, *L. n. fusca*, *Phrynocephalus scutellatus*, *Trapelus agilis agilis* (Agamidae); *Agamura persica*, *Bunopus tuberculatus*, *Cyrtopodion scabrum* (Gekkonidae); *Acanthodactylus blanfordii*, *A. micropholis*, *Eremias fasciata*, *E. persica*, *Mesalina watsonana*, *Ophisops elegans* (Lacertidae); *Ablepharus grayanus*, *Eumeces schneiderii zarudnyi*, *Ophiomorus brevipes*, *O. tridactylus* (Scincidae); *Uromastyx asmussi* (Uromastycidae); and *Varanus griseus caspius* (Varanidae). The most diverse families of the present collection are the Lacertidae with six species, followed by Agamidae and Scincidae each with four species. Detailed information of each lizard species was also provided

Key words: Herpetofauna, species, lizards, distribution, Sistan and Baluchestan Province, Iran

INTRODUCTION

The province of Sistan and Baluchestan in southeastern Iran (Fig. 1a) as the second largest province of the country covers a land area of 187,502 km² (more than 11% of total area of Iran) (IIM, 2015), and is located between latitudes 25°3'-31°28'N and longitudes 58°47'-63°19'E (IRIMO, 2015). The region is bordered to the north by South Khorasan Province, to the south by the Sea of Oman, to the west by Kerman and Hormozgan Provinces, and to the east by Afghanistan and Pakistan. The province comprises two sections: the Sistan (15917 km²) in the north and Baluchestan (172305 km²) in the south (IIM, 2015). The combined Sistan and Baluchestan Province today accounts for one of the driest regions of Iran with a slight increase in rainfall from east to west, and an obvious rise in humidity in the coastal regions (IRIMO, 2015). According to Anderson (1999) where he constructed 13 physiographic regions for discussing the geography of Iranian lizards, the combined Sistan and Baluchestan Province includes the Sistan basin in the north (Sistan section), and the Iranian Baluchistan and the Makran Coast in the east and south of province (Baluchestan section), respectively. In addition to preliminary papers describing new taxa by blanford (1874a, b), apparently the first comprehensive study to document reptiles of Sistan and Baluchestan Province coincides with systematic synopsis of the vertebrates, exclusive of fishes, by Blanford (1876), where he listed 92 reptiles for "Eastern Persia". Further works during the 19th and 20th centuries on the herpetofauna of Iran involved especially the reptiles of Sistan and Baluchestan Province resulted to description of new taxa and new country records were conducted by Nikolsky (1896, 1899, 1900, 1903), Anderson (1963, 1999), and others. To date 146 species of lizards belonging to 41 genera of 11 families were recorded for the Iranian herpetofauna (Šmíd et al., 2014, among them about 47

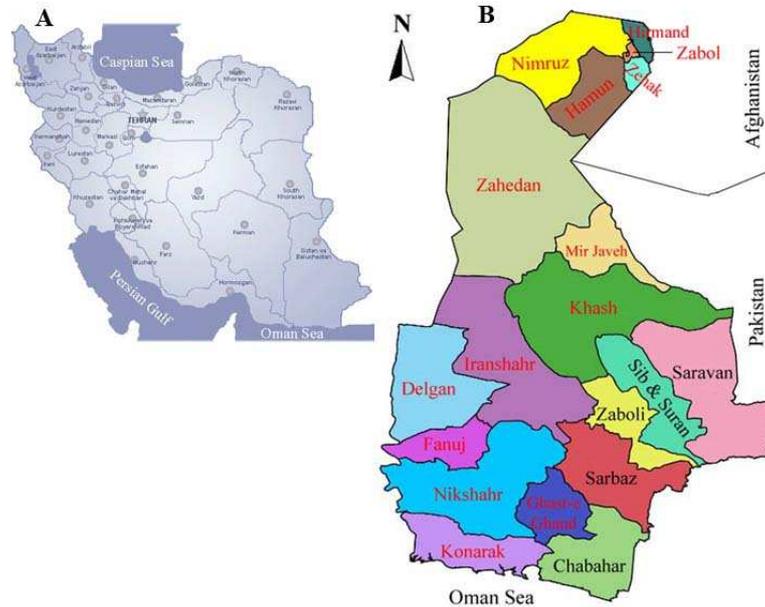


FIGURE 1. A, Map of Iran, showing location of each province; B, location of our study area in eastern townships of Sistan and Baluchestan Province named with black font. Source of Iran map and detailed map of Sistan and Baluchestan Province are the Google and <http://www.sbportal.ir>, respectively.

species occur in Sistan and Baluchestan Province (Anderson, 1999; Rastegar-Pouyani et al., 2007; Šmíd et al., 2014). Here we present a systematic list of lizards from southeast of Sistan and Baluchestan Province.

MATERIAL AND METHODS

The range of our study encompasses five out of nineteen townships, in southeastern portion of Sistan and Baluchestan Province including: Saravan (Jalq, Sarjou, Rendik, Black Mountain, Kalagan, and Nahang River area), Sib and Suran (Pasko, Rahmat Abad, Naser Abad, and Hiduj), Zaboli (Birk, Zaboli, and Ashar), Sarbaz (Rask and Pishin), and Chabahar (Polan, Bahu Kalat, Tis, and Beris-e Kohneh) (Fig. 1b). The region is bordered to the north by Khash township, to the west by Khash, Iranshahr, Nikshahr, Ghasr-e Ghand, and Konarak townships, to the south by the Sea of Oman, and to the east by Pakistan, and considered as a part of the Iranian Baluchistan and the Makran Coast physiographic region (Anderson, 1999). During herpetological fieldwork from April 2013 to March 2014 on the herpetofauna of these counties totally 97 specimens of lizards were collected at 19 localities (see Table 1; List of taxa). Most specimens were preserved in 70% ethanol and some of them were fixed in 10% Formalin solution, and are now deposited at the Razi University Zoological Museum (RUZM), Kermanshah, Iran. Specimens were identified according to Anderson, 1999. Detailed information about the morphology, distribution, and expedition localities of each lizard was also provided (Table 1; List of taxa). Distribution map of species in present study is based on the latest political divisions of Iran.

TABLE 1. List of present and previous collected species of lizards from Sistan and Baluchestan Province. * and # indicate those taxa with their holotype from Sistan and Baluchestan Province, and with restricted distribution only in this province in Iran, respectively. &: endemic to Iran.

Family	Species (Present study)	Species (previous studies by Blanford, 1874; Anderson, 1999; Heidari and Kami, 2009; Nazarov and Rajabizadeh, 2007; Nazarov et al., 2009; Mozaffari, 2010; Karamiani et al., 2015; Sanchooli, 2016 and others)
Agamidae	# <i>Calotes versicolor</i> (Daudin, 1802) <i>Laudakia nupta nupta</i> (De Filippi, 1843) * <i>Laudakia nupta fusca</i> (Blanford, 1876) <i>Phrynocephalus scutellatus</i> (Olivier, 1807) <i>Trapelus agilis agilis</i> (Olivier, 1804) <i>Agamura persica</i> (Duméril, 1856) * <i>Bunopus tuberculatus</i> Blanford, 1874	<i>Laudakia melanura</i> Blyth, 1854, <i>Phrynocephalus maculatus</i> Anderson, 1872
Gekkonidae	<i>Cyrtopodion scabrum</i> (Heyden, 1827)	* <i>Cyrtopodion agamuroides</i> (Nikolsky, 1900), * <i>C. brevipes</i> (Blanford, 1874), #* <i>C. goluberi</i> Nazarov, Ananjeva and Radjabizadeh, 2009, #* <i>C. sistanense</i> Nazarov and Rajabizadeh, 2007, <i>Hemidactylus flaviviridis</i> Rüppell, 1835, <i>H. persicus</i> Anderson, 1872, <i>H. robustus</i> Heyden, 1827, * <i>Mediodactylus russowii zarudnyi</i> (Nikolsky, 1900), * <i>M. sagittifer</i> (Nikolsky, 1900), * <i>Microgecko persicus persicus</i> (Nikolsky, 1903), * <i>Rhinogecko femoralis</i> (Smith, 1933), <i>Tenuidactylus caspius</i> (Eichwald, 1831), <i>T. longipes</i> (Nikolsky, 1896)
Lacertidae	<i>Acanthodactylus blanfordii</i> Boulenger, 1918 * <i>Acanthodactylus micropholis</i> Blanford, 1874 <i>Eremias fasciata</i> Blanford, 1874 <i>Eremias persica</i> Blanford, 1874 <i>Mesalina watsonana</i> (Stoliczka, 1872) <i>Ophisops elegans</i> Ménétriés, 1832 <i>Ablepharus grayanus</i> (Stoliczka, 1872) * <i>Eumeces schneiderii zarudnyi</i> Nikolsky, 1900	# <i>Acanthodactylus cantoris</i> Günther, 1864, # <i>Eremias acutirostris</i> (Boulenger, 1887), <i>Mesalina brevirostris</i> Blanford, 1874
Scincidae	<i>Ophiomorus brevipes</i> (Blanford, 1874) <i>Ophiomorus tridactylus</i> (Blyth, 1853)	<i>Chalcides ocellatus</i> (Forskål, 1775), #* <i>Ophiomorus blanfordii</i> Boulenger, 1887, #* <i>O. streeti</i> Anderson and Leviton, 1966
Sphaerodactylidae		<i>Pristurus rupestris</i> , Blanford, 1874, * <i>Teratoscincus bedriagai</i> Nikolsky, 1899, * <i>T. microlepis</i> Nikolsky, 1899, <i>T. keyserlingii</i> Strauch 1863
Uromastycidae	<i>Uromastyx asmussi</i> (Strauch, 1863)	-
Varanidae	<i>Varanus griseus caspius</i> (Eichwald, 1831)	<i>Varanus bengalensis</i> (Daudin, 1802)
Remark	Species recorded from south east of Sistan and Baluchestan Province	Other recorded species of lizards from throughout of Sistan and Baluchestan Province, not recorded in our study from south east of the province

RESULTS

The identified lizard species of our collection are listed below in the systematics section and the Table 1 (see also Figures 2-4). They comprise 19 named species and five subspecies in 16 genera and six families (Table 1). The family Lacertidae with 6 species is ranked first followed by the Agamidae and Scincidae each with four species. The Gekkonidae has three species, and Uromastycidae and Varanidae each with one species (Table 1).

Systematics

Family Agamidae

Genus *Calotes* Cuvier, 1816

1. *Calotes versicolor* (Daudin, 1802) _ Indian Garden lizard

Material examined (4): Maximum Snout-Vent Length (SVL) and Tail Length (TL) of an adult male and female, respectively: 119.54 mm and 300 mm; 84.93 mm and 108.96 mm.

Localities: Hiduj, Kalagan, Nahang River area (Fig. 2A).

Genus *Laudakia* Gray, 1845

2. *Laudakia nupta nupta* (De Filippi, 1843) _ Large-scaled rock agama

Material examined (2): Maximum SVL: 87.7 mm and TL: 179.33 mm.

Localities: Black Mountain, Tis (Fig. 2B).

3. *Laudakia nupta fusca* (Blanford, 1876) _ Yellow-headed agama

Material examined (2): Maximum SVL: 150 mm and TL: 264 mm.

Localities: Jalq, Kalagan (Fig. 2C).

Genus *Phrynocephalus* Kaup, 1825

4. *Phrynocephalus scutellatus* (Olivier, 1807) _ Gray toad agama

Material examined (3): Maximum SVL: 43.82 mm and TL 63.42 mm (male specimens).

Localities: Rahmat Abad, Hiduj, Zaboli (Fig. 2D).

Genus *Trapelus* Cuvier, 1816

5. *Trapelus agilis agilis* (Oliver, 1804) _ Steppe agama

Material examined (21): Maximum SVL and TL of an adult male and female, respectively: 70.84 mm and 118.25 mm, 55.65 mm and 89.26 mm.

Localities: Black Mountain, Kalagan, Pishin, Polan village, Bahu Kalat, Rahmat Abad, Ashar, Rendik, Rask, Kalporegan, Nahang River area (Fig. 2E).

Family Gekkonidae

Genus *Agamura* Blanford, 1874

6. *Agamura persica* (Duméril, 1856) _ Persian spider gecko

Material examined (3): Maximum SVL: 58.04 mm.

Localities: Rahmat abad, Birk Mountain, Rendik (Fig. 2F).

Genus *Bunopus* Blanford, 1874

7. *Bunopus tuberculatus* Blanford, 1874 _ Baluch rock gecko

Material examined (5): Maximum SVL: 53.85 mm, TL: 63.42 mm (male).

Localities: Black Mountain, Bahu Kalat, Hiduj, Rask, Pasko.

Genus *Cyrtopodion* Fitzinger, 1843**8. *Cyrtopodion scabrum* (Heyden, 1827) _ Keeled rock gecko**

Material examined (2): Maximum SVL: 32.60 mm.

Localities: Rahmat abad, Bahu Kalat.

Family Lacertidae**Genus *Acanthodactylus* Fitzinger, 1834****9. *Acanthodactylus blanfordii* Boulenger, 1918 _ Blanford's fringe-toed lizard**

Material examined (6): Maximum SVL: 52.51 mm and TL: 107.11 mm.

Localities: Tis, Rendik, Polan, Bahu Kalat, Ashar, Rask (Fig. 3A).

10. *Acanthodactylus micropholis* Blanford, 1874 _ Persian fringe-toed lizard

Material examined (2): Maximum SVL: 63.17 mm and TL: 122.98 mm.

Localities: Zaboli, Hiduj (Fig. 3B).

Genus *Eremias* Fitzinger, 1834**11. *Eremias fasciata* Blanford, 1874 _ Sistan racerunner**

Material examined (1): SVL: 58.68 mm and TL: 107.85 mm.

Localities: Hiduj (Fig. 3C).

12. *Eremias persica* Blanford, 1874 _ Persian racerunner

Material examined (2): SVL: 36 mm and TL: 40.51 mm.

Localities: Naser Abad, Polan (Fig. 3D).

Genus *Ophisops* Ménétriés, 1832**13. *Ophisops elegans* Ménétriés, 1832 _ Snake-eyed lizard**

Localities: Black Mountain (Fig. 3E).

Genus *Mesalina* Gray, 1838**14. *Mesalina watsonana* (Stoliczka, 1872) _ Persian long-tailed desert lizard**

Material examined (33): Maximum SVL: 47.87 mm and TL: 108.57 mm.

Localities: Black Mountain, Kalagan, Rendik, Rask, Polan village, Bahu Kalat, Pishin, Ashar, Bamposht, Kale Sari, Kalporegan, Nahang River area, Gosht (Fig. 3F).

Family Scincidae**Genus *Ablepharus* Fitzinger, 1823****15. *Ablepharus grayanus* (Stoliczka, 1872) _ Minor Snake-eyed Skink**

Material examined (2).

Localities: Sarjou (Saravan) (Fig. 4A).

Genus *Eumeces* Wiegmann, 1834**16. *Eumeces schneiderii zarudnyi* Nikolsky, 1900 _ Zarudny's skink**

Material examined (2): Maximum SVL: 120.11 mm and TL: 236.70 mm.

Localities: Bahu Kalat, Black Mountain (Fig. 4B).

Genus *Ophiomorus* Duméril and Bibron, 1839**17. *Ophiomorus brevipes* (Blanford, 1874) _ Short-legged snake skink**

Material examined (1): SVL: 84.71 mm.

Localities: Sarjou.

18. *Ophiomorus tridactylus* (Blyth, 1853) _ Three-toed sand skink

Material examined (2): Maximum SVL: 77.19 mm and TL: 57.54 mm.

Localities: Beris-e Kohneh, Chabahar County.

Family Uromastycidae

Genus *Uromastyx* Merrem, 1820

19. *Uromastyx asmussi* (Strauch, 1863) _ Iranian spiny-tailed lizard

Material examined (one specimen observed).

Localities: Rask (Fig. 4C).

Family Varanidae

Genus *Varanus* Merrem, 1820

20. *Varanus griseus caspius* (Eichwald, 1831) _ Transcaspian desert monitor

Material examined (1): SVL: 121.60 mm and TL: 176 mm (released).

Localities: Rendik, Pasko, Rask (Fig. 4D).

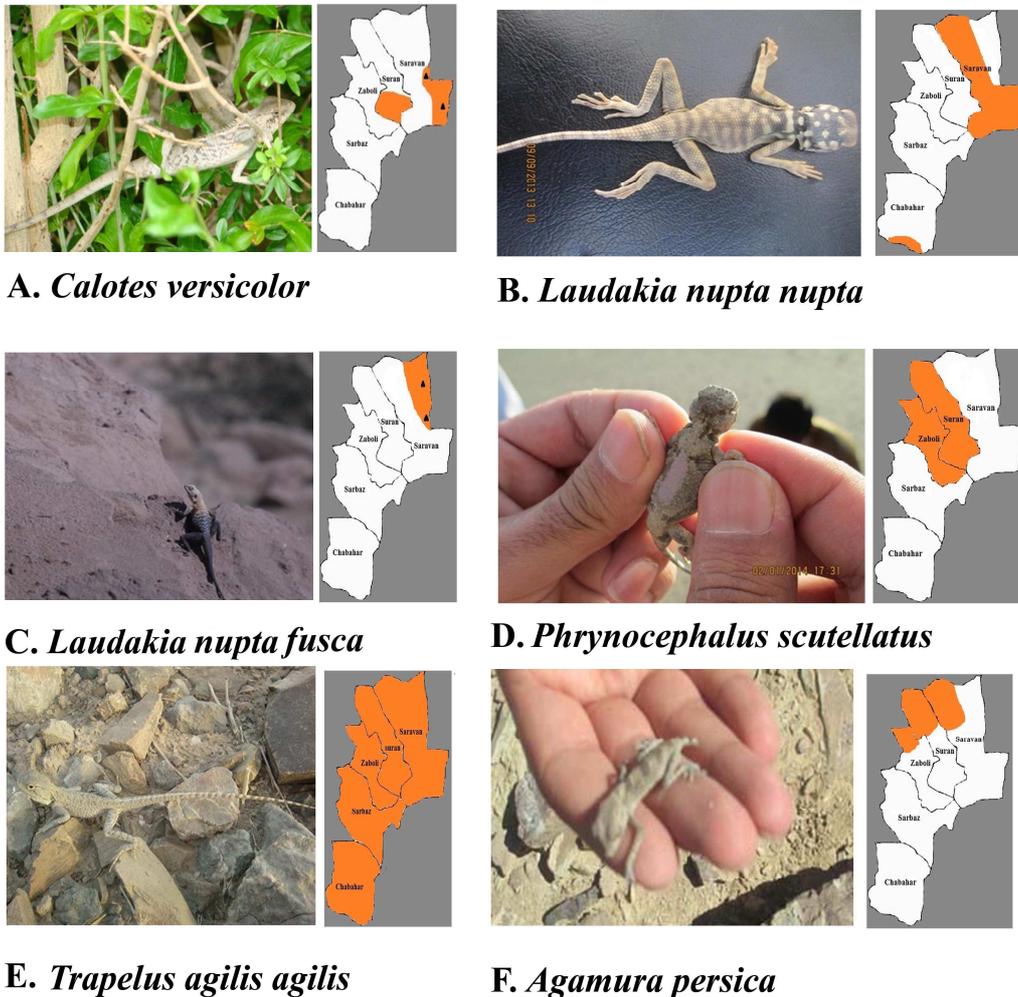


FIGURE 2. Dorsal view and distribution map of: A, *Calotes versicolor*; B, *Laudakia nupta nupta* (immature); C, *L. n. fusca*; D, *Phrynocephalus scutellatus*; E, *Trapelus agilis agilis*; F, *Agamura persica*.



A. *Acanthodactylus blanfordii*



B. *Acanthodactylus micropholis*



C. *Eremias fasciata*



D. *Eremias persica*



E. *Ophisops elegans*



F. *Mesalina watsonana*

FIGURE 3. Dorsal view and distribution map of: A, *Acanthodactylus blanfordii*; B, *A. micropholis*; C, *Eremias fasciata*; D, *E. persica*; E, *Ophisops elegans*; F, *Mesalina watsonana*.

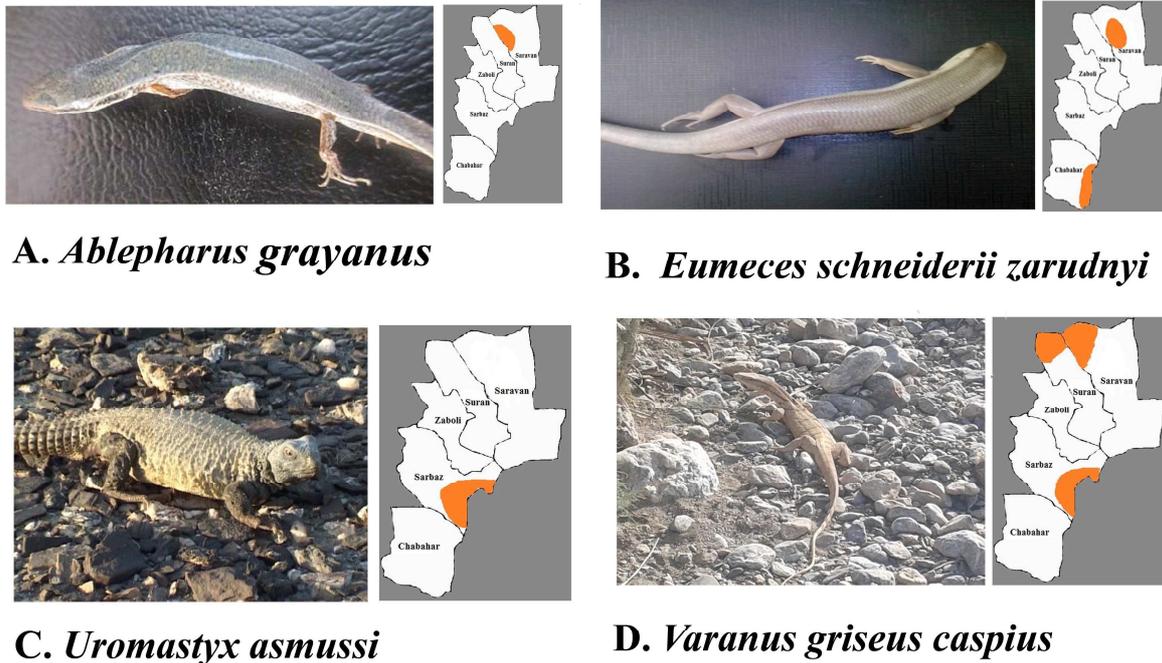


FIGURE 4. Dorsal view and distribution map of: A, *Ablepharus grayanus*; B, *Eumeces schneiderii zarudnyi*; C, *Uromastyx asmussi*; D, *Varanus griseus caspius*.

DISCUSSION

Iran mostly lies in the Palearctic zoogeographical realm bordering the Oriental and African ones (Rastegar-Pouyani et al., 2015). Here, the province of Sistan and Baluchestan in the southeast corner of Iran plays a significant role as a corridor to connecting the Palearctic and Oriental faunas to each other (Rastegar-Pouyani et al., 2015). Based on the results of our study and those of previous studies (Blanford, 1874, Anderson, 1999; Rastegar-Pouyani et al., 2007; Heidari and Kami, 2009; Šmíd et al., 2014 and others; see Table 1), Sistan and Baluchestan Province is one of the most diverse provinces of Iran from a herpetological viewpoint. The wide ranges of geographical and geological variety, coupled with the climatologically diverse environments (Rastegar-Pouyani et al., 2015), provide an enormous diversity in reptile fauna. The endemic lizards form a significant part of the total species known in this Province (Table 1). New species are usually described from one or a few localities and are consequently often endemic. The proportion of endemics is expected to rise as further studies on these herpetofauna are carried out. Our study following the previous researches is crucial for conducting a more comprehensive research on various aspects of biology and natural history of different taxa of reptiles in Sistan and Baluchestan, especially those taxa that are poorly studied. We hope that some new records and new taxa of reptiles will be discovered and more new data on biology and life history of the above-mentioned taxa will be provided.

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