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, Zabol, 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* (Agamidae);
- *Laudakia nupta nupta*,
- *L. n. fusca* (Agamidae);
- *Phrynocephalus scutellatus* (Agamidae);
- *Trapelus agilis agilis* (Agamidae);
- *Agamura persica* (Gekkonidae);
- *Bunopus tuberculatus* (Gekkonidae);
- *Cyrtopodion scabrum* (Gekkonidae);
- *Acanthodactylus blanfordii*,
- *A. micropholis* (Lacertidae);
- *Eremias fasciata*,
- *E. persica* (Lacertidae);
- *Mesalina watsonana*,
- *Opisthoops elegans* (Lacertidae);
- *Ablepharus grayanus*,
- *Eumeces schneiderii zarudnyi*,
- *Ophiomorus brevipes* (Scincidae);
- *Ophiomorus brevipes* (Scincidae);
- *Ophiomorus brevipes* (Scincidae);
- *Ophiomorus brevipes* (Scincidae);
- *Ophiomorus brevipes* (Scincidae);
- *Ophiomorus brevipes* (Scincidae);
- *Uromastyx asians* (Uromastycidae);
- *Varanus greeves aspais* (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
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.
A checklist of lizards from the Sistan and Baluchestan Province

<table>
<thead>
<tr>
<th>Family</th>
<th>Species (Present study)</th>
<th>Species (previous studies by Blanford, 1874; Anderson, 1999; Heidari and Kami, 2009; Nazarov and Rajabzadeh, 2007; Nazarov et al., 2009; Mozaffari, 2010; Karamiani et al., 2015; Sanchooli, 2016 and others)</th>
</tr>
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</table>
| Agamidae      | *Calotes versicolor (Daudin, 1802)                                                     | Landaukia nupta fusa (Blanford, 1876)  
**Phrynocephalus santellatus** (Olivier, 1807)  
**Trapelus agilis agilis** (Olivier, 1804)  
**Agamura persica** (Duméril, 1856)  
**Banophus tuberculatus** Blanford, 1874 |
| Gekkonidae    | **Cyrtopodion scabra** (Heyden, 1827)                                                  | *Cyrtopodion agamoides* (Nikolsky, 1900)  
**Cyrtopodion brevipes** (Blanford, 1874)  
**Cyrtopodion golubevi** Nazarov, Ananjeva and Radjabizadeh, 2009,  
**Cyrtopodion sistanense** Nazarov and Rajabzadeh, 2007,  
**Hemidactylus flaviviridis** Rüppell, 1835  
**H. persicus** Anderson, 1872  
**H. robustus** Heyden, 1827  
**M. russowii zarudnyi** (Nikolsky, 1900),  
**M. sagittifer** (Nikolsky, 1900)  
**Microgecko persicus** (Nikolsky, 1903)  
**Rhinogekko femoralis** (Smith, 1933)  
**Tenuidactylus caspius** Eichwald, 1831  
**T. longipes** (Nikolsky, 1896) |
| Lacertidae    | **Mesalina brevirostris** Blanford, 1874                                                | **Acanthodactylus blanfordii** Boulenger, 1918  
**A. micropus** Blanford, 1874  
**Eremias australis** Blanford, 1874  
**E. persica** Blanford, 1874  
**Mesalina watsonana** (Stoliczka, 1872)  
**Opisopus elongatus** Ménétriés, 1892  
**Ablepharus grayanus** (Stoliczka, 1872) |
| Scincidae     | **Ophiomorus brevipes** (Blanford, 1874)                                               | **Acanthodactylus cantorii** Günther, 1864  
**Eremias australis** Blanford, 1874  
**E. persica** Blanford, 1874  
**Mesalina brevirostris** Blanford, 1874 |
| Sphaerodactylidae | **Pristurus rupestris** Blanford, 1874                                                 | **B. occidentalis** (Forskal, 1775)  
**Ophiomorus brevipes** (Blanford, 1874)  
**Ophiomorus tridactylus** (Blyth, 1853) |
| Uromastyceae  | **Uromastyx asmussi** (Strauch, 1863)                                                   | **Pristurus rupestris**, Blanford, 1874  
**Teratoscincus bedriagai** Nikolsky, 1899,  
**T. microlepis** Nikolsky, 1899,  
**T. keyserlingii** Strauch 1863 |
| Varanidae     | **Varanus griseus caspius** (Eichwald, 1831)                                           | **Varanus bengalensis** (Daudin, 1802)  
Other recorded species of lizards from throughout of Sistan and Baluchestan Province, not recorded in our study from south east of the province |
| Remark        | Species recorded from south east of Sistan and Baluchestan 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).

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**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*. 
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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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LITERATURE CITED


