

Notes on the lizard's fauna of Sistan region in eastern Iran

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To evaluate the lizard fauna of the Sistan region, field work was conducted from 2014 to 2015 in five sampling locations as Zabol, Zahak, Hirmand, Nimrooz and Hamoon towns. Field work was done during both day and night at all sites. In total, 196 specimens were collected and identified using available identification keys. Collected lizards belong to six families: Agamidae, Lacertidae, Gekkonidae, Sphaerodactylidae, Scincidae and Varanidae. A total of 10 genera and 15 species of lizards were represented. Gekkonidae was the most diverse family with four genera and four species.

Key words: *Sistan lizard's fauna, Eastern Iran, Helmand basin, reptiles.*

INTRODUCTION

Recently, many projects have been conducted on the reptiles fauna of Iran with most focused on a given species or genus (Rastegar-Pouyani *et al.*, 2008; Gholamifard, 2011). There are few comprehensive studies of the general herpetofauna distribution in Iran such as the herpetofauna of Ilam province (Fathinia *et al.*, 2011), the reptile fauna of Yazd province (Ebrahimipour *et al.*, 2016), the lizard fauna of Esferayen (Kashefi, 2016), the lizard fauna of Shazand (Sedighi, 2009) and the lizard fauna of Semnan province (Rastegar-Pouyani, 2001).

Eastern Iran is a gap area for knowledge about herpetofauna, with no strong study of its herpetofauna. The Sistan region is the northern part of the Sistan-Baluchestan province (one of the largest provinces in eastern Iran adjacent with Pakistan and Afghanistan) and based on zoogeographic divisions, situated in the Helmand basin (Anderson, 1999). In the present study, the lizard fauna of this region was investigated and is presented.

MATERIAL AND METHODS

The study region was situated in eastern Iran at the border with Afghanistan. The longitudinal and latitudinal of the area was restricted as follows: longitudinal from 60° 15' to 61° 50' E and latitudinal from 30° 5' to 31° 28' N. The region is bordered by South Khorasan province to the north and west. The eastern part is bordered by Afghanistan (Fig. 1). Most of the western part of the Sistan region was occupied by water (Hamoon lake), but recently this was dried and the area is currently a large desert area. Mean annual temperature in the region is 22 °C and mean annual precipitation is 64 mm.

The field work was conducted in the Sistan region from 2014 to 2015 in five main stations, Zabol, Edimi, Mohammad Abad, Zahak and Doostmohammad (Fig. 1). At each station, diurnal and nocturnal searches were made for lizards around the villages, agricultural lands and sand dunes. In addition to direct and active search methods for lizards, some pitfall traps were used to capture nocturnal lizards. Finally, all captured specimens were transferred to the zoology lab of University of Zabol and identified using relevant lizard's references (Anderson, 1999; Nasrabadi *et al.*, 2017).

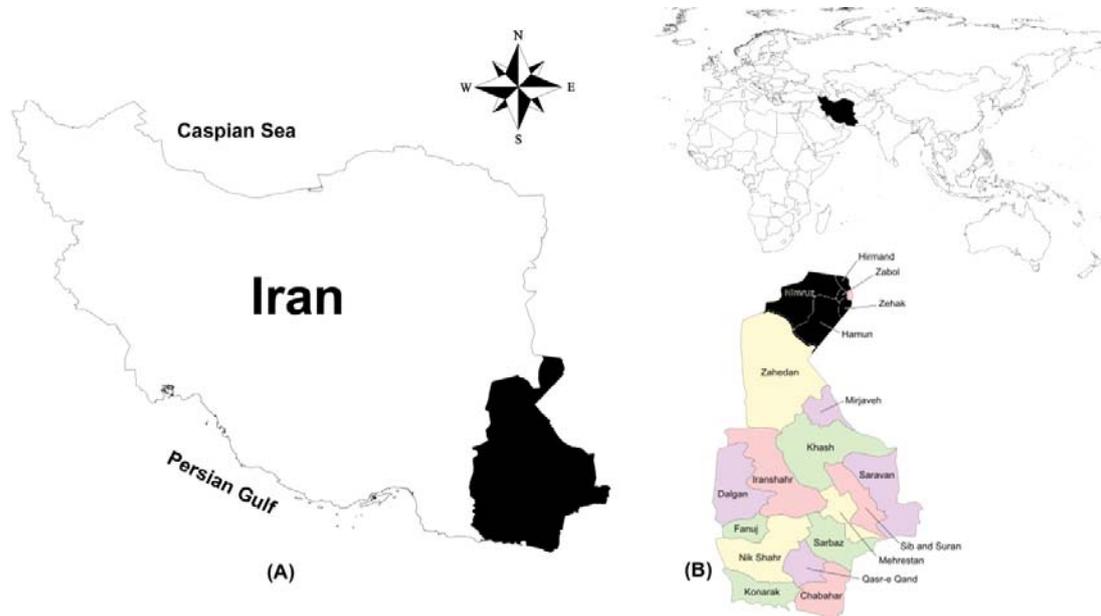


FIGURE 1. Map of Iran and study area in southeastern Iran (A); Location of all station in northern part of the Sistan and Baluchestan province with black color (B).

TABLE 1. List of all species that captured during this study with their taxonomic category as family, genus and species.

Family	Genus	Species
Agamidae	<i>Trapelus</i>	<i>Trapelus agilis</i>
	<i>Phrynocephalus</i>	<i>Phrynocephalus scutellatus</i>
Lacertidae	<i>Eremias</i>	<i>Eremias acutirostris</i>
		<i>Eremias fasciata</i>
		<i>Eremias persica</i>
Scincidae	<i>Mesalina</i>	<i>Mesalina watsonana</i>
	<i>Ablepharus</i>	<i>Ablepharus pannonicus</i>
	<i>Ophiomorus</i>	<i>Ophiomorus tridactylus</i>
	<i>Tenuidactylus</i>	<i>Tenuidactylus caspius</i>
Gekkonidae	<i>Cyrtopodion</i>	<i>Cyrtopodion scabrum</i>
	<i>Mediodactylus</i>	<i>Mediodactylus russowi</i>
	<i>Bunopus</i>	<i>Bunopus tuberculatus</i>
Sphaerodactylidae	<i>Teratoscincus</i>	<i>Teratoscincus bedriagai</i>
Varanidae	<i>Varanus</i>	<i>Teratoscincus microlepis</i>
		<i>Varanus griseus</i>

TABLE 2. Snout-vent length (in mm) of five abundant lizard's species in Sistan region, eastern Iran.

species	Number of specimens	Range	Mean
<i>Trapelus agilis</i>	61	43.12 – 108.00	68.56
<i>Cyrtopodion scabrum</i>	35	21.40 – 50.50	39.35
<i>Bunopus tuberculatus</i>	24	31.00 – 47.50	38.97
<i>Teratoscincus bedriagai</i>	20	52.10 – 64.30	59.72
<i>Eremias fasciata</i>	18	53.70 – 61.70	57.65

RESULTS

We found only 15 species (196 specimens) belonging to the six families of the lizards living in the Sistan region (Table 1). *Trapelus agilis* and *Cyrtopodion scabrum* were the most abundant lizards in the region. Mean snout-vent length (SVLs) for the five abundant species (*Trapelus agilis*, *Cyrtopodion scabrum*, *Bunopus tuberculatus*, *Teratoscincus bedragai* and *Eremias fasciata*) was calculated and is presented in Table 2. Among all captured species, *Varanus griseus* had the largest SVL length. Among all abundant species, *Trapelus agilis* has the largest SVL (68.56 mm) and *Bunopus tuberculatus* has the smallest SVL (38.97 mm).

DISCUSSION

Here, we present information regarding the lizard fauna of the Sistan region. Because of the lack of faunal study worldwide, it is necessary to improve knowledge and increase the distribution and habitat data for species in Iran. To address this, we aimed in this study to introduce the lizard fauna of Sistan region.

Family Agamidae

Trapelus agilis (Olivier, 1804)

Habitat. Flat, open plains and semideserts of clay or gravel substrate with scattered shrubs or vegetation-covered mounds. Although not a vertical climber like *Calotes*, it climbs readily on shrubs, rocks and rock piles to use them as observation posts. Observed to retreat into shallow burrows.

Distribution. Across all Iran except the NW part of the Zagros. It is a common lizard in the Sistan region and can be found in most plains.

Phrynocephalus scutellatus (Olivier, 1807)

Habitat. Flat gravel desert plains with very little vegetation. Avoid sandy or clayey substrates. Found up to 2300 m elevation, but the elevation in Sistan mostly up to 700 m (Anderson, 1999).

Distribution. A species widely distributed all over the central Iranian Plateau (and eastern Iran) but not crossing the Zagros in the west and Alborz in the north. It is a rare species in Sistan region. The species only found in southern part of the Sistan region.

Lacertidae

Eremias acutirostris (Boulenger, 1887)

Habitat. The species can be found in sand dunes and usually move between *Tamarix* shrubs for feeding and basking.

Distribution. Species restricted to eastern Iran and only reported from the Sistan region so far (Anderson, 1999; Smid *et al.*, 2014). The species was collected from sand dunes between Zabol and Doostmohammad cities.

Eremias fasciata (Blanford, 1874)

Habitat. Sandy or gravelly plains or silty alluvia with scattered steppe shrubby vegetation (*Alhagi*, *Tamarix*), under which these lizards seek refuge.

Distribution. Most abundant in all provinces east of the 55° E meridian and south of the Kopet Dag. Eastern Iran. In the Yazd province, we found the species in the Darreh Anjir protected area and in the Haji Abad Zarrin village.

Eremias persica Blanford, 1875

Habitat. Open plains and slopes with sparse grassy vegetation, usually associated with gravel surfaces, but can also be found on mixed sand and gravel or silt and gravel.

Distribution. The entire Iranian plateau south of the Alborz Mountains, including Zagros. There are no records of the species in the Lut and Kavir deserts. *Eremias persica* was seen around Aghda in the western part of Yazd province.

***Mesalina watsonana* Stoliczka, 1872**

Habitat: The species dwells in the desert and alluvial areas. Vegetation density is low and the shrubs are distributed in a scattered way. The most common shrubs recorded in the habitat are *Alhaji*, *Tamarix*, *Salsola* and *Prosopis*.

Distribution: The species range of the species covered most of the country from the central plateau to the eastern region. In the study area, the species is only found in Zahak and Hirmand townships.

Scincidae

***Ablepharus pannonicus*, Fitzinger, 1823**

Habitat: The species lives around gardens, agricultural areas and where plants are abundant. The recorded shrubs are: *Tamarix*, *Alhaji*, *Populus*, *Phragmites*, *Vitis* and *Eucalytus*.

Distribution: Records of the species from Iran were distributed across all parts of the country except the central plateau. In the Sistan region, the species was found from Zabol, Doostmohammad and Edimi townships.

***Ophiomorus tridactylus*, Blyth, 1853**

Habitat: Sand dunes are the best areas to find *O. tridactylus* in the Sistan region. Vegetation of the sand dunes was scattered and contains *Alhaji*, *Tamarix*, *Capparis* and *Triticum*.

Distribution: Based on the recent lizard checklist (Smid *et al.*, 2014), all records of the species were from the Sistan region. We collected it from Zabol, Zahak, Hirmand and Hamoon towns.

Gekkonidae

***Tenuidactylus caspium*, Eichwald, 1831**

Habitat: Warm and temperate regions are suitable for the species. It mostly lives near human homes and is distributed by the migration of people. The species prefers to climb from walls and vertical surfaces.

Distribution: The species was recorded from the northern half of Iran, but all populations show similar genetic structure because of migration by peoples from one area to another. In this study, the species was only found in Nimrooz town.

***Cyrtopodion scabrum*, Heyden, 1827**

Habitat: The species prefers to live near humans, like *T. caspius*. Lives on the walls, gardens, empty houses, animal houses and under the bridges on the roads.

Distribution: most parts of Iran, many cities and villages except northwestern Iran. In the study region, the species was found in all sampling locations.

***Mediodactylus russowi* (Strauch, 1887)**

Habitat: *Tamarix* shrub is the best place to find it. The species prefer to climb the *Tamarix* tree and move within the shrub.

Distribution: The species was recorded from many distant areas in Iran (Khorasan and Semnan provinces). In this study, we extended the distribution southward to the Sistan region. The species was only collected from Zabol town.

***Bunopus tuberculatus* Blanford, 1874**

Habitat: The species prefers to inhabit desert and semi-desert areas where sand dunes and flat areas are present. Many shrubs have been found in its habitat, including *Tamarix*, *Albagi*, *Salsola* and *Prosopis*.

Distribution: The species is distributed in desert areas of the western, southwestern, central and eastern parts of Iran. The Sistan region is within this range. *Bunopus tuberculatus* is one of the most recorded species in the region and we found it in all locations during field work.

Spharodactylidae***Teratoscincus bedriagai* Nikolsky, 1899**

Habitat: Flat areas with small boulders and areas with little shrubs. Soil was salty and clay. Different shrubs were found in the habitat as: *Albagi*, *Tamarix*, *Triticum*, *Salsola*, *Prosopis* and *Aeluropus*.

Distribution: the species range was from central plateau to the eastern Iran. The species were collected from Zabol, Hirmand, Hamoon and Nimrooz towns.

***Teratoscincus microlepis* Nikolsky, 1899**

Habitat: Sand dunes are the best habitat for the species. Most parts of the dunes are free of vegetation. The species prefers to inhabit slopes that face west.

Distribution: The species was recorded only from Kerman and Sistan-Baluchestan provinces. In the Sistan region, we found it only in Hirmand.

Varanidae***Varanus griseus* (Daudin, 1803)**

Habitat: The species lives around agricultural areas, gardens and villages. Areas have diverse vegetation and consist of different shrubs as: *Albagi*, *Triticum*, *Salsola*, *Tamarix*, *Capparis*, *Kochia* and *Suaeda*.

Distribution: The previous records of the species were from all parts of Iran except for northwestern Iran. The species was found only in Nimrooz town.

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