

## A PRELIMINARY STUDY OF THE REPTILE'S FAUNA IN NORTHWESTERN YAZD PROVINCE, IRAN

Farnaz Ebrahimi Pour,<sup>1</sup> Eskandar Rastegar-Pouyani,<sup>2</sup> and Batoul Ghorbani<sup>1</sup>

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We have studied the terrestrial reptile fauna of the northwest Yazd province (Iran) and present here some of the characters that we examined for common species in the region. In total, 50 specimens from eight families (six lizard families and two snake families) were collected from the region. The collected lizards belonging to 13 species were *Laudakia nupta*, *Phrynocephalus maculatus*, *Phrynocephalus scutellatus*, and *Trapelus agilis* (Agamidae); *Agamura persica* and *Bunopus crassicaudus* (Gekkonidae), *Teratoscincus bedriagai* (Sphaerodactylidae); *Eremias fasciata*, *Eremias persica*, *Mesalina watsonana*, and *Ophisops elegans* (Lacertidae); *Varanus griseus* (Varanidae), and finally *Uromastix asmussi* belonging to the Uromastycidae. The two species of snakes were *Spalerosophis diadema schiraziana* (Colubridae) and *Psammodphis schokari* (Lamprophiidae). Based on these results, Agamidae and Lacertidae are the families with highest number of genera and the genera *Eremias* and *Phrynocephalus* had the most species. Among the collected lizards, *Trapelus agilis*, *Mesalina watsonana*, and *Bunopus crassicaudus* were the most abundant species in the northwest Yazd province.

**Keywords:** Central Plateau of Iran; Yazd province; Reptile; Siyah Kouh; Darreh Anjir.

### INTRODUCTION

The Central Plateau of Iran is restricted by the Zagros and Elburz Mountains from the west and north, respectively. According to the zoogeographical view, the region is adjacent to several rich herpetofaunal areas (Anderson, 1999). The margins of the central plateau have varied fauna, especially in the Qom and Khorasan provinces, because of the ecotone condition in Qom and nearing the Khorasan region to the Kopet Dagh and Helmand basin (Anderson, 1999). The age of the formation of the central part of the Iranian Plateau is large and the area has experienced several collision forces because central Iran comprised part of the ancient land of Gondwana (Mouthereau, 2011).

Yazd province is one of the largest provinces (area is 129285 km<sup>2</sup>) in Central Iran and there are several mountains and deserts in the northwest part. However, there have been few studies on the herpetofauna of the region and there are several new regions that need to have their amphibian and reptile populations inventoried. Most

recent studies have been done in the Yazd province, especially in the Tabas region (Anderson, 1999; Masooli et al., 2014), but there has been no study of the northwest of the province (the Ardakan region). Masooli et al. (2014) found that the lizards of the Tabas region belong to 10 genera and 14 species. Eris et al. (2009) investigated the Kharanagh and Nodoushan regions in the Yazd province for herpetofauna with the following results: five species from Kharanagh area (*Laudakia nupta*, *Phrynocephalus scutellatus*, *Trapelus agilis*, *Mesalina watsonana*, and *Bunopus crassicauda*) and four species from the Nodoushan area (*Trapelus agilis*, *Eremias persica*, *Mesalina watsonana*, and *Bunopus crassicauda*).

In the present study, we conducted an inventory of the herpetofauna of Siyah Kouh National Park because there has been no previous herpetofaunal study of the region.

### MATERIAL AND METHODS

**Study area.** Yazd province is situated in the central part of the Iranian Plateau between 29.48 and 33.30° N and 52.45 and 56.30° E, bordered by the Isfahan, Kerman, Fars, and South Khorasan provinces. It is composed of two types of climates as cold and moist winters and hot and dry summers. Precipitation is varied in the province and changes from 50 – 300 mm in hot deserts (like Siyah

<sup>1</sup> Department of Biology, Tehran Medical Science Branch, Islamic Azad University, Tehran, Iran;  
e-mail: negahne@aol.com.

<sup>2</sup> Department of Biology, Faculty of Science, Hakim Sabzevari University, Sabzevar, Iran.

Kooh desert) to high elevated regions (like Shirkooh Mountain). Also, the vegetation in the province is very scattered and regions are formed of boulders with sparse herbaceous vegetation.

**Collecting methods.** During fieldwork on June 2015 in the northwest of Yazd province, 7 stations were investigated for reptile fauna during 20 days. Stations included all parts of the northwest of the province (Fig. 1) and were situated in both desert and mountain areas. At each station, diurnal and nocturnal searches were made for reptiles. Lizards and snakes were detected using the active searching method and then were captured by hand. All captured lizards were identified using relevant reptile references (Anderson, 1999; Latifi, 1991) and transferred to the Hakim Sabzevari University. Each one that had more than three specimens was examined for morphological characters (Tables 1 and 2).

## RESULTS

We found only 15 species of reptiles (13 species of lizards and 2 species of snakes) living in the northwest of Yazd province (Table 1; Fig. 1). Fifty specimens of 15 species were collected from the region. The most abundant species in the region was *Bunopus crassicauda*, which represented 25% of all samples. *Phrynocephalus scutellatus* and *Trapelus agilis* were relatively abundant species in the region. Mean Snout-Vent Lengths (SVLs) for five abundant species (*Trapelus agilis*, *Phrynocephalus scutellatus*, *Agamura persica*, *Mesalina watsonana*,

**TABLE 1.** List of All Species that Were Reported in this Study and Their Taxonomical Categories According to Suborder, Family, Genus, and Species

Family	Genus	Species
<b>Suborder Lizards</b>		
Agamidae	<i>Laudakia</i>	<i>Laudakia nupta</i>
	<i>Phrynocephalus</i>	<i>Phrynocephalus maculatus</i>
		<i>Phrynocephalus scutellatus</i>
	<i>Trapelus</i>	<i>Trapelus agilis</i>
Gekkonidae	<i>Agamura</i>	<i>Agamura persica</i>
	<i>Bunopus</i>	<i>Bunopus crassicauda</i>
Sphaerodactylidae	<i>Teratoscincus</i>	<i>Teratoscincus bedriagai</i>
Lacertidae	<i>Eremias</i>	<i>Eremias fasciata</i>
		<i>Eremias persica</i>
	<i>Mesalina</i>	<i>Mesalina watsonana</i>
	<i>Ophisops</i>	<i>Ophisops elegans</i>
Varanidae	<i>Varanus</i>	<i>Varanus griseus</i>
Uromastycidae	<i>Uromastix</i>	<i>Uromastix asmussi</i>
<b>Suborder Snakes</b>		
Colubridae	<i>Spalerosophis</i>	<i>Spalerosophis diadema schiraziana</i>
Lamprophiidae	<i>Psammophis</i>	<i>Psammophis schokari</i>

and *Ophisops elegans*) were calculated and are presented in Table 2. Mean SVL of *Trapelus agilis* was calculated as 84.4 mm ( $N = 4$ ); it included the largest lizards among examined species. *Ophisops elegans*, with mean SVL of 35.7 mm ( $N = 4$ ), is the smallest species in the region. The distributions of all species captured are presented in Fig. 2.

## DISCUSSION

Studying of the fauna of a given region is one of the most basic and important tasks needed to understand the faunal structure and how many species are present (Rastegar-Pouyani et al., 2008). All species captured are presented here with brief explanations and some remarks on their distribution on the region.

### Family Agamidae

#### *Laudakia nupta* (de Filippi, 1843)

(Fig. 1A)

**Habitat.** Rocks of limestone and other outcrops, very often also found near human settlements, abandoned buildings, on walls, monuments and other man-made habitats.

**Distribution.** Along the Zagros eastwards continuously up to the Pakistani border. Very common, particularly in the western Zagros foothills. Isolated records from Semnan and Khorasan Razavi Province. The species is very common in the Yazd province, especially in submountainous regions (Fig. 2A).

#### *Phrynocephalus maculatus* Anderson, 1872

(Fig. 1D)

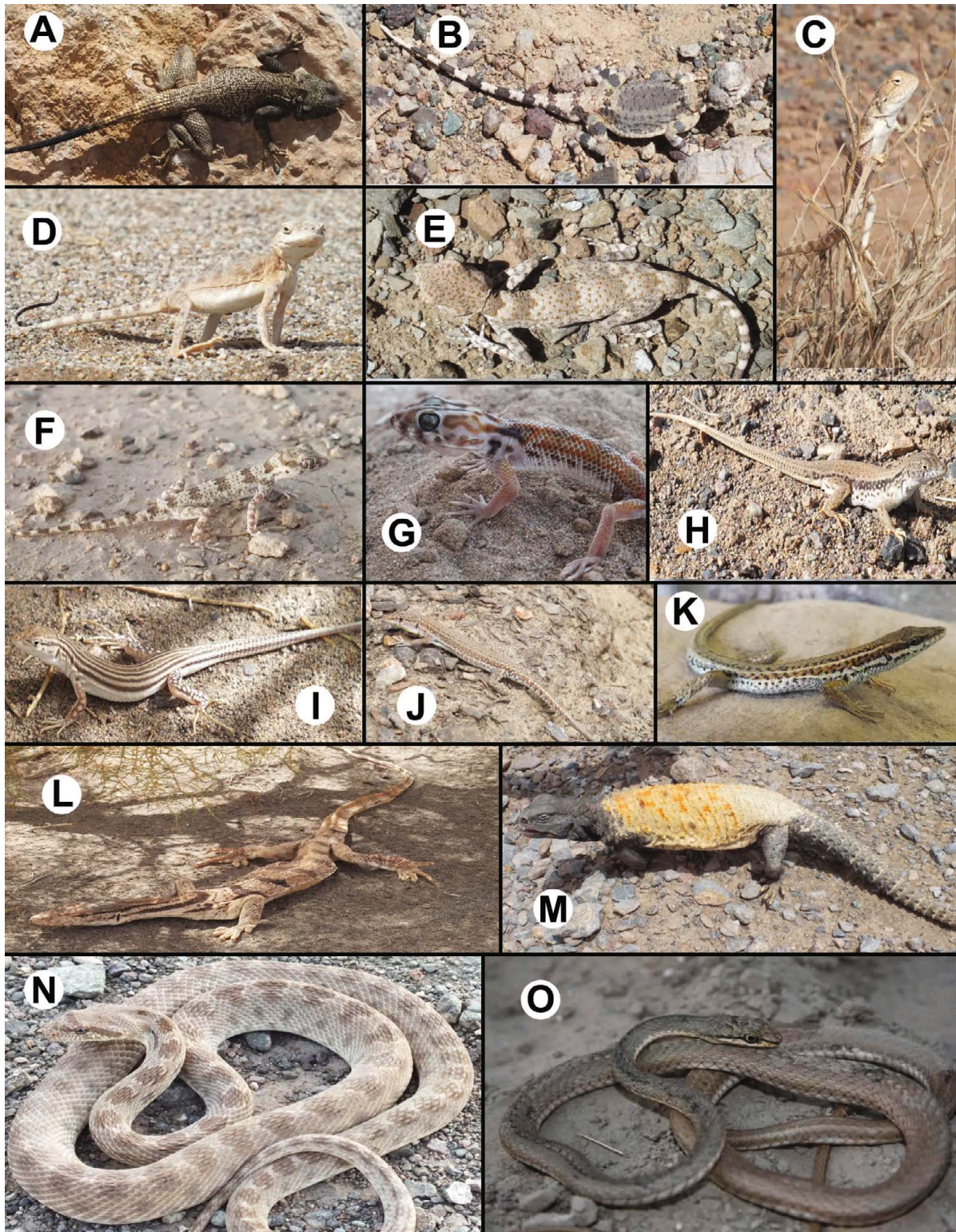
**Habitat.** Flat deserts with rather hard-packed, sandy clay soils or gravel-strewn hammadas (Minton 1966).

**Distribution.** Most of the central plateau to elevations up to 3000 m. The species does not cross the Zagros Mountains in the west. The species has scattered distribution in the province because of the distribution pattern of sand dunes (Fig. 2D).

**TABLE 2.** Snout-Vent Length (in mm) of the Five Abundant Lizard Species Occurring in the Northwest of Yazd Province

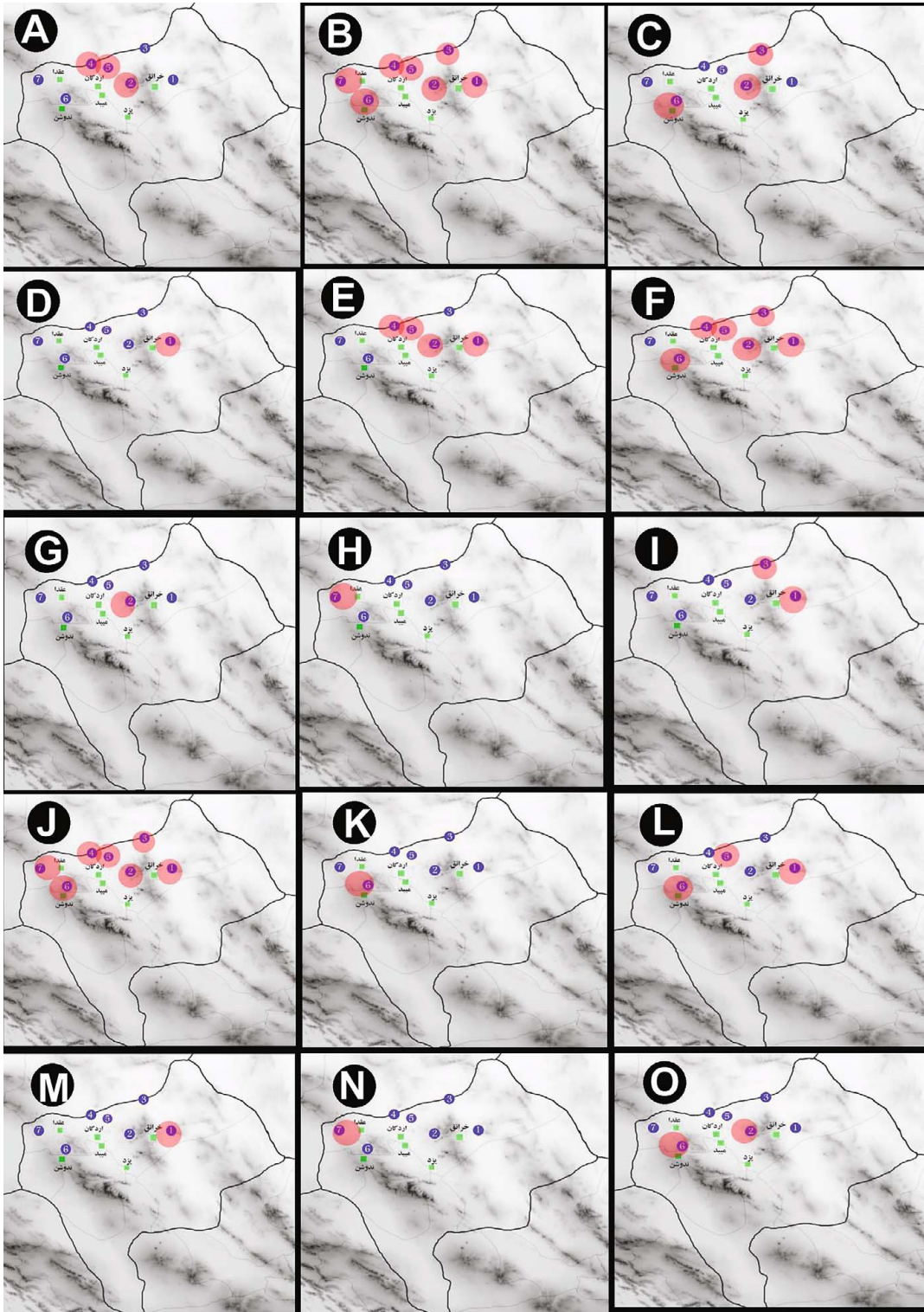
Species	The number of samples	Range	Mean
<i>Trapelus agilis</i>	4	71.35 – 97.35	84.35
<i>Phrynocephalus scutellatus</i>	5	44.63 – 45.14	45.88
<i>Agamura persica</i>	3	54.08 – 56.17	55.12
<i>Mesalina watsonana</i>	4	41.73 – 47.60	44.65
<i>Ophisops elegans</i>	4	35.20 – 36.10	35.65





**Fig. 1.** All species that were reported in this study from northwest of Yazd province: A, *Laudakia nupta*; B, *Phrynocephalus scutellatus*; C, *Trapeus agilis*; D, *Phrynocephalus maculatus*; E, *Agamura persica*; F, *Bunopus crassicaudus*; G, *Teratoscincus bedriagai*; H, *Eremias persica*; I, *Eremias fasciata*; J, *Mesalina watsonana*; K, *Ophisops elegans*; L, *Varanus griseus*; M, *Uromastyx assmusi*; N, *Spalerosophis diadema*; O, *Psammophis schokari*.





**Fig. 2.** Distribution of all species that were reported in this study from the northwest of Yazd province: Numbers from 1 to 7 indicated to the stations and the red color refers to the sampling locations for each species in the province: A, *Laudakia nupta*; B, *Trapelus agilis*; C, *Phrynocephalus scutellatus*; D, *Phrynocephalus maculatus*; E, *Agamura persica*; F, *Bunopus crassicaudus*; G, *Teratoscincus bedriagai*; H, *Eremias persica*; I, *Eremias fasciata*; J, *Mesalina watsonana*; K, *Ophisops elegans*; L, *Varanus griseus*; M, *Uromastyx assmusi*; N, *Spalerosophis diadema*; O, *Psammophis schokari*.

***Phrynocephalus scutellatus* (Olivier, 1807)**

(Fig. 1B)

**Habitat.** Flat gravel desert plains with very little vegetation. Avoid sandy or clayey substrates. Found up to 2300 m elevation (Anderson 1999).

**Distribution.** A species widely distributed all over the central Iranian Plateau but not crossing the Zagros in the west and Alborz in the north. It is one of the common species in Yazd province and distributed in most regions (Fig. 2C).

***Trapelus agilis* (Olivier, 1804)**

(Fig. 1C)

**Habitat.** Flat, open plains and semideserts of clay or gravel substrate with scattered shrubs or vegetation-covered mounds. Although not a vertical climber like *Laudakia*, 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. As the previous species, it is a common lizard in the Yazd province and can be found in most plains of the province (Fig. 2B).

**Family Gekkonidae*****Agamura persica* (Duméril, 1856)**

(Fig. 1E)

**Habitat.** Stony terrain, cliffs and rocky terraces, hillsides also barren plains and gravely alluvium (Minton 1966; Anderson 1999).

**Distribution.** Throughout most of the Iranian Plateau W of Zagros and S of Alborz and the Kopet Dagh. Distribution of the species in the Yazd province is restricted with dry rivers (Fig. 2E).

***Bunopus crassicaudus* Nikolsky, 1907**

(Fig. 1F)

**Habitat.** Cultivated alluvial plains, gravely and sandy areas with vegetation containing *Tamarix*, *Prosopis*, *Alhagi*, and *Artemisia* (Mozaffari et al., 2011).

**Distribution.** Western Iranian Plateau in the area around Tehran, Qom, Esfahan, Yazd, and Kerman; also S of the Kopet Dagh. *B. crassicaudus* is one of the common species in Yazd province (Fig. 2F).

**Family Sphaerodactylidae*****Teratoscincus bedriagai* Nikolsky, 1899**

(Fig. 1G)

**Habitat.** Loose, windblown sands with shrubby vegetation. Zarudnyi (1904, ex Szczerbak and Golubev, 1996) observed this species on gravel soil with a thin layer of salt crust. Hojati et al. (2009) reports them from clayey and loamy soils near *Tamarix* bushes. We found

the rare species in clay substrate and among *Tamarix* bushes as reported by Hojati et al. (2009).

**Distribution.** Deserts of the central and eastern Iranian Plateau south of the Alborz and Kopet Dagh and along the Afghan border. Yazd province is part of the central Iranian Plateau but the species is rare and restricted by isolated sand dunes (Fig. 2G).

**Family Lacertidae*****Eremias fasciata* Blanford, 1874**

(Fig. 1I)

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

**Distribution.** All provinces east of the 55° E meridian and south of the Kopet Dagh. Eastern Iran is the region in which the species is most abundant. In the Yazd province, we found the species in the Darreh Anjir protected area and in the Haji Abad Zarrin village (Fig. 2I).

***Eremias persica* Blanford, 1874**

(Fig. 1H)

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

**Distribution.** The whole Iranian plateau south of the Alborz Mountains and including Zagros. There are no records of the species in both Lut and Kavir deserts. *Eremias persica* was seen around Aghda in western Yazd province (Fig. 2H).

***Mesalina watsonana* (Stoliczka, 1872)**

(Fig. 1J)

**Habitat.** Flat plains with hard-soil or gravely substrate and with scattered small steppe shrubs. Usually very abundant in areas with suitable conditions. According to the distribution modeling, the effective factors for species limitation are the precipitation and slope (Hosseini Yousefkhani et al., 2013).

**Distribution.** The Mesopotamian Plain west of the Zagros, all of the Iranian plateau S of the Alborz and Kopet Dagh. The species was found in all stations and was more abundant than other species (Fig. 2J).

***Ophisops elegans* Ménétriés, 1832**

(Fig. 1K)

**Habitat.** Wide range of habitats mostly with hard-soil or stony substrate and with low steppe vegetation, flat hammadas, river banks or low foothills. Oraei et al. (2014) examined the potential distribution of the species using Maxent modeling and found that winter precipitation and intermediate of vegetation index are the most informative factors on the species presence.

**Distribution.** Throughout the western and south-western part of the country along and around the Zagros range, southern Alborz, Mesopotamian Plain, and on the southern Iranian plateau up to the border with Pakistan. We found the species only around the Nodoushan in western of the region (Fig. 2K).

#### Family Varanidae

*Varanus griseus* (Daudin, 1803)  
(Fig. 1L)

**Habitat.** A deserticolous species inhabiting a wide variety of habitats from sandy or gravelly plains to stony foothills with sparse vegetation.

**Distribution.** Western part of the range spans across the Mesopotamian Plain, Bushehr, Fars, Esfahan, Qom, Tehran, and westernmost Semnan Province. Darreh Anjir, Siyah Kooch national park, and Nodoushan are the recorded places for this species in Yazd province (Fig. 2L).

#### Family Uromastycidae

*Uromastyx asmussi* (Strauch, 1863)  
(Fig. 1M)

**Habitat.** Stony and gravelly plains and rocky hills with shrubby vegetation.

**Distribution.** From central Iran south of Tehran eastwards and southwards through the deserts to South Khorasan and Sistan and Baluchistan Province. One individual of this species was seen in Darreh Anjir protected area (Fig. 2M).

#### Family Colubridae

*Spalerosophis diadema schiraziana* (Jan, 1865)  
(Fig. 1N)

**Habitat.** The species lives in deserts and open plains with scattered shrubs and bushes.

**Distribution.** The distribution of this species in Iran is limited to the southwest, southeast, and eastern half of Iran. The species only found near Aghda in the Yazd province (Fig. 2N).

#### Family Lamprophiidae

*Psammodon schokari* (Forsskal, 1775)  
(Fig. 1O)

**Habitat.** *Psammodon schokari* lives in scrublands, sandy deserts, fields and seasonal rivers.

**Distribution.** Its distribution includes most parts of Iran except for the northwest of Iran. We found the species near Nodoushan and Meybod in the Yazd province (Fig. 2O).

Finally, the distribution of the collected and reported reptiles species in the northwest of Yazd province added

new information about their distribution in Central Iran. Using new methods (such as new traps to capture animals in the field) and monitoring the region using long time monitoring and surveying will help us to explain about the herpetofauna of the region completely.

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