

The Lizard Fauna of Kurdistan Province, Western Iran

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Kurdistan Province in the western Iran possesses varied climatic and geographical conditions that led to rich biodiversity. An investigation on the status of lizards in this Province was carried out from June 2010 to September 2011. A total of 73 specimens were collected and identified. The collected specimens represented four families, 10 genera, and 14 species and subspecies, including Agamidae: *Laudakia nupta nupta*, *Laudakia caucasia* and *Trapelus lessonae*, Gekkonidae: *Cyrtopodion scabrum*, *Asaccus kurdistanensis*, Lacertidae: *Eremias montanus*, *Eremias* sp. (1) and *Eremias* sp. (2) (unknown taxa which may be related to *E. persica* complex), *Apathya cappadocica urmiana*, *A. c. muhtari*, *Lacerta media media* and *Ophisops elegans*, Scincidae: *Eumeces schneideri princeps* and *Trachylepis aurata transcaucasica*. With respect to the data which was reported by Rastegar-Pouyani et al. (2008) and Anderson (1999) *Eremias* sp. (1) and *Eremias* sp. (2) may belong to two new taxa, *Apathya cappadocica muhtari* is a new record from Iran, and also *Eremias montanus* is a new record from Kurdistan Province. The Lacertidae with six species, showed the highest diversity among the families represented here.

Key words: Fauna, Reptiles, Sauria, Kurdistan Province, Western Iran

INTRODUCTION

The Iranian Plateau herpetofauna have been surveyed by some foreign (e.g., Mertens, 1957; Anderson, 1966, 1999; Tuck, 1971, 1974; Leviton et al., 1992) and native researchers (e.g., Balouch and Kami, 1995; Kami and Vakilipoure, 1996; Rastegar-Pouyani, 1996, 1998, 2009; Gharzi, 1999; Firouz, 2000; Rastegar-Pouyani and Nilson, 1997, 1998, 2002; Bakhtiari, 2003; Moradi 2003; Parsa, 2005; Rastegar-Pouyani et al., 2001, 2006, 2008; Dakhteh et al., 2007). So far, about 140 taxa of lizards have been reported from Iran (Anderson, 1999; Rastegar-Pouyani et al., 2006, 2008).

Kurdistan Province is located in the western periphery of the Iranian Plateau. A large part of this Province is mountainous with cold and Mediterranean climate in which most of the precipitation occurs in spring. Most parts of the Province are covered with meadows, forest and steppes. Due to its geographical and perhaps political situation this region has mostly been neglected from the standpoint of wildlife studies. Consequently, regarding the scanty of information on lizard fauna of Kurdistan Province, present study is aimed to investigate this aspect from morphological, habitat, and distribution viewpoints.

MATERIAL AND METHODS

The study area is located on the western margin of the Iranian Plateau between 34°44' to 36°30' N and 45°31' to 48°16' E. The region is bordered in the north by Western Azerbaijan Province, from the south by Kermanshah Province, from the west by the Iraq border and from the east by Zanjan and Hamedan Provinces. The altitude ranges from 900m to 3300m above sea level (Shahoo Mountain). The annual precipitation varies from 400mm in the central to more than 800mm in the western highlands (Ghasriani, 1998). The fieldwork was carried out from June 2010 to September 2011. Most specimens were caught manually. The locality data and habitat features were recorded for all the studied species. Most specimens were preserved in 70% ethanol and some of these were fixed in 10% formalin, the voucher specimens are deposited in the Razi University Zoological Museum (RUZM) in Kermanshah and the Lorestan University collection. Specimens were identified according to Baran and Atatür (1998), Anderson (1999), Rastegar-Pouyani et al. (2006, 2008) and Leviton et al. (1992) using morphometric measurements, coloration, and pholidosis features (including number, structure, and range of scales and shields).

RESULTS

A total of 73 specimens were collected in the study area including 14 species and subspecies belonging to 10 genera and four families (Table 1). The distribution map of the studied species and their photos are presented in Plates 1- 4.

Family Agamidae

Laudakia nupta nupta (De Filippi, 1843)

Three specimens.

This taxon is distributed throughout in Baneh and Sarvabad regions in west of the province (Plate 1a). These are inhabited in rocky areas of southern and western Zagros Mountains, and often can be seen around human habitation, commonly seen on the walls of old or ruined buildings (Plate 3a), these are abundant on and among large rocks and other outcrops having deep crevices, and the tombs and graveyards. Vegetation of the Zagros Mountains in this region is mainly *Quercus brantii* and *Q. persica*.

Morphology: The three collected specimens have folds of skin across nape, median dorsal scales broader than long and 16 longitudinal scale rows, Snout-Vent Length (SVL) of an adult male measured 175 mm and Tail Length (TL) 295mm, and an adult female measured (SVL) 110.2mm and (TL) 184.7mm.

Laudakia caucasia (Eichwald, 1831)

Thirteen specimens.

Morphology: Dorsal scales are heterogeneous; Tail divided into more or less distinct segments, each composed of two whorls of scales; patch of enlarged scales on middle of flanks with 131-180 scales around widest part of body. With 7-8 mid-dorsal scales (Anderson, 1999), Maximum Snout-Vent Length (SVL) of an adult male measured 147.89mm and Tail Length (TL) 121.49mm (Tail is regenerate), and an adult female measured 130mm and Tail Length (TL) 137mm (Plate 3b).

The species is distributed throughout the province except for Sarvabad and southwestern Baneh at western Kurdistan Province (Plate 1b). Their habitat is the rocky areas but not in the south and west of the Zagros Mountains, and these are found around human habitation, commonly seen on the walls of clay and old buildings. They are abundant on and among large rocks of limestone and other outcrops having deep crevices.

Trapelus lessonae (De Filippi, 1865)

Five specimens.

Morphology: Dorsal scales are heterogeneous; tail scales not forming annuli; Back with scales of varying sizes intermixed, enlarged scales not extending onto flanks, 92 scales around widest part of body; males without gular sac, upper surface of thigh with patch of enlarge scales intermixed with smaller scales (Anderson, 1999). Maximum Snout-Vent Length (SVL) of an adult male measured 73mm and Tail Length (TL) 92mm (TL is regenerate), and an adult female measured 53mm and Tail Length (TL) 84.7mm (Plate 3c). The species is distributed throughout all regions of the province (Plate 1c). This taxon was found on open stony places, open plains, bare areas, dusty, stony plains, with sparse steppe vegetation.

Family Gekkonidae

Asaccus kurdistanensis Rastegar-Pouyani et al., 2006

One specimen

Morphology: A relatively large-sized gecko (SVL: 53.2 mm, TL: 61.4 mm), with three pairs of postmentals, extension of dorsal tubercles onto the head region and upper surfaces of the hindlegs, presence of large, mucronate and tubeculate scales on sides of tail segments and a relatively distinct color pattern; tubercles in 8-11 longitudinal rows on the dorsum; under surfaces of toes are smooth (Rastegar-Pouyani, et al., 2006) (Plate 3d). The species is distributed in the western regions of Kurdistan Province. We captured this species in 10 km northwest of Sarvabad, between Marivan and Sanandaj (Plate 1d). The area is a part of the northern Zagrosian oak forest with scattered *Quercus brandtii* and *Q. persica* as dominant plant species. In addition, various species of the families Rosaceae and Gramineae are found among the *Quercus* trees. The type locality is situated in a mountainous area with large boulders and rocks.

Cyrtopodion scabrum (Heyden, 1827)

Two specimens.

Morphology: Anterior pair of enlarged postmentals in contact; males with 4-7 preanal pores; dorsal tubercles distinctly larger than inter spaces, strongly keeled and trihedral, 12-16 (usually 13-14) in longest transverse series across back, 10-14 supralabials, width of tubercles distinctly less than greatest diameter of ear opening (Anderson, 1999), The species is distributed throughout the province (Plate 1e), and it is found around human habitation. Mean SLV: 42 mm, Mean TL: 44 mm (Plate 3e).

Family Lacertidae

Apathya cappadocia urmiana Lantz and Suchow, 1934

Three specimens.

Morphology: The caudal scales are elongated and distinctly keeled; lower eyelid scaly; a transparent disc formed of 5-7 scales edged with black; 26 femoral pores; 8 longitudinal rows of ventrals; preanal shield absent. Maximum Snout-Vent Length (SVL) of an adult male measured 74.4mm and Tail Length (TL) 162.2mm, and an adult female measured 59.6mm and Tail Length (TL) 93.7mm (Plate 3f). The species is distributed southwestern Sarvabad the western regions of Kurdistan Province (Plate 1f).

Habitat: Rocky areas of the western Zagros Mountains, with vegetation of mainly *Quercus brandtii* and *Q. persica*.

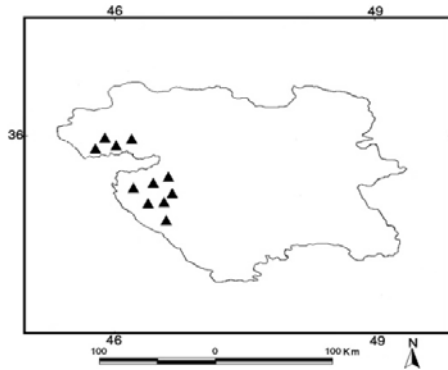
Apathya cappadocia muhtari Eiselt, 1979 (This is the first Record of this Lacertid from Iran)

Five specimens.

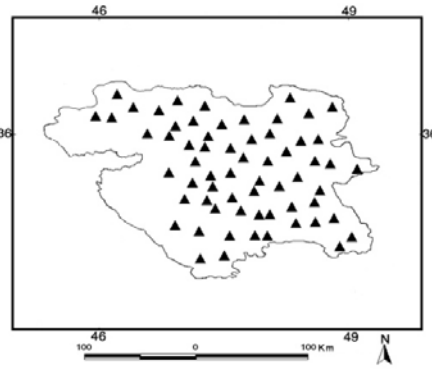
Morphology: The caudal scales are elongated and distinctly keeled. Lower eyelid scaly, a transparent disc formed of 5-7 scales edged with black, 24 femoral pores, 6 longitudinal rows of ventrals, preanal

PLATE 1

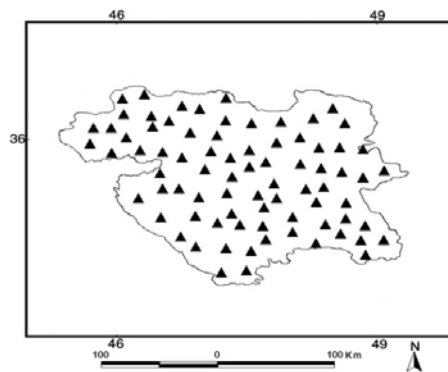
Distribution of species in the study area



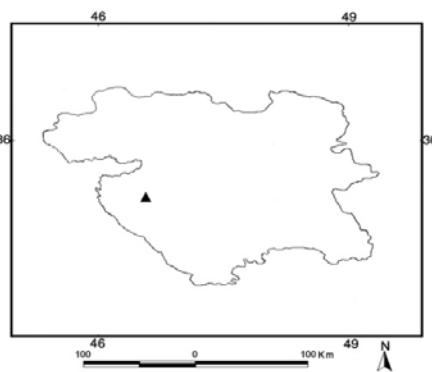
a. *Laudakia nupta nupta*



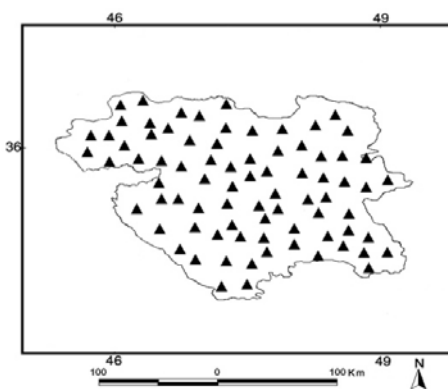
b. *Laudakia caucasia*



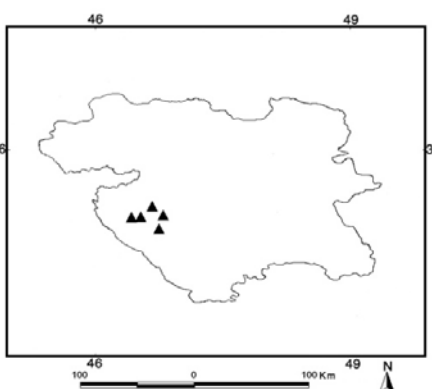
c. *Trapelus lessonae*



d. *Asaccus kurdistanensis*



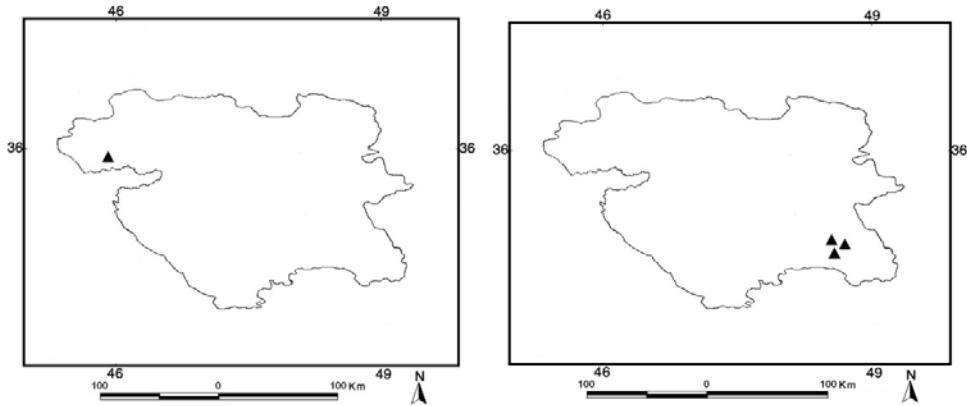
e. *Cyrtopodion scabrum*



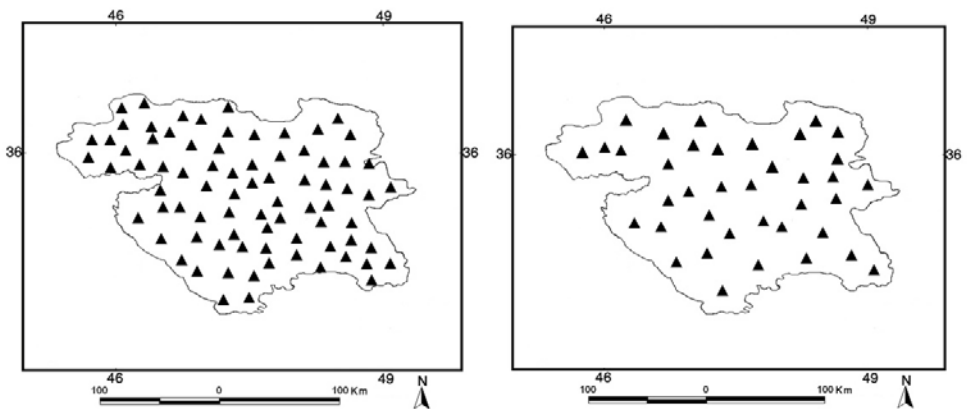
f. *Apathya cappadocia urmiana*

PLATE 2

Distribution of species in the study area

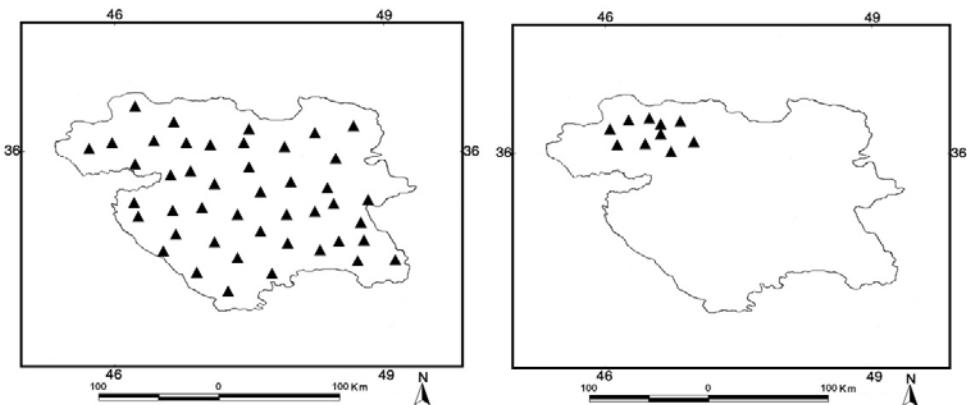


g. *Apathya cappadocia muhtari* **h.** *Eremias montanus*



i. *Ophisops elegans*

j. *Lacerta media media*



k. *Trachylepis aurata trans-caucasica*

l. *Eumeces schneiderii princeps*

PLATE 3**a. *Laudakia nupta nupta*****b. *Laudakia caucasia*****c. *Trapelus lessonae*****d. *Asaccus kurdistanensis*****e. *Cyrtopodion scabrum*****f. *Apathya cappadocia urmiana***

PLATE 4



g. *Apathya cappadocia muhtari*



h. *Eremias montanus*



i. *Ophisops elegans*



j. *Lacerta media media*



k. *Trachylepis aurata transcaucasica*



l. *Eumeces schneiderii princeps*

TABLE 1. Lizard species collected from Kurdistan Province.

Family	Genus	Species/subspecies
Agamidae	<i>Laudakia</i>	<i>L. nupta nupta</i> <i>L. caucasia</i>
	<i>Trapelus</i>	<i>T. lessonae</i>
Gekkonidae	<i>Cyrtopodion</i>	<i>C. scabrum</i>
	<i>Asaccus</i>	<i>A. kurdistanensis</i>
Lacertidae	<i>Eremias</i>	<i>E. montanus</i>
		<i>Eremias</i> sp.(1)
		<i>Eremias</i> sp.(2)
	<i>Ophisops</i>	<i>O. elegans</i>
	<i>Lacerta</i> <i>Apathya</i>	<i>L. media media</i> <i>A. cappadocica urmiana</i> <i>A. c. muhtari</i>
Scincidae	<i>Trachylepis</i>	<i>T. aurata transcaspica</i>
	<i>Eumeces</i>	<i>E. schneiderii princeps</i>

shield present (Eiselt, 1979). Maximum Snout-Vent Length (SVL) of an adult male measured 59.7mm and Tail Length (TL) 93.3mm, and an adult female measured 47.9mm and Tail Length (TL) 107.8mm (Plate 4g). The species is distributed in western parts of Kurdistan Province, southwestern Baneh (Plate 2g).

Habitat: Rocky areas of the western Zagros Mountains, with vegetation of *Quercus brantii* and *Q. persica*.

Eremias montanus Rastegar-Pouyani and Rastegar-Pouyani, 2001

One specimen (This is a new record from Kurdistan Province).

Morphology: axilla-groin distance 26; foreleg length 22.8mm; hind leg length 37.4mm; head length 20mm; head width 11mm; head height 5.27mm; dorsal scales slightly converging posteriorly with 65 small granular scales across middle of dorsum; venter with 13-14 longitudinal and 27-28 transverse rows of plates; subocular reaches mouth edge; one frontonasal; two supraoculars which are not completely separated from frontal and frontoparietals; 14 scales across widest part of venter; lower surface of the fourth finger containing two rows of subdigital scales; the lateral scales of the fourth finger without carinate lamellae; 25-26 scales on the 11th annulus of the tail; 8-9 upperlabials, 4-5 of which anterior to subocular; 7-8 lower labials; two supraoculars; 6-7 supracilliaris; 20-20 femoral pores, separated by three scales; 11-12 collars; five pairs of submaxillary shields (Rastegar-Pouyani and Rastegar-Pouyani, 2001; Bahmani et al., 2011). Maximum Snout-Vent Length (SVL) of an adult male measured 59.5mm and Tail Length (TL) 95.5mm, (Plate 4h). The specimen of this taxon were collected from the highlands of southern Kurdistan Province, on the Badr and Parishan regions, about 20 km south of Qorveh in the vicinity of Aminabad village (Plate 2h).

Habitat: The habitat is an upland area, characterized by steppe vegetation, being covered with snow from late November until late March. Foraging on rocks and in rock crevices as well as under bushes.

Ophisops elegans (Ménétriés, 1832)

Eighteen specimens.

Morphology: upper head shields smooth, 27-28 scales and plate round body, eyelid absent, Collar rudimentary or absent and snout shorter than breadth of head across eye (Anderson, 1999).

Maximum Snout-Vent Length (SVL) of an adult male measured 56mm and Tail Length (TL) 98.8mm, and an adult female measured 53.3mm and Tail Length (TL) 96.7mm (Plate 4i). The species is distributed throughout of the province (Plate 2i).

Habitat: commonly on stony plain and hillside; in all habitats of the province such as forest, plain, strand, arbor and farmlands. Vegetation is mainly families Rosaceae and Gramineae and various species of *Astragalus*.

Lacerta media media Lantz and Syren, 1920

Two specimens.

Morphology: ventral plates trapezoid with notches between plates, in six longitudinal rows, collar strongly serrated (Anderson, 1999). Snout-Vent Length (SVL) of an adult male measured 136.3mm and Tail Length (TL) 225mm, and an adult female measured 72.2mm and Tail Length (TL) 177.9mm (Plate 4j). The species is distributed throughout of the province (Plate 2j).

Habitat: this inhabits brushy or sparsely forested areas at various elevations, as well as on farmlands and gardens.

Family Scincidae:

Trachylepis aurata transcaucasica Chernov, 1926

Ten specimens.

Morphology: lower eyelid with undivided, more or less transparent disc, dorsals feebly tri-carinate to smooth, prefrontals not in contact, 65-72 gulars plus ventrals counted from mental shield to vent (Anderson 1999). Maximum Snout-Vent Length (SVL) of an adult male measured 113.7mm and Tail Length (TL) 116.7mm, and an adult female measured 97.5 mm and Tail Length (TL) 93.9 mm (Plate 4k). The species is distributed throughout of the Kurdistan Province (Plate 2k).

Habitat: these were caught on open stony areas, open plains, with sparse steppe vegetation predominated by *Astragalus*.

Eumeces schneiderii princeps (Eichwald, 1839)

Two specimens.

Morphology: lower eyelid lacking transparent disc, postnasal absent, two postmentals, ear with 4-5 acute lobules, scales in 26-28 rows at midbody, base of tail red in life (Anderson, 1999). Snout-Vent Length (SVL) of an adult male measured 166.3mm and Tail Length (TL) 263.6mm, and an adult female measured 115mm and Tail Length (TL) 190.4mm (Plate 4l). This taxon was collected from Saghez Township of northwestern regions in Kurdistan Province (Plate 2l).

Habitat: Foothills and lowlands below 1697m on loess and clay soils, stony areas where there is grassy or shrubby vegetation, seeking to refuge under stones, in burrows of other animals or its own shallow burrows.

DISCUSSION

The current study recorded 14 species and subspecies of lizards belonging to 10 genera and four families of Agamidae, Gekkonidae, Lacertidae and Scincidae.

The genus *Laudakia* is only represented by two species in Kurdistan Province, including *L. nupta* which is found in the rocky areas of Baneh and Sarvabad Township at elevation about 1500m in western Kurdistan Province, and another is *L. caucasica* that is distributed throughout the province except the western area. The coordinates of the overlapping sites are 33.5° 39' N and 45° 18'E.

Two subspecies of *Apathya cappadocica*, *A. c. urmiana* and *A. c. muhtari* were found in Kurdistan Province. This is the first record of *A. c. muhtari* within the Iranian borders. The locality of Iranian specimens is approximately 200km southeast of the closest previously known locality by Eiselt

(1979) in northern Iraq (37° 03' N, 43° 16' E). The current record is the easternmost limit for distribution of *A. c. mutari*. The occurrence of *A. c. muhtari* in Iran could be significant from a biogeographic point of view, as areas from which the subspecies has previously been reported in Turkey, and the recent localities in Iraq are contiguous, forming part of the same biogeographic Iranian-Anatolian Plateau and this is indicative of range expansion of *A. c. muhtari* towards eastern and southeastern regions in the Zagros Mountains.

The other species including *Trapelus lessonae* (Agamidae), *Cyrtopodion scabrum* (Gekkonidea), *Lacerta media media*, *Ophisops elegans* (Lacertidae), and *Trachylepis aurata transcaucasica* (Scincidae) are distributed throughout of the Kurdistan Province.

Finally, three specimens of the genus *Eremias* were collected from the protected area of Bijar in 2010, these specimens are under molecular investigations to verify their exact taxonomic status.

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LITERATURE CITED

- Anderson, S.C., 1966. *The turtles, lizards, and amphisbaenians of Iran*. Ph.D. Thesis. Stanford University ,660 pp.
- Anderson, S.C., 1999. *The Lizards of Iran*. Society for the study of amphibians and reptiles 442 pp.
- Baran, I., and Atatur, M.K., 1998. Turkish Herpetofauna (Amphibians and reptiles). Ankara, Turkey: Ministry of Environment, XIII (unnumbered), 214 pp.
- Bakhtiari, A., 2003. *Biosystematics of Hamadan Province Lizards, with special reference to the genus Eremias*, M.Sc. Thesis Razi University.
- Bahmani, Z., Rastegar- Pouyani, N., and Gharzi, A., 2011. A new record of *Eremias montanus* Rastegar-Pouyani & Rastegar-Pouyani, 2001(Sauria: Lacertidae) from Kurdistan Province, Western Iran. *Amphibian and Reptile Conservation* 5(1), 11-14.
- Baluch, M., and Kami, H.G., 1995. *Amphibians of Iran*. University of Tebran Press, Tebran. 177 pp.
- Dakhteh, S.M.H., Kami, H.G.,and Anderson, S.C., 2007. *Stenodactylus kbobarensis* (Haas, 1957): An addition to the Iranian herpetofauna (Reptilia: Squamata: Gekkonidae). *Russian Journal of Herpetology* 14, 229–231.
- Eiselt, T.V.J., 1979. Ergebnisse zoologischer Sammelreisen in der Türkei *Lacerta cappadocica* WERNER, 1902 (Lacertidae, Reptilia). *Ann. Naturhistor. Mus. Wien* (82), 387-421.
- Firouz, E., 2000. *A Guide to the Fauna of Iran (In Persian)*. Iran University Press, Tehran. 491 pp.
- Kami, H.G., and Vakilipoure, A., 1996. Geographic distribution: *Rana camerani*. *Herpetological Review* 27, 150.
- Gharzi, A., 1999. Biosystematics of north Sabzevar Lizards , *M.Sc Thesis, University of Tebran*.
- Ghasriani, F., 1998. *Range lands vegetation types of Kurdistan Province*, research institute press of forest and rangeland. 76pp. (In Farsi).
- Levinton, A.E., Anderson, S.C., Adler, K.A., and Minton, S.A., 1992. *Handbook to Middle East Amphibians and Reptiles*. Oxford, Ohio. Vii + 252 pp.

- Mertens, R.F.W., 1957. Weitere unterlagen zur herpetofauna von Iran 1956. *Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg* 112, 118–128.
- Moradi, A., 2003. *The biosystematic study of lizards of Chaharmahal and bakhtiari Province. M. Sc. Thesis, Isfahan University.*
- Parsa, H., 2005. The biosystematic study of lizards of Kohgiluyeh and Boyer-Ahmad Province. *M. Sc. Thesis, University of Tebran.*
- Rastegar- Pouyani, N., 1996. A new species of *Asaccus* (Sauria: Gekkonidae) from the Zagros Mountains, Kermanshah Province, western Iran. *Russian Journal of Herpetology* 3(1), 11-17.
- Rastegar- Pouyani, N., 1998. Lizard Biosystematics in some parts of Kermanshah Province. *M.Sc Thesis, University of Tebran.*
- Rastegar- Pouyani, N., 2006. Systematics of the genus *Asaccus* (Sauria: Gekkonidae) on the Zagros Mountains, Iran. *Proceedings of the 13th Congress of the Societas Europaea Herpetologica* 117-119.
- Rastegar- Pouyani, N., 2009. Identify reptiles protected areas Shaho-Kohsalan and Bijar. Report of the research project, Department of the Environment of Kurdistan Province, 115pp.
- Rastegar- Pouyani, N., and Nilson, G., 1997. A new species of *Eremias* (Sauria: Lacertidae) from Fars Province, South-Central Iran. *Russian Journal of Herpetology* 4(2), 94-101.
- Rastegar- Pouyani, N., and Nilson, G., 1998. A new species of *Lacerta* (Sauria: Lacertidae) from the Zagros Mountain, Esfahan Province, west-central Iran. *Proceedings of the California Academy of Science* 50, 267–277.
- Rastegar- Pouyani, N., and Nilson, G., 2002. Taxonomy and biogeography of the Iranian species of *Luadakia*. *Zoology in the Middel East* 26, 93-122.
- Rastegar- Pouyani, N., and Rastegar- Pouyani, E., 2001. A new species of *Eremias* (Sauria: Lacertidae) from highlands of Kermanshah Province, western Iran. *Asiatic Herpetological Research* 9, 107-112.
- Rastegar- Pouyani, N., and Rastegar- Pouyani, E., 2006. A new form of *Eremias* (Sauria: Lacertidae) from the Alvand Mountains, Hamedan Province, western Iran. *Iranian Journal of Animal Biosystematics* 1(1), 14-20.
- Rastegar- Pouyani, N., Nilson, G., and Faizi, H., 2006. A new species of *Asaccus* (Sauria: Gekkonidae) from Kurdistan Province, western Iran. *Hamadryad* 30, 141-150.
- Rastegar- Pouyani, N., Johari, M., and Parsa, H., 2006. *Field Guide to the Reptiles of Iran*. Vol. 1: Lizards. First edition. Razi University press 286 p. (In Farsi).
- Rastegar- Pouyani, N., Rastegar- Pouyani, E., and Johari, M., 2008. *Field Guide to the Reptiles of Iran* Vol. 1: Lizards. Second edition. Razi University Press (In Farsi).
- Tuck, R.G., 1971. Amphibians and reptiles from Iran in the United State National Museum Collection. *Bulletin of the Maryland Herpetological Society* 7, 36–48.
- Tuck, R.G., 1974. Some amphibians and reptiles from Iran. *Bulletin of the Maryland Herpetological Society* 10, 59–65.