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The snake fauna of Ilam Province, southwestern Iran

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Ilam Province in southwest Iran possesses varied climatic and geographical conditions leading to rich biodiversity. An investigating of the status of snakes in the province was carried out from June 2005 to March 2010. A total of 103 specimens were collected and identified. Six families, 20 genera, and 26 species are represented, including Boidae: *Eryx (Eryx) jaculus turcicus*; Colubridae: *Coluber andreanus, Dolichophis jugularis*, *Eirenis collaris*, *Eirenis punctatolineatus*, *Hemorrhois nummifer*, *Hemorrhois ravergieri*, *Malpolon insignitus*, *Malpolon moilensis*, *Natrix tessellata*, *Platyceps najadum*, *Platyceps rhodorachis*, *Psammophis schokari*, *Pseudocyclophis Persicus*, *Spalerosophis diadema*, *Spalerosophis microlepis*, *Telescopus tessellatus*; Elapidae: *Walterinnesia morgani*; Leptotyphlopidae: *Myriopholis macrorhyncha*; Viperidae: *Cerastes gasperettii*, *Macrovipera lebetina*, *Pseudocerastes persicus*, *Pseudocerastes urarachnoides*; and Typhlopidae: *Typhlops vermicularis*. With respect to the data which provided by Latifi (2000), more than 77% of the snakes are reported for the first time in this region. The Colubridae showed the highest species diversity among the families represented, with 16 species.

Key words: fauna, reptiles, snakes

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 (e.g., Latifi, 1984, 1991; Baloutch and Kami, 1995; Kami and Vakilipoure, 1996a,b; Rastegar-Pouyani, 1996; Rastegar-Pouyani and Nilson, 1998; Firouz, 2000; Rastegar-Pouyani and Rastegar-Pouyani, 2001; Bostanchi et al., 2006; Rastegar-Pouyani et al., 2006; Dakhteh et al., 2007; Mozafari and Parham, 2007; Rastegar-Pouyani et al., 2007; Rajabizadeh and Rastegar-Pouyani, 2009) researchers.

Two climatic regimes, Mediterranean and arid and semi-arid, are recognized for Ilam province [types III and IV1 according to Walter and Lieth (1960)] (Fig. 1A). More than 78% of the province is covered with forest, meadows, and arid lands (Fathinia, 2007; Fathinia et al., 2009).

About 87 snake species have been reported in Iran (Rastegar-Pouyani et al., 2008). Prior to the present study, six of these species had been recorded in Ilam Province, *Echis carinatus sochureki*, *Eirenis collaris*, *Natrix tessellata tessellata*, *Lytorhynchus diadema gaddi*, *Platyceps rhodorachis,* and *Spalerosophis diadema cliffordi* (Latifi, 2000).

Thus, of the 27 species and subspecies which were found during this survey, 21 are reported for the first time. The aims of this study were to record data of snake fauna of Ilam Province, Iran, including morphology, habitat, and distribution.

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MATERIAL AND METHODS

The study area is located in the western and southwestern regions of the Iranian Plateau between 31°58' and 34°15' N and 45°24' and 48°10' E (Fig. 2b). The region is bordered on the north by Kermanshah Province, to the south by Khuzestan Province, to the west by the Iraqi border and to the east by Lorestan Province. Altitude ranges from 50 m in the south of the province to 3,062 m at Kabir-Kooh Mountain. Annual precipitation varies from 200 mm in the south to more than 800 mm in the north highlands (Fathinia, 2007). The survey was carried out between June 2005 and March 2010. Most specimens were captured by pinning the neck with a forked stick. When collecting snake specimens it is essential to remain calm, especially when encountering venomous snakes such as vipers and cobras. Locality data and habitat features were recorded for all species. Most specimens were preserved in 75% ethanol with others in a mixture of 70% ethanol and 4% formalin. Voucher specimens were stored in the Razi University Zoological Museum (RUZM) at Razi University of Kermanshah, and in the International Center for Science, High Technology, and Environmental Science Zoological Museum (ICSTZM) Iran. Specimens were identified according to Leviton et al. (1992), Latifi (2000), Mallow et al. (2003), Szczerbak (2003), Ananjeva et al. (2004), Bostanchi et al. (2006), Nilson and Rastegar-Pouyani (2007), Rastegar-Pouyani et al. (2008), and Rajabizadeh and Rastegar-Pouyani (2009) using morphometric measurements, coloration, and pholidosis features (including the number, structure, and range of scales and plates). The *Flora of Ilam* (Mozaffarian, 2008) was used to determine vegetation of the region relative to the snake fauna.

RESULTS

A total of 103 specimens were collected in the study area from June 2005 to March 2010, encompassing 26 species in 20 genera and six families (Table 1).

TABLE 1. - Snake species collected from Ilam Province

Family	Species
Leptotyphlopidae	*Myriopholis macrorhyncha*
Typhlopidae	*Typhlops vermicularis*
Boidae	*Eryx (eryx) jaculus turcicus*
Colubridae	*Coluber andreanus* *Dolichophis jugularis* *Eirenis collaris* *Eirenis punctatolineatus* *Hemorrhois nummifer* *Hemorrhois ravergieri* *Malpolon insignitus insignitus* *Malpolon moilensis* *Natrix tessellata tessellata* *Platyceps najadum najadum* *Platyceps rhodorachis ladacensis* *Platyceps rhodorachis rhodorachis* *Psammophis schokari* *Pseudocyclophis persicus* *Spalerosophis diadema cliffordi* *Spalerosophis microlepis* *Telescopus tessellatus martini*
Elapidae	*Walterinnesia morgani*
Viperidae	*Cerastes gasperettii gasperettii* *Macrovipera lebetina obtusa* *Pseudocerastes persicus* *Pseudocerastes urarachnoides*

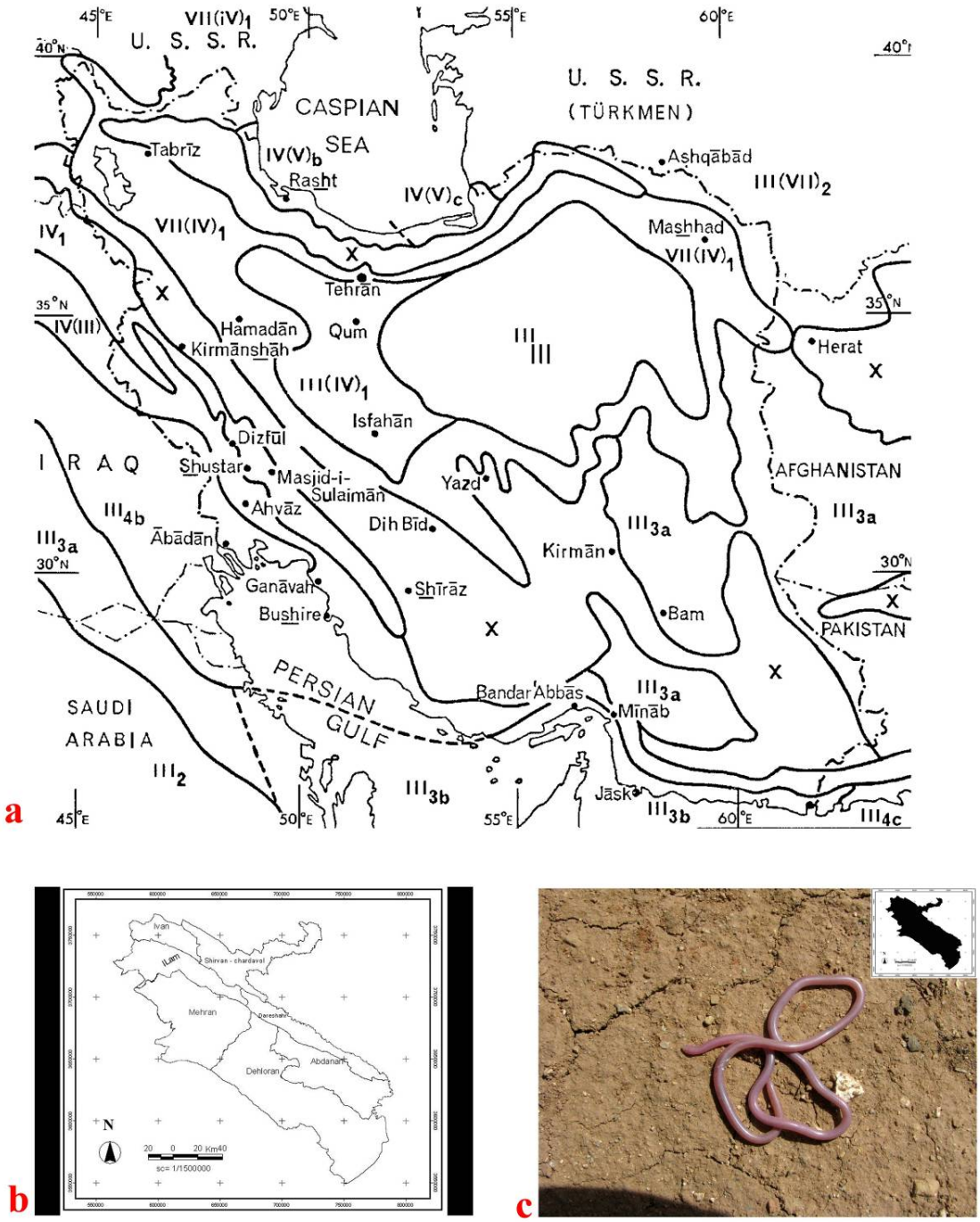

FIG.1.- (a) Climate types according to Walter and Lieth (from Anderson, 1968), (b) geographical location of Ilam Province, and (c) photograph and distribution map of *Myriopholis macrorhyncha.*

FAMILY LEPTOTYPHLOPIDAE

Myriopholis macrorhyncha (Jan, 1860) (Fig. 1–C)

Three specimens.

Morphology: 415 scales in a longitudinal line from nape to tail; subcaudals 32; total length 142.59 mm; diameter 1.32 mm; tail 11.19 mm; total length/diameter 108.02; total length/tail length 12.74. Body color is light red.

Distribution: The species is distributed throughout the province. Three specimens were collected.

Habitat: Rocky areas of the Zagros Mountains and gypsum sediments of the western foothills of the Zagros Mountains. Vegetation is mainly *Quercus brantii* in the Zagros Mountains and species of the genus *Astragalus* in the western foothills.

FAMILY TYPHLOPIDAE

Typhlops vermicularis Merrem, 1820 (Fig. 2–A)

Five specimens.

Morphology: 4 supralabials; 1 preocular, in contact with the 2nd and 3rd supralabials; 26 smooth scales around the circumference of the body; length of tail is approximately equal to its width; a horny appendage at the end of the tail; total length 220 mm. Body color uniformly light brown.

Distribution: The species is distributed throughout the province. Five specimens were collected in different areas of Ilam Province.

Habitat: The specimens were collected under stones in the Zagros Mountains and gypsum fragments in western foothills.

FAMILY BOIDAE

Subfamily Erycinae

Eryx (eryx) jaculus turcicus (Olivier, 1801) (Fig. 2–B)

Five specimens.

Morphology: 10-11 supralabials, one row of scales between eye and supralabials; 11 scales around eyes; 5-7 scales between eyes; 3 nasals; lower nasal in contact with the first two supralabials; 3rd supralabial higher than 2nd; 16 infralabials, the first 5 are intact and the others are divided; 49-52 dorsals, anterior half of dorsals smooth and posterior half keeled; 179-198 ventrals; anal undivided; 27-30 subcaudals, undivided.

Distribution: Widely distributed throughout the study area. Five specimens were collected in Ilam, Mehran, and Shirvan-Chardavol townships.

Habitat: Rocky areas, gypsum sediments, and flat plains.

FAMILY COLUBRIDAE

Subfamily Coulobrinae

Coluber (s.l.) *andreanus* (F. Werner, 1917) (Fig 2–C)

Two specimens.

Morphology: 7 supralabials, the 3rd and 4th supralabials in contact with eye; 2 preoculars; 2 postoculars; 7 infralabials, the first 4 in contact with anterior chin shield; 17 smooth dorsals; 234 ventrals; anal divided; 100 subcaudals, divided; Anterior half of dorsum is brownish grey and posterior half is buff, ventral surface is light yellow.

Distribution: Two specimens were collected in Shirvan-Chardavol and Darreshahr regions in the Zagros Mountain chain.

Habitat: Rocky areas and human habitations in Zagros Mountains.

Dolichophis jugularis (Linnaeus, 1758) (Fig. 2–D)
Three specimens.
Morphology: 8 supralabials, 4th and 5th in contact with eyes; 1 preocular, 2 postoculars, 1 subocular; 10 infralabials, the first 5 in contact with anterior chin shield; 19 smooth dorsals; 200 - 202 ventrals; anal divided; 106 - 111 subcaudals, divided; tail 400 mm; snout –vent length 1080 mm. Dorsal color is brick, margins of scales are lighter than central areas, ventral surface is brick colored.
Distribution: Three specimens were collected in Shirvan-Chardavol, Ilam and Abdanan townships.
Habitat: The species was found in the Zagros Mountains, farmlands, and ruins in human habitations.

Eirenis collaris (Menetries, 1832) (Fig. 2–E)
Five specimens.
Morphology: 7 supralabials, the 3rd and 4th supralabials in contact with eye; 1 preocular, 2 postoculars; each nostril pierced in a single nasal; 7 infralabials, the first 4 in contact with anterior chin shield; 15 smooth dorsals; 160 - 162 ventrals; anal divided; 55 - 63 subcaudals, divided; snout – vent length 215 mm; tail 41 mm. Dark cross bars on neck and head; dorsum color is light olive; ventral surface uniformly whitish, without spots.
Distribution: Relatively wide distribution throughout the province. Five specimens were collected in Eivan, Shirvan-Chardavol, Ilam, and Darreshahr regions.
Habitat: The habitat comprises mountainsides, mountains and rocky areas, over 1000 m a-s-l. The main vegetation type is *Quercus brantii*.

Eirenis punctatolineatus punctatolineatus (Boettger, 1892) (Fig. 2–F)
Six specimens.
Morphology: 7 supralabials, the 3rd and 4th in contact with eye; 1 (rarely 2) preocular, in some specimens the preocular is somewhat divided; 2 postoculars; nostril pierced in a single nasal; 9 infralabials, the first 4 in contact with anterior chin shield; 17 smooth dorsals; 150–181 ventrals; anal divided; 62–86 subcaudals, divided; tail 71 mm; snout–vent length 215 mm. Body color is light brown with interrupted dorsal spots and band on anterior body which change to longitudinal bars toward the tail; ventral surfaces uniformly light.
Distribution: Widely distributed throughout Ilam province. Six specimens were collected in Eivan, Ilam, Shirvan-Chardavol, Mehran and Abdanan regions.
Habitat: Rocky areas with vegetation types *Quercus brantii*, *Gundelia tournefortii*, and members of the genus *Echinops* and Family Gramineae.

Hemorrhois nummifer (Reuss, 1834) (Fig. 2–G)
Six specimens.
Morphology: 9 supralabials, 5th and 6th in contact with eye; 2 preoculars, superior in contact with frontal; 2 postoculars; 1 subocular; 10 infralabials, the first 5 in contact with anterior chin shield; 25 keeled dorsals; 207-217 ventrals; anal divided; 90-98 subcaudals, divided; tail 355 mm; snout–vent length 1120 mm. Dorsal color is black, becoming dark brown toward the tail. Ventral surface is uniformly whitish.
Distribution: Six specimens were collected from different sites in the Zagros Mountains.
Habitat: *Quercus brantii* woodlands and around human habitations, in ruins warehouses.

Hemorrhois ravergieri (Menetries, 1832) (Fig. 2–H)
Ten adult and sub–adult specimens.
Morphology: 9-10 supralabials, the 5th and 6th in contact with eye; 3 preoculars, the superior in contact with frontal; 2 postoculars; 10 infralabials, the first 5 in contact with anterior chin shield; 23 keeled dorsals; 205-206 ventrals; anal divided; 65-95 subcaudals, divided; tail 310 mm; snout–vent

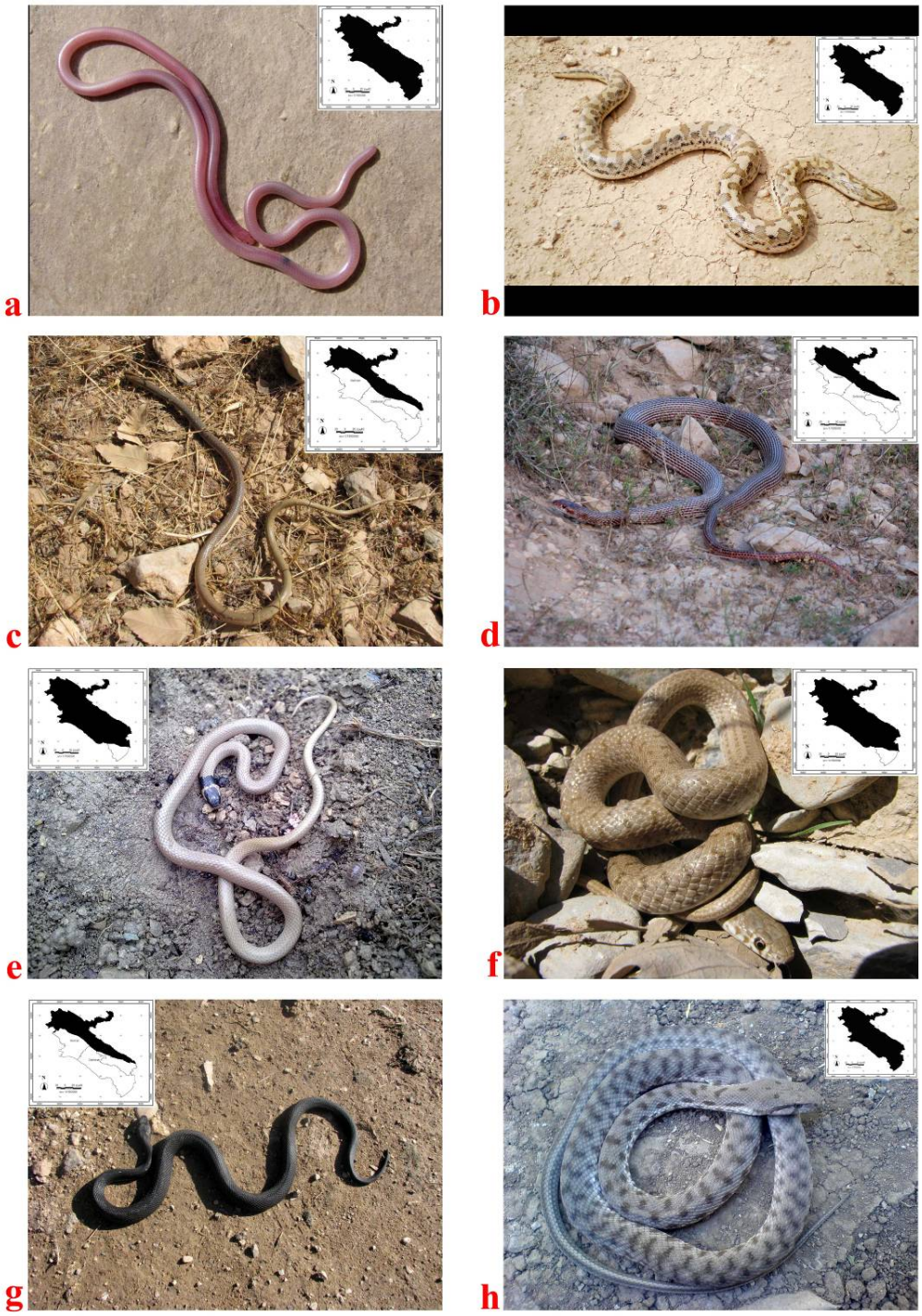

FIG.2.- Photographs and distribution maps of the species in Ilam Province: (a) *Typhlops vermicularis*, (b) *Eryx jaculus turcicus*, (c) *Coluber andreanus*, (d) *Dolichophis jugularis*, (e) *Eirenis collaris*, (f) *Eirenis punctatolineatus*, (g) *Hemmorhois nummifer*, (h) *Hemmorhois ravergieri.*

length 1020 mm. Dorsal color is dark brown with darker spots, ventral surfaces whitish with dark spots.
Distribution: Widely distributed in the province. Ten adult and sub–adult specimens were collected in Karezan, Darreshahr, Bina-Bijar and Abdanan regions.
Habitat: Rocky areas of mountains, mountainsides, and gypsum sediments of the western borders of Ilam Province.

Malpolon insignitus insignitus (Geoffroy Saint-Hilaire, 1827) (Fig. 3–A)
Five adult and juvenile specimens.
Morphology: 8 supralabials, the 4th and 5th in contact with eye; 1 preocular, in contact with frontal; 2 postoculars; 2 loreals; 10-11 infralabials, the first 5 in contact with anterior chin shield; 17 smooth dorsals; 180-186 ventrals; anal divided; 89-90 subcaudals, divided; tail 275 mm; snout–vent length 1390 mm. Dorsal color is dark olive with darker spots, ventral surfaces light with dark spots and yellowish in some specimens.
Distribution: A relatively wide distribution in the area in the Zagros Mountains. Five adult and juvenile specimens were collected in Ilam, Shirvan-Chardavol and Darreshahr regions.
Habitat: Rocky areas with *Quercus brantii* vegetation.

Malpolon moilensis (Reuss, 1834) (Fig. 3–B)
One specimen.
Morphology: 8 supralabials, the 5th and 6th supralabials in contact with eye; 1 preocular, not in contact with frontal; 3 postoculars; 2 loreals; 12 infralabials, 1st, 2nd, 3rd, 4th, and 6th infralabials in contact with anterior chin shield, 5th infralabial is small and separated by the 4th and 6th from anterior chin shield; 17 smooth dorsals; 170 ventrals; anal divided; 60 subcaudals, divided; tail 240 mm; snout–vent length 1140 mm. Body color grayish-brown, with two oblique dark stripes on the sides of head behind the eyes. Ventral surface is light brick-red anterior with remainder uniformly whitish.
Distribution: Most likely a narrow distribution in Ilam province. A single female specimen was collected near Ilam-Khuzestan-Iraqi border in Dehloran region, in November 2009.
Habitat: Lowlands and flat plains with *Alhagi camelorum* as dominant vegetation.

Platyceps najadum najadum (Eichwald, 1831) (Fig. 3–C)
Four specimens.
Morphology: 8 supralabials, the 4th and 5th in contact with eye; 9 infralabials, the first 4 in contact with anterior chin shield; 19 smooth dorsals; 221-224 ventrals; anal divided; 122-123 subcaudals, divided; tail 185 mm; snout–vent length 450 mm. Anterior of dorsum is olive, darker mottles on the sides at anterior with white margins, posterior of dorsum is olive yellow, ventral surface is uniformly whitish.
Distribution: A relatively wide distribution in the Zagros Mountains. Four specimens were collected in Eivan, Karezan, Darreshahr, and Abdanan.
Habitat: Rocky areas with trees (*Quercus brantii*, *Acer monspessulanum*, *Pistacia atlantica*, and *Ficus carica*) and annual plants such as members of the Family Gramineae.

Platyceps rhodorachis rhodorachis (Jan, 1865) (Fig. 3–D)
Two specimens.
Morphology: 9 supralabials, the 5th and 6th in contact with eye; 10 infralabials, the first 4 in contact with anterior chin shield; 19 smooth dorsals; 231 ventrals; anal divided; 106 subcaudals, divided; tail 222 mm; snout–vent length 570 mm. This subspecies has a longitudinal red line on the dorsum.
Distribution: Widely distributed in the area in habitats similar to those of *P. najadum najadum*. Two specimens were collected in the Shirvan-Chardavol and Abdanan area in the Zagros Mountains.

Habitat: Rocky areas In the Zagros Mountains with the main vegetation type of *Quercus brantii*.

Platyceps rhodorachis ladacensis (J. Anderson, 1871) (Fig. 3–E)
Four specimens.
Morphology: 9 supralabials, the 5th and 6th in contact with eye; 7 scales around eyes; nostril is bordered by 3 scales; 9-10 infralabials, the first 4 in contact with anterior chin shield; posterior chin shield longer than the anterior one; 19 smooth dorsals; 221-242 ventrals; anal divided; 130-137 subcaudals, divided; tail 310 mm; snout–vent length 840 mm. Anterior of dorsum is light olive with dark mottles, posterior is uniformly light olive, ventral surface is light yellow to whitish.
Distribution: A relatively wide distribution in the area. Four specimens were collected in Ilam, Abdanan and Mehran regions.
Habitat: The habitat is as the nominal subspecies.

Psammophis schokari (Forsskal, 1775) (Fig. 3–F)
Seven specimens.
Morphology: 7-9 supralabials, the 5th and 6th in contact with eye; 1 preocular, in contact with frontal; 2 postoculars; 11 infralabials, the first 5 scales in contact with anterior chin shield; 17 smooth dorsals; 180-183 ventrals; anal divided; 122-124 subcaudals, divided; tail 125 mm; snout–vent length 260 mm. Dorsum is olive yellow with three longitudinal lines, the median dotted white and two brown on either side from nape to the tip of tail. Ventral surface is whitish-yellow. Fig. 3–F shows the species in fixed position.
Distribution: Range is throughout Ilam Province. Seven specimens were collected in Mehran, Ilam, Shirvan-Chardavol, Dehloran and Abdanan regions.
Habitat: Tropical and subtropical flat plains, rocky areas, and gypsum sediments.

Pseudocyclophis persicus (Anderson, 1872) (Fig. 3–G)
Four specimens.
Morphology: 7 supralabials, the 3rd and 4th in contact with eye; loreal absent; 1 preocular; 1 postocular; 8 infralabials, the first 3 in contact with anterior chin shield; 15 smooth dorsals; 207-222 ventrals; anal divided; 63-80 subcaudals, divided; tail 70 mm; snout–vent length 242 mm. Dorsal color is whitish or brick-whitish with dark transverse bars from nape to the tip of tail not reaching the ventral surface, ventral is uniformly whitish. An adult male is shown in Fig. 3–G in its natural habitat.
Distribution: Western foothills. Four specimens were collected in western foothills of Ilam and Mehran regions.
Habitat: Rocky and gypsum areas of tropical and subtropical western regions.

Spalerosophis diadema cliffordi (Schlegel, 1837) (Fig. 3 H)
Two specimens.
Morphology: 12-14 supralabials, one row of scales between eye and upper labials; 2 preoculars; 9 scales around the eye; 11-13 infralabials, the first 4th and 5th are in contact with anterior chin shield; 31-33 dorsals, anterior half of dorsals smooth and posterior half keeled; 221-225 ventrals; anal undivided; 70-74 subcaudals, divided; tail 195 mm; snout–vent length 860 mm. Dorsal surface is buff with quadrilateral dark spots, ventral surface light buff without spots.
Distribution: Two specimens were collected in Shirvan-Chardavol and Dehloran regions in differing habitats.
Habitat: The species was collected in alluvial fans and rocky areas.

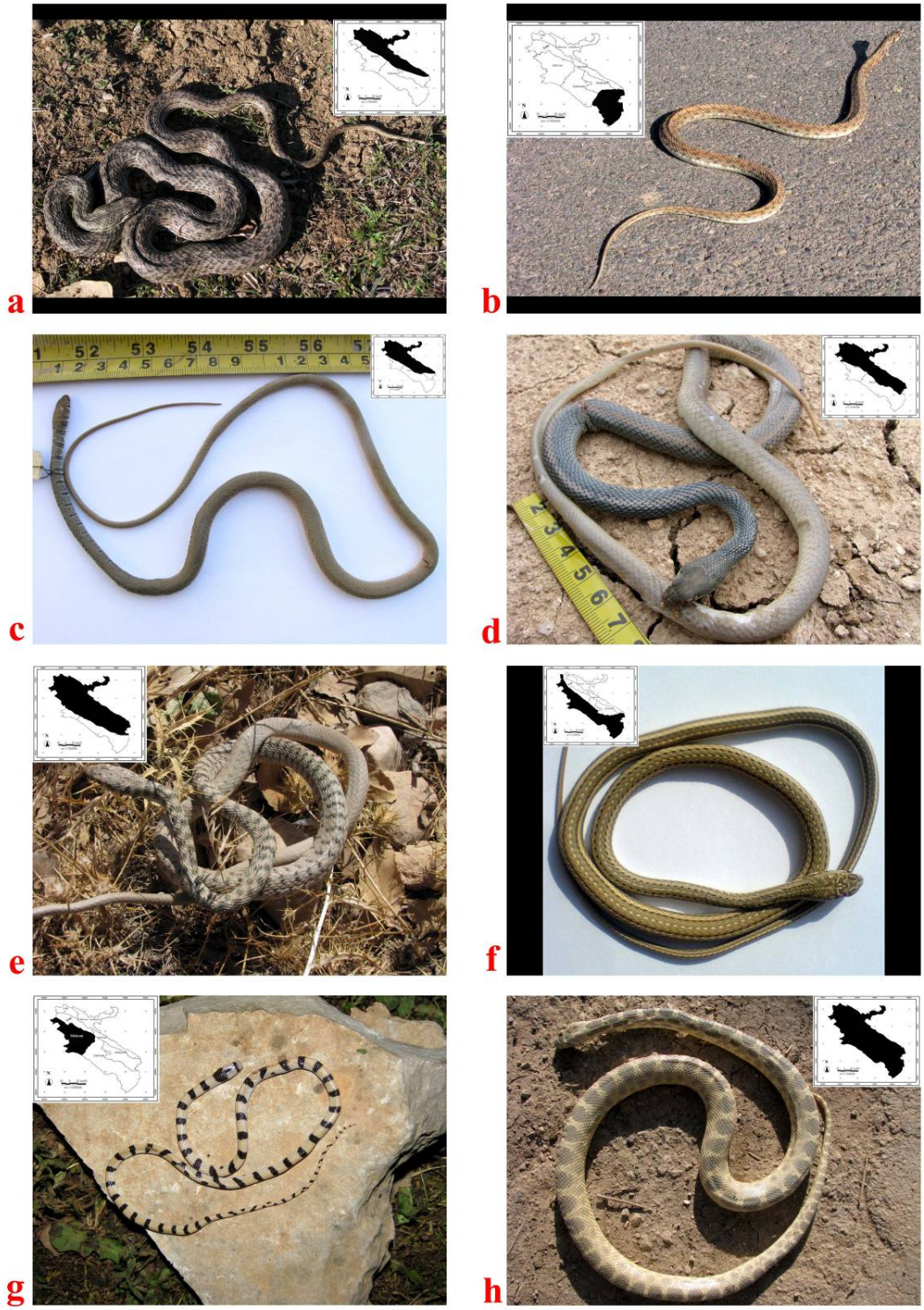

FIG.3.- Photographs and distribution maps of the species in Ilam Province: (a) *Malpolon insignitus*. (b) *Malpolon moilensis*, (c) *Platyceps najadum najadum,* (d) *Platyceps rhodorachis rhodorachis,* (e) *Platyceps rhodorachis ladacensis*, (f) *Psammophis schokari*, (g) *Pseudocyclophis persicus,* (h) *Spalerosophis diadema cliffordi.*

Spalerosophis microlepis Jan, 1865 (Fig. 4 A)
Four specimens.
Morphology: 13-14 supralabials; 13 infralabials; 12 scales around eyes; one row between eye and upper labial; frontal divided into three parts; 42-43 smooth dorsals; 246-249 ventrals; anal undivided; 89-99 subcaudals, divided; tail 250 mm; snout–vent length 1000 mm. Dorsal color is light grey with dark spots, two dark stripes on the sides of neck, ventral surface is light yellow.
Distribution: Widely distributed throughout the area. Four specimens were collected in Ilam, Shirvan-Chardavol, Mehran, and Dehloran regions.
Habitat: Rocky areas in the Zagros Mountains and the gypsum foothills of the western regions.

Telescopus tessellatus martini (Schmidt, 1939) (Fig. 4 B)
Two specimens.
Morphology: 8-9 supralabials, the 3rd, 4th, and 5th supralabials in contact with eye; 1 preocular, in contact with frontal; loreals is long and in contact with eye; 11-12 infralabials; 19-21 smooth dorsals; 235-243 ventrals; anal undivided; 72-77 subcaudals, divided; tail 155 mm; snout–vent length 890 mm. Dorsal color is brownish–grey with darker speckling and vertical stripes on the sides of body, ventral surface dark brown with small spots.
Distribution: Two adult specimens of *Telescopus tessellatus martini* were collected in Shirvan-Chardavol and Mehran regions.
Habitat: Rocky areas and gypsum sediments.

Subfamily Natricinae
Natrix tessellata tessellata (Laurenti, 1768) (Fig. 4 C)
Morphology: 8 supralabials, the 4th in contact with eye; 2 preoculars; 3 postoculars; 2 suboculars; 10 infralabials, the first 5 in contact with anterior chin shield; 19 keeled dorsals; 173-183 ventrals; anal divided; 68-75 subcaudals, divided; tail 165 mm; snout–vent length 600 mm. Dorsal coloration olive or light green with joined dark spots, ventral surface dark with black quadrilateral spots.
Distribution: Eight specimens were collected throughout the province.
Habitat: Specimens were mainly collected close to streams and near urban areas.

FAMILY ELAPIDAE
Subfamily Elapinae
Walterinnesia morgani Mocquard 1905 (Fig. 4 D)
Three specimens.
Morphology: 7 supralabials, the 3rd and 4th in contact with eye; 1 preocular, 2 postoculars, 1 subocular; 9 infralabials; 21-23 dorsals, anterior half of dorsals smooth and posterior half toward tail keeled; 190-198 ventrals; anal divided; 41-47 subcaudals, a few anterior are undivided with remainder divided; tail 87 mm; snout–vent length 600 mm. Dorsal body color uniformly black, ventral coloration lighter than dorsal.
Distribution: Western regions of the study area (Fig. 4 D). Two adults and a juvenile specimen were collected in summer 2009 in the vicinity of Mehran city.
Habitat: Flat plains and farmlands.

FAMILY VIPERIDAE
Subfamily Viperinae
Cerastes gasperettii gasperettii Leviton and Anderson, 1967 (Fig. 4 E)
Two specimens.

Morphology: 15 supralabials; 15 scales around eye; 14-16 scales between eyes; 6 rows of scales between eye and upper labials; 15-17 infralabials; 31-33 keeled dorsals; 157-164 ventrals, a longitudinal medial suture on ventral surface of body; anal divided; 33-36 subcaudals, divided; dorsal color is sandy, ventral color is whitish, two lateral stripes behind eyes, tongue is red in live specimens. Fig. 4 E shows an adult specimen of *Cerastes g. gasperettii* in its natural habitat.
Distribution: Two specimens– a juvenile and an adult– were collected in southern regions of the study area near the Ilam-Khuzestan- Iraqi border.
Habitat: Sandy lowlands with *Alhagi camelorum* as the dominant vegetation.

Macrovipera lebetina obtusa (Dwigubsky, 1832) (Fig. 4 F)
Five specimens.
Morphology: 10-11 supralabials, three rows of scales between eye and supralabials; 12-14 infralabials, the first three in contact with anterior chin shield; 16-17 scales around eyes; 25 keeled dorsals; 172-176 ventrals; anal undivided; 43-45 subcaudals, divided; tail 130 mm; snout–vent length 800 mm. Dorsal color sandy-grey with dark mottles on the lateral and dorsal regions, ventral surfaces whitish with black spots; two oblique brown stripes on lateral sides of the neck behind the eyes.
Distribution: This subspecies has a wide distribution in Ilam Province. Five adult specimens were collected from 2006 to 2010 in Ilam, Darreshahr, Shirvan-Chardavol, Mehran, Bina-Bijar, Abdanan, and Dehloran regions.
Habitat: Ranging from rocky areas to gypsum deposits in the west, and lowland areas in south and west of the study area.

Pseudocerastes persicus (Dumeril, Biborn, and Dumeril, 1854) (Fig. 4 G)
Two specimens.
Morphology: 12-13 supralabials, three rows of scales between eye and supralabials; 17-20 scales around eyes; 10 scales between horns; 14 infralabials; 23 keeled dorsals; 160 ventrals; anal undivided; 44-52 subcaudals, divided; tail 85 mm; snout–vent length 700 mm. Dorsal color is light grey with brown mottles, ventral surface is pale yellow with dark, small spots.
Distribution: Two specimens, one juvenile and one adult, were collected in Bina-Bijar and Shirvan-Chardavol.
Habitat: Rocky areas of Zagros Mountains and gypsum sediments of western foothills.

Pseudocerastes urarachnoides Bostanchi, Anderson, Kami and Papenfuss, 2006 (Fig. 4 H)
Three specimens.
Morphology: 12 supralabials, three rows of scales between eye and upper labial; 20 scales around eyes; 16-17 scales between horns; 13 infralabials; 23 dorsals, keeled and rugose; 144 ventrals; anal undivided; 15 subcaudals, divided; tail 80 mm, a knob-like structure at the end of the tail, caudal appendages present in lateral regions of the tail; snout–vent length 760 mm. Dorsal colors gray and brownish above with four series of large dark spots, a dark line on each side of the head from the eyes to behind the gape; the under parts are cream, with a lateral series of dark spots.
Distribution: Three specimens collected in western foothills of Ilam and Mehran regions.
Habitat: Western gypsum foothills.

DISCUSSION

Of 87 species and subspecies of snakes recorded in Iran (Rastegar-Pouyani et al., 2008), 27 species and subspecies (approximately 31%) occur in Ilam province. Of these, 16 species are aglypha, six are venomous, and four are opisthoglypha.

FIG. 4.- Photographs and distribution maps of the species in Ilam Province: (a) *Spalerosophis microlepis capturing a bat*, (b) *Telescopus tessellatus martini*, (c) *Natrix tessellata*, (d) *Walterinnesia morgani*, (e) *Cerastes g. gasperettii* in ambush site, (f) *Macrovipera l. Obtusa*, (g) *Pseudocerastes persicus*, (h) *Pseudocerastes urarachnoides*.

The snake biodiversity of Ilam province is the result of variety of geographic (such as mountains, alluvial fans, sandy areas and gypsum hills), climatic, and vegetative factors which provide variety of niches for these cryptic reptiles.

Results of this survey confirm distribution of *Cerastes g. gasperettii* northward into sandy areas of south Ilam Province at coordinates of 32°12' 28.93˝N and 47° 47' 49.11˝ E, while the formerly known distribution, based on Latifi (2000), was limited to Albaji near Ahvaz city in Khuzistan Province. *Cerastes gasperettii* has most likely originated from sandy deserts of the Middle East.

The senior author collected specimens of *Pseudocerastes urarachnoides* and *P. persicus* from the same locality in the Bina-Bijar non-hunting area. Some herpetologists (Joger, pers. comm.) consider *P. urarachnoides* a subspecies of *P. persicus*, but considering their sympatry, we are inclined to accept the validity of *P. urarachnoides* as a distinct species. There is no doubt that the distribution of *Pseudocerastes urarachnoides* originated in the areas of gypsum sediments in western Iran. There is controversy among herpetologists concerning the ancestry of *Pseudocerastes urarachnoides*, weather from *Pseudocerastes* or *Cerastes*, and a molecular survey is now being conducted to resolve this question (Rastegar-Pouyani, et al., unpubl.). It is suggested that *Pseudocerastes fieldi* occurs in the western and southern lowlands of Ilam Province because of the presence of suitable habitats, which also applies to the northern (Guilan-e-Gharb, southwest of Kermanshah Province) and southern (Khuzestan Province) (Latifi, 2000) borders of the province.

Spalerosophis diadema schiraziana is found in adjacent provinces such as Lorestan and Khuzestan (Latifi, 2000) which reinforce its presence in Ilam province. The two subspecies *S. d. schiraziana* and *S. d. cliffordi* are regarded as identical (i.e. *S. d. cliffordi*).

With regard to the sympatry of *Platyceps rhodorachis rhodorachis* and *P. r. ladacensis* and their occurrence in the same habitat, their subspecific status is questionable. We regard the two subspecies as two morphs of the same species, *Platyceps rhodorachis*.

Coluber andreanus has recently been added to the list of the Iranian herpetofauna (Rajabizadeh and Rastegar-Pouyani, 2009). According to these authors, the species has been reported in five localities (Kermanshah, Lorestan, Bushehr, Fars, and Kerman provinces), in the Zagros Mountain chain. We suggest that the Zagros Mountains may have served as a corridor for distribution of this snake.

Coluber andreanus and *Spalerosophis microlepis* are regarded as Iranian endemic species. The presence of these species in Ilam as a border province suggests that they may also occur in Iraq.

According to Latifi (2000) and Nilson and Rastegar-Pouyani (2007), *Walterinnesia morgani* is distributed in Bushehr, Kermanshah, Khuzestan, and Fars provinces. A new locality for *W. morgani* was discovered during this survey in alluvial fans around Mehran city west of Ilam province.

The Zagros Mountain chain acts as a barrier to the distribution of lowland dwelling species such as *Cerastes gasperettii*, *Echis carinatus,* and *Walterinnesia morgani* eastward into the center of the province.

Some species belonging to the same genus are sympatric in Ilam province, for example, *Eirenis punctatolineatus* and *E. collaris*, *Spalerosophis microlepis* and *S. diadema cliffordi*, *Pseudocerastes urarachnoides* and *P. persicus*, *Platyceps najadum* and *P. rhodorachis*, *Hemorrhois ravergieri* and *H. nummifer*.

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