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CONTRIBUTION TO THE KNOWLEDGE OF *Iranolacerta brandtii* DE FILIPPI 1863 (SAURIA: LACERTIDAE) FROM THE NORTHWEST OF IRAN

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According to recent revision of Lacertidae family by Arnold et al. (2007), two species of *Iranolacerta* genus are found in Iran: *Iranolacerta brandtii* and *Iranolacerta zagrosica*. Both species have limited range of distribution and unknown biological and ecological status. Therefore, in this study a total of 25 *Iranolacerta brandtii* specimens (10 males, 13 females, and 2 juveniles) were collected from northwest of Iran. First, based on the morphological features including coloration pattern, morphometric measurements and pholidosis characters the species was studied. Then, habitat features and new distribution localities were documented. For the first time, some reproductive aspects, such as clutch size, follicles number, testis length and color are reported. Feeding ecology of this species was investigated through analysis of stomach contents.

Keywords: *Iranolacerta brandtii*, morphological features, feeding, reproduction, habitat features, Iran.

INTRODUCTION

According to the new revision of Lacertidae family, there are nine genera of lacertid lizards in Iran (Anderson, 1999; Arnold et al., 2007). *Iranolacerta* is a small genus including *Iranolacerta brandtii* De Filippi 1863 and *Iranolacerta zagrosica* (Rastegar-Pouyani and Nilson, 1998) which both of them are native Iranian species with a limited distribution (Arnold et al., 2007; Ahmadzadeh et al., 2008). *I. brandtii* has two subspecies in Iran: *I. b. brandtii* which its local type is Basmenj of the East Azerbaijan province of Iran and *I. b. isfahanica* that was reported by Nilson et al. (2003) from the Zagros Mountains in Isfahan province of Iran (Rastegar-Pouyani et al., 2006; Arnold et al., 2007).

Early contribution about this species was provided by Lantz and Cyrén (1939). Although, general biology of *I. brandtii* has been discussed by In den Bosch (1996) and hemipenial microornamentation and comparative karyology of species have been studied by Böhme (1993) and Olmo et al. (2001), respectively, but this species has unknown biological and ecological status and is categorized in IUCN list in Data Deficient (DD) group (Ahmadzadeh and Kheyrandish, 2006; Ahmadzadeh et al., 2008; Tuniyev et al., 2009).

So, regarding to the lack of deep study in the ecology and biology of the species, the study presents morphological features including coloration pattern, morphometric measurements and pholidosis characters. Habitat features and new distribution locality is described, and from reproductive aspect some cases like clutch size and follicles number, testis length and color is reported for the first time. Feeding biology of this species was investigated through analysis of stomach contents.

MATERIAL AND METHODS

Study area. The study area is located in Northwest of Iran. Three sampling stations including foothills of the Sabalan mountain (39°17′ N 48°02′ E), hillsides around Ardabil plain (37°32′ N 48 °37′ E), and steppe of Namin (38°28′ N 48°23′ E) (Fig. 1). This area is a part of Palearctic region which is located on the way from Caucasian plateau to Iran plateau. The climate of the region is mild and mountainous, influenced by Mediterranean and Caspian weather stack. This area is surrounded by Sabalan range from West, Alborz range from East

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Fig. 1. Distribution of *Iranolacerta brandtii* in Iran, based on IUCN map of distribution of this species. Sampling stations were: Eastern part of Sabalan (39°17′ N 48°02′ E), 2.1 km N of Ardabil (37°32′ N 48 °37′ E), 3.3 km W of Namin (38°28′ N 48°23′ E).

and Baghro range from South. The elevation range of the area is 1500 – 1600 m and the highest point of the region is Sabalan peak with 4811 m. The prominent vegetation is Alpine and semi alpine steppe. The rivers spring have their resource in Sabalan Mountain.

Field and laboratory studies. The best time of year for sampling amphibians and reptiles is the spring. In this season this animals are seldom hidden and they can be found near places that they have spent the winter (Baloutch, 1977). Therefor, sampling was done in spring and summer of 2009 and totally 25 specimens were collected. All of these specimens were caught by hand. The color pattern of specimens was recorded when the animals were alive. All the specimens were preserved in accordance to standard methods with injection of formalin 10% and were stored in alcohol 70%. After transferring to the Zoology Lab of the Faculty of Biological Science at Shahid Beheshti University, specimens were examined. The specimens' guts were dissected out using surgical scissors and forceps. The prey items obtained from each specimen was stored in 10cc bottles containing 70% ethanol. Dried pieces from both undigested and partially digested prey consisted of whole body, wing(s), thorax with abdomen, head, and mouth parts. Prey items were identified using a Nikon stereomicroscope with 10 – 25× magnification (Dusen and Oz, 2001).

The biometric characters measured by dial caliper (±0.02 mm) included: SVL (snout to vent length), TL (tail length, length of vent to tip of tail), SL (snout length), HL (head length), HH (head height), HW (head width), EL (eye Length), DE (maximum diameter of ear opening), DOE (distance of orbit-ear), LFA (length of forearm), LA (length of arm), LF (length of foreleg), LT (length of thigh), AG (axilla-groin), TBL (total body length), EYEAR (distance between eye and ear), L4TOE (length of fourth toe), LC [length of cloaca (largest size)], LBT (length of widest part of tail base).

The biometric proportional characters included: HL.SVL [(HL/SVL) × 100], EL.SL [(EL/SL) × 100], SVL.TL [(SVL/TL) × 100], HH.HW [(HH/HW) × 100], HW.SVL [(HW/SVL) × 100], HH.HL [(HH/HL) × 100], DE.EL [(DE/EL) × 100], SL.HW [(SL/HW) × 100], DE.HL [(DE/HL) × 100], EL.HL [(EL/HL) × 100], DOE.DE [(DOE/DE) × 100], LFA.SVL [(LFA/SVL) × 100], AG.SVL [(AG/SVL) × 100], LC.LBT [(LC/LBT) × 100], EYEAR.SVL [(EYEAR/SVL) × 100], EYEAR.HL [(EYEAR/HL) × 100], L4TOE.SVL [(L4TOE/SVL) × 100], L4TOE.LF [(L4TOE/LF) × 100], LF.LT [(LF/LT) × 100].

Meristic pholidolial characters comprised the following counts: ULS (upper labial scales), LLS (lower labial scales), NEE (number scales of between eye and ear), PMS (postmental scales), VL (number of longitudinal Rows of large vertebral scales), SALH (number of scales along head longitudinal row from postmental to gular), Gulars [number of gular scales (from chin shield to collar)], Collars (number of collar scales), LRVS [longitudinal rows of ventral scales (arranged)], LST (number of subdigital lamella under the 4th toe), TS (tail segmented), FPL (number of femoral pores on left), FPR (number of femoral pores on right), and NDS [number of dorsal scales across the body (in widest part)].

In the studied population to distinct similarity and differences between males and females, some statistical analyses on metric and meristic characters were done. The number of the immature specimens ($n = 2$) was not let into analyses. Data were examined for conformation to assumption of normality (the Shapiro – Wilk test) and homogeneity (Leven's test for equality of variance). In order to compare sexual dimorphism, an independent *t*-test was applied to the proportional characters (metric measurements): HL.SVL, EL.SL, SVL.TL, HH.HW, HW.SVL, HH.HL, DE.EL, SL.HW, DE.HL, DOE.DE, LFA.SVL, LF.SVL, AG.SVL, LC.LBT, EYEAR.SVL, EYEAR.HL, L4TOE.SVL, L4TOE.LF, and LF.LT. Pro-

portional characters were used due to an uncertainly regarding age groups and because it was not known whether growth was isometric or not (Ilgaz and Kumlutaş, 2008). According to meristic pholidolial characteristics, the existence of sexual dimorphism was tested by independent *t*-test. For the reproductive system measurements descriptive analyses was done. Regarding all statistic tests, significance level set at 0.05. Statistical analyses were carried out using the program SPSS ver. 16.0. Data of the items of digest system contents was analyzed by program Excel ver. 2007.

RESULTS

Color pattern. In living specimens adult dorsal pattern from head to belly olive-green and from belly to the end of tail pale brown, white reticulate strips surrounded with black spots in dorsolaterals, blue spots on armpit and outer row of ventral scales, sides with reticulate black spots, head in ventral scales bluish green, abdominal scales green, fore limb green and hind limb pale brown, some black and white spots on the forelimb and hind limb; anal region, thighs and lower base of tail orange in breeding (Fig. 2).

Scaling. Supranasal was separated from anterior loreal plates; 2 postnasal; 5 upper labial scales were in front of subocular; nostril was in contact with first upper labial; postmental (chin shields) was 5; collar was not serrated; ventral scales in 8 longitudinal rows were rectangular with little overlap; dorsal body scales was small, smooth and comprised 42 – 65 in a transverse row across mid-body; 17 – 21 femoral pores, row of pores reached knee; whorls of tail scales was equal in length; semicircular row of scales surrounding the preanal scale

Fig. 2. Dorsal view (*a*) and lateral view (*b*) of *Iranolacerta barndtii* in its habitat from 10 km N of Ardabil.

TABLE 1. Descriptive Statistics of Meristic Pholidolial Characters Obtained from *Iranolacerta brandtii* Specimens Collected from Northwest of Iran (Ardabil Province)

Character	Overall						Males						Females					
	N	min	max	mean	S.E.	S.D.	*N*	min	max	mean	S.E.	S.D.	*N*	min	max	mean	S.E.	S.D.
ULS	23	8	10	9.35	0.14	0.71	10	9	10	9.50	0.22	0.70	13	8	10	9.23	0.20	0.72
LLS	23	7	9	7.48	0.12	0.59	10	7	9	7.60	0.22	0.69	13	7	8	7.38	0.14	0.50
NEE	23	6	11	8.78	0.25	1.24	10	6	11	8.80	0.46	1.47	13	7	10	8.77	0.30	1.09
PMS	23	4	5	4.70	0.09	0.47	10	4	5	4.70	0.15	0.48	13	4	5	4.69	0.13	0.48
VL	23	8	8	8.00	0.00	0.00	10	8	8	8.00	0.00	0.00	13	8	8	8.00	0.00	0.00
SALH	23	10	12	10.52	0.12	0.59	10	10	12	10.70	0.21	0.67	13	10	11	10.38	0.14	0.50
Gulars	23	10	16	13.39	0.30	1.43	10	10	15	12.90	0.50	1.59	13	12	16	13.77	0.34	1.23
Collar	23	8	13	10.13	0.22	1.10	10	8	13	10.40	0.45	1.43	13	9	11	9.92	0.21	0.76
LRVS	23	23	29	25.83	034	1.66	10	23	26	24.30	0.30	0.94	13	26	29	27.00	0.27	1.00
LST	23	23	29	26.61	0.35	1.69	10	25	29	27.30	0.33	1.05	13	23	29	26.08	0.53	1.93
TS	17	42	99	79.65	4.09	16.89	7	59	92	76.86	5.40	14.31	10	42	99	81.60	6.00	18.98
FPL	23	16	19	17.83	0.18	0.88	10	17	19	18.30	0.26	0.82	13	16	18	17.46	0.21	0.77
FPR	23	16	21	18.17	0.30	1.46	10	17	21	18.70	0.42	1.33	13	16	21	17.77	0.41	1.48
NDS	23	47	65	55.65	0.98	4.71	10	49	59	55.20	1.04	3.29	13	47	65	56.00	1.57	5.68

For abbreviations see text: *N*, number of specimens; min, minimum value; max, maximum value; S.E., standard error of the mean; S.D., standard deviation.

was one row and large; subdigital scales was not tubercular.

Statistical analyses. Descriptive statistics of pholidolial characters of *Iranolacerta brandtii* specimens are given in Table 1. According to the independent *t*-test (Table 2), there were a difference in LRVS ($t = –6.561$, $df = 21$, $sig = 0.000$) and FPL ($t = 2.502$, $df = 21$, $sig = = 0.02$) characters between males and females. LRVS in females (mean = 27.00) has higher mean value than that in males (mean = 24.30). In addition to mean value of FPL in males (mean = 18.30) was higher than that in females (mean = 17.46).

TABLE 2. Results of Independent *t*-test Comparing Males and Females in Terms of Pholidotic Characteristics

Character	*t*	*df*	*sig*
ULS	0.892	21	0.382
LLS	0.858	21	0.400
NEE	0.058	21	0.955
PMS	0.038	21	0.970
SALH	1.283	21	0.214
Gulars	–1.475	21	0.155
Collar	1.033	21	0.314
LRVS*	–6.561	21	0.000
LST	1.796	21	0.087
TS	–0.557	15	0.586
FPL*	2.502	21	0.021
FPR	1.557	21	0.134
NDS	–0.396	21	0.696

* The characters showing differences between males and females.

Descriptive statistics of metric measurements of *Iranolacerta brandtii* specimens are given in Table 3. SVL ranging from 54.31 to 72.07 with a mean of 63.19 mm were found for mature male specimens, while the mean value of this character in females was 64.70 mm (range: 52.98 – 76.42). L4TOE in males (mean = 10.88 mm, range = 7.02 – 14.74) is distinctively higher than females (mean = 9.93 mm, range = = 8.19 – 11.67).

According to independent *t*-test sexual dimorphism were found in HL.SVL ($t = 3.964$, $df = 21$, $sig = 0.001$), DE.EL ($t = 2.116$, $df = 21$, $sig = 0.046$), EL.HL ($t = = –2.452$, $df = 21$, $sig = 0.023$), LF.SVL ($t = 2.974$, $df = = 21$, $sig = 0.007$), AG.SVL ($t = –2.577$, $df = 21$, $sig = = 0.018$), EYEAR.SVL ($t = 2.356$, $df = 21$, $sig = 0.028$), and L4TOE.SVL ($t = 3.518$, $df = 21$, $sig = 0.002$) proportional characters (Table 4).

Reproduction. Collected data about reproduction of this species are given in Tables 5 and 6. In addition to, the females which caught in breeding season (last spring) had four incompletely matured eggs (rarely 3), 2 eggs in the left and 2 eggs in the right. The length of these big eggs was 13 – 15 mm, and its diameter was 7 – 8 mm. Shells were soft. In the breeding season the

TABLE 3. Descriptive Statistics of Metric Dimensions Obtained from *Iranolacerta brandtii* Collected from Northwest of Iran (Ardabil Province)

Character	Overall						Males						Females					
	N	min	max	mean	S.E.	S.D.	*N*	min	max	mean	S.E.	S.D.	*N*	min	max	mean	S.E.	S.D.
SVL	23	56.78	68.50	64.04	0.65	3.12	10	58.32	67.20	63.19	0.86	2.74	13	56.78	68.50	64.70	0.92	3.34
TL	23	76.00	136.90	1.01	3.31	15.87	10	79.72	136.90	1.04	5.77	18.26	13	76.00	119.60	98.73	3.88	14.01
SL	23	4.02	6.98	5.65	0.14	0.68	10	4.02	6.98	5.98	0.25	0.81	13	4.68	6.54	5.40	0.12	0.44
HL	23	12.02	18.80	15.43	0.36	1.74	10	12.02	18.80	16.49	0.57	1.80	13	13.20	18.20	14.61	0.33	1.20
HW	23	5.30	11.20	9.20	0.27	1.29	10	5.30	11.20	9.60	0.55	1.76	13	8.04	10.60	8.90	0.20	0.73
HH	23	6.18	9.70	7.85	0.20	0.99	10	6.18	9.30	8.45	0.28	0.88	13	6.38	9.70	7.40	0.22	0.82
EL	23	1.70	2.60	2.15	0.05	0.27	10	1.76	2.60	2.14	0.09	0.29	13	1.70	2.60	2.15	0.07	0.28
DE	23	2.20	3.54	2.75	0.06	0.32	10	2.28	3.54	2.90	0.09	0.31	13	2.20	3.20	2.64	0.08	0.29
DOE	23	4.46	6.70	5.35	0.14	0.71	10	4.50	6.70	5.80	0.20	0.66	13	4.46	6.70	5.01	0.15	0.56
LFA	23	4.80	7.46	6.30	0.12	0.59	10	4.80	7.46	6.48	0.24	0.77	13	5.60	7.00	6.17	0.11	0.40
LA	23	4.50	7.44	6.07	0.14	0.70	10	4.50	7.44	6.40	0.27	0.88	13	5.34	6.68	5.82	0.11	0.40
LF	23	6.80	10.00	8.52	0.20	0.97	10	6.80	10.00	9.05	0.31	1.00	13	7.00	9.34	8.11	0.21	0.76
LT	23	6.70	10.40	8.70	0.20	0.98	10	7.56	10.40	9.24	0.26	0.85	13	6.70	9.60	8.29	0.25	0.90
AG	23	26.70	42.56	34.21	0.91	4.40	10	26.70	38.00	31.93	1.19	3.78	13	26.88	42.56	35.97	1.14	4.13
TBL	23	111.48	203.50	1.62	4.33	20.80	10	138.58	203.50	1.66	6.41	20.28	13	111.48	188.10	1.59	5.96	21.49
EYEAR	23	3.24	5.20	4.33	0.09	0.46	10	3.24	5.20	4.53	0.18	0.57	13	3.60	4.82	4.17	0.08	0.30
L4TOE	23	8.50	12.36	10.34	0.18	0.89	10	8.50	12.36	10.88	0.31	1.00	13	9.16	10.90	9.93	0.15	0.54
LC	23	4.10	6.72	5.55	0.11	0.56	10	4.10	6.72	5.60	0.21	0.69	13	4.82	6.20	5.52	0.12	0.46
LBT	23	4.82	8.00	6.93	0.16	0.81	10	4.82	7.82	7.04	0.31	0.98	13	5.62	8.00	6.84	0.18	0.67

For abbreviations, see the text.

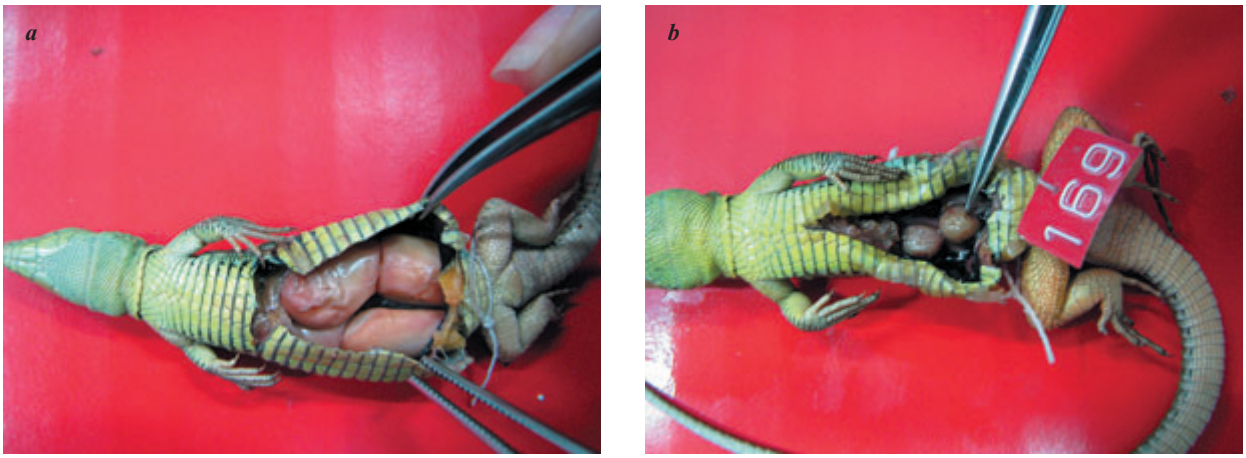

Fig. 3. Reproductive system in *Iranolacerta brandtii*: *a*, eggs in stomach; *b*, testises.

color pattern of the cloacae periphery, femurs and posterior part of abdominal was orange. The testis color was cream yellowish and color of eggs was light cream (Fig. 3).

Habitat. The specimens were collected from plains and hills which surrounded by dry farming fields. It is rarely observed that this lizard enters the farmlands; they are often seen in the margins. Vegetation of habitat is alpine steppe with *Trogoconthic astrogale*. Prominent genera of plants including: *Astragalus*, *Anthemis*, *Senecio*, *Euphobia*, *Circium*, etc. As observed this species, when feeling danger, often choose places under stones and other animals' nests as a hiding place and they seldom hide under bushes (Fig. 4).

Feeding. The digestive tract contents of 12 of the specimens were recognizable. Although a large number of prey fragments were found in dissected guts, most of them were digested to such an extent that they were unidentifiable. The major of them were insect (96.6%) and Arachnidae (3.4%). The total percentages of preys found in digestive tract of this species were as shown in Fig. 5.

TABLE 4. Results of Independent *t*-Test Comparing Males and Females in Terms of Proportional Characteristics

Character	*t*	*df*	*sig*
HL.SVL*	3.964	21	0.001
EL.SL	–1.921	21	0.068
SVL.TL	–1.159	21	0.259
HH.HW	0.597	21	0.557
HW.SVL	1.708	21	0.102
HH.HL	0.819	21	0.422
DE.EL*	2.116	21	0.046
SL.HW	–0.560	21	0.581
DE.HL	–0.536	21	0.598
EL.HL*	–2.452	21	0.023
DOE.DE	1.027	21	0.316
LFA.SVL	1.845	21	0.122
LF.SVL*	2.974	21	0.007
AG.SVL*	–2.577	21	0.018
LC.LBT	–0.244	21	0.809
EYEAR.SVL*	2.356	21	0.028
EYEAR.HL	–0.454	21	0.654
L4TOE.SVL*	3.518	21	0.002
L4TOE.LF	–0.616	21	0.545
LF.LT	–0.149	21	0.883

* The characters showing differences between males and females.

DISCUSSION

Concerning the systematic of *Iranolacerta brandtii* several researches (e.g., Peters, 1962; Arnold, 1973,

TABLE 5. Overall Measurements of Testis and Ovary in *Iranolacerta brandtii* from Northwest of Iran (Ardabil Province)

Character	*N*	min	max	mean	S.E.	S.D.
Left testis length	9	2.60	5.60	4.37	0.38	1.14
Right testis length	9	3.20	5.50	4.40	0.27	0.81
Left ovary length	11	3.80	7.20	5.51	0.32	1.06
Right ovary length	11	2.70	7.90	5.66	0.43	1.45

TABLE 6. Eggs Number of Females *Iranolacerta brandtii* from Northwest of Iran (Ardabil Province)

Characters	*N*	min	max	mean	S.E.	S.D.
Number of left eggs	11	4	8	5.64	0.38	1.28
Number of right eggs	11	4	9	5.50	0.48	1.67

Fig. 4. *I. brandtii* choose other animals' nests as a hiding place.

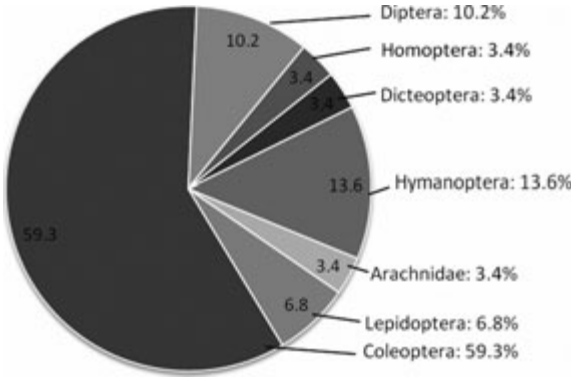

Fig. 5. Distribution of the item groups regarding numerical percentages.

1989) proposed that it is probably most closely related to *Lacerta fraasii* of Lebanon and *L. parva* of Turkey, but is intermediate these two distinctive species and the more typical species of *Lacerta* part II. Böhme (1993) had shown that one possible synapomorphy, a particular drived pattern of microornamentation, found in *L. parva* and *L. fraasii*, does not occur in *I. brandtii*, a circumstance that might be expected if *L. parva* and *L. fraasii* are one another's closest relatives. Arnold et al. (2007) says: "The sister-relationship between *I. brandtii* and *I. zagrosica* is supported strongly in DNA phylogenies. Morphologically they are very different and share few distinctive features. This is probably functionally associated with their divergent life modes, *I. brandtii* being ground dwelling while *I. zagrosica* is found on rock surfaces and in crevices in these. Both of them are small Lacertini up to about 70 mm from snout to vent; adult males larger than females; head and body not depressed in *I. brandtii*, but strongly so in *I. zagrosica* in which the toes are also strongly compressed."

I. brandtii have eight longitudinal rows of ventral scales and commonly two postnasal scales, but in *I. zagrosica* there are ten longitudinal rows of ventral scales and one postnasal scale (Fig. 4).

Bayesian phylogenetic tree (Carranza et al., 2004) of the Lacertini based on 620 bp of mitochondrial DNA sequence (291 bp of cytochrome b and 329 bp 12S rRNA) shows that *I. brandtii* and *I. zagrosica* are closely related species but make paraphyletic group with *L. parva* and *L. fraasii*.

For the first time, sexual dimorphism in *Iranolacerta brandtii* was studied. According to statistical analyses of 20 proportional characters, it was found that 7 of them were different between males and females. In males HL.SVL, DE.EL, LF.SVL, EYEAR.SVL, L4TOE.SVL is larger than those in females while EL.HL and AG.SVL in females is larger than that in males. This means that in males length of head, ear, femur, fourth finger of toe and distance between nose and eye are larger than females. While in females length of eye and distance between fore limb and hind limb (axilla-groin) is larger than males.

It seems that the last days of May is the time of egg laying. The matured eggs which filled stomach prove this fact. According to the result clutch size in *Iranolacerta brandtii* was four (rarely three) eggs. In 1964 Clark et al. had sampled four females from thirty miles SE of Tabriz and had reported that in 1 July females have eggs in the oviducts, the largest 14 mm long. In this study females had captured from 10 km N of Ardabil in 23rd of May had four eggs and the largest its size was 15 mm. In males there was no change in size of testis in time of breeding. It is observed the females were vulnerable in breeding season, because of their speed become lower and they got easily captured. In den Bosch (1996) had reported the species lived on the ground, moving between the scarce vegetation and some larger boulders, in catch *I. brandtii* ran from bush to bush, but soon became exhausted.

In den Bosch (1996) describe that "L. *brandtii* molts after about three weeks from hibernation. The annual change in coloration is described. Around three weeks after ending hibernation the male's dorsal and lateral regions of the frontal part of the body change from dull brown into bright green, the posterior half into a fair hazel. Around July the dorsal and lateral colors darken, the green disappears, and the ventral colors pale. Even before hibernation starts some throats may already acquire a blue tinge." Our observations confirm this description. Clark et al. (1966) had described habitat and habit of this

species: "These lizards were congregated in a dry stream gully, on the edge of a field on a steep hillside above a lake. They were numerous and active, running swiftly across the open fields from bush to bush, or hiding beneath small boulders in the gully."

Feeding preference of *I. brandtii* is presented for the first time. As it is shown (Fig. 5) in the chart of feeding the superiority of this species regarding its feeding in studied specimens is class insect (96.6%), and within this class, Coleoptera (53.9%) is the major order represent. Coccinellidae, Chrysomelidae and Carabidae were most frequent families belonging to Coleoptera in the food of this species. Regarding to feeding from Aphidae, belonging to the Homoptera, *Iranolacerta brandtii* can be considered a useful species in controlling of pest of the farms. Larva of butterfly belonging to the Lepidoptera was the biggest item which was eaten by this species. In addition to this recognized items. There was found number of gravels but not any vegetation in their gut. This situation is related to the type of habitat they live in and the abundance of prey species in the vicinity.

The tail of this species displays autotomy, approximately 60% of total specimens (Ahmadzadeh et al., 2008) while in our specimens autotomy was found in 30% of them.

In studied stations there was other species of lizards. *Iranolacerta brandtii* was found as sympatric with *Eremias strauchi*, *Ophisops elegans*, *Phrynocephalus persicus*, and *Laudakia caucasia* in one of the stations. *P. persicus* is categorized in IUCN list in Vulnerable group (VU), its presence in study area is new record, that observed in farmlands. Also, frog presented in this habitat. In other station *Ablepharus bivittatus*, *Phrynocephalus persicus*, and *Ophisops elegans* have sympatry with *I. brandtii*. In 1996 In den Bosch had sampled from 35 km east of Tabriz next to the small lake at Guritshul (1900 m) and near Bazoft in Kuh Rang (2500 m), and had recorded that *Ophisops elegans* and *Bufo viridis* were found to be sympatric.

As *I. brandtii* is an endemic species in Iran and only in small part of the country is present. There is any protected area in distribution range of this species. There are some factors, is unfitted environment for its life such as: development of agricultural land and excessive use of pesticides, dam construction on rivers and drying the substrate and thus reduce the nutritional materials of this lizard, road construction, excessive livestock grazing and wrong beliefs of people about lizard. It sounds this factors reduce the population of these species in the region. Because of suitable ecological conditions of habitats and next to humans habitats, cultivate and pasturage are main factors in lizard habitat degradation and often under threat. Appropriate management of the environment and prevent habitat degradation and also educate people in order to come in useful of lizard in the nature as the biological controller of insects, can be useful steps to protect this valuable species in the area. It should be continued research progress on conservation status, identify extinction risk areas, evaluate the current degree of protection of this species, habitat status, ecology and other biology features and define a strategy for the conservation of *I. brandtii*.

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