



## ORIGINAL ARTICLE

# The first report of lizard and turtle ticks from Ilam, Western Province of Iran

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### ABSTRACT

Ticks are one of the most significant ectoparasites of animals and man, particularly in tropical and subtropical regions. Approximately 10% of 899 tick species take role in transmission of more than 200 pathogens. Ilam province is located in western of Iran, close border with Iraq. A total of 129 lizard (*Trachylepis vittata*, *Trachylepis a. transcaucasica*, *Trapelus lessonae* and *Laudakia nupta*) and 25 tortoise specimens (*Testudo graeca*) were collected during May 2008 to August 2010. Out of 129 lizards species 78 (60.46%) cases had infestation with ticks (*Hyalomma aegyptium*, *Haemaphysalis spp* and *Rhipicephalus sanguineus*). Prevalence of *Hyalomma aegyptium*, *Repicephalus sanguineus* and *Haemaphysalis spp* were 39.53%, 13.95% and 17.05% respectively. *Hyalomma aegyptium* was found to be the most frequent tick species. In this study, 62 of specified ticks were male and 67 were female. Prevalence of ticks in male lizards was 61.29% and in female one was 53.73%. Out of 25 turtle, one of them was infested only by one tick. *Hyalomma aegyptium* were recognized on and attachment site were on the front leg of the *Testudo graeca* turtle. Our observation on the lizard in this study shows that reptiles live in their own area and they do not go far away from their territory. It can be concluded that if reptiles represents any ticks, it will be limited on their territory. However there are some concerns about tick born diseases, which could affect other animals and man.

**Key word:** Tick, lizard, Turtle, Reptile, Ilam,

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### INTRODUCTION

Ticks and mites are usually evident in close visual inspection between the area of the head and neck. Mites are most easily identified in the periocular and mandibular area. Mites are eliminated through a combination of environmental decontamination, and treatment of the reptile with suitable parasiticides. Ticks are one of the most significant parasites of animals and man globally, particularly in tropical and subtropical regions [1,2]. Approximately 10% of 899 tick species take role in transmission of more than 200 pathogens [2,3], including many zoonotic agents: bacteria, rickettsia, protozoan and virus [2,4]. The transfer of ticks on hosts outside their natural territorial habitats is facilitated and maintain by the animals seasonal journeys and migrations, by the development of means of transport, human tourist travel, and also by human activity related, among other things, to the trade in animals [5].

The international trade in reptiles has grown dramatically in the last decade, with the United States responsible for more than 80% of the total world trade in live reptiles listed by the Convention on International Trade Endangered Species of Wild Fauna and Flora [6,7]. According to previous survey Iran has 13 geographical regions relative to lizard distribution [8, 9]. The geography of Ilam province includes three of these regions, the Zagros Mountains, the Khuzestan plain, and the western foothills of the Zagros Mountains. Two climatic conditions, Mediterranean and Dry Semidry, exist in Ilam province. More than 78% of the province is covered with forests meadows, and arid lands, thus the area should have a rich biodiversity of lizards in general and of ticks in particular.

The genus *Hyalomma* distribute in Africa, southern Europaia and Asia [10]. The first report of presence of *Hyalomma aegyptium* tick from *Testudo graeca* turtle in Iran were reported by Nabian and Mirsalimi [11]. There is no any report regarding external parasites of lizard or grasshopper from Iran. The tortoise tick, *Hyalomma aegyptium*, is among the easily recognizable species. It possesses a set of morphological characters for instance two equal, well separated spurs of coxa I in both sexes. This study is aiming to

investigate lizard and turtle ticks from Ilam, Western Province of Iran as the first report in region and in the world.

## MATERIALS AND METHODS

### Area study

Western Iran in general and Ilam province in particular, has unique geographical and climatic condition that supports a rich flora and fauna. Ilam province is located in western of Iran in the vicinity of Iraq country. The length of common Iran –Iraq borderline is 465 Km.



Image.1: The area, study was done.

### Tick collection and identification

A total of 129 lizard 25 tortoise specimens were collected during May 2008 to August 2010. Ticks were collected from reptilian using tweezers, immediately put into plastic tubes containing 70% ethanol, and labeled with a field number of the reptilian specimen. Ticks were identified according Hoogstral [12], Anastos [13], Anderson [14], Aydn [15]. The movement of lizards were measured in open surrounded circle with diameter of 50× 50 meter area carpet with the soft fine wood powder (fine saw dust) and the sign remain in the ground at the end of the day were measured, each lizard were released and freed separately in this area and distance of their movement were measured. The lizards were cached at the end of the day when it was going to be completely dark and they stopped from movement. In other method the lizard were marked with color in their back and released in natural field and then followed by distance with string in the ground then at the end of the day the string were measured to obtain their distance of movement per day.

## RESULTS

Out of 129 lizards species; 38, 34, 31 and 26 numbers were identified as *Trachylepis vittata*, *Trachylepis a. transcaucasica*, *Trapelus lessonae* and *Laudakia nupta* respectively. Results indicated that 78 (60.46%) cases had infestation with ticks (*Hyalomma aegyptium*, *Haemaphysalis spp* and *Repicephalus sanguineus*). *Hyalomma spp* was found as the most frequent tick species (39.53%). Prevalence rate of *Repicephalus sanguineus* and *Haemaphysalis spp* were identified 13.95% and 17.05% respectively (Table 1). Out of 129 lizard species, 62 were recognized as male and 67 were identified female. Prevalence of ticks in male lizards was 61.29% and in female lizards was 53.73% (Table 1).

Out of 25 turtles (*Testudo graeca*), one of them was infested by only a tick. *Hyalomma aegyptium* were recognized on and attachment site were on the front leg of the *Testudo graeca* turtle.

*Rhipicephalus spp* ticks nymph and adult were recovered on *Trachylepis vittata* lizard, the site of the attachment were on axillary and near front leg side of the body, the same species of tick nymphs and adults were found on the top dorsal eyelid of the other species of the lizard *Trapelus lessonae*. Adult ticks and nymph were observed on dorsal hand of the different species of the *Trachylepis a. transcaucasica* and *Laudakia nupta* lizard (Pics. 1-2). The prevalence rates of ticks were more pronounce during June to the end of August. The infestations on lizards were more prevalent on male than female in this area. While, the movement of different species of male and female lizards was under supervision; the results indicated that the males are more active than the female in this two species (*Trachylepis vittata* and *Trapelus lessonae*). The other result of this research on the habit of lizard movement shows that the female lizards had a speed running pause (stop) after 2.5-3 meters per 45-56 second. Male lizards had a less speed running pause (stop) after 18-24 second; it means that the male were run non stop for average distance of 5- 6 meter and than stop and started to run again. The comparison in this result is that the experimental female lizards stop and stay longer than female in the field and this make more chance for the tick to attached to the reptile. The other results of this study shows that the maximum and minimum

distance of lizard movement per day were in order 365 meter and 139 meter mostly they stay for a long time in one place near to the bushes for hunting the insect. They move inside their own land and they do not go far from their territory. The other observation was the fighting between two lizards; this fight may be due to protection of territory, access to food and competition at mating time (Table 2). The skins of some species of lizards were dissected and observed that the female skins are softer or less rougher and some extent thinner than the male lizards. Most of the times when we handle the lizard in the cases of the female, we found some sort of the secretion coming out of the vaginal portion possibly due to scaring reaction).

Table1: Prevalence of ticks in lizards (first digit exhibits number of tick and the second digit exhibits the percent of thick)

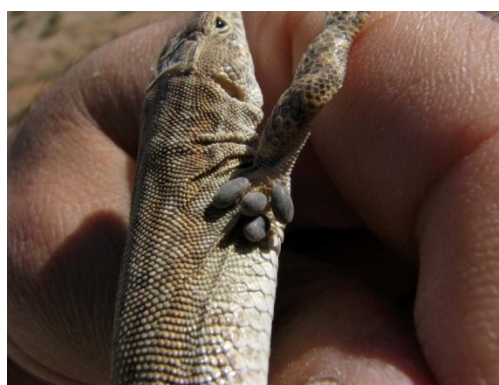
Ticks	<i>Trachylepis vittata</i>		<i>Trachylepis A. transcaucasica</i>		<i>Trapelus lessonae</i>		<i>Laudakia nupta</i>		Overall percentage
	Male	Female	Male	Female	Male	Female	Male	Female	
<i>Hyalomma spp</i>	5(31.2%)	7(31.8%)	3(16.6%)	2(12.5%)	8(47.05%)	5(35.71%)	6(54.5%)	2(13.1%)	38(29.4%)
<i>Haemaphysalis spp</i>	3(18.7%)	4(18.1%)	1(5.5%)	4(25%)	2(11.7%)	0	5(45.4%)	3(20%)	22(17.05%)
<i>Repicephalus sanguineus</i>	2(12.5%)	0	3(16.6%)	1(6.25%)	3(17.6%)	4(28.5%)	1(9.09%)	4(26.6%)	18(13.9%)
Total parasites	10(62.5%)	11(50%)	7(38.8%)	7(43.7%)	13(76.4%)	9(64.2%)	12(72.7%)	9(60%)	78(60.4%)

Table 2: Distances movement for each lizard per a day in meter

Lizard No	Day 1	Day2	Day3	Day4	Day5	Day6
1	208	318	285	141	314	322
2	181	239	301	184	151	208
3	314	285	165	219	261	322
4	168	345	211	298	314	360
5	144	291	334	143	261	298
6	289	139	319	308	165	231
7	251	189	322	206	165	365
8	361	182	261	151	238	356
9	318	148	225	329	142	199
10	215	300	208	252	322	349
11	255	321	241	138	269	362
12	329	01	185	250	356	215



Pic 1: Nymphs and adult tick on auxiliary and front leg of the *Trachylepis a. transcaucasica* lizard



Pic2: Adult tick on *Trachylepis a. transcaucasica* lizard

**DISCUSSION**

Reviewed ten species of ticks (three of the Argasidae, seven of the Ixodidae), parasitizing west palaeartic tortoises of the genus Testudo were reported by Barnard and Durden [16] and first and last presence of ticks on Testudo graeca turtle in Iran has been reported by Nabian and Mirsalimi [11]. In this study *Hyalomma aegyptium* were recognized from testudo graeca turtle the site of tick were on front leg of turtle. In this study we found the nymph and adult tick of *Rhipicephalus spp* on *Trachylepis vittata* lizard. It shows that after hatching the eggs the larvae are crawl on their host and it is in agreement with reported

that *Rhipicephalus spp* one host tick; all stages are spent on one animal. The eggs hatch in the environment and the larvae crawl up grass or other plants to find a host. The prevalence of ticks was more prevalent in June to end of August [17] they work on host gender, and are influence by the season. Newly attached seed ticks (larvae) are usually found on the softer skin inside the thigh, flanks, and forelegs. They may also be seen on the abdomen and brisket. Our observation on the lizard in this study shows that reptiles live in their own area and they do not go far away from their territory.

Results of the present study show that the female movements of the lizard are less and stay in one place more than male. The result also indicated that the prevalence of parasite is more on female than male. The reason could be that they stop for longer period in field than male and there will be more chance for parasites eggs or larvae to attach to the lizard. Scali et al [18] reported that the intensity of infestation is depend on host as well as tick activity. There are some publications in agreement with our result indicating that the female were more infested than the male lizard in Slovakia, Poland and Romania [19,20]. However, Talleklint-Eisen and Eisen [21] reported opposite results supporting that male lizard were more infested than the female. Scali et al [18] reported that this phenomenon is probably related to behavioral differences and mating activity. We also measured the distance that lizard move around and the data collected shows that the male are going more far than the female from their own territory but they not stay (pusses) one place than the female. Due to longer stay of female lizards, there will be more chance for expose than male lizards. Bauwens et al [22] and Eisen et al [17] reported that the home ranges of male individuals are larger than those of females and differ between lizard species. It can be concluded that if reptiles represents any ticks, it will be limited on their territory. However there are some concerns about tick born diseases, which may affect other animals and man. It is highlighted here that this study is the first report of lizard and turtle ticks from Ilam, Western Province of Iran.

## REFERENCES

1. Karaer Z, Guven E, Nalbantoglu S, Kar S, Orkun O, Ekdal K, Kocak A, Akcay A ( 2010) Ticks on humans in Ankara, Turkey. *Exp Appl Acarol*, 10.1007/s10493-010-9417-1.
2. Jongejan F, Uilenberg G ( 2004). The global importance of ticks. *Parasitol* 129: 3–14.
3. Labuda M, Nuttall PA (2004). Tick-borne viruses. *Parasitol* 129: 221–245.
4. Despommier DD, RW Gwadz, PJ Hotez, CA Knirsch(2000). *Parasitic diseases*. Apple Trees Prod, New York.
5. Magdalena N( 2010) The international trade in reptile (Reptilia) - The cause of the transfer of exotic (Acari: Ixodida) to poland. *Vet. Parasitol* 169: 373-381.
6. Burrige MJ, LA Simmons(2003). Exotic ticks introduced into the United States on imported reptiles from 1962 to 2001 and their potential roles in international dissemination of diseases. *Vet. Parasitol* 113: 289-320.
7. Hoover C (1998)The US role in the international live reptile trade: Amazon Tree Boas to Zululand Dwarf Chameleons. *Traffic North America*, Washington, DC, 59 pp.
8. Anderson CA(1979) Synopsis of the proceedings of the California Academy of Sciences fourth series, 22: 501-528:14.
9. Fathinia B, Rastegar-Pouyani N, Sampour M, Bahrami AM, Jaafari G (2009) The lizard fauna of Ilam province, Southwestern Iran. *Iran J Anim Biosystem* 5 (2): 65-79.
10. Siroký P, Petrzeková KJ, Kamler M, Mihalca AD, Modrý D (2006) *Hyalomma aegyptium* as dominant tick in tortoises of the genus *Testudo* in Balkan countries, with notes on its host preferences. *Exp Appl Acarol* 40 (3-4): 279-90.
11. Nabian S, Mirsalimi SM(2002) First report of *Hyalomma aegyptium* tick from *Testudo graeca* turtle in Iran. *J vet med, university of Tehran* 57 (3): 61-63.
12. Hoogstraal H, Santana FJ, Peenen PFD (1968) Ticks (Ixodoidea) of Mt.Sontra. Danang, Republic of Vietnam. *Ann Entomol Soci America* 61: 722-729.
13. Anastos G(1954) The 3<sup>rd</sup> Danish expedition to central Asia .Zoological result 12. Tick (*chelicerara*) from Afghanistan. *Videnskaceling meddester*.
14. Anastos G(1950) The *scutate* ticks or Ixodidae of Indonasia. *Entomol Americ* 30: 1-144.
15. Aydn L (2000) Distribution and species of ticks on ruminants in the southern Marmara Region. *Turk Parasitol-Dergi* 24 (2):194-200.
16. Barnard SM, LA Durden(2000) A veterinary Guide to parasites of Reptiles.vol.2, Arthropods (Excluding Mites).Krieger publishing company, Malabar, Florida.
17. Eisen RJ, Eisen L, Lane RS ( 2001) Prevalence and abundance of *Ixodes pacificus* immature (Acari Ixodidae) infesting western fence lizards (*Sceloporus occidentalis*) in northern California temporal trends and environmental correlates. *J. Parasitol* 87: 1301-1307.
18. Scali S, Manfredi MT, Guidali F (2001) *Lacerta bilineata* (Reptile, Lacertidae) as a host of *Ixodes ricinus* (Acari,Ixodidae) in a protected area of northern Italy. *Parassitologia*, 43: 165-168.
19. Viktoria M, Igor M, Martin H, Piotr T, Martin B, Marcin A, Bronislava V, Stefan D (2008) The role of the sand lizard (*Lacerta agilis*) in the transmission cycle of *Borrelia burgdorferi* sensu lato. *International J Medic Microbiol* 298: 161-167.
20. Lane RS, Loye JE (1989) Lyme disease in California: interrelationship of ixoded ticks (Acari) rodents, and *Borrelia burgdorferi*. *J. Med. Entomol* 28:719-725.

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21. Talleklint-Eisen L, RJ Eisen(1999). Abundance of ticks (Acari): Ixodidae) infesting the western fence lizard, *Sceloporus occidentalis*, in relation to environmental factors. *Exp.Appl.Acarol* 23: 731-740.
22. Bauwens D, Strijbosch H, Stumpel AHP (1983). The lizards *Lacerta agilis* and *L.vivipara* as hosts to larvae and nymphs of the tick *Ixodes ricinus*. *Ecograph* 6: 32-40.

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