New Record of Two Species of Hard Ticks from Some Domestic Animals in Basrah - Iraq

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Abstract

A survey of hard ticks which infested some domestic animals in Basrah province was carried during the period from March till August 2004. *Hyalomma anatolicum excavatum* was found to infest cattles, buffalos and donkeys for the first time in Iraq, while *H. asiaticum* was recorded infesting cattles for the first time in southern area, whereas *Rhipicephalus turanicus* and *R. sanguineus* were found to infest dogs and cats for the first time in Iraq respectively.

Key words: Hard ticks, *Hyalomma , Rhipicephalus, Boophilus,*.

Introduction

The survey which was carried out on the distribution of ticks in Basrah [1,2,3] reported the prevalent of *H.anatolicum anatolicum, H. marginatum turnicum, R. sanguineus* and *Boophilus annulatus,* the cattles were found to be heavly infested with *Hyalomma,* where as the sheeps carried the *Rhipicephalus* spp and *Boophilus* spp. The larval, nymphal and adult stages of *Boophilus* spp. were all spent on the same post animal. Engorged females dropp of and lay 2000 to 4000 eggs during the next 12 to 14 days. Newly hatched larvae are quite active, crawling to the tips of grasses and other plants, where they often accumulate in great numbers. After reaching a host, they remain until breeding and feeding. Obviating the finding of two or three hosts during its life has obvious [4]. *Hyalomma* spp. can be transmiting in various pathogenic agents. *H.anatolicum excavatum* and *H.asiaticum* transmit *Theileria annulata* of cattles [5]. While *H. dromedarii* transmit Crimean Congo Hemorrhagic Fever Virus, Kadam Virus, Dera Ghazi Khan Virus, Dhor Virus, Q Fever (*Coxiella burneti*), theileriosis of camel (*T. camelensis*) and cattle (*T. annulata*) [5]. *B. annulatus* transmits Taxas Cattle Fever, also called Red Water Fever, also *Babesia bigmenia* was transmitted from the adult female to their progeny by the way of their ovaries. Transoviral transmission of disease organisms is the only mechanism that allows one host ticks to serve as vectors [6].The present study focused on the taxonomy and the distribution of hard ticks in different domestic animals in Basrah province .

Materials and Methods

Eight areas in Basrah province were surveyed during the period from March till August 2004. These include Hartha, Deyar, Qurna, Mudaina, city centre (Mushrak), Abu –Al Khasib, Shatt–AlAraband Zubair. A total of 60 cattles, 60 sheeps, 40 goats, 80 buffalos, 50 horses, 10 camels, 5 donkeys, 25 cats, 25 dogs, were examined for the presence of hard ticks. Information concerning number and genus of ticks was recorded also.

A- Ticks collection:

Adult ticks were collected from animals by forcep and cotton which contain alcohol. The number of male, female and the immature stages of ticks were recorded. The specimens were preserved in vail's containing 70% ethyl alcohol for identification.

B- Preparation of microscopical slides:

Specimens of ticks containing host tissue in their mouth are cleaned by special brush then placed in 10% KOH for softing, small specimens required 2 days in 35°C, large specimens required 2 weeks in 35°C. The larva and nymph required one day only in 35°C.

For adult this process can be accelarated by the temperature up to 45°C. The specimens were washed several times with 70 % alcohol, then placed in the same concentration (2-4) hrs to remove KOH. In case of large specimens slow press by blunt forcep on dorsal and ventral of ticks were required. The specimens placed in 50% lactic acid at (40-45)°C for (2-3) days and mounted in Hoyer's medium under dissecting microscope. The slide is placed on hot plate (45°C) for 2 days to dry.

The initial identification of ticks was carried out in Basrah and then confirmed by Iraq Natural History Research Centre and Museum / University of Baghdad.

Results and Discussion

The taxonomic scheme of the hard ticks is as follows:

1. *Hyalomma* is unique genus found in the cattles, sheeps, buffalos, goats, horses, camels and donkeys. (Table: 1)

Table (1): Shows the *Hyalomma* species and variety which found in different hosts in Basrah

cattle	Sheep	Buffalo	Goat	Horse	Camel	donkey
H. anatolicum anatolicum	*H. anatolicum anatolicum*	*H. anatolicum excavatum*	*H. marginatum turanicum*	*H. marginatum turanicum*	*H. marginatum turanicum*	*H. anatolicum excavatum*
H. marginatum turanicum		*H. marginatum turanicum*	*H anatolicum anatolicum*	*H. anatolicum excavatum*	*H. anatolicum excavatum*	
H. asiatcum		*H. detritum*		*H.dromedarii*		
H. detritum				*H. detritum*		
H. anatolicum excavatum						

2. *B. annulatus* is unique genus found infested the cattles.
3. *R. turanicus* was found infested cattles, sheeps, goats, cats and dogs while *R. sanguineus* was found infested cats and dogs. The cattles, buffalos and donkeys were recorded as a new host for *H. anatolicum excavatum* for the first time in Iraq while cattles was recorded as a new host for *H. asiatcum* for the first time in southern area, moreover, the dog was recorded as a new host for *R. turanicus* for the first time in Iraq and *R. sanguineus* was found infested the dogs for the first time in southern area and infested the cats for the first time in Iraq.

The main characteristic features of *Hyalomma spp* and *Boophilus* spp.

The mouth part of *Hyalomma spp*. is larger than the basis capituli, second and third palpal segments approximately have the same length. Eyes are present, festoons are irregular, spiracles comma–shaped in male, triangular in female [7].

1. *H. anatolicum excavatum*:

Male: (Fig. 1 - A, B) (No. of specimens = 24 , length = 4.2 mm , width = 2.1 mm**)**

Lateral grooves are short, not reaching scutum mid length. Punctation few on centralscutum.Subanalandadanalshield in same axis (but subanals may be laterally displaced in engorged specimens or absent in small, trail specimens). Larger, robust, dark. Scutum 4-6 mm long; central punctations deep, caudal depression with many small punctations (few if any large); postero - medium groove and parma separated by bridge like extension or usually fusion of para - parmal festoons; ridges besides caudal field distinctly elevated. Adanal shields are heavily chitinized, margins convex, usually rectangular apically subanal shields usually present, less elongate, heavily chitinized. Legs are light brown some times faintly striped, usually marbled when dry .

Female: (No. of specimens = 16, length = 6.9 mm, width = 4.3 mm**)**Genital apron distinctly broader than long (broadly oval; triangular, or shield shaped). Scutum length is more than 2.00

mm. Genital apron typically widely triangular (may be circular or elongately triangular). Scutum heavily chitinized, large punctations deep. Leg rings faint reddish-brown; III and IV usually marbled dorsally when dry.

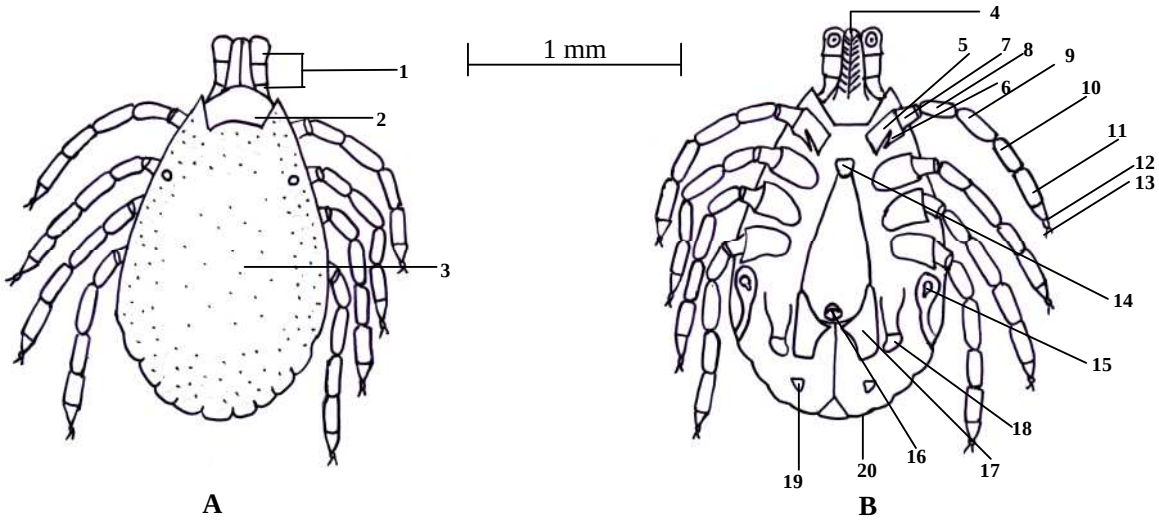
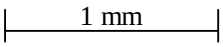


Fig. 1: *H. a. excavatum* [male - dorsal (A) and ventral view (B)]

2. *H. asiaticum*



Male: (Fig. 2 – A,B) (No. of specimens = 3 , length = 3.7 mm , width = 1.6 mm**)**

The colour of scutum varies from light tan to reddish black. Punctation are large and sparse, stigmal plate have long projection. A danal shield is elongated with an inside projection. Sub and anal shields are of medium size, they extend longitudinally and are placed below the adanals. Capitulum is long. Posterior margin of basis capituli has angular depression.

Female: (No. of specimens = 2 , length = 6.1 mm, width = 3.7 mm**)**

The colour of scutum is light tan to black. Stigmal plate has long, narrow , sharply bent, dorsal projection. Basis capituli has porous areas that are elongated and oval; they are separating a sharply projecting Keel and have a more or less parallel lateral margin .

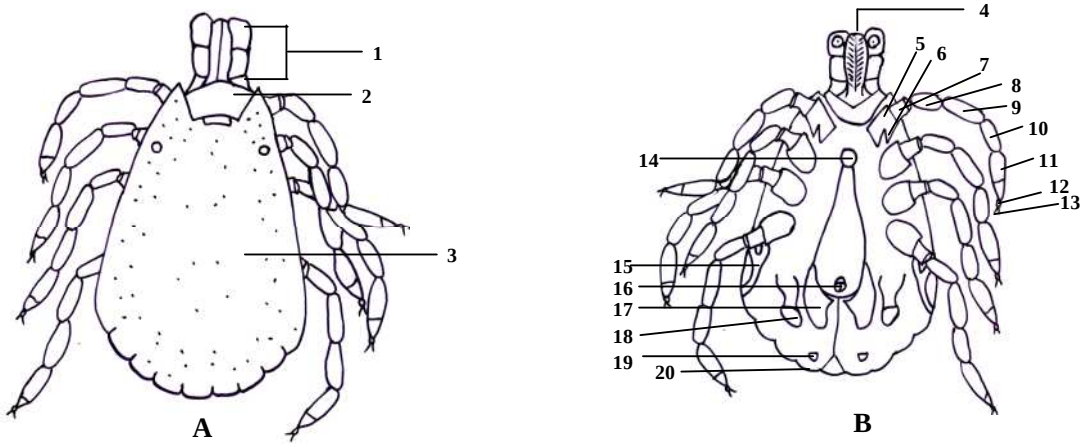


Fig. 2: *H. asiaticum* [male - dorsal (A) and ventral view (B)]

3. *H. dromedarii*

Male: (Fig. 3 – A, B) (No. of specimens = 3 , length = 4.6 mm, width = 2.3 mm**)**

Lateral groove short, not reaching scutum mid length, punctations few on central scutum. Sub anal shields are exterior to axis of adanals. Spiracular plate is dorsal extension long, narrow. Parma is moderate sized or small, sub triangular. Posteromedium groove reaching parma .**Female:(**No. of specimens = 1 , length = 7.4 mm, width = 4.1 mm**)**Genital apron is elongately triangular or circular. Genital apron triangular, narrowly pointed, margin definitely longer laterally than anteriorly; surface profile gradually depressed. Scutum usually as broad as or broader than long. Capitulum length; breadth ratio 1.2: 1.0. Scutum cervical punctations few, large, indistinct. Coxa I internal spur a pex bluntly pointed. Leg segment colors moderately contrasting .

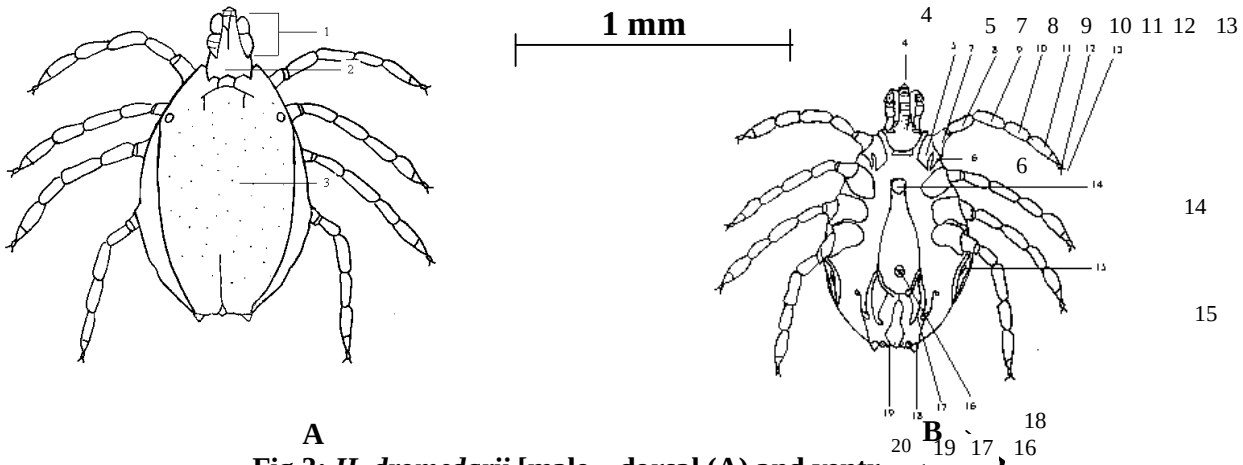


Fig.3: *H. dromedarii* [male – dorsal (A) and ventral view (B)]

4. *B. annulatus*

The *Boophilus* spp. have a hexagonal basis capituli [6]. Palps and hypostome are short; palps with prominent transver ridges. Anal groove obsolete in female, faint in male and surrounding the anus posteriorly. Inornate. Eye present. Festoons absent. Coxa I bifid. Spiracles circular or oval. Males small provided with adanal or accessory shields and a caudal process, fourth pair of legs of ordinary size [7].

Male: (Fig. 4 - A, B) (No. of specimens = 3 , length = 3.2 mm ,

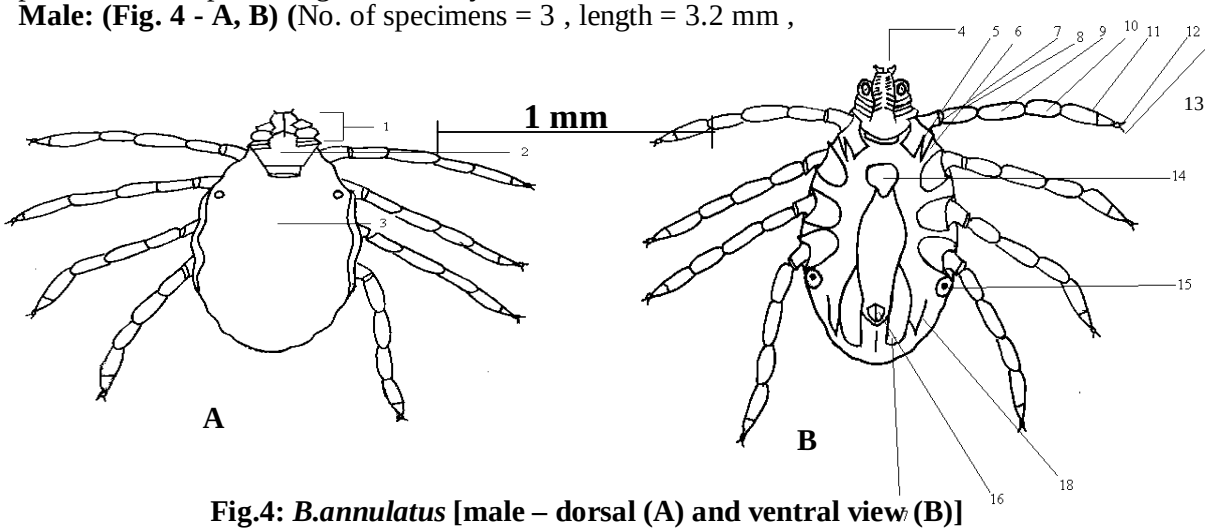


Fig.4: *B.annulatus* [male – dorsal (A) and ventral view (B)]

width = 1.4 mm**)**Body lacking caudal appendage. Palpal segment I is lacking inner setriferous tubercels. A danal shield is lacking posterior spur. Dental formula 4/4 .

Female:(No. of specimens = 1 , length = 5.8 mm, width = 3.6 mm**)** Palbal segment I is lacking inner setiferous tubercle. Coxa I posterior margin is mildly concave between spurs. Dental formula 4/4 . In this study it was found that the genus *Hyalomma* was found most common indomestic animals in Basrah. *H. marginatum turanicum* and*H. anatolicum excavatum* were found infested the cattles for the first time in Iraq, while *H.asiaticum* was found infested the cattles of the first time in the southern area. *H. anatolicum excavatum* was found infested the buffalos and donkeys for the first time in Iraq. The study showed that the cattles had the highest intensity infection with ticks. The cattles mostly kept in the barns is far from the effect temperature compared with other animals that live in an opening environment which is directly effected with temperature [8]. The presence of Hyalomma spp. in Basrah provinse may be due to the comparatively higher relative humidity. It was reported that the *H. marginatum turanicum* is cosmopolitan infested sheeps, goats, buffalos, camels, hares and *H. anatolicum excavatum* is cosmopolitan in the desirt area and semi desirt where infested sheeps, horses and camels [8].The cosmopolitan of this species may be due to the presence of small mammals which acquired the infection and hid in small holes [5]. *H.asiaticum* was found in Mousil where infested sheeps and cattles. *Hyalomma* spp. are not host - specific and infested domestic more than wild animals, and sometimes the infection is distinct in small wild animals which is usually infested by nymph or larva [8]. *H.dromedarii* was recorded to infest the horses only, and less specific for primary host (camel). The cosmopolitan of this species may be due to the presence of large number of hosts as rodents and small mammals in the environment (Two hosts) [9]. It was mentioned that the hosts were limiting the effect growth of larval stages of hard ticks [10]. *B. annulatus* was found to infest the cattles (one specimen only). This species is cosmopolitan in the little numbers were infested sheeps, cattles, buffalos, horses and donkeys [8]. Similar result was reported by [1]. More specimens were collected previously from Baghdad city [11]. In the present study dogs and cats were reported as a new hosts for *R. turanicus* and *R. sanguineus* respectively and their finding represent the first time in Iraq. The *R. turanicus* infested sheeps, cattles and cats, this cosmopolitan is due to their extent tolerance of different conditions [8]. Also *R. sanguineus* was found in the middle and north of Iraq [8].

Conclusion

This study showed that the cattles has the highest intensity infection by tick among the other examine animals in Basrah. *Hyalomma* spp. are more common in domestic animals due to the comparatively higher relative humidity in the southern area. *H. anatolicum excavatum* was found to infest cattles, buffalos and donkeys for the first time in Iraq, while *H. asiaticum* was found to infest cattles for the first time in southern area. *H. dromedarii* was found to infest the horses. Where as only *R. turanicus* and *R. sanguineus* were found infest the dogs and cats for the first time in Iraq.

الخلاصة

اجري مسح شامل لأنواع القراد الصلب الذي يصيب بعض الحيوانات الداجنة في محافظة البصرة للفترة من آذار ولغاية آب 2004. سجل النوع *Hyalomma anatolicum excavatum* باصابته للابقار والجاموس والحمير لأول مرة في العراق، في حين سجل اصابة النوع *Hyalomma asiaticum* لأول مرة في أبقار المنطقة الجنوبية. ومن ناحية أخرى سجل اصابة النوعان *Rhipicephalus turanicus* و *Rhipicephalus sanguineus* في الكلاب والقطط لأول مرة في العراق على التوالي.

1. Capitulum
2. Basis Capitulum
3. Scutum
4. Hypostome
5. Coxa
11. Tarsus
12. Pulvillus
13. Claws
14. Genital opening
15. Stigmal plate

6. Coxal spur	16. Anus
7. Trochanter	17. Adanal shield
8. Femur	18. Accessory shield
9. Tibia	19. Subanal shield
10. Pretarsus	20. Festoon

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