

## DISTRIBUTION OF HARD TICK SPECIES AMONG SHEEP *OVIS ARIES* L. IN AL-ANBAR PROVINCE, WESTERN DESERT OF IRAQ

Mohammad K. Mohammad\* and Suhad Y. Jassim  
Iraq Natural History Research Centre and Museum, University of Baghdad,  
Bab Al-Muadham, Baghdad, Iraq  
\*email: [amarmkm82@yahoo.com](mailto:amarmkm82@yahoo.com)

### ABSTRACT

The Middle East fat tailed sheep *Ovis aries* L. examined within the boundaries of Al-Anbar province, western Iraq was found to acquire seven species of ixodid ticks namely, *Hyalomma anatolicum*, *H. excavatum*, *H. marginatum turanicum*, *H. detritum*, *Hyalomma* sp., *Rhipicephalus turanicus* and *R. s. sanguineus*. The results discussed with the pertinent literature.

### INTRODUCTION

Al-Anbar Province occupies most of the western desert area and constitutes a very important pasture land for domestic animals. Thalen (1979) considered western desert district as one of five divisions of physiographical zones of Iraq. It has a subtropical, continental and arid climate. Rainfall is mainly in winter and early spring (November-April). Summer is dry and hot. Temperature is 45°C in July and August, while in December and January frost is regularly recorded.

The Middle East fat tailed sheep *Ovis aries*, goat *Capra hircus* and camel *Camelus dromedarius* are the most important domestic animals raised by local Bedouins. The estimated number of sheep is 5.582 million according to 1971 statistics. No current estimation is available now.

Family Ixodidae (hard ticks) is the largest family of ticks and contains 713 valid species (Barker and Murrell (2004), some of them play major role, as vectors, in spreading different diseases of livestock and human beings throughout the world (Kakar and Kakarsulmenkhel, 2008). Works on ixodid tick fauna of Iraq is rather fragmentary and scanty, most of them represent surveys from domestic animal with a very small part of attention to the ticks of wild vertebrates. This includes early works of Hubbard (1955), Hoogstraal and Kaiser (1958), Robson and Robb (1967), Robson *et al.* (1968 a, b, c; 1969 a, b, c) in series of publications composed of seven papers deal with examination of domestic animals infestation in Baghdad, Kut, Amara, Basra, Hilla, Karbala, Diwaniya, Nasiriya and Mosul Provinces, but surprisingly, they did not examined any from Al-Anbar Province. Two decades later, Shamsuddin and Mohammad (1988) in their survey for ticks in Al-Anbar province mentioned presence of four ixodid tick species: *Boophilus kohlsi*, *Hyalomma a. anatolicum*, *Rhipicephalus leporis*, *R. turanicus* as well as *Hyalomma* nymphs. They found that 88.6% of sheep in whole Iraq were infested with six species of hard ticks belonging to *Hyalomma*, *Rhipicephalus* and *Boophilus* genera. While Abdul-Rassoul and Mohammad (1988) in their work on the ticks of desert in Iraq found sheep infested with six ixodid tick species, five of them belong to *Hyalomma* and

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one to *Phipicephalus*. Then Mohammad (1996) found that sheep of western desert were infested with four *Hyalomma* spp. and two *Rhipicephalus* spp.

The aim of this work is to investigate about hard ticks infest the sheep in Al-Anbar Province as the sheep are the most important animals raised by locals.

### MATERIALS AND METHODS

This study depends on 490 specimens of ixodid ticks of the collection of Iraq Natural History Research Center & Museum and the personal collection of the authors collected through filed trips to the area achieved during 2004-2009.

### RESULTS AND DISCUSSION

Table (1) summarizes the results of this study. This would show that 36.7% of collected specimens belong to *Hyalomma excavatum*, 30.6% to *H. anatolicum*, 16.3% to *H. marginatum turanicum*, 8.1% to *Rhipicephalus s. sanguines*, 2% to *R. turanicus* and 4% to *Hyalomma* sp. This in general agreement with the findings of Abdul-Rassoul & Mohammad (1988) although there are some differences in the values of infection rates. They found that *H. excavatum* was the most dominant species. They found also that 93% of examined specimens belong to geuns *Hyalomma*, while this study shows that 89.9% belong to *Hyalomma*.

Table (1): Species, number of specimens, percentages of ticks infesting sheep in Al-Anbar Province.

Tick species	Number of ticks	% of total ticks
<i>Hyalomma anatolicum</i>	150	30.6
<i>H. excavatum</i>	180	36.7
<i>H. detritum</i>	10	2
<i>H. marginatum turanicum</i>	80	16.3
<i>Hyalomma</i> sp.	20	4
<i>Rhipicephalus turanicus</i>	10	2
<i>R. s. sanguineus</i>	40	8.1

Mohammad (1996) mentioned that *Hyalomma* was considered to be the most dominant genus and widely distributed in the western desert. This may because they are less specific to their hosts in addition its adaption to the arid environment and high temperature at this region.

Reporting *Hyalomma marginatum turanicum* and *H. detritum* from sheep with relatively low rate of infestation agrees with Abdul-Rassoul & Mohammad (1988) and Shamsuddin & Mohammad (1988) except for the second species which was absent from the list of ticks infest sheep provided by later paper.

Al-Khalifa *et al.* (2007) in their study on ticks infesting camels in Saudi Arabia found that infestation rate with *Hyalomma excavatum* exceeded that of *H. anatolicum*. This is in agreement with the present results. They thought that host preference was the reason for their findings. However, it is justified to say that it is true also to assume that *H. excavatum* is more adapted to desert environment than *H. anatolicum*. The same finding was observed by Nabian and Rahbari (2008) in their paper on the occurrence of soft and hard ticks on ruminants in Zagros Mountainous areas of Iran.

Presence of five species out of seven found in this study belong to genus *Hyalomma* is rather not surprising and the studied area, with its arid environment, is not an exception.

Kolonin (2009) in his book "fauna of ixodid ticks of the world" stated that the genus *Hyalomma* is a small flourishing group of ixodid ticks well adapted to living in arid biotopes, and a high degree of adaptation to hot and dry open habitats becomes apparent in the morphology (well developed spherical eyes, high legs), physiology (successful metamorphosis under reduced humidity) and behavior (active search of host) of species of this genus, he added also that ticks of this genus occur only in dry areas of the Old World.

On the other hand, the results show that 10.1% of ticks belong to genus *Rhipicephalus*. Two species of this genus are recorded in this study namely, *Rhipicephalus s. sanguinus* and *R. turanicus* with infestation rate of 8.1% and 2% respectively. This is rather surprising from two points of view, first is the previous studies in Iraq which showed higher infestation rate, for example Abdul-Rassoul and Mohammad (1988) found it 19.9%, while Al-Khalifa *et al.* (2007) in Saudi Arabia found it ranging between 86.2%-89.2% in a two years study. This somewhat hard to explain but more extensive collection of ticks from sheep may reveal the actual situation of these two species in this area. The second surprise is that infestation rate of *Rhipicephalus s. sanguineus* exceeds that of *R. turanicus*. This may be correlated to the continuous presence of guard dogs to the herds of sheep all the time, day and night. It is known that the first species (the brown dog tick) usually infests dogs while the second infests sheep and goats.

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## توزيع انواع القراد الصلب بين الضأن *Ovis aries* L. في محافظة الانبار، صحراء العراق الغربية

محمد كاظم محمد و سهاد ياسين جاسم  
مركز بحوث ومتحف التاريخ الطبيعي جامعة بغداد، باب المعظم، بغداد،  
العراق

### الخلاصة

تم فحص الضأن *Ovis aries* L. ضمن حدود محافظة الانبار، غرب العراق  
ووجد بانها تصاب بسبعة انواع من القراد الصلب وهي:  
*Hyalomma anatolicum*, *H. excxavatum*, *H. marginatum turanicum*, *H.*  
*detritum*, *Hyalomma* sp., *Rhipicephalus turanicus* and *R. s. sanguineus*.  
نوقشت النتائج في ضوء البحوث ذات العلاقة.