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## SURVEY OF TICK SPECIES INFESTING THE ONE HUMPED CAMEL (*CAMELUS DROMEDARIUS*) IN BORNO STATE, NIGERIA

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### ABSTRACT

A survey study of ticks of the one humped camel was conducted in Borno State, Nigeria between March and August 2007. Out of the 1054 ticks collected from 96 camels *Hyalomma dromedarii* had 928 (88.1%); *Boophilus decoloratus* 114 (10.8%); *Amblyomma variegatum* 9 (2.9%), while *Rhipicephalus evertsi* had 3 (0.3%) prevalence rates ( $p < 0.05$ ). Tick species had the highest preference for the perineum 82 (85.4%) with a tick burden of 354 and least preferred the abdominal flanks with 3(3.1%) with tick burden of 13, the scrotum 3(3%) with a tick burden of 13 and the hump 3(3.1%) with a tick burden of 5( $p < 0.05$ ). Tick infestation was highest on camels aged between 3 and 8 years with 52 (54.2%) and least be 8(8.3%) between 15 and 19 years, while female camels were more infested 63(65.6%) than the male with 33 (34.4%) ( $p < 0.05$ ).

**Keywords:** - Survey, ticks, camels, Borno, Nigeria.

### INTRODUCTION

The one humped camel widely believed to be a comparatively hardy animal herded in semi arid and arid areas in Africa (OIE 2003) has an estimated global population of 17.44 million increasing at a rate of 1.62% annually (Biu and Abbagana 2007). The camel population in Borno State comprises mostly of those being traded between Niger and Chad Republics, mostly serving as a means of transport, food in terms of meat and milk and industry (Biu and Abbagana 2007). Camels are afflicted by tick transmitted haemoparasitic diseases with significant production losses. Apart from the preliminary studies of ticks of camels in this study area (James- Rugu 2004) there is paucity of data relating to their predilection site and burden, thus this study was fashioned to provide these details with a hope towards proffering effective tick control methods.

### MATERIALS AND METHODS

**Study Area:** - Borno State with Maiduguri as its capital lies between latitude 10.20<sup>N</sup> and 13.40<sup>N</sup> longitude 9.80<sup>E</sup> and 14.40<sup>N</sup> with an area of 69,436 sq km located in the North eastern corner of Nigeria sharing borders with Niger to the North, Chad to the Northeast and Cameroun to the East (Musa and Pindar, 2005). The State has Sahel vegetation in the North and a Sudan Savanna in the South.

**Sample Collection and Identification:** - Visits were made to the metropolitan livestock market and central abattoir between March and August, 2007, during which ninety six one-humped camels were randomly examined and ticks collected into specimen bottles containing 2% formalin as preservative. In the parasitology laboratory, University of Maiduguri individual

ticks were examined under a dissecting microscope and identified using the keys of Soulsby (1982). Afterwards each tick was mounted using Canada Balsam to identify their species using taxonomic characteristics such as shape and length of mouthparts, punctuations and ornations, leg bands, presence or absence of festoons as described by Hoogstraal (1966).

**Statistical Analysis:-** Data on the tick species identified, their predilection site, sex and age of the host, tick burden and distribution were analyzed using the students "t" test with "p" values equal to or less than 0.05 considered significant (Dibal, 1991).

## RESULTS

The results as shown in Table 1 indicate that a total of 1054 ticks were collected on the 96 camels examined with *Hyalomma dromedarii* having 928 (88.1%) ; *Boophilus decoloratus* 114 (10.8%) while *Amblyomma variegatum* and *Rhipicephalus evertsi-evertsi* had 9(0.9%) and 3 (0.9%) and 3 (0.3%) respectively. Table 2 shows the prevalence of ticks based on the age and sex of the camels. Ages between 3- 8 years had a higher prevalence of 52 (54.2%) compared to 9-14 years with 36 (37.5%) and 15-19years with 8 (8.3%)( $p < 0.05$ ). Female camels were more infested 63(65.6%) compared to the male with 33(34.4%)( $p < 0.05$ ). Table 3 shows prevalence of ticks and tick burden based on predilection site. Ticks were most common on the perineum 82(85.4%) with a tick burden of 354, while the least preference was for the abdominal flanks with 3(3.1%) with a tick burden of 13, the scrotum with 3(3.1%) and a tick burden of 13 and the hump 3(3.1%) with a tick burden of 5( $p < 0.05$ ). Monthly distribution of ticks infesting one humped (dromedary) camel in Borno State between March and August, 2007 shows that the month of August had the highest mean tick burden of  $15.1 \pm 3.0$  and the highest number of ticks collected in the month as 241 (Table 4).

**Table 1: Prevalence of ticks infesting camels in Maiduguri**

Tick species	No (%) collected (n=1054)
<i>Hyalomma dromedarii</i>	928 (88.1)
<i>Boophilus decoloratus</i>	114 (10.8)
<i>Amblyomma variegatum</i>	9 (0.9)
<i>Rhipicephalus evertsi</i>	3 (0.3)

**Table 2: Prevalence of tick species based on the age group and sex of camels examined**

	No (%) of Camels infested (n=96)	No (%) infested with			
		<i>Hyalomma dromedarii</i>	<i>Boophilus decoloratus</i>	<i>Amblyomma variegatum</i>	<i>Rhipicephalus evertsi</i>
<b>Age group (years):</b>					
3-8	52(54.2)	41(78.9)	10(19.2)	3(5.8)	-
9-14	36(37.5)	31 (86.1)	07 (19.4)	1(2.8)	-
15-19	08(8.3)	08(100)	03(37.5)	-	-
<b>Sex:</b>					
Male	33(34.4)	28(84.9)	10(30.3)	2(6.1)	-
Female	63(65.6)	52(82.5)	10(15.9)	2(3.2)	1(1.9)

**Table 3: Tick burden based on predilection site**

Predilection site	No. (%) of camels infested	No. of ticks collected (Burden)	Mean ± SD of ticks collected
Abdominal region	3(1.2)	13	4.3±3.2
Chest region	9(3.5)	34	3.8±1.1
Ear	63(24.1)	267	4.2±1.8
Face	6(2.3)	30	5.0±2.0
Hump (Torso)	3(1.2)	05	1.6±0.6
Inguinal region	31(11.9)	112	3.7±1.9
Interdigital space	10(3.8)	40	4.0±3.7
Perineum	82(31.4)	354	4.2±1.8
Scrotal area	3(1.2)	13	4.3±2.3
Thigh	7(2.7)	19	2.7±1.1
Thoracic region	24(9.2)	89	3.7±1.5
Udder	20(7.7)	78	3.9±1.6
Total	261	1054	

**Table 4: Monthly distribution of Ticks**

Month	No. of ticks collected	Mean $\pm$ SD
March	161	10.1 $\pm$ 4.8
April	183	11.4 $\pm$ 6.8
May	127	7.9 $\pm$ 2.6
June	183	11.4 $\pm$ 3.6
July	159	9.9 $\pm$ 3.4
August	241	15.1 $\pm$ 3.0

## DISCUSSION

The findings in this study of *Hyalomma*, *Boophilus*, *Amblyomma* and *Rhipicephalus* species infesting camels with *Hyalomma* ticks predominating the other species are in line with observations by James Rugu (2004) on ticks of northeastern Nigeria,; Amoo *et al.*, (1984) in southwestern Nigeria; Mohammed (1976) in north central Nigeria, and eastern Nigeria by Okon and Obiekazie (1981) who described them as vectors of livestock. haemoparasitic diseases. In addition, similar results and observations were being reported from other parts of the country and Africa at large (Opara and Okoli, 2005, Sertse and Wossene, 2007). The findings of more preference to the perineum and ears of camels by ticks in this study also agrees with the observations by Basu (1993) and Irshad *et al.*, (2010) who explained that it could be due to accessibility of blood vessels, difference in the thickness of the skin in the different parts of the body, temperature or variation in microhabitat.

Also in this study more female camels were infested compared to the male, contrasting the reason proffered by Biu and Nwosu (1998), that the cultural practice of paying special attention to female animals by pastoralists reduces their infestation with ectoparasites. Young camels in this study were significantly more infested than their older ones. This could be attributed to the development of acquired immunity in older animals as described by Akhtar *et al.*, (2011) with effects ranging from simple tick rejection to interference to feeding, prolongation of feeding time, reduction in engorgement weights, inhibition of egg laying, decreased viability of eggs and death of the tick on the host. Tick burden was also shown to be highest on the camels during the month of August in this study. Rainfall, temperature and relative humidity are considered as the major determining factors. The rainy season which is heaviest in August provides a favourable environment for the tick's life cycle and increases their rate of infestation (host -vector contact) during browsing on green pasture (James-Rugu, 2004). In conclusion, there is the need to create awareness among livestock owners on the effects of tick infestation and the need to improve animal health extension services.

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