

TICK SURVEY IN ETHIOPIAN HEDGEHOGS (*PARAECHINUS AETHIOPICUS*) AT THUMAMAH, SAUDI ARABIA

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INTRODUCTION

Of all the mammals in Arabian Peninsula, the hedgehogs are perhaps the most primitive. Ethiopian hedgehog is well adapted for survival in extremely arid areas. However, within these areas it tends to favour the oases and vegetated wadis where food is more abundant. In Saudi Arabia, they hibernate in the cool weather (December to February) often in fox earths or disused tunnels dug by hares. However, even when hibernating for several weeks they will usually emerge every few days to feed (Harrison & Bates, 1991). Hedgehog feeds on scorpion, snails, spiders, snakes, insects, eggs and amphibians. It also eats seeds, berries, grasses and leaves. It survives up to 9-10 years (Aulagnier et al., 2008; Harrison & Bates, 1991; Macdonald, 1984)

Rhipicephalus sanguineus, kennel tick, is considered mainly parasite of dog known as a pan-African parasite now thrives on the entire world (Norval & Horax, 2004). This tick has been reported in wild animals: Arabian hare, Common Red Fox, Lesser Jerboa and Libyan Jird and domestic animals: dog, goat, sheep and camel (Hoogstraal et al., 1981). *R. sanguineus* was reported as vector of the CCHF virus, *Rickettsia rhipicephali*, *R. conorii*, *Rickettsia rickettsii*, *C. burneti*, *Ehlichia canis* and *B. canis* (Hoogstraal et al., 1981; Kahn, 2005). In general because ticks feed on the blood of vertebrate hosts, some species transmit such zoonotic diseases as human babesiosis and human *granulocytic anaplasmosis* (Brunner & Richard, 2008; Clark, 2012).

A study of was carried out from May–October 2012, the objective of which was to identify tick species prevalent in Ethiopian hedgehogs at Thumamah, at 1 km radius of King Khalid Wildlife Research Centre, Saudi Arabia, and assess the cross infestation of ticks in King Khalid Wildlife Research Centre's captive wild ruminant collection. This paper reports the findings of the study.

MATERIALS AND METHODS

Ethiopian hedgehogs were trapped over night with a 12.5x12.5x30cm Havahart™ live trap (EKCO Group Company, Pennsylvania, USA, figure 1). The following day they were anaesthetised with Isoflurane (ISOVET™, figure 2), using gas anaesthetic machine and vaporizer MatrX™ VIP 3000 (MIDMARK Corporation, NY, USA, figure 3). Ticks were collected using thumb forceps and preserved in 70% ethyl alcohol. Ticks were identified under stereomicroscope (Nikon Steroscopic Microscope, SMZ-2T™, Japan) in the KKWRC laboratory using the keys of Hoogstraal et al., (1981). Results were analysed with Graph pad InStat Software®

RESULTS AND DISCUSSION

A total of 995 adult (567males, 428 females) *Rhipicephalus* spp ticks were recovered from 57 Ethiopian hedgehogs (34 males, 23 females) at Thumamah. 17 immature stages of ticks were also identified. The maximum numbers of ticks collected from a single male and a single female hedgehog were 79 and 68 respectively and the minimum number was one from each. *Rhipicephalus sanguineus* (figure 4) was identified from all hedgehogs. The overall average mean recorded tick burden was 17.5 (SEM=2.09). Female hedgehogs carry a mean of 17.5 (SEM=3.6) and male hedgehogs carry a mean of 17.4 (SEM =2.6) ticks. There was no significant difference between them (t-test, P>0.05). There



Fig.1. Havahart™ live trap used to capture Ethiopian hedgehogs. Photo by Fekadu Shiferaw.

was no significant difference in numbers male and female ticks found (t-test, P>0.05). The highest number of male ticks collected from one hedgehog was 54 and female ticks were 39. Detail findings are depicted on tables 1 and figure 5. Because rodents are less active during the cold season (November to March), attempts to capture them during this season were unsuccessful.

	SEX OF TICKS		Total ticks
	M	F	
Ticks on male hedgehogs	366	227	593
Ticks on female	201	201	402
Total ticks	567	428	995

Table 1. Number of *Rhipicephalus sanguineus* ticks collected from Ethiopian hedgehogs at Thumamah during May–October 2012.

The tick species, *Rhipicephalus sanguineus*, recovered from Ethiopian hedgehogs have not been reported in the larger of mammals in the KKWRC collection nor from ground plots in the ongoing tick monitoring study in KKWRC and PMSGBC (Sheferaw, 2012). Bunnell et al. (2011) in North Yorkshire, England, reported that there is a strong correlation between health and tick load in hedgehogs, healthy animals being less likely to carry many ticks than sick ones. However, this is not the case in the hedgehogs in this study, all of which had good body condition and appeared healthy. The reasons for this difference might be worth investigation.

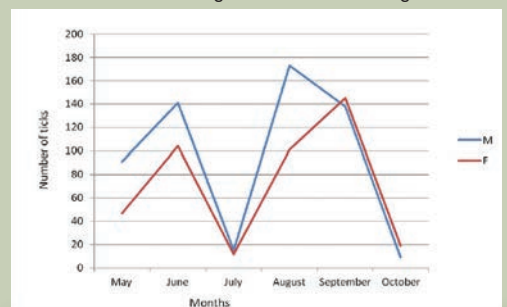


Fig. 5. Distribution of ticks in Ethiopian hedgehogs at Thumamah between May–October 2012.

The tick, *Rhipicephalus sanguineus*, seen here have been reported to infect larger and smaller domestic and wild mammals elsewhere and the role of these ticks in the transmission of disease has been documented. They could, therefore, be a potential threat to the KKWRC's animal collection and personnel.

All references and acknowledgements are available on the website version.



Fig.2. Male Ethiopian hedgehog under anaesthesia. Arrows indicate ticks. Photograph by Jorge Soares.

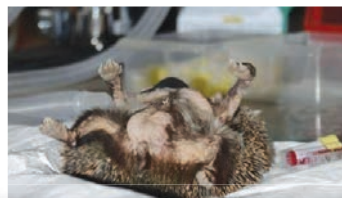


Fig.3. Male Ethiopian hedgehog under gas anaesthesia. Photograph by Jorge Soares



Fig.4. Dorsal view of male *Rhipicephalus sanguineus* collected from an Ethiopian hedgehog. Photograph by Fekadu Shiferaw.