

TICK SURVEY IN ETHIOPIAN HEDGEHOGS (*PARAECHINUS AETHIOPICUS*) AT THUMAMAH, SAUDI ARABIAFekadu ShiferawDesta¹ and Jorge F. Soares²¹Veterinary Clinical Officer (DVM, MSc WAH, Asst. Professor (Hon), King Khalid Wildlife Research Center, Saudi Arabia. Email- fdesta@yahoo.com²Head Veterinary and Laboratory Service (DVM, MSc WAH, MRCVS), King Khalid Wildlife Research Center, Saudi Arabia. Email - grec31@yahoo.com

ABSTRACT

A study of ticks was carried out in Ethiopian hedgehogs (*Paraechinus aethiopicus*) at Thumamah during May–October 2012 with the objective of assessing the tick species prevalent in Ethiopian hedgehogs and to examine cross infestation of ticks with King Khalid Wildlife Research Centre's captive wild ruminant collection. Traps were set and Ethiopian hedgehogs were captured overnight. The following day animals were collected, anaesthetised with Isoflurane in a gas chamber and explored for ticks in the veterinary clinic. In total 995 were collected from 57 Ethiopian hedgehogs, examined under a stereomicroscope and *Rhipicephalus sanguineus* was identified. In this study, a mean of 17.4 (SEM=2.09) ticks were recorded and there was no significant difference in the prevalence of male and female ticks in hedgehogs ($P>0.05$). Similarly no significant difference was found in the prevalence of ticks on female and male hedgehogs ($P>0.05$).

Key words: survey, tick burden, hedgehogs, disease transmission

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).



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

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 (Nokon 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®

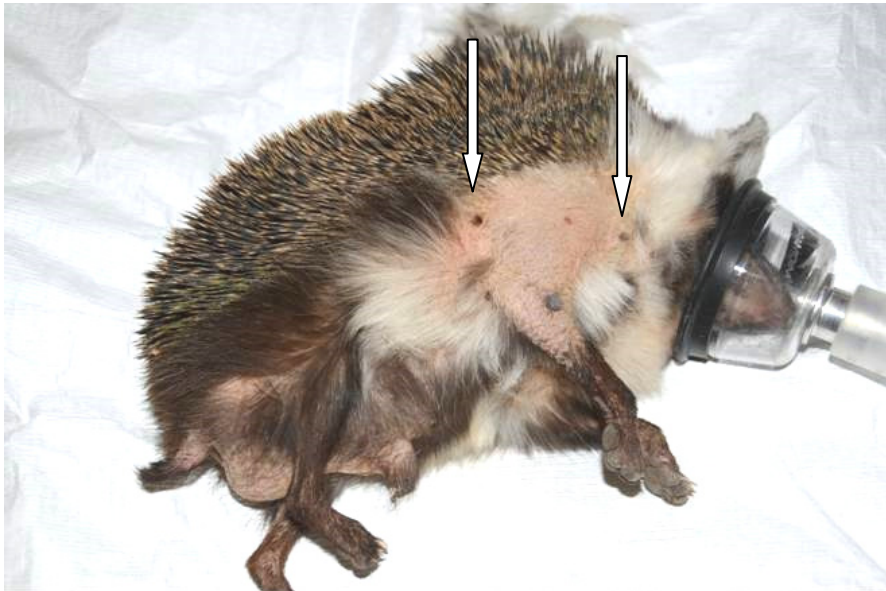


Fig 2. Male Ethiopian hedgehog under anaesthesia. Arrows indicate ticks. (Jorge Soares).

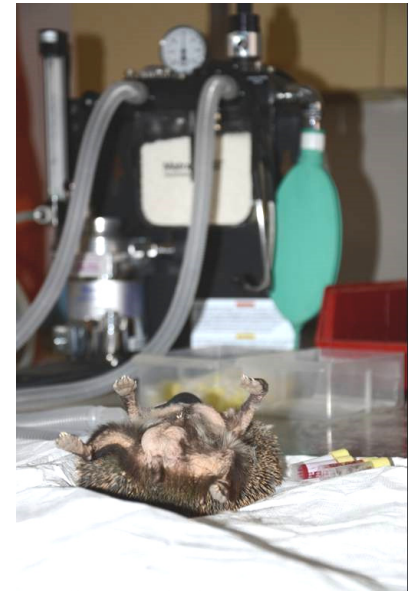


Fig 3. Male Ethiopian hedgehog under gas anaesthesia. (Jorge Soares)

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 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.

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

	Sex of ticks		Total ticks
	M	F	
Ticks on male hedgehogs	366	227	593
Ticks on female hedgehogs	201	201	402
Total ticks	567	428	995



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

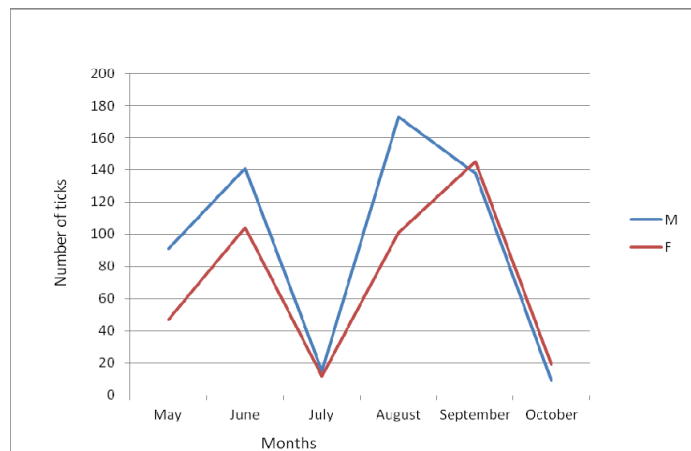


Fig 5. Distribution of ticks in Ethiopian hedgehogs at Thumamah between May–October 2012.

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.

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