

RECORDS OF THE BONT TICK, *AMBLYOMMA HEBRAEUM*, FROM THE ANGULATE TORTOISE, *CHERSINA ANGULATA*, AND THE LEOPARD TORTOISE, *GEOCHELONE PARDALIS*

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ABSTRACT

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A. hebraeum nymphae were found on 4 angulate tortoises and 13 leopard tortoises in the Addo Elephant National Park, Eastern Cape Province. Adults of this species were collected for the 1st time from a leopard tortoise in the Mkuze Game Reserve, Natal. The significance of this finding, in relation to the normal host preferences of this tick, is briefly discussed.

INTRODUCTION

It has long been known that tortoises often act as hosts of various tick species. As early as 1778 De Geer based his description of a new species, *Acarus sylvaticus* (now known as *Amblyomma sylvaticum*), on a tick removed from a tortoise by Sparrman during his travels at the Cape (Theiler, 1943). Attacks by ticks on tortoises, as well as on man, cattle, dogs and rats, in "Caffraria" were also referred to by Arbousset & Daumas (1846).

The vast majority of ticks that have been recorded from these reptiles so far belong to a small group of 5 closely related species in the genus *Amblyomma*, of which 3 occur in South Africa (Theiler, 1962). *Amblyomma marmoreum* is by far the commonest of these 3 species (Theiler & Salisbury, 1959).

In contrast the bont tick, *Amblyomma hebraeum*, has been recorded from relatively few reptiles, though it has an extremely wide range of avian and mammalian hosts (Theiler, 1962). The purpose of this note is to record its presence in tick collections from 2 species of tortoises, the angulate tortoise *Chersina angulata* and the leopard tortoise *Geochelone pardalis*.

COLLECTION METHODS

During August–November 1970 7 angulate tortoises and c. 29 leopard tortoises were examined in the Addo Elephant National Park (33°29'S., 25°45'E.), Eastern Cape Province. On 1 April 1973 another leopard tortoise, found in the Visitors' Camp, Mkuze Game Reserve (27°37'S., 32°02'E.), Natal, was also examined.

After capture each tortoise was turned upside down and securely held by an assistant. When it extended its legs each appendage in turn was firmly grasped and bent downwards over the edge of the shell. The ticks could then be removed fairly easily with a pair of forceps. They were put in glass vials and sent to the Veterinary Research Institute, Onderstepoort, for identification.

Some of the ticks from the leopard tortoises were still alive when they arrived at Onderstepoort. The engorged nymphae were simply left to moult, while the unfed nymphae were put on rabbits. Those that fed were collected when they had dropped off and kept until they moulted. The identity of the adult ticks that emerged from all these nymphae was then checked.

RESULTS

Ticks were found on 4 of the angulate tortoises and 14 of the leopard tortoises (Table 1). These parasites were all attached to the soft skin on the neck and the axillae of the reptiles' legs.

The angulate tortoises were parasitized by a total of 14 *A. hebraeum* nymphae only. Neither adults nor nymphae of *Amblyomma marmoreum* were collected from any of them.

Eleven of the 13 tick-infested leopard tortoises in Addo were also parasitized by *A. hebraeum* nymphae. Twelve of these tortoises carried relatively small numbers of *A. marmoreum*, and they were usually, but not invariably, parasitized by nymphae as well as adults of this species. The leopard tortoise at Mkuze, however, was found to be carrying 12 adults, but no nymphae, of *A. hebraeum*, plus 9 adults and 1 nymph of *A. marmoreum*.

Of the many *Amblyomma* nymphae collected from the leopard tortoises at Addo only 32 (*A. hebraeum* 8♂, 11♀; *A. marmoreum* 9♂, 4♀) developed into adults. Of these 32 nymphae 8 had already engorged sufficiently on the tortoises to complete their development without an additional blood meal. Few of the nymphae that were put on rabbits subsequently engorged. For example, from 1 collection of 14 nymphae (10 *A. hebraeum*; 4 *A. marmoreum*) only 2 ♂ (1 of each species) were ultimately obtained. From another collection of 15 *A. hebraeum* nymphae only 3♀ finally emerged.

DISCUSSION

So far as we know this is the 1st time that *A. hebraeum* has been recorded from *C. angulata*. The only other ticks listed from this tortoise are *A. marmoreum* and *A. sylvaticum* (Theiler, 1962).

A. hebraeum has been recorded from *G. pardalis* by Norval (1974). In a survey carried out on Paardekraal Farm, approximately 15 km S.E. of Grahamstown, Eastern Cape Province, he collected ticks from 10 leopard tortoises. Four of these collections included 14, 3, 2 and 1 *A. hebraeum* nymphae respectively. All the collections contained *A. marmoreum* adults, plus 1 or more nymphae; 7 also contained larvae of this species.

Norval found *A. hebraeum* larvae and/or nymphae, but never adults, in 21 out of 125 collections that he made from the indigenous reptiles, birds and mammals on Paardekraal Farm. In only 4 cases did he record >5 larvae on an individual host, and in only 3 cases >5 nymphae. The situation on the cattle was, however, very different. Norval commented: "Large numbers of both adults and nymphae of *A. hebraeum* were recorded on cattle at Paardekraal Farm. No quantitative records were obtained on the occurrence of larvae on cattle, but observations made in the early summer months of 1973 indicate that the numbers were high. On one occasion over 50 engorged and semi-engorged larvae were counted on the head of a steer." He found very few larvae and nymphae of *A. hebraeum* on goats and Merino sheep on the same farm, and no adults. The owner of the farm said that adult bont ticks rarely occur on these animals. A domestic dog twice harboured a few larvae, and once a nymph.

The significance of the single, and only known, record of *A. hebraeum* adults from a leopard tortoise in Mkuze Game Reserve is virtually impossible to assess. The bont tick is common in this reserve: Baker & Keep (1970) record it from all but 1 of the 21 animal species from

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TABLE 1 Ticks collected from angulate tortoises, *Chersina angulata*, and leopard tortoises, *Geochelone pardalis*, in the Addo Elephant National Park and the Mkuze Game Reserve

Locality and date of collection	Species of tortoises	No. of tick-infested tortoises	Tick species and stage of development						Notes		
			<i>Amblyomma hebraeum</i>			<i>Amblyomma marmoreum</i>					
			♂♂	♀♀	NN	♂♂	♀♀	NN			
Addo: 7 Sept. 1970 23 Oct. 1970	<i>Chersina angulata</i> <i>C. angulata</i>	1♀ 3♂♂	—	—	3 11	—	—	—	—	—	—
12 Aug. 1970 3 Sept. 1970 13 Sept. 1970 23 Sept. 1970 24 Sept. 1970 17 Oct. 1970 22 Oct. 1970 23 Oct. 1970 28 Oct. 1970	<i>Geochelone pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i> <i>G. pardalis</i>	1♂, 2♀♀ 1♂ 1♀ 1♀ 2♀♀ 2 (unspecified) 1 (unspecified) 1 (unspecified) 1 (unspecified)	—	—	1 2 18 14 15 24 37 11	—	16 8 8 2 1 10 10 1	2 1 — — 7 — 17 3	—	2 14 10 1 — 8 6 4 11	+ <i>Amblyomma</i> sp. 1 larva + <i>Amblyomma</i> sp. many live nymphae + <i>Amblyomma</i> sp. 7 larvae
Mkuze: 1 April 1973	<i>G. pardalis</i>	1♀	9	3	—	—	8	1	1	1	—

Mkuze that they list. Unfortunately they give no indication of the numbers of ticks that were collected, but some of the animals, e.g. buffalo (*Syncerus caffer*) and giraffe (*Giraffa camelopardalis*) are known to be good hosts of *A. hebraeum* (Horak, Potgieter, Walker, De Vos & Boomker, 1983). We feel, therefore, that the importance of this 1 record from a tortoise should not be overemphasized.

Few of the *Amblyomma* nymphae that were collected from the tortoises at Addo, and subsequently put on rabbits, reattached, engorged and later moulted. The exercise did enable us, however, to confirm the identity of those nymphae that managed to complete their development. It is often difficult, and sometimes impossible, to be certain of the specific identity of individual *Amblyomma* nymphae.

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