STUDIES ON THE *IXODIDAE* OF GOATS IN THE DRY ZONE OF SRI LANKA WITH SPECIAL REFERENCE TO *HAEMAPHYSALIS INTERMEDIA*, WARBURTON AND NUTTALL, 1909

by

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ABSTRACT

This study was made to determine the seasonal incidence of ixodid ticks on goats and in the pasture at the Government Livestock Farm, Kotukachchiya situated in the North Western Province of Sri Lanka. The biology of the common goat tick *Haemaphysalis intermedia* was also studied under controlled conditions of temperature and saturation deficit.

A survey of ticks infesting goats was carried out over a twelve-month period from June 1982 to May, 1983. Three crossbred female goats were used in this study and tick collections were made once in 14 days from the left ear and the perineal region of each goat. A total of 24,265 ixodid ticks belonging to four genera and five species were collected. The large majority of ticks collected were of *Haemaphysalis intermedia* (99.41%). The rest consisted of *Rhipicephalus haemaphysaloides* (0.51%), *R. sanguineus* (0.07%), *Boophilus annulatus (sensu lato)* (0.005%) and *Hyalomma marginatum isaaci* (0.005%). Adults and nymphae of *H. intermedia* were present in large numbers whilst the numbers of larvae collected were relatively low. The population of adults on goats increased in October, January and May and that of nymphae in September and January. Larvae were most abundant in September and March. *H. haemaphysoloides* appeared throughout the year but in small numbers. No larvae and only two nymphae of this species were recovered off goats. *R. sanguineus* was represented only by the males. In this study only one tick of *H.marginatum isaaci* was collected but this does not truly represent the infestation status of this species. However, its abundance is very low. The presence of *B. annulatus (sensu lato)* appears to be accidental.

Studies on the pasture were carried out from January 1983 to December 1983, using the strip-dragging technique. A total of 7146 ixodid ticks belonging to four species were collected. These consisted of all stages of *H. intermedia* (99.79%), and larvae of *Hy.m. isaaci* (0.17%), *Amblyomma clypeolatum* (0.03%) and *R. haemaphysaloides* (0.01%). All stages of *H. intermedia* were collected throughout the year, but larvae were the most abundant (75.5%).

Peak larval activity in the pasture occured in the months of February, July and October. Peak nymphal activity was observed in January/ February and July and peak adult activity in January and July. However, there was no significant correlation between the number of the different stages of *H. intermedia* collected, and temperature, rainfall and relative humidity at Kotukachchiya.

H. intermedia a three-host tick was seen to complete its life-cycle in 118-156 days, when fed on goats and the non-parasitic stages were maintained at 25°C and 2.3 mm Hg s.d. The pre-oviposition period was found to be 6.21 $\pm$ 0.05 days.(range 5-9 days) and the period of egg laying was 19.45 $\pm$ 0.28 days (range 14-25 days). The eggs were seen to hatch into larvae in 30.73 $\pm$ 0.15 days (range 29-33 days). The nymphal pre-moult was 12 to 18 days whilst the adult pre-moult period was 12 to 21 days.

An increase in temperature reduced the time taken for the engorged females to commence laying eggs and also reduced the oviposition period and the period of incubation of the eggs. Increase in temperature significantly decreased the minimum pre-moult period of larvae but the duration of larval moult and percentage moult were not significantly affected by temperature.

Increase in saturation deficit influenced the pre-oviposition period and the oviposition period only at 40°C. An increase in saturation deficit increased the incubation period of the eggs. Minimum pre-moult period of the larvae as well as the duration of larval moult at 25°C, increased when the saturation deficit increased. However, the percentage moult decreased when the s.d. increased.

The number of eggs produced was influenced by the engorged weight of the female but was not influenced by change in temperature. There was a significant by change in temperature. There was a significant correlation between the weight of the engorged female and the duration of the oviposition period.

The feeding period of larvae of *H. intermedia* was 2-4 days on goats and on rabbits whilst that of the nymphs was 3-5 days on the same hosts. Adult females fed for 7-8 days on goats.