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DISTRIBUTION AND ABUNDANCE OF GOAT LICE  
(PHTHIRAPTERA: *Bovicola* spp and *Linognathus stenopsis*)  
ON THEIR HOST

A thesis presented in partial fulfilment  
of the requirements for the degree of  
Master of Science in Zoology  
at Massey University

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## ABSTRACT

The abundance and regional distribution of louse populations were examined by fleece-parting and post-mortem counts on 20 feral $\times$ angora and six saanen $\times$ angora goats. The effect of temperature on louse population dynamics was examined in a controlled-temperature experiment using the saanen $\times$ angora goats. They were divided into two groups, held at 10 or 25°C and artificially infested with *Bovicola* spp. Fleece-parting counts were made weekly for 16 weeks and a final count was made at post-mortem. Fleece characteristics of the 26 goats were measured.

The distribution of *Bovicola caprae* and *B. limbatus* on all 26 goats, and of *Linognathus stenopsis* on the 20 goats is not uniform over the host's body. Preferences for particular regions are apparent for the two *Bovicola* spp and *L. stenopsis*. The preferred sites for *Bovicola* spp are along and either side of the backline, while the preferred sites for *L. stenopsis* are the shoulder regions, chest and throat. Grooming may account for the observed distribution pattern of *Bovicola* spp, but it does not appear to be the most important factor for *L. stenopsis*.

Fibre density appeared to affect the distribution of *Bovicola* spp females and eggs but not those of *L. stenopsis*. The two genera show different preferences for egg-laying sites and *Bovicola* spp uses a narrower range of fibre diameters for oviposition than *L. stenopsis*.

The magnitude of louse populations varies markedly between goats. Most goats in this study are host to few *Bovicola* spp while only two have >10 000 in the 26 body regions examined. *Linognathus stenopsis* is present in low numbers (<520) on all of the 20 feral $\times$ angora goats examined. Grooming efficiency, but not nutrition, may have caused the differential

infestation levels. However, differential infestation is more likely to be influenced by genetic differences between hosts, resulting in skin exudates which are different chemically or in quantity for different goats.

A build-up of lice under cool temperatures is not demonstrated in this study. Temperature is therefore probably not the critical factor influencing the build-up of louse populations on ungulates in winter, and their decline in summer.

Counts of *Bovicola* spp by fleece parting techniques show good correlation with post-mortem counts, and can therefore be used to obtain a reliable estimate of louse infestation levels on individual hosts.

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