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PREVALENCE OF PHTHIRAPTERA UPON CATTLES OF DEHRADUN

B.S. RAWAT A. KUMAR A.K. SAXENA

Prevalence of three phthirapteran species and ticks on the cattles belonging to Dehradun has been recorded.

*Linognathus vituli* has been found to be most common species while incidence of *Haematopinus eurysternus* and *Bovicola bovis* remained quite low. The incidence of infestation was higher on females than the males while young were more frequently infested than the adults. The intensity of infestation has also been recorded.

INTRODUCTION

Five species of lice reportedly infest the cattles viz. long nosed cattle louse *Linognathus vituli* (L), cattle biting louse *Bovicola bovis* (L), short nosed cattle louse, *Haematopinus eurysternus* (Nitzsch), little blue cattle louse *Solenopotes capillatus* (Enderlein) and cattle tail switch louse *Haematopinus quadripertusus*. One more species of sucking lice *Haematopinus tuberculatus* (Burm) occasionally infests the cattles.

The population of lice start increasing from autumn every year causing anemia and death of the host. Lice infested animals are subjected to constant irritation and rub and scratch themselves for a considerable part of the time that should be occupied in feeding and resting. This lead to loss of hair, the skin becomes scaly and raw areas are formed.

Lice can be responsible for a dermatitis of varying degrees of severity, particularly on the softer parts of the body such as inside the thigh and on the scrotum or udder. The heavy population of lice cause physical discomfort by continuous irritation and may be responsible for retarded growth rates, lowered vitality and reduced productivity of infested hosts.

Workers like Lamson (1917), Shull (1932), Craufurd-Benson (1941), Babcock and Cushing (1942) and Matthyse (1946) have provided earliest information on the biology of different cattle lice. Further information on various ecological aspects of cattle lice is furnished by Lancaster (1957) Gojmerac *et al.* (1957), Lewis and Christenson (1962), Lewis *et al.* (1967) and Gibney *et al.* (1985).

There had been no serious attempt to study the prevalence and density of Phthiraptera on cattles in India. Certain workers while performing taxonomic work casually mentioned about the relative abundance of different species of lice. For instance, Ansari (1951) provided information regarding the Phthiraptera of Punjab; Wattal and Srivastava (1967) recorded ectoparasite fauna from mammals of Alwar (Rajasthan); Srivastava and Wattal (1970) noted the haematophagous arthropods infesting mammals of Dharmshala (Himachal Pradesh); Rao *et al.* (1973) and Mishra *et al.* (1974) surveyed the haematophagous arthropods of western Himalayas, Sikkim and hill district of West Bengal, while Jagannath *et al.* (1974) and Rao *et al.* (1977) provided information regarding mammalian lice of Karnatka. Some information on the aspect is also available from the work of Ferris (1951) and Sen & Fletcher (1962); Lewis and Christenson (1962); Lakshminarayana (1979); Chalmers and Charleston (1980) and Watson (1984). However, abroad workers have provided information on prevalence of cattle lice in different parts of the world. The prevalence of lice on cattles of U.K. (Craufurd-Benson, 1941), U.S.A. (Scharff, 1962; Roberts, 1963; Calcott, 1985; Calcott and Frank, 1988), Germany (Ribbeck, 1972), Ceylon (Seneviratna, 1963), Poland (Piotrowski, 1967) and Philippines (Manuel, 1984) has been studied.

In the present report an attempt has been made to furnish information on the prevalence of lice on the cattles belonging to Dehradun. Furthermore, the incidence of ticks has also been included in study.

#### MATERIALS AND TECHNIQUE

A total of 1176 cattles of both sexes and of various ages and breeds were examined from 31 localities of Dehradun. The louse population on cattles were assessed by hair parting method provided by Lewis *et al.* (1967). The cattle hair was repeatedly parted close to the skin at each of the several anatomical sites typically infested by lice.

The young calves have been included either in steers (in case of males) or heifers (in case of females). Most of the cattles were from 3 month to 16 years of age. In addition to domestic cattles, dairy cattles were also sampled during the study. Each of the infested cattle was kept in one of the following category after thorough examination (in order to record the intensity of louse population): VL (Very light infestation), L (Light infestation), M (Medium infestation), H (Heavy infestation), VH (Very heavy infestation).

#### RESULTS

Out of the 6 phthirapteran species reported to occur on cattles, only three *B. bovis*, *L. vituli* and *H. eurytenuis* have been found on cattles of Dehradun. *S. capillatus* and *H. quadripertusus* could not be recorded, *H. tuberculatus* which commonly infests buffaloes of this region could not be detected on cattles. The individual incidence of every tick species has not

been recorded but on final analysis three sp. viz. *Boophilus microplus*, *Hyalomma dromedarii*, *Hyalomma anatolicum anatolicum* species have been identified.

As many as 31 localities of Dehradun have been surveyed during the years 1988 to 1990 in order to record the prevalence of lice on the cattles. Out of 1176 cattles examined, 46.6% were found infested with one or other species of lice or ticks. Most of the examined cattles were of Jersey cross breed, Local breed, Holstine frozen and Haryana cross breed maintained by private owners.

*L. vituli* has been found to be the most common species (62.6%) in area (Fig. 1). The incidence of infestation by other two louse remained quite low (*H. eurysternus*, 9.3% and *B. bovis* 6.2%) (Fig. 1). On the other hand 42.3% cattles carried one or other species of ticks (Fig. 1). The incidence of lice on females (heifers and cows (42%) was significantly higher than the males (28.2%) (steers and oxen). Similarly young (steers and heifers) (40.3%) were more frequently infested than the adults (cows and oxen) (33.7%). In other words incidence of infestation was maximum on young females (43.3%), narrowly followed by adult females (41.4%) and then by young males (36.8%) while least on adult males (22.4%). The prevalence ticks followed nearly similar pattern.

Half of the cattles infested with *B. bovis* bore medium infestation (50%) (Fig. 2). Only few (6%) were very heavily infested while the rest carried very light, light or heavy infestation (14.7% each category).

Half of the cattles infested with *L. vituli* bore either medium or light infestation (27.4 and 25.1% respectively) (Fig. 2). Nearly 20% of infested hosts had heavy infestation while 18% carried very light infestation. Very heavy infestation was visible on only 10% hosts.

Very few (2%) hosts carried very heavy infestation by *H. eurysternus* (Fig. 2). Few hosts (10%) carried heavy infestation. Maximum (33.3%) numbers of cattles showed medium infestation, while others were either lightly or very lightly infested (25.5 and 29.4%).

Nearly 41.4% of the infested cattles, carried light infestation of ticks, followed by very light category (26.3%). Nearly 18.5% carried medium infestation while 11% were heavily infested. Only 2.6% carried very heavy infestation of ticks.

Most of the infested cattles (58%) have been found in healthier condition. Nearly 28% exhibited comparatively poor health, while 14% appeared apparently very weak. More or less similar data has been obtained in case of tick infestation.

An examination of Table-1 indicates that single species infestation was most common on cattles. They infest mostly singly or in combination with ticks. Two species combination has been found on 3 cattles, while three species infestation could not be observed.

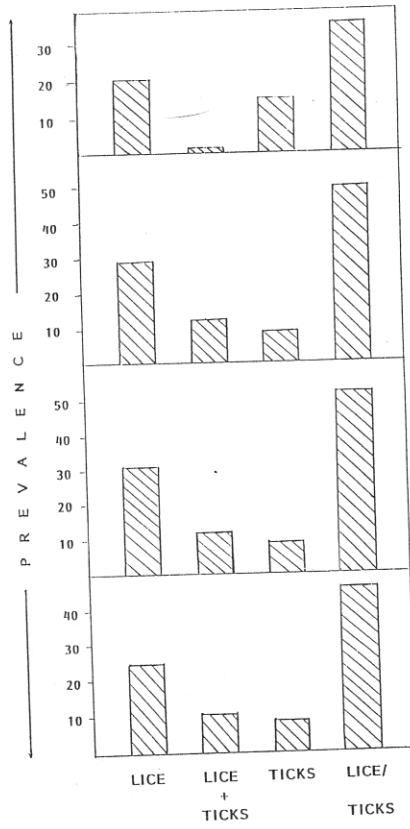


Fig. 1 - Prevalence of lice and ticks on the cattle of Dehradun.

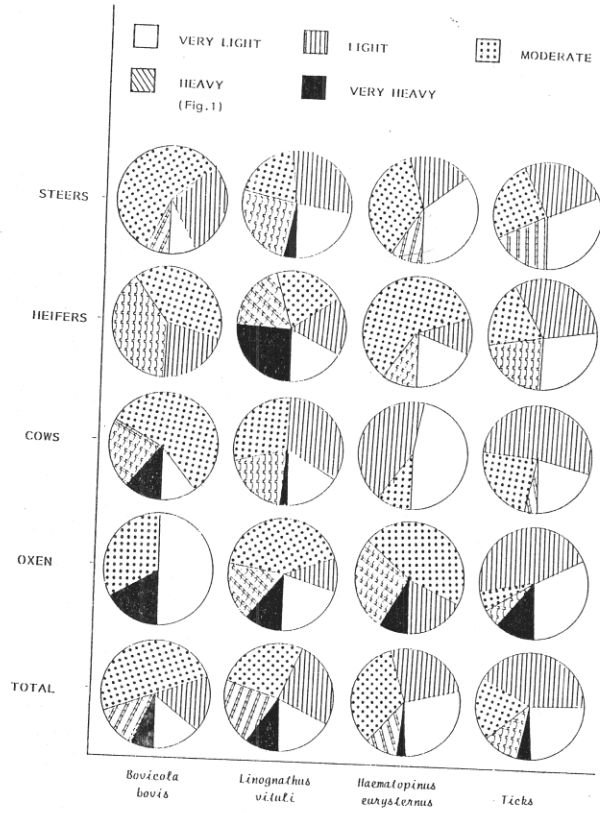


Fig. 2 - Relative intensity of lice and ticks on the cattles of Dehradun

Table 1 - Showing percentage of Cattles infested with each kind of Lice and Tick

Category of Cattle	%age of Cattle infested with							
	B.b.	Bb+T	T+Bb+Lv	Lv	Lv+T	He	T+He	T
Steer	6.0	2.0	3.0	38.0	17.0	12.0	2.0	20.0
Heifer	6.0	0.8	-	46.0	23.0	6.0	-	17.0
Cow	4.0	-	-	47.0	23.0	6.0	2.0	18.0
Oxen	3.0	3.0	-	45.0	-	10.0	-	40.0
TOTAL	4.0	1.0	0.5	45.0	17.0	8.0	1.0	22.0

## DISCUSSION

A close look on literature reveals that any serious attempt to record the prevalence and density of lice on cattles of any Indian locality have never been made. Certain workers, while making surveys for taxonomic work (on lice) casually mentioned about relative abundance of different louse species. For instance, Ansari (1951) recorded *H. eurysternus*, *L. vituli*, *S. capillatus* and *B. bovis* from cattles of Punjab and mentioned that the latter (*B. bovis*) was most prevalent. Rao *et al.* (1977) added two more species *H. quadripertusus* and *H. channabasavannai* (n. sp.) from cattles of Karnataka and also found *H. tuberculatus* occasionally. However, Rao *et al.* (1973) and Mishra *et al.* (1974) found only two species *H. eurysternus* and *L. vituli* from cattles of Western Himalayas, Sikkim and west Bengal. During present studies only three species viz. *L. vituli*, *H. eurysternus* and *B. bovis* could be detected during survey work. *L. vituli* remained commonest louse while the incidence of other two species was quite low. Elsewhere in world, in U.K. *B. bovis* has been found to be the commonest louse followed by *H. eurysternus*, *L. vituli* and *S. capillatus* (Craufurd-Benson, 1941); in Montana, U.S.A., *L. vituli* is most common followed by *H. eurysternus*, *S. capillatus* and *B. bovis* (Scharff, 1962). Likewise, there are variations in the order of abundance of these species upon the cattles of different parts of the world. Scharff (1962) found single species infestation on 62%, two species infestation on 29%, three species infestation on 7% and four species infestation on 1% of the infested cattles of Montana U.S.A. However, in Dehradun, most of the louse carrier bore single species. Only three cases of two species infestation were

recorded and none of the infested cattles had more than two species. The present report provides first information on the prevalence and intensity of lice as well as ticks on the cattles of an Indian locality (i.e. Dehradun).

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