

A note on the population of *Haematopinus tuberculatus* (Phthiraptera: Anoplura) on the Buffaloes in District Rampur U.P. India

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Abstract: One hundred sixty buffaloes were examined for the presence of phthirapteran ectoparasites. As many as, 37.5% (n = 160) buffaloes were found infested with anopluran species, *Haematopinus tuberculatus*. There was no significant difference in the prevalence of *H. tuberculatus* on two sexes ($X^2 = 0.54$, $P = 0.05$). However, prevalence rate was significantly higher on younger buffaloes than adults and other older ones. Significant correlation existed between the prevalence / intensity of infestation and mean monthly temperature. On the other hands, correlation with mean monthly relative humidity remained insignificant. Mean intensity of infestation (observed by counting entire louse load of the body) was found to be 28.5. The sex ratio was female biased and nymphal population was slightly larger than adults.

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Key words: Phthiraptera; Lice; *Haematopinus tuberculatus*; Anopluran

1. Introduction

Information on the biology of buffalo lice, *Haematopinus tuberculatus* was given by Chaudhuri and Kumar (1961). Selected workers have noted the prevalence of *H. tuberculatus* in different parts of the world (Azam *et al.*, 2002; Tasawer *et al.*, 2008; Kakar & Kakarsulemankhel 2008 & 09). Two reports have appeared on the prevalence of the *H. tuberculatus* on Indian buffaloes (in Dehradun and Chattisgarh) (Rawat *et al.*, 1992; Kumar & Prasad, 2004). Workers like Rosario and Manuel (1983), Price and Graham (1997) and Hussain *et al.* (2005) have discussed about impact of parasitism of buffalo lice. (India).

2. Materials and Methods

For present studies entire body of the buffaloes was searched for the presence of lice (with the help of hand lens fitted with circular light). Lice from positive hosts were placed in glass tubes containing 70% ethyl alcohol, using a separate vial for each host. Each tube contained information regarding host, sex age or stage, condition and locality. Later, identification and sexing provided the remaining data for the discussion of lice population. Sampled specimens were treated with 10% KOH for 24 hrs., washed in water and transferred to 10% acetic acid for 1 hours. Specimens were then subjected to dehydration (ethanol series), clearing (clove oil) and mounting (Canada Balsam) for microscopy.

3. Results

Only one phthirapteran species, *Haematopinus tuberculatus* (Burmeister) was recovered from

buffaloes in the district Rampur during 2007. Prevalence of *H. tuberculatus* on buffaloes was 37.5% (n = 160). As many as, 1550 specimens (all the stages) were collected from the infested buffaloes (mean intensity, 25.83). The sample mean abundance was 9.68 (range 7-110, n = 60). Out of the 160 buffaloes, 12 were siren and remaining adults or older hosts. The prevalence of lice on younger, adults and older buffaloes was 50%, 41.6% and 14.2%, respectively. Statistical analysis showed that prevalence was significantly higher on younger buffaloes ($X^2 = 8.11$, $P < 0.05$). Likewise, out of 160 buffaloes, 20 were males and 140 females. The prevalence of *H. tuberculatus* on two sexes was 30% and 38%, respectively ($X^2 = 0.54$, $P < 0.05$, insignificant).

For recording the population structure at different levels of infestation, entire data was divided into four categories. Maximum number of buffaloes (24) carried to 1-15 specimens of *H. tuberculatus* (mean number, 11.5; 2.7M, 2.2F, 6.5N; M: F = 1:1.8; A: N = 1:1.3) (Fig. 7). As many as, 18 buffaloes were found infested with 16-28 lice (mean number, 21.7; 2.9M, 6.8F, 11.9N; M: F = 1:2.3; A:N = 1:1.2) (Fig. 1). Twelve buffaloes were infested with 29-41 lice (mean number, 34.8; 5.5M, 10.6F, 18.8N; M:F = 1:1.9; A:N = 1:1.1) and another six buffaloes had more than 41 lice (mean number, 77.7; 10.7M, 20.3F, 46.7N; M:F = 1:1.9; A:N = 1: 1.5). The overall male female ratio was 1: 1.7; adult nymph ratio 1: 1.3 and the ratio of three nymphal instars remained 1: 1.2: 2.2.

As for as the distribution of *H. tuberculatus* on the body of the infested buffaloes is concerned the neck (19.0%) and back (14.9%), were found to be the most

preferred sites of *H.tuberculatus*. The ribs (11.4%) and shoulder (11.2%) remained the next the preferred sites, followed by belly, thighs and legs (8.7%, 8.7%, 7.1% and 6.4% respectively). Head and tail carried minimum numbers of lice (6.0% and 5.6%, respectively).

As many as, the 66.6% buffaloes carried *H.tuberculatus* in Jan 2007. Prevalence exhibited slight increase in February (72.7%), abruptly decreased in March (38.4%), remained similar in April (37.5%) (Fig.2). It became lowest in May (20%), increased in June (31.2%), but declined in August, 26.6%. It increased during next three months (September 33.3%, October, 46.6%) and November 50%. Prevalence rate remained at same level in December (50%). The correlation between mean monthly lice index and mean monthly prevalence ($r = -0.69$) was found significant, while correlation between mean monthly relative humidity ($r = 0.53$) remained insignificant.

As far as intensity of infestation is concerned, the mean lice index was 19.6 in January 2007. It increased during two subsequent months (February, 22.3; March, 31.4) then started declining during next three months (April, 26.5, May 13 and June 7.4) (Fig. 2). It rose in July (16.6) and August (22.0), remained nearly at same level in September (19.5) thereafter it decreased in October (14.3), presented sharp increase in November (71.0) and reached maximum level in December (74.3) (Fig. 2). Value of Karl Pearson's coefficient of correlation between mean monthly index and mean monthly temperature was significant at 5% level ($r = -0.618$) while correlation with mean monthly relative humidity remained insignificant ($r = -0.17$).

4. Discussion

Rawat *et al.* (1992) recorded the prevalence of *H.tuberculatus* (60.6%) on 373 buffaloes in Dehradun. Tasawar *et al.* (2008) found the prevalence of aforesaid louse on the buffaloes in Pakistan as 92% (n = 100). Furthermore, the latter recorded two more species (*Damalina* sp. and *Linognathus* sp.) from the similar host. The latter author also tried to compare the prevalence of *H.tuberculatus* on two sexes of buffaloes are found no significant difference. However, they stated that younger buffaloes (aging less than 100 months) were more prone to louse infestation than older ones. During present studies as many as, 37.5% of buffaloes examined in Rampur, during 2007 carried *H.tuberculatus* infestation. The back, neck, ribs, shoulder and hindlegs of the infested hosts were more popular sites of infestation of *H.tuberculatus*. Thus distribution of *H.tuberculatus* corresponds to that of description provided by Chaudhari and Kumar (1961) and Rosario and Manuel (1983). As far as, sex ratio is concerned, it remained skewed in favour of females (1:1.7) as expected in phthirapteran population (Marshall, 1981). Furthermore, nymphal population

had an edge over adult population, as the adult nymph ratio remained 1:1.3. Furthermore, Kakar and Kakarsulemnkhel (2009) examined 671 buffaloes in Quetta (Pakistan) and reported the occurrence of *H.eurysternus* and *H.quadripertusus* on 17.7% and 23.5% buffaloes. Both the species are incidentally the natural parasites of cattle. The data shows that prevalence of *H.tuberculatus* was similar on two sexes but younger buffaloes were more prone to louse infestation than older ones.

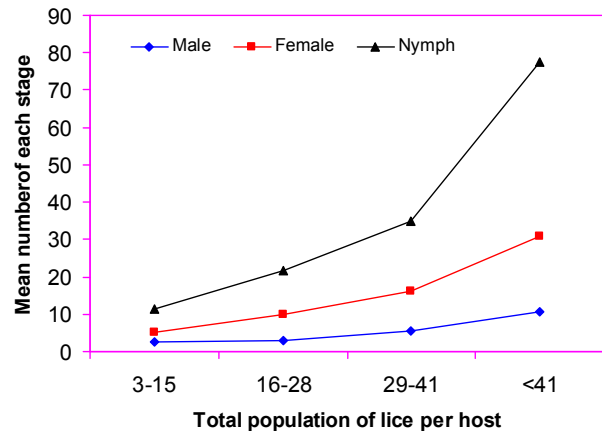


Figure 1. Population composition of *Haematopinus tuberculatus* on buffaloes.

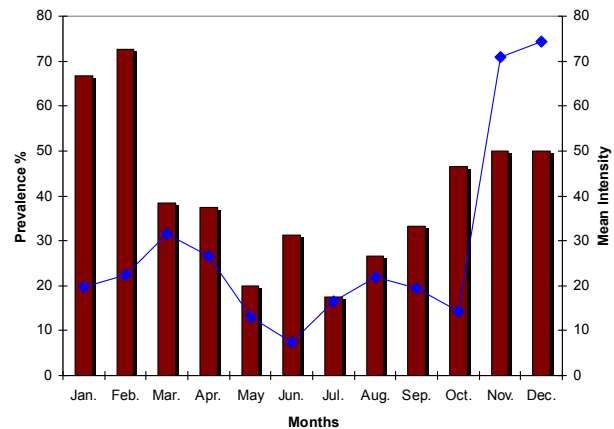


Figure 2. Showing the prevalence and intensity of infestation of *Haematopinus tuberculatus* on 160 buffaloes during different months of the year 2007, in the district Rampur(U.P.).

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