Prevalence of *Myrsidea salimalii* (Amblycera: Phthiraptera) on striated babblers (*Turdoides earlei*) (Timaliidae: Passeriformes: Aves)

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Abstract Survey of literature showed that the population characteristics of the phthirapterans parasitizing striated babblers deserved investigation. Hence, 30 birds were examined during 2007–2009 in district Rampur U.P. The prevalence of an amblyceran louse, *Myrsidea salimalii* on striated babblers was 40%. The mean intensity of infestation and the sample mean abundance were 33.5 and 13.4, respectively. The variance to mean ratio of the population exceeded unity (36.24). The frequency distribution pattern of the louse was aggregated but did not conform to the negative binomial model. Females outnumbered the males in natural condition (M:F—1:1.4) while the nymphal population had an edge over adult population (A:N—1:1.3).

Keywords Phthiraptera · Lice · Amblycera · Prevalence · *Myrsidea*

Introduction

Information regarding the population characteristics of phthirapteran ectoparasites of certain common Indian birds. viz. common myna (Chandra et al. 1990), pigeons (Singh et al. 1998; Khan et al. 2008), red avadavat (Gupta et al. 2007), Indian parakeets, house sparrows, common myna and white breasted king fishers (Saxena et al. 2007), house

crows (Beg et al. 2008), bank myna (Rajput et al. 2009) has been provided by the workers during the last two decades. Marshall (1981) reviewed the work done on the population ecology of the ectoparasitic insect. The patterns of abundance of biting lice on the host birds have been discussed by Rekasi et al. (1997), Rozsa (1997) and Reiczigel et al. (2005). Present report furnishes information on the population characteristics of phthirapteran ectoparasites infesting striated babblers (*Turdoides earlei*).

Materials and methods

Thirty striated babblers (Passeriformes: Aves) were live trapped in district Rampur (India) during 2007–2009. After tying the legs, each bird was examined under a Stereozoom Trinocular Microscope. Infested birds were deloused by modified fair Isle method (Gupta et al. 2007). The efficacy of different delousing techniques was discussed by Clayton and Drown (2001). The head was separately examined after delousing. The louse load was stored in 70% alcohol and separated stagewise and sexwise. The data were used for recording the prevalence and variance to mean ratio of the louse population. The exponent of the negative binomial distribution (k) and index of discrepancy (D) were computed with the help of software offered by Rozsa et al. (2000). The goodness of fit between the observed and the expected frequencies (negative binomial) was determined by the X^2 test.

Results

Only one amblyceran species (*Myrsidea salimalii*) was recovered from thirty striated babblers examined for the

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presence of lice. The prevalence of *M. salimalii* on striated babblers was 40% ($n = 30$). The value of sample mean abundance and mean intensity remained 13.4 and 33.5, respectively (range of infestation, 5–73). A look on data indicates that 16 birds (out of 30) were examined during winter months (November–February) and 14 birds during summers (March–June) of the year 2007–2009. None of bird could be examined during the month July–October. Prevalence of *M. salimalii* was significantly higher (57.2%) in summer months than winter months (25.0%). Likewise, the mean intensity was also higher in summers (42.12/bird) than the winter months (16.3/bird).

As many as 18 birds were louse-free. The pattern of distribution was aggregated (clumped). The variance to mean ratio (36.24) of the population was higher than unity. Value of exponent of negative binomial (k) was computed as 0.12. The index of discrepancy was recorded as 0.724. The observed frequencies differed significantly from the frequencies expected by negative binomial model ($X^2 = 13.21$; $P = 0.02$). Thus, negative binomial model was not found to be a good fit in the present case. A total of 402 lice were collected. An attempt was made to analyze the population composition of *M. salimalii* at different levels of infestation. The overall male, female ratio remained 1:1.4. The adult nymph ratio was 1:1.28, while the ratio of first, second and third instars of nymph remained 1:0.68:0.74.

Discussion

The survey of literature revealed that prevalence of different species of Phthiraptera on Indian common birds exhibit considerable variations viz. 29–61% on blue rock pigeons, 13–68% on common mynas, 14–31% on house sparrows, 17–34% on Indian parakeets, 40% on white breasted kingfishers, 21–36% on red avadavats, 11–52% on house crows and 31–48% on bank myna (Chandra et al. 1990; Singh et al. 1998; Gupta et al. 2007; Saxena et al. 2007; Beg et al. 2008; Khan et al. 2009; Rajput et al. 2009). Thus, the prevalence of *M. salimalii* on striated babblers examined during present investigation (40%) was not lower than the other birds examined, so far. Survey of literature further indicates that intensity of infestation of different species of Phthiraptera on other Indian birds is reported to be 80.2 per bird on common myna (Chandra et al. 1990), 18.4–182.5 per host on domestic pigeons (Singh et al. 1998), 11.0–27.0 per bird on house crows (Beg et al. 2008), 1.5–3.4 per bird on red avadavats (Gupta et al. 2007), 7.6–13.3 per bird on house sparrows, 13.8–21.8 per host on parakeets, 17.7 per bird on Kingfishers (Saxena et al. 2007) and 6.8–16.6 per host on bank myna (Rajput et al. 2009). Thus, in contrast to other birds the louse load born by

striated babblers was moderate, as the sample mean abundance of *M. salimalii* remained 13.4.

Phthirapteran ectoparasites reportedly exhibit clumped distribution in which most of the hosts have few parasites and a few hosts have a lot of them. Rekasi et al. (1997) have advocated the use of negative binomial model to describe the pattern of frequency distribution. However, the frequency distribution pattern of *M. salimalii* somehow did not conform to the negative binomial model, although it was clearly skewed. As per expectation, the sex ratio of *M. salimalii* was female biased. Marshall (1981) and Gupta et al. (2007) discussed the reasons responsible for skewed sex ratio in phthirapteran population. As far as adult nymph ratio is concerned, it exhibits considerable variation in different avian hosts. The presence of few nymphs and more adults indicates that population is stable while the occurrence of more nymphs than adults points out that population is expanding (Marshall, 1981). In case of *M. salimalii*, the nymphs outnumbered the adults in natural population. However, lice population on avian host fluctuates seasonally so the ratio is bound to vary with time. Although the sample size was too small, the data provides the clue that lice occurring on striated babblers, appear to exhibit the seasonal variations in population as the prevalence and intensity of *M. salimalii* were distinctly higher in summers.

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