

STRAY NOTES ON THE FEATURES OF ISCHNOCERAN LOUSE, *BRUEELIA AMANDAVAE* INFESTING RED AVADAVAT, *AMANDAVA AMANDAVA* (ESTRILDIDAE, PASSERIFORMES)

Nidhi Gupta

Department of Zoology, Govt. Raza P.G. College, Rampur - 244 901 (U.P.)

KEY WORDS

Avian lice
Biting lice
Brueelia amandavae
Ischnocera
Phthiraptera

ABSTRACT Present report supplements further information on the morphological features (SEM based) and site of occurrence of ischnoceran louse, *Brueelia amandavae* infesting red avadavat, *Amandava amandava*. Analysis of its crop contents further reveals that louse is a feather feeder and is also not involved in cannibalism/ predation.

INTRODUCTION

The Red Avadavat, *Amandava amandava* (an estrildid finch) was known to harbor a single amblyceran louse, *Myrsidea amandava* (Price *et al.*, 2003). Rekasi & Saxena (2005) recorded a new ischnoceran louse, belonging to genus *Brueelia* and named it *B. amandavae* and also noted its morphological features, on the basis of LM. Gupta *et al.* (2004) commented upon its egg laying patterns and Gupta *et al.* (2007) recorded its *in vitro* biology.

MATERIAL AND METHODS

Infested birds were examined under Megascop (a circular lens fitted with round electric tube). Lice were obtained by delousing the infested birds by fumigation (by placing in a polythene bag containing a wad of cotton wool soaked in ether, after tying the legs in such a way that head protruded out). After 10 minutes, bird was taken out and fluffed over white plastic sheet. Head was separately examined to

remove the lice. The louse load so obtained was placed in 70% alcohol and the adults sorted out. Deloused birds were released in wild. Adult male and female louse were subjected to SEM. Dehydrated lice were arranged on stubs (covered with double sided cello tape), gold coated and viewed under SEM. The adult lice were dissected under stereozoom trinocular microscope, to take out the tadpole shaped crop. The latter was teased out on glass slide with the help of extremely sharpened (by rubbing on zero number sand paper) entomological pins, to observe the nature of crop contents.

RESULTS AND DISCUSSION

Broadly triangular head of females is more elongated and narrower than males (Figures 1 & 2). It is more or less straight at the anterior margin and is slightly concave laterally at the base of antennae, especially in males. Pre-antennal region is more longer in both the sexes. The marginal stripe is

*Corresponding author: E-Mail: dr.nidhigpta@gmail.com

interrupted in the middle. The conus is extremely short in both the cases and is preceded by two setae. The shape of lateral carina is characteristic. The dorsal part of clypeus is anteriorly separated. The antennae are strongly dimorphic (larger and shorter in males). Antennae are 5 segmented. Second antennal segment is the largest. The occipital region is thickened. The periphery of temple bears a long and a short seta. Occipital region is thickened and marked with typical patterns. Posterior periphery of temple bears a short and a long seta. Trepezoidal (length almost equals width) prothorax is devoid of setae. As in other philopterids, mesothorax and metathorax are fused to form pterothorax. Posterior border of pterothorax of male is more convex than



Fig 1: SEM Photograph of an adult male, *Brueelia amandavae*



Fig 2: SEM Photograph of an adult female, *Brueelia amandavae*

females. The lateral margins of pterothorax bear setae. The abdomen of female is much elongated than males. The abdomen of males is more rounded than that of female. Abdominal segments gradually broader from 1st to 5th. Furthermore, abdominal tergites are centrally divided. The abdominal tips of two sexes exhibit remarkable differences. In males, abdominal tip is slightly striated with crescent shaped stripe.

B. amandavae exhibits more or less wide spread distribution on host body. Nevertheless, feathers belonging to back, neck, abdomen and breast carried most (82%) population of the lice. Wings (generally quite popular site of occurrence of elongated flat bodied ischnoceran lice) harbored only few lice (7%). Occasionally, few lice were encountered on nape and head feathers (8%). The legs and tail carried negligible population of lice (3%).

B. amandavae lays the eggs haphazardly (without characteristic pattern) on the vane of the rachis. The eggs are laid singly (not clustered). The eggshells are miniature rice grain in appearance and the opercular disc is characteristically produced into thick rod like polar thread, which is distally produced into oblique plate like structure.

The analysis of crop content of several adults as well as first, second and third instar nymphs of *B. amandavae* indicates that it is a feather feeder in nature, as the crop of all the specimens were found packed with feather barbules of nearly similar length. Presence of host blood was never detected in the crop of any specimen, indicating that the louse is not haematophagous. Furthermore, crop was always devoid of any triturating agent. The presence of body parts of any lice, or other insects was never noticed indicating that louse is not involved in cannibalism (as noted by Nelson, 1971).

Genus *Brueelia* (Keler, 1936) is one of the largest group of Philopterid lice and infests at least 41 families of birds belonging to 4 orders. Recently, the morphological revision of *Brueelia* – complex is given by Mey (2016) and Gustafsson & Bush (2017). The occurrence of *B. amandavae* on red avadavat, *A. amandava* (Passeriformes, Estrildidae) were recorded by Rekasi & Saxena (2005).

Present report furnishes supplementary information on the morphological features of the lice (based on SEM). Furthermore, casual remarks on the site of occurrence of the louse have also been offered. Feeding habits of phthirapteran species are of great concern to biologists, as some species are feather feeders, some partly haematophagous and still others exclusively haematophagous (Kumar *et al.*, 2017). The haematophagous species do not affect only vitality and productivity of host birds but are often involved in transmission of pathogens among the hosts (Clayton *et al.*, 2016). The analysis of crop contents of *B. amandavae* indicates that it is purely a feather feeder louse.

ACKNOWLEDGEMENTS

Authors are thankful to Principal, Government Raza P.G. College, Rampur (U.P.) for laboratory facilities.

REFERENCES

- Clayton, D.H., Bush, S.E. and Johnson, K.P. 2016. In "Coevolution of life on hosts: Investigating Ecology and history". The University of Chicago Press, Chicago and London, 1-249.
- Gustafsson, D.R. and Bush, S.E. 2017. Morphological revision of the hypodiverse *Brueelia* – complex (Insecta: Phthirapter: Ischnocera:Phloptera) with new taxa, checklists and generic Key. Zootaxa, 4313:1.
- Gupta, N., Kumar, S., Saxena, A.K. and Bisht, K.L. 2004. Aspects of oviposition of an ischnoceran (*Brueelia* sp.) and an amblyceran (*Myrsidea amandava*) lice (Phthiraptera). Nat. Sem. on Zoology and Human Welfare, Dr. Shyama Prasad Mukherjee Government Degree College, Phaphamau, Allahabad, 204-210.
- Gupta, N., Kumar, S. and Saxena, A.K. 2007. Intrinsic rate of natural increase of *Brueelia amandavae* (Ischnocera, Phthiraptera) populations infesting Indian red avadavat. Biologia, Bratislava **62**(4):458-461.
- Keler, S. 1936. Uber einige Mallophagen aus Rossitten. *Arbeiten uber morphologische und taxonomische Entomologie aus Berlin-Dahlem* 3, 256-264.
- Kumar, S., Ahmad, A., Ali, R., and Kumar, V.. 2016. A note on haematophagous nature of poultry shaft louse, *Menopon gallinae* (Amblycera: Phthiraptera). Journal of Parasitic Diseases. DOI 1007/s 12639-016-1760-y.
- Mey, E. 2016. Neue Gattungen und Arten aus dem *Brueelia*-Komplex (Insecta, Phthiraptera, Ischnocera, Phloptera s.l.). Rudolstädter naturhistorische Schriften **22**, 85-215.
- Nelson, B.C. 1971. Successful rearing of *Colpocephalum turbinatum* (Phthiraptera). Nature (London), **232**(34):255.
- Price, R.D., Hellenthal, R.A. and Palma, R.L. 2003. World checklist of chewing lice with host associations and keys to families and genera. In P Price, R.D., Hellenthal, R.A., Palma, R.L., Johnson, K.P. and Clayton, D.H. The chewing lice: World checklist and biological overview. INHVS Special publication 24, Illinois Natural History Survey, Illinois, USA, 501.
- Rekasi, J. and Saxena, A.K. 2005. A new Phthiraptera species (Phloptera) from the red avadavat (*Amandava amandava*). Aquila **112**, 87-93.

Received 09-05-2018; Accepted 01-06-2018

