

**PEDICULOSIS IN BLACK KITE (*MILVUS MIGRANS*): REPORT
OF CONCURRENT ISCHNOCERAN AND AMBLYCERAN
INFESTATION**

**E. Tamileniyan¹, M. Jeevitha², T. Yuvarani³, G. Amrit⁴,
A. Latchumikanthan^{5*}, M. Veeraselvam⁶,
R. Velusamy⁷ and K.K. Ponnu swamy⁸**

*Department of Veterinary Parasitology,
Veterinary College and Research Institute
Tamil Nadu Veterinary and Animal Sciences University
Namakkal - 637 002*

ABSTRACT

*A rescued black kite (*Milvus migrans*) presented to the Veterinary College and Research Institute, Orathanadu, Tamil Nadu, exhibited active ectoparasitic infestation predominantly over breast and contour feathers. Lice were manually collected and processed for morphological identification. Examination revealed three species: amblyceran louse *Laemobothrion maximum*, characterized by its large size (~12 mm), broad head and prominent preocular swellings; *Degeeriella fulva*, a slender ischnoceran louse (2.0–2.8 mm) with a distinct head structure, five-segmented antennae and narrow abdomen; and *Colpocephalum turbinatum*, a smaller amblyceran louse (1.8–2.5 mm) with a subtriangular head, four-segmented antennae and well-developed mandibles. Morphological features and morphometrics of lice were consistent with standard taxonomic descriptions. The concurrent presence of multiple lice species highlights the ecological diversity of ectoparasites in raptors and emphasizes the importance of detailed morphological identification in wildlife parasitology.*

Key words: Black kite, lice infestation, *Laemobothrion maximum*, *Degeeriella fulva*, *Colpocephalum turbinatum*

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¹PG Scholar, Dept. of Veterinary Medicine

²PG Scholar, Dept. of Veterinary Medicine

³PG Scholar, Dept. of Veterinary Medicine

⁴PG Scholar

⁵Assistant Professor

*Corresponding author – latchupara2010@gmail.com

⁶Assistant Professor, Dept. of Veterinary Medicine

⁷Associate Professor and Head

⁸Professor and Head, Dept. of Veterinary Medicine,
Veterinary College and Research Institute, Orathanadu

INTRODUCTION

Lice are permanent, wingless insects which are obligate parasites of birds and mammals and spend their entire life cycle on the host. Parasitic lice are traditionally grouped into blood-feeding sucking lice (order Anoplura), which infest mammals and chewing lice (formerly Mallophaga), which primarily parasitize birds and feed on

feathers, epidermal debris and skin exudates (Aziz *et al.*, 2013). Chewing lice represent a highly diverse assemblage, with more than 3,500 species described worldwide (Hatem *et al.*, 2021). Host specificity is generally high, reflecting long-standing co-evolutionary associations. However, certain vertebrate groups are typically free from lice infestation (Heckmann, 2014) suggesting ecological and evolutionary constraints on host colonization. Among avian hosts, raptors are frequently parasitized by species-specific chewing lice that may influence health and fitness, particularly under environmental or anthropogenic stress. The black kite is a widely distributed accipitrid raptor occurring across Asia, Europe, Africa and Australia, and is one of the most common birds of prey in India, especially in densely populated urban centers (Kumar *et al.*, 2018) which was characterized by dark brown plumage that appears black at a distance and exhibits remarkable adaptability to urban ecosystems. Despite its current conservation status as least concern, populations in urban landscapes face increasing threats including habitat alteration, deforestation and injuries associated with abrasive kite strings used during festivals. Parasitic infestations constitute an additional but comparatively underreported health concern in this host species. Chewing lice infestations may result in persistent irritation, pruritus, feather damage, reduced thermoregulatory efficiency and compromised body condition. In severe cases, affected birds may exhibit excessive preening, feather plucking and self-inflicted wounds secondary to pecking (Waller *et al.*, 2024). Chronic infestations have been associated with decreased growth

rates, reduced body weight and lowered reproductive performance in avian hosts. Furthermore, lice have been implicated as mechanical or biological vectors of certain bacterial, viral and protozoan pathogens, potentially exacerbating morbidity under stressful environmental conditions (Talabante and Bernal, 2022). Despite the ecological importance and urban prevalence of the black kite in India, published data on its ectoparasitic fauna remain limited. Documenting lice infestations in free-ranging raptors is essential not only for understanding host–parasite dynamics but also for assessing potential impacts on avian health in rapidly urbanizing landscapes. The present report describes concurrent infestation with three chewing lice species, *Laemobothrion maximum*, *Degeeriella fulva* and *Colpocephalum turbinatum* in a rescued black kite.

MATERIALS AND METHODS

A rescued black kite was presented to the Exotic and Special Species Referral Clinic, Veterinary Clinical Complex, Veterinary College and Research Institute, Orathanadu, TANUVAS by the officials of Forest department belongs to Pattukottai range with the history of rescue from paddy field. Physical examination of the plumage revealed active, free-moving ectoparasites predominantly distributed over the breast and contour feather regions. No active haemorrhage or deep skin lesions were observed at the time of examination. Lice were manually collected using fine forceps directly from the feather shafts and skin surface. Collected samples were

immediately preserved in 70% ethanol for further processing. Samples were processed as per the standard procedure (Soulsby, 1982) for specific identification.

RESULT AND DISCUSSION

A total of seven lice were collected from the rescued black kite, including two numbers of *Laemobothrion maximum*, two numbers of *Degeeriella fulva* and three numbers of *Colpocephalum turbinatum*. Morphological examination of *Laemobothrion maximum* revealed a large, elongated louse measuring approximately 12 mm in length (Fig. 1), with a dorsoventrally flattened body. The head was broad and flattened, with a prominent oral opening extending posteriorly up to the level of the antennal base. The inner structure of the head showed well-developed lateral preocular swellings anterior to the eyes, along with narrow temporal angles (Fig. 2). Pigmented segmentation was evident along the dark abdominal tergites. The thorax was well developed and bore three pairs of legs, each terminating in two claws adapted for grasping feathers. The abdomen was elongated with irregularly arranged bristles across the segments. The posterior extremity was characterized by the presence of numerous fine, elongated setae forming a dense fringe-like arrangement. Morphological examination of *Degeeriella fulva* revealed a slender, elongate louse with a slightly rounded head that was distinctly longer than wide. The ventral suture extended up to, or nearly to, the anterior margin of the head, while the inner dorsal margin of the marginal carina

showed a characteristic median notch (Fig. 3). A well-developed conus was present and the antennae were five-segmented. Two marginal temporal setae were observed on either side of the head. The abdomen was narrow with sub-parallel lateral margins, consistent with its adaptation to feather. In male, three pleural setae were present on each side in the posterolateral region of the terminal abdominal segment. Morphometric analysis revealed a total body length ranging from 2.0–2.8 mm and a maximum width of 0.5–0.8 mm, which is in accordance with standard descriptions of this species from accipitrid hosts.

The lice *Colpocephalum turbinatum* were small, dorsoventrally flattened and elongate-oval in shape, with distinct pigmentation over the head and abdominal tergites (Fig. 4). The head was broad and subtriangular, wider than long with a flattened anterior margin and well-developed temporal regions. Prominent preocular nodi were observed and the head margins were distinctly sclerotized. Antennae were short, four-segmented and partially concealed within antennal grooves consistent with amblyceran lice. Mouth parts were equipped with well-developed mandibles and maxillary palps. The thorax was compact, with the prothorax narrower than the fused pterothorax. Thoracic segments bore characteristic marginal setae. Legs were short, stout and adapted for grasping, each terminating in a strong tarsal claw. Femoral ctenidia were evident. The abdomen was broad, comprising multiple visible segments with well-defined, pigmented tergal plates. Each segment exhibited two rows of setae,

with prominent lateral marginal setae (Fig. 4). Spiracles were visible along the lateral margins of the abdomen. Genital structures were consistent with the genus, with males showing a well-developed genital apparatus and females possessing a distinct subgenital plate. Morphometric analysis indicated a body length ranging from 1.8–2.5 mm and a maximum width of 0.7–1.0 mm.

The present study confirms the occurrence of *Laemobothrion maximum*, *Degeeriella fulva* and *Colpocephalum turbinatum* as concurrent ectoparasites in a raptor, a finding that is consistent with several previous reports across different geographical regions and host species. Multiple studies on wild raptors such as *Buteo* spp., *Milvus migrans* and *Aquila* spp. have documented the simultaneous presence of these genera, indicating a stable parasitic assemblage in accipitrid hosts (Dik, 2006; İnci *et al.*, 2010). The morphological characteristics observed in *Laemobothrion maximum* and *Degeeriella fulva*, were in accordance with previous morphological descriptions which highlight adaptations such as specialized mouthparts and strong claws for attachment to contour feathers of raptorial hosts (Perez *et al.*, 1995; Lade *et al.*, 2023; Tamileniyan *et al.*, 2026). Comparable findings in raptors indicate adaptation to feather barb microhabitats, with the narrow body facilitating movement between feather structures (Gherman *et al.*, 2026). The amblyceran lice *Colpocephalum turbinatum* showed distinct morphological divergence including a broad head, concealed antennae and well-developed mandibulate

mouthparts, similar with earlier descriptions (Gherman *et al.*, 2026). Its wide host range across multiple avian orders and frequent occurrence in mixed infestations are also in accordance with previous reports, indicating low host specificity and high ecological adaptability.

The coexistence of these three lice species on a single host has been well documented. Studies on black kites (*Milvus migrans*) demonstrated simultaneous infestation with *L. maximum*, *Degeeriella* spp. and *C. turbinatum* with varying prevalence and intensity among species (Saxena, 2017). Similarly, investigations in European raptors have reported multi-species infestations as a common phenomenon rather than an exception (Tomás *et al.*, 2016). This pattern can be attributed to niche partitioning, where different lice occupy distinct microhabitats such as contour feathers, feather barbs and skin surface, thereby reducing direct competition. This has important implications for wildlife rehabilitation centres and captive management systems. Overall, the morphological observations in the present study are in strong agreement with established taxonomic descriptions and reinforce the concept of coexisting, ecologically specialized ectoparasite communities in avian hosts. The simultaneous occurrence of ischnoceran and amblyceran lice highlights functional diversity in feeding strategies and microhabitat utilization, contributing to stable parasite assemblages without direct competitive exclusion.



Fig.1. *Laemobothrion maximum* (adult and nymph), measuring approximately 12 mm in length



Fig.2. Head broad and flattened with prominent oral opening extending to antennal base with antennae (Arrow), showing well-developed lateral preocular swellings and narrow temporal angles and maxillary palps (arrowhead) - *Laemobothrion maximum* (x100)



Fig.3. Elongate louse with a slightly rounded head, distinctly longer than wide – *Degeeriella fulva* (x40)



Fig.4. Elongate-oval body with distinct pigmentation over the head and abdominal tergites – *Colpocephalum turbinatum* (x40)

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