

Post-Mortem Findings of Ascaridia Species Infection in Shikra (*Accipiter badius*)

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ABSTRACT

A Shikra (*Accipiter badius*) weighing 178 grams, and measuring 9 inches (from head to tail) was brought to the Veterinary Clinical Complex at College of Veterinary Science and Animal Husbandry, MHOW with a history of lethargy, inability to fly, and gasping. Based on clinical condition and prevailing environmental factors, dehydration and heat stroke were suspected and oral fluid therapy was administered. The following day, the shikra was found deceased and a post-mortem examination was performed. On opening the thoraco-abdominal cavity, congestion in the liver and intestines was observed. Pulmonary haemorrhages were present, with the right lung more severely affected. On opening the oesophagus and gastrointestinal tract, several roundworms were detected in the oesophagus, crop, gizzard, and proximal part of intestine. Microscopic examination of roundworms revealed 3 lips on the cranial end and transverse annulations throughout the length of the worm, characteristic of the *Ascaridia* species. In conclusion, the cause of death was probably due to roundworm infection, causing anaemia and pneumonia, resulting in hypoxia.

INTRODUCTION

The Shikra (*Accipiter badius*) is a small, agile raptor native to Central Asia and Southern Persia, and ranges from India and Myanmar to Sri Lanka and Southern China. This species is characterized by several subspecies, each varying in size, plumage, and migratory behavior. The widely distributed subspecies *A. b. dussumieri* is common in India, particularly in regions such as the North-West Frontier Province, Kashmir, Northern Assam, and the Himalayan foothills up to 5,000 feet. In contrast, the smaller and darker *A. b. badius* is found in the southern parts of India, including Travancore and Sri Lanka. Notably, while some subspecies are year-round residents, others, such as the larger and paler *A. b. cenchroides* from Central Asia migrate seasonally to regions like Balochistan, Sindh, and Punjab during the winter months (Fatima et al., 2016).

In terms of conservation status, the Shikra is classified as "Least Concern" on the IUCN Red List (2021), reflecting its relatively stable population. Additionally, it enjoys the highest level of legal protection under Schedule I of the Wildlife Protection Act, 1972, ensuring measures to safeguard its habitats and mitigate potential threats.

The present study aims to determine the cause of death in a Shikra (*Accipiter badius*) through a thorough post-mortem examination and to contribute to the literature on avian parasitology, pathology, and raptor health management.

MATERIALS AND METHODS

An adult Shikra (*Accipiter badius*) was rescued and brought to the Veterinary Clinical Complex at the College of Veterinary Science and Animal Husbandry, MHOW. The bird weighed 178 grams and measured approximately 23 cm from head to tail. Its exact age could not be determined, as it was wild, but it was presumed to be an adult based on its morphological features and the observation of a regressed bursa of Fabricius during necropsy. The bird was identified as male due to the presence of testes. It had been rescued from the roadside and presented with symptoms of lethargy, gasping, and an inability to fly. Based on the clinical signs and the prevailing summer season, dehydration and heatstroke were suspected, and oral fluid therapy was administered. However, the following day, the Shikra was found deceased and submitted for post-mortem examination.

Initially, the bird was inspected for external injuries or discharges. A transverse incision was made at the caudal end of the sternum using scissors, and the skin was retracted to expose the pectoral muscles. The thoraco-abdominal cavity was opened by cutting the ribs with scissors and retracting the sternum. Upon opening the cavity, the visceral organs, lungs, air sacs, heart, and peritoneum were examined, and gross lesions were documented photographically. The trachea and gastrointestinal tract were incised to assess the luminal content, mucosal condition, and presence of parasites.

Representative tissue samples from the lungs, kidneys, liver, trachea, and intestines were collected and preserved in 10% neutral buffered formalin for 48 hours. These samples were then dehydrated using increasing concentrations of alcohol, cleared in xylene, and embedded in wax blocks. Thin sections (4-5 μ m) were cut and prepared for slide examination. The sections were stained with hematoxylin and eosin (H&E) to observe microscopic lesions. Additionally, roundworms collected from the gastrointestinal tract were cleared in lactophenol for 48 hours for further examination.

RESULTS

Upon inspection, no external injuries were observed, and there was no discharge from the nostrils, mouth, or cloaca. The muscles appeared normal, and no subcutaneous hemorrhages were detected. Upon opening the thoraco-abdominal cavity, gross lesions were identified in multiple organs, including the lungs, liver, kidneys, intestines, gizzard, proventriculus, and trachea. The liver showed signs of congestion and oedematous enlargement evidenced by rounding of the edges of the liver, accompanied by necrotic foci. Histopathological analysis revealed focal necrosis and infiltration of mononuclear cells (Figure 1).

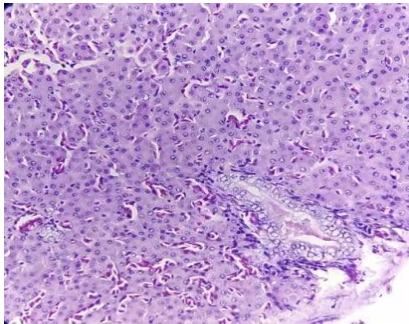


Figure 1. Liver (400x), showing infiltration of mononuclear cells and degenerative changes

The lungs exhibited extensive hemorrhages, with the right lung being more severely affected (Figure 2). Histopathological examination indicated red hepatization characterised by alveolar lumen filled with erythrocytes, consolidation, edema in peribronchial lesion, and hemorrhage around the bronchi, parabronchi, and air capillaries (Figure 3). Congestion and oedema was observed in the trachea (Figure 4). In the kidneys, histopathology revealed glomerular atrophy, inflammatory mononuclear cell infiltration, and degenerative changes in the renal tubules (fig. 5).



Figure 2. Gross lesions visible after opening the thoraco-abdominal cavity: haemorrhage in liver and lungs

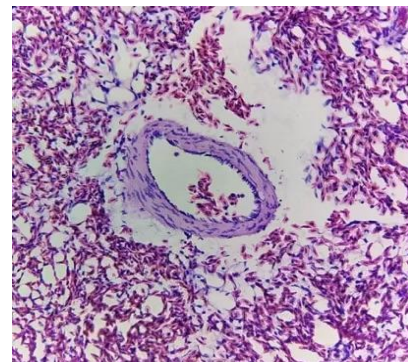


Figure 3. Lungs (400x), showing haemorrhage in bronchi and lungs parenchyma

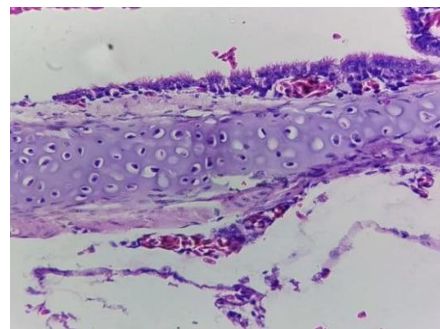


Figure 4. Trachea (400x), showing congestion and oedema

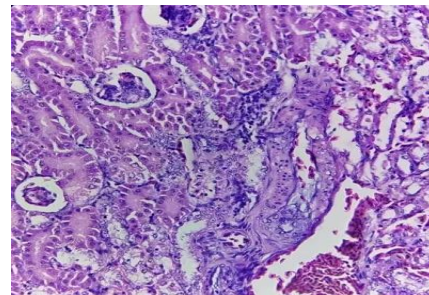


Figure 5. Kidney (400x), showing glomerular atrophy, tubular degeneration, and congestion.

In the gastrointestinal tract, several roundworms were found in the esophagus, crop, gizzard, and proximal intestines. Microscopic examination revealed that these roundworms had three lips on their anterior end and transverse annulations along their length, characteristics typical of the *Ascarididae* family (fig. 7). However, because no molecular tests for species-level diagnosis were performed, identification could not be made beyond morphological characteristics.



Figure 7. Roundworm (100x), anterior end having 3 lips

In conclusion, the Shikra (*Accipiter badius*) was found to be infected with nematodes, likely *Ascaridia* spp., as indicated by anatomical examination. The presumed cause of death was respiratory distress and hypoxia resulting from severe pneumonia.

DISCUSSION AND CONCLUSION

Despite being a common bird of prey in India and neighboring regions, there is limited research on the diseases and parasites of the Shikra. Previous studies have documented roundworms in other birds of the Accipitriformes group, which are closely related to the Shikra. For instance, Oyarzún-Ruiz et al. (2022) studied the endoparasites and ectoparasites of Harris's hawk (*Parabuteo unicinctus*) in central and southern Chile. Among 29 birds necropsied, 17 (58.6%) were found to be parasitized by helminths. Several species of nematodes were recorded, including *Porrocaecum depressum* (3.5%) from the small intestine, *Physaloptera alata* (6.9%) from the esophagus, *Microtetrameres* sp. (20.7%) from the proventriculus and small intestine, *Cyathostoma (Hovorkonema) americana* (3.5%) from the air sacs and lungs, and *Capillaria tenuissima* (13.8%) primarily from the small intestine.

Additionally, Yao C. Su and Andrew Chang Y. Fei (2004) reported parasitic species in crested goshawks (*Accipiter trivirgatus formosae*) from Taiwan, including *Lutztrema monoteran*, *Ascaridia perspicillus*, *Dispharynx nasuta*, *Spirocerca sanguinolenta*, *Raphidascaris* sp., and *Caryospora* sp. Majda Globokar et al. (2017) and Morgan and Schiller (1950) noted that *Porrocaecum angusticolle* and *Porrocaecum depressum* are found in both Accipitriformes and Falconiformes, with a global distribution. In a case report by Fatima et al. (2016), a Shikra rescued at Madras Veterinary College in Chennai was found to be infested with a tapeworm, suspected to be *Hymenolepis* spp., identified through fecal centrifugal sedimentation.

This case report contributes to the limited body of literature on Shikra parasites by documenting a roundworm infection in a rescued Shikra from Madhya Pradesh. The nematode was morphologically consistent with *Ascaridia* spp.; however, molecular confirmation was not performed. Further research is warranted to comprehensively characterize the parasite fauna of Shikra and to elucidate their implications for avian health and conservation.

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Conflict of Interest

The authors declare that they have no competing interests.

Authorship contributions

Writing: K.S., Analysis or Interpretation: N.S., Literature Search: K.S.

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