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SHORT COMMUNICATION

First Known Case of Carcass Guarding by Black Kite (*Milvus migrans)* in Urban Landscape, North India

Ritesh Joshi, Kanchan Puri*

Eco-Sensitive Zone Division, Ministry of Environment, Forest and Climate Change, JorBagh Road, New Delhi, 110003, India

ABSTRACT

Behavioral traits of species can play an important role in the functioning of the ecosystem and in evolving behavioural adaptations to survive according to environmental conditions. This note documents evidence of adding a rare observation by providing photographic evidence of the entanglement of a carcass of a juvenile Black Kite (*Milvus migrans*) from a nest and the use of nest by an adult individual, guarding the carcass. Documenting such behavior contributes to our understanding of the natural history and management of native species in an urban environment. Further, scientific studies/observations are needed to be conducted to reach some conclusion as to why species perform such behaviour.

Keywords: Behavioral traits; *Milvus migrans*; Carcass; Ecosystem; Biodiversity; India

1. Introduction

Behavioral traits of species can play an important role in the functioning of the ecosystem and in evolving behavioural adaptations to survive according to environmental conditions. The Black Kite (*Milvus migrans*) is distributed in Europe, Africa, Asia, Australia and the Indian subcontinent, and the subspecies *Milvus migrans govinda* is distributed across India, Pakistan, Nepal, Sri Lanka, Bangladesh, south China, Myanmar, Vietnam, Thailand and Malaysia. The Black Kite is a widely distributed species and inhabits almost all forms of habitats viz. forests, cultivated lands, deserts, riverine areas and

*CORRESPONDING AUTHOR:
Kanchan Puri, Eco-Sensitive Zone Division, Ministry of Environment, Forest and Climate Change, JorBagh Road, New Delhi, 110003, India; Email: genetics_1407@yahoo.co.in

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urban parks. The species has adapted to foraging in human landscapes, where it can occur in high numbers. Studies have shown that the species has been widely distributed in Indian subcontinent and serves as one of the major scavengers in most of the urban centers [1,2]. A study carried out on Black Kites in Delhi has indicated that the density of this species in Delhi may represent the highest concentration of a raptor recorded in the world, which has not declined since the 1960s [3].

Black Kites provide an essential ecosystem service in consuming carrion [4]. Although Black Kites serve as major scavenging raptors in most of the urban areas, scientific studies on this important ecosystem service provider are almost lacking in the Indian context [5]. This note aims to add a rare observation by documenting photographic evidence of the entanglement of a carcass of juvenile Black Kite from a nest and the use of nest by an adult individual, guarding the carcass. Instances of entanglement of various birds have been reported earlier for different reasons, but to our knowledge, no such instance has been previously reported wherein a Black Kite guarded a dead juvenile.

2. Materials and methods

The present observations occurred during a study that had the objective of documenting the avifauna of the urban green spaces. Hudco Park is located in south Delhi, which has a territorial area of 72843.4 m^2. The vegetation where the sightings occurred includes plant species such as *Cassia fistula*, *Ficus religiosa*, *Ficus virens*, *Bombax ceiba*, *Bauhinia variegata*, *Callistemon viminalis*, *Polyalthia longifolia*, *Alstonia scholaris*, *Ficus benghalensis, Mimusops elengi*, *Morus alba*(Mulberry) and *Roystonea regia* (Royal Palm). Observations were recorded with the help of field binoculars (Nikon Action Series, 10 × 50 CF) and photographs of the specimen were taken with a Canon EOS-700D camera.

3. Results and discussion

On 12 April 2021 (0840 H), while documenting the avifaunal species in some urban parks of the National Capital Territory of Delhi, we came across a carcass of a juvenile Black Kite which was entangled from the nest by a piece of cloth and the adult individual was guarding the carcass(in Hudco Park; 28.56°N, 77.22°E). The carcass was observed hanging from the nest in a silk cotton tree (*Bombax ceiba*) (**Figures 1 and 2**). The cause of death and the sex of the carcass was unknown. An adult individual was observed perching on a branch of the same tree near the nest. We continued our observations for the next 15–20 days and recorded activities of the Kite. The carcass was hanging from the nest for almost two weeks and was guarded by the adult Kite during this period. House Crows (*Corvus splendens*) were observed approaching the nest and trying to snatch the carcass quite a few times but during every attempt the Kite chased them away. The Kite was observed leaving the nest intermittently, however, returned to

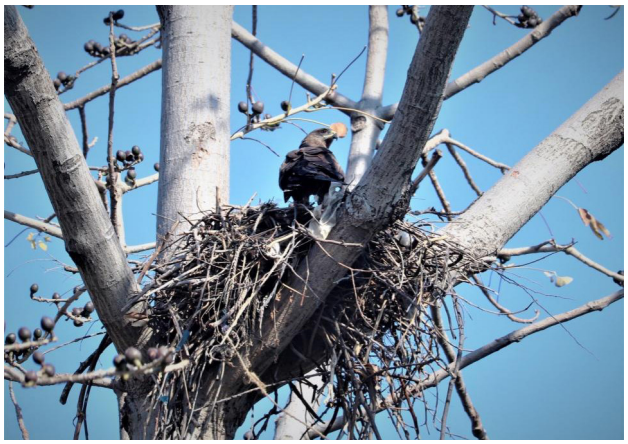

Figure 1. Black Kite at nest in Hudco Park.

Figure 2. A dead juvenile of Black Kite hanging from the nest bowl by piece of cloth string.

the nest continuously (approximately after 30–40 min soaring in the sky). Later, after almost 20 days, when the carcass dried up and the clefts remained hanging, the Kite was not observed in the nest. No other juvenile was observed in the nest.

On 24 April 2022, a "similar incident" (dead juvenile of Black Kite was observed hanging from the nest by a piece of cloth material) was observed in a silk cotton tree, some 80 m away from the spot from where the first observation was made. Again the cause of death and sex of the carcass were unknown. Our observations continued for the next 15–20 days. This time also the carcass was hanging from the nest for almost two weeks and was guarded by the adult Kite during this period. Later, after approximately 20 days, when the clefts remained hanging, the Kite was not observed in the nest and no other juvenile was observed in the nest. We believe this is the first published instance of a dead juvenile individual Black Kite entangled from the nest by a piece of cloth material and was guarded by the parent bird for about two weeks.

No studies are available on such an unusual behaviour of the species. Though, sometimes birds also lose their wing feathers during nest defense from the intruder species and during territorial defense, in the instant case no such observation was made. It is worth mentioning that crows are also engaged in conflict with Black Kites, which often compete with this raptor for food, by chasing in flocks. Sibling aggression and hatching asynchrony are also considered as mortality factors in raptors, however, any such reason was not observed. In the recent past, Wildlife SOS-India has observed that Black Kites are among the avifauna that were worst hit by the severe heatwaves that enveloped the country in the summer of 2022 and during March–April, over 100 Black Kites were rescued by the organization from the Delhi-National Capital Region [6]. Considering the availability of food, perching/roosting sites, space and dispersal, it has been observed that individuals might have died due to natural death, which might be due to food poisoning. Besides, it might also be possible that the individual was injured during swooping to pick up road kill and collision with vehicle. As this study only comprises of two random observations on the erratic behaviour of Black Kites and the exact cause of death is not known, further detailed studies are needed to reach some firm conclusion.

The breeding months of Black Kite have been reported as prolonged, commencing from the month of November and lasting till April [7]. However, the peak months of egg laying are considered to be January–February [8]. Usually, the species builds nests on tall trees like *Ficus* species and silk cotton trees in urban green space, and lines them with leaves, grass, cloth bits, small twigs, cotton, fibers of jute and plastic rope. The species has also been reported using human-made debris (white and transparent debris) to decorate their nests, which usually comprises of plastic or paper and rarely twine [9]. Juvenile Black Kites were reported to leave their nests mostly during April–May [2], when the breeding pairs gradually return to their roosting sites along with their fledged young, resulting in the maximum number of roosting Black Kites in the summer [5].

Although predation, starvation, desertion, hatching failure, and adverse weather are the major causes of mortality among birds, nest site competition, brood parasitism, accidents, disease and arthropod infestation may also cause mortality in some species [10,11]. Infanticide is a rare phenomenon [12], which causes the nestling mortality in birds. Nowadays, Chinese manja (nylon thread used for kite flying) is also serving as a death trap for larger birds, including Black Kites and crows (*Corvus* spp.) [13]. Some species have been observed sanitizing their nests [14,15], lowering the risk of infestation and nest predation by predators. Nest sanitation, specifically disposing of faecal sacs and removal of traces of egg material, throwing of excreta in birds, has been studied by various workers [16–18]. Raptor entanglement problems occur worldwide and instances of entangling of two nestlings of Black Kite have been reported from southern Spain [19], Ospreys (*Pandion haliaetus*) at various locations in North America [20], Southern

Caracara (*Caracara plancus*) [19] in Argentina. At the sites, where garbage dumps or human-induced debris lies, diurnal birds of prey are exposed to a variety of infections, including bacterial, viral, and fungal diseases. The presence of human debris in open areas attracts and influences many avian species and leads them to use waste items such as pieces of plastic bags, cloths, paper waste and bunches of hair, which can be harmful to bird species. Such human-made objects can be ingested by nestlings or cause entanglement of nestlings and adults [21,22], leading to injuries or death, which can ultimately reduce the reproductive success and survival of species [22].

4. Conclusions

As scavengers, Black Kites play an important functional role in the management of urban ecosystems and indicate the health of the environment. However, offering meat to scavengers like Black Kites is significantly affecting the population dynamics of species in Delhi [23]. Documenting such species behavior underpinning the species' ecology, would contribute towards species management in an urban environment. Further, scientific studies/observations are needed to be conducted to reach some conclusion as to why species perform such behaviour. Moreover to preserve Black Kite species, the implementation of comprehensive conservation measures that focus on minimizing bird mortality, as well as on the breeding and foraging sites of these raptors, would appear to be crucial [24]. Educational/awareness programmes on the importance of Black Kites and solid waste management issues should be supported to achieve the conservation goals.

Author Contributions

This work was carried out in collaboration between the authors. Author RJ designed the study and wrote the first draft of the manuscript. Author KP managed the analyses of study, the literature review and revisions based on the reviewer's comments. Authors read and approved the final manuscript.

Conflict of Interest

The authors express no conflict of interest.

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