

## Short Communication

# Sunning behavior in Black Kite (*Milvus migrans*): an opportunistic observation from South India

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**Abstract** - Sunning is a widespread avian behavior with significant physiological and ecological implications, including thermoregulation, feather maintenance, and ectoparasite control. In Black Kites (*Milvus migrans*), sunning involves adopting a distinctive posture to maximize exposure to solar radiation. However, the functional significance of this behavior remains insufficiently understood. This study presents an opportunistic field observation conducted during a Raptor Monitoring Program at Kollam Beach, Kerala, on 17 November 2024. A single *Milvus migrans* was observed sunning at 11:30 AM, lying horizontally on beach sand with its wings and tail fully outstretched and head slightly elevated, directly facing the sun. Ambient air temperature was recorded at 33°C, while sand surface temperature reached 51°C. The posture and environmental conditions suggest antiparasitic advantages, with intense solar and substrate heat potentially aiding in ectoparasite control by exposing feather lice to lethal temperatures. Although anecdotal, the study contributes to our understanding of the adaptive value of heliothermic behavior and highlights the importance of natural history observations in avian behavioral ecology. Further research is recommended to quantify the effects of sunning on parasite loads and to examine its ecological function across varied habitats.

**Key words:** sunning behavior, natural history, ectoparasite control, Black Kite (*Milvus migrans*), avian ecology, heliothermy.

**Riassunto** - Il comportamento di esposizione al sole nel nibbio bruno (*Milvus migrans*): un'osservazione opportunistica dall'India meridionale.

L'esposizione al sole è un comportamento diffuso tra gli uccelli con importanti implicazioni fisiologiche ed ecologiche, tra cui la termore-

golazione, la cura del piumaggio e il controllo degli ectoparassiti. Nel caso dei nibbi neri (*Milvus migrans*), prendere il sole comporta l'adozione di una postura particolare per massimizzare l'esposizione alla radiazione solare. Tuttavia, il significato funzionale di questo comportamento rimane insufficientemente compreso. Questo studio presenta un'osservazione opportunistica sul campo condotta durante un programma di monitoraggio dei rapaci a Kollam Beach, Kerala, il 17 novembre 2024. Un singolo esemplare di *Milvus migrans* è stato osservato mentre prendeva il sole alle 11:30 del mattino, disteso orizzontalmente sulla sabbia della spiaggia con le ali e la coda completamente distese e la testa leggermente sollevata, rivolto direttamente verso il sole. La temperatura dell'aria ambiente era di 33°C, mentre la temperatura della superficie della sabbia raggiungeva i 51°C. La postura e le condizioni ambientali suggeriscono vantaggi antiparassitari, con l'intenso calore solare e del substrato che potenzialmente aiutano nel controllo degli ectoparassiti, esponendo i pidocchi delle piume a temperature letali. Sebbene aneddótico, lo studio contribuisce alla nostra comprensione del valore adattativo del comportamento elietermico e sottolinea l'importanza delle osservazioni di storia naturale nell'ecologia comportamentale degli uccelli. Si raccomandano ulteriori ricerche per quantificare gli effetti dell'esposizione al sole sul carico parassitario ed esaminarne la funzione ecologica in habitat diversi.

**Parole chiave:** comportamento di esposizione al sole, storia naturale, controllo degli ectoparassiti, nibbio bruno (*Milvus migrans*), ecologia aviaria, elietermia.

## INTRODUCTION

Sunning, or heliothermic behavior, is common among birds and serves multiple functions, including thermoregulation, vitamin D synthesis, plumage maintenance, and ectoparasite control (Clayton & Moore, 2010; Koop *et al.*, 2012; Arana *et al.*, 2024). Birds typically adopt specialized postures, such as the "spreadeagle" stance, to maximize solar exposure (Graves *et al.*, 2020; Lesku *et al.*, 2023), and this behavior is often triggered by direct sunlight or sudden increases in light intensity (Unsöld & Melzer, 2010; Mueller, 1972). Juveniles and molting individuals may sun more frequently, likely to aid feather development (Prinzinger, 1976; Gibb, 1947). In raptors, where flight performance relies on optimal feather condition, sunning may play a key role in plumage maintenance and parasite control. Sunning behavior has been documented across diverse habitats and even in nocturnal species such as Eurasian Eagle-Owls (Friedemann, 2021), emphasizing its broad functional importance.

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The Black Kite (*Milvus migrans*) is a widely distributed scavenging raptor that thrives in human-dominated landscapes (David *et al.*, 2021). In India, the resident subspecies *M. m. govinda* is common, yet systematic reports of its sunning behavior are scarce. Documenting such observations can contribute to understanding the species' behavioral ecology and its adaptation to urban and coastal environments. Here, we report an opportunistic observation of sunning in *M. m. govinda* along the Kerala coast, describing posture, ecological context, and potential functional significance.

## MATERIALS AND METHODS

This report is based on a single opportunistic observation made during a Raptor Monitoring Program at Kollam Beach, Kerala, India (8.882692, 76.569699) on 17 November 2024. The observation occurred at 11:30 AM under clear sky conditions. The bird was observed with Nikon Monarch M7 8×42 binoculars and photographed using a Nikon D500 camera equipped with a Sigma 150-600 mm telephoto lens. Ambient air temperature was recorded with a mercury thermometer (33°C), and surface temperature at the sunning location was measured immediately after the bird's departure (51°C). The observation was entirely visual and non-invasive, with no handling or disturbance of the bird.

## RESULTS

A single Black Kite was observed engaging in sunning behavior. The bird was positioned horizontally on the open beach, facing the sun, with wings and tail fully fanned and



Fig. 1 – A Black Kite (*Milvus migrans*) engaged in sunning behavior on a sandy beach, characterized by a crouched posture, partially ruffled plumage, and extended wings to maximize solar exposure. / Un nibbio bruno (*Milvus migrans*) intento a crogiolarsi al sole su una spiaggia sabbiosa, caratterizzato da una postura accovacciata, piumaggio parzialmente arruffato e ali distese per massimizzare l'esposizione solare.

head slightly raised. The behavior lasted less than 3 minutes and was accompanied by visible panting. No other kites or bird species present in the area exhibited sunning during this time. Following the bout, the kite flew to a nearby tree. The sunning site was an exposed, sandy area devoid of vegetation, providing clear visibility of the surroundings (Fig. 1).

## DISCUSSION

Our observation supports the interpretation that sunning in *M. m. govinda* is a deliberate, adaptive behavior. The kite adopted a characteristic sunning posture, with its wings fully extended and its body inclined toward the heated substrate, suggesting intentional exposure to solar radiation. Comparable behavior has been documented in Hooded Vultures under similar midday conditions with elevated air ( $\approx 33^\circ\text{C}$ ) and substrate ( $\approx 60^\circ\text{C}$ ) temperatures (Gutiérrez *et al.*, 2020). Since sunning typically occurs when air temperatures exceed  $\sim 29^\circ\text{C}$  (Moyer & Wagenbach, 1995), the behavior likely confers significant benefits despite potential costs such as heat stress or increased predation risk.

Two main functional hypotheses explain sunning: thermoregulation and ectoparasite control. While heat gain may assist birds in reaching thermoneutral zones, sunning is often performed near the hyperthermic limit, suggesting functions beyond temperature regulation (Simmons, 1986). Ectoparasite infestations are common in *M. migrans*, with 75% of individuals reported to carry phthirapterans (Saxena, 2017). Similar findings from Kerala (Mohan *et al.*, 2019; Sharun, 2020) suggest that such heavy infestations may select for antiparasitic behaviors, such as sunning (Graves *et al.*, 2020; Clayton *et al.*, 2010). Complementary behaviors such as dusting (Sonter, 1987) and anting (Sarlin *et al.*, 2023a, 2023b) further highlight the importance of ectoparasite management in birds.

Sunning in Black Kites has been reported previously (Sonter, 1987; Gibb, 1947) and in sympatric Brahminy Kites (*Haliastur indus*), in Kerala (Sanuraj & Anitta, 2020). Experimental studies confirm its antiparasitic benefit, showing reduced lice survival in sun-exposed birds (Moyer & Wagenbach, 1995) and decreased sunning frequency in pesticide-treated individuals (Blem & Blem, 1993). Although sunning likely serves multiple functions, the evidence strongly supports a primary role in ectoparasite control, supplemented by thermoregulation and physiological stimulation (Prinzinger, 1983). This observation documents sunning in *M. m. govinda* along the Kerala coast and supports its functional significance in ectoparasite control and plumage maintenance. Continued documentation of such behaviors across seasons and habitats will enhance understanding of their ecological and physiological roles in urban-adapted raptors.

## CONCLUSIONS

Sunning in *M. m. govinda* appears to balance ectoparasite control and thermoregulation, highlighting behavioral plasticity in urban raptors. Future research should integrate behavioral monitoring with habitat and temperature data to clarify the physiological mechanisms and adaptive significance of this behavior.

## CONTRIBUTIONS

PJS, conceptualized the project, provided photographs and ecological notes, reviewed and edited the draft manuscript, and approved the final submission; SandM, conceptualized the project, wrote the original draft, reviewed and edited the revised draft, and approved the final submission; AM, provided ecological notes and conducted the field survey; SancM, reviewed and edited the draft manuscript, and approved the final submission; SavM, provided ecological notes and conducted the field survey. PJ conceptualised the project, reviewed and edited the draft manuscript, and approved the final submission.

## CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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