



Documenting The First Regional Presence Of Indian Grey Hornbill In Jodhpur's Bilara Landscape

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Abstract

This paper reports the first confirmed sighting of the Indian grey hornbill (*Ocyrceros birostris*) in the Bilara region of Jodhpur, Rajasthan, marking a significant extension of the species' known range within the state. The Indian grey hornbill, a medium-sized bird distinguished by its grey plumage and casque, is usually found in deciduous forests and urban green spaces throughout the Indian subcontinent. Observations were recorded through direct visual and photographic documentation, along with detailed notes on habitat conditions and local plant life. This discovery suggests an adaptive expansion into semi-arid and urbanized areas of western Rajasthan, highlighting the importance of conserving native tree species and urban green spaces. The record provides valuable baseline data on the species' distribution and highlights the need for continuous monitoring to better understand population trends in this region.

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INTRODUCTION

Asian hornbills are "birds of the forest," according to Kemp (1995), although the growing number of Indian grey hornbills in urban areas contradicts that concept. Out of the nine species of hornbills found in India, 44% of the Indian Grey Hornbill population has been found in urban park areas (Datta et al. 2018).

Ecologically, the hornbill plays a significant role as a seed disperser in dry deciduous, moist deciduous, and semi-arid ecosystems. Santhoshkumar and Balasubramanian (2011) noted that the species disperses seeds of a wide range of forest trees, particularly figs (*Ficus* spp.), thereby contributing to forest regeneration and plant community structure. Its nesting ecology is equally specialised, relying on natural cavities in large, mature trees where the female seals herself during incubation. This unique nesting strategy makes the species highly dependent on the presence of old-growth trees, even in urban and agricultural landscapes. Jhahria (2021) documented first sightings in Sikar district, suggesting either overlooked resident populations or recent colonisation linked to increased plantation activities, expansion of green belts, and roadside afforestation initiatives. Such observations point to a broader ecological trend in which hornbills are utilising anthropogenic habitats more extensively. Gadikar (2024) reported significant shifts in feeding habits within city environments, where hornbills now rely heavily on ornamental and exotic fruit tree species, including *Ficus* varieties planted in parks, campuses, and urban corridors. These findings illustrate the species' behavioural plasticity in response to landscape transformation, especially in regions undergoing rapid urbanization.

STUDY AREA

Bilara tehsil, located in the southeastern Jodhpur district of Rajasthan, India (26°13'N 73°40'E), spans 1,666 km² of a semi-arid agricultural landscape at an elevation of ~302 m, bordered by Bhopalgarh to the north, Nagaur to the northeast, Pali to the east/south, and Luni/Mandor to the west. The region features irrigated

fields, scattered mature trees (e.g., *Prosopis cineraria*, *Azadirachta indica*), roadside avenues, and canal-side plantations amid low annual rainfall (~300–400 mm) and temperatures ranging 22–32°C. This human-modified mosaic supports arboreal species, such as hornbills, via linear woody elements in an otherwise treeless matrix.

SAMPLE SITES

Four primary sites were selected across Bilara tehsil based on habitat suitability (presence of tall fruiting trees >10 m), prior avifaunal data gaps, and accessibility: (1) Bilara town outskirts (irrigated farmlands, 26.18°N 73.70°E); (2) NH62-adjacent avenue plantations (roadside *Acacia* groves, 26.15°N 73.65°E); (3) Luni canal buffer (riparian trees, 26.10°N 73.75°E); (4) village groves near Pipar (agroforestry patches, 26.20°N 73.55°E). Sites were spaced >2 km apart to minimize overlap, covering ~50 ha total with 70% canopy in focal patches amid 80% cropland.

METHODOLOGY

Field surveys for the first reporting of Indian grey hornbill (*Ocyrceros birostris*) in Bilara tehsil, Jodhpur district, Rajasthan, were conducted from 2020 to 2024 across semi-arid agricultural landscapes with irrigated fields and scattered trees. Four key sites were selected based on ecological potential for avian diversity, including areas near Shiv Nagari and other localities with native vegetation and minimal disturbance. Surveys occurred during peak activity periods: morning sessions from sunrise to 10:00 AM and evening sessions from 3:00 PM to sunset, with 3–4 consecutive days per visit to ensure comprehensive coverage. Bird observations employed the point count method combined with direct sighting techniques, where two observers recorded species using binoculars (8x42 magnification) and Nikon Coolpix p900 DSLR camera for photographic evidence and identification. Point counts lasted 10 minutes per station with an unlimited radius initially, followed by distance estimation to account for detectability, noting vocalizations, movements, and fruit foraging behaviour specific to hornbills. Habitat parameters like canopy cover were assessed around each sighting using a spherical densitometer or apps to evaluate suitability. Bird species were identified using standard ornithological field guides, including Ali and Ripley (2007) and Grimmett et al. (1999). The Indian Grey Hornbill is one of the more adaptable hornbill species, but its distribution in western Rajasthan is still poorly known, with many areas lacking systematic ornithological surveys. There is no prior scientific record of this species in the Jodhpur district, and especially in the Bilara region, which is characterized by semi-arid scrubland, sporadic agroforestry belts, and plantation-based green cover.

RESULT

The present study reports the first verified sighting of the Indian Grey Hornbill in the Bilara region of Jodhpur, supported by photographic evidence and habitat assessment. This new record is significant as it extends the known distribution of *O. birostris* in Rajasthan's western arid landscape. It also contributes to emerging evidence that the species is gradually expanding its range into semi-arid zones, possibly aided by increasing tree cover from community plantations, urban greening projects, and agricultural diversification. Documenting such sightings is essential for understanding regional distribution shifts and for guiding local conservation planning in dryland ecosystems. The first confirmed sighting of Indian Grey Hornbills (*Ocyrceros birostris*) was recorded on October 13, 2023, at Site 1: Swami Vivekananda Model School, Pichiyak Block Bilara (26°10'45"N 73°42'20"E), an irrigated roadside farmland along NH62 with high-canopy (>15 m) avenue trees, according to systematic surveys that included 42-point counts (2020–2024). The Indian Grey Hornbill (*Ocyrceros birostris*) is a medium-sized, primarily frugivorous hornbill widely distributed across the Indian subcontinent. The species is taxonomically placed under the family Bucerotidae and represents one of the few hornbill species that thrive in both natural and human-modified landscapes. According to the IUCN Hornbill Specialist Group, it is currently classified as of Least Concern, owing to its broad geographic range and stable population at the national level. However, despite its wide distribution, localised ecological patterns, habitat specificity, and recent reports of new sightings in previously undocumented regions highlight the importance of fine-scale monitoring. During the observation period, no evidence of paired individuals, family groups, vocalizations, or nesting activities was recorded for the Indian Grey Hornbill (*Ocyrceros birostris*), clearly highlighting its solitary behavioural pattern. Notably, a single adult Indian Grey Hornbill were observed engaging in vigorous foraging on ripe *Ficus* fruits. After feasting, the bird gracefully glided low over the adjacent fields, effortlessly navigating the landscape before reaching the lush foliage along the college border. The striking contrast between the vibrant *Ficus* fruits and the rich greens of the environment created a visually stunning tableau, underscoring the unique and elusive beauty of this solitary forager. The most important food

of the Indian Grey Hornbill is figs from Ficus trees, namely Banyan (*Ficus benghalensis*), Peepal (*Ficus religiosa*), and Cluster Fig (*Ficus racemosa*). The hornbills are mainly frugivorous during the non-breeding season, but during the breeding season, they become omnivorous to fulfil the requirements of calcium and proteins of the growing nestlings (Kasambe, 2011). Indian grey hornbill largely feeds on fruit, especially wild figs (*Ficus* spp.), berries, flower petals, insects (beetles, mantids, grasshoppers, wasps, etc.) and occasionally on lizards, mice and other small animals. Recorded eating the poisonous fruits of the (*Thevetia neriifolia*) Yellow Oleander (Ali and Ripley 1983).

Morphological identification –

| Feature | Observation | Diagnostic Traits |
|-----------------|---|----------------------------------|
| Plumage | Greyish-brown upperparts | Grey-brown with pale supercilium |
| Casque | Prominent, narrow, pointed | Male: larger on dark bill |
| Bill | Curved, blackish base, yellowish culmen | Diagnostic vs Malabar Grey |
| Tail | Long, white tip, dark subterminal band | Key field mark |
| Orbital skin | Dark | Male typical |
| Flight feathers | Dark brown, whitish tips | Wing pattern confirmation |





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