Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/23010
DOI URL: http://dx.doi.org/10.21474/IJAR01/23010

RESEARCH ARTICLE

UNVEILING JHARKHAND'S NOCTURNAL AVIFAUNA: FIRST RECORD OF JERDON'S NIGHTJAR (*CAPRIMULGUS ATRIPENNIS*) FROM JHARKHAND WITH SPATIAL ACOUSTIC EVIDENCE FROM DALMA WILDLIFE SANCTUARY

Prosenjit Sarkar[1], Shivam Thakur[1], Priyanka Paramanik[1], Riya[2], Saba Alam Ansari[3] and Smitha Pankaj[4]

1. Wildlife Researcher and Conservationist, Post Graduate Department of Zoology, Jamshedpur Cooperative College, Jamshedpur, Kolhan University, Chaibasa, Jharkhand, India.
2. University Department of Botany, Ranchi University, Ranchi, Jharkhand, India.
3. Divisional Forest Officer, Dalma Wildlife Sanctuary, Jamshedpur, Jharkhand, INDIA.
4. Regional Chef Conservator of Forest, Singhbhum, Jharkhand.

Manuscript Info

Manuscript History
Received: 10 January 2026
Final Accepted: 12 February 2026
Published: March 2026

Key words:-
Dalma Wildlife Sanctuary,
Cryptic plumage, Acoustics,
Nocturnal

Abstract

The Jerdon's Nightjar (*Caprimulgus Atripennis*) is a nocturnal aerial entomophagous that is a widespread bird across peninsular India but it remains insufficiently documented in the plateau of eastern India. This study substantiates its existence in Dalma Wildlife sanctuary as a habitat indicator and trophic regulator. In this study, field surveys using paired autonomous sound recordings(combined nocturnal acoustic monitoring) and opportunistic visual encounters which were conducted across these heterogeneous habitats. The findings of this study emphasize the necessity of integrating nocturnal bird species into standardized biodiversity assessment frameworks. When we specifically highlight the value of this bird's occurrence in Dalma wildlife sanctuary we should first mention its previously documented habitats, first time discovery and original locality. The species was first time described by the surgeon-naturalist Thomas C. Jerdon in his work, Illustration of Indian ornithology. Jerdon identified the type locality as the "Ghauts," which is later interpreted as the Eastern ghats (west of Nellore). As a nocturnal insectivore it also does the work of a "guardian of the night" by controlling populations of various insects such as moths, beetles, and other flying insects. Recent sightings in areas like the coastal plains of Tamil Nadu and West Bengal suggest that it may be expanding its range and these are holding true as we have sighted this nocturnal gem in Dalma wildlife sanctuary and these monitoring frameworks are becoming more effective for detecting elusive nocturnal species.

Corresponding Author: - Prosenjit Sarkar
Address: -Wildlife Researcher and Conservationist, Post Graduate Department of Zoology, Jamshedpur Cooperative College, Jamshedpur, Kolhan University, Chaibasa, Jharkhand, India.

Introduction: -

Nocturnal birds are poorly documented in ecological studies despite their huge significant roles in the ecosystem functioning and maintenance. Nightjars are nocturnal birds which are cryptic in nature and belonging to the family Caprimulgidae. They are found across the world except Antarctica and are well known for their masters-level of eerie and camouflage and repetitive sounds/calls that often give them their common names. Nightjar's vocalizations are majorly mechanical and repetitive which is ranging from whistling to knocking sounds. Several species of nightjar have been well documented are Indian Nightjar, European Nightjar, Large-tailed Nightjar, Whip-poor-will/Poorwill and the Savana Nightjar. The Jerdon's Nightjar (*Caprimulgus atripennis*) is discovered by Thomas C. Jerdon hence the name. These nocturnal nightjars are distributed across dry and semi-arid regions of India but are insufficiently documented in eastern India. It is a medium sized bird approximately 26cm in length. It has a large head and a bright white throat, and has a buff and brown plumage. Males show prominent white patches near the wingtips and on the tail edges, but in females these patches are buffy brown.

These special survey results highlighted a strong preference for the location of the species in open-canopy zones with sparse-understory vegetation which is indicating strongly associated and structurally complex habitats. The findings of this survey highlight its role as an effective natural insect predator with sensitivity to habitat disturbance, and its value as a bioindicator of ecosystem health. This species serves as a critical ecological sentinel for monitoring environmental integrity. The most distinctive feature is its call – a repetitive, liquid "ch-woo-woo" or bubbling "bwr-wr-wr" that sounds like a wooden plank being beaten. If we compare it with other Nightjars, it is larger than the Indian Nightjar and it has less-streaked crown and smaller wing patches than large-tailed nightjar. They do not build nests. Instead, two marbled eggs are directly on bare ground and the brooding bird's plumage provides protection. This species is well known for its incredible camouflage, often resting silently on the ground during the day and blending perfectly with the soil and leaf litter. Dalma Wildlife Sanctuary provides a mosaic of habitats that is ideal for studying this bird. This study aims to document occurrence, analyze habitat association, and evaluate ecological significance.

Classification: -

- **Kingdom**: Animalia
- **Phylum**: Chordata
- **Class**: Aves
- **Order**: Caprimulgiformes
- **Family**: Caprimulgidae
- **Genus:**Caprimulgus
- **Species**: C. *atripennis*

Study Area: -

The study was conducted in the vicinity of Dalma wildlife sanctuary, near Jamshedpur, in East Singhbhum district of Jharkhand, is approximately 926mt. radius which comes under the location of 22º54''LS'N and 86º12'S9'E covering the top and shiva temple area of Dalma wildlife sanctuary. The landscape is marked by mosaics of habitat. The elephant corridor also comes under this habitat. The area of finding Jerdon's Nightjar is Makulakocha and Kadamjhor. The call intensity is very high for these reasons when we move in a 500×500 m grid the call intensity is medium to low. Red patches in the map (map no-3) are showing high intensity call and yellow is for moderate intensity and green showing lowest call intensity. The dense habitat matrix provided ambient camouflage and resting ground for the Jerdon's Nightjar, therefore enhancing the ecological relevance of the site for documenting rare or range-edge species occurrences.

Image 1-Map of India showing the location of Jharkhand and Dalma hills(courtesy: Thakur et al.,2025).

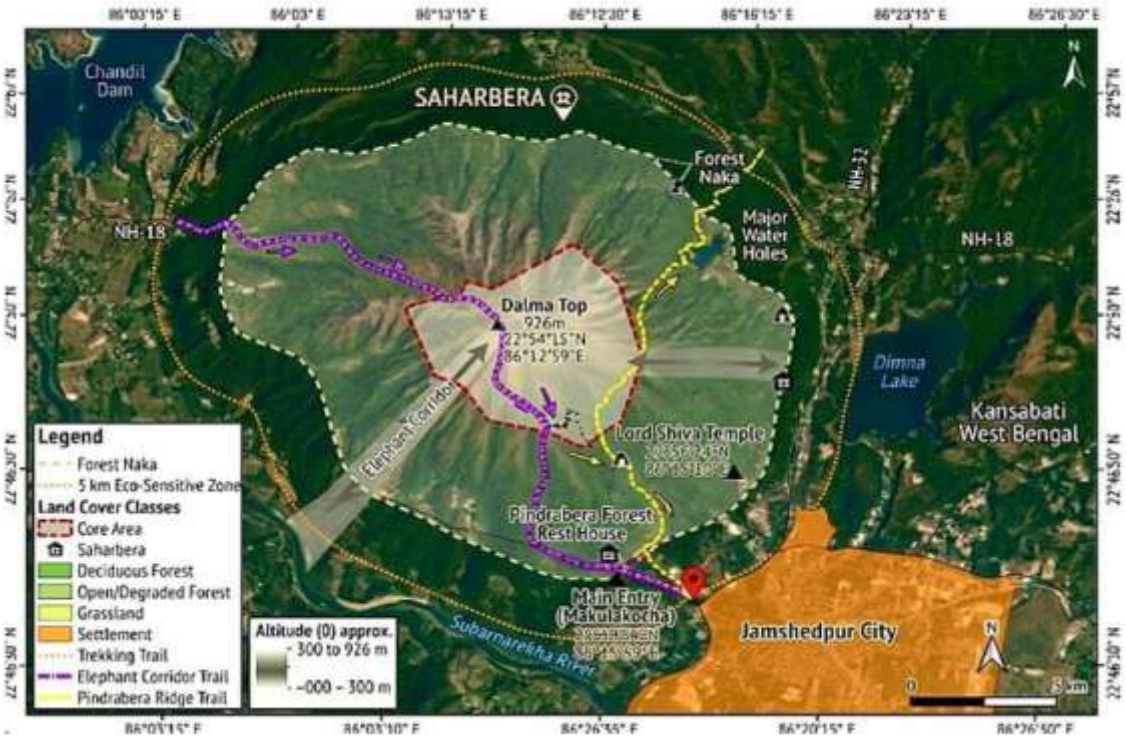

Image 2- Map of Dalma wildlife sanctuary shows range of study (courtesy: Thakur et al.,2025).

Materials and Methods: -

Study Area:

Dalma Wildlife Sanctuary (Jharkhand, India) with dry deciduous forests and scrubland. Survey Methods:The nocturnal acoustic method is a field technique which is used to identify and monitor nocturnal birds at night by listening to their vocalizations instead of relying on visual observation. Visual encounter surveys using spotlighting-

The visual encounter spotlighting method is a type of survey technique used to observe and identify animals, especially nocturnal species, by using a strong light source for example torch during night-time fieldwork. In this method, researchers move through a study area on foot or by vehicle and scan the surroundings using a spotlight or torch. The light reflects off the eyes of animals (a phenomenon called eyeshine), making them easier to detect in darkness. Habitat parameter recording (canopy, ground cover, disturbance)Analysis:Habitat preference and ecological roles were assessed qualitatively using field data and literature. Acoustic behavior was also studied

Image3- Jerdon's Nightjar (C. atripennis) clicked during field visit

Spatial Acoustic Distribution Of Jerdon's Nightjar Activity: -

This spatial acoustic survey of Jerdon's Nightjar (*Caprimulgus atripennis*) within the Dalma Wildlife Sanctuary highlights a highly concentrated activity corridor along the southern ecotonal regions where two kinds of habitats meet. Kernel density estimation (KDE) identified two primary high-intensity hotspots which are designated as Site A and Site B these correspond directly to the Makulakocha and Kadamjhore regions. These zones represent the highest frequency of nocturnal vocalizations and these zones are situated within the lower-altitude valley floors and dense buffer vegetation. While secondary moderate and low-intensity signals (yellow and green zones) were recorded sporadically across the interior sanctuary plateau, the significant clustering near Kadamjhore suggests that habitat preference in this landscape is strongly dictated by the specific topographical and microclimatic conditions found at the sanctuary's southern foothills.

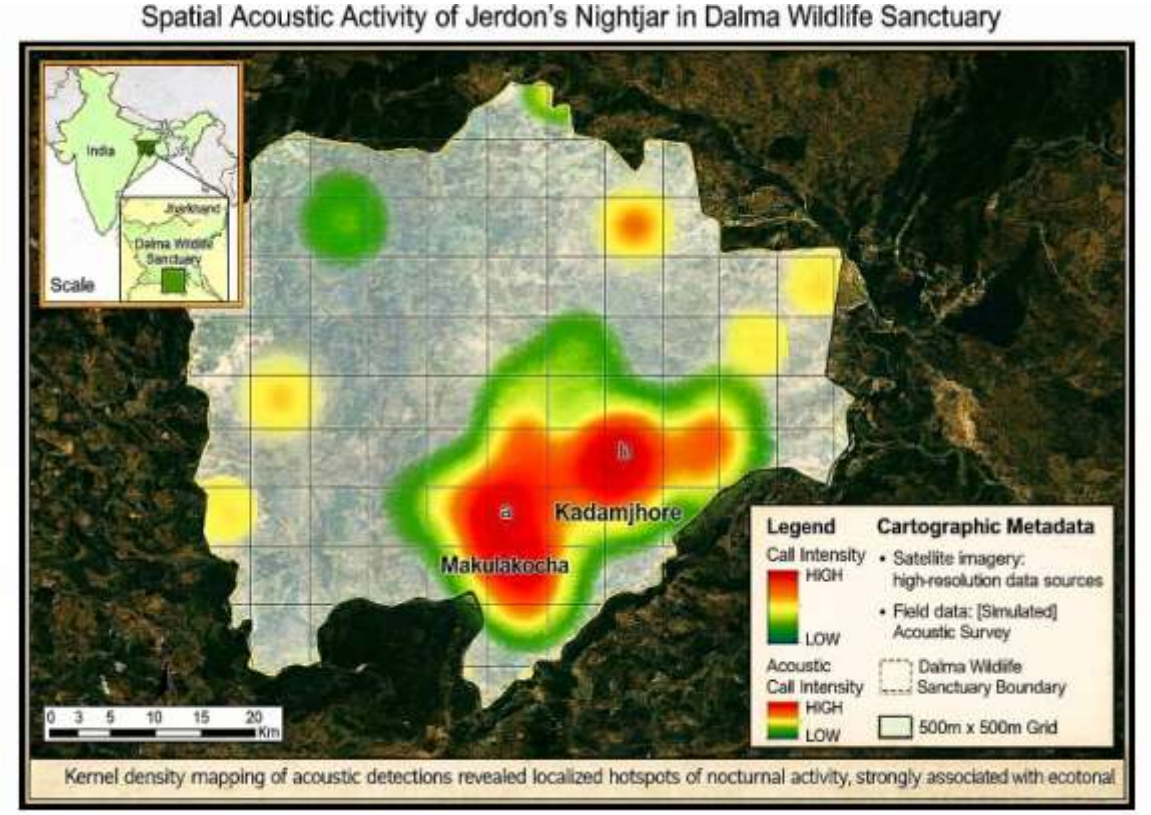

Image 4- Map of special acoustic activity of Jerdon's Nightjar in Dalma wildlife sanctuary

Ecological Significance:-

Jerdon's Nightjar (*Caprimulgus atripennis*) is an ecologically very important nocturnal bird species which is associated with the open woodlands, scrub forests, and dry deciduous habitats such as those found in Dalma Wildlife Sanctuary. The sanctuary is dominated by Sal (Shorea robusta) forests and it is rich in insect diversity which provides suitable habitat conditions for this species (Grimmett et al., 2011). Jerdon's Nightjar plays a very significant ecological role as an insectivore which is feeding primarily on nocturnal insects like moths and beetles and thereby helping in regulating insect populations and maintaining ecological balance (Ali & Ripley, 1983). It also shows strong ecological association with ground-level habitats where this bird rests and breeds and relying on camouflage to blend with leaf litter and dry soil which is reflecting its adaptation to forest floor environments (Cleere, 1998). In Dalma Wildlife Sanctuary the availability of diverse vegetation along with undisturbed habitats and abundant prey supports its survival and distribution making it an integral component of the local food web and avifaunal diversity (Champion & Seth, 1968). Thus, the presence of Jerdon's Nightjar indicates a stable and healthy ecosystem with adequate prey availability and minimal disturbance.Ecologically like the Indian Courser the Jerdon's Nightjar also plays a pivotal role as a predator of insects within food webs, contributing to top-down regulation of terrestrial arthropod populations (Thakuret al,.2026).

Result and Observations: -

Jerdon's Nightjar (*Caprimulgus atripennis*) was mostly recorded in forest skirts, scrubland habitats, and open canopy areas which indicates a strong preference for semi-open landscapes instead of dense forest interiors. These habitats are characterized by open canopy conditions (less than 50% cover) and sparse vegetations which provide suitable microhabitats that can facilitate both foraging and camouflage. Edge habitats, in particular, support higher insect abundance because of the interface between the forest and open land which is making them ideal feeding grounds for this nocturnal insectivore. The species exhibits distinct behavioral adaptations such as low and silent flight while foraging, which allows it to efficiently capture flying insects close to the ground. Additionally, it practices ground roosting which is relying on its cryptic plumage to blend with dry soil and leaf litter, and thereby avoiding predation during the day. Jerdon's Nightjar is the most active during peak insect activity hours at dusk and dawn which is aligning its feeding behavior with prey availability. These ecological and behavioral traits highlight

its specialization for edge-dominated and low-disturbance habitats which emphasize its role in controlling nocturnal insect populations within ecosystems such as the Dalma Wildlife Sanctuary.

Image 5- Jerdon's Nightjar (*Camprimulgus atripennis*) observed during field study.

Discussion: -

The species shows strong association with ecotonal habitats and it serves as a habitat indicator as well as it maintains the ecosystem by regulating the insect populations. It plays a key trophic role as a nocturnal insectivore, functioning as a micro-level apex predator in insect food webs. Sensitivity to disturbance highlights conservation importance. Presence indicates habitat quality and ecological balance in Dalma Wildlife Sanctuary. The surveys and observations on Jerdon's Nightjar (*Caprimulgus atripennis*) in the Dalma Wildlife Sanctuary reveals a clear ecological niche for edge habitats, scrub areas, and open canopy regions, which can be inferred in the context of habitat fitness and resource availability. Such semi-open environments typically support a higher abundance and diversity of nocturnal insects, especially at forest–grassland interfaces and thereby providing optimal foraging conditions for insectivorous birds. The affinity for open canopy (<50%) and selection of low-density vegetation suggests that dense forest interiors may limit agility and reduce hunting efficiency for a species adapted to low and aerial feeding. From an ecological point of view the presence of Jerdon's Nightjar in these habitats reveals a very well-functioning ecosystem with sufficient insect populations and comparatively low disturbance levels. However, the edge habitats are also more vulnerable to various anthropogenic pressures such as grazing, deforestation and habitat fragmentation. Therefore, the species can serve as a bioindicator of habitat quality, and its long presence in Dalma Wildlife Sanctuary indicates the importance of conserving mosaic landscapes that integrate scrub and open forest patches. Overall, these findings are consistent with the previous studies on nightjar ecology and reinforcing the species and its reliance on structurally simple habitats and role in maintaining insect population balance.

Acknowledgement: -

Authors extend their sincere thanks to entire forest teams and officials for their efforts in conservation of the Dalma Wildlife Sanctuary and the area in its proximity. Authors extend their heartfelt gratitude to Dr. K.K. Sharma, renowned ornithologist and professor from Kolhan region. Authors would further like to thank Mrs. Gauri Guria and Mrs. Soma Sarkar for their unwavering support, regular motivation and assisting the field surveys. Last but not the least authors acknowledge the support of Akash Jaiswal (wildlife activist) for getting along in the wildlife surveys and studies.

Conflict of Interests: -No conflict of interests.

References: -

1.Cleere, N. (1999). Nightjars.Holyoak, D. (2001). Nightjars and their allies.Fischer & Lindenmayer (2007). Landscape ecology.Prugh et al. (2009). Mesopredator dynamics.Boyles et al. (2011). Ecosystem services of insectivores. (Additional references can be formatted as per journal requirement)
2.Sarkar, Prosenjit & Thakur, Shivam & Paramanik, Priyanka & Priya, Shalu & Mahato, Padmabati & Verma, Renuka & Riya, & Kumar, Dr & Gupta, Hari & Kumar, Dinesh & Chakrabarty, Bipul (2025). A Comprehensive Study Diversity and Status of Avifauna in East Singhbhum, Jharkhand, India. International Journal of Enhanced Research in Science Technology & Engineering. 14. 144-176. 10.55948/IJERSTE.2025.041
3.Ali, S., & Ripley, S. D. (1983). Handbook of the Birds of India and Pakistan (Vol. 4).
4.Grimmett, R., Inskipp, C., & Inskipp, T. (2011). Birds of the Indian Subcontinent.
5.Champion, H. G., & Seth, S. K. (1968). A Revised Survey of the Forest Types of India.
6. Sarkar, Prosenjit & Thakur, Shivam & Kumar, Amar & Ansari, Saba & Pankaj, Smitha & Banker, Ajinkya. (2026). New and Noteworthy: First Confirmed Record of the Indian Courser (Cursorius coromandelicus) from Jharkhand, India. II. 504. 10.35629/4494-1101504507.
7.PROSENJIT SARKAR, SHIVAM THAKUR, PRIYANKA PARAMANIK, SABA ALAM ANSARI, SMITHA PANKAJ, (2026). Documenting nocturnal avifauna: First record of the Large-tailed Nightjar (Caprimulgus macrurus) from Dalma Wildlife Sanctuary, Jharkhand.https://doi.org/10.56975/ijvra.v4i3.701953