

# First Confirmed Occurrence of the Brown Wood Owl in Jharkhand, India: Photographic Documentation, Bioacoustics Validation, and Behavioural Observations from Dalma Wildlife Sanctuary

Prosenjit Sarkar<sup>1</sup>, Shivam Thakur<sup>1</sup>, Priyanka Paramanik<sup>1</sup>, Shalu Priya<sup>1</sup>, Padmabati Mahato<sup>1</sup>, Renuka Verma<sup>1</sup>, Amar Kumar<sup>2</sup>, Riya<sup>3</sup>, Gouri Guria<sup>4</sup>, Saba Alam Ansari<sup>5</sup>, Smitha Pankaj<sup>6</sup>

<sup>1</sup>Wildlife Researcher and Conservationist, Department of Zoology, Jamshedpur Cooperative College, Jamshedpur, Kolhan University, Chaibasa, Jharkhand, India

<sup>2</sup>University department of Zoology, Kolhan University, Chaibasa, Jharkhand, India

<sup>3</sup>Department of Botany, Ranchi university, Jharkhand, India

<sup>4</sup> Ethnologist, Wildlife conservationist

<sup>5</sup> Divisional Forest Officer, Dalma Wildlife Sanctuary, Jamshedpur, Jharkhand, INDIA

<sup>6</sup>Regional Chef Conservator of Forest, Singhbhum, Jharkhand, INDIA

Email- [prosen0018@gmail.com](mailto:prosen0018@gmail.com), [shivamlifescience05@gmail.com](mailto:shivamlifescience05@gmail.com)


ORCID: <https://orcid.org/0009-0002-8974-9968>      <https://orcid.org/0009-0008-2813-2167>

Corresponding Author: **Prosenjit Sarkar**



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## Abstract

The Brown Wood Owl is forest dependent species of owl, whose distribution in the Jharkhand still remains sparsely documented. This article presents the 1<sup>st</sup> confirmed record of Brown Wood Owl (*Strix leptogrammica*) from the Jharkhand, India supported by multiple encounters, clear photographic evidences, bioacoustics analysis, and behavioural studies. The species was recorded during targeted surveys, especially during night and late evening in old Sal dominated forest habitat, where individuals, and pair of male and female were observed. Subsequently, the species were photographed and call recordings were analysed. After brief discussion and reference from field guides along with robust validation from spectrograms, species were identified. In addition to it, perch selection, nocturnal behaviour pattern, and roosting posture selection were also done as behavioural observations. This record fills a significant distributional gap for *S. leptogrammica* in Jharkhand and highlights the likelihood of under-detected cryptic, nocturnal species in underexplored regions of old Sal forests. Integration of photographic, acoustic and behavioural studies strengthen the reliability of the record and presents the effectiveness of multi-method approaches in avian surveys and recording. The finding also highlights the ecological importance of old forest ecosystem as a potent refugia for elusive top predator species and provide important baseline for future studies on distribution, ecology, conservation, and routine nocturnal surveys in the region.

**Keywords:** 1<sup>st</sup> record, Sal Forest, nocturnal survey, bioacoustics.

## Introduction

Nearly 10,000 species of birds have been recorded around the globe and about 13% of the total species of birds are found in Indian subcontinent (Grimmett *et al.*, 2016). Presence of bird species is an important indicator of healthy ecosystem or habitat (Jarvinen and Vaisanen 1979; Jarvinen 1983). Nocturnal birds are not properly documented in ecological studies and article, despite their pivotal roles in ecosystem maintenance and function (Thakur *et al.*, 2026). The Brown Wood Owl is a forest dependent, and large sized bird prevalently distributed across Southeast Asia and Southern Asia, where it is typically corresponds to matured, densely packed and woody habitats, and interior forest conditions. Despite this broad range of distribution, the species is infrequently seen due to its nocturnal behaviour, reliance on structurally intricated forest conditions, low detectability due to good camouflage pattern, which all together contributes to the gaps in its distributional documentation. In the Indian sub-continent, Brown Wood Owl has been reported from variety of forested landscapes, yet its occurrence in Eastern India specially in Jharkhand is patchily understood, with many apparent distributional discontinuities. Such gaps are more often accredited to limited survey efforts, specifically in the areas where systematic nocturnal sampling has historically been insufficient. Jharkhand, characterised by extensive Sal (*Shorea robusta*) dominated forests and plateaus type landscapes, signifies on of the such unexplored region where avifaunal inventories remain incompletely understood, especially for cryptic, small, and nocturnal taxa. The reliance of birds on the natural resources, feeding resources, habitat, roosting and nesting place is supplied with the help of forest (Thakur *et al.*, 2025) Owls that are classified in genus *Strix* are known to be challenging to detect through conventional survey methods, as visual sighting are not so common, and are often constrained by dense vegetation and scotopic condition. Consequently, the cryptic colouration and camouflaging ability make it even more difficult to sight owls clearly, especially Brown Wood Owl. Therefore, other methods of detection such as bioacoustics, nesting site study and prey predator relationships have become increasingly important in resolving this lacuna and documenting its presence. Species specific vocalisations are important tool for biodiversity-based research study and sighting. The use of acoustic based monitoring along with opportunistic sighting and regular field visits and survey focussing on nocturnal avifauna has emerged as a robust framework for sighting, studding and confirming, the presence of elusive nocturnal species in poorly surveyed landscapes. Regular monitoring of bird species, is of great use for understanding changes in the ecosystem structure and habitat restoration plan (Rawat *et al.*, 2021). In this context the absence of confirmed, photographed and published record of Brown Wood Owl from Jharkhand is noteworthy, particularly with respect to the ecological continuities of desired habitats with neighbouring landscapes where the *Strix leptogrammica* is known to occur. This finding contributes to fill the gap of distribution and also marks the importance of century old forest ecosystem specially of key stone species of plants which harbours diverse varieties of fauna on them. Targeted nocturnal surveys, use of technologies, audio-visual based study, field visits on regular basis are of great importance for establishing the lesser-known taxa of lifeforms such as the Brown Wood Owl.

## Classification

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Strigiformes

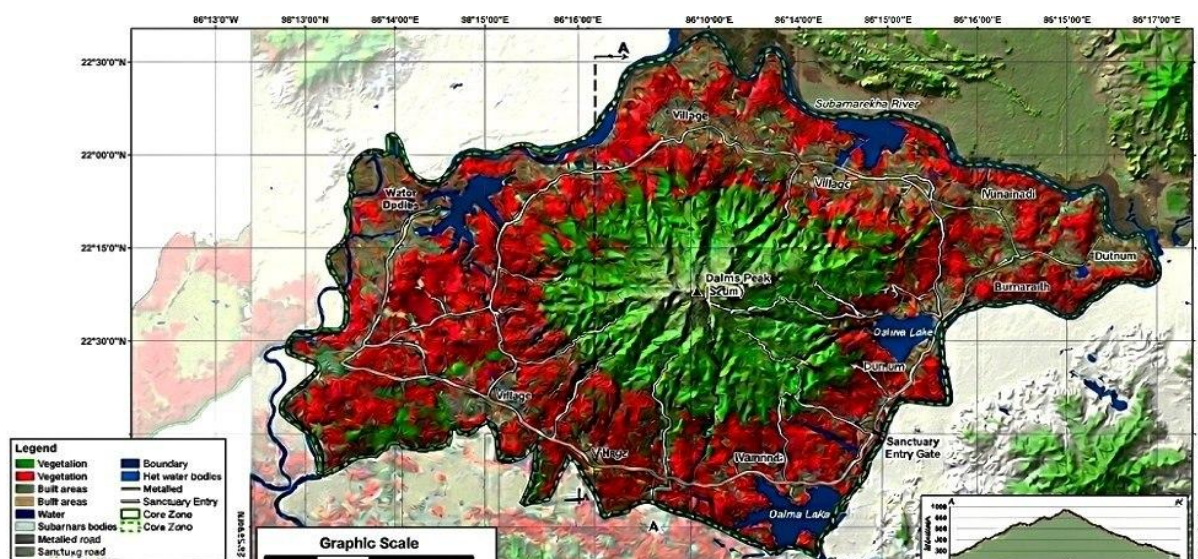
Family: Strigidae

Genus: *Strix*

Species: *S. leptogrammica*



**Figure:1** Map of India showing relative position of Dalma Wildlife Sanctuary



**Figure 2:** Map of survey area of Dalma wildlife Sanctuary

**IUCN Status:** According to the red data book of IUCN 3.1 the species belong to LC category

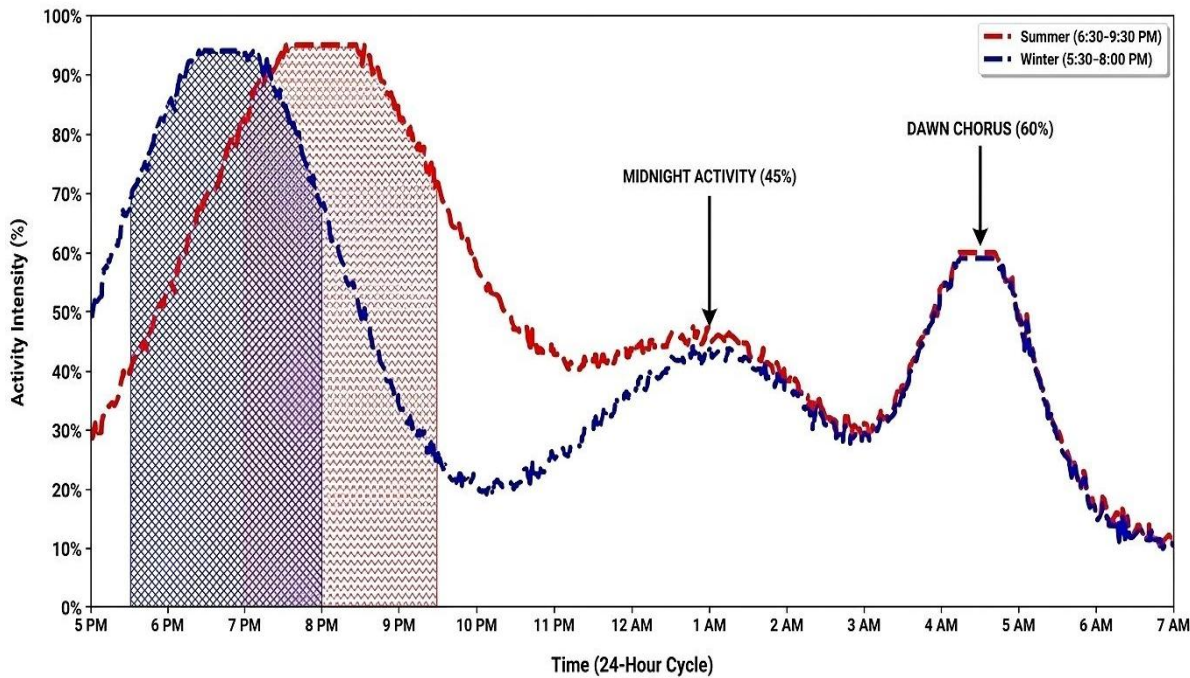
**Site of study**

The sighting and assessment of the bird species was done within the premises of Dalma Wildlife Sanctuary which is ecologically important arena of diverse avifauna activity. It is a protected area in the eastern India within the Plateau of Chota Nagpur. The core coordinates of site of study lies approximately 22°54'15"N and 86°12'59"E. The Dalma wildlife sanctuary lies in East Singhbhum districts of Jharkhand and the sanctuary encloses the area of approximately 193 km<sup>2</sup>. It is an undulating range of hills, valleys, rocky land, dense canopy of old trees and creepers.

**Methodology**

Targeted surveys were done in the month of February to December in consecutive years from 2023 to 2026, which covered multiple forest transects and vantage points. Surveys were conducted majorly during the late evening (17:30H) till mid-night (23.30 H). This timing coincides with the nocturnal behaviour of the species. Standard transect line method and

opportunistic sighting were employed, where observers moved slowly while ( $\leq 1 \text{ km h}^{-1}$ ) while listening for vocalisation and scanning the area. During summer time, peak activity was recorded around 18:30 H to 21:30 H, and during winter peak activity was seen during 17:30 H to 20:30 H. Upon detection of calls, observers paused to localise the source of phonation and also attempted for visual confirmation using low light beam intensity handheld torches to minimise disturbance. Digital sound recorder with extended microphones was used to record the distinct call of the species and Dslr mirrorless camera with high zoom lens were used to click the images. Number of calls, attempts and phonation were separately noted to plot the peak activity curve later.

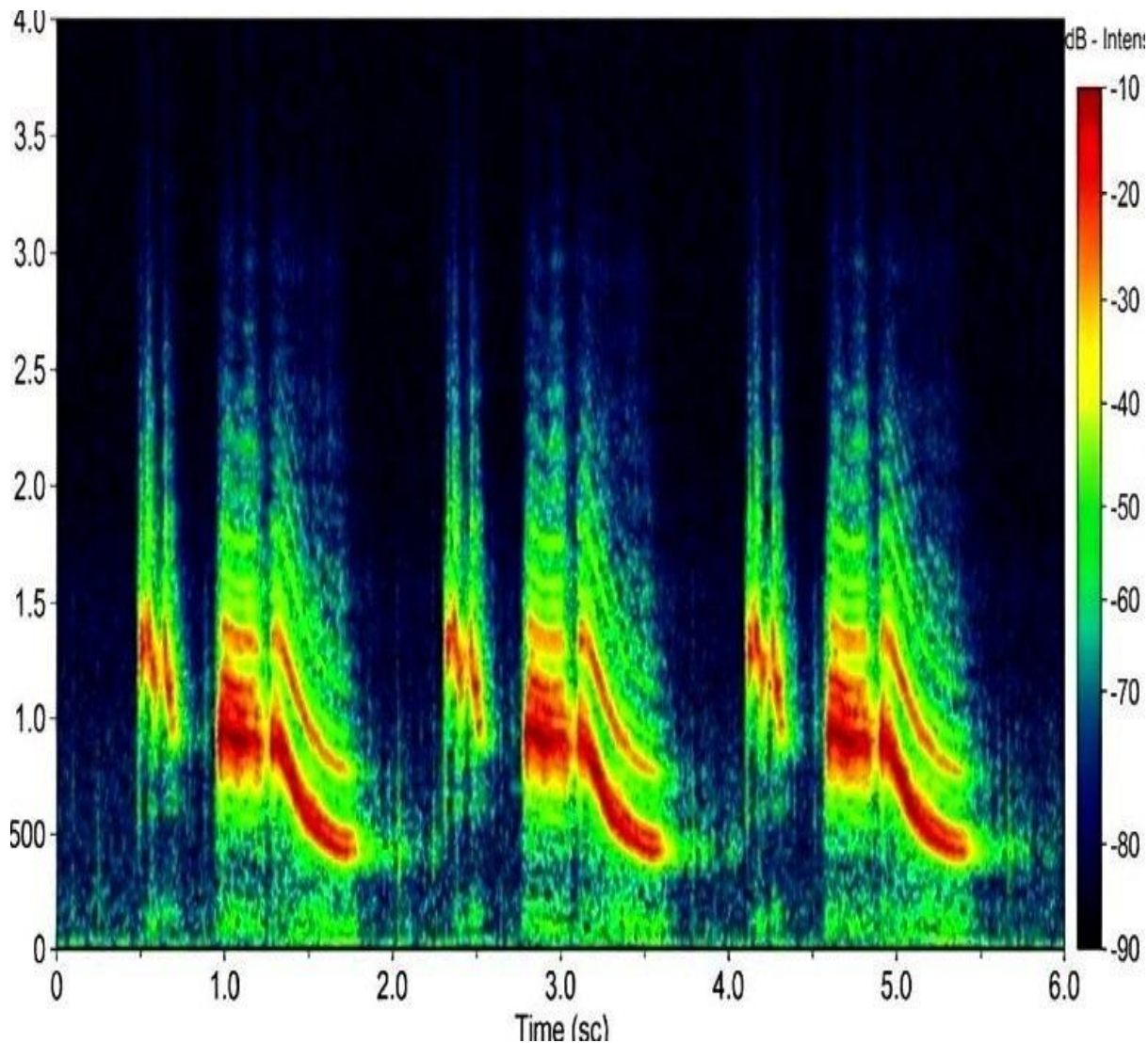


**Figure 3:** Graph of activity level (y-axis) v/s time (x-axis)

Area search method was used during Sighting and spotting of the large tailed Nightjar was done with the help of binoculars (Olympus 50mm 10x50) with on sight identification with the help of field guides and online available resources. After the identification and confirmation, the species, *C. macrurus* was recorded in the data sheet. Photography of the bird was done using high quality camera with zoom lens attachments (Nikon D90, Nikon D7500). Survey and field visit was done during the late hours and mid night to increase the chance of sighting the bird due to its nocturnal behaviour.

### Review of Literature

Going through the research articles present from the region of Jharkhand; it can be asserted that the Brown Wood Owl is yet to be reported and documented from the state. This article established the 1<sup>st</sup> record and also the photographic evidence from the state. *Thakur and Sarkar et al. 2025* reported total of 262 bird species from east Singhbhum. In this checklist they mentioned [i.] Brown Hawk Owl (*Ninox scutulata*) [ii.] Eagle Owl (*Bubo bengalensis*) [iii.] Short eared owl (*Asio flammeus*) [iv.] Scops Owl (*Otus bakkamoena*) [v.] Oriental Scops Owl (*Otus sunia*) [vi.] Jungle Owlet (*Glaucidium*) [vii.] Spotted Owlet (*Athene brama*) [viii.] Barn Owl (*Tyto alba*). Brown wood owl remains poorly documented. Sanjay et al., 2023 reported two owl species [i.] Mottled Wood-Owl (*Strix ocellata*) and [ii.] Spotted Owlet (*Athene brama*) from the similar region. Photographic evidence and behavioural aspect remain undocumented in the region.



**Figure 4:** Spectrogram of *S. leptogrammica* call recording from Jharkhand in Dalma range.

### Observation

The Brown Wood Owl is primarily nocturnal and a forest interior species, typically observed roosting quietly during day in mildly dense foliage or tree trunk cavities. They become active after dusk. The species exhibited sit and wait type hunting pattern using elevated perches to detect and hunt prey that majorly comprises of rodents and shrews. Behaviourally they prefer to stay solitary or in pairs, maintaining their territories through vocal communications. The species observed have deep resonating hooting calls, usually delivered in a series of low frequency notes that advances in intensity toward the final call. Their vocalisation plays important role in territorial establishment, mating communications, and niche spacing between individuals. Bio-acoustically the phonation and hooting calls are dominated by low-frequency bands. This is an important and marked adaptation that enhances transmission of sound waves through dense forest habitats, making the acoustic detection a reliable method for confirmation of this species in wilderness. Their peak activities were during 19:30 H to 23:30 H. The species were seen resting during day time with periodic scanning of the area to avoid any potential threats.



**Figure 5:** Photographic image of Brown wood owl clicked during survey

### **Ecological Importance:**

The Brown Wood Owl has vital ecological role as top nocturnal predator in the dense forested ecosystem. By preying on small mammals such as shrews, rodents and also on other vertebrates and invertebrates, they help in prey population regulation. They have significant role in maintenance of trophic balance, thereby reducing the chance of ecological imbalances such as vegetation loss, rodent outbreaks, rodent related disease control. Their strong association with undisturbed forests of matured and old trees also establish them as important bio-indicator of ecosystem health. Through depositing of pellets and faecal materials they also play their role in nutrient cycling and recycling and supports the decomposer communities dependent on the faecal material, on the forest floor. The presence of *Strix leptogrammica* suggest old and functionally stable forested landscapes and the importance of anthropogenically undistributed landscapes.

### **Ethical Considerations**

All the surveys were conducted following the standard ethical guidelines for wildlife research. Any playbacks, high pitched noise were avoided to minimise the disturbance to the species and nocturnal ecosystem. Light intensity was kept low and light usage were restricted to brief intervals only. High-capacity zooming lens were used for photographing the species to avoid going near the nesting or roosting sites. No individuals were handled or physically disturbed during or after the survey and field studies

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**Conflict of Interests:** No conflict of Interests

## Reference

1. Sarkar, Prosenjit & Thakur, Shivam & Paramanik, Priyanka & Priya, Shalu & Mahato, Padmabati & Verma, Renuka & Riya, & Kumar, Dr & Gupta, Hari & Kumar, Dinesh & Chakrabarty, Bipul & Ghosh, Raja. (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.2025.0418.
2. Avian Diversity of Lohar Daga Forest Division, Jharkhand, India. Jharkhand, India. 1, SANJAY XAXA, 3CHANDRA SHARMA, 4ARVIND KUMAR, 5AVINASH KUMAR, 6DASHRATH THAKUR. 2023 IJCRT | Volume 11, Issue 4 April 2023 | ISSN: 2320-2882
3. Grimmett, R., Inskipp, C. and Inskipp, T. 1998. *Birds of the Indian Subcontinent*.
4. Järvinen O. 1983. How should a Finnish monitoring system of bird populations be implemented? *Ornis Fennica* 60(4): 126–128.
5. Järvinen, O., Väisänen R. A. 1979. Changes in bird populations as criteria of environmental changes. *Ecography* 2(2): 75–80
6. Rekha Rawat 1, Dinesh Bhatt1 and Ashish Kumar Arya2\*(2021), The Survey of Avifauna in the natural habitat and their adjoining areas of Harbhajwala, Dehradun, India. <https://doi.org/10.53562/ajcb.YZQU3927>. *Asian Journal of Conservation Biology*, July 2021. Vol. 10 No. 1, pp. 162-167
7. Prosenjit Sarkar1, Shivam Thakur1, Priyanka Paramanik1, Saba Alam Ansari2, Smitha Pankaj3 (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>. *INTERNATIONAL JOURNAL OF VERSATILE RESEARCH AND ANALYSIS*.