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Cover: Green Sea Turtle *Chelonia mydas* watercolour by Elakshi Mahika Molur.



An annotated checklist of the birds in Loharghat Forest Range, Assam, India

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Abstract: Loharghat Forest Range, within the Indo-Burma biodiversity hotspot, features diverse habitats like wetlands, scrublands, grasslands, tropical and deciduous forests. Chandubi, a vital tectonic wetland in the landscape, is designated as Important Bird Area (2003) and Key Biodiversity Area (2005) but remains largely unexplored. This study aims to establish a baseline database of avifaunal assemblages from the Loharghat Forest Range in Kamrup District, Assam, which includes the Mayang Reserved Forest and Barduar Reserved Forest. The forest is protected and managed by the local community. The surveys were conducted between August 2021 to June 2023. The study revealed the occurrence of a total of 224 avian species belonging to 20 orders and 58 families. The birds are further categorised on the basis of their seasonal movements, diets, and rarity in the region. Our findings indicate that the community-managed forests have a rich and diverse avifauna.

Keywords: Avian diversity, biodiversity assessment, biodiversity hotspot, bird ecology, chandubi lake, community forest, ecological niches, forest ecology, species distribution, wildlife conservation.

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Author contributions: TT—drafting manuscript, study design, data collection, cartography, data analysis, data pertaining; LMA—drafting manuscript, data collection, data analysis, data pertaining; MR—data collection, data pertaining; BR—data collection, data pertaining.

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INTRODUCTION

Birds play a significant part in the functioning and balancing of ecosystems, and are well-known bio-indicators. They serve as agents of the nitrogen cycle, pollination, seed dispersal, reduction of insects, and ecological cleaning through the consumption of carrion (Mariyappan et al. 2023). The evaluation of the avian community is a crucial step in conserving biodiversity and determining the best course of action for management.

Loharghat Forest Range, located inside the Kamrup Sal Forest, comprises various forest types, including tropical moist deciduous, tropical moist evergreen, and occasionally subtropical broadleaf hill forest. Pristine tectonic lakes namely Chandubi Beel, and Sakoli Beel are well-known wetlands that attract many birds and other wildlife (Nath et al. 2020). Birdlife International identified Chandubi Beel and the adjacent regions as an Important Bird Area (IBA) in 2003 (Birdlife International 2023).

The Loharghat Forest Range, in common with other Assam forests, presents an impressive array of avian diversity. This includes summer migrants like the Chestnut-winged Cuckoo *Clamator coromandus*, Emerald Cuckoo *Chrysococcyx xanthorhynchus*, and Ruddy Kingfisher *Halcyon coromanda*, as well as winter visitors like the Grey-bellied Tesia *Tesia cyaniventer* and Lesser Shortwing *Brachypteryx leucophrys*. Furthermore, the wetlands within this region are habitats for a diverse waterfowl community, including species like the Purple Heron *Ardea purpurea*, Eurasian Coot *Fulica atra*, and Whiskered Tern *Chlidonias hybrida*. In the grasslands, one can encounter various species, including the Striated Grassbird *Megalurus palustris*, Baya Weaver *Ploceus philippinus*, Scaly-breasted Munia *Lonchura punctulata*, and Zitting Cisticola *Cisticola juncidis*. Wintering warblers, crakes, bitterns, and herons are supported by the presence of perennial reed grasses such as Giant Reed *Arundo donax* and Tropical Reed *Phragmites karka* (Baruah & Sharma 1999).

Earlier studies in the area revealed a total of 99 bird species (Deka & Nath 2013). Pallas's Fish Eagle *Haliaeetus leucorhynchus* (Birdlife International 2023) and Yellow-wattled Lapwing *Vanellus malabaricus* (Saikia & Saikia 2016) have been reported from Chandubi Lake. The local communities, primarily the Pati Rabha and Garo, who reside in the area, have a deep connection with nature and practise traditional ecological knowledge to actively protect the forests. These forests are crucial for maintaining biodiversity and supply of biomass needs for local domestic uses (Negi et al. 2012; Arya et al. 2021).

MATERIALS AND METHODS

Study Area

The study area falls in the geographical coordinates between 25.8409–25.8623 °N and 91.4510–91.4450 °E. It comprises of two reserved forests, namely, Barduar Reserved Forest and the Mayang Reserved Forest, extending south towards the Thañ-Mawdem Forest Range (Figure 1). These remote forest habitats are separated by Chandubi Lake, and subsequently, by roads and village settlements in the plains. The topographic variations within the area create a diverse landscape consisting of wetlands, scrublands, rivers, forests, and agricultural fields. Spanning over 63 km², the assessed area exhibits elevations ranging 55–280 m.

The climate of Chandubi exhibits summer temperatures reaching highs of 35–38 °C and winter lows ranging from 8–10 °C. The study area is also characterised by a temperate tropical monsoon climate, featuring abundant rainfall and high humidity (Imsong et al. 2018).

Data collection

Data collection for this study spanned from August 2021 to June 2023. The surveys were conducted on selected pre-existing trails at the study locations and opportunistic observations such as sightings of injured birds and detection of nocturnal birds calls were also considered to ascertain the occurrence of the species. Distance of the trail varied from 3–6 km walked at 600 m per hour (Bibbly et al. 1998; Tian et al. 2015). A total of 78 km² were covered across 22 transects for 368 hours. In Barduar, a 39.6 km² transect was walked in the Barduar Reserve Forest between 0630 h and 1300 h, and 38.4 km² in the Mayang Reserve Forest between 0530 h and 1200 h. Of all the transects, 15 were surveyed three times, and seven were surveyed twice. Each time, 2–3 observers were present, ensuring data reliability.

Equipment such as Olympus 8–16 x 40, Solognac 10 x 42 binoculars, Canon Powershot SX540 HS, and Nikon D7200 cameras with a 200–500 mm telelens, phone recorders for species call identification, and a Garmin Etrex 10 global positioning system (GPS) were used. The GPS data from fieldwork was meticulously integrated into QGIS to construct the map. The map portrays settlement patterns, agriculture, waterbodies, rivers, channels, and scrubland within the study area, providing valuable insights into its geographical features and land use (Figure 1). It also includes the 22 transect points where surveys were conducted. Data collection sheets and e-bird were used to record observations,

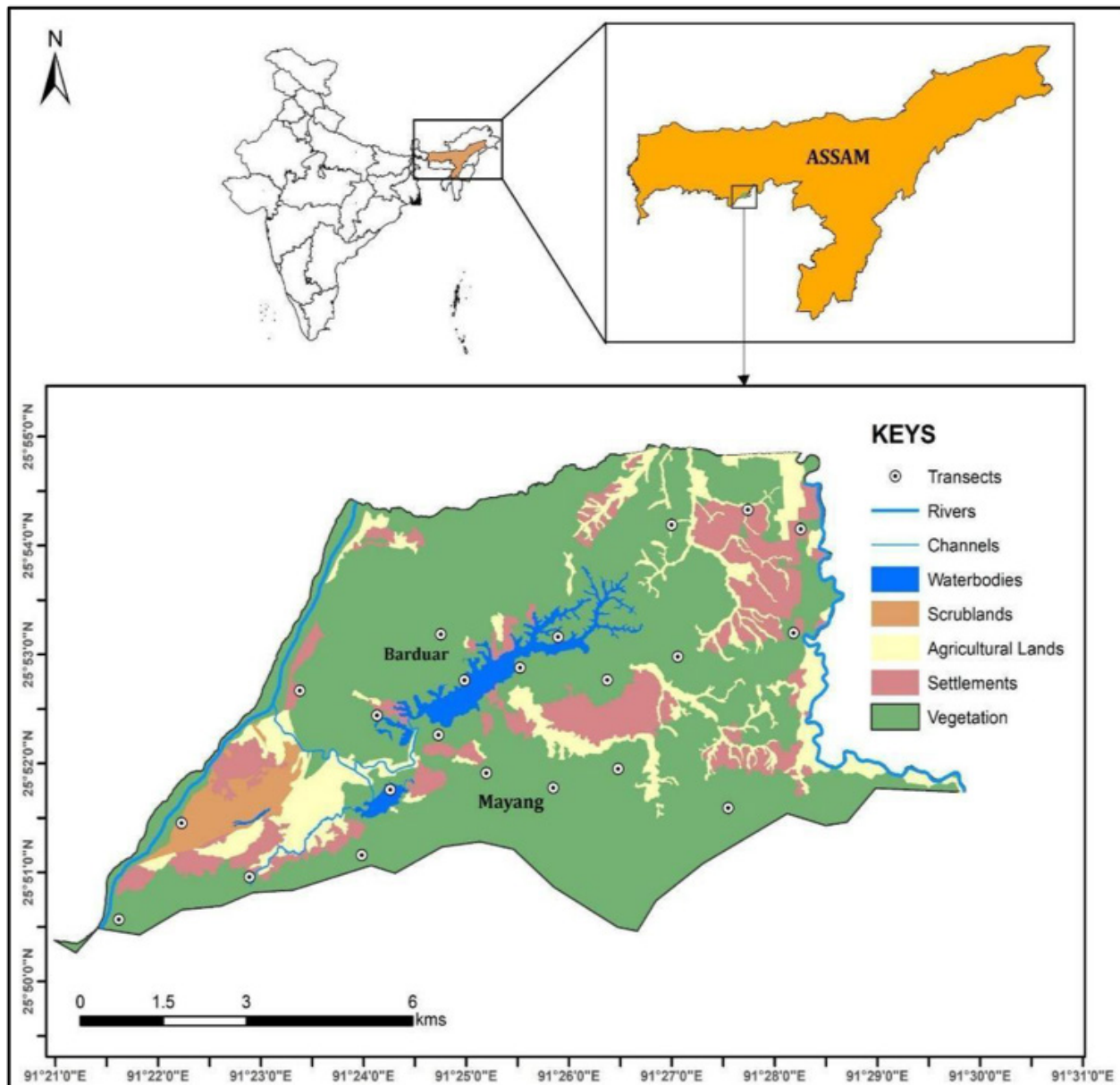


Figure 1. Loharghat Forest Range including Barduar Reserved Forest and Mayang Reserved Forest.

including date, time, weather conditions, species, flock size, coordinates, record type (vocalisations/sightings), and habitat type. The occurrence status of bird species is determined by the proportion of days with sightings from the research area throughout the length of the survey period: Very Common (VC) >50%, Common (C) = 25–50%, Uncommon (UC) = 5–25%, and Rare (R) = 1–5%.

RESULTS

The current study enlisted a comprehensive checklist of 224 avian species belonging to 20 orders and 58

families. Passeriformes exhibited the highest diversity, comprising a total of 106 species, followed by Piciformes (14 spp.), Coraciiformes (12 spp.), Anseriformes (12 spp.), Cuculiformes (11 spp.), Charadriiformes (11 spp.), Pelecaniformes (11 spp.), Columbiformes (10 spp.), Accipitriformes (8 spp.), Strigiformes (6 spp.), Gruiformes (5 spp.), Galliformes (3 spp.), Suliformes (3 spp.), Podicipediformes (2 spp.), Ciconiiformes (2 spp.), Bucerotiformes (2 spp.), Falconiformes (2 spp.), Caprimulgiformes (1 sp.), and Apodiformes (1 sp.).

Based on the IUCN Red List (2023), species were categorised according to their conservation status. Common Pochard *Aythya ferina* is designated as

‘Vulnerable’ while Ferruginous Pochard *Aythya nyroca*, Ashy-headed Green Pigeon *Treron phayrei*, River Lapwing *Vanellus duvaucelii*, Oriental Darter *Anhinga melanogaster*, Black-headed Ibis *Threskiornis melanocephalus*, Himalayan Griffon *Gyps himalayensis*, and Red-breasted Parakeet *Psittacula alexandri* were designated as ‘Near Threatened’. Lesser Adjutant *Leptoptilos javanicus* IUCN status has been revised to ‘Near Threatened’, earlier it was classified as ‘Vulnerable’. The remaining 215 species were classified as ‘Least Concern’.

Table 1 provides insights into the rarity of bird species based on the frequency of sightings within the study area. Among the total number of species, 78 were categorised as very common (VC), 99 as common (C), 41 as uncommon (UC), and six as rare (RA) (Figure 2). Noteworthy rare sightings included raptors such as the Black Baza *Aviceda leuphotes*, Himalayan Griffon *Gyps himalayensis*, Black Kite *Milvus migrans*, and Eurasian Hobby *Falco subbuteo*, as well as summer migrants like the Brown-breasted Flycatcher *Muscicapa muttui* and Black Bittern *Ixobrychus flavicollis*.

In terms of migration patterns, 157 species were identified as resident, while 67 were classified as migratory (Grimmit et al. 2016). Non-migratory species were further categorised based on residency, altitudinal or local migrations. Migratory species were classified as summer, winter, or passage migrants. Figure 3 illustrates the distribution, indicating that 56.7% of the listed species were resident (R), 25.4% were winter migrants (WM), 8.4% were residents with winter influx (R-WI), 3.5% were summer migrants (SM), 2.6% were residents with summer influx (R-SI), 1.3% were residents with altitudinal movements (R-AM), 0.8% were residents with local migration (R-LM), and 0.4% were passage migrants (PM) (Figure 3). The Barn Swallow *Hirundo rustica* was categorised as both WM and R-WI since the majority of the population comprises winter migrants, but a small portion remains resident.

Table 1 also presents bird species categorised according to their dietary preferences. Dietary types included Carnivores (CR), Insectivores (I), Omnivores (O), Granivores (G), and herbivores. Herbivores are further categorised under Grainivore (H-G) and Frugivore (H-F). Figure 4 demonstrates that Insectivores accounted for 45.54% of the birds’ principal diet, followed by 20.98% for CR, 14.29% for OM, 9.82% for H-F, 7.59% for H-G, and 1.79% for H.

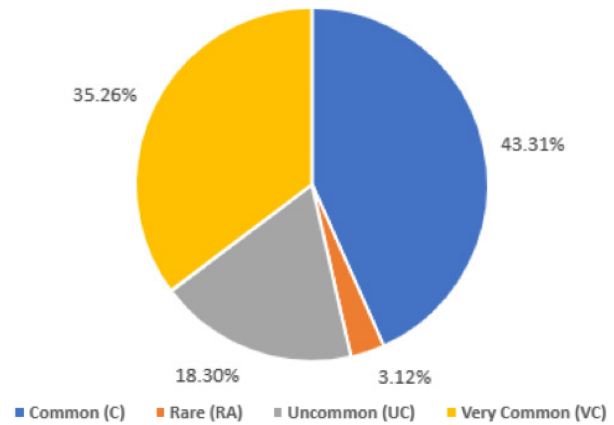


Figure 2. Rarity status of birds in Loharghat Forest Range.

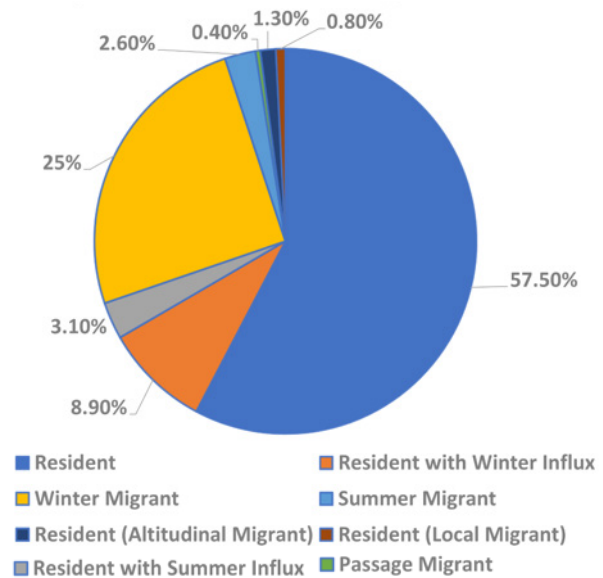


Figure 3. Migratory status of birds in Loharghat Forest Range.

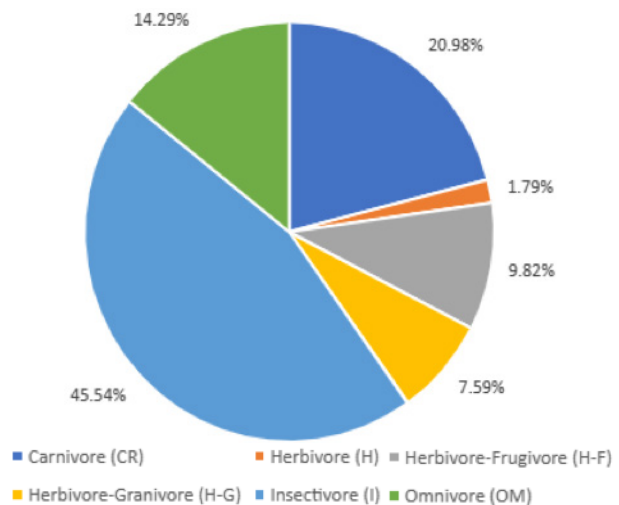


Figure 4. Feeding habit of birds in Loharghat Forest Range.

Notes on uncommon and/or interesting species of Loharghat Forest Range

1. Lesser Adjutant *Leptoptilos javanicus*

In September 2021, a solitary Lesser Adjutant was observed soaring in thermals by TT in the specified location during the forenoon hours at coordinates 25.9052°N, 91.4591°E. Although the Lesser Adjutant is not considered an uncommon species in the region, yet it is not frequently sighted in the study area. LMA has sighted 12 individuals together once in the nearby wetlands of Dora Beel and Deepor Beel.

2. Orange-breasted Green-Pigeon *Treron bicinctus*

The species was first identified based on a photograph taken by a local resident named Matiram Rabha, as reported by LMA and TT. On 18 October 2022, TT personally observed the species at coordinates 25.8761°N, 91.4194°E. Baruah et al. (1999) mention the species in their list, but Rahmani et al. (2023) reported that it is rather uncommon and has not been seen there in recent years.

3. Ashy-headed Green Pigeon *Treron phayrei*

In September 2021, TT had the opportunity to observe two Ashy-headed Green Pigeons at Mayang Reserved Forest at coordinates 25.8619°N, 91.4119°E. While this species is classified as 'Near Threatened'. It is not uncommon to encounter them along with other green pigeons during spring when there are many fruiting trees. LMA has sighted the species in both Garbhanga RF and Amchang WS.

4. Common Cuckoo *Cuculus canorus*

On 7 April 2023, an observation of a Common Cuckoo was made in a fringe village near the forest at coordinates 25.8819°N, 91.4330°E. This species is known to be a fairly common spring and autumn passage migrant in the Assam plains. The sighting contributes to our understanding of the seasonal movements and distribution patterns of this species in the region. LMA has seen them in Dorabeel and Garbhanga RF during autumn migration.

5. Oriental Darter *Anhinga melanogaster*

During a survey conducted by TT and Borojit Rabha (BR) in May 2022, a solitary individual was observed in Chandubi Lake (25.8791°N, 91.4169°E) on 20 May 2022. Oriental Darter has been recorded by LMA and TT in the nearby lakes namely Deepor Beel and Dora Beel.

6. Ruddy-breasted Crake *Zapornia fusca*

During a boat survey conducted in the late evening of 13 November 2021, multiple vocalisations of Ruddy-breasted Crakes were detected emanating from various sections of reedbeds and tall grasses within the beel by LMA. The area was teeming with activity as numerous insectivorous birds such as dollarbirds, hair-crested drongos, and large-tailed nightjars engaged in their foraging behaviours. Ruddy-breasted Crake has been recorded from Deepor Beel by LMA.

7. Spotted Bush Warbler *Locustella thoracica*

On November 14, 2021, while exiting the designated forest trail following a survey in Chandubi, a single vocalising Spotted Bush Warbler was detected by LMA, TT, and BR at coordinates 25.8802°N, 91.4169°E. The distinct calls of this bird originated from a reedbed situated in the stream that enters the forest patch on the north bund of Chandubi. It's worth noting that both the Spotted Bush Warbler and the Baikal Bush Warbler are documented in the surrounding forests and wetlands of Garbhanga during the winter season (Mahananda et al. 2023). The extent of white on the tail coverts can distinguish between these two species, and their calls also exhibit distinct differences (Kennerly & Pearson 2010).

8. Grey-lored Broadbill *Serilophus rubropygius*

During the survey of the Mayang hills, south to Chandubi Lake area on 17 April 2022, a vocalising solitary Silver-breasted Broadbill was detected by LMA at coordinates 25.8630°N, 91.4247°E. Subsequently, the bird was sighted by LMA, TT, and BR in the mid-story of the forest from a nearby patch. This species has been observed from the Garbhanga Reserve Forest by LMA.

9. Ruddy Kingfisher *Halcyon coromanda*

During the survey of the Mayang Hills on 17 April 2022, a Ruddy Kingfisher *Halcyon coromanda* was heard while surveying at coordinates 25.8641°N, 91.4213°E. It is a summer visitor to the region and is known to breed here (Grimmitt et al. 2016). However, we (TT, LMA, BR) were not able to see it. LMA has seen this species from various parts of Garbhanga during the summers. This species was also mentioned by Mahananda et al. (2023).

10. Red-breasted Parakeet *Psittacula alexandri*

The study area has witnessed the presence of a significantly large flocks comprising 400–500 birds on multiple occasions. These birds can be observed at close proximity in various locations within the study area such



Image 1. Orange-breasted Green-pigeon *Treeron bicinctus*. © Matiram Rabha



Image 2. Common Cuckoo *Cuculus canorus*. © Taniya Talwar



Image 3. Grey-lored Broadbill *Serilophus rubropygius*. © Leons Mathew Abraham



Image 4. Brown-breasted Flycatcher *Muscicapa muttui*. ©Taniya Talwar

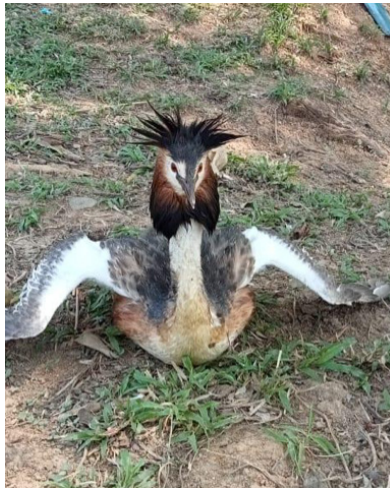


Image 5. Great Crested Grebe *Podiceps cristatus*. © Nileshwar Rabha

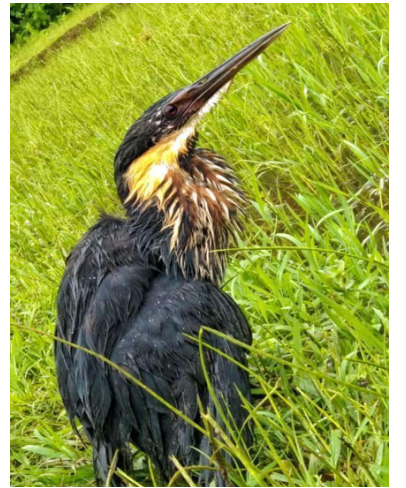


Image 6. Black Bittern *Ixobrychus flavicollis*. © Nileshwar Rabha



Image 7. Juvenile of Changeable Hawk-eagle *Nisaetus cirrhatus*. ©Nileshwar Rabha



Image 8. Lesser Shortwing *Brachypteryx leucophris*. ©Taniya Talwar

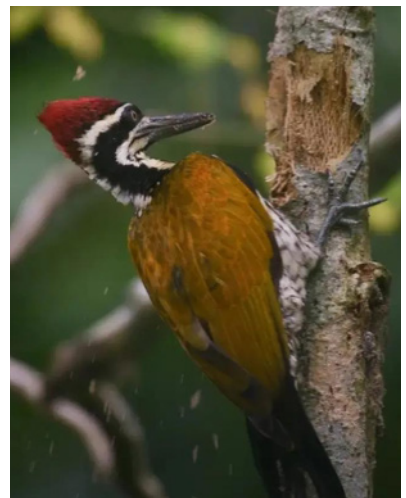


Image 9. Greater Flameback *Chrysocolaptes guttacristatus*. © Leons Mathew Abraham



Image 10. Female of Small Niltava *Niltava macgrigoriae*. © Leons Mathew Abraham



Image 11. Pale-chinned Blue Flycatcher *Cyanis poliogenys*. © Leons Mathew Abraham



Image 12. Pin-striped Tit-Babbler *Mixornis gularis*. © Leons Mathew Abraham



Image 13. Blue-winged Leafbird *Chloropsis moluccensis*. © Leons Mathew Abraham



Image 14. Scarlet Minivet *Pericrocotus speciosus*. © Leons Mathew Abraham



Image 15. Large-tailed Nightjar *Caprimulgus macurus*. © Leons Mathew Abraham



Image 16. Thick-billed Warbler *Arundinax aedon*. © Leons Mathew Abraham



Image 17. Short-billed Minivet *Pericrocotus brevirostris*. © Leons Mathew Abraham



Image 18. Dollarbird *Eurystomus orientalis*. © Leons Mathew Abraham



Image 19. Grey-bellied Tesia *Tesia cyaniventer*. © Leons Mathew Abraham



Image 20. Small Minivet *Pericottus cinnamomeus*. © Taniya Talwar



Image 21. Crested-serpent Eagle *Spilornis cheela*. © Taniya Talwar



Image 22. Thick-billed Green-Pigeon *Treron curvirostra*. © Taniya Talwar

as Chandubi Lake during early mornings and at Batha River (25.9044°N, 91.4741°E) in the late evenings. The frequent sightings of such a substantial flock highlight the ecological significance and attractiveness of the area as a habitat and gathering site for this species.

11. Black Kite *Milvus migrans*

An individual Black Kite was observed soaring on thermals on 20 May 2022 by TT at coordinates 25.8794°N, 91.4713°E. This sighting was opportune and noteworthy, particularly considering that the species is uncommon in the study area. The species is very common in suburban and urban areas when compared to forests.

12. Brown-breasted Flycatcher *Muscicapa muttui*

On 26 May 2022, a solitary Brown-breasted Flycatcher was sighted by TT and BR at coordinates 25.8455°N, 91.3605°E and later identified by LMA. LMA has seen a juvenile once in Garbhanga RF. This avian species is relatively uncommon and primarily restricted to the lower Brahmaputra Valley area (Grimmett et al. 2016). They are known to breed during the summer months in this region. Given their infrequent encounters, further detailed studies are warranted to better understand their distribution and ecological preferences in the area.

13. Eurasian Hobby *Falco subbuteo*

On May 18, 2022, an Eurasian Hobby was observed effortlessly soaring at coordinates 25.7547°N, 91.4741°E by TT. Rahmani et al. (2023) describe the species as extremely rare in the Assam valley. Bikram et al. (2002) describe the bird as a sporadic visitor to the plains.

14. Great Crested Grebe *Podiceps cristatus*

On 21 April 2022, a solitary Great Crested Grebe was successfully rescued at coordinates 25.8830°N, 91.4225°E. These birds, although not rare, exhibit notable occurrences during the winter season, often congregating in significant numbers in water bodies

15. Black Bittern *Dupetor flavicollis*

On 18 June 2023, a Black Bittern was rescued from a Joramkhurai village north of Chandubi Lake at coordinates 25.8836°N, 91.4222°E. The individual had unfortunately become ensnared in a net but was fortunately liberated by the prompt action of local residents, ensuring its release and safety. There are no records of this species from nearby areas. The residential status of this species is perplexing, Grimmett et al. (2016) describe this species as a resident while Ali & Ripley (2001) describes it as a summer visitor.

16. Changeable Hawk Eagle *Nisaetus cirrhatus*

On 5 June 2023, a Changeable Hawk Eagle was successfully rescued at coordinates 25.8819°N, 91.4188°E. These raptors, while not as abundant as some other species such as Crested Serpent Eagles or Shikras, are fairly common in the forests of Assam. Rehmani et al. (2023) mentions this species as fairly common in Kaziranga National Park.

17. Black Baza *Aviceda leuphotes*

On 20 April 2023, a solitary Black Baza was observed soaring at coordinates 25.8819°N, 91.3561°E. This species, which is a summer visitor to the region, stands out significantly in terms of its distinctive appearance compared to all other species in the area.

Table 1. Checklist of the avian species of Loharghat Forest Range.

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
	Anseriformes: Anatidae				
1	Fulvous Whistling-Duck	<i>Dendrocygna bicolor</i>	UC	WM	OM
2	Lesser Whistling-Duck	<i>Dendrocygna javanica</i>	VC	R-WI	OM
3	Greylag Goose	<i>Anser anser</i>	UC	WM	H
4	Ruddy Shelduck	<i>Tadorna ferruginea</i>	UC	WM	H
5	Cotton Pygmy-Goose	<i>Nettapus coromandelianus</i>	VC	R-WI	H
6	Garganey	<i>Spatula querquedula</i>	C	WM	OM
7	Northern Shoveler	<i>Spatula clypeata</i>	UC	WM	OM
8	Gadwall	<i>Mareca strepera</i>	C	WM	H
9	Green-winged Teal	<i>Anas crecca</i>	C	WM	OM
10	Common Pochard	<i>Aythya ferina</i>	UC	WM	OM
11	Ferruginous Duck	<i>Aythya nyroca</i>	C	WM	OM
12	Tufted Duck	<i>Aythya fuligula</i>	UC	WM	OM
	Galliformes: Phasianidae				
13	White-cheeked Partridge	<i>Arborophila atrogularis</i>	C	R	H-G
14	Kalij Pheasant	<i>Lophura leucomelanos</i>	C	R	H-G
15	Red Junglefowl	<i>Gallus gallus</i>	VC	R	H-G
	Phoenicopteriformes: Podicipedidae				
16	Little Grebe	<i>Tachybaptus ruficollis</i>	C	R-WI	CR
17	Great Crested Grebe	<i>Podiceps cristatus</i>	UC	WM	CR
	Columbiformes: Columbidae				
18	Rock Pigeon	<i>Columba livia</i>	VC	R	H-G
19	Oriental Turtle-Dove	<i>Streptopelia orientalis</i>	VC	R-WI	H-G
20	Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	C	R	H-G
21	Red Collared-Dove	<i>Streptopelia tranquebarica</i>	VC	R-WI	H-G
22	Spotted Dove	<i>Spilopelia chinensis</i>	VC	R	H-G
23	Asian Emerald Dove	<i>Chalcophaps indica</i>	C	R	H-F
24	Orange-breasted Green-Pigeon	<i>Treron bicinctus</i>	UC	R	H-F
25	Ashy-headed Green-Pigeon	<i>Treron phayrei</i>	C	R	H-F
26	Thick-billed Green-Pigeon	<i>Treron curvirostra</i>	C	R	H-F
27	Yellow-footed Green-Pigeon	<i>Treron phoenicopterus</i>	VC	R	H-F
	Cuculiformes: Cuculidae				
28	Greater Coucal	<i>Centropus sinensis</i>	C	R	CR
29	Lesser Coucal	<i>Centropus bengalensis</i>	UC	R	I
30	Green-billed Malkoha	<i>Phaenicophaeus tristis</i>	C	R	I
31	Chestnut-winged Cuckoo	<i>Clamator coromandus</i>	UC	R	I
32	Asian Koel	<i>Eudynamis scolopaceus</i>	C	R	H-F
33	Asian Emerald Cuckoo	<i>Chrysococcyx maculatus</i>	UC	R	I
34	Banded Bay Cuckoo	<i>Cacomantis sonneratii</i>	C	R	I
35	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	C	R	I
36	Common Hawk-Cuckoo	<i>Hierococcyx varius</i>	C	R	I
37	Indian Cuckoo	<i>Cuculus micropterus</i>	C	SM	I
38	Common Cuckoo	<i>Cuculus canorus</i>	UC	R-SI	I
	Caprimulgiformes: Caprimulgidae				
39	Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	C	R	I
	Apodidae				
40	Asian Palm Swift	<i>Cypsiurus balasiensis</i>	VC	R	I

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
	Gruiformes: Rallidae				
41	Eurasian Moorhen	<i>Gallinula chloropus</i>	C	R	OM
42	Grey-headed Swamphen	<i>Porphyrio poliocephalus</i>	VC	R	OM
43	Watercock	<i>Gallicrex cinerea</i>	C	R-SI	OM
44	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	VC	R	OM
45	Ruddy-breasted Crake	<i>Zapornia fusca</i>	C	R	OM
	Charadriiformes: Charadriidae				
46	Northern Lapwing	<i>Vanellus vanellus</i>	UC	WM	I
47	River Lapwing	<i>Vanellus duvaucelii</i>	C	R-WI	I
48	Grey-headed Lapwing	<i>Vanellus cinereus</i>	C	WM	I
49	Red-wattled Lapwing	<i>Vanellus indicus</i>	VC	R	I
50	Little Ringed Plover	<i>Charadrius dubius</i>	UC	R-WI	I
	Jacaniidae				
51	Bronze-winged Jacana	<i>Metopidius indicus</i>	VC	R	OM
	Scolopacidae				
52	Common Sandpiper	<i>Actitis hypoleucos</i>	C	WM	CR
53	Green Sandpiper	<i>Tringa ochropus</i>	C	WM	CR
54	Common Greenshank	<i>Tringa nebularia</i>	C	WM	CR
55	Wood Sandpiper	<i>Tringa glareola</i>	C	WM	CR
	Laridae				
56	Whiskered Tern	<i>Chlidonias hybrida</i>	UC	SM	CR
	Pelecaniformes: Ciconiidae				
57	Asian Openbill	<i>Anastomus oscitans</i>	VC	R	CR
58	Lesser Adjutant	<i>Leptoptilos javanicus</i>	UC	R	CR
	Ardeidae				
59	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	C	R	CR
60	Black Bittern	<i>Ixobrychus flavicollis</i>	RA	R-SI	CR
61	Purple Heron	<i>Ardea purpurea</i>	VC	R	CR
62	Great Egret	<i>Ardea alba</i>	VC	WM	CR
63	Intermediate Egret	<i>Ardea intermedia</i>	VC	R-SI	CR
64	Little Egret	<i>Egretta garzetta</i>	C	R	CR
65	Eastern Cattle Egret	<i>Bubulcus coromandus</i>	VC	R	CR
66	Indian Pond-Heron	<i>Ardeola grayii</i>	VC	R	CR
67	Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	C	R	CR
	Threskiornithidae				
68	Glossy Ibis	<i>Plegadis falcinellus</i>	C	R-WI	CR
69	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	UC	WM	CR
	Suliformes: Anhingidae				
70	Oriental Darter	<i>Anhinga melanogaster</i>	UC	R-WI	CR
	Phalacrocoracidae				
71	Little Cormorant	<i>Microcarbo niger</i>	VC	R	CR
72	Great Cormorant	<i>Phalacrocorax carbo</i>	UC	WM	CR
	Accipitriformes: Accipitridae				
73	Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	C	R	I
74	Black Baza	<i>Aviceda leuphotes</i>	RA	R	I
75	Himalayan Griffon	<i>Gyps himalayensis</i>	RA	R	CR
76	Crested Serpent-Eagle	<i>Spilornis cheela</i>	VC	R-WI	CR
77	Changeable Hawk-Eagle	<i>Nisaetus cirrhatus</i>	RA	R	CR

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
78	Pied Harrier	<i>Circus melanoleucos</i>	UC	R	CR
79	Shikra	<i>Accipiter badius</i>	VC	WM	CR
80	Black Kite	<i>Milvus migrans</i>	RA	R	CR
Strigiformes: Tytonidae					
81	Barn Owl	<i>Tyto alba</i>	C	R	CR
Strigidae					
82	Collared Scops-Owl	<i>Otus lettia</i>	C	R-WI	CR
83	Oriental Scops-Owl	<i>Otus sunia</i>	C	R	CR
84	Asian Barred Owlet	<i>Glaucidium cuculoides</i>	C	R	CR
85	Spotted Owlet	<i>Athene brama</i>	VC	R	CR
86	Brown Hawk-Owl	<i>Ninox scutulata</i>	C	R	CR
Bucerotiformes: Upupidae					
87	Eurasian Hoopoe	<i>Upupa epops</i>	VC	WM	I
Bucerotidae					
88	Oriental Pied-Hornbill	<i>Anthracoceros albirostris</i>	C	R	H-G
Coraciiformes: Alcedinidae					
89	Common Kingfisher	<i>Alcedo atthis</i>	VC	R	CR
90	Blue-eared Kingfisher	<i>Alcedo meninting</i>	UC	R	CR
91	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	C	R	CR
92	Ruddy Kingfisher	<i>Halcyon coromanda</i>	UC	SM	CR
93	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	VC	R	CR
94	Pied Kingfisher	<i>Ceryle rudis</i>	C	R	CR
Meropidae					
95	Blue-bearded Bee-eater	<i>Nyctornis athertoni</i>	C	R	I
96	Asian Green Bee-eater	<i>Merops orientalis</i>	VC	R	I
97	Blue-tailed Bee-eater	<i>Merops philippinus</i>	C	SM	I
98	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i>	VC	R-SI	I
Coraciidae					
99	Indochinese Roller	<i>Coracias affinis</i>	VC	R	I
100	Oriental Dollarbird	<i>Eurystomus orientalis</i>	VC	R	I
Piciformes: Megalaimidae					
101	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	VC	R	OM
102	Blue-eared Barbet	<i>Psilopogon duvaucelii</i>	C	R	OM
103	Great Barbet	<i>Psilopogon virens</i>	UC	R-SI	OM
104	Lineated Barbet	<i>Psilopogon lineatus</i>	VC	R	OM
105	Blue-throated Barbet	<i>Psilopogon asiaticus</i>	VC	R	OM
Picidae					
106	Speckled Piculet	<i>Picumnus innominatus</i>	C	R	I
107	White-browed Piculet	<i>Sasia ochracea</i>	C	R	I
108	Fulvous-breasted Woodpecker	<i>Dendrocopos macei</i>	C	R-SI	I
109	Greater Flameback	<i>Chrysocolaptes guttacristatus</i>	C	R	I
110	Rufous Woodpecker	<i>Micropternus brachyurus</i>	C	R	I
111	Black-rumped Flameback	<i>Dinopium benghalense</i>	VC	R	I
112	Lesser Yellownape	<i>Picus chlorolophus</i>	VC	R	I
113	Grey-headed Woodpecker	<i>Picus canus</i>	UC	R	I
114	Greater Yellownape	<i>Chrysophlegma flavinucha</i>	C	R	I
Falconiformes: Falconidae					
115	Eurasian Kestrel	<i>Falco tinnunculus</i>	UC	WM	CR

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
116	Eurasian Hobby	<i>Falco subbuteo</i>	RA	PM	I
	Psittaciformes: Psittaculidae				
117	Rose-ringed Parakeet	<i>Psittacula krameri</i>	C	R	H-F
118	Red-breasted Parakeet	<i>Psittacula alexandri</i>	VC	R	H-F
	Passeriformes: Eurylaimidae				
119	Grey-lored Broadbill	<i>Serilophus rubropygius</i>	UC	R	I
	Pittidae				
120	Western Hooded Pitta	<i>Pitta sordida</i>	UC	SM	I
	Campephagidae				
121	Small Minivet	<i>Pericrocotus cinnamomeus</i>	C	R	I
122	Short-billed Minivet	<i>Pericrocotus brevirostris</i>	UC	WM	I
123	Scarlet Minivet	<i>Pericrocotus speciosus</i>	C	R	I
124	Large Cuckooshrike	<i>Coracina macei</i>	C	R	I
125	Black-winged Cuckooshrike	<i>Lalage melaschistos</i>	UC	WM	I
	Oriolidae				
126	Black-hooded Oriole	<i>Oriolus xanthornus</i>	VC	R	H-F
	Artamidae				
127	Ashy Woodswallow	<i>Artamus fuscus</i>	VC	R	I
	Vangidae				
128	Large Woodshrike	<i>Tephrodornis virgatus</i>	C	R	I
129	Bar-winged Flycatcher-shrike	<i>Hemipus picatus</i>	UC	R-WI	I
	Aegithinidae				
130	Common Iora	<i>Aegithina tiphia</i>	VC	R	I
	Rhipiduridae				
131	White-throated Fantail	<i>Rhipidura albicollis</i>	C	R-WI	I
	Dicruridae				
132	Black Drongo	<i>Dicrurus macrocerus</i>	C	R	I
133	Ashy Drongo	<i>Dicrurus leucophaeus</i>	C	R	I
134	Bronzed Drongo	<i>Dicrurus aeneus</i>	C	R-WI	I
135	Lesser Racket-tailed Drongo	<i>Dicrurus remifer</i>	C	R-WI	I
136	Hair-crested Drongo	<i>Dicrurus hottentottus</i>	VC	R	I
137	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	C	R	I
	Monarchidae				
138	Black-naped Monarch	<i>Hypothymis azurea</i>	C	R	I
	Laniidae				
139	Brown Shrike	<i>Lanius cristatus</i>	C	WM	CR
140	Long-tailed Shrike	<i>Lanius schach</i>	C	WM	CR
141	Grey-backed Shrike	<i>Lanius tephronotus</i>	C	WM	CR
	Corvidae				
142	Common Green-Magpie	<i>Cissa chinensis</i>	UC	R	OM
143	Rufous Treepie	<i>Dendrocitta vagabunda</i>	VC	R	OM
144	House Crow	<i>Corvus splendens</i>	C	R	OM
145	Large-billed Crow	<i>Corvus macrorhynchos</i>	VC	R	OM
	Stenostiridae				
146	Grey-headed Canary-Flycatcher	<i>Culicicapa ceylonensis</i>	VC	WM	I
	Paridae				
147	Cinereous Tit	<i>Parus cinereus</i>	VC	R	I

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
	Alaudidae				
148	Bengal Bushlark	<i>Mirafra assamica</i>	C	R	H-G
	Cisticolidae				
149	Common Tailorbird	<i>Orthotomus sutorius</i>	VC	R	I
150	Dark-necked Tailorbird	<i>Orthotomus atrogularis</i>	C	R	I
151	Rufescent Prinia	<i>Prinia rufescens</i>	C	R	I
152	Grey-breasted Prinia	<i>Prinia hodgsonii</i>	C	R	I
153	Plain Prinia	<i>Prinia inornata</i>	C	R	I
154	Zitting Cisticola	<i>Cisticola juncidis</i>	VC	R	I
	Acrocephalidae				
155	Thick-billed Warbler	<i>Arundinax aedon</i>	C	WM	I
	Locustellidae				
156	Spotted Bush Warbler	<i>Locustella thoracica</i>	UC	WM	I
157	Striated Grassbird	<i>Cincloramphus palustris</i>	VC	R	I
	Hirundinidae				
158	Grey-throated Martin	<i>Riparia chinensis</i>	C	R-WI	I
159	Barn Swallow	<i>Hirundo rustica</i>	VC	R-WI/ WM	I
	Pycnonotidae				
160	Black-crested Bulbul	<i>Rubigula flaviventris</i>	VC	R	H-F
161	Red-vented Bulbul	<i>Pycnonotus cafer</i>	VC	R	H-F
162	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	C	R	H-F
163	White-throated Bulbul	<i>Alophoixus flaveolus</i>	C	R	H-F
	Phylloscopidae				
164	Hume's Warbler	<i>Phylloscopus humei</i>	C	WM	I
165	Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>	VC	WM	I
166	Dusky Warbler	<i>Phylloscopus fuscatus</i>	VC	WM	I
167	Whistler's Warbler	<i>Phylloscopus whistleri</i>	C	WM	I
168	Greenish Warbler	<i>Phylloscopus trochiloides</i>	VC	WM	I
169	Blyth's Leaf Warbler	<i>Phylloscopus reguloides</i>	VC	WM	I
	Scotocercidae				
170	Grey-bellied Tesia	<i>Tesia cyaniventer</i>	UC	WM	I
171	Yellow-bellied Warbler	<i>Abroscoptes superciljaris</i>	C	R-WI	I
	Zosteropidae				
172	Indian White-eye	<i>Zosterops palpebrosus</i>	VC	R	OM
	Timaliidae				
173	Pin-striped Tit-Babbler	<i>Mixornis gularis</i>	VC	R	I
	Pellorneidae				
174	Puff-throated Babbler	<i>Pellorneum ruficeps</i>	C	R	I
175	Abbott's Babbler	<i>Malacocincla abbotti</i>	UC	R	I
	Leiotherichidae				
176	Jungle Babbler	<i>Argya striata</i>	C	R	I
177	Lesser Necklaced Laughingthrush	<i>Garrulax monileger</i>	C	R	OM
	Sturnidae				
178	Common Hill Myna	<i>Gracula religiosa</i>	VC	R	OM
179	Indian Pied Starling	<i>Gracupica contra</i>	VC	R	OM
180	Chestnut-tailed Starling	<i>Sturnia malabarica</i>	VC	R	OM
181	Common Myna	<i>Acridotheres tristis</i>	UC	R	OM
182	Bank Myna	<i>Acridotheres ginginianus</i>	VC	R-WI	OM

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
183	Jungle Myna	<i>Acridotheres fuscus</i>	VC	R	OM
184	Great Myna	<i>Acridotheres grandis</i>	C	R	OM
	Muscicapidae				
185	Brown-breasted Flycatcher	<i>Muscicapa muttui</i>	RA	SM	I
186	Oriental Magpie-Robin	<i>Copsychus saularis</i>	VC	R	I
187	White-rumped Shama	<i>Copsychus malabaricus</i>	VC	R	I
188	Pale-chinned Blue Flycatcher	<i>Cyornis poliogenys</i>	VC	R-AM	I
189	Small Niltava	<i>Niltava macgrigoriae</i>	C	WM	I
190	Lesser Shortwing	<i>Brachypteryx leucophris</i>	UC	WM	I
191	Blue Whistling-Thrush	<i>Myophonus caeruleus</i>	C	WM	CR
192	Black-backed Forktail	<i>Enicurus immaculatus</i>	C	R	I
193	Snowy-browed Flycatcher	<i>Ficedula hyperythra</i>	C	WM	I
194	Little Pied Flycatcher	<i>Ficedula westermanni</i>	VC	WM	I
195	Taiga Flycatcher	<i>Ficedula albicilla</i>	VC	WM	I
196	Plumbeous Redstart	<i>Phoenicurus fuliginosus</i>	UC	WM	I
197	White-capped Redstart	<i>Phoenicurus leucocephalus</i>	UC	WM	I
198	Blue Rock-Thrush	<i>Monticola solitarius</i>	C	WM	I
199	Siberian Stonechat	<i>Saxicola maurus</i>	C	WM	I
	Dicaeidae				
200	Plain Flowerpecker	<i>Dicaeum minullum</i>	C	R	H-F
201	Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>	VC	R	H-F
	Nectariniidae				
202	Ruby-cheeked Sunbird	<i>Chalcoparia singalensis</i>	VC	R	H-F
203	Purple Sunbird	<i>Cinnyris asiaticus</i>	VC	R	H-F
204	Crimson Sunbird	<i>Aethopyga siparaja</i>	VC	R	H-F
205	Little Spiderhunter	<i>Arachnothera longirostra</i>	C	R-AM	H-F
	Irenidae				
206	Asian Fairy-bluebird	<i>Irena puella</i>	C	R	H-F
	Chloropseidae				
207	Blue-winged Leafbird	<i>Chloropsis cochinchinensis</i>	C	R	H-F
208	Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	VC	R-AM	H-F
	Ploceidae				
209	Baya Weaver	<i>Ploceus philippinus</i>	VC	R-LM	H-G
210	Black-breasted Weaver	<i>Ploceus benghalensis</i>	UC	R-WI	H-G
	Estrildidae				
211	Scaly-breasted Munia	<i>Lonchura punctulata</i>	VC	R	H-G
212	White-rumped Munia	<i>Lonchura striata</i>	C	R	H-G
213	Chestnut Munia	<i>Lonchura atricapilla</i>	UC	R-LM	H-G
	Passeridae				
214	House Sparrow	<i>Passer domesticus</i>	VC	R	H-G
215	Eurasian Tree Sparrow	<i>Passer montanus</i>	C	R	H-G
	Motacillidae				
216	Grey Wagtail	<i>Motacilla cinerea</i>	C	WM	I
217	Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	UC	WM	I
218	Citrine Wagtail	<i>Motacilla citreola</i>	VC	WM	I
219	White Wagtail	<i>Motacilla alba</i>	VC	WM	I
220	Richard's Pipit	<i>Anthus richardi</i>	C	WM	I
221	Paddyfield Pipit	<i>Anthus rufulus</i>	VC	R	I

	Common name	Scientific name	Rarity (C, RA, UC, VC)	Movement (R, R-SI, R-WI, WM, SM, PM, R-AM, R-LM)	Food Habit (OM, CR, I, G, H-G, H-F)
222	Blyth's Pipit	<i>Anthus godlewskii</i>	C	WM	I
223	Rosy Pipit	<i>Anthus roseatus</i>	VC	WM	I
224	Olive-backed Pipit	<i>Anthus hodgsoni</i>	VC	WM	I

C—Common | RA—Rare | VC—Very common | UC—Uncommon | R—Residential | R-SI—Residential with summer influx | R-WI—Residential with winter influx | R-LM—Residential with local migration | R-AM—Resident with altitudinal migration | WM—Winter migrant | SM—Summer migrant | PM—Passage migrant | CR—Carnivore | I—Insectivore | OM—Omnivore | H—Herbivore | H-G—Granivore | H-F—Frugivore.

DISCUSSION

The seasonal variability plays a significant role in the avifaunal composition of the study area. During the winter months, numerous species from the Himalaya, Europe, northern Asia, and northeastern Asia migrate to lower-elevation areas. Loharghat is connected to the Garbhanga-Rani Reserved Forest in the east and the Garo Hills in the north-west, which encompasses 307 species of birds (Mahananda et al. 2023). Therefore, due to the rich avian diversity in the neighbourhood, this region also becomes an important site for many avian species to visit or pass through. Deka & Nath (2013) conducted earlier investigations on the terrain, documenting a total of 99 bird species. The area recorded relatively low numbers of raptors, which were mostly Shikra *Accipiter badius* and Crested Serpent Eagle *Spilornis cheela*. Reports from Birdlife International (2023) and local sources mention the sightings of Pallas's Fish Eagle *Haliaeetus leucoryphus* in the past near Chandubi Lake around 12–15 years ago. Additionally, Saikia & Saikia (2015) documented sightings of Yellow-wattled Lapwing *Vanellus malabaricus* in the late winter months near Sakoli Lake.

The wide range of bird species found in the study area can be attributed to the diverse habitats present, including tea gardens, evergreen and deciduous forests, grasslands, marshes, scrublands, riverine, agricultural communities, and forest settlements. The occurrence of 106 passerines indicates the presence of varied and healthy habitats (Hilaluddin et al. 2008). Despite human activities in the landscape, this highlights the importance of maintaining niche requirements to support both migratory and resident bird species (Arya et al. 2021). However, further qualitative and quantitative investigations are required to strengthen the information on avifaunal community assemblages in this region, as there is a lack of comprehensive data.

CONCLUSION

Understanding the ecological richness and complexity of the Loharghat forest ecosystem, this study reveals Passeriformes as the predominant order, demonstrating significant representation, closely followed by Piciformes, Coraciiformes, and Anseriformes. The conservation status varied among species, with some species belonging to Vulnerable or Near Threatened categories of IUCN. Migration patterns showed both resident and migratory species, with winter migrants comprising a significant portion. The dietary preferences of birds varied, with insectivores being the most common group. The study emphasised the importance of further research, conservation efforts, and habitat preservation to safeguard the avian diversity in the area.

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