

A Preliminary Checklist of the Avian Fauna from the Indian state of Assam's Raimona National Park

Nilutpal Mahanta

*Corresponding author

Nilutpal Mahanta

Wildlife Trust of India, F-13, Sector-8, Noida, Uttar Pradesh, India

Received Date : Sep 07,2022

Accepted Date : Sep 08,2022

Published Date : Oct 08,2022

Abstract

Birds perform several crucial ecological tasks, including pollination, seed distribution, pest management, and nutrient dynamics. They are also excellent indicators of the health of an ecosystem in a landscape.

A contemporary global priority for efficient management planning to preserve ecosystem stability and ecological functionality is biodiversity inventory, conservation, and ecosystem restoration at the landscape level.

A baseline database of avifaunal assemblages from the recently established Raimona National Park in the Indian state of Assam will be created as part of this study.

This new protected area is situated within the state's Kachugaon forest division's 422 km² Bhabar belt.

From November 2020 through, a systematic grid-based line transect method 227 bird species from the study region were confirmed to exist as of April 2021, 7 of which were globally threatened.

Additionally, the region is home to the severely endangered White-bellied heron (*Ardea insignis* Hume, 1878), which requires a suitable habitat.

The inventory of more avian fauna as well as their conservation in the Raimona National Park will require extensive research and long-term monitoring in the near future.

1.Introduction

Birds perform several crucial ecological tasks, including seed dispersal, pollination, pest management, and nutrient dynamics. They are also excellent markers of the health of an ecosystem in a landscape [1, 2, 3].

Since the north-eastern region of India has special environmental conditions and a variety of habitat types because of its location, more than 950 bird species—or almost 77% of the avifauna known from India—have

flourished there [4,5,6].

Assam is home to 850 different species of birds, including several dubious ones that are probably common there [7,8].

However, anthropogenic influences including encroachment, deforestation, and overexploitation of biological resources are currently exerting significant pressure on our world's bird variety, which has a negative impact on ecosystem functioning [9,10,11,12,13].

Inventory of biodiversity and its preservation In order to preserve ecosystem stability and ecological functionality, including ecosystem restoration at the landscape level in management planning has lately become a global priority [1]. Since the late 19th century, the Ripu Reserve Forest (RF) in Assam's Kokrajhar district has been one of the best managed woods in the nation [16].

Huge tracts of sal (*Shorea robusta*) forest were prevalent in the area, and the colonial government routinely extracted and shipped it for use in building railroad sleepers [17,18].

One of the nation's Important Bird and Biodiversity Areas (IBA Site; IN-AS-37) is this landscape [19].

A significant portion of the Ripu RF on its southern side has been completely devastated and converted to agricultural land and homestead settlement as a result of the unsustainable trend of forest product extraction and exploitation in the late 20th century [20].

To stop this pattern a larger portion (422 km²) of the Ripu RF has been designated as "Raimona National Park" and included in the network of protected areas due to the self-destructive destruction of such century-old managed natural forest. a bigger portion (422 km²) of the Ripu RF has been designated as "Raimona National Park" and incorporated in the network of protected areas due to the self-destructive destruction of such century-old managed natural forest. Indian state of Assam's Raimona National Park is home to a variety of birds.

2.Experimentation Instruments for Laboratory Work

2.1. Study Subject

The survey was conducted in the Raimona National Park (NP), which covers a 422 km² area and is part of the Kachugaon forest division in the northwest of Assam, India. The Sonkosh River on the west and the Saralbhangha River on the east make up the northern boundary of the Indo-Bhutan International Border.

The research region is bordered to the west and north by the

Phipsoo Wild Life Sanctuary (WLS) of Bhutan and the Buxa Tiger Reserve (TR) of West Bengal.

The research region is located inside the traditional Bhabar belt, which is divided by various waterways. The terrain slopes gradually southward and is between 85 and 240 metres above mean sea level. Only a very thin layer of humus covers the dry sandy loam soil that covers the majority of the Bhabar area, which is overlaid on a bed of pebbles. Surface stones are relatively common. [13,21]. The research area's climate is of the moist tropical monsoon variety, with temperatures ranging from 7°C to 34°C and an average annual rainfall of 2000mm to 3000mm [19].

Due to its unique geographic setting and geology, up to twelve different types and subtypes of forests, including riparian, sub-Himalayan high alluvial semi-evergreen, moist-mixed deciduous, and very moist sal forests, can be found there. Champion and Seth classed the wide river beds as "fringing forests to khoir-sisoo forests" [22].

2.2. Techniques

The study area was split up into 104 grids, each measuring 4 km² (2km x 2km). For the study, 85 accessible sampling grids that were representative of the entire area were chosen at random. Three 1-kilometer-long line transects were placed in each grid to conduct the field survey [23]. A team of two biologists and two local frontline employees of the forest department conducted the survey using the line transect method during the day in two sessions, namely in the morning (06:30–10:30) and in the afternoon (15:00–17:00), during the winter and pre-monsoon season for six months from November 2020 to April 2021. Opportunistic Throughout the survey period, every species seen had been meticulously documented.

When feasible, the birds were photographed using a digital camera (Nikon Coolpix P900, Canon sx600) and watched via binoculars (Vortex 8X42, Zeiss 8X42). The Garmin eTrex 30 was used to help acquire the GPS data. With the use of common sound recorders, the call playback method was also employed for certain elusive and shy species (Zoom H6).

With the aid of a common field guidebook, the recorded bird species were identified in the field [24]. With the aid of a reference book written by Ali and Ripley, the identifications of the bird fauna were also verified [25]. Based on in-field observations, the species' broad habitat types, migratory status, and conservation status were assigned [26,27]. Environmental and Applied Ecology 654

3. Results

A total of 267 km were walked in transects following the current forest roads and animal tracks in 89 sampling grids in 11 forest blocks of the research region over the course of the survey's six-month timeframe in the winter and pre-monsoon season. This survey found that there were 227 bird species overall in the Raimona National Park, spread across its many

habitat types in 19 orders and 58 families. Passeriformes, with approximately 116 species (51%) out of all the orders, is the dominant order in terms of species richness, followed by order

Accipitriformes (of which there are 18 species), Piciformes (of which there are 14 species), Coraciiformes (of which there are 11 species), Columbiformes (of which there are 9 species), Charadriiformes (of which there are 9 species), Strigiformes (of which there are 7 species), Cuculiformes (of which there are 7 species), Bucerotiformes (of which there are 5 species) (1 species) Black-crested bulbul (*Rubigula flaviventris* Tickell, 1833), Black drongo (*Dicrurus macrocercus* Vieillot, 1817), and Golden-fronted leafbird (*Chloropsis aurifrons* Temminck, 1829) were three of the most prevalent species of birds among all those that had been observed in Raimona National Park. Seven globally endangered bird species were discovered in the study area, of which two were critically endangered, including the White-rumped vulture (*Gyps bengalensis* Gmelin, 1788) and the Slender-billed vulture (*Gyps tenuirostris* Gray, 1844); five others were vulnerable, including the Greater spotted eagle (*Clanga clanga* Pallas, 1811), Great hornbill (*Buceros bicornis* Linn According to Choudhury, out of them, there were a total of 184 resident bird species and 43 migratory bird species (2000).

These comprise a total of 182 species of terrestrial birds and 45 species of aquatic birds, according to field observations and descriptions by Grimmer et al (2016)

4. Discourse

This quick inventory survey found that there are 227 different species of birds in the Raimona National Park in Assam, which indicates the park's importance for conservation and is on par with the Buxa Tiger Reserve in West Bengal to the west and the Phipsoo Wildlife Sanctuary in Bhutan to the north.

A total of 177 species of birds have been documented from the Phipsoo Wildlife Sanctuary [29] while 284 species of birds have been recorded from the Buxa Tiger Reserve [28].

Between the Sankosh River in the west and the Aie River in the east, a preliminary survey was carried out. had somewhat more bird species documented from the area than we did, 270 in total [30].

Pygmy flycatcher (*Ficedula hodgsoni*), Bay woodpecker (*Blythipicus pyrrhotis*), Short-billed minivet (*Pericrocotus brevirostris*), Rufous-necked laughingthrush (*Pterorhinus ruficollis*), and Greater adjutant (*Leptoptilos dubius*) are a few notable woodlands birds that have been reported to live in this IBA site [19], but our survey

short survey time and detection challenges in dense foliage, including some inaccessible areas or terrain, The Bamba Forest Block, along with the northernmost portions of the Pekua and Polo Forest Blocks, may have contributed to the study area's slightly lower bird species diversity.

In the near future, intensive study and ongoing observation

will be essential for the inventory of more bird fauna and their conservation in the Raimona. The dominance of the order Passeriformes, which has 116 species of bird, suggests that the study area contains a variety of habitat types [30].

The Passeriformes' avian fauna is frequently referred to as the "songbird" family because of its exceptional singing ability. Around 30 species of predatory birds live in the region, including nocturnal predatory birds of the order Strigiformes and diurnal raptors of the orders Accipitriformes and Falconiformes. Raptors are important apex predators in an ecosystem, and their existence suggests that the ecosystem is in good shape [31]. 7 are present worldwide. A threatened avian fauna is a sign that the area requires the highest level of protection to ensure the survival of these endangered species. The largest frugivorous forest birds, including the Great Indian hornbill, Wreathed hornbill, and Rufous-necked hornbill, were found in the study area's deep forest habitats, demonstrating that at least some areas of the forest are still pristine. However, these birds are sensitive to selective logging, especially when it comes to their roosting and nesting trees as well as other human disturbances [32].

The grassland environments are also thought to be home to Bengal floricans (*Houbaropsis bengalensis*) and Swamp francolins (*Francolinus gularis*), however we were unable to record these species at the time of our study.

The Phipsoo Wildlife Sanctuary's most recent records of the severely endangered White-bellied heron (*Ardea insignis* Hume, 1878) of Bhutan, Jamduar, and the Pepsu area of Raimona is a crucial indicator that the research area contains sufficient habitat for this critically endangered bird species. for this severely endangered species of bird [29].

Acknowledgements

The Department of Environment and Forest-Government of Assam and the Bodoland Territorial Council are thanked by the authors for working with Wildlife Trust of India (WTI).

We also recognise the International Fund for Animal Welfare's (IFAW) significant financial contribution to the repair and preservation of the Greater Manas landscape.

Additionally, we would like to express our gratitude to DFO Kachugaon Forest Division and CHD Forest of BTC for granting the required authorization and other logistical help during the survey time. We would especially like to thank Dr. Rahul Kaul and Dr. Samir K. Sinha for their insightful recommendations and ongoing support.

We owe a debt of gratitude to all of the range officers, front-line forest workers, and NGO volunteers at Raimona National Park for their unwavering assistance and generosity throughout the survey.

The reviewers' helpful criticism and ideas for enhancing this work are likewise appreciated by the authors.

References

1. Wenny D.G., Devault T.L., Johnson M.D., Kelly D., Sekercioglu C.H., Tomback D.F. and Whelan C.J., "The need to quantify ecosystem services provided by birds". *The auk*, 128(1), 1-14, 2011.
2. Sekercioglu C.H., "Bird functional diversity and ecosystem services in tropical forests, agroforests and agricultural areas." *Journal of Ornithology*, 153(1), 153-161, 2012.
3. Sekercioglu Ç.H., Wenny D.G. and Whelan, C.J. (Eds.), "Why birds matter: avian ecological function and ecosystem services". University of Chicago Press, London, 368 pp.
4. Saikia P.K. and Bhattacharjee P.C., "The present status of Waders and other Water Birds of Brahmaputra Valley, Assam, India". *Stilt*, 17, 65-70, 1990.
5. Saikia P.K., Saikia M.K., Bhattacharjee P.C., Kalita J., Dutta D., Sarma R. and Saikia D.J., "Diversity of Bird Fauna in North East India". *Journal of Assam Science Society*, 41(4), 379-396, 2000.
6. Upadhyaya S. and M. Raj, "Study on Avian Biodiversity of North- east India with Special Reference to the Conservation of Threatened Species". *International journal of Bio-resource and Stress Management*, 4(2), 270-277, 2013.
7. Choudhury A, *The Birds of Assam*. Gibbon Books & WWF-India, NE Regional Office, Guwahati, Assam, India, 2000, 236 pp.
8. Devi O.S., Islam M., Das J. and Saikia P.K., "Avian-fauna of Gauhati University Campus, Jalukbari, Assam". *The Ecoscan*. 6 (3&4), 165-70, 2012.
9. Jokimaki J. and Kaisanlahti-Jokimaki M.L., "Spatial similarity of urban bird communities: a multiscale approach". *Journal of Biogeography*, 30(8), 1183-1193, 2003
10. Fusco J., Walker E., Papaix J., Debolini M., Bondeau A. and Barnagaud J.Y., "Land Use Changes Threaten Bird Taxonomic and Functional Diversity Across the Mediterranean Basin: A Spatial Analysis to Prioritize

- Monitoring for Conservation". *Frontiers in Ecology and Evolution*, 9, 612356. doi: 10.3389/fevo.2021.612356
11. Rather H.A., Shrivastava P., Gautam V., Ahmad N., Ganie R.A.D. and Hurra W.A., "Effects of anthropogenic activities on bird diversity in an urban waterbody (Bhoj Wetland), Bhopal, Madhya Pradesh, India". *International Journal of Fauna and Biological Studies*, 9(2), 21-24, 2022.
 12. Narasimmarajan, K., Chetri D., Ri, C. and Mathai M.T., "Bird Species of conservation concern along the Brahmaputra River in Assam, Northeast India". *Podoces*, 8(2), 31-37, 2013.
 13. Islam N., Barman R., Deka S., Borkataki U., Chhetri T., Basumatary S., Rahman M. and Sinha B., "Richness and relative abundance of mammalian fauna in Raimona national park, Assam, India". *International Journal of Fauna and Biological Studies*, 8(5), 39-44, 2021.
 14. Green M.J., How R., Padmalal U.K.G.K. and Dissanayake S.R.B., "The importance of monitoring biological diversity and its application in Sri Lanka". *Tropical Ecology*, 50(1), 41-56, 2003.
 15. UNEP (United Nations Environment Programme), "Becoming #GenerationRestoration: Ecosystem restoration for people, nature and climate". Nairobi, 2021. <https://www.unep.org/resources/ecosystem-restoration-people-nature-climate>.
 16. Goswami R.C, Working Plan for the Forest Reserves of the Kachugaon Division, 1983- 84 to 1998-1999, Part I & Part II, Social Forestry Division, Kokrajhar, Assam, India. 1983, 122 pp.
 17. Hilaly S, "Railways and colonialism: The Kachugaon forest tramway in Assam". *Global Journal of Indian History and Culture*, 1(1), 45-57, 2016.
 18. Wary J, "Incredible Tram of Goalpara Forest. *Indian Historical Review*, 43(1), 135-148, 2016.
 19. Rahmani A.R., Islam M.Z. and Kasambe R.M., "Important Bird and Biodiversity Areas in India: Priority Sites for Conservation (Revised and updated)". Bombay Natural History Society, Indian Bird Conservation Network, Royal Society for the Protection of Birds and BirdLife International (U.K.), 2016. Pp. 1992 + xii
 20. Narzary G.S, "Forest related activities for livelihood in ripu reserve forest". Doctoral Thesis. Submitted to Department of Geography, North-Eastern Hill University, Shillong, India, 2013, 196 pp.
 21. Mukherjee R.P. and Saha S.S, "The Golden Langurs (*Presbytis geei* Khajuria, 1956) of Assam". *Primates*, 15, 327-340, 1974.
 22. Champion H.G. and Seth S.K, A revised survey of the forest types of India. Natraj Publishers, Dehradun, India. 1968, 404 pp.
 23. Sutherland W.J. (Ed.), *Ecological census techniques: A Handbook*, Cambridge University Press, New York, 2006, 408 pp.
 24. Grimmett R., Inskipp C., Inskipp T, *Birds of the Indian Subcontinent: India, Pakistan, Sri Lanka, Nepal, Bhutan, Bangladesh and the Maldives*. Bloomsbury Publishing India Pvt. Ltd., New Delhi, India, 2016, 528 pp.
 25. Ali S. and Ripley S.D. *Handbook of the birds of India and Pakistan*. Compact edition. Oxford University Press and BNHS, Mumbai, India, 1983, 3121 pp.
 26. Choudhury A, *The Birds of Assam*. Gibbon Books & WWF-India, NE Regional Office, Guwahati, Assam, India, 2000, 236 pp.
 27. IUCN (International Union of Conservation and Nature) *Red List of Threatened Species*. Version 2021-3. 2021. <https://www.iucnredlist.org/>.
 28. Sivakumar, S., Varghese, J.E.E.J.O. and Prakash, V.I.B.H.U, "Abundance of birds in different habitats in Buxa Tiger Reserve, West Bengal, India". *Forktail*, 22, 128-133, 2006.
 29. Zhongming Z., Linong L., Xiaona Y., Wangqiang Z. and Wei L, "Biodiversity Baseline Assessment: Phipsoo Wildlife Sanctuary in Bhutan". Asian Development Bank, Philippines, 2018, 143 pp.
 30. Hilaluddin and Sharma. K, "Survey of three divisions of Bodoland Territorial Council for addition into

protected area network". In V. Menon, R. Kaul, R. Dutta, NVK. Ashraf & P. Sarkar (Eds). Bringing Back Manas-Conserving the forest and wildlife of Bodoland Territorial Council, New Delhi, Wildlife Trust of India, 66-84, 2008.

31. Mahanta N., Saikia P.K. and Saikia M.K, "Avifaunal Assemblages of Jhanjimuk-Kokilamukh IBA Complex of Jorhat Assam India-A Potential Ramsar Site of Assam". Applied Ecology and Environmental Sciences, 7(3), 101-109, (2019).
32. Saikia P.K. and Rabha A, Studies on the status and diversity of avian fauna in Manas Biosphere Reserve, Assam. In Rabha et al. eds. Manas: A Set of Technical Article Edition. Reception Committee of the Closing Ceremony of Manas Centenary Celebration. Department of Forest & Tourism, BTC and Manas Tiger Project, 2006, 68-86.