Avian Diversity in and Around Nazare Dam, Jejuri, Pune District, Maharashtra, India

Om C. Tambade[1], Snehal B. Punde[2]

[1]Department of Zoology, Savitribai Phule Pune University, Pune, India

[2]Department of Zoology, The Institute of Science, Mumbai, India

DOI: https://doi.org/10.51244/IJRSI.2025.1210000280

Received: 05 November 2025; Accepted: 12 November 2025; Published: 19 November 2025

ABSTRACT

The present study was conducted to evaluate the avian diversity of Nazare Dam and its surrounding habitats located near Jejuri in Pune District, Maharashtra, India. The dam, a freshwater reservoir encompassed by agricultural fields, open grasslands, and scrub vegetation, provides heterogeneous ecological conditions that support a wide range of avifaunal communities. Field investigations were carried out from June 2024 to July 2025 using standard line transect and point count methods during early morning and evening hours to record both resident and migratory bird species.

A total of 69 bird species belonging to 39 families and 16 orders were recorded during the study period. The most dominant avian orders included *Passeriformes*, *Pelecaniformes*, and *Accipitriformes*, with representative families such as Ardeidae, Accipitridae, Sturnidae, and Muscicapidae. Aquatic and semi-aquatic species, including the Indian Spot-billed Duck (*Anas poecilorhyncha*), Black-winged Stilt (*Himantopus himantopus*), Painted Stork (*Mycteria leucocephala*), and Black-headed Ibis (*Threskiornis melanocephalus*), were frequently observed in the reservoir zone, while terrestrial species such as the Indian Robin (*Saxicoloides fulicatus*), Red-vented Bulbul (*Pycnonotus cafer*), and Large Grey Babbler (*Argya malcolmi*) dominated the adjacent vegetated areas.

Migratory species such as the Black Redstart (*Phoenicurus ochruros*), Common Sandpiper (*Actitis hypoleucos*), and Black-tailed Godwit (*Limosa limosa*) were predominantly recorded during the winter months, with maximum species richness observed from June 2024 to July 2025. The occurrence of Near Threatened species including the Painted Stork and Black-headed Ibis highlights the ecological significance and conservation value of this wetland ecosystem. Anthropogenic activities such as agricultural runoff, pollution, unregulated fishing, and habitat encroachment pose potential threats to the avian diversity of the site. The findings underscore the importance of Nazare Dam as a vital refuge for both resident and migratory avifauna and emphasize the need for regular monitoring, public awareness, and sustainable management strategies to ensure long-term conservation of its biodiversity.

Keywords: Avian diversity, Anthropogenic pressure, Conservation, Migratory birds, Nazare Dam, Wetland ecosystem.

INTRODUCTION

Wetlands play a vital role in maintaining ecological balance by providing essential habitats for a variety of flora and fauna, particularly avian species (Ali & Ripley, 1987; Weller, 1999). Birds serve as effective bioindicators of habitat quality and environmental changes due to their sensitivity to habitat alteration and climatic variation (Bibby et al., 2000). India, with its wide range of wetland ecosystems, supports more than 1,200 avian species (Grimmett et al., 2011), of which a significant portion rely on freshwater bodies for breeding, feeding, and roosting.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

The Nazare Dam, located near Jejuri in Pune District, Maharashtra, is one such freshwater ecosystem. It harbors diverse habitats, including open water, mudflats, agricultural land, and scrub vegetation, which support both resident and migratory bird species. Despite its ecological importance, the site remains understudied, and there is limited published data on its avian diversity. Understanding bird composition and abundance at such locations can help in developing effective management and conservation strategies (Islam & Rahmani, 2004).

MATERIALS AND METHODS

Study Area

Nazare Dam is situated near Jejuri (18.264°N, 74.147°E) in Pune District, Maharashtra, India. The dam is constructed across the Karha River and serves as a freshwater reservoir supplying irrigation water to surrounding agricultural lands. The area experiences a tropical monsoon climate with average rainfall of 700–800 mm annually. The surrounding landscape comprises agricultural fields, grasslands, and scrub vegetation that provide varied habitats for birds (Figure 1).

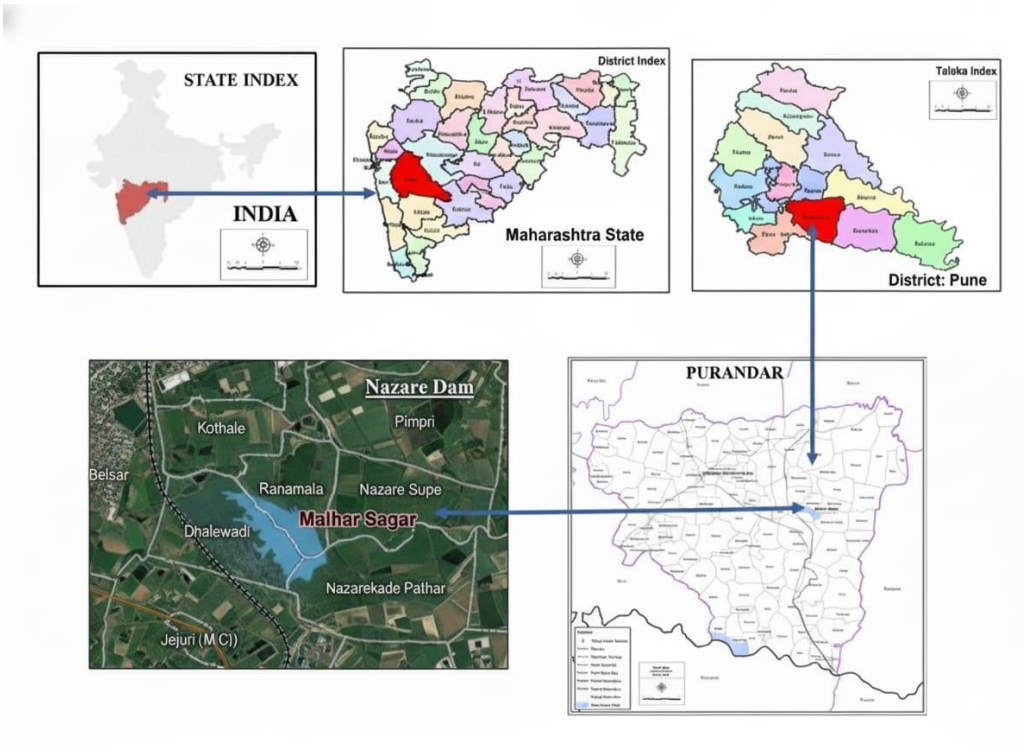

Fig. 1 Study map area

Study Period

Field investigations were carried out from June 2024 to July 2025, covering both monsoon and early winter seasons. This period was chosen to capture both breeding and migratory bird activity.

Data Collection

Standard lines transect and point count methods (Bibby et al., 2000) were employed for bird sampling.

Line Transects: Five transects, each 500 m in length, were established in different habitat types-reservoir, agricultural area, and scrubland.

Point Counts: Observations were conducted at fixed points (200 m apart) for 10 minutes each.

Surveys were conducted twice daily early morning (06:00–09:00 hrs) and evening (04:30–06:30 hrs). All birds seen or heard were recorded with the aid of binoculars (Nikon 8×40) and a DSLR camera for photographic documentation.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

Identification and Classification

Birds were identified using field guides by Ali and Ripley (1987) Pande et al.(2013) and Grimmett et al. (2011). Taxonomic classification followed the IOC World Bird List (v13.1, 2023).

Data Analysis

The diversity of birds was assessed using:

- **Species Richness (S)** – total number of species recorded.
- **Relative Abundance (%)** = (Number of individuals of a species / Total individuals) × 100.
- **Shannon-Wiener Diversity Index (H')** and Evenness (E) were calculated using standard formulas (Magurran, 2004).

RESULTS

Family	Order	Common Name	Scientific Name
Accipitridae	Accipitriformes	Black-Winged Kite	Elanus caeruleus
Accipitridae	Accipitriformes	Bonelli's Eagle	Aquila fasciata
Accipitridae	Accipitriformes	Brahminy Kite	Haliastur indus
Accipitridae	Accipitriformes	Shikra	Accipiter badius
Accipitridae	Accipitriformes	Short-toed Snake Eagle	Circaetus gallicus
Alcedinidae	Coraciiformes	Common Kingfisher	Alcedo atthis
Alcedinidae	Coraciiformes	Pied Kingfisher	Ceryle rudis
Alcedinidae	Coraciiformes	White Throated Kingfisher	Halcyon smyrnensis
Anatidae	Anseriformes	Indian Spot-billed Duck	Anas poecilorhyncha
Alaudidae	Passeriformes	Ashy Crowned Finch Lark	Emberiza fucata
Alaudidae	Passeriformes	Indian Bushlark	Mirafra erythroptera
Ardeidae	Pelecaniformes	Great Egret	Ardea alba
Ardeidae	Pelecaniformes	Grey Heron	Ardea cinerea
Ardeidae	Pelecaniformes	Indian Pond Heron	Ardeola grayii
Ardeidae	Pelecaniformes	Intermediate Egret	Ardea intermedia
Ardeidae	Pelecaniformes	Little Egret	Egretta garzetta
Bucerotidae	Bucerotiformes	Indian Grey Hornbill	Ocyceros birostris
Charadriidae	Charadriiformes	Red-wattled Lapwing	Vanellus indicus
Charadriidae	Charadriiformes	Common Ringed Plover	Charadrius hiaticula
Ciconiidae	Ciconiiformes	Painted Stork	Mycteria leucocephala
Cisticolidae	Passeriformes	Ashy Prinia	Prinia socialis
Cisticolidae	Passeriformes	Common Tailorbird	Orthotomus sutorius
Columbidae	Columbiformes	Eurasian Collared Dove	Streptopelia decaocto
Columbidae	Columbiformes	Laughing Dove	Spilopelia senegalensis
Corvidae	Passeriformes	House Crow	Corvus splendens
Corvidae	Passeriformes	Indian Jungle Crow	Corvus culminates
Cuculidae	Cuculiformes	Asian Koel	Eudynamys scolopaceus

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

Cuculidae	Cuculiformes	Greater Coucal	Centropus sinensis
Dicruridae	Passeriformes	Black Drongo	Dicrurus macrocercus
Estrildidae	Passeriformes	Red Avadavat	Amandava amandava
Estrildidae	Passeriformes	Scaly Breasted Munia	Lonchura punctulata
Rallidae	Gruiformes	Eurasian Coot	Fulica atra
Hirundinidae	Passeriformes	Wire-Tailed Swallow	Hirundo smithii
Laniidae	Passeriformes	Bay-backed Shrike	Lanius vittatus
Laniidae	Passeriformes	Long-Tailed Shrike	Lanius schach
Laridae	Charadriiformes	Indian River Tern	Rynchops albicollis
Leiothrichidae	Passeriformes	Large Grey Babbler	Turdoides malcolmi
Meropidae	Coraciiformes	Small Green Bee Eater	Merops orientalis
Motacillidae	Passeriformes	White browed Wagtail	Motacilla maderaspatensis
Muscicapidae	Passeriformes	Black Redstart	Phoenicurus ochruros
Muscicapidae	Passeriformes	Indian Robin	Copsychus fulicatus
Muscicapidae	Passeriformes	Pied Bushchat	Saxicola caprata
Oriolidae	Passeriformes	Indian Golden Oriole	Oriolus kundoo
Passeridae	Passeriformes	House Sparrow	Passer domesticus
Phalacrocoracidae	Suliformes	Great Cormorant	Phalacrocorax carbo
Phalacrocoracidae	Suliformes	Indian Shag	Phalacrocorax fuscicollis
Phalacrocoracidae	Suliformes	Little Cormorant	Microcarbo niger
Phasianidae	Galliformes	Gray Francolin	Francolinus pondicerianus
Phasianidae	Galliformes	Peacock	Pavo cristatus
Phasianidae	Galliformes	Rock Bush Quail	Perdicula argoondah
Picidae	Piciformes	Coppersmith Barbet	Psilopogon haemacephalus
Ploceidae	Passeriformes	Baya Weaver	Ploceus philippinus
Psittaculidae	Psittaciformes	Plum Headed Parakeet	Psittacula cyanocephala
Psittaculidae	Psittaciformes	Rose Ringed Parakeet	Psittacula krameri
Pycnonotidae	Passeriformes	Red Vented Bulbul	Pycnonotus cafer
Recurvirostridae	Charadriiformes	Black-winged Stilt	Himantopus himantopus
Scolopacidae	Charadriiformes	Common Sandpiper	Actitis hypoleucos
Scolopacidae	Charadriiformes	Green Sandpiper	Tringa ochropus
Scolopacidae	Charadriiformes	Western Black-tailed Godwit	Limosa limosa
Strigidae	Strigiformes	Indian Eagle Owl	Bubo bengalensis
Strigidae	Strigiformes	Spotted Owlet	Athene brama
Sturnidae	Passeriformes	Brahminy Starling	Sturnia pagodarum
Sturnidae	Passeriformes	Common Myna	Acridotheres tristis
Sturnidae	Passeriformes	Jungle Myna	Acridotheres fuscus
Sylviidae	Passeriformes	Yellow Eyed Babbler	Chrysomma sinense
Threskiornithidae	Pelecaniformes	Black-headed Ibis	Threskiornis melanocephalus
Tytonidae	Strigiformes	Barn Owl	Tyto alba
Upupidae	Bucerotiformes	Common Hoopoe	Upupa epops
Zosteropidae	Passeriformes	Indian White Eye	Zosterops palpebrosus

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

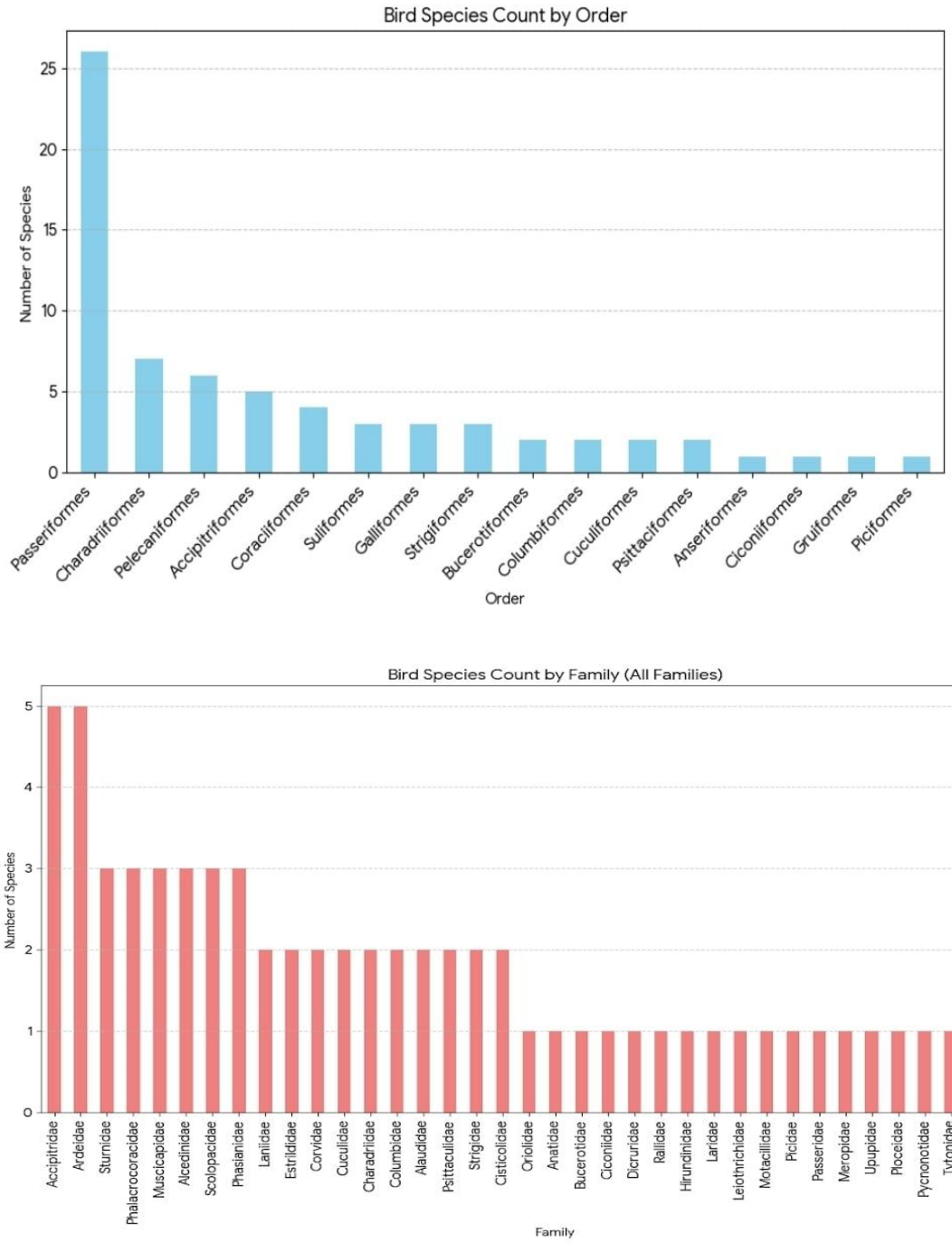

Fig 2: Bird species count

DISCUSSION

The recorded diversity (69 species) highlights the ecological richness of Nazare Dam, comparable to other regional wetlands like Bhigwan (Deshmukh et al., 2019) and Ujani (Patil & Kulkarni, 2020). The dominance of Passeriformes aligns with global patterns where this order represents the largest avian group (Gill, 2007).

Seasonal variation indicated a clear influx of migratory species during the post-monsoon period, consistent with observations across western India (Islam & Rahmani, 2004). The presence of Near Threatened species emphasizes the dam's role as a refuge for sensitive taxa. However, anthropogenic pressures such as agricultural runoff, pollution, and unregulated fishing threaten habitat quality.

The dominance of Passeriformes among the recorded species corresponds with patterns observed in other parts of the Deccan Plateau (Patil & Kulkarni, 2020; Deshmukh et al., 2019). Passerines, being primarily insectivorous or granivorous, benefit from the abundance of insects and seeds available in agricultural and

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XII Issue X October 2025

scrub habitats surrounding the reservoir. Families such as Sturnidae, Muscicapidae, and Pycnonotidae were particularly well represented, indicating the adaptability of these groups to semi-urban and modified landscapes.

The substantial representation of aquatic and wading birds, including members of Ardeidae and Anatidae, reflects the suitability of the reservoir zone for feeding and roosting. Species like the Indian Spot-billed Duck (*Anas poecilorhyncha*), Painted Stork (*Mycteria leucocephala*), and Black-headed Ibis (*Threskiornis melanocephalus*) are dependent on shallow water areas rich in fish and invertebrates. Their regular occurrence highlights the wetland's ability to sustain diverse trophic levels.

RECOMMENDATION:

Proper wetland management - including buffer vegetation maintenance, pollution control, and community-based awareness is essential for long-term conservation.

CONCLUSION

Nazare Dam supports a diverse assemblage of avifauna, including resident, migratory, and threatened species, demonstrating ecological and conservation importance. Regular biodiversity monitoring and habitat protection should be prioritized to safeguard this valuable ecosystem from increasing anthropogenic pressures.

REFERENCES

1. Ali, S., & Ripley, S. D. (1987). Handbook of the Birds of India and Pakistan. Oxford University Press.
2. Bibby, C. J., Burgess, N. D., Hill, D. A., & Mustoe, S. (2000). Bird Census Techniques. Academic Press, London.
3. Deshmukh, R. B., Shinde, S. R., & Patil, D. V. (2019). Avifaunal diversity of Bhigwan wetland, Maharashtra, India. Journal of Threatened Taxa, 11(4): 13520–13530.
4. Gill, F. B. (2007). Ornithology (3rd ed.). W. H. Freeman and Company.
5. Grimmett, R., Inskipp, C., & Inskipp, T. (2011). Birds of the Indian Subcontinent. Oxford University Press.
6. Islam, M. Z., & Rahmani, A. R. (2004). Important Bird Areas in India: Priority Sites for Conservation. BNHS and BirdLife International, Mumbai.
7. Magurran, A. E. (2004). Measuring Biological Diversity. Blackwell Publishing.
8. Patil, M. N., & Kulkarni, D. R. (2020). Diversity and abundance of birds in Ujani Wetland, Maharashtra. International Journal of Zoological Studies, 5(2): 45–52.
9. Weller, M. W. (1999). Wetland Birds: Habitat Resources and Conservation Implications. Cambridge University Press.
10. Satish Pande, Pramod Deshpande & Niranjan Sant(2013).Book of the Birds of Maharashtra.