



Chapter

[14]

## Avifaunal diversity and conservation status of Okhla Bird Sanctuary, Noida, Uttar Pradesh, India

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### Abstract

Okhla Bird Sanctuary, subside in the Gangetic plains falls in the semi-arid region. The sanctuary consists of a deep-water area, reed bed area, ponds, and shallow vegetated area that supports rich habitat for water and terrestrial birds. It is known for the occurrence of large congregations of winter migratory birds including some rare and endangered species. Present chapter is based on the published records and the observations carried by authors during 2018-19. Total 302 species have been reported so far. Four critically endangered species viz; White-rumped Vulture (*Gyps bengalensis*), Indian Vulture (*Gyps indicus*), Baer's Pochard (*Aythya baeri*), and Sociable Lapwing (*Vanellus gregarious*) have been reported from this area. Apart from this, three endangered species, nine vulnerable species, and seventeen near threatened species occur in this area. Based on the field observations and earlier discussion with the officials of the sanctuary, it has been observed that during the past one and half decades the population and species density of avifauna is decreased and some of the species which were frequently seen, are becoming rare. The wetland is facing conservation problems owing to anthropogenic pressure and water pollution. Thus, in the catchment area and surroundings of water bodies, dumping of wastes (such as garbage, sewages, food wastes, and polyethylene bags) should be banned and stopped by law enforcement.

### Keywords

Avifauna, Conservation issue, Diversity, Okhla Bird Sanctuary, Wetland

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## Introduction

Okhla Bird Sanctuary, subside in the Gangetic plains falls in the semi-arid region (Jha and McKinley, 2015). It is located in the catchment area of river Yamuna, under south Delhi, and plays an important role as a breeding and/or feeding site for the water birds. According to an estimation, around 14,000 to 20,000 water birds have been recorded during winters (Urfi, 2003). The prominent feature of this site is the large-sized (about 4 km<sup>2</sup>) lake which is formed after the creation of a barrage on the river in 1986. The area around Okhla circle, the river Yamuna and the marshland associated with it, are the preferred birding sites. Three hundred and twenty-four avian species have been recorded as per the forest department, Uttar Pradesh. According to long-term study carried out by Urfi (2003), a total of 302 species of birds have been reported from the wetland. This sanctuary is one among the several ornithologically important sites along the river Yamuna (Ganguli, 1975).

The sanctuary consists of a deep-water area, reed bed area, ponds, and shallow vegetated area that supports rich habitat for water and terrestrial birds. The aquatic vegetation of this stretch is diverse. Reed beds that are abundant in the marshy areas are *Typha angustata* and *Phragmites maxima*. The submerged vegetation includes *Vallisneria spiralis*, *Hydrilla verticillata*, *Potamogeton pectinatus*, and *Najas* species. Water hyacinth such as *Eichhornia crassipes*, *Salvinia molesta* and *Alternanthera philoxeroides* are found in river and form a dense mat over the water body. Trees and bushes i.e., *Tamarix dioica*, *Prosopis spp*, and *Ficus* species occur along with *Ipomoea fistulos* (Gopal and Shah, 1993). Recent updated information is lacking on the avifauna of Okhla Bird Sanctuary, so preparation of a checklist with updates was, thus, considered necessary for further conservation management of wetland.

## Description of the study area

Okhla Bird Sanctuary (28°33'56.3" N and 77°18'56.6" E) is roughly 4 km<sup>2</sup> in size and situated on the entrance of Noida, in Gautam Buddha Nagar district, Uttar Pradesh. It is situated on the point where river Yamuna enters the state of UP leaving the territory of Delhi (Urfi, 2003). The wetland was declared a Wildlife Sanctuary for Birds on 8 May 1990 by the Govt. of Uttar Pradesh. It has an area of 400 ha with open water covering around 273 ha, reed and sand beds covering 97 ha, and roads and bunds comprising the remaining 30 ha area. The area consists of a vast alluvial plain with a gentle south-eastern slope. It is surrounded by roads and bounded by mesh-wirings and bunds (Manral *et al.* 2013). Wetland water body and reedbeds with waterbirds were shown in Figures (1-8).

## Methods

Systematic observations were made on the avifauna of the Okhla Bird Sanctuary and few adjoining localities. Four days of field surveys were conducted from 24.02.2018 to 27.02.2018. Observations on birds were made every day from 6.30 am to 4.00 pm (with few exceptions), with the help of prismatic field binoculars (12x50 Bushnell). Identification of species was carried out with the help of field guides,

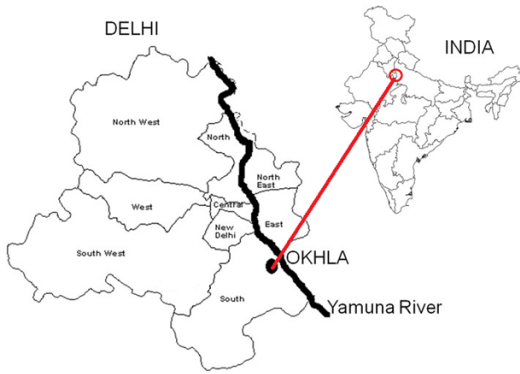


Figure 1. Map of India, pointing out the location of Okhla Bird Sanctuary.

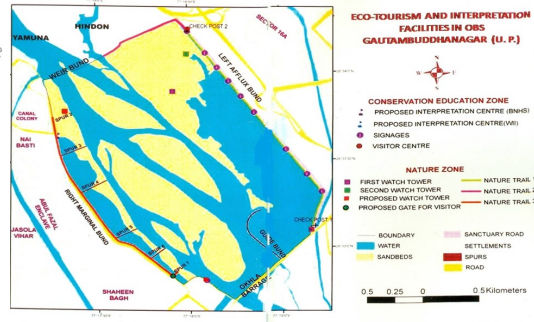


Figure 2. Map of the study area, Okhla Bird Sanctuary.

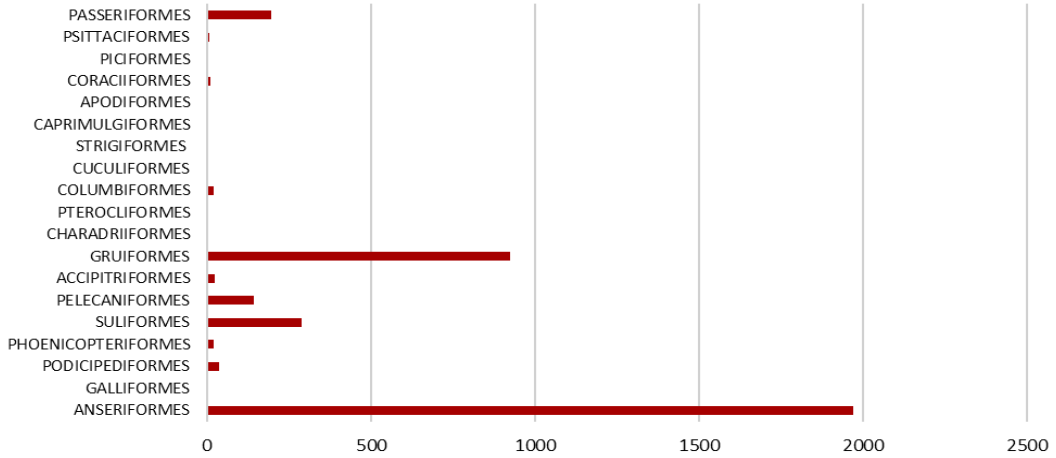


Figure 3. Showing the average number of individuals of different orders.

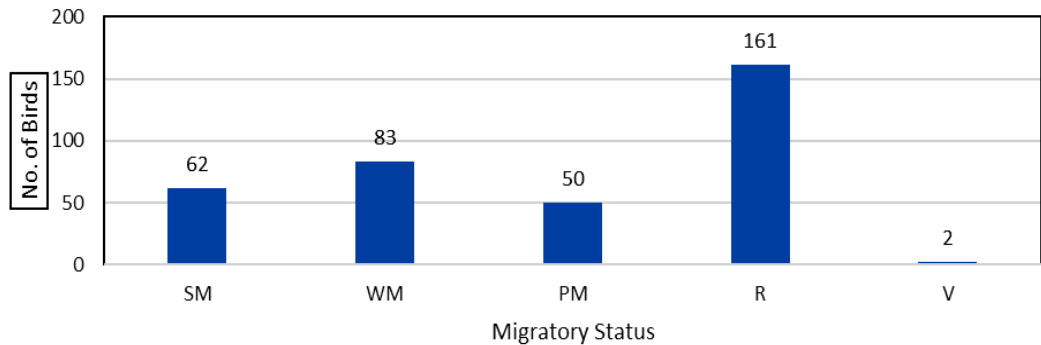


Figure 4. Migratory status of birds of Okhla Bird Sanctuary.



Figure 5. Landscape of Okhla Bird Sanctuary.



Figure 6. Landscape of Okhla Bird Sanctuary is showing urbanization in background.



Figure 7. Gadwall (*Mareca strepera*) and Northern Shoveler (*Spatula clypeata*) in flight.



Figure 8. Grey-headed Swamphen (*Porphyrio poliocephalus*) are common at Okhla Bird Sanctuary.

Birds of the Indian Subcontinent by (Grimmett *et al.*, 2003) and Birds of India (Grewal *et al.*, 2016). The taxonomic order and nomenclature followed by Clements v 2018, updated in 2018 (Clements *et al.*, 2018). 'Birds of South Asia: The Ripley Guide' (Rasmussen and Anderton, 2005) and 'Birds of India' (Kazmierczak and Perlo, 2009) were also considered to infer the occurrence of the species.

## Conservation status

Based on direct sightings and published records, total 302 species of birds belonging to 70 families and 19 orders have been enlisted from the sanctuary, besides a few species remained unidentified due to inadequate observations (E-suppl. Resource 1). The most dominant order was Anseriformes followed by Gruciformes, Passeriformes, and Suliformes (Figure 3). The resident avian species are found in more numbers than the winter migrants followed by summer migrants, passage migrants, and vagrant

(Figure 4). This proves that the sanctuary plays a vital role for the resident birds of Delhi. Analysis of the data revealed, that the sanctuary supports the occurrence of four critically endangered species *viz*; White-rumped Vulture, Indian Vulture, Baer's Pochard and Sociable Lapwing and three endangered species *i.e.*, Greater Adjutant, Egyptian Vulture and Black-bellied Tern. Nine vulnerable species, namely Common Pochard, Sarus Crane, Woolly-necked Stork, Indian Skimmer, Pallas's Fish Eagle, Greater-Spotted Eagle, Lesser Adjutant, Bristled Grassbird and Finn's Weaver have been reported. Sixteen near threatened species such as Falcated Duck, Ferruginous Pochard, Black-necked Stork, Painted Stork, Darter, Grey-headed Fish Eagle, Black-headed Ibis, Cinereous Vulture, Great Thick Knee, River Lapwing, Eurasian Curlew, Black-tailed Godwit, River Tern, European Roller, Laggar Falcon and Alexandrine Parakeet were also reported. Three vulnerable and six near-threatened species were reported (Urfi, 2003). The numbers are now increased due to the change in the IUCN status of some species. During last one and half decades, it has been observed that the species which were endangered, many of them are now in IUCN critically endangered list, followed by species which were near threatened, several of them are now in vulnerable list. During past, the species which were commonly seen in the sanctuary area, are becoming rare. Taking this under consideration, necessary measures for the conservation of this wetland should be adopted.

## Conservation Issues

Based on the field observations and earlier discussion with the officials of the sanctuary, it has been observed that during the past one and half decades the population and species density of avifauna is decreased and some of the species which were frequently seen, are becoming rare. Some of the major threats observed in the sanctuary are as listed below:

**Pollution:** Wetlands are the most complex and fragile ecosystems and do not have a self-cleaning ability and thus readily accumulate pollution (Jyoti and Hemant, 2003). Dispose of water bottles, plastic wrappers, and bags have been observed near the banks of the wetland. After discussing with the officials of the sanctuary, it was found that it was mostly disposed of by visitors. The sanctuary is becoming an excursion site for the people of Delhi. Knowingly, it has been observed that the people living nearby wetland are seen dumping wastes inside the sanctuary area thus making the water and surroundings more polluted.

**Urbanization:** Okhla bird sanctuary is rapidly becoming an island in a concrete jungle (Urfi, 2003). Over the past few decades, due to the urbanization, the habitats of wintering birds are shrinking and there has been a considerable loss of the remaining open fields and semi-natural marshes area around the Yamuna in Delhi. The water birds at Okhla are dependent upon the enclosed area, especially the agricultural fields, grassy patches, and marshy areas around the barrage for feeding. Their habitats are disappearing as more areas around the barrage are building up and so it is important to take concern about the surrounding sanctuary land to preserve the habitats of birds (Urfi, 1995).

**Draining of sewage waste:** Okhla stretch becomes the highest polluted stretch because of the discharge of about 18 drainage sewage including the large Najafgarh drain which discharges about 320.000

kilolitres of untreated sewage daily into the river, carrying a high concentration of pesticides and heavy metals (Anon, 1993).

**Anthropogenic activities:** Several anthropogenic activities like fishing and grazing of cattle (small herds) are seen in the wetland area, which not only affects the habitat, also disturbs the avifauna of the sanctuary. The wetland soils can directly reduce herbs/ grasses on the site through intensive grazing by livestock and it can also reduce the ability of the land to produce vegetation through soil compaction and long-term changes in soil structure (Adams and Akhtar, 1994).

## Conclusion

In conclusion, after studying the past scenario and surveying the current status of Okhla Bird Sanctuary, we found that over the years, the wetland water gets polluted. Besides this, urbanization around the sanctuary and anthropogenic activities inside the sanctuary were increased by many folds. Present study revealed that the number of endangered and threatened birds are increased, due to species status update as per IUCN. Rehabilitation programmes are needed in order to sustain the ecological health and water quality of wetland, as most of the wetlands in the UP are slowly turning into reed-beds/ barren lands. In the catchment area and surroundings of water bodies, dumping of wastes (such as garbage, sewages, food wastes, and polyethylene bags) should be banned and stopped by law enforcement.

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## E-Supplementary resource

Online version of this book chapter contains additional supplementary resource/data which can be accessed at: <https://www.aesacademy.org/book/biological-diversity-current-status-and-conservation-policies>.

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