

## DELHI

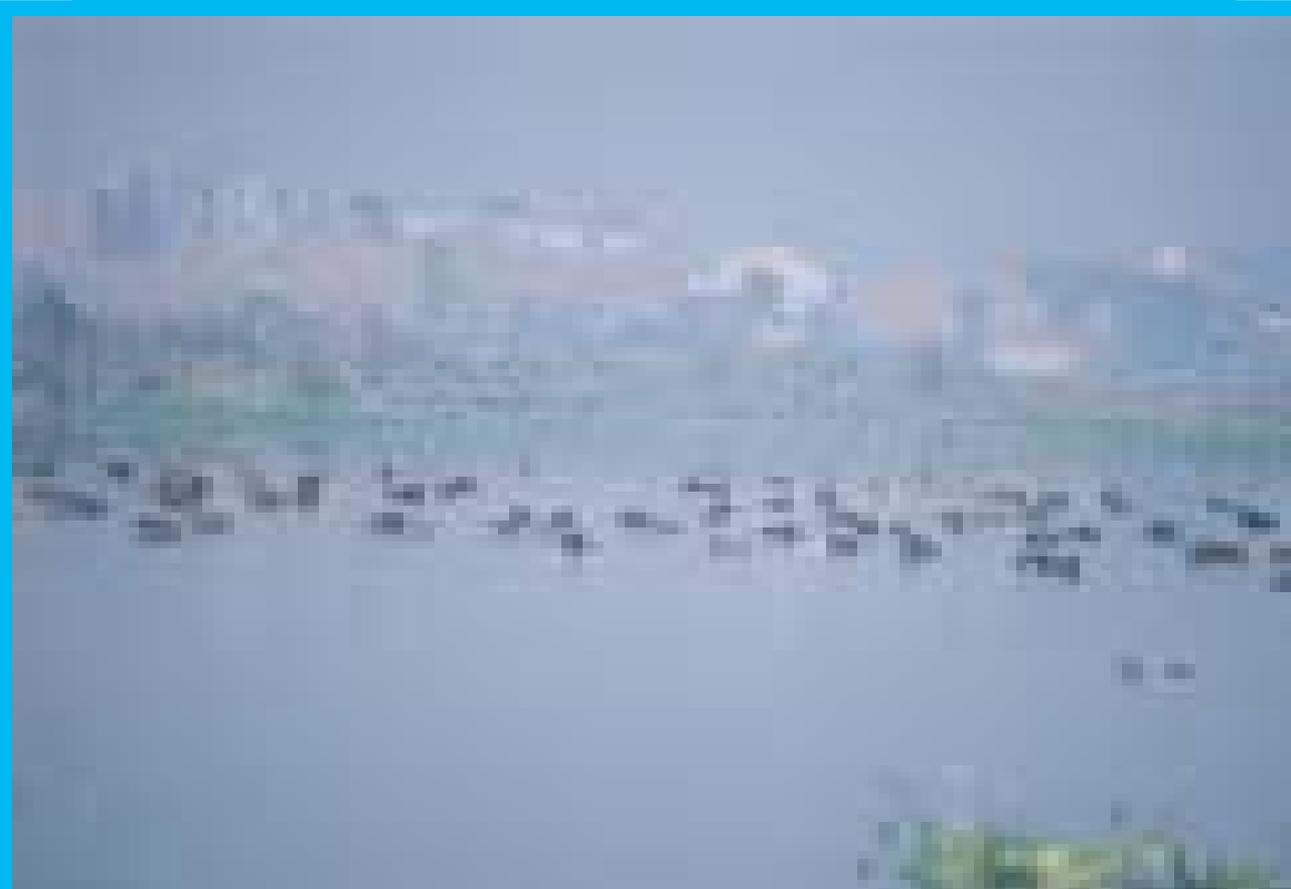


Photo: Asad R. Rahmani

Owing to dense human population, very little natural vegetation is left in Delhi but it is still a birdwatcher's paradise.

**D**elhi (28° 25' to 28° 52' N and 76° 50' to 77° 21' E) is the capital of India. It has an area of 1,483,00 ha. The State is divided into two main ecological zones, an extension of the Aravalli Hills and the Plains. The Yamuna river, where a large number of waterbirds congregate during winter, is the main source of water.

Delhi experiences extreme temperatures. Winter temperatures can fall as low as 2 °C, while the mercury soars to an uncomfortable 48 °C in summer. Delhi falls in a semi-arid zone so the rainfall is low, reaching a maximum of 600 mm.

The human population of the State is 13.78 million (2001 census) with a density of 9,294 persons per sq. km, which is the highest density in the country. The urban population is 93% and the rural population 7%.

### Vegetation

Despite dense human population, Delhi does have some natural forests, especially on what is known as the Ridge. The forest type is Tropical Dry Deciduous. The total recorded forest area is 8,500 ha. The reserved forest is 7,800 ha. and the protected and other forests cover 700 ha. The main forest occurs in the southeastern districts of the State, where mainly dense and open forests are found (Ministry of Environment and Forests 2001).

### IBAS AND PROTECTED AREAS

Delhi has a fully notified Asola-Bhatti Wildlife Sanctuary spread over about 2,760 ha. It was notified in 1986. However, this Sanctuary does not meet any IBA criteria. Delhi is divided into nine districts, two of which, the Northeast and East are situated on the banks of River Yamuna. This part of the Yamuna is important for migratory waterbirds, along with the Okhla barrage, which extends to the Okhla Wildlife Sanctuary in Uttar Pradesh, identified as Important Bird Area.

The Uttar Pradesh (U.P.) side of Okhla has already been declared as a bird sanctuary and lies on the border of Delhi in the Gautam Buddha Nagar district near the Okhla village. This Sanctuary comes under the Irrigation Department (Uttar Pradesh). On May 8, 1990 the U. P. Government declared 4000 ha of land as protected area for a bird sanctuary under the Wildlife (Protection) Act, 1972.

## Important Bird Areas in India - Delhi

### IBA of Delhi

IBA site code	IBA site name	IBA criteria
IN-DL-01	Okhla Bird Sanctuary	A1, A4iii

### AVIFAUNA

Despite its dense human population, Delhi is a birdwatcher's paradise, thanks to old avenue trees, a large number of parks, historical monuments with gardens, colonial bungalows with large lawns, and the famous Delhi Ridge. More than 400 species of birds have been identified till now (Devasar 2002), including some rare ones such as the Spot-billed Pelican *Pelecanus philippensis*, Lesser Adjutant *Leptoptilos javanicus* and Indian Skimmer *Rynchops albicollis*. The Delhi Region also has a very active Delhi Bird Club, whose members regularly go bird-watching and new species are added to the checklist.

### List of threatened birds with IBA site codes

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-DL-01
Long-billed Vulture	<i>Gyps indicus</i>	IN-DL-01
Vulnerable		
Spot-billed Pelican	<i>Pelecanus philippensis</i>	IN-DL-01
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-DL-01
Baikhal Teal	<i>Anas formosa</i>	IN-DL-01
Baer's Pochard	<i>Aythya baeri</i>	IN-DL-01
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>	IN-DL-01
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-DL-01
Sarus Crane	<i>Grus antigone</i>	IN-DL-01
Sociable Lapwing	<i>Vanellus gregarius</i>	IN-DL-01
Indian Skimmer	<i>Rynchops albicollis</i>	IN-DL-01
Bristled Grass-Warbler	<i>Chaetornis striatus</i>	IN-DL-01
Finn's Weaver	<i>Ploceus megarhynchus</i>	IN-DL-01
Near Threatened		
Darter	<i>Anhinga melanogaster</i>	IN-DL-01
Painted Stork	<i>Mycteria leucocephala</i>	IN-DL-01
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	IN-DL-01
Oriental White Ibis	<i>Threskiornis melanocephalus</i>	IN-DL-01
Ferruginous Pochard	<i>Aythya nyroca</i>	IN-DL-01
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>	IN-DL-01
Black-bellied Tern	<i>Sterna acuticauda</i>	IN-DL-01
Conservation Dependent		
Dalmatian Pelican	<i>Pelecanus crispus</i>	IN-DL-01

### THREATS AND CONSERVATION ISSUES

Despite the fact that Delhi has a very high human density of more than 9,000 per sq. km, it still retains some forest cover, especially in the Ridge area. The Delhi Development Authority (DDA) and the Delhi University have developed a biodiversity park of nearly 200 acres at Wazirabad, to which recently the Lt. Governor of Delhi has ordered the addition of another 300 acres of land. The existing 200 acres had dry ecosystems, while the addition that is to be made will mostly have aquatic habitat, along the banks of River Yamuna. This biodiversity park is supposed to be part of a bird sanctuary spread over 800 acres in the area.

The Delhi Tourism and Transport Development Corporation (DTTDC) has proposed the development of a bird sanctuary in the Najafgarh area of Southwest Delhi. The sanctuary will cover an area of several kilometres along the Najafgarh drain and a large number of trees are to be planted to form a thick forest belt. The Indian National Trust for Art and Cultural Heritage (INTACH) had been appointed as a consultant for the project.

The 7,777 ha Delhi Ridge forest has been under constant threat for several decades from development pressures, including construction of roads, armed forces activities, conversion to parks, development of housing colonies and slums. Pressure from environmental organizations over several years has resulted in some level of protection, including declaration of the Delhi Ridge as a Reserve Forest. The Supreme Court has ordered the Delhi Government to free the Ridge of all encroachments. However, in the several months since the judgement, most major occupations by government/private agencies have continued, while the authorities have moved quickly to evict poor slum-dwellers and villagers. In the latest incident, eviction notices were issued to residents of Sanjay, Balbir and Indira Colonies from the Asola Sanctuary area of the Delhi Ridge. The several thousand strong affected population primarily comprises construction worker families who have been living in these colonies for over twenty years. While some alternate area has been identified, this also appears to be a part of the Ridge, though not in its legally notified part. Mostly ravinous, the site is in any case unfit for habitation.

The people have now organised themselves, with help from members of the National Alliance of People's Movements, under the banner of Gram Bachao Sangharsh Samiti, to oppose their forced eviction. Environmental groups like Kalpavriksh, Srishti, Vatavaran, WWF-I



## Important Bird Areas in India - Delhi

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(Delhi-Haryana State Unit) and the Development Research and Action Group (DRAG) have supported their struggle; they have asked for the removal of the bigger destroyers (including the Indian Army) first, a negotiated settlement with the villagers, and an investigation on why luxury farmhouses adjacent to the villages have not been targeted for eviction.

The 132 Infantry Battalion (Ecology) of the Territorial Army is presently working on the restoration of the mines in the Asola Bhatti Wildlife Sanctuary in Delhi. The forest that is being resurrected in the Bhatti mines is to be called the Kargil Martyrs' Memorial Forest. One hundred thousand saplings have already been planted and an additional hundred thousand will be planted in the period up to March 2003.

At the same time, there is a proposal to denotify the Asola Wildlife Sanctuary and use the Bhatti mines as a landfill for the garbage that is generated by the city of Delhi. An estimated 6000-7000 tonnes of garbage is generated daily in Delhi and the city is reported to be fast running out of landfills to deal with it. It is estimated that by the year 2021 Delhi will be generating around 20,000 tonnes of garbage every day, and it is to meet this need that the 1000 ha Bhatti mines are to be converted into a landfill. Illegal sand mining is a major problem in the Asola Wildlife Sanctuary. It takes place in an area of over 6,500 acres on the Haryana Delhi border, including the sanctuary area.

The only IBA of Delhi, the Okhla Wildlife Sanctuary is not protected properly. Construction of a flyover near the sanctuary would affect it negatively, at least during the construction period. However, the bigger problems are pollution and encroachment (Urfi 1993). Due to rapid urbanization all around, the Okhla Bird Sanctuary is becoming an island. The wintering ducks at Okhla are dependent upon the surrounding areas, especially the grassy patches, crop fields and marshes around the barrage for feeding. As more and more areas around the barrage are built up, these habitats are disappearing and so it is important to develop a buffer zone around the Sanctuary (Urfi 2003).

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## OKHLA BIRD SANCTUARY



IBA Site Code	: IN-DL-01
State	: Delhi, Uttar Pradesh
District	: Gautam Buddh Nagar
Coordinates	: 28° 33' 00" N, 77° 17' 60" E
Ownership	: State
Area	: 400 ha
Altitude	: 200 msl
Rainfall	: 660 - 670 mm
Temperature	: 4 °C to 46 °C
Biogeographic Zone	: Semi-Arid
Habitat	: Freshwater Swamp

IBA CRITERIA: A1 (Threatened Species), A4iii ( $\geq 20,000$  waterbirds)

PROTECTION STATUS: Bird Sanctuary, established in May 1990

### GENERAL DESCRIPTION

Delhi and the neighbouring state of Uttar Pradesh harbour a huge wetland refuge for birds. The site is located at the point where the River Yamuna leaves the territory of Delhi and enters the neighbouring state of Uttar Pradesh. The most prominent feature of the Sanctuary is a large lake created by damming the river, which lies sandwiched between Okhla village towards the west and Gautam Buddh Nagar towards the east (Urfi 2003). So rich is this stretch of the river in avian diversity that it could well qualify as a Ramsar wetland of international importance. However, various development activities such as the construction of the NOIDA-Delhi freeway are encroaching on prime habitats of several birds.

The Uttar Pradesh (U.P.) side of Okhla has already been declared a bird sanctuary. This Sanctuary comes under the Irrigation Department. The aquatic vegetation of this stretch of River Yamuna has been described by Gopal and Sah (1993). *Typha* and *Phragmites* reed beds are abundant, especially during monsoon. Patches of Water Hyacinth *Eichhornia crassipes* form dense mats. *Salvinia* is also found. The common tree species are *Acacia nilotica*, *Acacia modesta*, *Albizia lebbek*, *Dalbergia sissoo*, *Zizyphus mauritiana*, *Ficus bengalensis* and *F. glomerata*.



Near Delhi water gets polluted by sewage and factory waste.

Photo: Otto Pfister

### AVIFAUNA

Since the creation of a barrage on the river in 1986, and the resultant waterbody, the bird life has shown tremendous increase. Urfi (2003) has compiled a list of 302 bird species from this site. An additional 27 species have been listed by Harris (2001) as probable. They need confirmation. During winter, between 14,000 to 20,000 waterbirds are recorded. This site qualifies in A4iii criteria (i.e. the site is known or thought to hold  $\geq 20,000$  waterbirds).

The total Okhla list includes two Critically Endangered species, nine Vulnerable species, seven Near Threatened species and one Conservation Dependent species. Some species, such as Baikal Teal *Anas formosa*, Greater Grey-headed Fish Eagle *Ichthyophaga ichthyaetus*, and Bristled Grass-Warbler *Chaetornis striatus* have not been seen in recent years (see Urfi 2003, for more details).

Among the resident birds listed in the Table, which are of great concern to us than vagrants, the Sarus Crane *Grus antigone* has declined all over India during the last two decades (BirdLife International 2001). Prior to 1992, pairs were sighted sporadically from the agricultural fields and marshes outlying Okhla lake area. One such area has now been destroyed by a newly built motorway. Since then, there has been no sighting of Sarus from Okhla (Urfi 2003).

The Indian Skimmer *Rynchops albigollis* that has declined all over its range (BirdLife International 2001), was found frequently in summer in the Yamuna river system in the mid 1970s (Ganguli 1975) but now it is a rare visitor to Okhla (Harris 2001), with flocks of up to seven sighted in August 1998, January 2001, and August 2001.

The Lesser Adjutant *Leptoptilos javanicus* has also not been sighted during the last 10 years. Urfi (2003) noted six birds in February 1990, but there has been no other recent record (Harris 2001). However, the Near Threatened Black-necked Stork *Ephippiorhynchus asiaticus* is still holding on. Up to five birds were seen in Okhla during 1989-1992 (Urfi 2003), and three birds in September 1990 (Harris 2001).

Records of nest-building activity by the Vulnerable Yellow Weaver or Finn's Baya *Ploceus megarhynchus* has been a topic of discussion. It is a bird of the terai region of Uttar Pradesh and Assam (Ali and Ripley 1987, Grimmett *et al.* 1998). Rai (1979) has recorded it breeding in Hastinapur WLS (an IBA) in Meerut

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district. They could have come from there. There has been no recent sighting from Okhla or other areas in the Yamuna.

The Okhla barrage is an important feeding ground for the 300 to 500 Painted Storks *Mycteria leucocephala* that breed in Delhi Zoo (Urfi 1997, 2003).

Several migratory species visit the river in large numbers in winter, with the commonest ducks being the Northern Shoveller *Anas clypeata* and Gadwall *Anas strepera*. The Northern Pintail *Anas acuta* and Ruddy Shelduck *Tadorna ferruginea* are also common. Other common species include the Common Teal *Anas crecca*, Tufted Duck *Aythya fuligula*, Common Pochard *Aythya ferina*, Greylag Goose *Anser anser* and Bar-headed Goose *Anser indicus*. The resident Spot-billed Duck *Anas poecilorhyncha* is abundant. The Garganey *Anas querquedula* is a fairly scarce passage migrant, along with the Common Shelduck *Tadorna tadorna*, Comb Duck *Sarkidiomias melanotos*, and Indian Cotton Teal or Pygmy Goose *Nettion coromandelianus*. The Red-crested Pochard *Rhodonessa rufina* and Mallard *Anas platyrhynchos* occur in small numbers. Other species that have occasionally been seen in the area include the Black Bittern *Ixobrychus flavicollis*, Asian Openbill *Anastomus oscitans*, White-necked Stork *Ciconia episcopus*, Large Whistling Duck *Dendrocygna bicolor* and Ruff *Philomachus pugnax*.

The very rare Bristled Grass-Warbler or Grassbird *Chaetornis striatus* has also been sighted here (Grewal 1996). Yet, the area where the Bristled Grass-Warbler was found has been destroyed by the NOIDA toll bridge. In November 2000, more than 450 Greater Flamingos *Phoenicopterus ruber* were observed and there have been sightings of large flocks of flamingos throughout.

Okhla has been identified as an IBA in view of its bird life and the presence of globally threatened species such as the Sarus Crane, Bristled Grass-Warbler, Greater Spotted Eagle, and Indian Skimmer.

The non-sanctuary area on the Delhi side has also been assigned IBA status on the basis of IBA criteria A1, A3 and A4i.

**Critically Endangered**

Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>

**Vulnerable**

Spot-billed Pelican	<i>Pelecanus philippensis</i>
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Baikal Teal	<i>Anas formosa</i>
Baer's Pochard	<i>Aythya baeri</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucorhynchus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Sarus Crane	<i>Grus antigone</i>
Sociable Lapwing	<i>Vanellus gregarius</i>
Indian Skimmer	<i>Rynchops albicollis</i>
Bristled Grass-Warbler	<i>Chaetornis striatus</i>
Yellow Weaver	<i>Ploceus megarhynchus</i>

**Conservation Dependent**

Dalmatian Pelican	<i>Pelecanus crispus</i>
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**Near Threatened**

Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichthyaeus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

Okhla provides habitat for over 300 bird species including the Yellow-footed Green Pigeon.



Photo: Otto Pflister

**OTHER KEY FAUNA**

There are no large or small mammals of conservation concern. On the Delhi side, the Sanctuary is surrounded by a bustling market and residential area, while on the Uttar Pradesh side, sometimes a few Golden Jackals *Canis aureus* and an occasional Nilgai *Boselaphus tragocamelus* are seen. Not much is known about the reptile, amphibian and fish fauna.

**LAND USE**

- q Fisheries
- q Water management

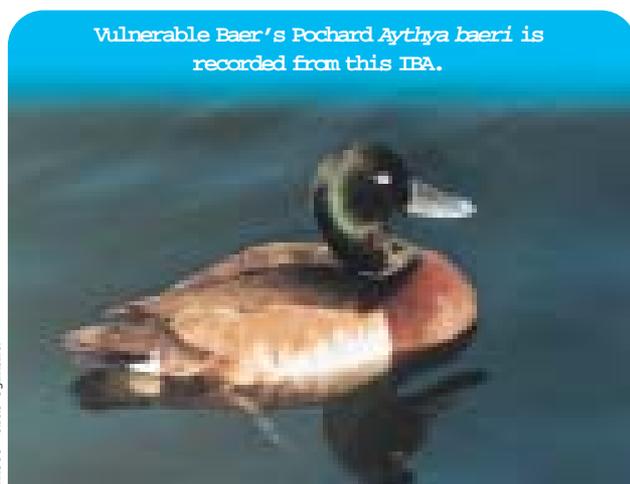
**THREATS AND CONSERVATION ISSUES**

- q Disturbance to birds
- q Poaching of birds
- q Water pollution
- q Encroachment
- q Cultivation
- q Fishing

Okhla Wildlife Sanctuary has great potential to attract national and international birdwatchers. Its greatest advantage is its easy accessibility and congregation of waterfowl. However, the Sanctuary is not protected properly. Pollution and solid-waste is the biggest problem of Okhla wetland. Cleaning the area and protecting the marshes would prove useful for wildlife, but also for the nearly 1 million humans who rely on the River Jamuna for their water requirements (Urfi 1993).

On the northeastern boundary, a Hanuman Temple is coming up during the last few years, and recently on the eastern boundary, an ashram is also gradually encroaching on the Sanctuary land. These are illegal constructions and pose a threat to the bird habitat in the Sanctuary.

Due to heavy siltation, some parts of the Okhla Barrage have



become considerably shallower and this has permitted the growth of reeds, particularly at the junction of the weir and the left influx bund and also in the areas between the spurs (Urfi 2003). In what ways these changes in the water depth will affect the bird communities remains to be seen.

Due to rapid urbanization all around, the Okhla Bird Sanctuary is becoming an island. The wintering ducks at Okhla are dependent upon the surrounding areas, especially the grassy patches, crop fields and marshes around the barrage for feeding. As more and more areas around the barrage are being built up, these habitats are disappearing, and so it is important to develop a buffer zone around the Sanctuary (Urfi 2003).

#### KEY CONTRIBUTORS

Nikhil Devasar, Abdul J. Urfi, Bill Harvey and Tarun K. Roy

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