

WEST BENGAL

IN-WB



Photo: Asad R. Rahmani

The northern part of West Bengal has some important sanctuaries and IBAs of India.

West Bengal (20° 31' - 27°12' North and 85° 50' - 89° 52' East) is bounded on the north by Sikkim and Bhutan, on the east by Assam and Bangladesh, on the south by the Bay of Bengal and on the west by Orissa, Bihar and Nepal. West Bengal covers a geographical area of 88,752 sq. km, which constitutes about 2.7% of the total land area of the country. The State is divided into 18 administrative districts. The old Bengal (of which West Bengal was a part) was known as Gauda or Vanga in ancient Sanskrit literature. In 1947 when India got Independence from the British, Pakistan's share was called East Pakistan and India's share was called West Bengal. In 1950 the Princely State of Cooch Behar was merged into West Bengal. The former French enclave of Chandernagore was added on October 2, 1954. Under the State Reorganization Act, some parts of Bihar were transferred to Bengal (Mathew 2003).

The State can be divided into two distinct regions, i) the Himalayas and the Sub-Himalayas and their associated forest types in the northern parts; and ii) the thickly populated Gangetic Plains, merging with the sea in the form of vast, tangled mangroves.

About 70 % of the State population is dependent on agriculture. The major crops are paddy, jute, tea, potatoes, oilseeds, betel-vine, tobacco, wheat, barley and maize.

The climate is generally humid tropical monsoon. It varies from moist-tropical in the southeast to dry tropical in the southwest and from subtropical to temperate in the mountains of the north. The temperature ranges from 0 °C to 45 °C. The mean annual rainfall ranges from 900 mm in the southwest to 6,000 mm in parts of the north.

The total human population of the state is 80.22 million (Census 2001), which is 7.08% of the country's population of which the rural population comprises 72.0% and urban 28%. The tribal population is 5.6% of the State population. The population density is 904 persons per sq. km (Ministry of Environment and Forest 2001).

Vegetation

There are eight forest types in the State. They are Tropical Semi-evergreen, Tropical Moist Deciduous, Tropical Dry Deciduous, Subtropical Broadleaf Hill, Subtropical Pine, Himalayan Moist Temperate, Montane Wet Temperate, Littoral and Swamp Forests. The forests are mainly distributed in the north, southwest and southeast. As per the Forest Survey of India report of 2001, the total recorded forest area is 11,879 sq. km, which constitutes 13.4% of the geographical area of the State and 1.5% of country's forest area. By legal status, reserved forest constitutes 59.3%, protected forest 31.8% and unclassified forest 8.9% (Ministry of Environment and Forest 2001). There is an increase in the forest cover in the districts of Bankura, Jalpaiguri, Maldah, Midnapur and Murshidabad. The increase in forest cover is mainly due to plantations and the protection offered to areas under Joint Forest Management (Ministry of Environment and Forest 2001). A decrease in forest cover has been recorded in the district of Uttar Dinajpur in scattered patches near Bangladesh border.

IBAS AND PROTECTED AREAS

There are five national parks and 16 wildlife sanctuaries covering an area of 0.28 million ha, constituting 3.15% of the geographical area of the State (Rodgers *et al.* 2000). The State has two Tiger Reserves namely, Sundarbans and Buxa, both are identified IBAs. The Sunderbans Biosphere Reserve is one of the 12 Biosphere Reserves of the country. The Sunderbans National Park is also a World Heritage site. All the five national parks are identified as IBAs, namely Buxa National Park, Gorumara National Park, Lava-Neora National Park, Sundarbans National Park and Singhalila National Park. Out of 16 wildlife sanctuaries, three have been identified as IBAs, namely Jaldapara Wildlife Sanctuary, Kulik Bird Sanctuary, and Mahananda Wildlife Sanctuary.



Stork-billed Kingfisher is a common bird in many IBAs.

Photo: Ketil Kondsen/Peter Lobo

Number of IBAs and IBA criteria

A1= Threatened species; A2 = Restricted Range species; A3= Biome species; A4=Congregatory species

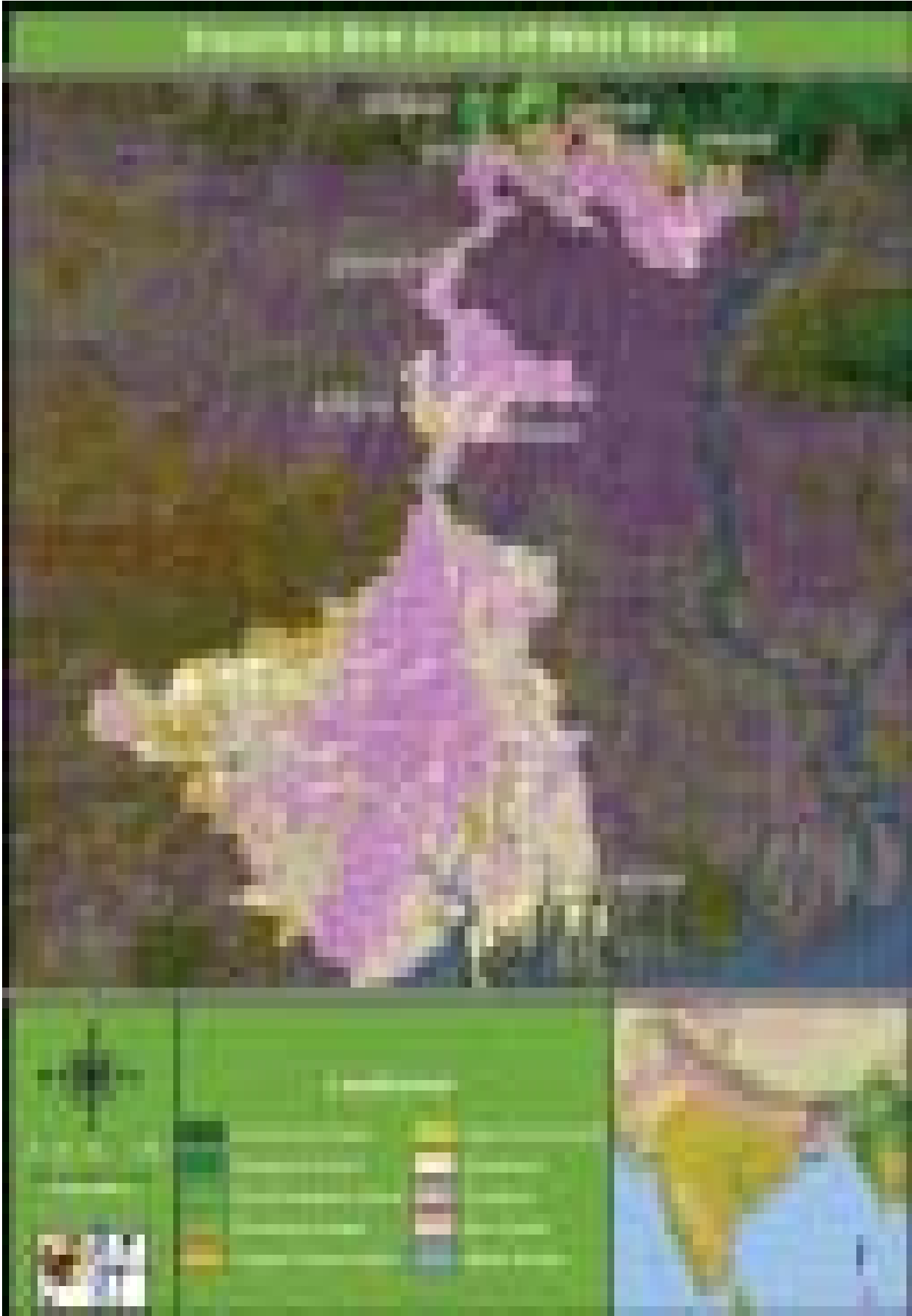
IBAs of West Bengal

IBA site codes	IBA site names	IBA criteria
IN-WB-01	Buxa Tiger Reserve (National Park)	A1, A2
IN-WB-02	Farakka Barrage and Adjoining Area	A1, A4i, A4iii
IN-WB-03	Gorumara National Park	A1, A2
IN-WB-04	Jaldapara Wildlife Sanctuary	A1, A2
IN-WB-05	Kulik (Raiganj) Bird Sanctuary	A1, A4i, A4iii
IN-WB-06	Lava-Neora Valley National Park	A1, A2, A3
IN-WB-07	Mahananda Wildlife Sanctuary	A1, A2, A3
IN-WB-08	Naya Bandh Wetland Complex	A1
IN-WB-09	Singhalila National Park	A1, A2
IN-WB-10	Sundarbans Biosphere Reserve (National Park)	A1

AVIFAUNA

The bird life of West Bengal is rich. About 734 species have been identified (Sen 2003) including some extremely rare ones. Among the Critically Endangered species, Oriental White-backed Vulture *Gyps bengalensis*, Long-billed Vulture *G. indicus* and Slender-billed Vulture *G. tenuirostris* are present in this State. Among the Endangered birds, White-bellied Heron *Ardea insignis*, Greater Adjutant *Leptoptilos dubius* and Bengal Florican *Houbaropsis bengalensis* have been found. There are chances of finding Oriental Stork *Ciconia boyciana* which is reported mainly as winter visitor to the northeast India. Another species worth noting is Spotted or Nordmann's Greenshank *Tringa guttifer*. This Endangered bird is reported from many IBAs in Assam (Islam and Rahmani 2002) and unconfirmed reports from Rajasthan, Gujarat, and Calcutta district (BirdLife International 2001).

In West Bengal, 23 out of 57 Vulnerable species listed for India by BirdLife International (2001) are found. For some species, the IBAs, and protected areas of West Bengal are important for their survival. Fourteen Near Threatened species are also found in the IBAs of West Bengal.



Important Bird Areas in India - West Bengal

List of threatened birds with IBA site codes

IN-WB

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-WB-01, 02, 03, 05, 07, 08
Long-billed Vulture	<i>Gyps indicus</i>	IN-WB-02, 05, 08
Slender-billed Vulture	<i>Gyps tenuirostris</i>	IN-WB-01, 07
Endangered		
Greater Adjutant	<i>Leptoptilos dubius</i>	IN-WB-10
Bengal Florican	<i>Houbaropsis benghalensis</i>	IN-WB-03, 04, 07 (?)
Vulnerable		
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-WB-01, 02, 03, 04, 05, 07, 08, 10
Baer's Pochard	<i>Aythya baeri</i>	IN-WB-02, 08, 10
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>	IN-WB-03, 04, 05, 08, 10
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-WB-03, 08, 09, 10
Eastern Imperial Eagle	<i>Aquila heliaca</i>	IN-WB-03, 06
Lesser Kestrel	<i>Falco naumanni</i>	IN-WB-04, 06
Swamp Francolin	<i>Francolinus gularis</i>	IN-WB-01, 03, 10
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>	IN-WB-01, 09
Black-necked Crane	<i>Grus nigricollis</i>	IN-WB-01
Masked Finfoot	<i>Heliopais personata</i>	IN-WB-10
Wood Snipe	<i>Gallinago nemoricola</i>	IN-WB-01, 09
Indian Skimmer	<i>Rynchops albicollis</i>	IN-WB-01, 02
Purple Wood-Pigeon	<i>Columba punicea</i>	IN-WB-06
Rufous-necked Hornbill	<i>Aceros nipalensis</i>	IN-WB-01, 06, 07
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>	IN-WB-06, 09
Snowy-throated Babbler	<i>Stachyris oglei</i>	IN-WB-03
Jerdon's Babbler	<i>Chrysomma altirostre</i>	IN-WB-01
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>	IN-WB-01, 03, 04, 06, 07
Hodgson's Prinia	<i>Prinia cinereocapilla</i>	IN-WB-01
Bristled Grass-Warbler	<i>Chaetornis striatus</i>	IN-WB-01
Beautiful Nuthatch	<i>Sitta formosa</i>	IN-WB-01, 06, 09
Finn's Weaver	<i>Ploceus megarhynchus</i>	IN-WB-01, 04
Near Threatened		
Darter	<i>Anhinga melanogaster</i>	IN-WB-01, 02, 03, 04, 07, 08, 10
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	IN-WB-01, 10
Oriental White Ibis	<i>Threskiornis melanocephalus</i>	IN-WB-07, 08
Ferruginous Pochard	<i>Aythya nyroca</i>	IN-WB-01, 02, 08, 10
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>	IN-WB-01
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichhyaetus</i>	IN-WB-01, 03, 04
Cinereous Vulture	<i>Aegypius monachus</i>	IN-WB-01
Red-headed Vulture	<i>Sarcogyps calvus</i>	IN-WB-01, 03, 04, 07
Pallid Harrier	<i>Circus macrourus</i>	IN-WB-01, 07, 08
Satyr Tragopan	<i>Tragopan satyra</i>	IN-WB-06
Black-bellied Tern	<i>Sterna acuticauda</i>	IN-WB-01, 02, 03, 04, 08, 10
Ward's Trogon	<i>Harpactes wardi</i>	IN-WB-06
Great Pied Hornbill	<i>Buceros bicornis</i>	IN-WB-01, 03, 04, 07
Rufous-rumped Grass-Warbler	<i>Graminicola bengalensis</i>	IN-WB-01

THREATENED BIRDS OF WEST BENGAL

Oriental White-backed Vulture *Gyps bengalensis*, **Slender-billed Vulture** *Gyps tenuirostris* and **Long-billed Vulture** *Gyps indicus* **Critically Endangered**

These vultures have been upgraded to Critically Endangered category because they have suffered an extremely rapid population decline, particularly across the Indian subcontinent (BirdLife International 2001). The veterinary use of pain-killer drug Diclofenac has been found to be responsible for these massive deaths (Oaks *et al.* 2004).

Bengal Florican *Houbaropsis bengalensis* **Endangered**

This bustard has a very small, rapidly declining population largely as a result of the widespread loss of its grassland habitat. It therefore qualifies as Endangered (BirdLife International 2001). It has been recorded from Jaldapara Wildlife Sanctuary (Narayan and Rosalind 1990) and possibly from Gorumara National Park.

Lesser Adjutant *Leptoptilos javanicus* **Vulnerable**

The Lesser Adjutant is resident in central and northeast India (Ali and Ripely, 1987). Jerdon (1862-1864) states that the species occurred in small numbers throughout India. The species has experienced rapid recent declines and has become rare. In West Bengal, it has been reported from the Buxa Tiger Reserve, Farakka Barrage and adjoining areas, Gorumara National Park, Jaldapara Wildlife Sanctuary (Kumar 1998), Kulik Wildlife Sanctuary and Sundarban Biosphere Reserve (Scott 1989).

Pallas's Fish-Eagle *Haliaeetus leucorhynchus* **Vulnerable**

This species is widely distributed from Europe to China, India, Pakistan, Bhutan, Bangladesh and Myanmar. In India it was a widespread breeding species on the lakes and large rivers in the north and northeast of the country. In West Bengal, it has been reported from the Gorumara National Park, Jaldapara Wildlife Sanctuary (Samant *et al.* 1995; Kumar 1998), Kulik Wildlife Sanctuary, Mahananda Wildlife Sanctuary and Sundarban Biosphere Reserve.

Swamp Francolin *Francolinus gularis* **Vulnerable**

This Francolin is one of the Vulnerable species and has undergone a rapid population decline because degradation of its specialized grassland habitat and trapping (BirdLife International 2001). This bird is found in all the *terai* areas up to Assam and from West Bengal it has been reported from the Buxa Tiger Reserve, Gorumara National Park, Mahananda Wildlife Sanctuary, Jaldapara Wildlife Sanctuary (Scott 1989) and Sundarban Biosphere Reserve (Mukherjee 1977).

Red-breasted Hill or Chestnut-breasted Partridge *Arborophila mandelli* **Vulnerable**

It is inferred from the limited available data that this partridge has a small population which is declining and becoming increasingly fragmented. It is therefore classified as Vulnerable. Results of more extensive surveys will require a reassessment, and possible downgrading of its threat status (BirdLife International 2001). It is evenly distributed in West Bengal wherever suitable habitat remains (R. Kaul *pers. comm.* 2003, Khaling *et al.* 1998). Khaling (1999) has indicated its presence in Darjeeling district, especially Singhalila National Park where it was also reported by Kaul (*pers. comm.* 2003).

Wood Snipe *Gallinago nemoricola* **Vulnerable**

This secretive snipe has a small, declining population, as a result of habitat loss and localized hunting in its wintering grounds. It therefore qualifies as Vulnerable (BirdLife International 2001). This Snipe breeds in the Himalayas and has been recorded from Himachal Pradesh to Assam, Arunachal Pradesh and Manipur. From West Bengal, it has been reported from the Buxa Tiger Reserve (Anon. 1993) and the Singhalila National Park.

Purple Wood-Pigeon *Columba punicea* **Vulnerable**

This pigeon has a small, declining, severely fragmented population owing to destruction of its evergreen forest habitat and hunting. It therefore qualifies as Vulnerable (BirdLife International 2001). It is a widely distributed bird in the northeastern states. In West Bengal it has been reported only from the Lava-Neora Valley National Park.

Rufous-necked Hornbill *Aceros nipalensis* **Vulnerable**

This large hornbill qualifies as Vulnerable because it has a small, rapidly declining population as a result of the destruction of evergreen forest and hunting (BirdLife International 2001). In India, it has been reported from West Bengal, Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, and possibly also from Nagaland and Sikkim. From West Bengal has been reported from the Buxa Tiger Reserve, (Allen *et al.* 1996), Mahananda Wildlife Sanctuary and the Lava-Neora Valley National Park.

Rusty-bellied Shortwing *Brachypteryx hyperythra* **Vulnerable**

This species has a small, declining population which qualifies it as Vulnerable. Its decline is thought to be a result of forest clearance and degradation (BirdLife International 2001). This Shortwing is endemic to the Eastern Himalayan Endemic Bird Areas, especially in West Bengal (Darjeeling, Haldibari, Mangpu, Tonghlu) to extreme western Arunachal Pradesh (Mehao WLS) (Stattersfield *et al.* 1998 and BirdLife International 2001). It has also been reported from the Lava-Neora Valley National Park and the Singhalila National Park.

Jerdon's Babbler *Chrysama altirostre* **Vulnerable**

This species's small population is inferred to be rapidly declining as a result of the extensive loss of its tall, wet grassland habitat, primarily due to drainage and conversion to cultivation. It therefore qualifies as Vulnerable (BirdLife International 2001). This is one of the least studied birds which is distributed from the Indus Valley of Pakistan to the plains of Brahmaputra Valley and the *terai* of Nepal. From West Bengal it has been reported from the Buxa Tiger Reserve and the Mahananda Wildlife Sanctuary.

Slender-billed Babbler *Turdoides longirostris* **Vulnerable**

This elusive species is inferred to have a small, rapidly declining population because of the extensive destruction and degradation of its tall grassland habitats. It therefore qualifies as Vulnerable (BirdLife International 2001). This Babbler was reportedly common in northern West Bengal at Hasimara (Inglis 1951-1969) and it has also been reported from the Jaldapara Wildlife Sanctuary (BirdLife International 2001).

Black-breasted Parrotbill *Paradoxornis flavirostris* **Vulnerable**

This tall grassland specialist is inferred to have a small, rapidly declining population as a result of the extensive loss and degradation of grasslands. It therefore qualifies as Vulnerable (BirdLife International 2001). This Parrotbill has been recorded in the northeastern plains and neighbouring foothills of India, from West Bengal, through Assam, to Arunachal Pradesh and northern Bangladesh, with possible records from Nepal, Sikkim and Bangladesh (BirdLife International 2001). From West Bengal it has been reported from the Buxa Tiger Reserve, Gorumara National Park and Jaldapara Wildlife Sanctuary.

Beautiful Nuthatch *Sitta formosa* **Vulnerable**

This nuthatch has a small, declining, severely fragmented population as a result of the loss, degradation and fragmentation of evergreen and semi-evergreen forest. It therefore qualifies as Vulnerable (BirdLife International 2001). From West Bengal it has been reported from the Buxa Tiger Reserve (Allen *et al.* 1996), Lava-Neora Valley National Park and Singhalila National Park.

Finn's Weaver *Ploceus megarhynchus* **Vulnerable**

This species has a small, rapidly declining, severely fragmented population as a result of the loss and degradation of *terai* grasslands, principally through conversion to agriculture and overgrazing. These factors qualify it as Vulnerable (BirdLife International 2001). From West Bengal it has been reported from the Jaldapara Wildlife Sanctuary, 65 individuals (BirdLife International 2001, Turin *et al.* 1987) and the Buxa Tiger Reserve (Anon. 1993).

RESTRICTED RANGE SPECIES

The northern parts of West Bengal, especially Darjeeling and the valleys of Lava and Neora fall under the Eastern Himalayas Endemic Bird Area 130, while the remaining parts of the northern West Bengal lie under the Assam Plains Endemic Bird Areas 131, identified by Stattersfield *et al.* (1998). There are 22 restricted range species in the Eastern Himalayas EBA, out of which eight are found in West Bengal. Some of them are Chestnut-breasted or Red-breasted Hill Partridge *Arborophila mandellii* (Singhalila National Park), Rusty-bellied Shortwing *Brachypteryx hyperythra* (Lava-Neora Valley National Park, Mahananda Wildlife Sanctuary, Singhalila National Park), Snowy-throated Babbler or Austen's Babbler *Stachyris oglei* (Gorumara National Park), Grey Sibia *Heterophasia gracilis* (Singhalila National Park) Similarly in the Assam plains, there are three restricted range species and of these Black-breasted Parrotbill *Paradoxornis flavirostris* is found in the IBAs (Buxa Wildlife Sanctuary, Gorumara National Park, Jaldapara National Park, Lava-Neora Valley National Park, Mahananda Wildlife Sanctuary) of West Bengal. There are historical records of the Manipur Bush Quail *Perdica manipurensis*, from near Torsa River and Alipur Duar (BirdLife International 2001).

Endemic Bird Area 130: Eastern Himalayas		
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>	IN-WB-01, 09
Ward's Trogon	<i>Harpactes wardi</i>	IN-WB-06
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>	IN-WB-06, 07
Snowy-throated Babbler	<i>Stachyris oglei</i>	IN-WB-03
Hoary-throated Barwing	<i>Actinodura nipalensis</i>	IN-WB-01
Grey Sibia	<i>Heterophasia gracilis</i>	IN-WB-09
White-naped Yuhina	<i>Yuhina bakeri</i>	IN-WB-01
Black-browed Warbler	<i>Phylloscopus cantator</i>	IN-WB-01
Endemic Bird Area 131: Assam Plains		
Manipur Bush-Quail	<i>Perdica manipurensis</i>	IN-WB-01
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>	IN-WB-01, 03, 06, 07

BIOME RESTRICTED ASSEMBLAGES

West Bengal has five Biomes, namely, Biome-7 (Sino-Himalayan Temperate Forest), Biome-8 (Sino-Himalayan Subtropical Forest), Biome-9 (Indo-Chinese Tropical Moist Forest), Biome-11 (Indo-Malayan Tropical Dry Zone), and Biome-12 (Indo Gangetic Plain). These five biomes have different coverage in the State. The north of Siliguri, the Lava-Neora Valley National Park, and Singhalila National Park fall under Biome-7, Biome-8 and Biome-9 because these areas have altitude between 1,000 to 3,600 m and the main habitats are Broadleaf Evergreen Forest, Broadleaf Deciduous, Mixed Broadleaf-Coniferous and Coniferous Forests, Montane Grassland, Semi-evergreen Rain Forest and Moist Deciduous Forest.

BirdLife International (undated) has listed 112 bird species under Biome-7, 88 have been found in West Bengal. Similarly, Biome-8 has 95 species, out of which 63 have been reported from the State. The Biome-9 is represented by 11 out of 19 species, and Biome-11 of this state has 38 out of 59 bird species listed by BirdLife International (undated). Some parts of West Bengal lie in Indo-Gangetic Plains (Biome-12) where 13 species are considered as representative of biome assemblage. Based on the checklist available to us, seven species of this biome have been reported till now. They are Swamp Francolin, Bengal Florican, Striated Babbler *Turdoides earlei*, Long-tailed Prinia *Prinia burnesii*, Bristled Grass-Warbler or Grassbird *Chaetornis striatus*, Black-breasted Weaver *Ploceus benghalensis* and Finn's Weaver *Ploceus megarhynchus*.

Some of the IBAs which come under Biome-12, have large congregations of birds, e.g. Farrakka Barrage and Kulik Wildlife Sanctuary, where more than 20,000 waterbirds congregate.

THREATS AND CONSERVATION ISSUES

Most of the IBAs have tremendous anthropogenic pressures. To overcome these threats, the Forest Department of West Bengal has started a Participatory Forest Management System, involving people living in and around the reserves, under its Forest Resources Management Policy.

Timber smuggling with the connivance of the lower staff of the Forest Department is a big problem and occurs from time to time despite strict action. The Indian Railways plan to convert the existing metre-gauge railway track between Siliguri and Guwahati via Alipurduar and Cooch Behar in North Bengal into a broad-gauge line. This will involve cutting large number of trees. This broad gauge line will also form an effective barrier for wildlife movement. An increasing number of faster trains would mean more death to wildlife, especially the Asian Elephant. Crop damage by elephants is one of the major problems. The Forest Department, under Project Elephant, has enclosed many settlements and villages by electric fences but maintenance of the fence is not easy.



Important Bird Areas in India – West Bengal

Overfishing (unsustainable harvesting of fish) is a common problem in the Indo-Gangetic areas. Local people also kill waterbirds, especially during winter months when there are large congregations of waterbirds.

In the Singhalila National Park, the human communities mainly consist of two ethnic groups, the Nepalese and the Sherpas. They are completely dependent on the Park's forests for firewood, fodder and to some extent for timber, which they use for construction.

Threats to IBAs

IN-WB

A=Agriculture intensification/expansion; B=Dams/Dykes; C=Disturbance to Birds; D=Firewood Collection;
E=Industrialisation/Urbanisation; F=Unsustainable exploitation; G=Others; H=Natural Events

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BUXA TIGER RESERVE



IBA Site Code	: IN-WB-01
State	: West Bengal
District	: Jalpaiguri
Coordinates	: 26° 40' 30" N, 89° 44' 30" E
Ownership	: State
Area	: 76,087 ha
Altitude	: 152 -1,800 m
Rainfall	: 4,100 mm
Temperature	: 12 °C to 32 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Riverine Vegetation, Tropical Dry Deciduous Forest, Tropical Dry Evergreen Forest, Tropical Grassland

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas; Endemic Bird Area 131: Assam Plains)

PROTECTION STATUS: Tiger Reserve, established in April 1983

GENERAL DESCRIPTION

Buxa Tiger Reserve is located in the northeastern corner of Jalpaiguri district. It is about 180 km from the city of Jalpaiguri and 7 km from the district headquarters at Alipurduar. The northern boundary of the Reserve lies along the international border with Bhutan. The eastern side of the Reserve forms the interstate boundary with Assam, demarcated by River Sankosh. The western and southern sides are bounded by tea gardens and agricultural fields. The core area is about 38,500 ha, which comprises 26,000 ha area of Buxa Sanctuary and 11,700 ha area of Buxa National Park. The buffer zone comprises 37,500 ha.

Buxa Tiger Reserve is located at the meeting ground of three major biogeographical provinces, (Rodgers and Panwar 1988) namely the Lower Gangetic Plains, Central Himalayas and the Brahmaputra Valley. The Reserve has immense ecological and geomorphological significance. It consists of Himalayan formations of Darjeeling gneiss at an altitude of 1,800 m, the Great Boundary Fall (Godawans) lies just south of it, followed by the Siwalik Hills. Most of the area of the Reserve lies on the plains. Only the northern tracts are hilly. Many rivers and streams intersect the Reserve, the important ones are the Rydak, Jainty, Bala and Dima. Every year, flash floods cause widespread damage to forest vegetation during the monsoon.

Buxa Tiger Reserve was brought under Project Tiger in 1983 and became India's fifteenth Tiger Reserve.

Buxa Tiger Reserve has a rich floral diversity. It is mainly Moist Tropical Forest and has been subdivided into eight Sub-types of Champion and Seth (1968): Sal Forest, Moist Mixed/Dry Mixed Forest, Wet Mixed Forest, Semi-evergreen Forest, Evergreen Forest, Hill Forest, Savannah Forest and Riverine Forest (Forest Department Working Plan). The most common tree species which is of great economic and ecological importance is Sal *Shorea robusta*. In areas adjoining rivers, *Albizia lebbek*, *Dalbergia sissoo* and *Acacia catechu* are the most common species, while on the hills are *Morus laevigata*, *Ailanthus grandis*, *Zizyphus* sp., *Careya arborea* and *Butea monosperma*. The Savannah forests is characterized by tropical trees such as *Careya arborea*, *Dillenia pentagyna* and *Syzygium cumini*.

AVIFAUNA

More than 227 bird species were reported from this IBA site by Allen *et al.* (1996). But, if we include the birds seen earlier by Inglis *et al.* (1918-1920), Stevens (1923-1925), Inglis (1952-69), Law (1953) and Sanyal (1995), the total comes to 359 species for the IBA. During a one-year BNHS study, 221 species were sighted by Prakash *et al.* (2001).

The Greater Adjutant *Leptoptilos dubius*, an Endangered species, was earlier seen by Inglis *et al.* (1918-1920) but not by Allen *et al.* (1996) or Prakash *et al.* (2001). Similarly, the following species were not sighted in recent surveys: Manipur Bush Quail *Percidula manipurensis*, Pallas's Fish Eagle *Haliaeetus leucoryphus*, Bengal Florican *Houbaropsis bengalensis*, Lesser Florican *Sypheotides indica*, White-bellied Heron *Ardea insignis*, Wood Snipe *Gallinago nemoricola*, Jerdon's Babbler *Chrysomma altirostre* and Finn's Weaver *Ploceus megarhynchus*.

A part of Buxa Tiger Reserve lies in the Eastern Himalayas Endemic Bird Area (EBA 130) where Stattersfield *et al.* (1998) have listed 21 restricted range species. Red-breasted Hill Partridge *Arborophila mandelli*, Yellow-vented Warbler *Phylloscopus cantator*, Hoary-throated Barwing *Actinodura nipalensis* and White-naped Yuhina *Yuhina bakeri* are found in the higher reaches of Buxa. Most parts of Buxa are plains and would come under the Assam Plains Endemic Bird Area (EBA 131) where three species are considered restricted range. Only the Black-breasted Parrotbill *Paradoxornis flavirostris* has been reported from this IBA, although earlier even the Manipur Bush Quail was found at the foot hills. As described by Allen *et al.* (1997), the type specimens were procured in Goalpara. Primrose has seen this bird not far from the Torsa and Shebbeare also believes he has seen it. There is a ragged skin in the British Museum said to have been procured in the Bhutan Duars. This is evidently the bird mentioned by Thornhill as shot by him at Alipurduar (Inglis *et al.* 1918-1920).

The site is situated in the transition zone between Biome-8 and Biome-12 therefore, bird species representing Sino-Himalayan Subtropical Forest and Indo-Gangetic Plains are sighted in the Reserve. Owing to wide distribution of bird species of Biome-11 (Indo-Malayan Tropical Dry Zone), many birds from this biome are also found in this IBA site. In winter, some species

from Biome-5 (Eurasian High Montane Alpine and Tibetan) and Biome-7 (Sino-Himalayan Temperate Forests) are also reported from this IBA site. Altogether, this site has avian elements from five biomes.

Prakash *et al.* (2001) recorded 32 species of raptors, including the two Critically Endangered *Gyps* vultures. Allen *et al.* (1996) report five species of hornbills (Indian Grey *Ocyrceros birostris*, Oriental Pied *Anthracoeros albirostris*, Great Pied *Buceros bicornis*, Rufous-necked *Aceros nipalensis* and Wreathed *Aceros undulatus*). Some species of conservation interest seen by them are: Chestnut-breasted Partridge *Arborophila mandellii* (5 individuals), Rufous-necked Hornbill (one pair), Beautiful Nuthatch *Sitta formosa* (2-4 birds), Long-billed Wren-Babbler *Rimator malacoptilus* (one pair), Black-headed Shrike-Babbler *Pteruthius rufiventer* (small numbers), Yellow-throated Fulvetta *Alcippe cinerea* (small party), White-naped Yuhina *Yuhina bakeri* (small flocks) and Greater Rufous-headed Parrotbill *Paradoxornis ruficeps* (flocks of >30). Thirteen species belonging to the Vulnerable category and 11 belonging to the Near Threatened category are found in Buxa, some with significant numbers.

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Swamp Francolin	<i>Francolinus gularis</i>
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Black-necked Crane	<i>Grus nigricollis</i>
Wood Snipe	<i>Gallinago nemoricola</i>
Indian Skimmer	<i>Rynchops albicollis</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Jerdon's Babbler	<i>Chrysomma alirostre</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Hodgson's Prinia	<i>Prinia cinereocapilla</i>
Bristled Grass-Warbler	<i>Chaetornis striatus</i>
Beautiful Nuthatch	<i>Sitta formosa</i>
Finn's Weaver	<i>Ploceus megarhynchus</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Lesser Grey-headed Fish-Eagle	<i>Ichthyophaga humilis</i>
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichthyaetus</i>
Cinereous Vulture	<i>Aegypius monachus</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Pallid Harrier	<i>Circus macrourus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>
Great Pied Hornbill	<i>Buceros bicornis</i>
Rufous-rumped Grass-Warbler	<i>Graminicola bengalensis</i>
Endemic Bird Area 130: Eastern Himalayas	
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Hoary-throated Barwing	<i>Actinodura nipalensis</i>
Black-Browed Warbler	<i>Phylloscopus cantator</i>
White-Naped Yuhina	<i>Yuhina bakeri</i>
Endemic Bird Area 131: Assam Plains	
Manipur Bush-Quail (Old record)	<i>Pedicularia manipurensis</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>

OTHER KEY FAUNA

As the name indicates, Buxa is famous for its population of Tiger *Panthera tigris*. According to official records there were 32 Tigers in 1997 in the Reserve (Jain 2001). Buxa is an essential forest corridor for Tigers and Asian Elephants *Elephas maximus* moving between the forests of northwest Assam and southern Bhutan (Rodgers and Panwar 1988). Other larger vertebrates are Leopard *Panthera pardus*, Gaur *Bos frontalis*, Sambar *Cervus unicolor*, Hog Deer *Axis porcinus* and Wild Boar *Sus scrofa*.

According to Jain (2001), there are 73 species of mammals, 76 species of reptiles and 5 species of amphibians. This government document also claims 390 species of birds from this Reserve.

LAND USE

- ☐ Nature conservation and education

THREATS AND CONSERVATION ISSUES

- ☐ Grazing
- ☐ Poaching
- ☐ Fuel wood collection
- ☐ Fire

This small reserve forest is under tremendous anthropogenic pressure, with nearly 0.2 million people living in the vicinity, along with their 12,500 livestock. To overcome these threats, the Forest Department of West Bengal has started a Participatory Forest Management System, involving people living in and around the Reserve, under its Forest Resources Management Policy. A World Bank supported Ecodevelopment Project has been implemented in the Reserve to reduce the dependency of local people on the natural resources of the Reserve.

Ban on the lifting of boulders from the rivers is a contentious issue and needs immediate resolution so the local people are not affected and river ecology is not disturbed.

Timber smuggling with the connivance of the lower staff of the Forest Department is a big problem and occurs from time to time despite strict action. The Indian Railways plan to convert the existing metre-gauge railway track between Siliguri and Guwahati via Alipurduar and Koch Bihar in North Bengal into broad gauge line. This will involve cutting a large number of trees and also formation of a more effective barrier for wildlife movement. An increasing number of faster trains would mean more death to wildlife, especially the Asian Elephant.

Crop damage by elephants is one of the major problems. The Forest Department, under Project Elephant, has enclosed many settlements and villages by electric fences but maintenance of the fence is not easy.

KEY CONTRIBUTOR

IBA Team

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More than 220 bird species are reported from Buxa.

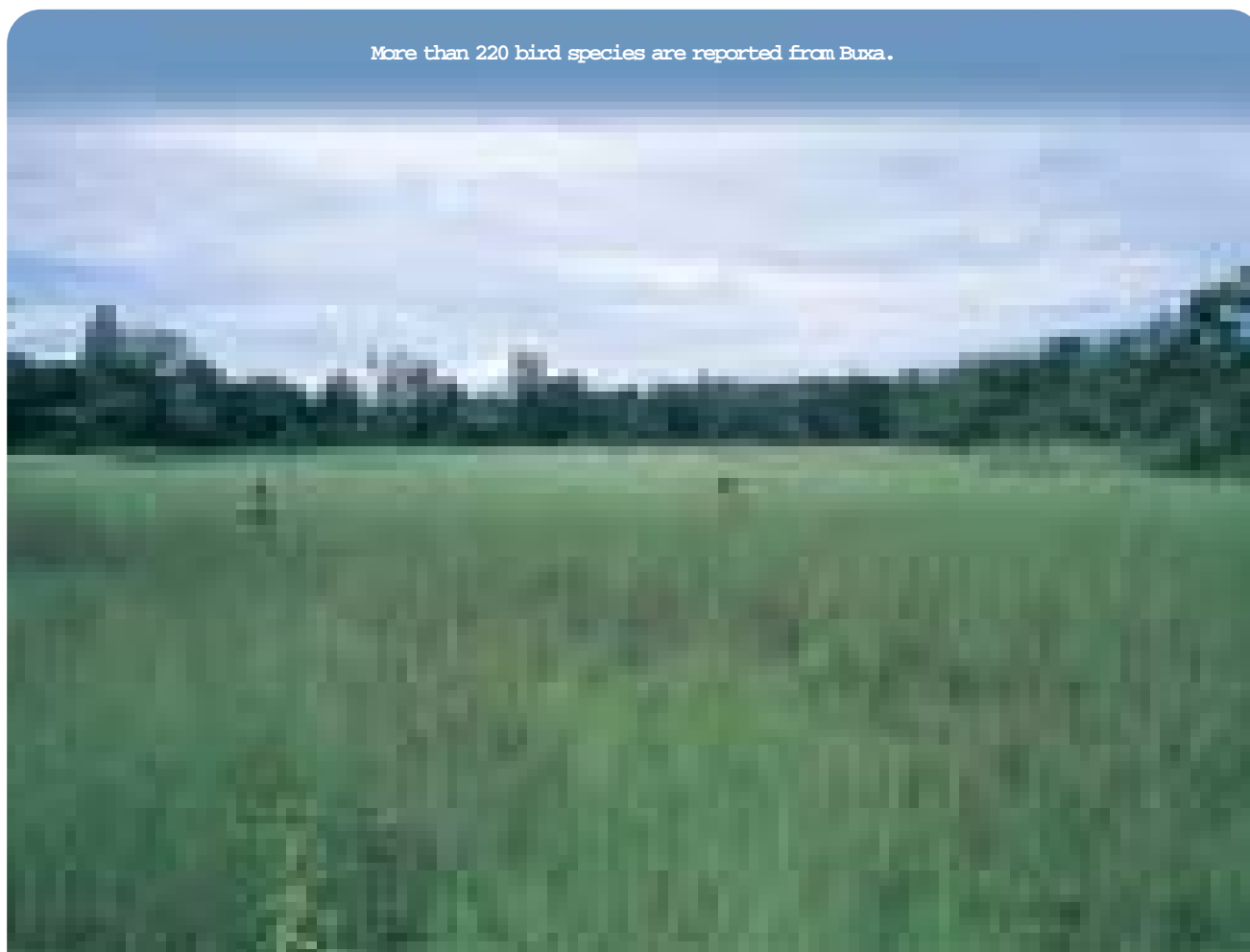
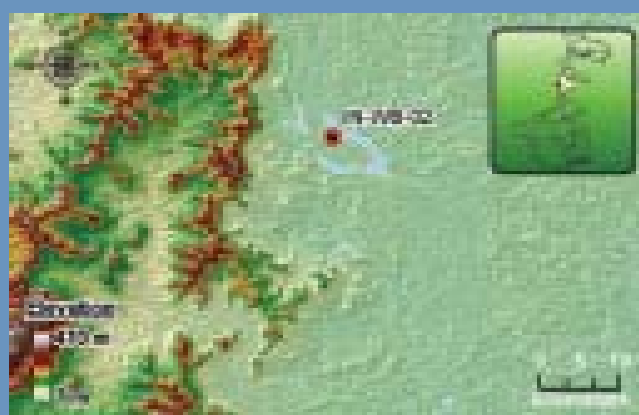


Photo : G. Maheswaran

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FARAKKA BARRAGE AND ADJOINING AREA



IBA Site Code	: IN-WB-02
State	: West Bengal
District	: Malda
Coordinates	: 25° 05' 44" N, 87° 48' 18" E
Ownership	: State
Area	: 2,000 ha
Altitude	: 30 m
Rainfall	: 1,450 mm
Temperature	: 8 °C to 40 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Riverine Vegetation and Reservoir

IBA CRITERIA: A1 (Threatened Species), A4i ($\geq 1\%$ biogeographic population), A4iii ($\geq 20,000$ waterbirds)

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Farakka Barrage, constructed in 1974-75 over the River Ganga, about 20 km from the border of Bangladesh has created a large reservoir, which stores water for irrigation. The overall span of the barrage is 1,200 m. The proposed IBA site starts from Farakka Barrage up to the Manikchak Ghat of Malda district (West Bengal). The maximum depth of water near the barrage is 25 m. From the onset of winter, the water starts to recede in the river and several *chaurs* or riverine islets emerge. The birds use these *chaurs* for day roosting and other diurnal activities. Around mid-February, as the *chaurs* reach a considerable size, the villagers of nearby villages reclaim them for agricultural purposes. On some *chaurs*, large reed beds are present that are used by migratory terrestrial birds such as reed warblers for foraging and roosting.

AVIFAUNA

Nearly 70 species of birds have been reported from this IBA (Samiran Jha *in litt.* 2002).

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Baer's Pochard	<i>Aythya baeri</i>
Indian Skimmer	<i>Rynchops albigollis</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

The Farakka Barrage and Manikchak Ghat support waterfowl populations between 50,000 and 1,00,000, including about 8,000 Fulvous or Large Whistling Duck *Dendrocygna bicolor* (Jha and Sengupta 1999). Wetlands International (2002) has estimated that 1% of the bio-geographical population is only 200, and the total population is 20,000. Therefore, Farakka Barrage holds two-thirds of the total estimated population of this species in the Indian subcontinent. Sharma (1998) counted up to 70,000 Tufted Ducks *Aythya fuligula* on January 23, 1998. This is a very common species in India and elsewhere but according to Wetlands International (2002), the 1% threshold of biogeographic population in South Asia is 10,000. The number seen in Farakka Barrage is more than

seven times of the 1% population of this species. These records qualify the site for an IBA.

OTHER KEY FAUNA

The area supports a healthy population of the highly endangered Gangetic Dolphin *Platanista gangetica* (Sinha 2000). Other major species of conservation concern are Gharial *Gavialis gangeticus*, Marsh Crocodile *Crocodylus palustris* and Otters *Lutra* spp.

LAND USE

q Aquaculture

THREATS AND CONSERVATION ISSUES

q Agricultural intensification and expansion

q Fisheries

More than 40 species of commercial fish are found in the reservoir. Since its development nearly 30 years ago, the Farakka Barrage has become an extremely important inland fisheries centre where every year hundreds of tons of fish is netted. However, this barrage has played havoc with the indigenous fauna, especially the Gangetic Dolphin and Gharial. The barrage has also obstructed the movement of nutritionally valuable fish such as the Hilsa *Hilsa ilisha*. Sinha (2000) has discussed the adverse impact of this barrage in the context of the highly endangered Gangetic Dolphin. As far as waterfowl is concerned, this barrage has replaced some of the natural wetlands lost under cultivation.

KEY CONTRIBUTOR

Samiran Jha

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GORUMARA NATIONAL PARK



IBA Site Code	: IN-WB-03
State	: West Bengal
District	: Jalpaiguri
Coordinates	: 26° 49' 12" N, 88° 51' 35" E
Ownership	: State
Area	: 7,995 ha
Altitude	: 25 m - 275 m
Rainfall	: 3,684 mm
Temperature	: 10 °C to 37 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Tropical Moist Deciduous Forest, Tropical Dry Deciduous Forest, Tropical Semi-evergreen Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 131: Assam Plains; Endemic Bird Areas 130: Eastern Himalayas)

PROTECTION STATUS: National Park, established in January 1994

GENERAL DESCRIPTION

Gorumara has been under protection since 1895, when it was declared a Reserve Forest under the Indian Forest Act (VII of 1878). It became a Wildlife Sanctuary in 1949, and was finally elevated to National Park status in 1994. However, the final notification procedure is still not complete.

Gorumara is located in the flood plains of Murti and Jaldhaka rivers in the Duars region, a terai habitat of Jalpaiguri district. There are many rivulets that have created wet grasslands, ideal for the One-horned Rhinoceros *Rhinoceros unicornis*, for which this area was protected for more than 100 years. In 1996, 16 individuals were present in Gorumara (Pratihari and Chakraborty 1996).

The vegetation of Gorumara can be classified into four main types: Moist Deciduous and Dry Deciduous forests, Semi-evergreen forest, Riverine Forest and Savannah Forest. Nearly 326 species of plants have been identified, including 158 species of trees and 32 grasses (Anon. 1998). The core area of the Park contains dense mixed forest with thick undergrowth and is mainly composed of tall trees such as *Shorea robusta*, *Tectona grandis*, *Bombax ceiba*, *Amoora wallichii*, *Dalbergia sissoo*, *Sterculia villosa* and *Ficus bengalensis* (Pratihari and Chakraborty 1996). An interesting grass species is *Citronella*, which adds the fragrance of citrus fruit to the air, wherever it occurs in the Park.

AVIFAUNA

Gorumara has rich bird diversity but unfortunately, no systematic work has been done here. The Management Plan of Gorumara, prepared by the Wildlife Circle, State Forest Department (Anon. 1998) lists 193 species, including many Red Data Book species. Rufous-necked Hornbill *Aceros nipalensis*, a globally threatened species found from the Himalaya foothills to 1,800 m (Ali and Ripley 1987) is also listed.

Based on the information gathered during IBA workshops in West Bengal, nine species belonging to threatened category (Critically Endangered and Vulnerable) and five species belonging to Near Threatened category of BirdLife International (2001) are found at this site. The Endangered Bengal Florican *Houbaropsis bengalensis* is not seen in recent year but some grasslands maintained for the One-horned Rhinoceros could be suitable for this bird.

A small portion of this IBA falls in Eastern Himalayas Endemic Bird Area (EBA 130) in which 21 restricted range species are listed. Only one species, the Snowy-throated Babbler *Stachyris oglei* has been identified till now, but more are likely to be found once detailed investigations are done. As most of Gorumara is plain, the site also lies in Assam Plains Endemic Bird Area (EBA 131) of Stattersfield *et al.* (1998). In this EBA, three bird species are listed, out of which Black-breasted Parrotbill *Paradoxornis flavirostris* is found.

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Endangered	
Bengal Florican	<i>Houbaropsis bengalensis</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucorhynchus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Eastern Imperial Eagle	<i>Aquila heliaca</i>
Swamp Francolin	<i>Francolinus gularis</i>
Snowy-throated Babbler	<i>Stachyris oglei</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichthyaetus</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>
Great Pied Hornbill	<i>Buceros bicornis</i>
Endemic Bird Area 130: Eastern Himalayas	
Snowy-throated Babbler	<i>Stachyris oglei</i>
Endemic Bird Area 131: Assam Plains	
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>

OTHER KEY FAUNA

In addition to the Rhinoceros, Gorumara is known for its megamammalian fauna such as the Asiatic Elephant *Elephas maximus*,

Gaur *Bos frontalis*, Tiger *Panthera tigris*, and Leopard *P. pardus*. According to the Management Plan of Gorumara National Park of the Wildlife Circle, West Bengal Forest Department, 48 species of mammals have been identified till now (Anon. 1998). Pratihar and Chakraborty (1996) have listed 43 mammal species, including the Malayan Giant Squirrel *Ratufa bicolor gigantea* and the highly-endangered Hispid Hare *Caprolagus hispidus*. However, Maheswaran (2002) found no evidence of Hispid Hare in Gorumara National Park. Chital or Spotted Deer *Axis axis* is also reported by the Forest Department, but Pratihar and Chakraborty (1996) could not find it.

LAND USE

- ☐ Nature conservation
- ☐ Tourism

THREATS AND CONSERVATION ISSUES

- ☐ Poaching
- ☐ Firewood collection
- ☐ Burning
- ☐ Grazing
- ☐ Expansion of road and railway line

Poaching of Rhinoceros for its ‘horn’ is the major threat in this Park. Till now, according to official records, there has been no incident of Rhinoceros poaching, but the threat is always there. Poaching of Wild Boar *Sus scrofa* is common on the fringes of the Park.

There are 13 revenue villages, four forest villages and five tea estates just outside the Park. They exert tremendous anthropogenic pressure on the forest resources. The village cattle graze on the fringes, and are sometimes killed by Tiger or Leopard, creating resentment against the Park. Villages on the periphery depend on

the Park for fuel wood and fodder. Since the establishment of the Park, forestry operations have been stopped, resulting in decrease in employment opportunities. Such socioeconomic problems must be addressed to save the Park and do justice to the villagers as well.

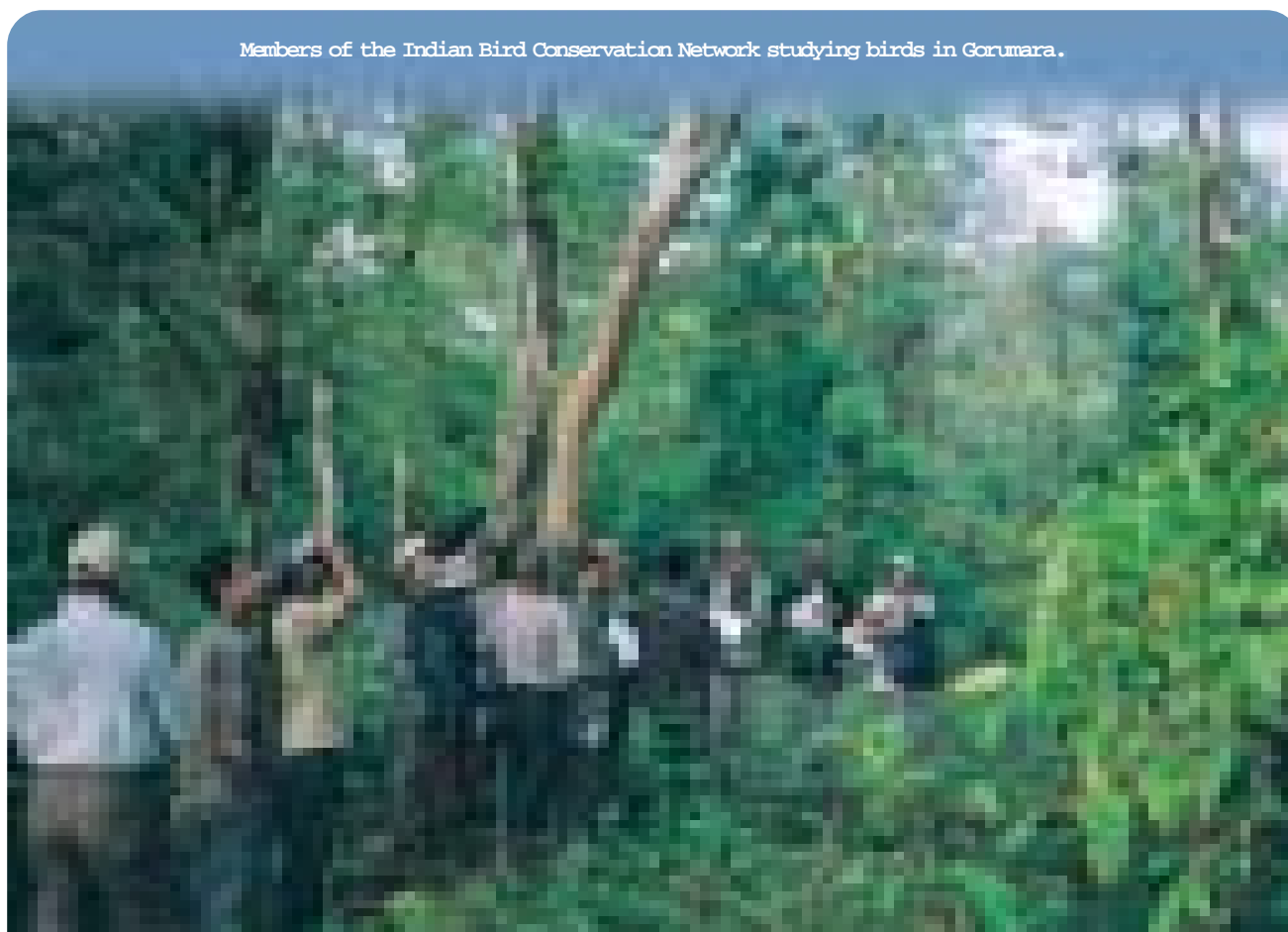
A national highway passes through the Park. There is a plan to widen it into an eight lane road. The Indian Railway plans to convert the existing metre-gauge track between Siliguri and Guwahati into broad-gauge, and also increase the frequency of trains. This would also affect the Park adversely.

KEY CONTRIBUTOR

IBA Team

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Members of the Indian Bird Conservation Network studying birds in Gorumara.

Photo: M. Zafar-ul-Islam

JALDAPARA WILDLIFE SANCTUARY



IBA Site Code	: IN-WB-04
State	: West Bengal
District	: Jalpaiguri
Coordinates	: 26° 30' 57" N, 89° 28' 07" E
Ownership	: State
Area	: 21,651 ha
Altitude	: 60 - 130 m
Rainfall	: 382 cm
Temperature	: 10 °C to 37 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Tropical Moist Deciduous Forest, Tropical Dry Deciduous Forest, Tropical Dry Evergreen Forest, Tropical Grassland

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 131: Assam Plains)
PROTECTION STATUS: Wildlife Sanctuary, established in June 1976

GENERAL DESCRIPTION

Jaldapara Wildlife Sanctuary is located in the flood plains of the River Torsa and other small rivers. It has large tracts of grasslands sustaining a small population of the One-horned rhinoceros *Rhinoceros unicornis*. The lofty snow clad ranges of the Himalaya loom in the background. A number of rivulets, the Torsa, Hollong, Chirakhawa, Kalijhora, Sissamora, Sanjoy and Bhaluka traverse the Sanctuary. The great diversity of vegetation and the network of rivers and rivulets have made this Sanctuary home to a rich variety of avifauna.

The savanna and grassland of the Sanctuary supports tall grasses like *Themada arundinacea*, *Saccharum narenga*, *S. arundinaceum*, *S. spontaneum*, *S. bengalense*, *Heteropogon contortus*, *Imperata cylindrica* and *Arundo donax*. The forest on the western side consists of *Dalbergia sissoo*, *Albizia lebbek*, *Acacia catechu*, *Bombax ceiba* and the eastern side is dominated by Sal forest *Shorea robusta*.

The Sanctuary consists mainly of riverine forests, with grasslands or savanna, maintained by burning of grasslands periodically by the forest officials. About 20-30% of the Sanctuary bears tall grasses (Narayan *et al.* 1989).

AVIFAUNA

Jaldapara is one of the best areas in northern West Bengal where the tall, wet grassland of the Indo-Gangetic plains is still seen, thanks to the protection of this habitat for the sake of the One-horned Rhinoceros. Despite the fact that Jaldapara is very popular among visitors, tourists and wildlifers, a systematic bird checklist is not available. According to the records of the Forest Department, 240 species of birds are known to occur here (Kumar 1998), but many species need confirmation. Kumar (1998) during his short trip saw 53 species from elephant back in the vicinity of Hollong Lodge, banks of Hollong river and the Peacock Avenue.

According to Ali *et al.* (1985) Jaldapara was the last known locality for the Bengal florican *Houbaropsis bengalensis* in West Bengal. Narayan *et al.* (1989) estimated a population of up to 10 individuals in Jaldapara in the late 1980s.

K. Mookherjee (*in litt.* 2001) has reported Black-breasted Parrotbill *Paradoxornis flavirostris* and Yellow Weaver or Finn's Weaver *Ploceus megarhyncha*, two globally threatened birds. The presence

of Parrotbill is perhaps the best indication that tall, dense *terai* grassland is still surviving. Yellow Weaver is also restricted to *terai* grasslands but the more open types, with tall trees for nesting (Ali and Ripley 1987).

Greater Adjutant *Leptoptilos dubius*, once fairly common in Jaldapara and all over West Bengal has drastically decreased and none has been sighted here for many years.

This site is selected on the basis of the presence of a small population of the Bengal Florican, and tall wet grassland habitat that could be having viable populations of many grassland-dependent species. As the Sanctuary is well protected, despite being surrounded by dense human population, there are long-term chances of survival of many grassland birds.

Endangered	
Bengal Florican	<i>Houbaropsis bengalensis</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Lesser Kestrel	<i>Falco naumanni</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Finn's Weaver	<i>Ploceus megarhynchus</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Greater Grey-headed Fish-Eagle	<i>Ichthyophaga ichthyaetus</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>
Great Pied Hornbill	<i>Buceros bicornis</i>
Endemic Bird Area 131: Assam Plains	
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>

OTHER KEY FAUNA

Jaldapara is an important refuge for the One-horned Rhinoceros, whose present population stands at about 80. Earlier, its numbers appeared to have dwindled from an estimated 72 in 1964 (Spillett 1967) to 22 in 1980 (Chowdhuary and Ghosh 1984). Now the population is back to 75-80 animals, thanks to control on poaching. Apart from this, a good population of Gaur *Bos frontalis*, a few

Sloth Bears *Melursus ursinus* and good numbers of Wild Boar *Sus scrofa*, Indian Muntjak or Barking Deer *Muntiacus muntjak*, Hog Deer *Axis porcinus* and Sambar *Cervus unicolor* are also present here. Leopard *Panthera pardus* and Asian Elephant *Elephas maximus* are very common, and sometimes one can see huge herds wandering in the Sanctuary. A small resident population of elephants is also seen throughout the year.



Hispid Hare *Caprolagus hispidus*, one of the threatened hares of the world, is found in this IBA.

Recently, a small remnant population of Hispid Hare *Caprolagus hispidus* has been found by a BNHS scientist within Jaldapara Wildlife Sanctuary. It is the only population of this highly endangered species in the whole of north Bengal and the estimated number is around 30 (Maheswaran 2002). The whole Sanctuary, especially the tall grasslands, should be protected to save grassland-dependent species like the Bengal Florican and the Hispid hare.

LAND USE

- ☐ Nature conservation

THREATS AND CONSERVATION ISSUES

- ☐ Grazing
- ☐ Fuel wood collection

The Sanctuary is uninhabited, but the adjacent lands are occupied by villages with dense human population (Seshadri 1986). The Sanctuary is famous for One-horned Rhinos and thus all the management activities are oriented towards Rhino conservation. Good management of tall grasslands not only benefits Rhinos but also the dependent species like the Bengal Florican and the Hispid Hare, besides Hog Deer and Swamp Deer. Jaldapara was included in a status survey of the Bengal Florican in 1985 (Ali *et al.* 1985) and subsequently in 1988 and 1989 (Narayan *et al.* 1989).

Jaldapara, and the nearby Buxa Tiger Reserve, are together one of the most important areas in northeastern India, providing a refuge for potentially viable populations of several threatened species (Tiger, Elephant, Rhinoceros, Swamp Deer, Gaur, as well as certain lesser cats, Hispid Hare and Bengal Florican) and critical as a corridor for the wildlife moving between Bhutan and Assam (Rodgers and Panwar 1988).

It was proposed that the Sanctuary be extended to 37,300 ha and a core area of 10,000 ha be upgraded to National Park status (Rodgers and Panwar 1988).

The Sanctuary has always been under threat from the high densities of villages occupying the surrounding areas. Illegal grazing by domestic livestock continues to be a major problem, besides unchecked movements of villagers who venture into the Sanctuary to collect fuel wood and thatch grass for roofing. Consequently, these resources have been largely depleted from the surrounding area (Spillett 1967, Chowdhury and Ghosh 1984, Seshadri 1986).

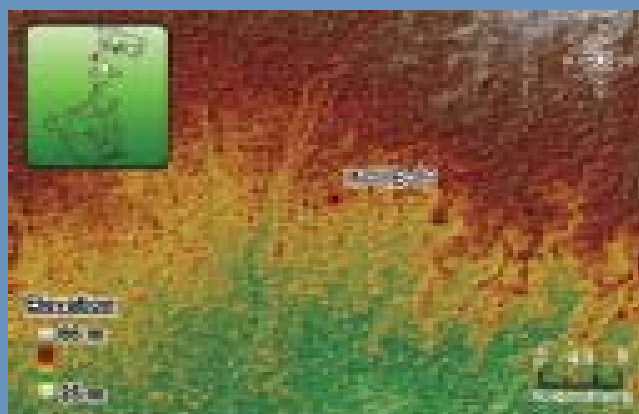
KEY CONTRIBUTOR

G. Maheswaran

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KULIK (RAIGANJ) BIRD SANCTUARY



IBA Site Code	: IN-WB-05
State	: West Bengal
District	: Uttar Dinajpur
Coordinates	: 25° 58' 00" N, 87° 52' 50" E
Ownership	: State
Area	: 130 ha
Altitude	: 35 m
Rainfall	: 1,500 mm
Temperature	: 8 °C to 40 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp, Riverine Vegetation, Tropical Dry Deciduous Forest

IBA CRITERIA: A1 (Threatened Species), A4i (1% biogeographic population), A4iii (20,000 waterbirds)

PROTECTION STATUS: Wildlife Sanctuary, established in 1986

GENERAL DESCRIPTION

The Kulik (Raiganj) Sanctuary is an artificial plantation of Dry Deciduous Forest, around a U-shaped canal. During monsoon the canal gets connected with the Kulik river which marks the eastern and southern boundary of the Sanctuary. National Highway 34 passes through the Sanctuary, dividing it into two halves. The U-shaped canal has created a small island-like area in the middle of the Sanctuary, which is the main breeding ground for birds. This area is a preferred habitat for heronry species (Jha and Sengupta 1999).

Around this artificial waterbody, the Forest Department has planted *Anthocephalus cadamba*, *Lagerstroemia reginae*, *Dalbergia sissoo*, *Eucalyptus* sp. and *Barringtonia* sp. (S. Jha, *in litt.* 2002).

AVIFAUNA

The Sanctuary, although an artificially planted forest, holds perhaps the largest nesting colony of Asian Openbill *Anastomus oscitans* (Jha and Sengupta 1999) in India. More than 11,000 nests were recorded in 1999. According to Wetlands International (2002), the total breeding population of this species is >1,25,000, and the 1% threshold is 1,250. Thus about 10% of the breeding population is found in this Sanctuary. The population of Asian Openbill has increased dramatically. For example, Shahi (1983) has seen 3,956 nests in 1981, and he estimated a population of about 15,800 storks (parents and two chicks in each nests). He also counted 1,030 nests of Black-crowned Night Herons *Nycticorax nycticorax*, and estimated a population of about 4,000 Night Herons. His estimates of other species are 3,000 egrets and 2,700 Little Cormorants *Phalacrocorax niger*.

Around 127 species of birds have been recorded from the area (S. Jha, *in litt.* 2002). Kulik is one of the most important heronries in India (Subramanya 1996).

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>

OTHER KEY FAUNA

The fauna does not include any species of much significance except for some Golden Jackal *Canis aureus*, Jungle Cat *Felis chaus*, Roofed Turtle *Kachuga dhongoka*, and Yellow Monitor Lizard *Varanus flavescens*.

LAND USE

- ☐ Agriculture
- ☐ Forestry
- ☐ Nature conservation and research,
- ☐ Tourism

THREATS AND CONSERVATION ISSUES

- ☐ Poaching of birds
- ☐ Aquaculture/Fisheries
- ☐ Disturbance to birds
- ☐ Tourists
- ☐ Firewood collection

Tree felling by villagers as well as by the Forest Department, egg collection for commercial purpose, chick collection for the table, disturbance by insensitive tourists, noise from picnickers in the nearby Kulik river are some of the conservation problems in this Sanctuary. After these issues were raised by a local NGO called Green Peoples, the authorities stopped tree felling in the Sanctuary area, and also banned picnickers. However, egg and chick collection continues despite the ban. Unregulated fishing is another problem.

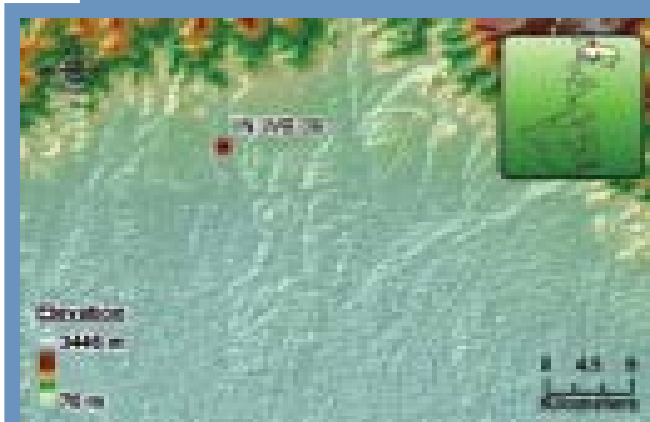
KEY CONTRIBUTOR

Samiran Jha

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LAVA-NEORA VALLEY NATIONAL PARK



IBA Site Code	: IN-WB-06
State	: West Bengal
District	: Darjeeling and Jalpaiguri
Coordinates	: 26° 55' 38" N, 88° 45' 16" E
Ownership	: State
Area	: 8,800 ha
Altitude	: 183 - 3,200 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Himalaya
Habitats	: Sub-tropical Broadleaf Hill, Montane Wet Temperate Forest, Sub-tropical Pine Forest, Sub-tropical Secondary Scrub

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas), A3 (Biome-7: Sino-Himalayan Temperate Forest; Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: National Park, established in April 1986

GENERAL DESCRIPTION

Neora Valley National Park is one of three protected areas in Darjeeling district, and probably the most undisturbed patch of forest in West Bengal. It is unique and ecologically important as it includes a relatively inaccessible patch of late successional forest with rich diversity and a wide range of environmental gradients.

The Neora Valley National Park has four main habitat types: Subtropical Mixed Broadleaf Forest, Lower Temperate Evergreen Forest, Upper Temperate Mixed Broadleaf Forest and Rhododendron Forest (Pradhan *in litt.* 2003).

AVIFAUNA

Neora Valley and Lava are very popular among birdwatchers, so there is a fairly comprehensive birdlist. A total of 258 bird species have been sighted (Nick Dymond *in litt.* 2002; Anand Prasad *in litt.* 2003). Prakriti Samsad has recorded 288 species from Lava and Loleygoan Range (Kushal Mokherjee *pers. comm.* 2004).

Seven globally threatened species and two Near Threatened species are found at this site. It is one of the best sites in India to see rarities such as the Rusty-bellied Shortwing *Brachypteryx hyperythra*. This species is also considered as restricted range by Stattersfield *et al.* (1998) as it is endemic to the Eastern Himalayas and perhaps has a narrow distributional range. However, the discovery of nine singing males in the Lava area in 1996 (Mauro and Verduyck 2000) was the first record in the Darjeeling area since 1945, and confirmed that fairly dense populations survived in at least this area (BirdLife International 2001).

Thanks to its great altitudinal variation from 183 m to 3,200 m, Lava-Neora Valley covers two biomes: Biome-7 (Sino-Himalayan Temperate Forest) from about 1,800 m to 3,600 m, and Biome-8 (Sino Himalayan Subtropical Forest) from about 1,000 m to 2,000 m. BirdLife International (undated) has listed 112 and 95 species respectively in these biomes. Forty-three species of Biome-7 and 24 of Biome-8 have been identified so far.

As Neora Valley is regularly visited by birdwatchers, some very interesting records are available from this site. For instance, a spectacular calling flock of almost 600 Hill Myna *Gracula religiosa* was seen near Loleygaon, and another flock of about 1,000 individuals of Dark-throated Thrushes *Turdus ruficollis* was seen at Rishyap (Mike Prince *in litt.* 2002).

Suntalekhola, on the fringes of Neora Valley NP, is also a good area for birds. Its altitude varies from 2,000 to 3,200 m, so it has many restricted range species of the Eastern Himalayas Endemic Bird Area. D. Ghosh (*in litt.* 2002) has sighted 64 species of birds.

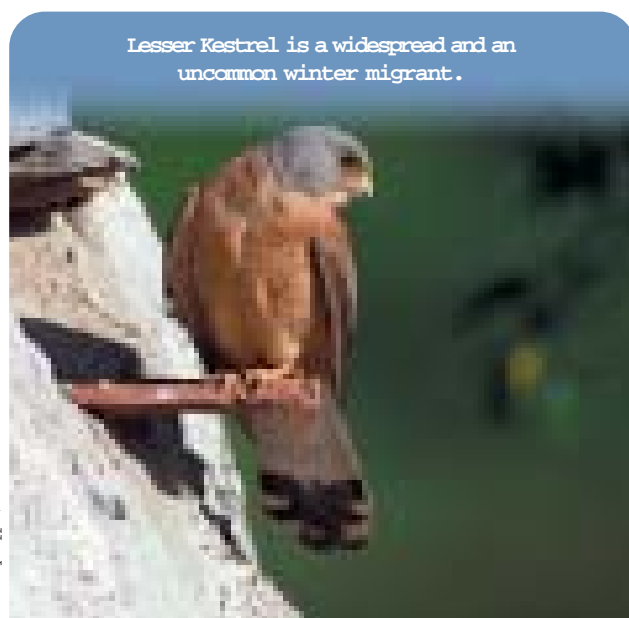


Photo: Ray Tipper/BirdLife International

Vulnerable	
Eastern Imperial Eagle	<i>Aquila heliaca</i>
Lesser Kestrel	<i>Falco naumanni</i>
Purple Wood-Pigeon	<i>Columba punicea</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Beautiful Nuthatch	<i>Sitta formosa</i>

Near Threatened	
Satyr Tragopan	<i>Tragopan satyra</i>
Ward's Trogon	<i>Harpactes wardi</i>
Endemic Bird Area 130: Eastern Himalayas	
Ward's Trogon	<i>Harpactes wardi</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Endemic Bird Area 131: Assam Plains	
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Biome-7 Sino-Himalayan Temperate Forest	
Speckled Wood-Pigeon	<i>Columba hodgsonii</i>
Darjeeling Pied Woodpecker	<i>Dendrocopos darjellensis</i>
Long-billed Thrush	<i>Zoothera monticola</i>
White-collared Blackbird	<i>Turdus albocinctus</i>
Chestnut Thrush	<i>Turdus rubrocanus</i>
Gould's Shortwing	<i>Brachypteryx stellata</i>
Indian Blue Robin	<i>Luscinia brunnea</i>
Golden Bush-Robin	<i>Tarsiger chrysaeus</i>
White-browed Bush-Robin	<i>Tarsiger indicus</i>
Rufous-breasted Bush-Robin	<i>Tarsiger hyperythrus</i>
White-bellied Redstart	<i>Hodgsonius phaenicuroides</i>
Rusty-tailed Flycatcher	<i>Muscicapa ruficauda</i>
Ferruginous Flycatcher	<i>Muscicapa ferruginea</i>
Rufous-gorgeted Flycatcher	<i>Ficedula strophciata</i>
Slaty-blue Flycatcher	<i>Ficedula tricolor</i>
Sapphire Flycatcher	<i>Ficedula sapphira</i>
Rufous-bellied Niltava	<i>Niltava sundara</i>
White-throated Laughingthrush	<i>Garrulax albogularis</i>
Striated Laughingthrush	<i>Garrulax striatus</i>
Spotted Laughingthrush	<i>Garrulax ocellatus</i>
Scaly Laughingthrush	<i>Garrulax subunicolor</i>
Black-faced Laughingthrush	<i>Garrulax affinis</i>
Stripe-throated Yuhina	<i>Yuhina gularis</i>
Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
Rufous-breasted Accentor	<i>Prunella strophciata</i>
Chestnut-headed Tesia	<i>Tesia castaneocoronata</i>
Grey-bellied Tesia	<i>Tesia cyaniventris</i>
Aberrant Bush-Warbler	<i>Cettia flavolivacea</i>
Yellowish-bellied Bush-Warbler	<i>Cettia acanthizoides</i>
Grey-sided Bush-Warbler	<i>Cettia brunnifrons</i>
Buff-barred Warbler	<i>Phylloscopus pulcher</i>
Grey-faced Warbler	<i>Phylloscopus maculipennis</i>
Large-billed Leaf-Warbler	<i>Phylloscopus magnirostris</i>
Grey-cheeked Flycatcher-Warbler	<i>Seicercus poliogenys</i>
Yellow-breasted Greenfinch	<i>Carduelis spinoides</i>
Tibetan Siskin	<i>Carduelis thibetana</i>
Dark-breasted Rosefinch	<i>Carpodacus nepalensis</i>
Dark-rumped Rosefinch	<i>Carpodacus edwardsii</i>
Crimson-browed Finch	<i>Propyrrhula subhimachala</i>
Scarlet Finch	<i>Haematospiza sipahi</i>
Brown Bullfinch	<i>Pyrrhula nipalensis</i>
Red-headed Bullfinch	<i>Pyrrhula erythrocephala</i>
Yellow-billed Blue Magpie	<i>Urocissa flavirostris</i>

Biome-8: Sino-Himalayan Subtropical Forest	
Rufous-throated Partridge	<i>Arborophila rufogularis</i>
Asian Emerald Cuckoo	<i>Chrysococcyx maculatus</i>
Golden-throated Barbet	<i>Megalaima franklinii</i>
Blue-throated Barbet	<i>Megalaima asiatica</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Short-billed Minivet	<i>Pericrocotus brevirostris</i>
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
Black Bulbul	<i>Hypsipetes leucocephalus</i>
Tickell's Thrush	<i>Turdus unicolor</i>
White-tailed Robin	<i>Myiomela leucura</i>
Blue-fronted Robin	<i>Cinclidium frontale</i>
Slaty-backed Forktail	<i>Enicurus schistaceus</i>
Purple Cochoa	<i>Cochoa purpurea</i>
Grey-sided Laughingthrush	<i>Garrulax caeruleatus</i>
Red-faced Liocichla	<i>Liocichla phoenicea</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrognys</i>
Rufous-capped Babbler	<i>Stachyris ruficeps</i>
Red-billed Leiothrix	<i>Leiothrix lutea</i>
Slaty-billed Tesia	<i>Tesia olivea</i>
White-gorgeted Flycatcher	<i>Ficedula monileger</i>
Black-throated Sunbird	<i>Aethopyga saturata</i>
Streaked Spiderhunter	<i>Arachnothera magna</i>
Grey Treepie	<i>Dendrocitta formosae</i>

OTHER KEY FAUNA

No information

LAND USE

- ☐ Tourism and recreation.
- ☐ Nature conservation and research

THREATS AND CONSERVATION ISSUES

- ☐ Fuel wood collection and forest fires
- ☐ Poaching
- ☐ Encroachment
- ☐ Grazing

Like any other protected area in India, Neora-Valley National Park also suffers from illegal cattle grazing, firewood collection, encroachment on the fringes and poaching. But due to inaccessibility and difficult terrain, the biotic pressures are not very acute. The Neora Valley National Park has some intact forest patches.

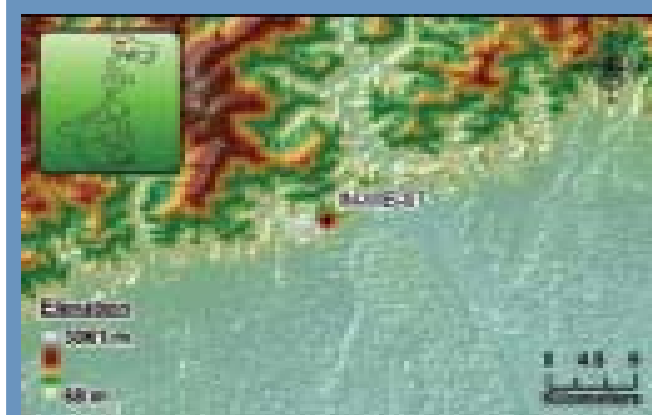
KEY CONTRIBUTORS

Nick Dymond, Anand Prasad and Peter Lobo

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MAHANANDA WILDLIFE SANCTUARY



IBA Site Code	: IN-WB-07
State	: West Bengal
District	: Darjeeling
Coordinates	: 26° 51' 34" N, 88° 24' 45" E
Ownership	: State
Area	: 12,722 ha
Altitude	: 45 - 1,750 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Himalaya
Habitats	: Tropical Semi-evergreen Forest, Tropical Dry Deciduous Forest, Montane Wet Temperate Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas, Endemic Bird Areas 131: Assam Plains), A3 (Biome-8: Sino-Himalayan Subtropical Forest)
PROTECTION STATUS: Wildlife Sanctuary, established in June 1976

GENERAL DESCRIPTION

The Mahananda Sanctuary is located on the west bank of River Teesta in the southern part of Darjeeling district in West Bengal. It was declared a sanctuary in 1976 to protect the lower catchment of the Mahanadi river, but till 1988 it was under the control of the Kurseong Forest Division, when it was transferred to the Wild Life Division. The terrain is undulating, with moderate to steep slopes and high ridges towards the north. The hill slopes descend to almost flat stretches of the *terai*, and alluvial plains towards the south of the IBA.

The main entry point of Mahananda WLS is via Sukna, a small village 12 km from Siliguri on the Siliguri-Darjeeling road. National Highway 31 passes through the southern part of the Sanctuary. It is perhaps the largest compact block of forested habitat situated at the western end of the migratory route of the Asian Elephant *Elephas maximus*.

A large waterbody of nearly 1,500 ha, formed after the construction of a barrage on the Teesta, falls in the buffer zone of this Sanctuary.

As Mahananda extends across hills as well as plains, the forest types are quite varied. In the hills we see Sal Forest, Dry Mixed Forest and Wet Mixed Forest. In some portions, Sal *Shorea robusta* forms almost pure stands, with an occasional other species such as *Gmelina arborea*, *Terminalia*, *Lagerstroemia parviflora*,

Sterculia villosa and *Toona ciliata*. The flood plains of rivers are covered with *Phragmites karka* and *Saccharum munja*, with scattered *Bombax ceiba* trees. This habitat is under human pressure and only a few undisturbed patches are left. This is the habitat of Jerdon's Babbler *Chrysomma altirostre* and the Bengal Florican *Houbaropsis bengalensis*. While the former is still reported occasionally, the latter species is probably extinct in this area.

AVIFAUNA

The bird life is very rich in Mahananda as the Park is at the crossroads of two biomes i.e. Sino-Himalayan Subtropical Forest and Indo-Chinese Tropical Moist Forests, with a small portion of Indo-Gangetic Plain. The higher reaches of the Park harbour elements of Sino-Himalayan Temperate Forest. The checklist prepared by Lobo (2003) has 316 species while in the Calcutta Gazetteer, (Anon. undated), 300 birds have been listed.

The site lies in the Eastern Himalayas Endemic Bird Area (EBA 130) in which Stattersfield *et al.* (1998) have listed 21 species found in India. Only one has been located in this site, Rusty-bellied Shortwing *Brachypteryx hyperythra*, a bird of forest undergrowth and thickets (Grimmett *et al.* 1998). Interestingly, another rare and endemic bird found here is the Black-breasted Parrotbill *Paradoxornis flavirostris*, belonging to Assam Plains Endemic Bird Area (EBA 131) where only three species are considered restricted range, and Parrotbill is one of them. This bird is confined to tall, wet grasslands and reedbeds.

There are unconfirmed reports of occurrence of Bengal Florican *Houbaropsis bengalensis* in the grasslands on the riverbanks. During surveys in the 1980s by Rahmani *et al.* (1990), this bustard was not located in Mahananda. There is a grassland called Ghoramora and on the River Teesta, about 1 km from Ghoramora there are some big grass-covered islands which could have some floricans.

Another globally threatened species occurring here is the Rufous-necked Hornbill *Aceros nipalensis*. It is also reported in two more IBAs in West Bengal, Buxa and Lava-Neora.

Mahananda WLS also has five Near Threatened species. Two biomes occur in Mahananda: Biome-8 (Sino Himalayan Subtropical Forest) from c. 1,000 to 1,800 m, and Biome-9 (Indo-Chinese Tropical Moist Forests) found below 1,000 m. BirdLife International (undated) has listed 95 species in Biome-8 that occur

The forests and grasslands of Mahananda have threatened, restricted range and biome species.



Photo: Arunayan Sharma

in India, out of which 20 species are found in this IBA. Similarly, many species of Biome-9 are also found. In winter, many birds of Biome-5 (Eurasian High Montane-Alpine and Tibetan) are seen here when they come down to escape winter. One of the most interesting species is Ibisbill *Ibidorhyncha struthersii*. Himalayan Griffon *Gyps himalayensis* is also seen sometimes, especially in the higher reaches of Mahananda.

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>
Endangered	
Bengal Florican (?)	<i>Houbaropsis bengalensis</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Jerdon's Babbler	<i>Chrysomma altirostre</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Pallid Harrier	<i>Circus macrourus</i>
Great Pied Hornbill	<i>Buceros bicornis</i>
Endemic Bird Area 130: Eastern Himalayas	
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Endemic Bird Area 131: Assam Plains	
Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>
Biome-8: Sino-Himalayan Subtropical Forest	
Asian Emerald Cuckoo	<i>Chrysococcyx maculatus</i>
Rufous-necked Hornbill	<i>Aceros nipalensis</i>
Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
Black-winged Cuckoo-Shrike	<i>Coracina melaschistos</i>
Himalayan Bulbul	<i>Pycnonotus leucogenys</i>
White-throated Bulbul	<i>Alophoixus flaveolus</i>
Lesser Long-billed Thrush	<i>Zoothera marginata</i>
Purple Cochoa	<i>Cochoa purpurea</i>
Green Cochoa	<i>Cochoa viridis</i>
Rufous-chinned Laughingthrush	<i>Garrulax rufogularis</i>
Rusty-cheeked Scimitar-Babbler	<i>Pomatorhinus erythrogeus</i>
Rufous-capped Babbler	<i>Stachyris ruficeps</i>
White-hooded Babbler	<i>Gampsorhynchus rufulus</i>
Nepal Tit-Babbler	<i>Alcippe nipalensis</i>
Black-chinned Yuhina	<i>Yuhina nigripennis</i>
Grey-headed Parrotbill	<i>Paradoxornis gularis</i>
Greater Rufous-headed Parrotbill	<i>Paradoxornis ruficeps</i>
Pale-footed Bush-Warbler	<i>Cettia pallidipes</i>
Grey-headed Flycatcher-Warbler	<i>Seicercus xanthoschistos</i>
Black-throated Sunbird	<i>Aethopyga saturata</i>

OTHER KEY FAUNA

Besides the Asian Elephant *Elephas maximus*, Mahananda has its usual complements of large mammals such as the Tiger *Panthera tigris*, and Leopard *P. pardus*. Serow *Nemorhaedus sumatraensis* is present in Chawa, Andhera and Upper Ghoramara forest blocks, where occasionally Asiatic Black Bear *Ursus thibetanus* is sighted. In the Moist Deciduous Forest on lower reaches, Gaur *Bos frontalis*

is quite common, especially in Sevoke and Laltong blocks. Chital or Spotted Deer *Axis axis*, otherwise uncommon in north West Bengal, are common in Sevoke block and plantation areas, while Sambar *Cervus unicolor* is more widespread and found in all parts of the Sanctuary. A species worth mentioning is the Clouded Leopard *Neofelis nebulosa*, a feline seldom seen but likely to be present in this area as the habitat is suitable. Among the primates, five Hoolock Gibbon *Hylobates hoolock* were introduced in 1965, but they died out (Anon. undated).

LAND USE

- Agriculture
- Aquaculture/Fisheries
- Military establishment
- Nature Conservation and Research
- Tourism and Recreation,
- Water management

THREATS AND CONSERVATION ISSUES

- Poaching
- Illegal felling of trees
- Agricultural intensification
- Forest fires
- Grazing
- Logging
- Road and rail transport

Poaching is a serious problem, mainly due to the fact that the Sanctuary is easily accessible in the southern part. National Highway-31 passes through the Sanctuary, and there are numerous villages. Timber smuggling to provide raw material to numerous saw mills in nearby Siliguri town is another problem which the authorities face all the time. Grazing, a persistent problem of all sanctuaries in India, is quite severe here also. A large number of cows can be seen on the roads going towards the Sanctuary. During summer, villagers set fires to promote fresh growth of grass. This coincides with the breeding season of many ground-nesting birds (pheasants, quails, francolins, larks) and does obvious damage.

There is a plan to widen the National Highway into an eight lane road. The Indian Railway plans to convert the existing metre-gauge track between Siliguri and Guwahati to broad-gauge, and also increase the frequency of trains. This would also affect the Sanctuary adversely.

KEY CONTRIBUTOR

Peter Lobo

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NAYA BANDH WETLAND COMPLEX



IBA Site Code	: IN-WB-08
State	: West Bengal
District	: Malda
Coordinates	: 24° 55' 00" N, 88° 19' 60" E
Ownership	: Mixed, Government, Private
Area	: 400 ha
Altitude	: 30 - 35 m
Rainfall	: 1,500 cm
Temperature	: 8 °C to 40 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp, Tropical Secondary Scrub

IBA CRITERIA: A1 (Threatened Species)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

The Naya Bandh area extends from the Indo-Bangla border to Naya Bandh Beel. It is a low lying area which includes several seasonal wetlands, mainly Chalka, Bakla, Vikon, Morkatta, Mona and Sirishdang. These distinct wetlands together form the Naya Bandh wetland complex. This wetland complex depends on two rivers, namely Tangon and Purarbhaba. During monsoon, the area gets connected with the River Punarbhaba and gets flooded. After the monsoon, the water recedes and several small wetlands develop, with a rich variety of aquatic vegetation. There is a small monoculture plantation of *Barringtonia acutangula* at the Bangladesh border.

AVIFAUNA

About 150 species of birds have been identified in this IBA (S. Jha, *pers. comm.* 2003), of which six are globally threatened, five Near Threatened, and 11 biome species.

Among the thousands of other ducks, about 140 Ferruginous Duck *Aythya nyroca* were seen in January 2003 (Anon. 2003). In 1994, the 1% biogeographic population of this species was estimated at 100 (Rose and Scott 1994), but recently, Wetlands International

(2002) could not determine the 1% population threshold of this species as it was difficult to assess the tens of thousands that were found breeding in Inner Mongolia. It is also very common in the Tibetan Plateau (Birdlife International 2001). About 70,000 individuals winter in a large wetland habitat locally called *hoars* in northeast Bangladesh. However, BirdLife International (2001) still keeps it in the Near Threatened category, as the population is declining, mainly due to hunting and drainage of its wetland habitats.

This site lies in Biome-11 (Indo-Malayan Tropical Dry Zone). BirdLife International (undated) has listed 59 species in this biome, of which 11 have been found here. Most of the birds listed are quite common and presently of not much conservation concern.

Despite the fact that this site has six species considered globally threatened, none of them have significant populations in this IBA. Naya Bandh is designated as an IBA for its value as a waterfowl habitat. If proper protection is provided, the Naya Bandh wetlands could easily host more than 20,000 waterfowl.



Photo: Omaso Ujihara

The Vulnerable Baer's Pochard *Aythya baeri* is a rare winter visitor to this IBA.

Critically Endangered

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

Vulnerable

Lesser Adjutant	<i>Leptoptilos javanicus</i>
Baer's Pochard	<i>Aythya baeri</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>

Near Threatened

Darter	<i>Anhinga melanogaster</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Pallid Harrier	<i>Circus macrourus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

OTHER KEY FAUNA

No information is available on other key fauna.

LAND USE

- q Fishing
- q Agriculture
- q Forestry

THREATS AND CONSERVATION ISSUES

- q Aquaculture
- q Hunting of birds
- q Excessive reed gathering
- q Land reclamation
- q Use of pesticide in nearby agricultural fields

The area is unprotected, and thousands of ducks are killed annually by the tribals. However, the long-term threat is the government plan to drain a part of the area under the Wasteland Reclamation Programme. The land would be distributed to the local landless people for cultivation. Excessive reed gathering is also destroying the habitat of wet-grassland- dependent bird species such as the Striated Marsh Warbler *Megalurus palustris*.

KEY CONTRIBUTOR

Samiran Jha

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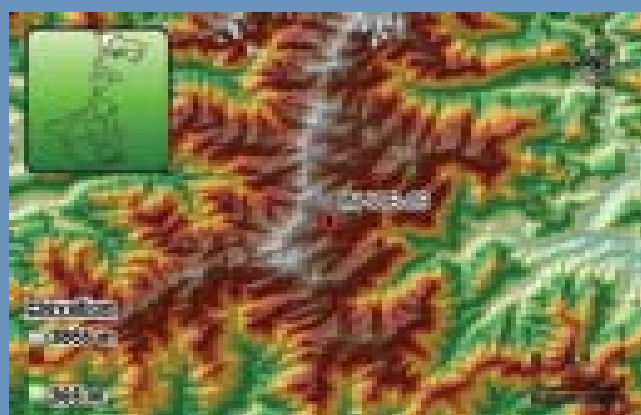
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Comb Duck *Sarkidiornis melanotos* is seen in large numbers in this IBA.



Photo: M. Zafar-ul-Islam

SINGHALILA NATIONAL PARK



IBA Site Code	: IN-WB-09
State	: West Bengal
District	: Darjeeling
Coordinates	: 27° 08' 39" N, 88° 02' 10" E
Ownership	: State
Area	: 7,860 ha
Altitude	: 2,600 - 3,650 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Himalaya
Habitats	: Montane Wet Temperate Forest, Sub-tropical Broadleaf Hill, Sub-alpine Dry Scrub, Sub-alpine Forest

IBA CRITERIA: A1 (Threatened Species), A2 (Endemic Bird Area 130: Eastern Himalayas)

PROTECTION STATUS: National Park, established in May 1986

GENERAL DESCRIPTION

Singhalila National Park (SNP), situated at the northwestern border of Darjeeling district qualifies as an IBA because it harbours many endemic and threatened bird species. Climatically, this IBA is moist temperate, and parts of it lie within temperate to alpine zones.

On the northern side, the Park is contiguous with the forests of Sikkim, while to the south, there are reserve forest corridors. If these are restored, the IBA would be connected to Senchal Wildlife Sanctuary near Darjeeling town. On the western side, there is contiguity with the forests in Nepal, though the areas are very small.

Forest types include Wet Temperate Forests at altitudes 2,500-2,800 m which are dominated by *Quercus* sp. Moist Temperate Forests in the 2,850- 3,600 m range which include species such as *Quercus pachyphylla*, *Betula utilis*, *Castanopsis tribuloides*, *Tsuga brunnioma*, *Rhododendron* sp. and an understory of ringal bamboo; Subalpine Forests in the 3,000-3,650 m range include species like *Abies densa*, *Betula utilis* and *Rhododendron* sp. (S. Khaling, *in litt.* 2003). The forests of Singhalila are reported to be floristically very rich. Rhododendron (13 species), Magnolia, orchids, medicinal plants like *Aconitum* sp., *Swertia chirata*, *Rheum* sp., and *Taxus baccata*, are some of the important plant species found in the Park. Besides, the forests have a variety of mosses, lichens, mushrooms, tree ferns, climbers and other epiphytic plants (S. Khaling, *in litt.* 2003).

AVIFAUNA

This IBA is widely known for its bird diversity. Sarla Khaling claims to record 500 bird species from an area which is just over 100 sq. km, but list is not available. These include the Satyr Tragopan *Tragopan satyra*, Blackbacked Kaleej Pheasant *Lophura leucomelanos*, Blood Pheasant *Ithaginis cruentus*, Hill Partridge *Arborophila torqueola*, Redbreasted Hill Partridge *A. mandelli*.

Vulnerable	
Greater Spotted Eagle	<i>Aquila clanga</i>
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Wood Snipe	<i>Gallinago nemoricola</i>
Rusty-bellied Shortwing	<i>Brachypteryx hyperythra</i>
Beautiful Nuthatch	<i>Sitta formosa</i>
Endemic Bird Area 130: Eastern Himalayas	
Red-breasted Hill-Partridge	<i>Arborophila mandellii</i>
Grey Sibia	<i>Heterophasia gracilis</i>

OTHER KEY FAUNA

Some important mammals of SNP are Leopard *Panthera pardus*, Clouded Leopard *Neofelis nebulosa*, Asiatic Black Bear *Ursus thibetanus*, Chinese Pangolin *Manis pentadactyla*, Himalayan Mouse-Hare *Ochotona roylei*, rodents, bats. The rare Red Panda *Ailurus fulgens* is an important species of the National Park.

LAND USE

- ☐ Tourism
- ☐ Nature conservation and research

THREATS AND CONSERVATION ISSUES

- ☐ Disturbance to birds
- ☐ Grazing and collection of firewood
- ☐ Tourism and recreation

There are 8 villages around the core area of the SNP, while 6 large villages are located in the buffer zone. As in most forested areas, human settlements in the vicinity of Singhalila are completely dependent on forest resources for sustenance and livelihood. The human communities mainly consist of two ethnic groups, the Nepalese and the Sherpas. They are dependent on the Park for firewood, fodder and to some extent for timber, which they use for construction. Edible plants like mushroom, bamboo shoots, various herbs and other medicinal plants are also seasonally harvested by the communities for subsistence.

Most families in SNP are subsistence farmers mainly growing maize, potatoes, peas and other vegetables. Only a few of them are government employees. Other economic activities include wage labour, and tourism related activities. Most of the villages are remote, without basic amenities like motorable roads, electricity, filtered drinking water facilities, health centres, or education facilities.

Communities around Singhalila are already motivated for participatory conservation. The Singhalila Environment Protection Committee comprising of community members of Nepal and India are working actively to reduce the threats of unsustainable harvesting of forest resources.

KEY CONTRIBUTOR

Sarala Khaling

KEY REFERENCE

None

SUNDARBAN BIOSPHERE RESERVE

	IBA Site Code	: IN-WB-10
	State	: West Bengal
	District	: North and South 24-Parganas
	Coordinates	: 21° 10' 46" N, 88° 58' 21" E
	Ownership	: State
	Area	: 1,33,010 ha
	Altitude	: 0 - 5 m
	Rainfall	: Not available
	Temperature	: 5 °C to 45 °C
	Biogeographic Zone	: Coasts
	Habitats	: Tropical Moist Deciduous Forest, Littoral Forest, Wetland

IBA CRITERIA: A1 (Threatened Species)
PROTECTION STATUS: Tiger Reserve, established in 1984

GENERAL DESCRIPTION

The Sundarban is the largest delta covered with mangrove forests and vast saline mud flats in the world. It got the name from the mangrove plant locally known as Sundari *Heritiera minor*. The Sundarban stretches from the Hooghly (India) on the west to the Meghna (Bangladesh) in the east, both of which are major streams of the River Ganga. It spreads over the southern part of three districts, namely 24-Parganas (India), Khulna and Backarganj (Bangladesh). The boundary of Sundarban within West Bengal is demarcated by the Raimangal and Hooghly rivers in the East and West respectively, and the Bay of Bengal in the south. The northern limit cannot be clearly defined due to the progressive reclamation of land.

The Sundarban covers an area of 9,63,000 ha, of which 2,58,500 ha is demarcated as the Sundarban Tiger Reserve and 1,33,000 as the National Park (core area). Sajnakhali Wildlife Sanctuary (36,234 ha) lies within the buffer zone, to the north of Netidhopani and Chadkhali forest blocks. There are two small sanctuaries within the Biosphere Reserve: the 583 ha Halliday Island Wildlife Sanctuary, and the 3,885 ha Lothian Island Wildlife Sanctuary.

Sunderban is the largest mangrove forest, with perhaps the largest tiger population in the world. It is a World Heritage Site and Biosphere Reserve, both in India and Bangladesh. It is also proposed as a Ramsar site. This World Heritage site is known for its rich biodiversity, especially fish, crustaceans, reptiles and birds.

The total area of the IBA extends over 4,26,200 ha, of which 2,32,000 ha is under mangrove forest and the remaining is under water (Mukherjee 1975). As reported earlier, *Heritiera minor*, locally known as Sundari (Jain and Sastry 1983) is a predominant feature of the IBA. Champion (1936) classified the Sundarban as Moist Tropical Seral Forest, comprising beach forest and tidal forests. Characteristic species include *Rhizophora* spp., *Bruguiera gymnorrhiza*, *Ceriops* sp., and *Avicennia officinalis*. *Heritiera minor* is scattered over areas of higher elevation, along with *Sonneratia apetala*, *Excoecaria agallocha*, and *Phoenix paludosa*. Low mangrove forest (3-6 m high) occurs between Matla and Muriganga, to the west of the National Park and Tiger Reserve. This area is devoid of fresh water because its rivers are cut off from the ramifications of the Hooghly in the north. The

soft mud of the intertidal zone supports a dense forest, very similar in composition to salt-water *Heritiera* forest. Various trees and other plants were introduced, including some exotics.

AVIFAUNA

Sanyal (2002) identified 163 species of birds from Sunderban but recently, Sujan Chatterjee (*in litt.* 2003) has listed 219 species. Although the whole of the Sunderban mangrove is a bird watcher's paradise, Sajnakhali Wildlife Sanctuary is best known for its bird life. Mukherjee (1959) found 16 species in a breeding colony, including Darter *Anhinga melanogaster* and Black-necked Stork *Ephippiorhynchus asiaticus* (both presently Near Threatened).

In India, Sunderban is the most important site for the Vulnerable Masked Finfoot *Heliopais personata*. It is difficult to estimate the total number of this elusive bird, but it is fairly common in suitable areas. Earlier, Greater Adjutant *Leptoptilos dubius* was commonly seen but now sightings are rare due to drastic decline in its numbers.

Masked Finfoot is an enigmatic waterbird found in thick vegetated pools and mangroves.



Photo: M. U. Gani

Another uncommon species is the Spoon-billed Sandpiper *Eurynorhynchus pygmeus*, which is regularly reported from this site. As can be expected, Sunderban is famous for its waterbirds and water-dependent birds, such as the kingfishers. Out of the 12 kingfisher species found in India, six are found in this IBA. They are the Common *Alcedo atthis*, Brown-winged *Halcyon*

amauroptera, Stork-billed *H. capensis*, Ruddy *H. coromanda*, White-throated *H. smyrnensis*, Black-capped *H. pileata*, Collared *Todiramphus chloris* and Pied *Ceryle rudis* Kingfishers. About 30 species of small waders (sandpipers, stints, plovers, curlews, etc.) and nine species of gulls and terns are found here.

Sunderban is one of two sites where the Mangrove Whistler *Pachycephala grisola* is definitely found. This species is not considered threatened by BirdLife International (2001) as it is widely distributed in south and southeast Asia but its narrow, ribbon-like habitat along the coasts, that is under tremendous human pressure all over Asia, would put this species at risk in future. Incidentally, this is the only bird species that is entirely restricted to mangroves (Ali and Ripley, 1987, Grimmett *et al.* 1998).

The vast Sunderban mangroves and mud flats host hundreds of thousands of waterbirds, especially waders but as we do not have species-wise detailed information, we have not listed this site under any A4 criteria. This site is selected only on the basis of presence of globally threatened species (A1 criteria).

Endangered	
Greater Adjutant (no recent record)	<i>Leptoptilos dubius</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Baer's Pochard	<i>Aythya baeri</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Swamp Francolin (no recent record)	<i>Francolinus gularis</i>
Masked Finfoot	<i>Heliopais personata</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Black-necked Stork (no recent record)	<i>Ephippiorhynchus asiaticus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

OTHER KEY FAUNA

Although seldom seen, the Tiger *Panthera tigris* is the star attraction of Sunderban. Sunderban also has the largest population of the Estuarine Crocodile *Crocodylus porosus*. A hundred years ago the Sunderban Forests were the home of many wild animals, including the Javan Rhinoceros *Rhinoceros sondaicus*, Swamp Deer *Cervus duvauceli*, Chital *Axis axis*, Wild Boar *Sus scrofa*, Rhesus Macaque *Macaca mullata*, Fishing Cat *Felis viverrina*, and Wild Buffalo *Bubalus arnee*. It is said that Barking Deer *Muntiacus muntjak* existed on these swamp islands, but it has not been recorded in recent years from the Sunderban Forests that lie in West Bengal.

LAND USE

- ☐ Nature conservation
- ☐ Fisheries

THREATS AND CONSERVATION ISSUES

- ☐ Erosion
- ☐ Fishing and Large-scale prawn farming
- ☐ Collection of firewood
- ☐ Poaching
- ☐ Tourism
- ☐ Encroachment

Despite its status as a World Heritage Site, Biosphere Reserve, Tiger Reserve, National Park and Wildlife Sanctuary, the Sunderban suffers from many anthropogenic problems. Illegal

fishing, cutting of mangroves, poaching and encroachment are the biggest chronic threats.

Illegal settlers are causing widespread destruction of mangroves, particularly on Jambu Dweep, the furthestmost of the cluster of islands. The Supreme Court of India has banned human habitation on this island, but over 20,000 people reside here, mostly in a place called Charso Bees. The fishing business here, run mostly by Bangladeshis from Chittagong, records a turnover of about Rs. 1.5 billion annually. Many settlers on the island are unaware that fishing in the protected area is prohibited.

Poaching in the Sunderban is a persistent and uncontrollable problem, because thousands of people move in the Reserve all the time. Poachers go mainly for Tiger and deer.

Unmanaged tourism is another problem for the sensitive ecology of Sunderban. There are plans to build a large tourist resort on 750 acres of land spread across the five islands of Sagar, Kaikhali, Frasersganj, L-Plot and Jharkhali. A jetty will be built in Kolkata for ferrying tourists to those islands. There will be floatels, water sports and arrangements for excursions to different creeks in the delta. Such a massive project, in the name of 'eco-tourism', would give rise to anthropogenic problems and irreversibly damage the ecology.

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Sujan Chatterjee, Kushal Mukherjee and the IBA team

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Photo: Hira Punjabi