

BIHAR



Photo: Hira Prustyabi

Wetlands in Bihar attract millions of waterbirds, such as the Greylag Goose *Anser anser*.

Bihar (22° 00' - 27° 45' North and 83° 15' - 88° 30' East) has a geographical area of 94,163 sq. km which constitutes 2.9% of the land area of the country. Bihar has two distinct physiographic regions, namely the Gangetic Plain and the Southern Plateau. The state is watered by four major rivers, the Ganga, the Sone, the Gandak and the Damodar. It was left with the agriculturally rich alluvial Gangetic area when the forest and mineral rich region of Jharkhand in the south became a separate state in 2000. Bihar has a long and impressive history of culture and education.

The annual rainfall in the state varies from 1,000 mm to 2,000 mm. The temperature ranges from 4 °C to 45 °C.

Bihar is the second most populous state of the country. The total population is 82.88 million (8.1% of India's population), 89.5% of which is rural (2001 census). The population density is 880 per sq. km.

Vegetation

There were three major forest types in undivided Bihar: Tropical Moist Deciduous, Tropical Dry Deciduous, and Subtropical Broadleaf Hill Forests. Sal *Shorea robusta* is the major forest species, which covers about 55% of the forest area (Ministry of Environment and Forests 1999).

The Forest Survey of India report of 2001, reports that the recorded forest area is 2.92 million ha which constitutes 16.81% of the geographical area of the State. The Chotanagpur Plateau and the south Bihar Plains covering the southern half of the State are rich in forest resources whereas the Gangetic Plains, which are thickly populated and intensively cultivated, have meagre forest resources. The reserved forest constitutes 11.4%, and the protected forest 88.6% of the recorded forest area. The Forest Survey of India report of 2001 has recorded dense forest in northwest, southwest and southern Bihar.

Bihar is basically an agricultural state where nearly 80% people depend on farming or related activities. Thanks to the rich alluvial soil, good rainfall and annual flooding of rivers, most of the forest cover has gone under the plough. As human population density is high, most land holdings are small and intensively used. Bihar used to have, and still has in many areas, a large number of wetlands that are extremely important for waterfowl. The finest example left is the Kabar taal. Most of the smaller wetlands have been drained, encroached upon and/or are under intense human pressure. The larger wetlands which cannot be drained due to topography, hydrology



Important Bird Areas in India - Bihar

and annual flooding, are intensively fished, leaving no room for wildlife. Community fishing is a part of the culture and during summer, when agricultural activities are reduced, an entire village could be seen fishing. Ingenious nets and traps are used to catch the smallest fish. This leaves very little food for the fish-eating birds. Traditional trapping of birds is another menace for the waterfowl and other species. Although it has been reduced after the state ban, it still goes on in smaller towns and villages, with or without the connivance of the police.

IN-BR

IBAS AND PROTECTED AREAS

Bihar has one national park and 11 wildlife sanctuaries. They cover a total area of 3,28,219 ha. Valmiki is the only tiger reserve in the State. Kabar, situated in Begusarai district, with an area of 6738 ha is an important wetland and one of the IBA sites for congregatory and threatened birds. Of the 12 protected areas of Bihar four are identified IBAs, namely Valmiki National Park and Wildlife Sanctuary (WLS), Kabar Lake WLS, Nagi Dam WLS Nakti Dam WLS and Vikramshila Gangetic Dolphin Sanctuary. There are many IBAs that are not officially protected.

Number of IBAs and IBA criteria

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

IBAs of Bihar

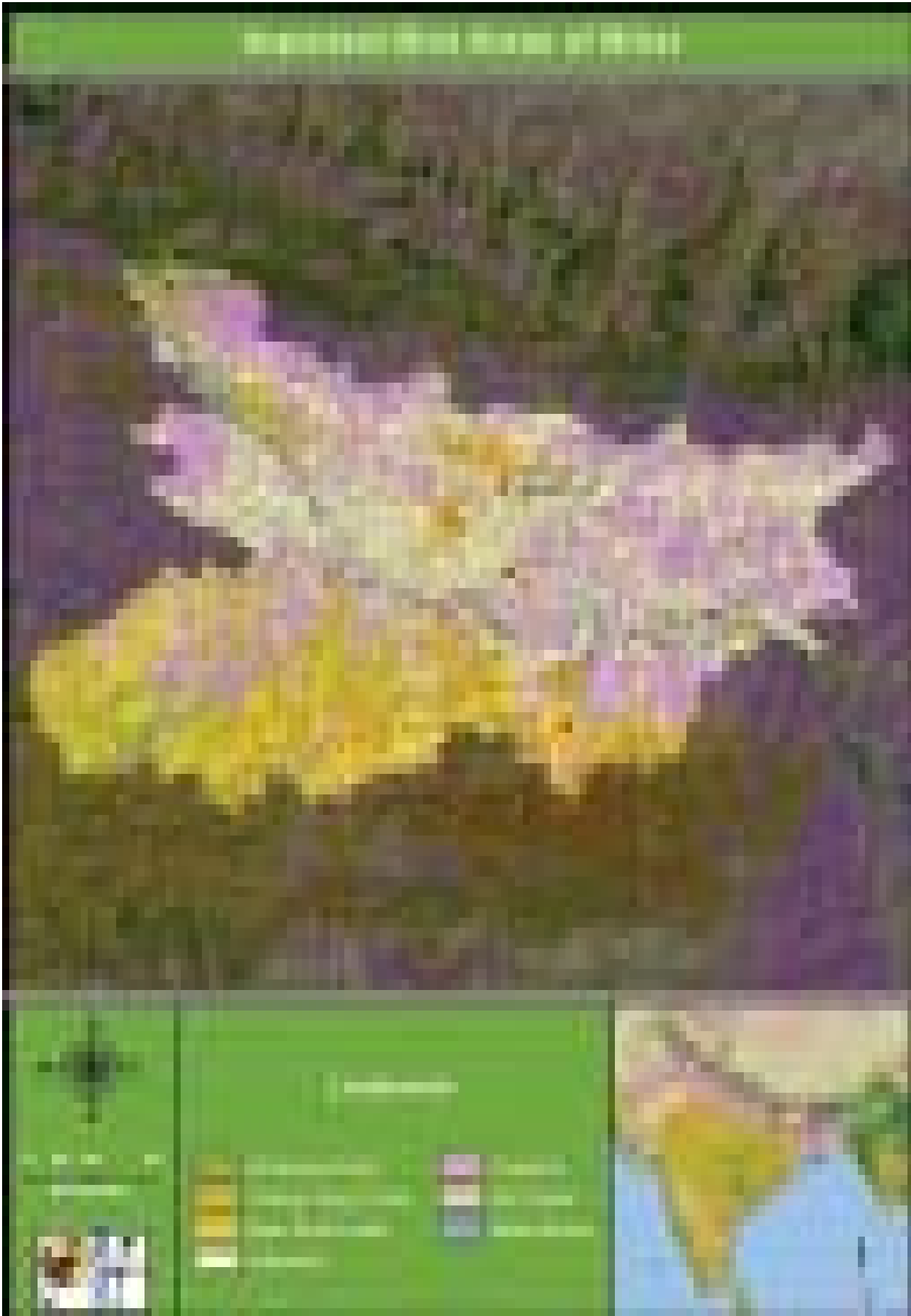
IBA site codes	IBA site names	IBA criteria
IN-BR-01	Chauras of North Bihar	A4iii
IN-BR-02	Danapur Cantonment Area	A1, A4i
IN-BR-03	Gogabil Pakshi Vihar, Baghar Beel and Baldia Chaur	A1, A4iii
IN-BR-04	Kawar or Kabar Lake Wildlife Sanctuary	A1, A4iii
IN-BR-05	Kurseala River Course and Diyara Flood Plains	A4iii
IN-BR-06	Kusheshwarthan	A1
IN-BR-07	Mokama Taal (Barah) Wetlands	A1, A4i, A4iii
IN-BR-08	Nagi Dam and Nakti Dam Bird Sanctuary	A4i, A4iii
IN-BR-09	Reservoirs of Chotanagpur Plateau	A4i, A4iii
IN-BR-10	Valmiki Tiger Reserve and Saraiyaman Lake	A1, A3
IN-BR-11	Vikramshila Gangetic Dolphin Sanctuary	A1

List of threatened birds with IBA site codes

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-BR-04, 07, 11
Long-billed Vulture	<i>Gyps indicus</i>	IN-BR-04, 07
Endangered		
Greater Adjutant	<i>Leptoptilos dubius</i>	IN-BR-07
Vulnerable		
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-BR-03, 06, 07, 10
Pallas's Fish Eagle	<i>Haliaeetus leucoryphus</i>	IN-BR-07, 11
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-BR-04, 07, 11
Lesser Kestrel	<i>Falco naumanni</i>	IN-BR-02, 07, 11
Swamp Francolin	<i>Francolinus gularis</i>	IN-BR-10
Sarus Crane	<i>Grus antigone</i>	IN-BR-04, 10
Sociable Lapwing	<i>Vanellus gregarius</i>	IN-BR-10 (?)
Indian Skimmer	<i>Rynchops albicollis</i>	IN-BR-11



IN-BR



Near Threatened		
Darter	<i>Anhinga melanogaster</i>	IN-BR-04, 06, 07, 08
Painted Stork	<i>Mycteria leucocephala</i>	IN-BR-04
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	IN-BR-03, 04, 07, 10
Oriental White Ibis	<i>Threskiornis melanocephalus</i>	IN-BR-03, 04, 06, 07, 08, 11
Ferruginous Pochard	<i>Aythya nyroca</i>	IN-BR-03, 08
Black-bellied Tern	<i>Sterna acuticauda</i>	IN-BR-04, 08

AVIFAUNA

The major area of the State comes under the Gangetic Plain, especially the northern part, where many water-bodies exist that attract migratory waterbirds. However, most of them remain unstudied. One of the IBA sites of this region is the Kabar Taal, with a very large congregation of waterbirds during winter months. *Chaur*s of north Bihar have many wetlands where more than 100,000 birds congregate. Other congregatory sites are Kursela, Kusheshwarsthan, the Mokama Taal (Barah) wetlands, Nagi Dam and Nakti Dam Bird Sanctuary, and the reservoirs of the Chotanagpur Plateau. These sites attract hundreds of thousands of waterbirds in winter.

The key threatened species which are found in the IBAs of Bihar are the Lesser Adjutant *Leptoptilos javanicus*, Pallas's Fish Eagle *Haliaeetus leucoryphus*, Oriental White-backed *Gyps bengalensis* and Long-billed *Gyps indicus* vultures. The Valmiki Tiger Reserve in the *terai* belt bordering Nepal, could have significant populations of Swamp Francolins *Francolinus gularis*. There are some records of the Greater Spotted Eagle *Aquila clanga* from Mokama Taal, and the Lesser Kestrel *Falco naumanni* from the Chaur's of Chotanagpur, Danapur and Mokama. These birds are widespread across the country, and are not seen in regular and significant numbers in Bihar.

The IBAs of Bihar are also important for some of the Near Threatened species. The Black-necked Stork *Ephippiorhynchus asiaticus* is becoming rare in India (Rahmani 1989). It is regularly seen in Gogabil, Mokama and the Valmiki Tiger Reserve. Ferruginous Pochard *Aythya nyroca* is an uncommon duck of Asia, considered Vulnerable by BirdLife International (2001). In Bihar, it is seen in Kabar Taal and Gogabil. Other Near Threatened birds seen regularly in the IBAs are mentioned in the Table above.

THREATENED SPECIES FOR WHICH BIHAR IS IMPORTANT

A total of 13 globally threatened species have been reported from Bihar, but some have only historical records and have not been seen in recent years. The following are found in the IBAs of this state.

Lesser Adjutant *Leptoptilos javanicus* Vulnerable

This bird is widely distributed in India from the north, northeast India up to Kerala in the south (Ali and Ripley 1987, Grimmett *et al.* 1998). BirdLife International (2001) has listed it as Vulnerable due to its declining population. In Bihar, it is found in four IBAs: Gogabil, Kusheshwarsthan, Mokama Taal, and Valmiki Tiger Reserve.

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

Both these vultures have been upgraded to Critically Endangered status because they have suffered an extremely rapid population decline, particularly in the north Indian states, including Bihar (BirdLife International 2001). As in the other states, in Bihar too vultures are still seen in a wide area but not in as many numbers as earlier. Everywhere, their populations have declined almost up to 96% (Prakash *et al.* 2003). In Bihar, they are found in many areas but are regularly reported only near Mokama Taal.

Pallas's Fish Eagle *Haliaeetus leucoryphus* Vulnerable

Similar to the Lesser Adjutant, this wetland-dependent bird has declined all over India. In Bihar, it has been reported only in Mokama Taal, although earlier it was common on most large wetlands (BirdLife International 2001). Even in the Mokama Taal, it is neither seen regularly nor in any significant numbers.

Greater Spotted Eagle *Aquila clanga* Vulnerable

BirdLife International (2001) says that this species has suffered from extensive habitat loss. This bird is very rare in Bihar too. The species is reported from Mokama Taal (Arvind Mishra *pers. comm.* 2003).

Lesser Kestrel *Falco naumanni* Vulnerable

This bird is a widespread winter visitor but uncommon everywhere (BirdLife International 2001). In Bihar, it is reported from the Chaur's of Chotanagpur, Danapur and Mokama Taal (Arvind Mishra *pers. comm.* 2003).

Swamp Francolin *Francolinus gularis* Vulnerable

This Francolin is one of the Vulnerable species that has suffered a rapid population decline because of the destruction of its tall, wet grassland habitat. Trapping and poaching are other major problems (BirdLife International 2001). In Bihar, it has been confirmed only from the Valmiki Tiger Reserve (Javed and Rahmani 1991).

Sarus Crane *Grus Antigone* Vulnerable

This crane has suffered a rapid population decline, which is projected to continue, as a result of



widespread reductions in the extent and quality of its wetland habitats, exploitation and the effects of pollution (BirdLife International 2001). The Sarus in Bihar has a highly disjunct distribution. It has been reported from the Valmiki Tiger Reserve (Anon. 1993), with a pair reported nearby in 1999 (Sundar *et al.* 2000).

Biomes

The main biome in Bihar is Biome-12: The Indo-Gangetic Plain. BirdLife International (undated) has identified 13 bird species representing this biome. There is no Endemic Bird Area or Secondary Area in Bihar. Biome-12 has wetlands, moist-marshy grasslands (*tertia*) and scrub on marshy ground. Most of this habitat has already been converted into agricultural fields. There are some seasonally flooded wetlands but people use them intensively. The only area where a representative habitat of Biome-12 is still seen, which is also under increasing pressure, is the Valmiki Tiger Reserve in the West Champaran district. While the Swamp Francolin *Francolinus gularis* is likely to be present, the Endangered Bengal Florican *Houbaropsis bengalensis* is perhaps extinct in Bihar (Rahmani *et al.* 1990) with no recent confirmed record.

There are chances of the occurrence of the White-tailed Stonechat *Saxicola leucura*, the Striated Babbler *Turdoides earlei*, the Bristled Grass-Warbler or Grassbird *Chaetornis striatus*, the Rufous-rumped Grass-Warbler *Graminicola bengalensis* and the Black-breasted Weaver *Ploceus benghalensis*. There is no recent record of Jerdon's Bushchat *Saxicola jerdoni*, Jerdon's Babbler *Chrysomma altirostre* and Finn's Baya or Yellow Weaver *Ploceus megarhynchus*.

THREATS AND CONSERVATION ISSUES

Bihar is one of most populous states of India, with a human density of 880 persons per sq. km. The governance of the state is reportedly very poor, as a result of which lawlessness prevails in many areas. Therefore, poaching and hunting are quite common. There is hardly any forest left in the densely populated Gangetic Plain. However, there are a large number of flood-plain wetlands but most of them are under severe human pressure.

Threats to IBAs

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

Hunting and poaching: Hunting takes a heavy toll of the waterfowl populations in most of the IBAs. Trapping of birds on a massive scale, by the local fishermen, to supplement their income, is commonplace (Shahi 1982). Ducks, coot and other waterfowl are trapped at night with fine nylon nets. Because the Valmiki Tiger Reserve is contiguous with both the international and interstate boundaries, it is infested with armed dacoits who are involved in the smuggling of Khair *Acacia catechu* and cane. Poaching of the Tiger and its prey is not uncommon.

Livestock grazing: All the IBAs suffer from severe overgrazing. While livestock grazing may not be very damaging to the wetland ecosystems as they need to be grazed, unrestricted grazing and overgrazing are the major problems. Even the Valmiki Tiger Reserve is not free from this menace. Around 60,000 head of livestock are present in the Reserve, which cause severe damage to the flora. The buffer area of the Park is very prone to fires caused by the locals whilst grazing their cattle. The fires are set to encourage growth of grass.

Disease transmission to wild animals: Herbivores in many areas, especially in the Valmiki Tiger Reserve, are highly susceptible to iodine deficiency disease, goiter and foot and mouth disease (Jain 2001). Livestock also transmit disease to wild animals.

Wetland drainage: Demands for water for irrigation are increasing, the wetlands are over-fished and aquatic vegetation is heavily grazed by domestic livestock. The wetlands are also infested with *Eichhornia crassipes* and contaminated with the run-off of pesticides and fertilizers used by farmers.





Photo: M. Zaifur-Ul-Islam

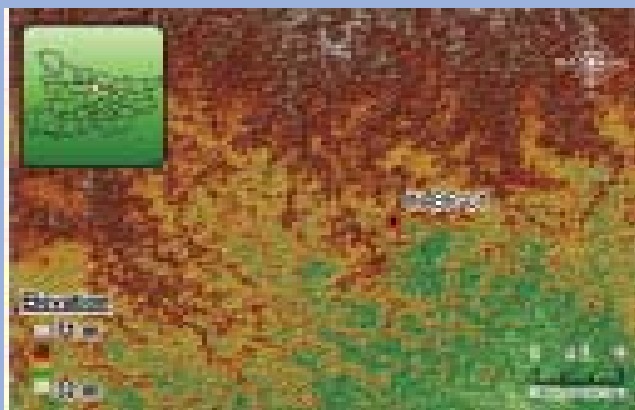
Funds and land disputes: The Development Funds allotted by the Central Government to the State government have remained unutilized for many years, and there has been no development of many protected areas of the State. Land disputes are other vital issues. Officials do not know the true ownership of land in many protected areas, especially in the Kabar taal.

Over-fishing: Apart from bird poaching and over-grazing, over-fishing is one of the most important conservation issues in Bihar. Over-fishing in wetlands, including IBAs, has increased many folds because of increase in human population. Local villagers use very fine nets to catch fish in which even very tiny fishes are caught. During the winter months, when migratory waterbirds come, the fishing activity disturbs the birds. There is an urgent need to curb over-fishing and poaching activities in those IBAs which are not officially protected.

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CHAURS OF NORTH BIHAR



IBA Site Code	: IN-BR-01
State	: Bihar
District	: Darbhanga
Coordinates	: 26° 07' 30" N, 86° 10' 00" E
Ownership	: State/ Private
Area	: c. 40,00,000 ha
Altitude	: 30 - 75 m
Rainfall	: 1,000 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp, Seasonal Marsh

IBA CRITERIA: A4iii (≥ 20,000 waterbirds)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

These *chaurs* or small freshwater lakes lie scattered in the Gangetic plain in Bihar. These wetlands are inundated by overflow from the River Ganga and its six major tributaries, and rain water. Most of these *chaurs* are between 100 ha and 200 ha in area, while a few exceed 1,000 ha. They have a maximum depth of 1.5 m during the monsoon, and completely dry out between March and June. As the *chaurs* dry out, the exposed substrate becomes covered with vegetation. The total area and number of wetlands is unknown. These *chaurs* are particularly abundant around Khabartal, and cover an area of over 14,000 ha in Darbhanga district. Some of the major *chaurs* in the Khabartal region are Nagri Jheel, Bikrampur *Chaur*, Rajakpur *Chaur*, Chalki *Chaur*, the Chakka/ Motihari *Chauras*, the Malipur/ Brahampur *Chauras*, Rajor *Chauras*, Dasin/ Turki *chaurs*, the Korai/ Sajanpur *Chauras*, and the Dunhi *Chauras*. The *chaurs* are surrounded by rice fields and other cultivation (Anon. 1993).

When inundated, the *chaurs* support a great abundance of aquatic vegetation. Dominant emergent vegetation includes *Cyperus rotundus* and *Oryza sativa*. Free-floating plants include *Eichhornia crassipes* and *Pistia stratiotes*, while rooted-floating plants include *Ipomea aquatica* and *Nymphaea* sp. (Anon. 1993).

AVIFAUNA

The *chaurs* are known to be extremely important for waterfowl, particularly wintering ducks, but no census data is available. Altogether, the numerous *chaurs* support, and are critical to the survival of hundreds of thousands of ducks and other waterfowl in the winter, thus satisfying A4iii criteria. Sometimes the waterfowl number is so huge, that many species would easily fit A4i criteria also. There is an urgent need to gather species specific and site (*chaur*) specific data from this IBA site.

As 4,000,000 ha area, with extremely high density of human population would not be easy to declare as an IBA, it is therefore, necessary to identify important *chaurs* or cluster of *chaurs* for intensive protection with the cooperation of villagers. The *chaurs* are similar to the *hoars* of Bangladesh (BirdLife International 2001) which also act as an important wintering ground for huge numbers of ducks, egrets, herons, waders and raptors.

OTHER KEY FAUNA

Not much information is available on other key fauna.

LAND USE

- ☐ Agriculture
- ☐ Fishing

THREATS AND CONSERVATION ISSUES

- ☐ Poaching
- ☐ Agricultural intensification/expansion
- ☐ Agricultural run-off
- ☐ Urbanization/ industrialization

Hunting pressure takes a heavy toll on the waterfowl populations. Trapping of birds is undertaken by the local fishermen on a massive scale to supplement their income (Shahi 1982). Ducks, coot and other waterfowl are trapped at night with fine nylon nets. Most of the smaller *chaurs* have very little value for agriculture or pisciculture.

These *chaurs* and the biodiversity they support remain largely unstudied (Rai and Munshi 1982). It is essential to document, monitor and conserve these *chaurs*, and to protect the waterfowl and biodiversity they support.

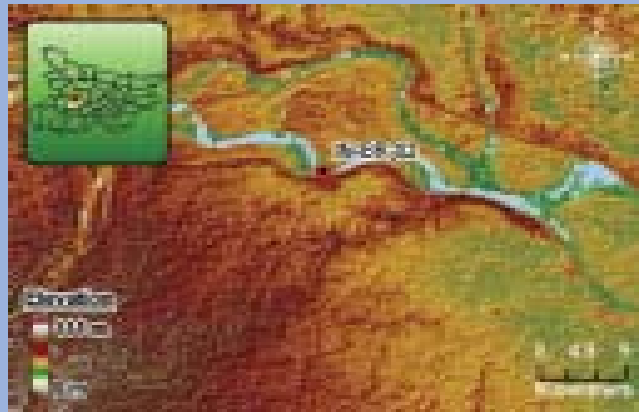
KEY CONTRIBUTORS

H. S. A. Yahya and Arvind Mishra

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DANAPUR CANTONMENT AREA



IBA Site Code	: IN-BR-02
State	: Bihar
District	: Patna
Coordinates	: 25° 38' 32" N, 85° 02' 06" E
Ownership	: State
Area	: c. 399 ha
Altitude	: c. 50 m
Rainfall	: 1,100 mm
Temperature	: 5 °C to 40 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp

IBA CRITERIA: A1 (Threatened Species), A4i (>1% biogeographic population)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Danapur Cantonment is under the jurisdiction of the Indian army so it is protected from general human disturbance. Danapur is located about 6 km from the course of the River Ganga. It is proposed as *Sainik Pakshi Vihar* meaning Army Bird Area. It is considered as an IBA because more than 10,000 Asian Openbill *Anastomus oscitans* breed here. The birds rest and nest in the Army campus, their residential colonies and official establishments. In the adjacent land, there are some waterlogged areas which are cultivated. Birds use these areas as feeding ground.

Important trees found at the site are *Mangifera indica*, *Ficus religiosa*, *F. bengalensis*, *F. glomerata*, *Acacia nilotica*, *Syzygium cumini*, *Tamarindus indica*, *Acanthocephalus indicus* and *Dalbergia sissoo*.

AVIFAUNA

The area is a permanent nesting site for over 11,000 Asian Openbill. The nesting colony is not shared with other bird species, as in other sites. The South Asian breeding population of the Asian Openbill is calculated as >125,000 (Wetlands International 2002) and the 1% threshold is 1,250, which means that at this IBA site, nearly 9% of the breeding population of the Asian Openbill is found.

Lesser Kestrel *Falco naumanni* is the only threatened bird occasionally seen in winters.



Photo: Valeri Mossikhin

The globally threatened Lesser Kestrel *Falco naumanni* is also reported from the area (Arvind Mishra *pers. comm.* 2003). Other birds seen are cormorants, egrets, bulbuls, owls, and raptors. Though the birds are nesting in increasing numbers here, tree felling has restricted them to around 11,000.

Vulnerable

Lesser Kestrel	<i>Falco naumanni</i>
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OTHER KEY FAUNA

No large mammal of any significance is found in the area.

LAND USE

- ☐ Military

THREATS AND CONSERVATION ISSUES

- ☐ Cutting of nesting trees
- ☐ Poaching of birds in their feeding grounds in the adjacent areas

The area remains well protected as it is under the jurisdiction of the Indian army. Felling of nesting trees has, however, reduced the number of Asian Openbill Stork nesting in the area. The Society for Conservation of Flora and Fauna, Patna, Bihar has recommended that felling of trees be stopped and more trees be planted to increase the size of the nesting colony.

At present the military personnel, the Society for Conservation of Flora and Fauna, and some other concerned citizens are interested in the conservation birds. They have undertaken tree plantation activities and raising general awareness.

KEY CONTRIBUTORS

Society for Conservation of Flora and Fauna (Patna), Arvind Mishra, Mandar Nature Club

KEY REFERENCE

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BR-03

GOGABIL PAKSHI VIHAR, BAGHAR BEEL AND BALDIA CHAUR



IBA Site Code	: IN-BR-03
State	: Bihar
District	: Katihar
Coordinates	: 25° 24' 02" N, 87° 45' 11" E
Ownership	: State
Area	: c. 208 ha
Altitude	: Not available
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp

IBA CRITERIA: A1 (Threatened Species), A4iii ($\geq 20,000$ waterbirds)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Gogabil (88 ha) was initially notified as a closed area for five years in 1990, which was further extended up to the year 2000, but thereafter the notification has not been extended. The site is situated about 33 km southeast of Katihari in Amdabad block. The lake is fed by the flood waters. Gogabil is a permanent waterbody, however, the level of water varies seasonally. This waterbody is surrounded by many other temporary wetlands. The floodwaters from Gogabil during monsoon form two wetlands, namely Baghar *beel* and Baldia *chaur*. These wetlands are inundated by overflow from the Gogabil river and local monsoon run-off. Baldia *chaur* is more shallow than Baghar and is seasonal only. Baghar *beel* is about 28 km southeast of Katihar. Its waterspread becomes about 25 ha in summer from about 400 ha in the monsoon. These *chaurs* or *beels* are oxbow lakes marking the historical course of Gogabil river.

As the *chaurs* dry out, the exposed mud is covered with grasses and creepers. The great part of the exposed lake bed is subsequently brought under cultivation. Water from these wetlands is used for irrigation and domestic supply.

AVIFAUNA

Seventy-one bird species have been recorded from this site, of which one is Vulnerable, three Near Threatened and four are Biome-restricted species. The site falls in Biome-12 (Indo-Gangetic Plains) but many species of Biome-11 (Indo-Malayan Tropical Dry Zone) are also reported from the site (A. Mishra *in litt.* 2002). During good monsoon

Among 71 species recorded from this site, Oriental White Ibis *Threskiornis melanocephalus* is also seen here.



Photo: Kishor Rithe

years, when the waterspread is extensive, more than 20,000 waterfowl are likely to be present in all these wetlands. Not much work has been conducted on the waterfowl number, species composition, density and population fluctuation. Ringing information is also not available. This site can be considered as Data Deficient.

Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Near Threatened	
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>

OTHER KEY FAUNA

Not known

LAND USE

- ☐ Agriculture
- ☐ Fishing
- ☐ Irrigation

THREATS AND CONSERVATION ISSUES

- ☐ Poaching
- ☐ Trade of birds
- ☐ Agricultural pesticides runoff
- ☐ Land disputes
- ☐ Leasing out of the site for fishing

Leasing out of the site by the district administration for fishing has been a major issue, along with trapping, hunting, poaching, and illegal trade of birds. Agricultural pesticide run-off, land reclamation, and non-settlement of land disputes are other problems that need to be addressed.

KEY CONTRIBUTOR

Arvind Mishra

KEY REFERENCE

None

KAWAR (KABAR) LAKE WILDLIFE SANCTUARY



IBA Site Code	: IN-BR-04
State	: Bihar
District	: Begusarai
Coordinates	: 25° 40' 47" N, 86° 04' 47" E
Ownership	: State
Area	: c. 6,311 ha
Altitude	: 50 m
Rainfall	: 1,100 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp, Seasonal Marsh, Sub-tropical Secondary Scrub

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

PROTECTION STATUS: Wildlife Sanctuary, established in June 1989

GENERAL DESCRIPTION

Kawar (Kabar) Lake Wildlife Sanctuary, also a Ramsar Site, is the largest freshwater lake in northern Bihar. It is a residual oxbow lake formed by the changing course of the River Gandak, a tributary of the Ganga. In years of average rainfall, the Kawar Lake joins with the nearby Nagri Lake, Bikrampur *Chaur* and Burhi Gandak, a tributary of the River Ganga, to form a lake of about 7,400 ha. By late summer, however, the water is confined to the deeper areas of only c. 200 to 300 ha. As the water level recedes, over 2,400 ha of the exposed mudflats are converted into paddy fields. There is a permanent island (Jaimanglagarh) of about 130 ha in the southeast corner of the lake. Kawar Lake experiences tropical monsoon climate typical of the middle Gangetic plain.

The lake supports a rich and diverse aquatic flora. Submerged macrophytes include *Hydrilla verticillata*, *Potamogeton crispus* and *Najas minor*. Emergent macrophytes include *Oryza sativa* and *Ipomea aquatica* (Anon. 1993).

AVIFAUNA

The lake is eutrophic, sustaining rich plant and animal life, and teeming with waterfowl (George 1964). Kawar is one of the most important wetlands for waterfowl in the Indo-Gangetic Plain. It supports huge numbers of migratory ducks and Coot *Fulica atra*

through the winter, as well as large concentrations of resident species such as Dabchick *Tachybaptus ruficollis* and Asian Openbill *Anastomus oscitans*. The Near Threatened Oriental White Ibis *Threskiornis melanocephalus*, Ferruginous Pochard *Aythya nyroca* and Rufous-vented Prinia *Prinia burnesii* are also found (Arvind Mishra *pers. comm.* 2001). About 26 species of birds including Baillon's Crake *Porzana pusilla*, Fantail Snipe *Gallinago gallinago*, Ruff *Philomachus pugnax* and Greyheaded Lapwing *Vanellus cinereus* were ringed here during a BNHS bird ringing camp (Anon. 2002).

It is difficult to estimate the number of waterfowl found in Kawar as no systematic study has been conducted but certainly, every year, more than 20,000 waterbirds are found here, thus fulfilling A4iii criteria of BirdLife International (undated). It is likely that totally about a hundred thousand birds still visit this site.

To give an idea of the number of birds that used to visit this site, S. P. Shahi estimated that about 70,000 birds were trapped every year till early 1980s. Manjhol town was a major bird market and a center for distribution to other areas. Since the declaration of the Sanctuary in 1989, bird trapping has reduced considerably but has been replaced by poisoning instead.



Photo: R. K. N.

Critically Endangered

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

Vulnerable

Greater Spotted Eagle	<i>Aquila clanga</i>
Sarus Crane	<i>Grus antigone</i>

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>
Black-bellied Tern	<i>Sterna acuticauda</i>

OTHER KEY FAUNA

Over 29 species of commercially valuable fish have been recorded from the lake. The edible mollusc *Pila globosa* is abundant, the main food of the Asian Openbill.

Kabar Lake is known for a very large congregation of waterbirds during winters.



Photo: Asad R. Rahmani

LAND USE

- q Water management
- q Irrigation
- q Fishing
- q Grazing land
- q Agriculture

THREATS AND CONSERVATION ISSUES

- q Agricultural intensification and expansion
- q Drainage of wetland
- q Grazing of livestock
- q Poaching
- q Invasion by exotic species
- q Pollution

The lake is very important for fisheries. Inhabitants of about 15 villages around the lake depend on the wetland resources for their livelihood. Duck trapping was a major occupation of many villagers. Shahi (1982) estimated that 70,000 ducks, coot and other waterfowl were netted and sold in the winter of 1981-82. Now trapping on this scale has been stopped but has been replaced by poisoning of waterfowl. It is a common sight to see dead and wounded fish on the water surface along with the dead birds (Mehboob Alam *pers. comm.* 2003).

Demands for water for irrigation are increasing, the lake is over fished and the aquatic vegetation is heavily grazed by domestic livestock. The lake is also infested with *Eichhornia crassipes* and contaminated with run-off of pesticides and fertilizers used by farmers.

The major issue at Kavar is the dispute between the politicians and landlords, and the fishermen, local people and NGOs. A few powerful politicians and the landlords are putting pressure on the Government to convert the wetland into agricultural land by draining out the lake. They discourage efforts towards clearing the lake of the vegetation that is choking it and threatening its existence. However, villagers use the emergent weeds as fodder or thatching of houses.

The Development Fund allotted by the Central Government is lying with the State Government for many years, but there has been little development of the Sanctuary. Due to land disputes the officials do not even know the true ownership of the land in the Sanctuary.

KEY CONTRIBUTORS

Arvind Mishra, Ali Hussain and Mehboob Alam

KEY REFERENCES

- Anonymous (1993) *Directory of Indian Wetlands*, WWF-INDIA, New Delhi and AWB Kuala Lumpur, xvi + 264 pp; 32 maps.
- Anonymous (2002) *Bird Banders Training Programme Final Report*, Bombay Natural History Society, Mumbai, India.
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- George, P. V. (1964) Notes on migrant birds in North Bihar, *J. Bombay Nat. Hist. Soc.* 61: 370-384
- Shahi S.P. (1982) Bird massacre in Manjhaul. *Hornbill* 3: 17-22.

KURSEALA RIVER COURSE AND DIYARA FLOODPLAIN



IBA Site Code	: IN-BR-05
State	: Bihar
District	: Kathiari
Coordinates	: 25° 26' 60" N, 87° 15' 00" E
Ownership	: State/ Private
Area	: Not available
Altitude	: 50 m
Rainfall	: >1,000 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp, Seasonal Marsh

IBA CRITERIA: A4iii (>20,000 waterbirds), Data Deficient

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Kurseala lies at the confluence of the Ganga and Koshi rivers. From Naugachhia to Kursela on the national highway NH-8, a stretch of about 16 km has been designated as an IBA. It extends from Diyara floodplain from Naugachhia to Kurseala on its southern side till the margin of River Ganga.

AVIFAUNA

Though no systematic survey has been carried out in the area, globally threatened species that frequent it may include the Oriental White-backed vulture *Gyps bengalensis*, Lesser Adjutant *Leptoptilos javanicus*, Pallas's Fish Eagle *Haliaeetus leucoryphus* and Lesser Kestrel *Falco naumanni*. Six Greater Adjutants *Leptoptilos dubius* were seen by the Kursi River near Kurseala in April 1988 (Rahmani *et al.* 1990).

The site is also thought to hold on a regular basis over 20,000 waterbirds (Arvind Mishra *pers. comm.* 2001).



Photo: Asad R. Rahmani

As the site is Data Deficient and the area is not properly defined, we have kept it as an optional IBA. Surveys are required to investigate the present status of threatened and common species, and congregations, and also to demarcate the exact area that should be considered as IBA.

OTHER KEY FAUNA

The rare and endangered Gangetic Dolphin *Platanista gangetica* inhabits the river.

LAND USE

- ☐ Agriculture
- ☐ Fishing

THREATS AND CONSERVATION ISSUES

- ☐ Poaching and poisoning of birds
- ☐ Agricultural intensification and expansion
- ☐ Human disturbance

The area has not been thoroughly surveyed. The boundaries of the IBA also need to be defined. Extensive human activities are reported from the area, as there are several villages on the banks of the River Ganga. The margins of the lake are under cultivation. Birds are poached on a massive scale, by various methods including poisoning (Arvind Mishra *pers. comm.* 2001).

KEY CONTRIBUTORS

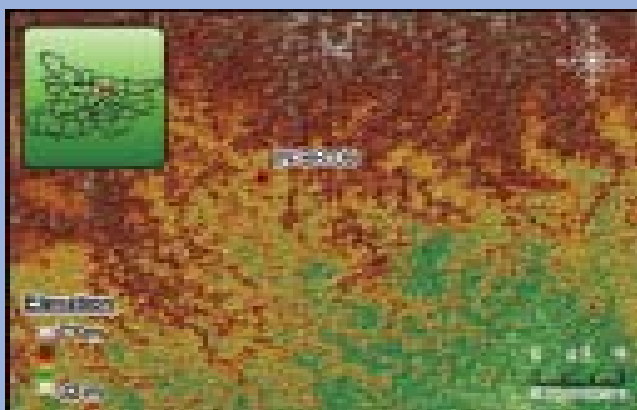
Arvind Mishra and IBA team

KEY REFERENCE

Rahmani, A. R., Narayan, G. and Rosalind, L. (1990) Status of the Greater Adjutant Stork (*Leptoptilos dubius*) in the Indian subcontinent. *Colonial Waterbirds* 13: 138-142.

BR-06

KUSHESHWARSTHAN



IBA Site Code	: IN-BR-06
State	: Bihar
District	: Darbhanga
Coordinates	: 26° 10' 00" N, 86° 02' 30"
Ownership	: State
Area	: c. 2,932 ha
Altitude	: 49 m
Rainfall	: Not available
Temperature	: Not available
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp

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

GENERAL DESCRIPTION

This is the second largest protected area for birds in Bihar, known since pre-Independence for its large and diverse congregations of birds. This permanent waterbody is located about c. 60 km from Darbhanga in Birail subdivision and includes the blocks of Biraul, Ghanshyampur and Kusheshwarsthan. The low lying areas of these blocks are dotted with perennial ponds and lakes. During floods, the water from nearby rivers fills the lake and the water level of the lake rises. During the monsoon, more than 10,000 ha become inundated as this lake joins with Simri Jheel and Kabar Taal (an IBA) (Yahya 1995). Rain and overflow of the rivers Kamla, Bagmati and Karree are the main sources of water for this lake.

Large numbers of local people have been dependent on this wetland for fishing and for some aquatic crops such as Makhana *Euryale ferox*. This was a hunting ground for birds for royal parties and administrators, but now the lake is occupied by fishermen and agriculturists. Although trapping of birds is prohibited, many local people still depend on it for their survival, catching birds and selling them live. Kusheshwarsthan was known as the 'winter capital' of migratory birds. A. O. Hume in his journal *Stray Feathers* considered it as one of the best waterfowl habitats in India. A local NGO has proposed to develop this area as Dr. Salim Ali Bird Sanctuary.

Most of the wetlands and ponds are covered with Water Hyacinth *Eichhornia crassipes*, but the local fishermen and bird trappers bind them together in small pockets so as to clear the surface area for fishing and bird trapping.

AVIFAUNA

Kusheshwarsthan used to be one of the most important wetlands of Bihar, but now it is in a sorry state. However, even now, thousands of waterfowl are seen wherever human disturbance is low. According to S. K. Verma of the UNESCO Club of Darbhanga, a local NGO, the birds flock to nearly 200 private-owned ponds sprawled over 162 ha, and 412 medium-size Government owned ponds spread over 240 ha in Kusheshwarsthan.

Presently, we do not have information about the total number of birds visiting this cluster of wetlands, but as the site has great potential, it is considered as a Data Deficient IBA. The Lesser

Adjutant *Leptoptilos javanicus*, Darter *Anhinga melanogaster* and Oriental White Ibis *Threskiornis melanocephalus* have been reported by A. Mishra (*in litt.* 2002).

Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>

OTHER KEY FAUNA

No information.

LAND USE

- ☐ Nature conservation and research
- ☐ Agriculture
- ☐ Aquatic crops
- ☐ Fishing

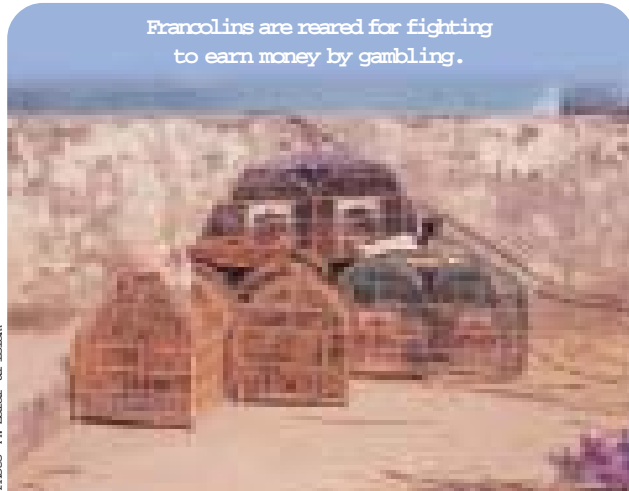


Photo: M. Zafar-ul-Islam

THREATS AND CONSERVATION ISSUES

- q Trapping of birds
- q Poaching
- q Illegal bird trade
- q Absence of law and order
- q Lack of survey
- q Agricultural runoff
- q Non-extension of legal status as protected area

As some of these wetlands are privately owned, it is not easy to declare them as a waterfowl sanctuary. Hundreds of thousands of



people depend upon these wetlands for cultivation, fishing and (illegal) bird trapping. Owing to the general breakdown of law and order in rural Bihar, it is extremely difficult to control poaching. Despite a legal ban on trapping and selling wild birds, thousands of waterfowl are illegally sold to private houses and roadside eateries, and sometimes even taken to neighbouring districts like Saharsa, Muzaffarpur, and Samastipur. Thousands of birds are poisoned by mixing pesticide in fried rice and spreading it in the foraging areas. This slow poison cripples the birds, which are then easily picked up by poachers.

For some years, this site was declared as a Closed Area for Shooting, but this status has not been extended. However, the site can be declared as a Community Reserve under the amended Indian Wildlife (Protection) Act, 1972. But, before any legal action is taken, an environmental education programme must be initiated to make the local people aware of their waterfowl wealth and the importance of sustainable use of the wetland.

KEY CONTRIBUTORS

S. K. Verma and Arvind Mishra

KEY REFERENCES

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BR-07

MOKAMA TAAL (BARAH) WETLANDS



IBA Site Code	: IN-BR-07
State	: Bihar
District	: Patna, Samastipur and Begusarai
Coordinates	: 25° 28' 00" N, 85° 42' 00" E
Ownership	: State/ Private
Area	: 1,000 ha
Altitude	: 50 m
Rainfall	: 1,100 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Freshwater Swamp, Seasonal Marsh

IBA CRITERIA: A1 (Threatened Species),
A4i (1% biogeographic population), A4iii (≥ 20,000 waterbirds)
PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Mokama Taal wetlands cover more than 1,000 ha of shallow waterbodies, situated in Patna, Samastipur and Begusarai districts of Bihar. They lie about 75 km of Patna city towards the southern bank of the River Ganga, which drains the wetland. The topography of the area is generally flat land, like most of the Gangetic plains. It is a fairly compact tract of alluvial plain, sloping gently from south to north. Mokama Taal is a perennial water system and exhibits enormous biodiversity. Kawar (Kabar) Lake, an IBA site is close to Mokama, and when the birds get disturbed at Kawar they fly to Mokama.

AVIFAUNA

About 149 species of birds have been estimated to occur in the area. Further surveys will most certainly add to the number of species. The site also holds, on a regular basis, over 20,000 breeding and migratory waterbirds. The Black Ibis *Pseudibis papillosa*, Glossy Ibis *Plegadis falcinellus*, Eurasian Spoonbill *Platalea leucorodia*, Greylag Goose *Anser anser* and Barheaded Goose *A. indicus* are some of the species reported from the area. Ten globally threatened and Near Threatened species are found here.

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>
Endangered	
Greater Adjutant	<i>Leptoptilos dubius</i>
Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish Eagle	<i>Haliaeetus leucorhynchus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Lesser Kestrel	<i>Falco naumanni</i>
Near Threatened	
Darter	<i>Anhinga melanogaster</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>

Flocks of 200 Eurasian Spoonbill are not uncommon. Similarly, Lesser Whistling Duck *Dendrocygna javanica* is found in thousands, along with a few hundred Large Whistling Duck *D. bicolor* (Mehboob Alam pers. comm. 2002).

OTHER KEY FAUNA

As the site is surrounded by agricultural fields and villagers, there is no large wild mammal or reptile of conservation concern.

LAND USE

- ☐ Agriculture
- ☐ Fishing

THREATS AND CONSERVATION ISSUES

- ☐ Filling in of wetlands
- ☐ Poaching
- ☐ Construction of thermal power plant
- ☐ Pollution from agricultural chemical runoff

The wetlands are under considerable threat from the proposed construction of the Barh Super Thermal Power Plant by the National Thermal Power Corporation Ltd (Anon. 2000). The construction of the plant and the subsequent dumping of fly ash generated by it would choke the wetland and destroy its wildlife.

Currently, no scientific information on the state of the environment of Mokama Taal is available.

Although trapping and shooting of birds is prohibited by law, these activities go on, albeit on a much smaller scale than before. Poisoning of waterfowl with pesticide using rice as bait is also becoming a common *modus operandi* to catch birds.

KEY CONTRIBUTORS

Arvind Mishra, Mehboob Alam, Ali Hussain and S. P. Roy

KEY REFERENCE

Anonymous (2000) EIA Interim Report, for the 3x660 MW Barh Super Thermal Power Plant, of M/s National Thermal power Corporation Limited. Ghosh Bose & Associates Pvt. Ltd., Calcutta.

NAGI DAM AND NAKTI DAM BIRD SANCTUARY



IBA Site Code	: IN-BR-08
State	: Bihar
District	: Jamui
Coordinates	: 24° 48' 35" N, 86° 24' 35" E
Ownership	: State (Irrigation Department)
Area	: 1,123 ha
Altitude	: 200 m
Rainfall	: >1,800 mm
Temperature	: 10 °C to 45 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Freshwater Swamp

IBA CRITERIA: A4i (1% biogeographic population), A4iii (≥ 20,000 waterbirds)

PROTECTION STATUS: Wildlife Sanctuary, established in 1987

GENERAL DESCRIPTION

The Nagi Dam (791 ha) and Nakti Dam (332 ha) are two sanctuaries so close to each other that they can be taken as one bird area. Nagi is c. 7 km from Jhagha in the district Jamui, and Nakti is a further c. 4 km from Nagi, occupying similar habitat. These notified sanctuaries are surrounded by rocky hillocks, formed by the damming of streams. Both these waterbodies are quite deep, with a clear watersurface. These dams were built to supply water to local farms. There are cultivable lands adjacent to both the waterbodies.

AVIFAUNA

About 1,600 Bar-headed Goose *Anser indicus* have been recorded from this site (A. Mishra *pers. comm.* 2002). According to Wetlands International (2002), 1% threshold of this species is 560; accordingly about 3% of the population is found at this IBA site. This site could also attract more than 20,000 birds, if fishing and other disturbances are curtailed during winter when most of the migrants are found in India.

Beyond the cultivated areas, these waterbodies are surrounded by barren, rocky terrain. Consequently, dryland birds are also seen, such as the Indian Courser *Cursorius coromandelicus*, Indian Sandgrouse *Pterocles exustus*, Yellow-wattled Lapwing *Vanellus malabaricus* and Indian Robin *Saxicoloides fulicata*. The site falls in Biome-12, i.e. Indo-Gangetic Plains, but species of Biome-11 are also sighted.

Bar-head Geese *Anser indicus* are common birds seen during winter in the Sanctuary.



Photo: Nayen Khanolkar

Near Threatened

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

OTHER KEY FAUNA

No information

LAND USE

- ☐ Fishing
- ☐ Agriculture
- ☐ Irrigation

THREATS AND CONSERVATION ISSUES

- ☐ Agricultural runoff
- ☐ Land dispute between Irrigation and Forest Departments
- ☐ Leasing out of the site for fishing

The land on which these waterbodies are located belongs to the Irrigation Department. However, as the sanctuaries have been notified and the wildlife comes under the jurisdiction of the Forest Department, there are many legal matters. For instance, the Irrigation Department gives fishing lease to private individuals, which is contested by the Forest Department and NGOs such as the Mandar Nature Club. The State Government is reluctant to transfer the land to the Forest Department as the government fears that, once this is done, fishing and other exploitation of resources would be curtailed. A system needs to be developed where water and fish are exploited by different departments but, at the same time, birds are least disturbed. There is also a need to conduct environmental education amongst villagers and students to highlight the importance of the wildlife, especially birds.

KEY CONTRIBUTOR

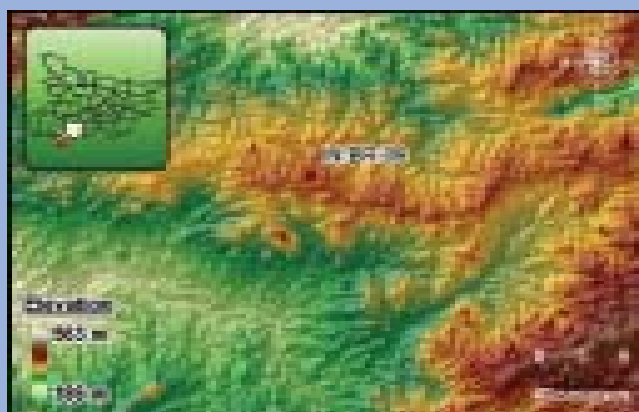
Arvind Mishra

KEY REFERENCE

Wetlands International (2002) *Waterbird Population Estimates – Third Edition*. Wetlands International Global Series No. 12. Wageningen, The Netherlands.

BR-09

RESERVOIRS OF CHOTA NAGPUR PLATEAU



IBA Site Name	: IN-BR-09
State	: Bihar and Jharkhand
District	: Gaya, Dhanbad and Hazaribagh
Coordinates	: 24° 09' 60" N, 84° 31' 04" E
Ownership	: State
Area	: 34,447 ha
Altitude	: c. 1,000 m (average)
Rainfall	: 1,163 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Freshwater Reservoir

IBA CRITERIA: A4i (1% biogeographic population), A4iii (≥20,000 waterbirds), Data Deficient

PROTECTION STATUS: Not officially protected

GENERAL DESCRIPTION

Tilaiya (5,957 ha), Konar (2,590 ha), Maithon (10,619 ha) and Panchet (15,281 ha) are reservoirs that lie on the Damodar river and constitute a part of the Damodar Valley Corporation (DVC) Multipurpose Project. These reservoirs drain an area of Tilaiya (98,420 ha), Konar (99,210 ha), Maithon (6,00,000 ha), and Panchet (1,00,000 ha). The reservoirs experience tropical monsoon climate and the average annual rainfall is 1,163 mm. They are used for power generation, flood control, irrigation and fisheries.



Photo: M. Zafar-ul-Islam

AVIFAUNA

More than 20,000 migratory birds such as ducks and coot visit these reservoirs. Several species of resident birds have also been observed. Though several water management, structural and hydro-engineering studies have been conducted, there seems to be no environmental study on the waterfowl in the area.

OTHER KEY FAUNA

Not known

LAND USE

- ☐ Power generation
- ☐ Water management
- ☐ Flood control
- ☐ Irrigation
- ☐ Fisheries

THREATS AND CONSERVATION ISSUES

- ☐ Siltation

All four reservoirs are threatened by siltation. Brick manufacturing units located in the catchment area of the Tilaiya Dam are contributing to the increased sedimentation of the reservoir (Anon. 1993).


KEY CONTRIBUTORS

Arvind Mishra and Mandar Nature Club

KEY REFERENCES

Anonymous (1993) *Directory of Indian Wetlands*, WWF INDIA, New Delhi and AWB Kuala Lumpur, xvi +264 # pp: 32 maps.

VALMIKI TIGER RESERVE AND SARAIYAMAN LAKE



IBA Site Code	: IN-BR-10
State	: Bihar
District	: West Champaran
Coordinates	: 27° 18' 30" N, 84° 08' 36" E
Ownership	: State
Area	: 88,078 ha
Altitude	: 125 - 880 m
Rainfall	: Up to 2,000 mm
Temperature	: 8 °C to 36 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Tropical Dry Deciduous, Tropical Bamboo Brakes, Freshwater Swamp

IBA CRITERIA: A1 (Threatened Species), A3 (Biome-12: Indo-Gangetic Plains)
PROTECTION STATUS: Tiger Reserve, established in 1989

GENERAL DESCRIPTION

Valmiki Tiger Reserve is located in the northernmost part of West Champaran district of Bihar. The Rivers Gandak and Masan flow through this area. The core area of the Tiger Reserve is a National Park (Jain 2001). Most of the terai forests and grasslands in Bihar have been converted in to agricultural fields. Valmiki Tiger Reserve is the only such habitat left untouched in Bihar. This Reserve is also under tremendous pressure from encroachers and poachers. Saraiya Man Bird Sanctuary is a freshwater body c. 7 kms from Bagha. It is known for good numbers of waterbirds. We have designated this small bird sanctuary and the Tiger Reserve as one IBA.

The forest types include Mixed Deciduous Forests, Cane brakes, grasslands and swamp forests. Important trees include Sal *Shorea robusta*, Khair *Acacia catechu* and Cane *Calamus pseudo-tenuis*.

AVIFAUNA

The avifauna of this Reserve is inadequately studied, but it can be said that where the forest is intact, almost all the *terai* forest species are likely to occur that are found in Dudhwa (Javed and Rahmani 1998) or the adjoining Sohagi Barwa Sanctuary in Uttar Pradesh. Presently, the grasslands are not in good condition, due to grazing and plantation, but they could be revived with effective management. We might even get back the Bengal Florican *Houbaropsis bengalensis* that has become locally extinct in the Reserve. Mukherjee (1986) claims to have seen one bird in 1980. To the north of Valmiki Tiger Reserve, in Nepal, is located the Royal Chitwan National Park, where this species is still found (BirdLife International 2001).

Globally threatened species such as the Swamp Francolin *Francolinus gularis* and Sociable Lapwing *Vanellus gregarius* have been reported from the area (Javed and Rahmani 1991). The Vulnerable Sarus Crane *Grus antigone* also occurs in small numbers (Anon. 1993, Gopi Sundar *et al.* 2000). The Greater Adjutant *Leptoptilos dubius* has not been seen for many decades, but the Lesser Adjutant *L. javanicus* is still found in streams and ponds. The most important wetland, Bhasa-lotan (= wallow of buffalo), famous for Wild Buffalo *Bubalus arnee* (= *bubalis*), has been completely drained out and now a bustling, dirty town stands over it.

Vulnerable	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Swamp Francolin	<i>Francolinus gularis</i>
Sarus Crane	<i>Grus antigone</i>
Sociable Lapwing (?)	<i>Vanellus gregarius</i>
Near Threatened	
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Biome-12: Indo-Gangetic Plains	
White-tailed Stonechat	<i>Saxicola leucura</i>
Striated Babbler	<i>Turdoides earlei</i>
Long-tailed Prinia	<i>Prinia burnesii</i>
Rufous-rumped Grass-Warbler	<i>Graminicola bengalensis</i>
Black-breasted Weaverbird	<i>Ploceus benghalensis</i>

OTHER KEY FAUNA

Valmiki Tiger Reserve was the 18th tiger reserve to be declared in India, with the sole purpose of arresting the decline of this apex carnivore, and also an ecosystem which could support this endangered animal. Besides Tiger *Panthera tigris*, it has Leopard *P. pardus*, Sambar *Cervus unicolor*, Cheetal or Spotted Deer *Axis axis*, Hog Deer *Axis porcinus* and other associated animals of the terai. Wild Buffalo and Swamp Deer *Cervus duvaucelii* have become locally extinct. Hispid Hare *Caprolagus hispidus* probably survives in the grassland.



Pied Kingfisher *Ceryle rudis* is commonly seen catching small fishes.



Photo: Asad R. Rahmani

LAND USE

- q Forestry
- q Nature education and conservation
- q Water management

THREATS AND CONSERVATION ISSUES

- q Poaching
- q Illegal felling of trees
- q Livestock grazing
- q Forest fires
- q Agricultural intensification and expansion
- q Construction and impact of dykes
- q Firewood collection
- q Disease spread from domestic animals to wild animals
- q Lack of funds
- q Abandonment/ reduction of land management
- q Construction of road

Since Valmiki Tiger Reserve is contiguous with both international and interstate boundaries, it is infested with armed dacoits who are involved in the smuggling of Khair *Acacia catechu* and cane. Poaching is very common. About 81,000 people live in the 142 villages on the fringe of the Reserve. About 20,000 people in the area depend on forest resources for survival for six months of the year, as there is a lack of employment opportunities.

The buffer area of the Park is very prone to fires caused by the locals grazing their cattle. The fires are set to encourage growth of grass. Around 60,000 heads of livestock are present in the Reserve, which cause severe damage to the flora. Herbivores in the Reserve are highly susceptible to iodine deficiency disease, goitre and foot-and-mouth disease (Jain 2001). Forty-two villages hold agricultural and habitation rights.

The natural flow of two streams was blocked and 1,691 ha forest land was inundated due to the construction of a rail and road bridge. This led to the death of 15,000 trees in the buffer zone of the Reserve (Jain 2001).

The funds for protection, development and management of the Reserve are scarce. Consequently, it is difficult to manage the reserve and infrastructure is inadequate. Eco-development activities were initiated in the Reserve in 1997-1998 (Jain 2001).

KEY CONTRIBUTORS

Arvind Mishra, Asad R. Rahmani and Pushp Jain

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VIKRAMSHILA GANGETIC DOLPHIN SANCTUARY



IBA Site Code	: IN-BR-11
State	: Bihar
District	: Bhagalpur
Coordinates	: 25° 17' 23" N, 86° 55' 48" E
Ownership	: State
Area	: Not available
Altitude	: Not available
Rainfall	: 1,100 mm
Temperature	: 5 °C to 45 °C
Biogeographic Zone	: Gangetic Plain
Habitats	: Riverine Vegetation

IBA CRITERIA: A1 (Threatened Species)

PROTECTION STATUS: Wildlife Sanctuary, established in August 1990

GENERAL DESCRIPTION

A 60 km stretch of the River Ganga extending from Sultanganj, eastward to Kahalgaon has been notified as the Vikramshila Gangetic Dolphin Sanctuary. During monsoon, the river inundates a vast floodplain and the river course also changes a bit. There are many small sandbars inhabited by birds. They serve as breeding grounds for many birds, especially the section from Sultamour to Bhagalpur, a 36 km stretch, which seems to be a paradise for birds and other aquatic animals.

AVIFAUNA

This site has been selected as an IBA due to the presence of hundreds of Indian Skimmers *Rynchops albicollis*. Globally threatened species such as the Greater Adjutant *Leptoptilos dubius* and Lesser Adjutant *L. javanicus* are also present. Other storks present are the Black *Ciconia nigra*, Black-necked *Ephippiorhynchus asiaticus*, White-necked *Ciconia episcopus*, and the Asian Openbill *Anastomus oscitans*. The Sanctuary is rich in waders. Common Crane *Grus grus*, Eurasian Spoonbill *Platalea leucorodia* and various ducks are also seen here.

Critically Endangered	
Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Vulnerable	
Pallas's Fish Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Lesser Kestrel	<i>Falco naumanni</i>
Indian Skimmer	<i>Rynchops albicollis</i>
Near Threatened	
Oriental White Ibis	<i>Threskiornis melanocephalus</i>

OTHER KEY FAUNA

The River Ganga is the lifeline of north India and the Gangetic Dolphin *Platanista gangetica* epitomizes its life and the wealth

of biodiversity in India. This is the only Dolphin Sanctuary to be declared in India. Listed by IUCN as Endangered, included in Appendix-II of CITES, and placed in Schedule I of the Indian Wildlife (Protection) Act, 1972, the dolphin enjoys a high level of protection, nationally and internationally. Yet its numbers continue to decline due to continuing developmental pressures on its habitat.

LAND USE

- ☐ Irrigation
- ☐ Fishing
- ☐ Transport

THREATS AND CONSERVATION ISSUES

- ☐ Agricultural chemical runoff
- ☐ Fishing
- ☐ Transportation

Little needs to be said regarding the importance of Ganga for the millions of people who depend upon it for drinking, irrigation, fishing, transport and many other activities. These human activities, especially fishing and transportation, are a severe threat to avian and other biodiversity in and around the river. The Government is also planning a water transportation project, that would disturb the whole Sanctuary. Use of modern techniques such as gill nets has severely affected the fish and other aquatic species, reducing the population drastically. Sewage and effluents are another major threat that pollute the river. All these factors call for serious concern as they threaten the biodiversity of the river.

KEY CONTRIBUTORS

Sandeep Behera, Arvind Mishra and R. K. Sinha

KEY REFERENCE

Not available