



ISSN
Online 0974-7907
Print 0974-7893

OPEN ACCESS

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 April 2014 | 6(4): 5660-5666

AVIFAUNA IN FIVE WETLANDS OF DIARA AND BARIND REGION IN MALDAH DISTRICT OF WEST BENGAL, INDIA

Monoranjan Chowdhury¹ & Bidyut Nandi²

¹Department of Botany, University of North Bengal, Darjeeling, West Bengal 734013, India

²Department of Zoology, Malda College, Malda, West Bengal 732101, India

¹mono_malda@yahoo.com (corresponding author), ²nandi.bidyut@yahoo.com

Abstract: The present work deals with avifauna of five important wetlands of Diara and Barind region in Maldah District of West Bengal, India. Sixty-two species of water birds belonging to 21 families were regularly seen during the survey period (2008–2010). Out of 62 bird species recorded, 13 are threatened species as per the IUCN checklist. The ecosystem and existing biodiversity of these wetlands are under various levels of anthropogenic pressures that directly affect the avifauna.

Keywords: Avifauna, human intervention, Maldah, threatened birds, wetlands.

Wetlands are very important as productive but fragile ecosystems in different climatic zones of the world. These habitats are often selected by aquatic birds as their food and foraging centers. The wetlands, rivers, pond and ephemeral water bodies with enough food and weedy vegetation provide a good habitation for the resident, resident migratory and migratory birds. Wetlands also provide shelter to frogs, snakes, fishes, insects and mammals along with good number of plant species (Anonymous 1991). India is one of the global hotspots for birds with over 1340 bird species (13% of world species) recorded from the country (Manakadan & Pittie 2001), of which 310 species are dependent on different fresh and salt water wetlands (Kumar et al. 2005). The conversion of wetland habitat to agricultural

lands and urban areas is gradually destroying the ideal habitat of water birds. In India, 29 wetland birds are reported as threatened with extinction (Islam & Rahmani 2002).

The state of West Bengal is very important for its diverse ecosystem including well protected sanctuaries, mangroves, water bodies and reserve forests that support good birdlife. Ramakrishnan & Maheswaran (2007) listed around 750 birds, of which 23 species are categorized as Vulnerable and 14 species as Near Threatened (according to the IUCN Redlist). Maldah District in West Bengal is dotted with several natural marsh lands with rich diversified biota (Chowdhury 2009). According to BirdLife International (2001), the wetland of this area lies in Biome - 11 (Indo-Malayan tropical dry zone). Jha (2005) provides a preliminary list of 269 bird species, of which 13 are globally threatened and 11 are Near Threatened from different habitats of Maldah District. Jha & Sengupta (1999a) reported six important less common water birds from this district.

Study Area

The Maldah District is located between 24°40'20"–25°32'08"N & 87°45'50"–88°28'10"E, covering 3,733km² of land. Topographically this district is divided into

DOI: <http://dx.doi.org/10.11609/JoTT.o2736.5660-6> | ZooBank: urn:lsid:zoobank.org:pub:D4160AE4-3BF1-4A94-B88F-1932B571347D

Editor: C. Srinivasulu, Osmania University, Hyderabad, India.

Date of publication: 26 April 2014 (online & print)

Manuscript details: Ms # o2736 | Received 22 March 2011 | Final received 07 April 2014 | Finally accepted 09 April 2014

Citation: Monoranjan Chowdhury & Bidyut Nandi (2014). Avifauna in five wetlands of Diara and Barind region in Maldah District of West Bengal, India. *Journal of Threatened Taxa* 6(4): 5660–5666; <http://dx.doi.org/10.11609/JoTT.o2736.5660-6>

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Funding: Self.

Competing Interest: The authors declare no competing interests.

Acknowledgements: We are grateful to our colleagues Mr. B.K. Roy and D. Mandal for beautiful photography of the birds during the survey. The authors are also thankful to Chandan Roy, Motin Ahmed, Palas Ghosh and Subhas Ghosh for their kind assistance as survey team members. The authors convey their thanks to all the reviewers and the subject editor for their valuable advice and suggestions that helped us to improve this manuscript.



three regions, i.e., Tal, Diara and Barind and a part of the Gangetic flood plains. Maldah District holds first position based on inland fresh water natural wetlands in West Bengal. Eleven big fresh water wetlands, out of 23 (>100 hectare) in West Bengal, are present in different blocks of this district (Anonymous, 1990). In North Bengal the large or small, permanent or seasonally waterlogged marshes are popularly known as “beel”. As per recent satellite data the estimated wetland area of Maldah is 29416.95ha, which is 7.88% of the total geographical area of West Bengal (Bhattacharyya et al. 2000). The wetlands of this region are generally palustrine (floodplains, seasonal waterlogged, marsh), lacustrine (Lakes) and riverine types. All these wetlands are directly or indirectly connected with the different

river systems like Ganga, Pagla, Mahananda, Tangan and Punarbhaba.

The present study is restricted to the Diara and Barind region of Maldah District. The five most important bird habitats were selected from Diara (Farakka barrage (FB) on the river Ganga, Gabgachi-Bhatia wetland complex (GW) and Sagardighi (S)) and Barind (Belatuli wetland (BW) and Nayabandh wetland complex (NW)) region for this study (Fig. 1, Table 1). Among these five sites, GW is a large palustrine composed of several smaller water bodies like Malanchapally beel, Bhatia beel, Abhirampur beel, Veon beel, Gabgachi I, Nander beel and Koimary beel. The NW is also a large palustrine with several smaller water bodies like Chakla beel, Bakla beel, Ramdole beel, Vikon beel and Sirisdanga. Sagardighi is

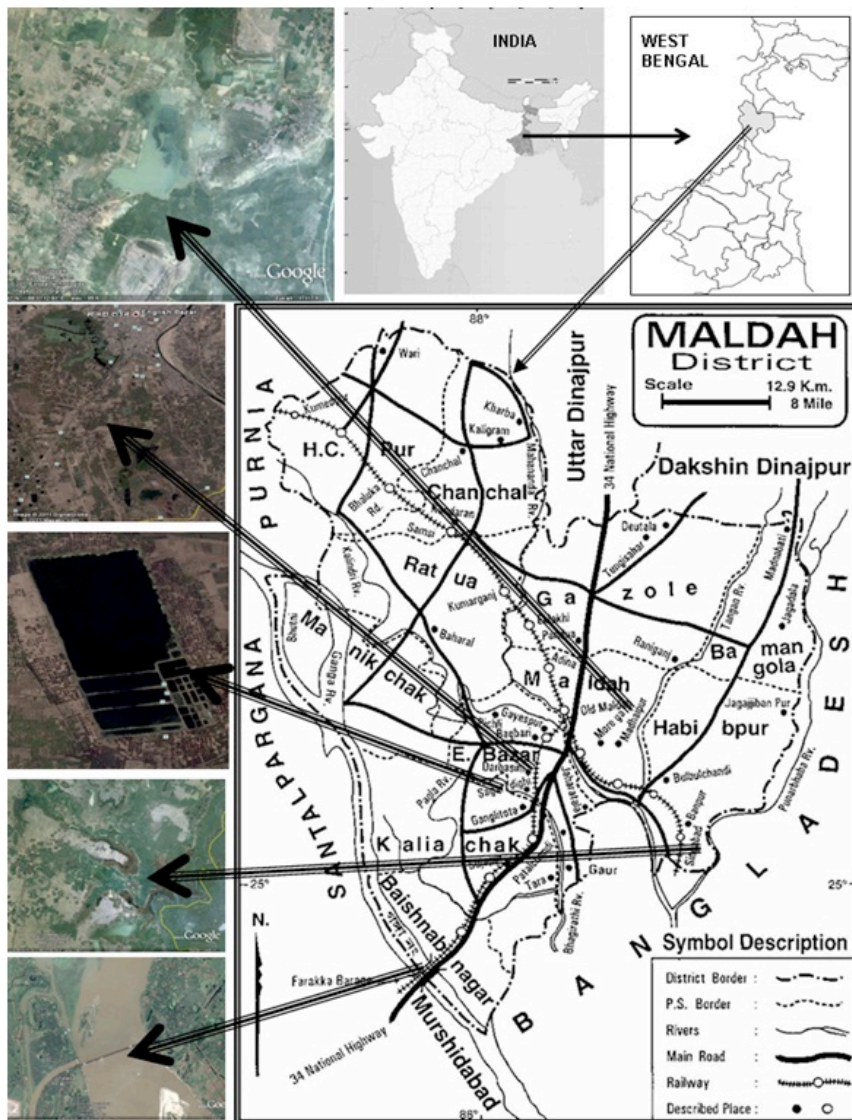


Figure 1. Location of the five wetlands under study from the Maldah District, West Bengal, India (coloured maps of five wetlands are taken from www.googleearth.org)

Table 1. Geographic coordinates, IBA site code (Important Bird Areas in India-West Bengal) and elevation of the five wetlands of Maldah District.

Region	Name of the wetlands	Area (ha)	Latitude	Longitude	Elevation (m)	IBA site code
Barind	Belatuli	120	25°02'54.08"N	88°11'59.07"E	19	Not recognized
Barind	Nayabandh	400	24°55'17.06"N	88°19'08.77"E	16	IN-WB-08
Diara	Gabgachi-Bhatia	1800 (Approx.)	24°59'40.02"N	88°07'22.03"E	21	Not recognized
Diara	Sagar Dighi	86	24°58'11.91"N	88°06'04.40"E	28	Not recognized
Diara	Farakka Barrage	2000	24°48'26.24"N	87°55'24.17"E	22	IN-WB-02

an old and constructed lacustrine consisting of a single obliquely rectangular water body. FB on the river Ganga is also quite wide and houses various water birds.

Methods: For preparing the list of avifauna of these study areas, 26 consecutive surveys were executed from November 2008–March 2011. Bird species were observed visually using binoculars of different ranges and their photographs were taken using a Cannon SX10 camera for identification. Surveys started during the peak hours of their activity, in the morning, from 0500–1100hr and in the evening, from 1600–1800hr on a regular basis in different groups. Observations were carried out mainly during the months November to March (2008 – 2011). To prepare the recorded bird list a total of 22 transects of 1km stretches were established in the study areas. Observations were carried along each transect following Ridgely & Greenfield (2006). The identification and classification of birds followed Ali (2002). The listed species were thoroughly checked with the Red List of Threatened Species of IUCN version 2010.4 to know the present status. Some common human influences that cause habitat loss in the study areas were also recorded.

Result and Discussion

The resident (R), resident migratory (RM) and migratory (M) birds like ducks, cormorant, pochard, waterhen, gadwall, mallard, goose, jacanas nest in the bush on the peripheral mat of vegetation of reeds, sedges, grass and water hyacinth in all these wetlands. The Raiganj Bird Sanctuary, which is recognized as an important Aisan Openbill Stork breeding centre of this region is located only 60km away from the northern boundary of the Maldah District. Openbill storks are also very common in the wetlands of Maldah. The local resident birds are found in different wetlands, almost throughout the year in reasonable numbers. They nest on trees like *Bombax ceiba*, *Mangifera indica*, *Aegle marmelos*, *Oroxylum indicum* etc. which are located

in areas surrounding the water bodies. The birds like herons and egrets nest on different trees like *Azadirachta indica*, *Artocarpus heterophyllus*, *Mangifera indica* etc. in urban and rural areas of the district.

The different wetlands of the Maldah District are very popular with their various water bird habitats. Murti (1991) recorded around 23 water birds from the Gangetic belt of Munger to Farakka on the river Ganga. Jha (2006) recognized 12 rare water birds from the Farakka barrage area on the river Ganga. Sharma (1997, 1998) reported more than 50,000 and 70,000 individuals of *Aythya fuligula* from either side of the Farakka barrage on the river Ganga. One individual of *Ephippiorhynchus asiaticus* was reported from *chaurs* of river Ganga near the Farakka barrage (Sharma 2009). Another famous bird habitat is NW, from where a total of six threatened species, five near threatened and 11 biome species of water birds were reported (Ramakrishnan & Maheswaran 2007).

In the present study, a total of 62 bird species belonging to 21 families (Table 2) were observed. The highest numbers of recorded species belonged to the families, Ardeidae and Anatidae (Fig. 2). Among the 62 birds species recorded, 13 are globally threatened. Species like *Ardea insignis* (Critically Endangered C2a(i)), *Leptoptilos dubius* (Endangered A2bcd+3bcd+4bcd; C2a(ii)), *Aythya baeri* (Critically Endangered A2cd+3cd+4cd), *Rynchops albicollis* (Vulnerable A2cde+3cde+4cde), *Leptoptilos javanicus* (Vulnerable A2cd+3cd+4cd), *Haliaeetus leucoryphus* (Vulnerable C2a(ii)), *Aquila clanga* (Vulnerable C2a(ii)), *Anhinga melanogaster* (Near Threatened), *Threskiornis melanocephalus* (Near Threatened), *Aythya nyroca* (Near Threatened), *Sterna acuticauda* (Endangered A2cde+3cde+4cde), *Pelecanus philippensis* (Near Threatened) and *Ephippiorhynchus asiaticus* (Near Threatened) are recognized as per IUCN Redlist (IUCN 2014).

Among the species from these wetlands, 28 species

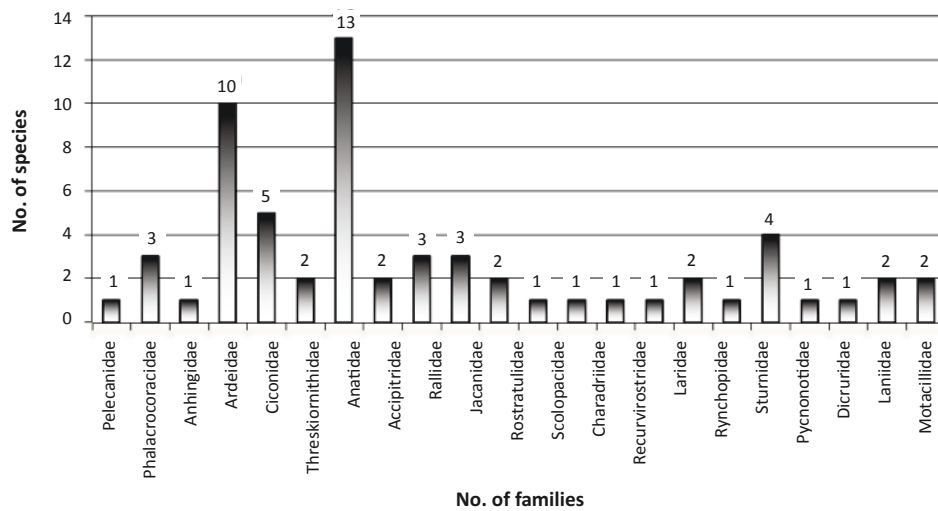


Figure 2. List of bird families recorded from the five wetland areas of Diara and Barind region of Maldah District

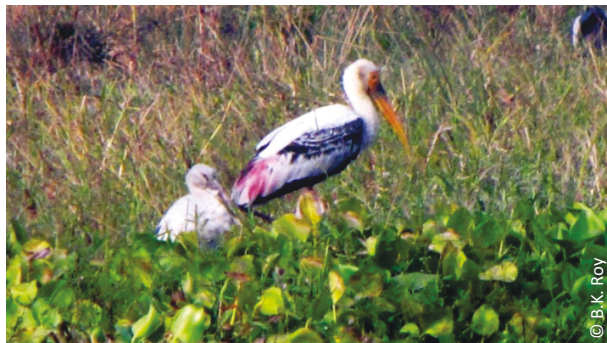


Image 1. Painted Stork *Mycteria leucocephala*



Image 2. *Athya nyroca*, *Anas strepera* and *Anas querguedula*



Image 3. Lesser Adjutant Stork *Leptoptilos javanicus*



Image 4. *Dendrocygna javanica*, *Anas penelope*, *Anas poecilorhyncha*, *Vanellus cinereus*, *Himantopus himantopus*, *Athya nyroca*, and *Anas platyrhynchos*

are local or resident, 20 species are resident migrant and 14 species are migrant birds. During the entire survey period only a pair of *Pelecanus philippensis* was sighted once at GW on 21 December 2008. We observed one pair of *Leptoptilos dubius* only once on 7 January 2009,

and also at GW. One individual of *Leptoptilos javanicus* on 12 January 2009, a single individual on 10 March 2010 and two individuals on 17 December 2011 from GW. Four individuals of *Ardea insignis* were recorded at

Table 2. List of avifauna recorded in five wetlands of Diara and Barind region of Maldah District.

	Common name and Scientific name		Status	IUCN status	Wetlands under study				
					BW	GW	NW	FB	S
Pelecaniformes: Pelecanidae									
1.	Spot-billed Pelican	<i>Pelecanus philippensis</i>	RM	NT	-	+	-	-	-
Phalacrocoracidae									
2.	Great Cormorant	<i>Phalacrocorax carbo</i>	RM		+	+	+	+	+
3.	Little Cormorant	<i>Phalacrocorax niger</i>	RM		+	+	+	+	+
4.	Indian Shag	<i>Phalacrocorax fuscicollis</i>	RM		+	+	-	+	-
Anhingidae									
5.	Darter or Snake Bird	<i>Anhinga melanogaster</i>	RM	NT	+	+	-	+	-
Ciconiiformes: Ardeidae									
6.	White-bellied Heron	<i>Ardea insignis</i>	R	CR	+	+	+	+	+
7.	Grey Heron	<i>Ardea cinerea</i>	RM		-	+	-	-	+
8.	Goliath Heron	<i>Ardea goliath</i>	R		+	+	-	+	-
9.	Purple Heron	<i>Ardea purpurea</i>	R		+	+	+	+	+
10.	Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	R		+	+	-	+	-
11.	Indian Pond Heron	<i>Ardeola grayii</i>	RM		+	+	+	+	+
12.	Cattle Egret	<i>Bubulcus ibis</i>	RM		+	+	+	+	+
13.	Little Egret	<i>Egretta garzetta</i>	RM		+	+	+	+	+
14.	Large Egret	<i>Casmerodius albus</i>	RM		+	+	-	+	-
15.	Median Egret	<i>Mesophoyx intermedia</i>	RM		+	+	+	+	-
Ciconidae									
16.	Greater Adjutant- Stork	<i>Leptoptilos dubius</i>	RM	EN	-	+	-	-	-
17.	Lesser Adjutant -Stork	<i>Leptoptilos javanicus</i>	RM	VU	-	+	-	+	-
18.	Asian Openbill-Stork	<i>Anastomus oscitans</i>	RM		+	+	+	+	-
19.	Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	R	NT	-	+	-	+	-
20.	Painted Stork	<i>Mycteria leucocephala</i>	R		-	+	-	-	-
Threskiornithidae									
21.	Glossy Ibis	<i>Plegadis falcinellus</i>	R		-	+	+	+	-
22.	Oriental White Ibis	<i>Threskiornis melanocephalus</i>	R	NT	+	+	-	+	-
Anseriformes: Anatidae									
23.	Lesser Whistling- Duck	<i>Dendrocygna javanica</i>	R		+	+	+	+	+
24.	Large Whistling- Duck	<i>Dendrocygna bicolor</i>	R		+	-	+	+	+
25.	Greylag Goose	<i>Anser anser</i>	M		+	+	-	+	-
26.	Gadwall	<i>Anas strepera</i>	M		+	+	+	+	+
27.	Garganey	<i>Anas querquedula</i>	M		+	+	+	+	+
28.	Eurasian Wigeon	<i>Anas penelope</i>	M		-	+	-	+	+
29.	Spot-billed Duck	<i>Anas poecilorhyncha</i>	RM		+	-	-	+	+
30.	Ferruginous Pochard	<i>Aythya nyroca</i>	R	NT	+	+	+	+	+
31.	Red-crested Pochard	<i>Netta rufina</i>	M		+	+	+	+	+
32.	Common Pochard	<i>Aythya ferina</i>	R		+	+	+	+	+
33.	Tufted Pochard	<i>Aythya fuligula</i>	M		-	-	-	+	-
34.	Baer's Pochard	<i>Aythya baeri</i>	M	CR	+	+	+	+	+
35.	Mallard	<i>Anas platyrhynchos</i>	M		+	+	+	+	+

	Common name and Scientific name		Status	IUCN status	Wetlands under study				
					BW	GW	NW	FB	S
Falconiformes: Accipitridae									
36.	Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>	RM	VU	+	+	+	-	-
37.	Greater Spotted Eagle	<i>Aquila clanga</i>	R	VU	+	+	-	+	-
Gruiformes: Rallidae									
38.	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R		+	+	+	+	+
39.	Purple Swamphen	<i>Porphyrio porphyrio</i>	R		-	+	+	+	+
40.	Eurasian Coot	<i>Fulica atra</i>	M		-	+	+	+	+
Coraciiformes: Alcedinidae									
41.	Common Kingfisher	<i>Alcedo atthis</i>	RM		+	+	+	+	+
42.	White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	R		+	+	+	+	+
43.	Lesser Pied Kingfisher	<i>Ceryle rudius</i>	R		+	+	+	+	+
Charadriiformes: Jacanidae									
44.	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	M		+	+	+	+	+
45.	Bronze-winged Jacana	<i>Metopidius indicus</i>	M		-	+	+	+	-
Rostratulidae									
46.	Greater Painted-Snipe	<i>Rostratula benghalensis</i>	RM		-	+	-	+	
Scolopacidae									
47.	Marsh Sandpiper	<i>Tringa stagnatilis</i>	M		-	+	+	+	-
Charadriidae									
48.	Gery-headed Lapwing	<i>Vanellus cinereus</i>	M		+	+	+	+	+
Recurvirostridae									
49.	Black-winged Stilt	<i>Himantopus himantopus</i>	R		+	+	+	+	-
Laridae									
50.	Black-bellied Tern	<i>Sterna acuticauda</i>	R	EN	+	+	-	+	-
51.	Gull-billed Tern	<i>Gelochelidon nilotica</i>	RM		+	+	-	+	-
Rynchopidae									
52.	Indian Skimmer	<i>Rynchops albicollis</i>	R	VU	+	-	+	-	-
Passeriformes: Sturnidae									
53.	Common Myna	<i>Acridotheres tristis</i>	R		+	+	+	+	+
54.	Bank Myna	<i>Acridotheres ginginianus</i>	R		-	-	-	+	-
55.	Jungle Myna	<i>Acridotheres fuscus</i>	R		-	+	-	+	+
56.	Asian Pied Starling	<i>Sturnus contra</i>	R		-	+	+	+	-
Pycnonotidae									
57.	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R		+	+	+	+	+
Dicruridae									
58.	Black Drongo	<i>Dicrurus macrocercus</i>	R		-	+	+	+	-
Laniidae									
59.	Brown Shrike	<i>Lanius cristatus</i>	M		-	+	-	+	-
60.	Great-Grey Shrike	<i>Lanius excubitor</i>	RM		-	+	+	+	-
Motacillidae									
61.	Paddyfield Pipit	<i>Anthus rufulus</i>	R		+	+	+	+	-
62.	White Wagtail	<i>Motacilla alba</i>	RM		-	+	-	+	+

Status: R - Resident; RM - Resident migratory; M - Migratory. IUCN status: CR - Critically Endangered; EN - Endangered; VU - Vulnerable; NT - Near Threatened. Wetlands under study: FB - Farakka barrage; GW - Gabgachi-Bhatia Wetland; S - Sagardighi; BW - Belatuli Wetland; NW - Nayabandh Wetland

GW on 3 January 2010. We observed six individuals of *Rynchops albicollis* from BW on 3 February 2010 and four individuals from FB on 7 February 2010. This species is a regular migrant in groups of 4–20 and was observed on emerged sandbars of the river Ganga near Manikchak and Farakka barrage. A flock consisting of 12 individuals of *Aythya baeri* was recorded from Belatuli wetland on 3 February, 2010 and about seven birds were recorded from GW on 6 March 2011. One individual of *Aquila clanga* was recorded from NW on 14 March 2010. One individual of *Haliaeetus leucoryphus* and *Aquila clanga* was recorded on 6 March from GW. Some important birds of the study areas are featured in Images 1–4.

During the study period, we found that the wetlands were seriously disturbed by human activities including the occasional presence of hunters. Out of these five wetlands, only two (FB and NW) are declared as IBA (Important Bird Areas) in West Bengal (Jha & Sengupta 1999b). The other three wetlands are not yet recognized in spite of housing a significant number of bird species. Villagers near the wetlands catch avifauna during the winter season using fishing nets or by using fire guns and sell the catch at village markets. These activities gradually reduces the number of bird species in these wetlands.

Rapid urbanization, cattle rearing and excessive agricultural activities are the major threats to the wetlands of Diara and Barind of this district. The three wetlands like GW, NW and BW are suffering due to excessive paddy cultivation. During the post monsoon season farmers clear the dense mat of aquatic weeds from the shallow areas to prepare the fields for paddy cultivation, that sometimes result in the destruction of nests of various water birds. Excessive application of toxic pesticides and fertilizers in paddy fields in these wetland areas is gradually polluting the ecosystems. The water and soil of GW and FB are also getting polluted due to mixing with urban sewage. The GW is located at English bazaar municipality areas and the excess populations in this area demands more space thereby impacting the wetland. Malanchapally, Sri Krishna Colony, Netaji Park, Lake Garden, etc., are the newly established colonies in catchment area of GW through the filling of the wetland area to facilitate construction works. Control and regulation of such destructive activities within this region requires more involvement of government and local public to conserve such important bird habitats. All these five important wetland habitats

are not protected. The forest department is adopting a management strategy to protect these areas and is in the process of creating a strong law against poaching. Efforts should be taken to conserve the wetlands like GW (English Bazaar block), NW (Habibpur block), BW (Old Maldah block) and FB (Kaliachak block II & III). Proper monitoring and more research are required to understand the birdlife in this region.

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