

Original Research

Present status of aquatic avifaunal diversity in Kapla wetland of Barpeta district, Assam

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ABSTRACT:

A study was conducted in a flood plain wetland (Kapla) of Barpeta district, Assam from September, 2013 to May, 2014 to evaluate the present status and major threats to aquatic avifaunal diversity in the wetland. Periodic surveys were conducted in and around the wetland by walking on fixed path in the early morning from 5.30 am to 9.00 am. To locate and identify the distant birds, binocular (10X15) was used and photographs were taken with the aid of digital camera. Water birds were identified with the help of different field guides. The present status and IUCN status of all the birds were enumerated. A total of 30 water bird species under 14 families were observed in the wetland. As per IUCN status, 26 bird species are placed in Least Concern (LC), three species in Near Threatened (NT) and one species in the Vulnerable (VU) category. The observation also revealed 16 bird species as common (Cm), six species as Rare (Rr), five species as Lesser in number (Ln), two species as Irregular visitor (Ir) and one bird species found as Abundant (Ab) in and around the wetland. Anatidae was the dominant family with seven bird species (23.33%). The wetland faced various anthropogenic threats for which water birds are in decreasing trend by about 48% comparing to the earlier literature. Therefore it is suggested to declare the wetland as aquatic bird sanctuary to save the birds from extinction in the near future.

Keywords:

Water birds, Kapla wetland, anthropogenic threat, macrophytes, Barpeta district, Assam

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INTRODUCTION

Wetlands are natural repository of diverse group of animals and plants for which they are called as biological supermarkets (Mitsch and Gosselink, 2000). Wetlands provide both nesting material and suitable habitat to varieties of bird species along with a great source of food. A large numbers of globally important birds migrate to the wetland and use them as their essential breeding, growing, resting, and wintering ground either for the whole year or a few months. In wetland ecosystem, birds can play a significant role as their rich diversity is an excellent bio-indicator of quality and habitat suitability of the wetland for animal survival (Jayson and Mathew, 2002). Though so many birds are found dependant on wetland directly or indirectly, the birds which inhabit wetlands for feeding, breeding, nesting or roosting are commonly called as water birds or wetland birds (Kumar and Gupta, 2013).

However, in recent times aquatic avifauna or the water birds attract the attention of the ornithologist and public through their beautiful appearance, high visibility, behavioural pattern etc. Apart from these, water birds are of global importance for their recreational and high economic value. It has been found that 40% of the total bird species across the globe are reported from freshwater wetlands; which is 12% of all animal species (Kirsten and Brander, 2004). Out of 310 wetland dependent bird species in India (Kumar et al., 2005), 113 species of water birds are reported in Assam, which indicate 38% reduction of avifauna from the wetlands of Assam.

To get accurate information about the significant role of water birds in an ecosystem, Basavarajappa (2006) emphasized the need of extensive study in the wetlands on the status and biology of birds associated with them. Apart from this, the study will also help to create awareness among the local communities about the conservation and importance of the wetlands. Therefore, the present investigation attempts to evaluate the present

status of avifaunal diversity particularly the water birds in Kapla flood plain wetland of Barpeta district, Assam.

MATERIALS AND METHODS

The present investigation was carried out in a flood plain wetland *i.e.* Kapla wetland of Barpeta district, Assam. Geographically the wetland lies between the 26°18'12" N to 26°25'07" N and 91°08'42" E to 91°14'50" E with an area of about 91 hectares. The average annual temperature in the wetland was reported within the range of 16° to 32°C, while the annual rainfall was about 2000 mm (Deka et al., 2012). Periodic surveys were conducted from September, 2013 to May, 2014 in and around the wetland by walking on fixed path in the early morning from 5.30 am to 9.00 am. Though this period of time is preferable to observe water birds, but in the evening time also the wetland was visited to watch birds moving in and around it. Opportunistic observation was also made in other time of the day and the record was taken in to consideration for the final study.

To locate and identify the distant birds, binocular (10X15) was used. On the other hand, photographs were taken with the aid of digital cameras: 14 MP with 16X optical zoom lens and 12 MP with 5X optical zoom lens. Water birds were identified with the help of different field guides (Ali and Ripley, 1987; Grimmett et al., 2000; Grewal et al., 2002). The standard common names with scientific names were compiled following Manakadan and Pittie, (2001). On the basis of occurrence, birds are classified as Ab (Abundant), Cm (Common), Ln (Lesser in number), Ir (Irregular visitor), Rr (Rare), Rs (Resident), Lm (Local migrant) and Mg (Migratory). IUCN status of all birds were compiled using the IUCN red list of threatened species (IUCN, 2014).

RESULTS AND DISCUSSION

The study reports a total of 30 water bird species under 14 families from the wetland (Table-1). As per

IUCN status, 26 numbers of bird species are categorised in the Least Concern (LC), three species in the Near Threatened (NT) and one species in the Vulnerable (VU) category. The local status of the water birds in the wetland during the study period is summarised in table-1.

The observation revealed sixteen bird species as Common (Cm), six species as Rare (Rr), five species as Lesser in number (Ln), two species as Irregular visitor (Ir) and one bird species found as Abundant (Ab) in and around the wetland. 11 water birds were migratory (local

Table 1: Water birds recorded in Kapla wetland and their present status

Common name	Scientific name	IUCN status	Status in Kapla wetland*
1. Purple Moorhen	<i>Porphyrio porphyrio</i> (Linnaeus, 1758)	LC	Ab, Rs
2. Asian Openbill-Stork	<i>Anastomus oscitans</i> (Boddaert, 1783)	LC	Cm, Lm
3. Lesser Adjutant-Stork	<i>Leptoptilos javanicus</i> (Horsfield, 1821)	VU	Cm, Rs
4. Common Coot	<i>Fulica atra</i> (Linnaeus, 1758)	LC	Cm
5. Ferruginous Pochard	<i>Aythya nyroca</i> (Guldenstadt, 1770)	NT	Ln, Mg
6. Eurasian Wigeon	<i>Anas penelope</i> (Linnaeus, 1758)	LC	Rr, Mg
7. Tufted Pochard	<i>Aythya fuligula</i> (Linnaeus, 1758)	LC	Rr, Mg
8. Gadwall	<i>Anas strepera</i> (Linnaeus, 1758)	LC	Rr, Mg
9. Indian Pond-Heron	<i>Ardeola grayii</i> (Sykes, 1832)	LC	Cm, Rs
10. Median Egret	<i>Mesophoyx intermedia</i> (Wagler, 1829)	LC	Cm, Rs
11. Cattle Egret	<i>Bubulcus ibis</i> (Linnaeus, 1758)	LC	Cm, Rs
12. Little Grebe	<i>Tachybaptus ruficollis</i> (Pallas, 1764)	LC	Ln, Rs
13. Little Cormorant	<i>Phalacrocorax niger</i> (Vieillot, 1817)	LC	Cm, Rs
14. Bronze-winged Jacana	<i>Metopidius indicus</i> (Latham, 1790)	LC	Cm, Rs
15. Lesser Whistling Duck	<i>Dendrocygna javanica</i> (Horsfield, 1821)	LC	Cm, Rs
16. Darter	<i>Anhinga melanogaster</i> (Pennant, 1769)	NT	Cm
17. Common Swallow	<i>Hirundo rustica</i> (Linnaeus, 1758)	LC	Cm
18. Wire-tailed Swallow	<i>Hirundo smithii</i> (Leach, 1818)	LC	Cm
19. Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i> (Scopoli, 1786)	LC	Ln
20. Purple Heron	<i>Ardea purpurea</i> (Linnaeus, 1766)	LC	Ln, Rs
21. Red-crested Pochard	<i>Rhodonessa rufina</i> (Pallas, 1773)	LC	Rr, Mg
22. Nepal House Martin	<i>Delichon nipalensis</i> (Horsfield & Moore,	LC	Cm
23. Black-headed Gull	<i>Larus ridibundus</i> (Linnaeus, 1766)	LC	Ir, Mg
24. Grey-headed Lapwing	<i>Vanellus cinereus</i> (Linnaeus, 1758)	LC	Ln, Mg
25. Northern Pintail	<i>Anas acuta</i> (Linnaeus, 1758)	LC	Cm, Mg
26. Glossy Ibis	<i>Plegadis falcinellus</i> (Linnaeus, 1766)	LC	Rr, Mg
27. Oriental White Ibis	<i>Threskiornis melanocephalus</i> (Latham,	NT	Rr
28. Black-winged Stilt	<i>Himantopus himantopus</i> (Linnaeus, 1758)	LC	Ir, Mg
29. Large Pied Wagtail	<i>Motacilla maderaspatensis</i> (Gmelin, 1789)	LC	Cm
30. Grey wagtail	<i>Motacilla cinerea</i> (Tunstall, 1771)	LC	Cm

*as per observation during the study period LC=Least concern, NT=Near threatened, VU=Vulnerable, Ab=abundant, Cm=common, Ln=lesser in number, Rr=rare, Rs=resident, Lm=local migrant, Mg=migratory

or seasonal) and 10 species were resident to the Kapla wetland. Dewan and Saikia (2012) recorded 58 species of water birds with 14 families from Kapla wetland complex having four wetlands inside. They did survey in the month of April, 2005 to April, 2006. It indicates that avifaunal diversity in the wetland is in decreasing trend. Comparing both the data it can be predicted that the total water bird diversity is decreasing by about 48% in the Kapla wetland.

Occurrence of maximum number of birds (7 numbers) was found under the family Anatidae (23.33%) followed by Ardeidae with four species, Hirundinidae with three species, Rallidae, Ciconiidae, Motacillidae, Jacanidae, Threskiornithidae each with two species and Podicipedidae, Phalacrocoracidae, Anhingidae, Laridae, Charadriidae and Recurvirostridae each with single bird species. The percentage occurrence of bird species against each family is shown in Table 2. Dewan and Saikia (2012) also reported 14 families from the Kapla wetland complex. However they reported four additional families such as Glareolidae, Scolopacidae,

Apodidae and Motacillidae excluding the families Anhingidae, Hirundinidae, Threskiornithidae and Recurvirostridae were recorded in the present study.

The wetland as the centre of attraction for different migratory water birds might be due to occurrence of diverse vegetation and macrophytes which provide better breeding, nesting, resting, feeding opportunities to birds. Deka et al., (2012) reported 36 species of macrophytes belonging to 24 families from the Kapla wetland. However, wanton growth of macrophyte like Water Hyacinth (*Eichhornia crassipes*) in the wetland sometimes rapidly covers the water surface which thereby reduces the feeding area for the water birds.

The wetland is also rich in ichthyofaunal diversity and the fish is a favourite food for few water birds. Chakravarty et al., (2012) reported 75 fish species comprising both small and big fish from the wetland. The other available aquatic fauna like crab, insect larvae are also good food for different bird species which attract them to this wetland. According to Basavarajappa

Table 2: Family wise percentage occurrence of water birds in Kapla wetland

Sl. No.	Family	No of Species	Percent occurrence
1	Rallidae	2	06.67%
2	Ciconiidae	2	06.67%
3	Anatidae	7	23.33%
4	Motacillidae	2	06.67%
5	Ardeidae	4	13.33%
6	Podicipedidae	1	03.33%
7	Phalacrocoracidae	1	03.33%
8	Jacanidae	2	06.67%
9	Anhingidae	1	03.33%
10	Hirundinidae	3	10.00%
11	Laridae	1	03.33%
12	Charadriidae	1	03.33%
13	Threskiornithidae	2	06.67%
14	Recurvirostridae	1	03.33%

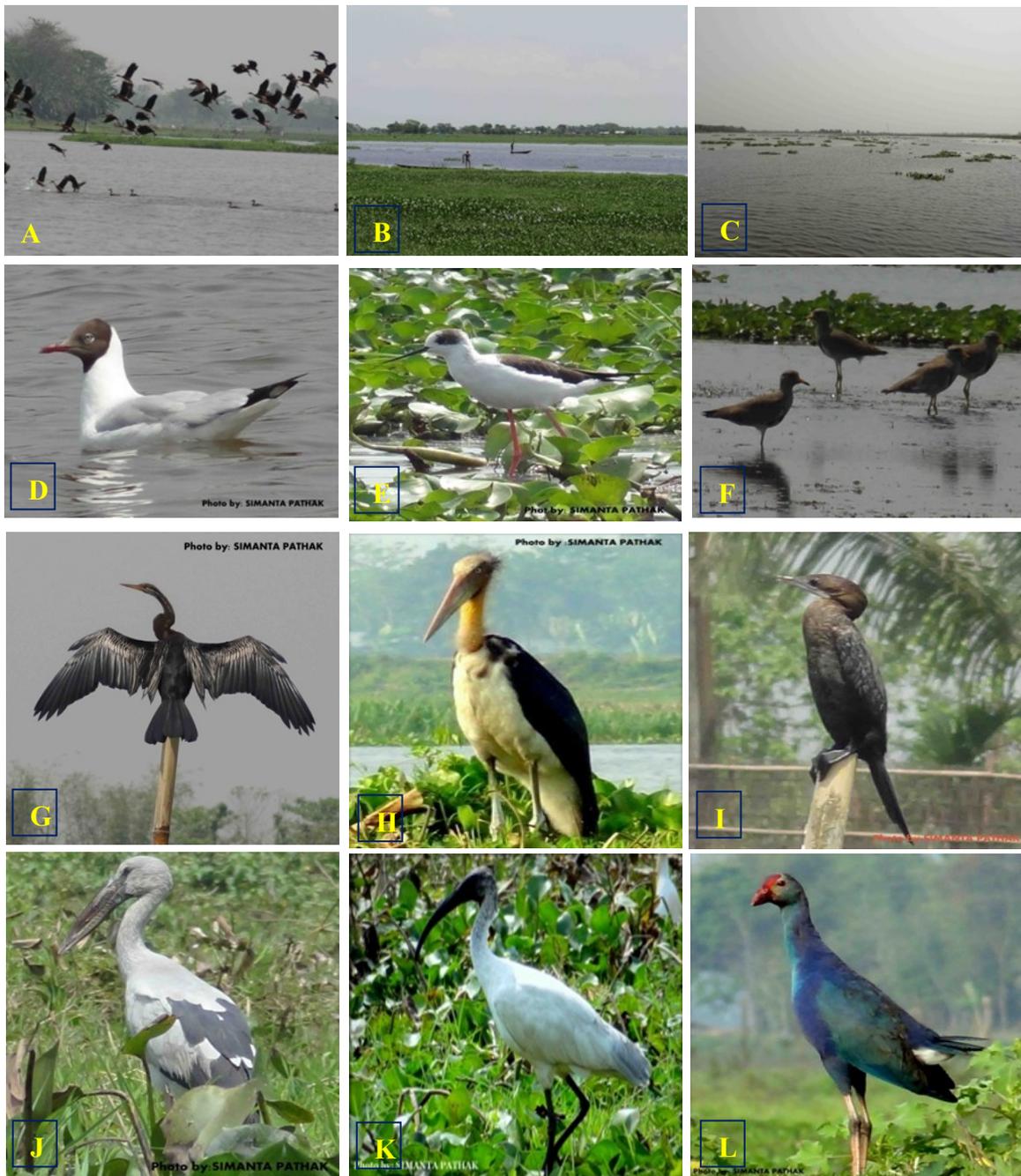


Figure 1. A. Flock of flying water birds. B. Kapla beel covered with macrophytes. C. View of Kapla beel. D. Black-headed Gull. E. Black-winged Stilt. F. Grey-headed Lapwing. G. Darter. H. Lesser Adjutant-Stork. I. Little Cormorant. J. Asian Openbill-Stork. K. Oriental White Ibis. L. Purple Moorhen.

(2006), the native flora like bushy scrub, scattered horticulture plants, stray trees in the paddy field are the most favourable sites for shelter, feeding and breeding for most of the water birds and the aquatic fauna like

fishes, crabs, worms, insect larvae etc., found in the water bodies are the primary feed for them.

However, the diversity of water birds have been decreasing due to various anthropogenic activities going in and around the wetland, which have direct and indirect

impact on it. Fish depletion due to over exploitation, organic pollution, silting, blocking of the feeding canal in the wetland (Chakravartty *et al.*, 2012) might be the reason which affect the aquatic bird population feeding on fish. About 25% of the wetland area is used for extensive crop cultivation during the winter lean season (Deka *et al.*, 2009), which is a major problem in the wetland. Unplanned use of pesticides or other chemicals in the agricultural crops during cultivation pose threat to the water birds by food contamination. As the wetland is leased to private party, the wetland environment is frequently disturbed by extensive fishing activity (Barman and Baruah, 2013) resulting high damage or alteration to the aquatic vegetation. This will make the wetland unsuitable for nesting and roosting by the birds (Basavarajappa, 2006). Other threats reported in the wetland include trapping and killing of water birds using different device and ringing bell at night, encroachment to the wetland area for cultivation or human habitation etc. (Dewan and Saikia, 2012).

CONCLUSION

From the above discussion, it is clear that though the Kapla wetland is facing various threats from different agents, still it is a homeland for diverse group of water birds. However, steps should be taken to ecologically restore the wetland to save the habitat and breeding ground of water birds. In this regard, there is need of further research on the biology of water birds available in the wetland to formulate proper strategies for their conservation. But awareness among the people of the surrounding area will be prerequisite for every conservation efforts.

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