

Analysis of avian-biodiversity in rural wetland environs in Panipat district in Haryana, India

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Abstract: The present study has observed 67 species of wetland birds, belonging to, 10 orders and 18 families from rural wetland Environs in Panipat district located at a distance of 90 KMs north of Delhi on National Highway No.1 (29.39°N 76.97°E) in Haryana, India. Out of 67 species, 35 species were winter migrants, 18 residents, 10 local migrants and four species were summer migrants. Peculiar species of birds recorded in Panipat rural ponds are Painted Stork *Mycteria leucocephala*, White-necked Stork *Ciconia episcopus*, Asian openbill- Stork *Anastomus oscitans*, Lesser Adjutant Stork *Leptoptilos javanicus*, Black-necked Stork *Ephippiorhynchus asiaticus*, Oriental White Ibis *Threskiornis melanocephalus*, Black Ibis *Pseudibis papillosa*, Glossy Ibis *Plegadis falcinellus*, Eurasian Spoonbill *Platalea leucorodia*, Brahminy Shelduck *Tadorna ferruginea*, Comb Duck *Sarkidiornis melanotos*, Tufted Pochard *Aythya fuligula* and Green Sandpiper *Tringa ochropus*. On the other hand, familiar species include amongst others, Bar-headed Goose *Anser indicus*, Common Coot *Fulica atra*, Northern Shoveller *Anas clypeata*, Northern Pintail *Anas acuta*, Common Teal *Anas crecca*, Common Pochard *Aythya ferina*, Gadwall *Anas strepera* and Lesser-whistling Duck *Dendrocygna javanica* etc. Longest stay during winter season was demonstrated by birds like Northern Shoveller, Northern Pintail, Bar-headed Goose, Greylag Goose and Rudy Shelduck, whereas shortest winter sojourn was observed in case of Mallard, Eurasian Wigeon and Common Pochard. It is interesting to note that migratory birds like Northern Shoveller, Northern Pintail, Common Teal, Bar-headed Goose, Tufted Pochard, and Common Pochard come to Panipat rural ponds from very far off places like Central Russia, Caspian USSR, Siberia, Ladhakh and Central Asia, West and Central Asia and Siberia respectively.

Keywords: Avian biodiversity, Rural wetland environs, Winter migratory, Panipat, Haryana

INTRODUCTION

Panipat was carved out as a fully fledged district out of Karnal district in the year of 1 January, 1992. In regard of biodiversity of birds, Panipat despite total absence of forests has rich diversity of traditional rural ponds. Consequents upon this, it has been endeavored to determine Avian Biodiversity in reference of rural ponds. It has a total area of 1754 square kilometers with 567 villages. It is pertinent to mention that birds in the Indian subcontinent have been studied by stalwarts like Oates (1889); Baker (1926); Sibley and Monroe (1990); Ralph *et al.* (1993); Ali (1996); Grimmet *et al.* (1998); Manakadan and Pittie, (2001) and Rasmussen and Anderton, (2005). In Haryana, studies in ornithology have been earlier carried by Gupta and Midha (1992), Gupta and Bajaj (1996), Kalsi (1998) and on wetland birds by Gupta and Bajaj (1997, 1998, 1999, 2000); Gupta *et al.* (2009); Gupta *et al.* (2010a,b,c), Gupta and Kaushik (2010a,b,c,d,e) and Gupta and Kaushik (2011a,b). However, no studies have been carried on the avian biodiversity of rural environs in

Panipat district and hence the present study was undertaken.

MATERIALS AND METHODS

In order to analyze avian biodiversity in rural ponds of Panipat District, atleast 90 ponds spread over 75 villages in various blocks of Panipat District in Haryana, India were surveyed during 2005-2011. It was ensured to pay atleast one visit to each pond. Some ponds were visited more than twice or so. Readings were recorded with the help of Zenith Camera with a Tele-lens and Nikon Coolpix P500 to record bird's upto 500 Meters. The methodology is simple and precise. The methodology is basically based upon the basic rationale available in Ali (1996). The nomenclature adopted was that of Manakadan and Pittie (2001).

The observations of six years have been telescoped in composite data which was subsequently assorted into Orders and Families. The wetland bird's species which were observed during the study period were further categorized according to their residential status categories

like: Resident; Winter migratory; Local migratory and Summer migratory following the technique developed by Kumar *et al.* (2005). Identification of birds has been done following Ali and Ripley (1987), Ali (1996), Grimmet *et al.* (1998) and Kumar *et al.* (2005).

RESULTS AND DISCUSSION

The various wetland birds observed in rural ponds in Panipat district in Haryana during the winter season (2005-2011) are shown in Table 1. It is evident from Table 1 that atleast 67 different species of wetland birds were observed from rural ponds in Panipat district in Haryana during the winter season. Out of 67 species, 35 species were winter migrants, 18 residents, 10 local migrants and four species were summer migrants (Fig.3). It is pertinent to mention that one species of bird i.e. Lesser Adjutant Stork is Vulnerable, three species of birds like Black-necked Stork, Painted Stork, Oriental White Ibis are Near Threatened and three species of birds *viz.* Comb Duck (BRS II), Black Ibis (BRS II) and Brown-headed Gull (BRS 05) are Biome Restricted Species (Birdlife International, 2001). Further, two species of birds like Comb Duck (Appendix-II) and Eurasian Spoonbill (Appendix-I) are listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Kumar *et al.* (2005) reported 242 species of water birds and 67 species of wetland dependent birds from India. Out of 242 Indian wetland birds' species, 125 are migrants, 109 residents, while the status is not known for eight species. It is crucial to

mention that Gupta *et al.* (2009) reported 72 species of wetland birds from Karnal District in Haryana. Further, 66 species of wetland birds were observed from nearby Kurukshetra district in Haryana (Gupta and Kaushik, 2010b). At the same time, 63 species of birds were observed from Kaithal district (Gupta *et al.*, 2010a).

It is also clear from Table 1 that some 10 Orders (Podicipediformes, Pelecaniformes, Ciconiiformes, Anseriformes, Gruiformes, Charadriiformes, Falconiformes, Apodiformes, Coraciiformes and Passeriformes) are represented by these birds. Ciconiiformes (17 species) is the most dominating order followed by Charadriiformes (16 species) and Anseriformes (14 Species) (Fig.1). Further, as per Table 1 that there are 18 families represented in rural ponds in respect of bird's diversity (Table 1 and Fig. 2). The other familiar wetland birds amongst others are Painted stork, White-tailed Lapwing, Black Ibis, Lesser Adjutant- Stork, Black-necked Stork, Glossy Ibis, Oriental White Ibis, White-necked Stork, Asian Openbill-Stork, Eurasian Spoonbill, Brahminy Shelduck, Comb Duck, Tufted Pochard, Green Sandpiper, Bar-headed Goose, Common Coot, Northern Shoveller, Northern Pintail, Common Teal, Common Pochard, Gadwall and Lesser Whistling duck etc.

The birds which come to Panipat rural ponds during winter from far off places across gigantic Himalayas include Common Sandpiper, Northern Shoveller, Northern Pintail, Common Teal, Common Pochard, Garganey, Gadwall, Brahminy Shelduck, Mallard, Bar-

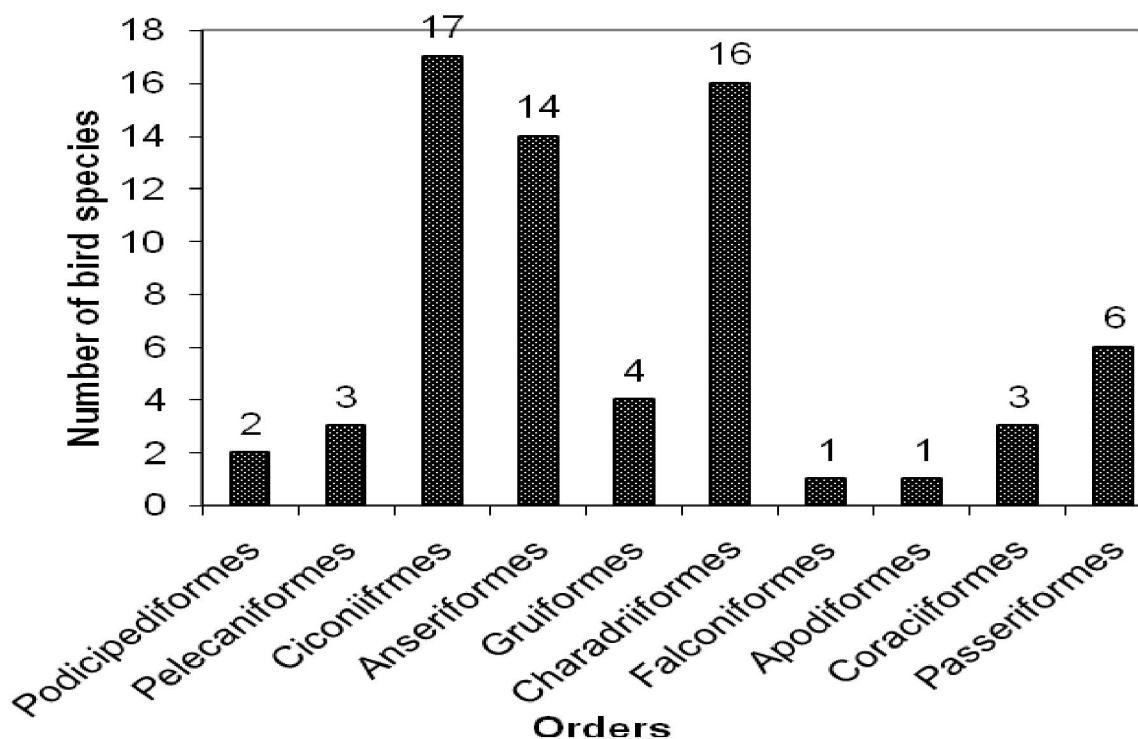


Fig.1. Showing incidence of avian biodiversity observed at village ponds in Panipat district in order-wise manner during 2005-11.

Table 1. Checklist of wetland birds of village ponds in Panipat District In Haryana, India.

S. No.	Common name	Scientific name	Residential status
Podicipediformes		Podicipedidae	
1	Little Grebe	<i>Tachybaptus ruficollis</i> (Pallas, 1764)	R
2	Great Crested Grebe	<i>Podiceps cristatus</i> (Linnaeus, 1758)	WM
Pelecaniformes		Phalacrocoracidae	
3	Little Cormorant	<i>Phalacrocorax niger</i> (Vieillot, 1817)	R
4	Indian Shag	<i>Phalacrocorax fuscicollis</i> (Stephens, 1826)	LM
5	Great Cormorant	<i>Phalacrocorax carbo</i> (Linnaeus, 1758)	LM
Ciconiiformes		Ardeidae	
6	Little Egret	<i>Egretta garzetta</i> (Linnaeus, 1766)	WM
7	Grey Heron	<i>Ardea cinerea</i> (Linnaeus, 1758)	WM
8	Purple Heron	<i>Ardea purpurea</i> (Linnaeus, 1766)	WM
9	Large Egret	<i>Casmerodius albus</i> (Linnaeus, 1758)	LM
10	Median Egret	<i>Mesophoyx intermedia</i> (Wagler, 1829)	LM
11	Cattle Egret	<i>Bubulcus ibis</i> (Linnaeus, 1758)	R
12	Indian Pond-Heron	<i>Ardeola grayii</i> (Sykes, 1832)	R
13	Black-crowned Night Heron	<i>Nycticorax nycticorax</i> (Linnaeus, 1758)	R
		Ciconiidae	
14	Painted Stork	<i>Mycteria leucocephala</i> (Pennant, 1769)	LM
15	Asian Openbill-Stork	<i>Anastomus oscitans</i> (Boddaert, 1783)	WM
16	White-necked Stork	<i>Ciconia episcopus</i> (Boddaert, 1783)	WM
17	Lesser Adjutant- Stork	<i>Leptoptilos javanicus</i> (Horsfield, 1821)	LM
18	Black-necked Stork	<i>Ephippiorhynchus asiaticus</i> (Latham, 1790)	WM
		Threskiornithidae	
19	Glossy Ibis	<i>Plegadis falcinellus</i> (Linnaeus, 1766)	LM
20	Oriental white Ibis	<i>Threskiornis melanocephalus</i> (Latham, 1790)	WM
21	Black Ibis	<i>Pseudibis papillosa</i> (Temminck, 1824)	R
22	Eurasian Spoonbill	<i>Platalea leucorodia</i> (Linnaeus, 1758)	LM
Anseriformes		Anatidae	
23	Large Whistling Duck	<i>Dendrocygna bicolor</i> (Vieillot, 1816)	WM
24	Lesser Whistling duck	<i>Dendrocygna javanica</i> (Horsfield, 1821)	SM
25	Greylag Goose	<i>Anser anser</i> (Linnaeus, 1758)	WM
26	Bar-headed Goose	<i>Anser indicus</i> (Latham, 1790)	WM
27	Brahminy Shelduck	<i>Tadorna ferruginea</i> (Pallas 1764)	WM
28	Comb Duck	<i>Sarkidiornis melanotos</i> (Pennant, 1769)	SM
29	Gadwall	<i>Anas strepera</i> (Linnaeus, 1758)	WM
30	Mallard	<i>Anas platyrhynchos</i> (Linnaeus, 1758)	WM
31	Spot-billed Duck	<i>Anas poecilorhyncha</i> (Forester, 1781)	WM
32	Northern Shoveller	<i>Anas clypeata</i> (Linnaeus, 1758)	WM
33	Northern Pintail	<i>Anas acuta</i> (Linnaeus, 1758)	WM
34	Common Teal	<i>Anas crecca</i> (Linnaeus, 1758)	WM
35	Common Pochard	<i>Aythya ferina</i> (Linnaeus, 1758)	WM
36	Tufted Pochard	<i>Aythya fuligula</i> (Linnaeus, 1758)	WM
Gruiformes		Rallidae	
37	White-breasted Waterhen	<i>Amaurornis phoenicurus</i> (Pennant, 1769)	R
38	Purple Moorhen	<i>Porphyrio porphyrio</i> (Linnaeus, 1758)	R
39	Common Moorhen	<i>Gallinula chloropus</i> (Linnaeus, 1758)	LM
40	Common Coot	<i>Fulica atra</i> (Linnaeus, 1758)	WM
Charadriiformes		Jacaniidae	
41	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i> (Scopoli, 1786)	SM
		Charadriidae	
42	Kentish Plover	<i>Charadrius alexandrinus</i> (Linnaeus, 1758)	WM

Contd.

Table 1. Cont.

43	River Lapwing	<i>Vanellus duvaucelii</i> (Lesson-1826)	R
44	Red-wattled Lapwing	<i>Vanellus indicus</i> (Boddaert, 1783)	R
45	White-tailed Lapwing	<i>Vanellus leucurus</i> (Lichtenstein, 1823)	WM
Scolopacidae			
46	Spotted Redshank	<i>Tringa erythropus</i> (Pallas, 1764)	WM
47	Common Redshank	<i>Tringa tetanus</i> (Linnaeus, 1758)	WM
48	Green Sandpiper	<i>Tringa ochropus</i> (Linnaeus, 1758)	WM
49	Common Sandpiper	<i>Actitis hypoleucos</i> (Linnaeus, 1758)	WM
50	Common Greenshank	<i>Tringa nebularia</i> (Gunner, 1767)	WM
51	Black-winged Stilt	<i>Himantopus himantopus</i> (Linnaeus, 1758)	R
Recurvirostridae			
52	Pied Avocet	<i>Recurvirostra avosetta</i> (Linnaeus, 1758)	WM
Laridae			
53	River Tern	<i>Sterna aurantia</i> (Gray, 1831)	LM
54	Pallas's Gull	<i>Larus ichthyaetus</i> (Gray, 1831)	WM
55	Brown-headed Gull	<i>Larus brunnicephalus</i> (Jerdon, 1840)	WM
56	Black-headed Gull	<i>Larus ridibundus</i> (Linnaeus, 1766)	WM
Falconiformes			
57	Brahminy Kite	<i>Haliastur indus</i> (Boddaert, 1783)	R
Coraciiformes			
Alcedinidae			
58	Lesser Pied Kingfisher	<i>Ceryle rudis</i> (Linnaeus, 1758)	R
59	White-breasted Kingfisher	<i>Halcyon smyrnensis</i> (Linnaeus, 1758)	R
Meropidae			
60	Blue-cheeked Bee-eater	<i>Merops persicus</i> (Pallas, 1773)	SM
Apodiformes			
Apodidae			
61	House Swift	<i>Apus affinis</i> (Gray, 1830)	R
Passeriformes			
Hirundinidae			
62	Common Swallow	<i>Hirundo rustica</i> (Linnaeus, 1758)	R
63	Wire-tailed Swallow	<i>Hirundo smithii</i> (Leach, 1818)	R
Motacillidae			
64	White Wagtail	<i>Motacilla alba</i> (Linnaeus, 1758)	WM
65	Large Pied Wagtail	<i>Motacilla maderaspatensis</i> (Gmelin, 1789)	R
66	Yellow Wagtail	<i>Motacilla flava</i> (Linnaeus, 1758)	WM
67	Citrine Wagtail	<i>Motacilla citreola</i> (Pallas, 1776)	WM

Abbreviations: WM- Winter Migratory, LM- Local Migratory, SM- Summer Migratory and R- Resident.

headed Goose, Greylag Goose, Spotted Redshank, Green Sandpiper (Ali and Ripley, 1987, and Kumar *et al.*, 2005). The shortest sojourn in rural ponds during winter season is displayed by Mallard, Eurasian Wigeon and Common Pochard. The longest stay is depicted by Northern Shoveller, Northern Pintail, Bar-headed Goose, Greylag Goose and Rudy Shelduck,

It is pertinent to mention that every bit of any given pond and majority of the village ponds in Panipat district were stuffed with winter migratory birds, so much so, that at least during the month of December and January, only migratory bird are seen in the village ponds and nothing else. The Migratory birds like Northern Shoveller, Northern Pintail, Garganey, Common Teal, Common Pochard, Spot-billed duck, Gadwall and Common Coot were seems to settle on the bank where they feel constant disturbance due to passerines, street dogs and children.

In the present study, an attempt has been made to piece together the various factual threats that are confronted by the migratory avifauna. Albeit these threats apparently appear superficial but are primary in compounding the scenario into a potential tool capable of wiping out this significant event of international significance just like the total annihilation of the phenomenon of arrival of Siberian Crane in Keoladeo National Park in Bharatpur in Rajasthan. The threats, which the migratory birds are confronted with, are contained in a very narrow domain, quite fortunately, and, therefore can be dealt with comprehensively and precisely. The threats include the situation wherein village ponds are juxtaposed with human inhabitations thus constant disturbance to the winter visitors. The ever and fast depleting area of each and every pond due to encroachment of ponds' peripheral ground by villagers. The third most disturbing factor is the shortage as well

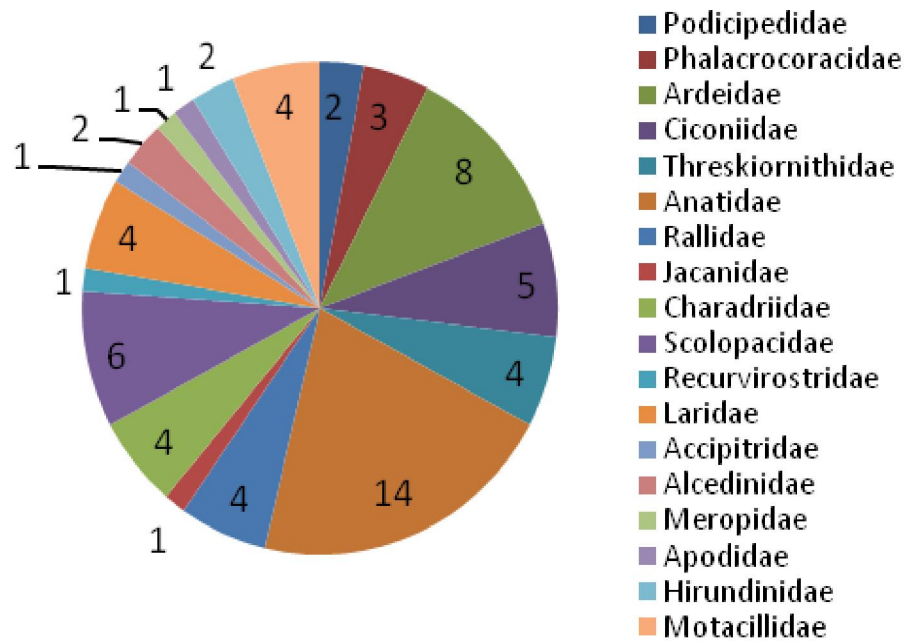


Fig. 2. Showing incidence of avian biodiversity observed at village ponds in Panipat district in family-wise manner during 2005-11.

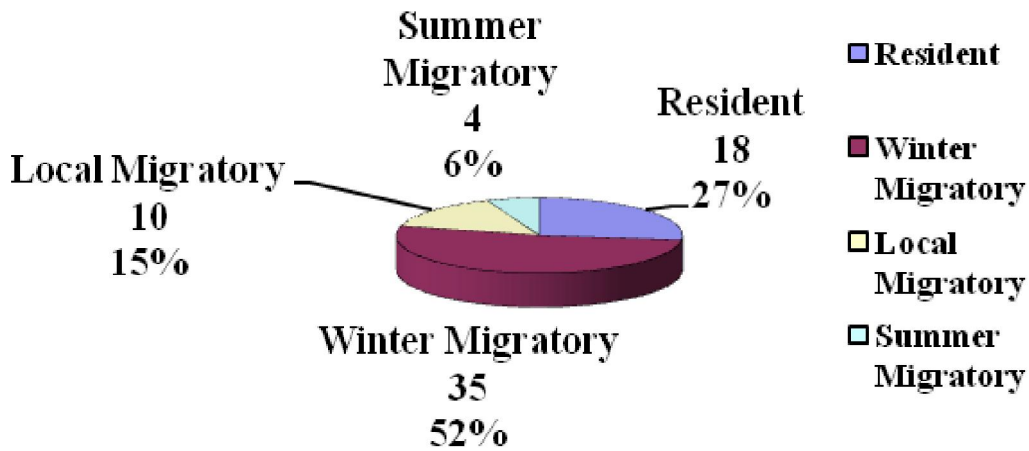


Fig. 3. Showing the residential status of avian biodiversity observed at village ponds in Panipat district during 2005-11.

as disappearance of perching islands within ponds which are a must for all birds specially for Bar-headed Goose, Northern Shoveller, Northern Pintail, Common Teal, Common Pochard, Gadwall Tufted Pochard, Red-Crested Pochard, Rudy Shelduck and Lesser Whistling duck etc.

On the top of all these threats, the move of Haryana Government to lease all village ponds for intensive Fish-farming has spelled disaster for the comfortable stay of winter migratory birds that arrive each year between October and February. The last but not least is multipurpose use of village ponds by the villagers constantly work as a major source of potential disturbance for the winter migratory birds in hundreds and thousands. It is argued that responsible quarters take cognizance of these serious threats that pose a great danger to a vital portion of global avian diversity.

Timely action may lead to assuring congenial conditions to the winter migratory birds. Any further negligence and indifferent attitude will lead to their annihilation. Hence suitable measures should be taken by authorities to ensure that artificial platforms are made available within the pond with thick cover of vegetation.

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