

Blooming Avifaunal Diversity in a Jheel Near Kolkata

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ABSTRACT

In West Bengal, Santragachi Jheel is an abode of various migratory as well as resident birds. As it is surrounded by dense human habitations, railway yards. The existing biodiversity of the lake is under various levels of anthropogenic pressures. Considering this scenario, an effort has been made to study and to inventorise the avifaunal diversity of this wetland and to investigate the rise or decline of the avian population every year during the period of study. This paper reports that twenty five species of birds under nine families used the lake mostly during the months of November of one year to the month of March of the following year which is their main migratory season. Family Anatidae excel all other families put together having the highest number of species. Among the birds—lesser whistling duck was found to be the dominant ones followed by Gadwall and Northern Pintail. Some rare birds which are nearly threatened were also spotted. Guild characteristics of these birds showed that most of them are carnivorous followed

by some phytocarnivorous while few are omnivorous. During 2017-18 total number of birds drastically fell. However conservatory efforts from various side could revive this wetland which was indicated by a rise in avian population the following year.

Keywords Avifauna, Migratory birds, Santragachi Jheel.

INTRODUCTION

Wetlands can support a large number of resident and migratory birds due to their high productivity as well as their suitability as breeding sites of many birds. West Bengal has several large and small water bodies having diverse aquatic flora and fauna.

One such abode of migratory birds is Santragachi Jheel, a 30 minutes drive from the main city of Kolkata. This wetland with enough food and weedy vegetation provide a good habitat to the avifaunal species. During winter (November to February) about 3000-4000 birds come over here. As it is surrounded by human habitations, local small markets and railway yards, the existing biodiversity of the lake is under various levels of anthropogenic pressures. In order to conserve the lake, an inventory of birds should be made with thorough investigation every year. This study contributes to the knowledge of bird diversity and provides the most recent status of bird diversity of

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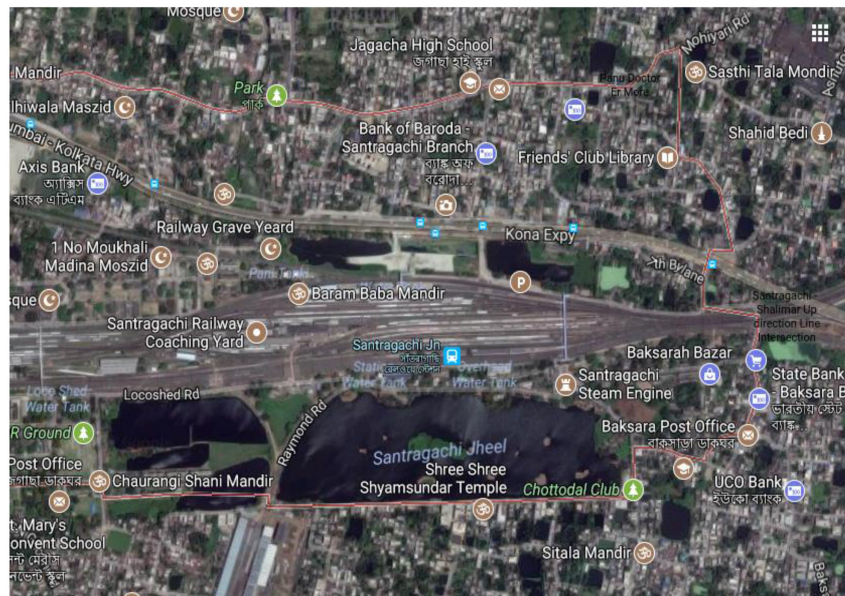


Fig. 1. Map of the study site (Santragachi Jheel). Source: Google map.

the lake. This study was conducted mainly to enlist the varieties of birds coming over here, total number of avian population every year during the study period, the reason behind the decline of these bird population and to see if the conservatory efforts from various side could revive this wetland avifauna. Wetlands have been extensively investigated for their diversity, ecology, management and conservation by many from time to time (Steven *et al.* 2011, Narayana and Pandiyan 2013, Gupta and Palit 2014, Sabo 2016).

MATERIALS AND METHODS

Study site

The Santragachi lake or Jheel is a roughly rectangular area in Howrah District about 8km from Kolkata, India (22°34'60"N, 88°17'60"E). The Santragachi Jheel receives various sewage water from the nearby localities, township. The total area of Santragachi Jheel is 10.87 ha. The study of avian fauna was conducted in Santragachi Jheel, during the winter months of November-March. The study site is surrounded by dense human habitations, small scale industrial complexes and railway yards.

Study method

The study was conducted from November 2016 to March 2019 in three successive years (Fig. 1). For the present study a total of thirty surveys (ten surveys per year) were conducted for preparing the list of avifaunal species. The birds were spotted by binoculars, Spotter and telescopes. Care was taken for their proper identification by the help of ornithologists and various books on birds (Ali 1996, Grimmett *et al.* 1999, Fraser and Keddy 2005). We surveyed each side by walking along a transect and counted all the birds seen. The large wetlands were divided into imaginary blocks and the waterbirds in each block were counted in succession.

RESULTS AND DISCUSSION

During winter large number of birds descend to this lake from November onwards to early March. This time was found to be the best for niche occupancy of the species. About twenty five species of birds belonging to nine families have been observed (Table 1). Numerically, family Anatidae excel all other families put together (Fig. 2). The most representa-

Table 1. List of avifauna recorded and their seasonal status. (R = Resident, RM = Resident migratory, M = Migratory).

Sl. No.	Family		Seasonal status
	Common name	Scientific name	
Anatidae			
1.	Lesser whistling duck	<i>Dendrocygna javanica</i>	R
2.	Fulvous whistling duck	<i>Dendrocygna bicolor</i>	M
3.	Northern Pintal	<i>Anas acuta</i>	M
4.	Gadwall	<i>Anas strepera</i>	M
5.	Garganey	<i>Anas querquedula</i>	M
6.	Cotton Pygmy Goose	<i>Nettapus coromandelianus</i>	M
7.	Ferruginous Pochard	<i>Aythya nyroca</i>	M
8.	Common Pochard	<i>Aythya farina</i>	R
Rallidae			
9.	Common Moorhen	<i>Gallinula chloropus</i>	R
10.	White breasted water hen	<i>Amaurornis phoenicurus</i>	R
11.	Common coot	<i>Fulica atra</i>	RM
Jacaniidae			
12.	Bronze Winged Jacana	<i>Metopidiu indicus</i>	R
Ardeidae			
13.	Pond heron	<i>Ardeola grayii</i>	R
14.	Purple heron	<i>Ardea purpurea</i>	RM
15.	Grey heron	<i>Ardea cinerea</i>	RM
16.	Median Egret	<i>Mesophoyx intermedia</i>	RM
17.	Yellow Bittern	<i>Ixobrychus sinensis</i>	R
Alcedinidae			
18.	White breasted kingfisher	<i>Halcyon smyrnensis</i>	R
19.	Common kingfisher	<i>Alcedo atthis</i>	R
Dicruridae			
20.	Drongo	<i>Dicrurus macrocercus</i>	R
Scolopacidae			
21.	Swinhoe's snipe	<i>Gallinago megala</i>	M
22.	Sandpiper	<i>Tringa stagnatilis</i>	RM
Phalacrocoracidae			
23.	Great cormorant	<i>Phalacrocorax carbo</i>	RM
24.	Little cormorant	<i>Phalacrocorax niger</i>	R
Anhingidae			
25.	Darter or snake bird	<i>Anhinga melanogaster</i>	RM

tive families noted during the study were Anatidae with 8 species, followed by Ardeidae (5 species), Rallidae (3 species), Alcedinidae, Scolapacidae and phalacrocoracidae these three families represented by 2 species each and the families like Jacaniidae, Dicruridae and Anhingidae were represented by one species each. It was found that 44% of the species are resident, rest are either resident migratory or migratory. Similar observations with family Anatidae as the dominant one was made by several authors in

various lakes of India (Vyas *et al.* 2010, Rai *et al.* 2017, Ahmed *et al.* 2019).

The total number of species exhibited distinct temporal variation and the maximum diversity of birds was noted only in winter season. Similar observation was noted by Rajashekara and Venkatesha (2011) in 15 major lakes of Bangalore. Among the birds—lesser whistling duck was found to be the dominant ones followed by Gadwall and Northern Pintail. The local breeding birds of lake are the Bitterns and Jacanas. The other common birds include Garganey, shoveller, combduck, common moor hen, cotton pygmy goose, little cormorant, Pond heron and Bronze Winged Jacana. The Swinhoe's snipe which is relatively rare is of great attraction of bird watchers. We found the threatened duck species—Ferruginous pochard and the Fulvous whistling duck was found rarely. The abundance of the species was divided into three categories (Fig. 3) as abundant (A-15 species) where the frequency of sighting is 90-100%, Moderate (M - 7 species) where the frequency of sighting is 60-70% and Rare (R-3) where the frequency of sighting is less than 1%.

Foraging groups were classified as phytophagus, carnivorous, and omnivorous on the basis of feeding and foraging habits of the bird species according to our observation. Carnivorous species were numerous (12) followed by 8 phytophagus, carnivorous and 5 omnivorous species. Members of the dominant family Anatidae were phytophagus, carnivorous. The foraging guilds of birds are indicated in Table 2.

The densities of birds reached a peak during December-January months. Total no. of birds fluctuated every year during the said period of study as follows (Fig.4). As evident from the graph, during 2017-18 total number of birds drastically fell and was below 1000 in number compared to the previous year where the number was almost three thousand in the year of 2016-17. Many ornithologically important wetland water birds are facing major threat due to population explosion, socio-economic activities and man-induced adverse phenomena (Kedar 2012). The

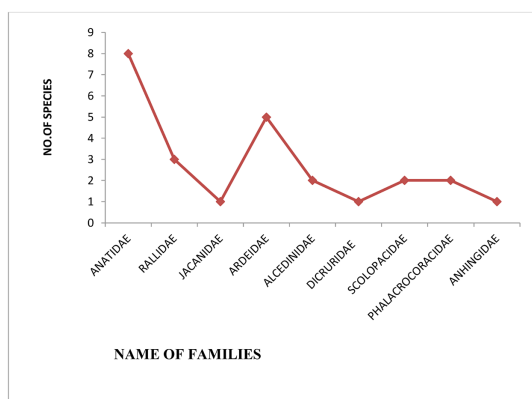


Fig. 2. Family composition of the of the avifauna recorded.

resident (R), resident migratory (RM) and migratory (M) birds like ducks, cormorant, pochard, waterhen, gadwall, jacanas nest in the bush on the peripheral mat of vegetation of sedges, grass and water hyacinth in these wetlands (Chowdhury and Nandi 2014). It was found that being unaware of the avian requirements, all the water hyacinth was cleared up which used to cover the whole lake. As a result the birds did not find a place to roost. In the following year, however the concerned authorities tried to make the habitat conducive to birds and cleared up all the invasive plants and the floating water hyacinth islands were there. Significantly the number of avifauna rose to around three thousand in the year 2018-2019 again. Thus comparative avifaunal diversity is an excellent indicator of ecosystem stability because birds respond quickly to changes in their environments (Miller and

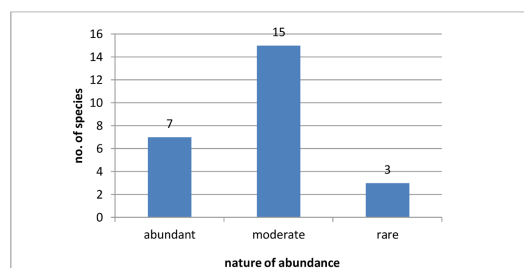


Fig. 3. Nature of abundance of the species recorded.

Spoolman 2014). Abundance of bird species might be associated with nature of habitat, abundance of food and breeding season of the species (Bibi and Ali 2013). Further, anthropogenic influences and increased disturbances reduce the presence of birds as they avoid risks and tend to show avoidance behavior (Alwis *et al.* 2016).

CONCLUSION

Such avifaunal diversity of migratory, local migratory and resident birds found in our study was surely indicative of the great importance of the lake. Birds utilizing this lake for continuing their various life cycle activities indicates the usefulness of Santragachi Jheel as their habitat. However, avifaunal population during the three years of study was not the same. But efforts for restoration and revival of this wetland resulted in rise of the avian population during the year 2018-2019 as indicated in the graph

Table 2. Guild characteristics of the avifaunal species.

Phytophagus carnivorous	Carnivorous	Omnivorous
<i>Dendrocygna javanica</i>	<i>Tringa stagnatilis</i>	<i>Amaurornis phoenicurus</i>
<i>Dendrocygna bicolor</i>	<i>Ardea purpurea</i>	<i>Gallinula chloropus</i>
<i>Nettapus coromandelianus</i>	<i>Ardea cinerea</i>	<i>Gallinago megala</i>
<i>Aythya farina</i>	<i>Phalacrocorax carbo</i>	<i>Metopidius indicus</i>
<i>Aythya nyroca</i>	<i>Phalacrocorax niger</i>	<i>Fulica atra</i>
<i>Anas strepera</i>	<i>Ardeola grayii</i>	
<i>Anas querquedula</i>	<i>Mesophoyx intermedia</i>	
<i>Anas acuta</i>	<i>Halcyon smyrnensis</i>	
	<i>Ixobrychus sinensis</i>	
	<i>Alcedo atthis</i>	
	<i>Dicrurus macrocercus</i>	
	<i>Anhinga melanogaster</i>	

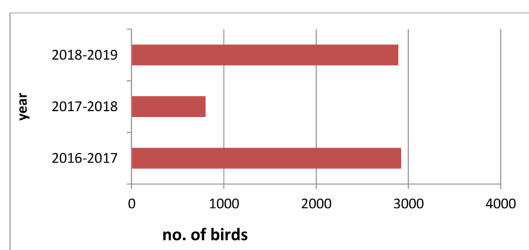


Fig. 4. Comparative account of population of bird in three consecutive years.

shown here. The rise in avian population showed that the concerted effort for restoring Santragachi Jheel are moving in the right direction. Efforts have been given to reverse urban degradation and revive the lake habitat. Limnological variables of the lake should also be checked from time to time to support more and more avian population. Full protection of the habitat should be given with special attention during the migratory period.

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