



A STUDY ON AVIAN SPECIES DIVERSITY IN PURBASTHALI OXBOW LAKE AND ADJACENT AREAS, WEST BENGAL, INDIA

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ABSTRACT

Purbasthali Oxbow Lake (also known as Chupi Char) is made by the Ganges/Bhagirathi River on its Western Bank, in Purba Burdwan District, West Bengal, India. Different types of animals like Fishes, Arthropods, Mollusks, Reptiles, and Birds can be seen in Chupi Char. Due to abundant food available throughout the year in the form of aquatic Arthropods, Mollusks, Fishes, etc., the lake attracts several birds throughout the year. A large number of migratory birds come to this lake during the winter season. The present study deals with the bird's diversity and analyzes the number of birds in Purbasthali Oxbow Lake and also identifies them. About 95 avian species belonging to 15 orders and 34 families were recorded during this study. Among the recorded avian species, 59.3 % were residents, and 40.7 % were winter migratory.

Keywords: Avian, Purbasthali Oxbow Lake, Aquatic, Migratory Birds, Diversity

INTRODUCTION

Wetlands are the most productive and biologically diverse ecosystem in the world which serves as an ideal home for different types of animals, plants and microorganisms [1]. Birds are one of the important indicators which determine the health of the Wetlands [2-4]. Avian Species play a crucial role in many food webs of the aquatic ecosystem through nutrient cycling and as a part of the food web, as potential pollinators and bio-indicators [5,6].

Purbasthali Oxbow Lake (also known as Chupi Char) is created by the Bhagirathi River on its Western Bank, in Purba Burdwan District, West Bengal, India. This lake is the habitat of different types of aquatic Arthropods, Mollusks, Birds, Fishes, and Reptiles [7]. Due to abundant food available throughout the year in the form of aquatic Arthropods, Mollusks, Fishes etc., the lake attracts several birds throughout the year. A large number of migratory birds come to this lake during the winter season. It is now a great place for eco-tourism. As a lot of migratory birds come to this lake during winter, many tourists are attracted to this place. The present study deals with bird diversity analyzes the number of birds in Purbasthali Oxbow Lake and determines the existing threats to the avian species of the concerned wetland.

OBJECTIVES

The following objectives have been set up for the present research:

- To make a complete checklist of wetland birds found within a time interval at Purbasthali Oxbow Lake.
- To determine the existing threats to the avian species of the concerned wetland.

MATERIAL AND METHOD

DATA SOURCE

The study is mainly based on primary and secondary data sources.

Primary data regarding the identification and counting of various bird species were collected by using the 'Point count method' and 'Line transects method'. Both methods are the most common method for identifying birds used by researchers in various parts of the world [8-10].

Secondary data was collected from different books, journals, internet access, and many reports. The checklist of species was prepared following Ali [11], Grimmett and Inskipp [12].

For picture capturing Nikon-D5600 and Nikkor 70-300 mm lens were used.

STUDY AREAS

The study area is Purbasthali Chupi Lake formed by the River Bhagirathi on its western Bank in Purba Burdwan district of West Bengal. The geographical location is $88^{\circ}19'45''$ E to $88^{\circ}22'$ E longitude and $23^{\circ}26'N$ to $23^{\circ}26'45''$ N latitude, covering a total area of 2.19 km². It is located 120 km north of Kolkata city, 26 km south of the Katwa Railway Station, and 11 km from the holy town Nabadwip.

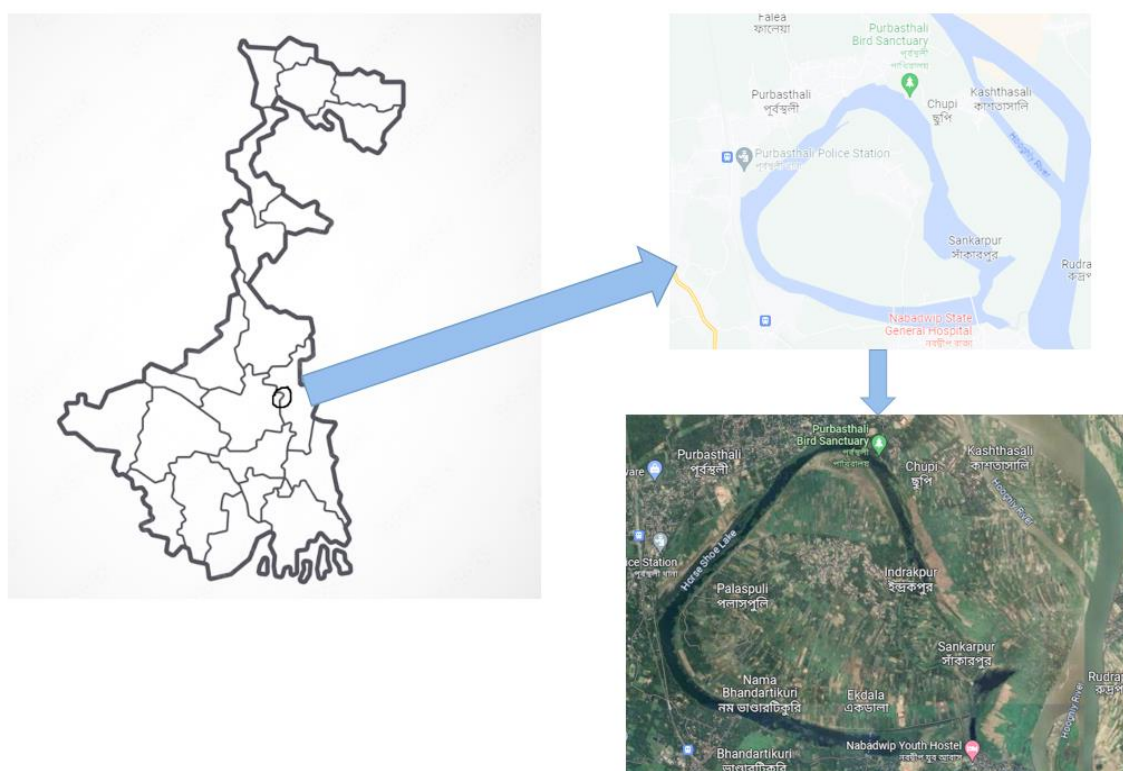


Figure 1: Geographical localization of Purbasthali Oxbow Lake

RESULT AND DISCUSSION:

The Purbasthali Oxbow Lake acts as a resource pool and habitat for various floral and faunal communities mainly the birds. This place attracts thousands of migratory birds during winter so, the survey starts on 1st December, and observation is completed on 31st January of the years 2020,2021, and 2022 . Table no 1. Provides a checklist of the avian species that were found in this lake during the survey along with information on their common name, scientific name, order, family, dispersal status, and IUCN status. During this survey, 113 bird species were observed. Out of the total 113 species of birds, 59.3 were resident (RE) and 40.7 % were winter migrants (WM) in this checklist.

Table 1: List of Birds Observed in Chupi Char (2020-2022) according to their Common name , Scientific name, Order, Family, Dispersal status and IUCN status.

Sl. No.	Common Name	Scientific Name	Order	Family	Dispersal Status	IUCN Status
1	Little Grebe	<i>Tachybaptus ruficollis</i>	Podicipediformes	Podicipedidae	RE	LC
2	Great Cormorant	<i>Phalacrocorax carbo</i>	Suliformes	Phalacrocoracidae	RE	LC
3	Indian Shag	<i>Phalacrocorax fuscicollis</i>	Suliformes	Phalacrocoracidae	RE	LC
4	Little Cormorant	<i>Microcabro niger</i>	Suliformes	Phalacrocoracidae	RE	LC
5	Purple Heron	<i>Ardea purpurea</i>	Pelecaniformes	Ardeidae	RE	LC
6	Indian Pond Heron	<i>Ardeola grayii</i>	Pelecaniformes	Ardeidae	RE	LC
7	Night Heron	<i>Nycticorax nycticorax</i>	Pelecaniformes	Ardeidae	RE	LC
8	Cattle Egret	<i>Bubulcus ibis</i>	Pelecaniformes	Ardeidae	RE	LC
9	Intermediate Egret	<i>Ardea intermedia</i>	Pelecaniformes	Ardeidae	RE	LC
10	Great Egret	<i>Ardea alba</i>	Pelecaniformes	Ardeidae	RE	LC
11	Little Egret	<i>Egretta garzetta</i>	Pelecaniformes	Ardeidae	RE	LC
12	Yellow Bittern	<i>Ixobrychus sinensis</i>	Pelecaniformes	Ardeidae	RE	LC
13	Glossy Ibis	<i>Plegadis falcinellus</i>	Pelecaniformes	Threskiornithidae	RE	LC
14	Black Ibis	<i>Pseudibis papillosa</i>	Pelecaniformes	Threskiornithidae	RE	LC
15	Spoon Bill	<i>Platalea leucorodia</i>	Pelecaniformes	Threskiornithidae	RE	LC
16	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Pelecaniformes	Threskiornithidae	RE	NT
17	Asian Openbill Stork	<i>Anastomus oscitans</i>	Ciconiiformes	Ciconiidae	WM	LC
18	Lesser Adjutant Stork	<i>Leptoptilos javanicus</i>	Ciconiiformes	Ciconiidae	RW	VU
19	Greylag Goose	<i>Anser anser</i>	Anseriformes	Anatidae	WM	LC
20	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Anseriformes	Anatidae	WM	LC
21	Northern Pintail	<i>Anas acuta</i>	Anseriformes	Anatidae	WM	LC

22	Common Teal	<i>Anas crecca</i>	Anseriformes	Anatidae	WM	LC
23	Cotton Pygmy-goose	<i>Nettapus coromandelianus</i>	Anseriformes	Anatidae	WM	LC
24	Gadwall	<i>Marecas trepera</i>	Anseriformes	Anatidae	WM	LC
25	Eurasian Wigeon	<i>Mareca penelope</i>	Anseriformes	Anatidae	WM	LC
26	Garganey	<i>Spatula querquedula</i>	Anseriformes	Anatidae	WM	LC
27	Eurasian wigeon	<i>Mareca penelope</i>	Anseriformes	Anatidae	WM	LC
28	Spot billed duck	<i>Anas poecilorhyncha</i>	Anseriformes	Anatidae	RE	LC
29	Eurasian Teal	<i>Anas crecca</i>	Anseriformes	Anatidae	WM	LC
30	Northern Shoveller	<i>Spatula clypeata</i>	Anseriformes	Anatidae	WM	LC
31	Common Pochard	<i>Aythya ferina</i>	Anseriformes	Anatidae	WM	VU
32	Tufted Duck	<i>Aythya fuligula</i>	Anseriformes	Anatidae	WM	LC
33	Red-crested Pochard	<i>Netta rufina</i>	Anseriformes	Anatidae	WM	LC
34	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	Anseriformes	Anatidae	RE	LC
35	Ferruginous Pochard	<i>Aythya nyroca</i>	Anseriformes	Anatidae	WM	NT
36	Bailon's Crake	<i>Zapornia pusilla</i>	Gruiformes	Rallidae	RE	LC
37	Water Cock	<i>Gallicrex cinerea</i>	Gruiformes	Rallidae	RE	LC
38	Purple Swamp Hen	<i>Porphyrio porphyrio</i>	Gruiformes	Rallidae	RE	LC
39	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Gruiformes	Rallidae	RE	LC
40	Indian Moorhen	<i>Gallinula chloropus</i>	Gruiformes	Rallidae	RE	LC
41	Common Coot	<i>Fulica atra</i>	Gruiformes	Rallidae	RE	LC
42	Purple moorhen	<i>Porphyrio porphyrio</i>	Gruiformes	Rallidae	RE	LC
43	Eurasian coot	<i>Fulicaatra</i>	Gruiformes	Rallidae	WM	LC
44	Bronze-winged Jacana	<i>Metopidius indicus</i>	Charadriiformes	Jacaniidae	RE	LC
45	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Charadriiformes	Jacaniidae	RE	LC
46	River Lapwing	<i>Vanellus duvaucelii</i>	Charadriiformes	Charadriidae	WM	NT
47	Grey-headed Lapwing	<i>Vanellus cinereus</i>	Charadriiformes	Charadriidae	WM	LC
48	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriiformes	Charadriidae	RE	LC
49	Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	Charadriiformes	Charadriidae	RE	LC

50	Pacific Golden Plover	<i>Pluvialis fulva</i>	Charadriiformes	Charadriidae	WM	LC
51	Little Ringed Plover	<i>Charadrius dubius</i>	Charadriiformes	Charadriidae	WM	LC
52	Little Stint	<i>Calidris minuta</i>	Charadriiformes	Charadriidae	WM	LC
53	Marsh Sandpiper	<i>Tringa stagnatilis</i>	Charadriiformes	Charadriidae	WM	LC
54	Ruff	<i>Philomachus pugnax</i>	Charadriiformes	Charadriidae	WM	LC
55	Lesser Sand Plover	<i>Charadrius mongolus</i>	Charadriiformes	Charadriidae	WM	LC
56	Black-Winged Stilt	<i>Himantopus himantopus</i>	Charadriiformes	Charadriidae	WM	LC
57	Common Snipe	<i>Gallinago gallinago</i>	Charadriiformes	Scolopacidae	WM	LC
58	Common Red Shank	<i>Tringa tetanus</i>	Charadriiformes	Scolopacidae	WM	LC
59	Green Shank	<i>Tringa nebularia</i>	Charadriiformes	Scolopacidae	WM	LC
60	Spotted Redshank	<i>Tringa erythropus</i>	Charadriiformes	Scolopacidae	WM	LC
61	Common Sandpiper	<i>Actitis hypoleucos</i>	Charadriiformes	Scolopacidae	WM	LC
62	Wood Sandpiper	<i>Tringa glareola</i>	Charadriiformes	Scolopacidae	WM	LC
63	Green Sandpiper	<i>Tringa ochropus</i>	Charadriiformes	Scolopacidae	WM	LC
64	Pin-Tailed Snipe	<i>Gallinago stenura</i>	Charadriiformes	Scolopacidae	WM	LC
65	Temminck's Stint	<i>Calidris temmincki</i>	Charadriiformes	Scolopacidae	WM	LC
66	Painted Snipe	<i>Rostratula benghalensis</i>	Charadriiformes	Rostratulidae	RE	LC
67	Great Stone Plover	<i>Esacusre curvirostris</i>	Charadriiformes	Burhinidae	RE	NT
68	Whiskered Tern	<i>Chlidonias hybrid</i>	Charadriiformes	Laridae	WM	LC
69	River Tern	<i>Sterna aurantia</i>	Charadriiformes	Laridae	RE	NT
70	Barn Swallow	<i>Hirundo rustica</i>	Passeriformes	Hirundinidae	RE	LC
71	Wire-Tailed Swallow	<i>Hirundo smithii</i>	Passeriformes	Hirundinidae	RE	LC
72	White Wagtail	<i>Motacilla alba</i>	Passeriformes	Motacillidae	WM	LC
73	Yellow Wagtail	<i>Motacilla flava</i>	Passeriformes	Motacillidae	WM	LC
74	Citrine Wagtail	<i>Motacilla citreola</i>	Passeriformes	Motacillidae	WM	LC
75	Baya Weaver	<i>Ploceus philippinus</i>	Passeriformes	Ploceidae	RE	LC
76	Black Drongo	<i>Dicrurus macrocercus</i>	Passeriformes	Dicruridae	RE	LC
77	Lesser Racket Tailed Drongo	<i>Dicrurus remifer</i>	Passeriformes	Dicruridae	RE	LC
78	Bank Myna	<i>Acridotheres ginginianus</i>	Passeriformes	Sturnidae	RE	LC
79	Jungle Myna	<i>Acridotheres fuscus</i>	Passeriformes	Sturnidae	RE	LC

80	Pied Myna	<i>Gracupica contra</i>	Passeriformes	Sturnidae	RE	LC
81	Brambhany Starling	<i>Sturnia pagodarum</i>	Passeriformes	Sturnidae	RE	LC
82	Common Myna	<i>Acridotheres tristis</i>	Passeriformes	Sturnidae	RE	LC
83	Purple Sunbird	<i>Cinnyris asiaticus</i>	Passeriformes	Nectarinidae	RE	LC
84	Purple rumped Sunbird	<i>Leptocoma zeylonica</i>	Passeriformes	Nectarinidae	RE	LC
85	House Crow	<i>Corvus splendens</i>	Passeriformes	Corvidae	RE	LC
86	Oriental Magpie Robin	<i>Copsychus saularis</i>	Passeriformes	Muscicapidae	RE	LC
87	Jungle Babbler	<i>Turdoides striata</i>	Passeriformes	Leiotherichidae	RE	LC
88	Ashy Prinia	<i>Prinia socialis</i>	Passeriformes	Cisticolidae	RE	LC
89	Zitting Cisticola	<i>Cisticola juncidis</i>	Passeriformes	Cisticolidae	RE	LC
90	Common Tailorbird	<i>Orthotomus sutorius</i>	Passeriformes	Cisticolidae	RE	LC
91	Plain Prinia	<i>Prinia inornata</i>	Passeriformes	Cisticolidae	RE	LC
92	Red-Vented Bulbul	<i>Pycnonotus cafer</i>	Passeriformes	Pycnonotidae	RE	LC
93	Red-Whiskered Bulbul	<i>Pycnonotus jocosus</i>	Passeriformes	Pycnonotidae	RE	LC
94	Brown Shrike	<i>Lanius cristatus</i>	Passeriformes	Laniidae	RE	LC
95	Pied Kingfisher	<i>Ceryle rudis</i>	Coraciiformes	Alcedinidae	RE	LC
96	Common Kingfisher	<i>Alcedo atthis</i>	Coraciiformes	Alcedinidae	RE	LC
97	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	Coraciiformes	Alcedinidae	RE	LC
98	White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	Coraciiformes	Alcedinidae	RE	LC
99	Marsh Harrier	<i>Circus spilonotus</i>	Accipitriformes	Accipitridae	WM	LC
100	Indian Shikra	<i>Accipiter badius</i>	Accipitriformes	Accipitridae	RE	LC
101	Black kite	<i>Milvus migrans</i>	Accipitriformes	Accipitridae	RE	LC
102	Shikra	<i>Accipiter badius</i>	Accipitriformes	Accipitridae	RE	LC
103	Osprey	<i>Pandion haliaetus</i>	Accipitriformes	Pandionidae	RE	LC
104	Rose-ringed parakeet	<i>Psittacula krameri</i>	Psittaciformes	Psittaculidae	RE	LC
105	Rock Pigeon	<i>Columba livia</i>	Columbiformes	Columbidae	RE	LC
106	Spotted Dove	<i>Spilopelia chinensis</i>	Columbiformes	Columbidae	RE	LC
107	Green Bee Eater	<i>Merpos orientalis</i>	Columbiformes	Meropidae	RE	LC
108	Asian Koel	<i>Eudynamis scolopaceus</i>	Cuculiformes	Cuculidae	RE	LC
109	Greater Coucal	<i>Centropus sinensis</i>	Cuculiformes	Cuculidae	RE	LC
110	Indian Cuckoo	<i>Cuculus</i>	Cuculiformes	Cuculidae	RE	LC

		<i>micropterus</i>				
111	Copper smith Barbet	<i>Psilopogon haemacephala</i>	Piciformes	Megalaimidae	RE	LC
112	Blue throated Barbet	<i>Megalaima asiatica</i>	Piciformes	Megalaimidae	RE	LC
113	Common kestrel	<i>Falco tinnunculus</i>	Falconiformes	Falconidae	RE	LC

Note: RE- Resident, WM - Winter migrant, (IUCN) Categories: LC: Least Concern; VU: Vulnerable; NT: Near threatened

Table 2: Status of birds recorded at Chupi Char

Sl. No.	Order	No of Families	No of Species	Residential Status	
				RE	WM
1	Podicipediformes	01	01	01	00
2	Suliformes	01	03	03	00
3	Pelecaniformes	02	12	12	00
4	Ciconiiformes	01	02	01	01
5	Anseriformes	01	17	02	15
6	Gruiformes	01	08	01	07
7	Charadriiformes	06	26	07	19
8	Passeriformes	12	25	22	03
9	Coraciiformes	01	04	04	00
10	Accipitriformes	02	05	04	01
11	Psittaciformes	01	01	01	00
12	Columbiformes	02	03	03	00
13	Cuculiformes	01	03	03	00
14	Piciformes	01	02	02	00
15	Falconiformes	01	01	01	00

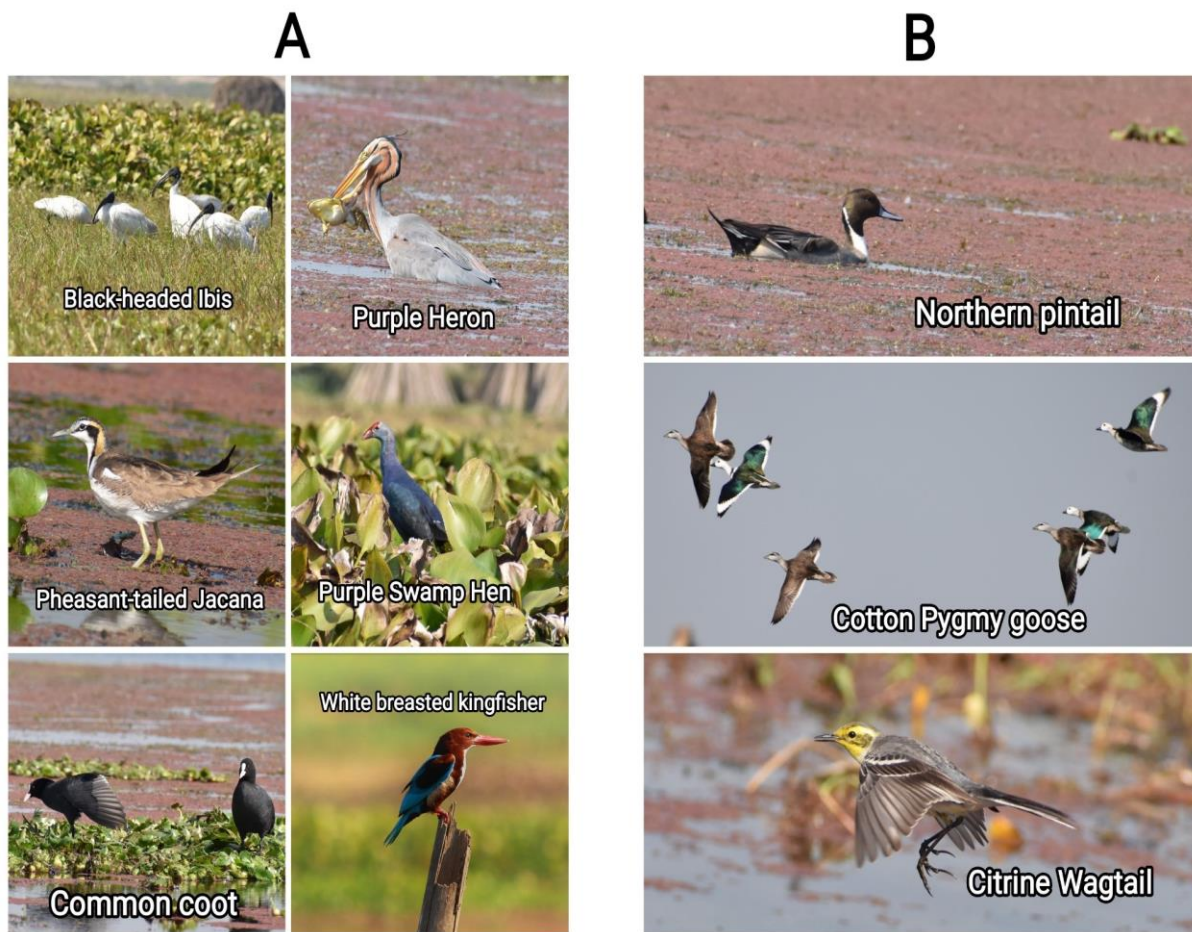


Figure 2: Some Birds observed in Chupi Lake. (A) Resident and (B) Winter Migrants.

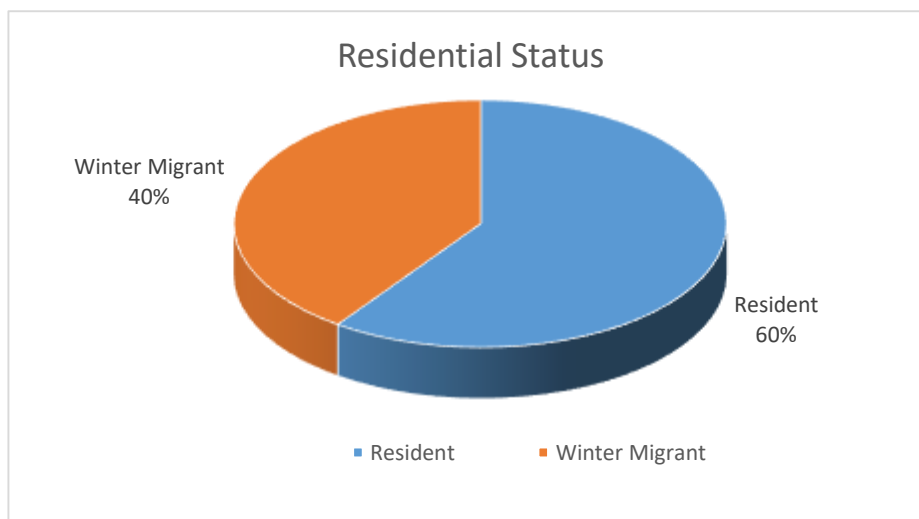


Figure 3 : Residential status of birds in Chupi Lake

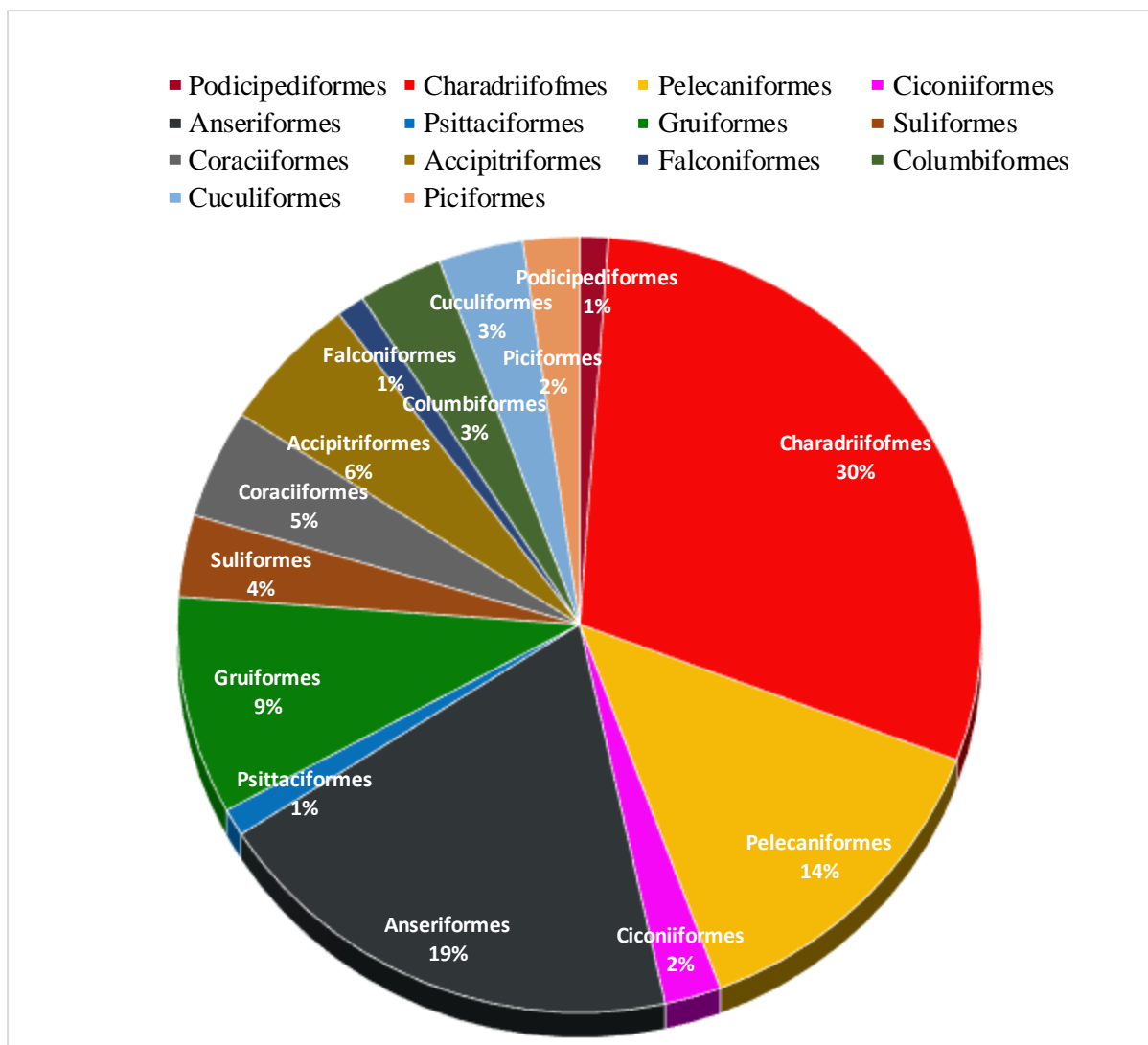


Figure 4: Birds diversity of Chupi Lake in terms of order

THREAT AND LIMITATION:

Birds are often considered to be important indicators of the health of the overall environment. But present-day birds are threatened due to the following reasons:

- 1. Pollution:** Farmers use pesticides on agricultural land adjacent to Chupi Lake. These pesticides pollute the lake water. As a result, these pesticides have adverse effects on birds.
- 2. Climate change:** Climate change is one of the most important. Due to the climate changes migratory birds do not come to proper time in this lake.
- 3. Area Protection-** The overall area of Chupi Lake is totally unprotected and this area is totally guard-less, with no monitoring system. Birds Catcher takes advantage of this situation.
- 4. Other Problems-** Chupi Lake is also used as a picnic spot during winter sessions. Therefore a huge amount of sound vibration is created which is harmful to bird diversity. Nowadays Human population slowly increasing in that area, and it's harmful to bird species.

CONCLUSION:

The Chupi Lake is an important habitat for bird species including winter migratory birds. This wetland has great potential to develop as a famous tourist spot in the winter season. But nowadays there are a lot of problems in Chupi Lake. For this problem, biodiversity is lost. Avian diversity loss creates adverse effects on our environment. Therefore sustainable and holistic management planning is necessary to protect the Chupi Lake.

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