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Status of avifaunal diversity in Bhoj Wetland Bhopal, Madhya Pradesh, India

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Abstract
The present study was conducted to check the status of avian diversity of Bhoj Wetland of Bhopal. Visual count surveys was done by using the line transect and point count methods, pictures were also captured for identification of birds. During the present study, a total of 70 species of birds belonging to 16 orders and 35 families were recorded. The study was carried out from November 2020 upto February 2021. From order Passeriformes, Muscicapidae was foremost family followed by Motacillidae during this season. Bhoj Wetland harbours rich diversity of birds due to the availability of food and good ecological conditions but due to human pressure and conversion of wetland into agricultural land the bird population is going to decline. Proper management is needed.

Keywords: Avifaunal diversity, Bhoj Wetland, Status, Anthropogenic and Agricultural activity, etc.

Introduction
The greatest functions of wetlands is to provide a habitat for birds. Birds also use wetlands as a source of drinking water and for nourishing, sleeping, lodging, and social relations (Stewart, 2007). Wetlands and water birds are attached elements and support a rich array of water bird communities (Grimmett and Inskipp, 2007) [5]. Local people used the wetlands for various purposes for their livelihood, fishing, agriculture, irrigation, bathing, washing, grazing of cattle, grass cutting which cause the factors of degradation of wetland ecosystem, that leads to the destruction of habitat of aquatic avifauna (Manakadan *et al*., 2011) [9]. The richness of avifauna specifies the healthy status of lakes owing the availability of water, safe habitat and food sources for both adults and nestlings, and essential nesting/ roosting sites in and around the lakes are important abundance of aquatic bird populations (Joshi, 2012) [6]. Avifaunal diversity has been declining due to the destruction of natural habitats and disturbances by anthropogenic activities (Bhadja and Vaghela, 2013) [4]. Most of the birds are useful to mankind. Birds play a useful character in the control of insect or pests of agricultural crops, as predators of rodents, as scavengers, as seed dispensers and as pollinating agents. Therefore, birds are nurtured not only for preserving ecological balance but also for products of economic importance such as downs feather (Simeone *et al*. 2002) [12]. Bhoj Wetland of Bhopal is a Ramsar site and supports a rich biodiversity including birds (Vyas *et al*., 2011) [13]. Thus the present work has been carried out with the aim to identify and enlist various species of birds visiting and residing in the Upper Lake which may provide a baseline for the future management of avian fauna in the area (Fig. No. 1).

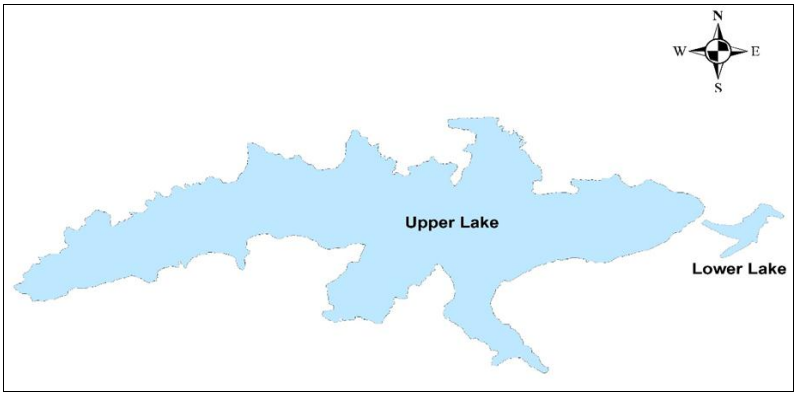

Fig 1: Map showing study area.

Materials and Methods

The survey was conducted in early hours in the morning from 06:00 to 10:00 hours and evening 17:00 to 18:30 hours last week of each month during November 2020 to February 2021. Bird diversity and identities were done by Line Transect and Point Count methods for gathering the information on bird (Bibi and Ali, 2013) [3]. The birds were identified and counted with the help of Binoculars (Nikon Action 8X40), photographed by using Camera (Canon D-60) at different spots at every location and field guides such as a Pictorial Guide to the Birds of the Indian Subcontinent (Ali, 2006) and Water birds of Northern India (Alfred *et al*. 2001) [2], were used for identifying the birds. The birds were identified up to order level and check list was prepared using the standardized common and scientific names of the birds of the Indian subcontinent by Manakkadan and Pittie, (2001) [8]. The Bird species were categorized based on their status.

Results and Discussion

Total 70 species of birds belonging to 35 families and 16 orders were noted from the study area during the study period. The check list of recorded bird species along with their order, family, scientific name and common name is given in (Table 1). Monthly fluctuations was seen in bird diversity. Order Passeriformes was most dominant in the study area in which 16 families and 36 species were found (Figure-2). Vyas *et al*., (2010) [13] while working on Upper Lake of Bhopal recorded 43 species, belonging to 14 families and 8 orders. Family Anatidae was found to be the most dominant family represented by ten species followed by family Ardiedae represented by 8 species. Kukade *et al*., (2011) [7] recorded 68 species from Chhatri lake of Amravati district. Puri and Virani (2016) [10] recorded 90 species form chorkhamara reservoir in Gondia district.

Table 1: List of Birds recorded during Present Study

Order	Family	Scientific Name	Common Name	Status
Passeriformes	Emberizidae	*Emberiza bruniceps*	Red-headed Bunting	UC
		Emberiza melanocephala	Black-headed Bunting	UC
		Emberiza lathami	Crested Bunting	UC
	Motacillidae	*Anthus campestris*	Tawny Pipit	C
		Anthus rufulus	Paddyfield Pipit	C
		Motacilla alba	Pied Wagtail	C
		Motacilla maderaspatensis	White-browned Wagtail	C
		Motacilla cinerea	Grey Wagtail	C
	Muscicapidae	*Saxicola caprata*	Pied Bushchat	UC
		Saxicola maurus	Siberian Stonechat	UC
		Monticola solitarius	Blue Rock Thrush	VR
		Eumyias thalassinus	Verditer Flycatcher	UC
		Copsychus saularis	Oriental Magpie-Robin	LC
		Ficedula superciliaris	Ultramarine Flycatcher	UC
	Passeridae	*Passer domesticus*	House Sparrow	C
	Nactariniidae	*Leptocoma zeylonica*	Purple-rumped Sunbird	C
	Dicaeidae	*Dicaeum agile*	Thick-billed Flowerpecker	UC
	Leiothrichidae	*Turdoides striata*	Jungle Babbler	C
		Turdoides caudata	Common Babbler	UC
	Zosteropidae	*Zosterops palpebrosus*	Indian White-eye	C
	Cisticolidae	*Prinia inornata*	Plain Prinia	LC
		Prinia socialis	Ashy Prinia	LC
		Orthotomus sutorius	Common Tailorbird	C
	Paridae	*Parus cinereus*	Cinereous Tit	UC
	Corvidae	*Corvus splendens*	House Crow	C
	Laniidae	*Lanius schach*	Long-tailed Shrike	VR
		Lanius vittatus	Bay-backed Shrike	R
	Rhipiduridae	*Rhipidura albogularis*	Spot-breasted Fantail	LC
		Rhipidura aureola	White-browned Fantail	LC
	Dicruridae	*Dicrurus macrocercus*	Black Drongo	C
		Dicrurus leucophaeus	Ashy Drongo	R
		Dicrurus caerulescens	White-bellied Drongo	UC
	Sturnidae	*Sturnia malabarica*	Chestnut-tailed Starling	UC
		Pastor roseus	Rose-coloured Starling	UC
	Hirundinidae	*Cecropis daurica*	Red-rumped Swallow	UC
		Hirundo smithii	Wire-tailed Swallow	C
Anseriformes	Anatidae	*Dendrocygna javanica*	Lesser Whistling-Duck	C
		Aythya ferina	Common Pochard	UC
		Spatula clypeata	Northern Shoveler	C
		Mareca strepera	Gadwall	C
		Sarkidiornis melanotos	Knob-billed Duck	LC
		Tadorna ferruginea	Ruddy Shelduck	LC
Ciconiiformes	Ciconiidae	*Ciconia nigra*	Black Stork	E R
		Ciconia episcopus	Woolly-necked Stork	UC
		Mycteria leucocephala	Painted Stork	UC
Gruiformes	Rallidae	*Fulica atra*	Eurasian Coot	C
		Amaurornis phoenicurus	White-breasted Waterhen	C

Cuculiformes	Cuculidae	*Eudynamys scolopaceus*	Asian Koel	C
Charadriiformes	Burhinidae	*Burhinus indicus*	Indian Thick-knee	LC
	Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	C
	Laridae	*Sterna aurantia*	River Tern	C
Accipitriformes	Accipitridae	*Milvus migrans*	Black Kite	UC
		Gyps indicus	Indian Vulture	E R
		Hieraaetus pennatus	Booted Eagle	C
Falconiformes	Falconidae	*Falco tinnunculus*	Common Kestrel	UC
Piciformes	Picidae	*Yungipicus nanus*	Brown-capped Woodpecker	UC
Galliformes	Phasianidae	*Francolinus pictus*	Painted Francolin	R
Suliformes	Phalacrocoracidae	*Phalacrocorax carbo*	Great Cormorant	R
Coraciiformes	Alcedinidae	*Pelargopsis capensis*	Stork-billed Kingfisher	VR
		Halcyon smyrnensis	White-throated Kingfisher	C
	Meropidae	*Merops orientalis*	Green Bee-eater	C
Psittaciformes	Psittaculidae	*Psittacula krameri*	Ring-necked Parakeet	C
		Psittacula cyanocephala	Plum-headed Parakeet	UC
Pelecaniformes	Ardeidae	*Ardea alba*	Great White Egret	C
		Ardea intermedia	Intermediate Egret	LA
		Egretta garzetta	Little Egret	C
		Ardeola garyii	Indian Pond Heron	C
	Threskiornithidae	*Pseudibis papilosa*	Red-naped Ibis	R
Bucerotiformes	Upupidae	*Upupa epops*	Eurasian Hoopoe	C
Podicipediformes	Podicipedidae	*Tachybaptus ruficollis*	Little Grebe	R

UC= UnCommon, C=Common, LA= Less Abundant, R= Rare, ER= Extremely Rare, VR= Very Rare and LC= Least Count.

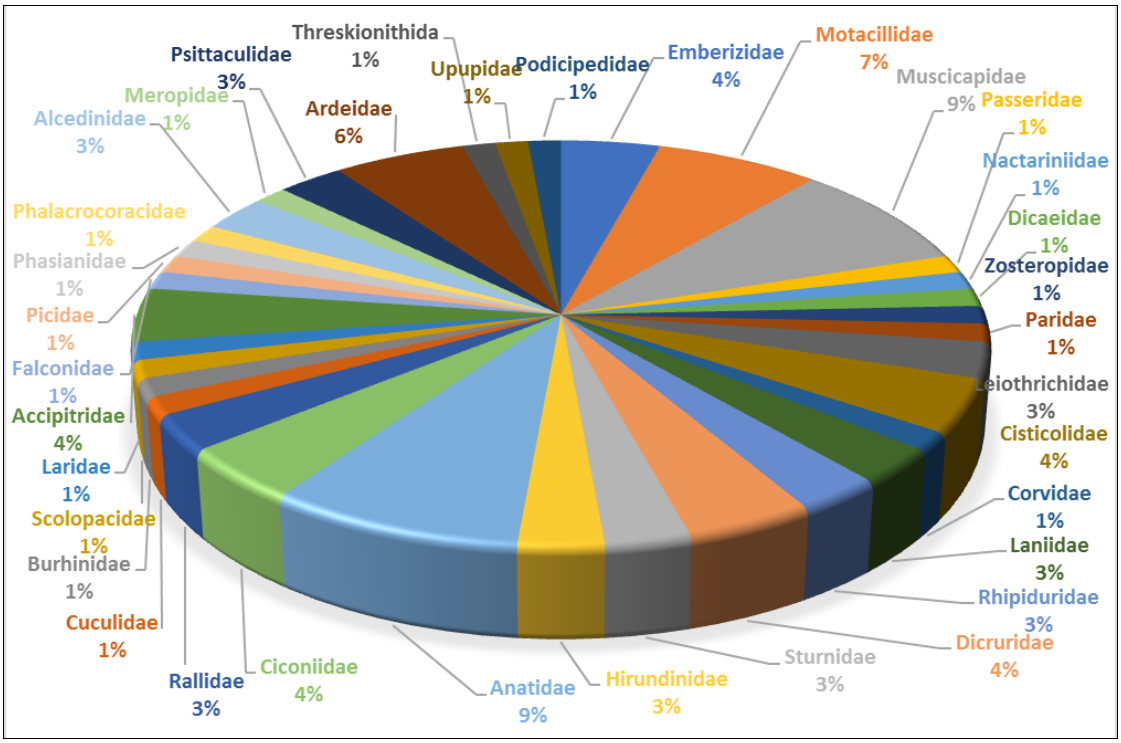

Fig 2: Shows the family wise birds species contribution in study area

Conclusion

The study divulges that the Upper Lake of Bhopal is a growing ecosystem consist essential features for survival of birds and other wild species. Anthropogenic and agriculture process in and around the Lake affected the diversity of aquatic bird species. Proper awareness program regarding importance of bird and their vital role in daily life should be adopted.

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