

Research article

DIVERSITY OF WATERBIRDS IN MUTTARA WETLAND, KOLLAM DISTRICT, KERALA, SOUTH INDIA

NEENA NARAYANAN

Sree Narayana College, Cherthala, Alappuzha.

Address: Leena Estate, Muttara P O-691512,

Odanavattom, Kollam district, Kerala, South India

E-mail: neenanarayanan84@gmail.com



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Abstract

The study was focused on the diversity of Waterbirds in Muttara wetland, kollam district, Kerala, South India was studied during October 2020 to January 2021. The observation of wetland birds can be recorded using binoculars (10X50). A total of 28 species of birds belonging to 18 families were recorded from the wetland. Of these, 11 species are Waterbirds. They are Little Egret, Intermediate Egret, Great Egret, Cattle Egret, Indian Pond Heron, Purple Heron, Oriental White Ibis, White - breasted Waterhen, Red-wattled Lapwing, Little Cormorant and White throated Kingfisher. More numbers of waterbirds are visible in December 2020 and less in October 2020. Many factors which threaten these wetlands and these factors are influenced by the low diversity level of birds. Plastics, Pollution, Pesticides, Fertilizers, Chemicals, Tourism of Muttara Maruthimala and loss of employees are the major threats affected in this area.

Keywords: Birds, Muttara Wetland, conservation problem

INTRODUCTION

Wetlands are one of the most productive ecosystems that support diverse habitats and biodiversity and are known for their various ecosystem goods and services (Kumari et al 2020). Wetlands provide critical services such as protection against flooding and wave action, water quality maintenance, habitat provision, food products, etc (Joy, et al 2020). Wetlands are considered as the interim zones, crammed between perpetually flooded deep water environments and drained uplands, which support a diverse range of biodiversity (Puthur S. et al. 2021). Wetland ecosystems are home of resident and local migrant birds throughout the year and are also used by winter migrant birds during a part of the year (Parameswaran et al 2018). Birds play an important role in the ecosystem (Venkitachalam et al 2020) and these are reliable and widely used indicators for conservation planning and monitoring of wetland health (Kandel et al 2018). Birds which are fully dependent on wetlands for their physiological and behavioral characters are termed as waterbirds (Vargiya et al 2019). Waterbirds are an important component of most of wetland environment, as these occupy several trophic levels in the food web of wetland nutrient cycles also wetland, birds play a significant cultural and social role in local communities as well as being an important component of wetland ecosystem (Veeramani et al 2018). The present study will be helpful to the diversity of waterbirds and to identify the major threats in the Muttara wetland.

MATERIALS AND METHODS

Muttara (8° 57' 27.21"N 76° 45' 29.16"E) is a small village/hamlet in Kottarakara block in Kollam District of Kerala state, India. It comes under Veliyam Panchayat. It belongs to South Kerala Division. It is located 24 KM towards East from District headquarters, Kollam, 3KM from Kottarakara, 65KM from State Capital, Thiruvananthapuram. Muttara is famous for Maruthimala Eco-tourism. The Eco-tourism project in Maruthimala is being established at the 37 acres of revenue land leased from the Veliyam Panchayat for 20 years. The height of Maruthimala is 1200 feet from sea level. Maruthimala hill is home to thousands of medicinal plants. The hillock includes large rocks with massive rubber trees, just almost similar to Moonaar. One of the unique features of Maruthimala is the popular vanarasadhya, a food fest for the inhabitant monkeys of the hill conducted yearly during the festival season of onam. Another attraction of the hill is "Pulichaan" which is said to be a tiger's cave indicating the presence of bestly Carnivores in the locality centuries ago. One could also see the Tangasserry Lighthouse, which is situated 30 Kilometers away from Muttara from the hilltop.

Studies on the avian fauna of Muttara (Fig. 1) wetland are very few. Systematic list of the birds of this region is lacking. Hence, the present study was conducted during the period of October 2020 to January 2021. Bird counts were carried out five days in a week during low tide using Direct Visual Counts (Hoves and Bakewell 1989). The observations were made between 6AM to 11AM in the early morning and the birds were identified using field books (Grimmett et al 2011). Direct Observation Count was used to determine the population of waterbirds. Birds are identified and counted with the aid of binoculars (10X50) at a fixed scanning point across the habitat. The abundance of birds are categorised into (Com) – seen on most of the visits, Uncommon (Uncom) – seen on a few visits and Rare (Ra) – seen once or twice. All birds are resident and during the month of Oct-Jan, the birds are more in numbers. After January, they are limited in number. The present study included the following common species in the area: Little Egret (*Egretta garzetta*), Intermediate Egret (*Mesophoyx intermedia*), Great Egret (*Casmerodius albus*), Cattle Egret (*Bubulcus ibis*), Indian Pond Heron (*Ardeola grayii*), Purple Heron (*Ardea purpurea*), Oriental White Ibis (*Threskiornis melanocephalus*), White-breasted Waterhen (*Amauornis phoenicurus*), Red-wattled Lapwing (*Vanellus indicus*), Little Cormorant (*Phalacrocorax niger*) and White throated Kingfisher (*Halcyon smymensis*) and also Brahminy Kite (*Haliastur indus*).



Figure 1: Map of the study area

RESULTS

A total of 28 species of birds belonging to 18 families were recorded from the Muttara wetland (Table 1). During present study, 11 species of waterbirds were recorded. They belong to six families: Ardeidae, Threskiornithidae, Rallidae, Charadriidae, Phalacrocoracidae and Alcedinidae. Little Egret (*Egretta garzetta*), Intermediate Egret (*Mesophoyxintermedia*), Great Egret (*Casmerodius albus*), Cattle Egret (*Bubulcus ibis*), Indian Pond Heron (*Ardeola grayii*), Purple Heron (*Ardea purpurea*), Oriental White Ibis (*Threskiornis melanocephalus*), White - breasted Waterhen (*Amauornis phoenicurus*), Red-wattled Lapwing (*Vanellus indicus*), Little Cormorant (*Phalacrocorax niger*) and White throated Kingfisher (*Halcyon smymensis*) are the different species of waterbirds.

Other species (17 species) of birds except waterbirds belong to 12 families. They are, Accipitridae, Phasianidae, Corvidae, Sturnidae, Columbidae, Leiothrichidae, Dicuridae, Cuculidae, Picidae, Megalaimidae, Oriolidae and Pycnonotidae. These families consist of 17 species of birds: Brahminy Kite (*Haliastur indus*), Indian Peafowl (*Pavo cristatus*), House Crow (*Corvus splendens*), Indian Jungle Crow (*Corvus culminates*), Rufous treepie (*Dendrocitta vagabunda*), Common Myna (*Acridotheres tristis*), Common Pigeon (*Columba livia*), Emerald Dove (*Chalcophaps indica*), Spotted Dove (*Stigmatopelia chinensis*), Jungle Barbblber (*Argya striata*), Black Drongo (*Dicurus macrocerus*), Greater Racket-tailed Drongo (*Dicurus paradiseus*), Greater Coucal (*Centropus sinensis*), Lesser Goldenback (*Dinopium benghalense*), White - cheeked Barbet (*Megalaima viridis*), Black-hooded Oriole (*Oriolus xanthomus*), Red- whiskered Bulbul (*Pycnonotus jocosus*).

Table 1. Checklist of birds recorded in the Muttara Wetland.

Sl. No.	Family	Common Name	Scientific Name	Abundance	IUCN Red List Status
1.	Ardeidae	Little Egret	<i>Egretta garzetta</i>	Com.	LC
2.		Intermediate Egret	<i>Mesophoyxintermedia</i>	Com.	LC
3.		Great Egret	<i>Casmerodius albus</i>	Com.	LC
4.		Cattle Egret	<i>Bubulcus ibis</i>	Com.	LC
5.		Indian Pond Heron	<i>Ardeola grayii</i>	Com.	LC
6.		Purple Heron	<i>Ardea purpurea</i>	Uncom.	LC
7.	Threskiornithidae	Oriental White Ibis	<i>Threskiornis melanocephalus</i>	Com.	NT
8.	Accipitridae	Brahminy Kite	<i>Haliastur indus</i>	Com.	LC
9.	Phasianidae	Indian Peafowl	<i>Pavo cristatus</i>	Ra.	LC
10.	Rallidae	White - breasted Waterhen	<i>Amauornis phoenicurus</i>	Com.	LC
11.	Charadriidae	Red -wattled Lapwing	<i>Vanellus indicus</i>	Com.	LC

12.	Phalacrocoracidae	Little Cormorant	Phalacrocorax niger	Uncom.	LC
13.	Corvidae	House Crow	Corvus splendens	Com.	LC
14.		Indian Jungle Crow	Corvus culminatus	Com.	LC
15.		Rufous treepie	Dendrocitta vagabunda	Com.	LC
16.	Alcedinidae	White - throated Kingfisher	Halcyon smymensis	Com.	LC
17.	Sturnidae	Common Myna	Acridotheres tristis	Com.	LC
18.	Columbidae	Common Pigeon	Columba livia	Com.	LC
19.		Emerald Dove	Chalcophaps indica	Com.	LC
20.		Spotted Dove	Stigmatopelia chinensis	Com.	
21.	Leiothrichidae	Jungle Barbler	Argya striata	Com.	LC
22.	Dicuridae	Black Drongo	Dicurus macrocerus	Com.	LC
23.		Greater Racket-tailed Drongo	Dicurus paradiseus	Ra.	LC
24.	Cuculidae	Greater Coucal	Centropus sinensis	Com.	LC
25.	Picidae	Lesser Goldenback	Dinopium benghalense	Com.	LC
26.	Megalaimidae	White - cheeked Barbet	Megalaima viridis	Com.	LC
27.	Oriolidae	Black-hooded Oriole	Oriolus xanthornus	Ra.	LC
28.	Pycnonotidae	Red- whiskered Bulbul	Pycnonotus jocosus	Ra.	LC

Com: Common, Uncom: Uncommon, Ra: Rare, LC: Least Concern, NT: Near Threatened

Checklist of birds (Table 1) contains different families (18 families), Common name, scientific name, and Abundance and IUCN Red list status of birds. The abundance of birds is categorised into (Com), Uncommon (Uncom) and Rare (Ra). All Egrets, Indian Pond Heron, White Ibis, Brahminy Kite, White - breasted Waterhen, Red - wattled Lapwing, House Crow, Indian Jungle Crow, Rufous treepie, White - throated Kingfisher, Common Myna, Common Pigeon, Emerald Dove, Spotted Dove, Jungle Babbler, Black Drongo, Greater Coucal, Lesser Goldenback, White - cheeked Barbet are Common species in this area. Purple Heron, Little Cormorant are Uncommon and Indian Peafowl, Greater Racket-tailed Drongo, Black-hooded Oriole and Red- whiskered Bulbul are rare species. All species of birds are Least Concern (LC) except White Ibis; Ibis has Near Threatened (NT) in the IUCN Red List Status.

Highest numbers of birds were recorded during the month of December 2020 and least in October 2020 (Fig. 2). Bird count was carried in October 2020 to January 2021. During this season, more numbers of waterbirds are present in this area. Families of Ardeidae, Threskiornithidae, Corvidae, Leiothrichidae are the highest number of birds and least in Accipitridae, Phasianidae, Rallidae, Charadriidae, Phalacrocoracidae, Alcedinidae, Sturnidae, Columbidae,

Dicruridae, Cuculidae, Picidae, Megalaimidae, Oriolidae, Pycnonotidae. 60% bird species are the Ardeidae family. Waterbirds are the most prominent bird species. Egrets, Indian Pond Heron and White Ibis are the highest number of bird species in this area.

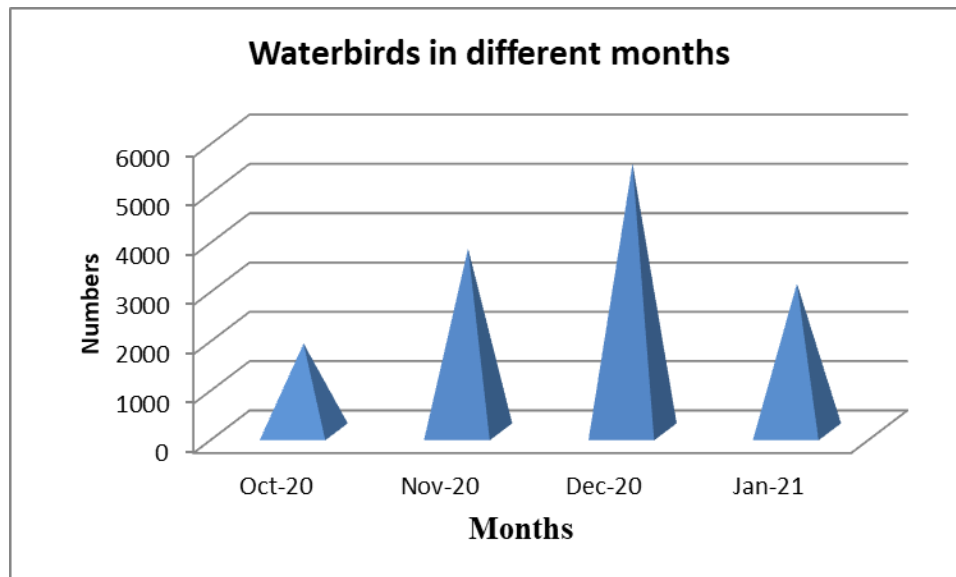


Figure 2: Waterbirds present in different months

DISCUSSION

Diversity of avifauna is one of the most important ecological indicators to evaluate the integrity and stability of ecosystem structure and functions (Kumar et al 2019). Wetlands are very important for the conservation of waterbirds. Many avian species are very limited in population and hence these are very close to extinction because of disturbance, destruction or conversion of their habitats and poaching by humans and animals (Arya *et al* 2019). Due to past and ongoing destruction, and degradation of coastal and inland wetlands, many of these species are now threatened with extinction. Habitat protection is important to conserve bird communities. Large wetlands normally receive all the importance while smaller and isolated wetlands receive least attention and are often neglected from conservation priorities (Karikar *et al* 2019)

Many factors which threaten the Muttara Wetland ecosystem and these factors are influenced by the low diversity level of birds. The uses of fertilizers, Pollution, Chemicals, Tourism nears this wetland, loss of employees, Pesticides and Plastics, etc. are the major threats in this area. Muttara wetland is the major feeding areas of Resident bird species like Egrets, Herons, Ibis, etc. At the 22, 50 and 70 days old the fertilizers like Factompose, Urea, Potash and Microfood (Microelements included fertilizer) are added. At the 18 days old, those plants are damaged by small pests. To check more numbers of pests in the farm, there are more numbers of waterbirds. To avoid harmful pests in the farm, farmers use chemicals like "Regent" (Fipronil 5% SC, Liquid, 250ml/Acre). The Maruthimala Eco-tourism has seen near the Muttara wetland and a small road passed near the wetland. Air pollution and others affect this wetland. The sounds from the Muttara temple and plastics are other consequences. A small water source can be passed near the wetland. These source ends in the Ithikkara River. Many fishermen's used this river in fishery purpose. The fertilizers and pesticides in this wetland are mixed with water source, it cause harmful effects in our ecosystem.

CONCLUSION

Muttara wetland is important for feeding and roosting sites of water birds. Wetlands in Muttara are declining due to anthropogenic activities. The study proved that this area has the lowest species richness of birds. Because, many factors which threaten these wetlands. To conduct different programmes about the importance of wetland and waterbirds given to them. This will help the protection of waterbirds in Muttara. The tourism near the wetland will continue, this increased many threatening impacts of the wetland.

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