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on Wetland Ecosystems including Inland Wetlands

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ENVIS Newsletter *on Wetland Ecosystems including Inland Wetlands*

Sarovar Saurabh

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The articles and other information should be neatly typed in double space not exceeding five pages. The figures, graphs/drawings should be of good quality and clarity. Photographs should be of minimum 300 dpi resolution. References should be limited and cited in the text by name and year. Council of Science editors style may be referred to for listing references at the end.

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From the Editors' Desk

Water is considered the elixir of life and the sustenance of all life forms depends on it. Conservation of wetlands has become a challenge since the 20th Century with depleting freshwater resources. The Government of India has taken several measures over the years to address the concern of man and water. In recent times the 100 days 100 wetlands program has successfully brought the wetlands to the forefront with the community involvement in conservation of water bodies across the country.

In the year 2021, the Ramsar secretariat and the UN has emphasized on the importance of water to all life forms with the themes revolving around the importance of water, wetlands and human. In this Newsletter we bring to you articles on the wetland habitats used by different avifauna, along with other information on wetland flora and activities. During this quarter we have observed World Wetlands Day and the World Water Day along with several environmental days using digital media. We look forward to going back to the personal interactive methods when the situations come to normal.

Here I request all readers to kindly contribute your events, activities, articles and keep us updated on the happenings of the wetlands around you. Your inputs will help us in disseminating the message of environmental well being to the masses.

Editor

Valuing our Wetlands

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A wetland is an aquatic ecosystem where the land is usually submerged under water. The undrained hydric soil supports hydrophytic plants and vegetation. Owing to the unique nature of this ecosystem and predominant presence of water along with sunlight, makes the soil unusually rich in nutrients. The wetlands are the stopovers and breeding sites for millions of migratory avian species each year world-wide.

Evidence of the first wetland plants extends back to the Ordovician Period (485.4 million to 443.8 million years ago). The first terrestrial plants which were dependent on wet substrates had begun to colonize land then. The first marshes and swamps appeared during the Devonian Period (419.2 million to 358.9 million years ago). Since then the wetland dependent vegetation and animals have continued evolving.

Around 2416 wetlands designated as internationally important are distributed unevenly in different continents (except Antarctica). Europe owns the largest number of wetland sites, whereas Africa has the largest area of wetland sites (Xu Ting *et al*., 2019). In India, around 4.7% of the total geographical area accounts for the wetlands (BassiNitin *et al*., 2014).

Wetlands cater to a large number of plant and animal species. This ecosystem feeds downstream waters, traps floodwater, recharges ground water supply, removes pollution and provides a habitat for the fishes and other forms of wildlife. They are also key drivers of local economies by aiding in agriculture, bird watching sites, recreation, fishing etc. I have had the privilege of touring and studying a few notable wetlands of India. My observations from two wetlands are given here below.

I had visited the Udayamarthandapuram Bird Sanctuary (10°26'57".89 N; 79° 33' 21".98 E), situated in Thiruvarur district of Tamil Nadu during October 2018. This freshwater wetland is a small paradise for numerous water birds. It covers an area of 0.45 square kilometre surrounded by agricultural lands and is fed by an irrigation tank that receives water from the Mettur Dam.

The major attraction of this sanctuary is the roosting site for more than hundred Spot-billed Pelicans. This near-threatened coastal water-bird is one of the three extant species of the family Pelecanidae, found in India. Within a span of couple of hours, I had noted the presence of more than 50 avian species that I identified using Grimmet *et al*. (2013) and www.ebird.org. Most of the species were going through their morning activities including preening and feeding. A family of Little Grebe was continuously diving among the reed brakes and aquatic grass. A large flock of Asian Openbill was seen hovering high up in the sky. Hundreds of Lesser Whistling-ducks rested upon the small islands present in middle of the water body. They were accompanied by small flocks of Northern Shovelers and Red-wattled Lapwings. There was a constant influx of Ibises, Egrets and Duck species. As the place is abundant in both aquatic and forest vegetation, it provides an ideal refuge to these birds along with other faunal species.

Congregation of Lesser Whistling-duck at Udayamarthandapuram Bird Sanctuary

Bhandup Pumping Station (19° 08' 30".86 N 72° 57' 52".66 E), one of Mumbai's water filtration plant, lies in the heart of Mumbai Metropolitan Region. This station filters and treats the sewage via the waste management system. Surprisingly, this same area caters to a vast number of avian species, including several migratory species.

I have visited this brackish-water wetland many times, the latest being in December 2019. This region is surrounded by salt-pans, mangrove forests, grasslands and thus, hosts a rich biodiversity.

Along with the charismatic avian species like the Black-crowned Night-heron, Brahminy Kite, Gulls, Coots, Egrets, Sandpipers, Swallows, Kingfishers, Bulbuls and Waterhens, this place is mostly known for the large flamboyance of Greater Flamingos and Lesser Flamingos. The River Tern, a species rendered with the vulnerable status by the IUCN, was seen circling the salt pans. Large groups of Black Kites thronged the transmission towers. Painted Storks and a Black-headed Ibis were seen foraging in the nearby farmlands. As I ventured deeper into the forest, I was greeted by a Golden Jackal *Canis aureus* resting under the shades of trees amidst the bushes. Before I could reach for my camera, this majestic mammal slid within the bushes and out of my sight. I heard the calls of Indian Robin, Rosy Starlings, Indian Golden Oriole and the occasional clinking notes of the Plain Prinia. A beautiful kaleidoscope of fluttering butterflies had painted the surroundings vibrant. Within the curls of long leaves lining the bushes near the road, I saw the transparent eggs of the Common Tree Frog *Polypedates maculatus*.

The area amalgamates the diverse populations of water-birds, grassland and forest birds, butterflies, insects, amphibians, reptiles and a few mammal species.

Currently, there are 42 recognized Ramsar sites in India. The diverse life forms depending on these ecologically important and sensitive areas are under constant threat from urbanization, land use changes and pollution. Climate change, introduction of weeds, pests, invasive species, excessive inundation, loss of vegetation and salinization have also aided in damaging the country's wetlands. The effective management of wetlands require stringent policy frameworks and full integration of these areas into environmental management planning. A better community education and awareness along with effective participatory processes will encourage in conservation and protection of these vulnerable ecosystems.

Painted Stork
(*Mycteria leucocephala*)

Lesser Flamingo
(*Phoeniconaias minor*)

Checklist of bird species spotted in Udayamarthandapuram Bird Sanctuary and Bhandup Pumping Station

Sl. No.	Common Name	Scientific Name	IUCN Status	Site
1	Asian Green Bee-eater	*Merops orientalis*	LC	U
2	Asian Koel	*Eudynamys scolopaceus*	LC	B
3	Asian Openbill	*Anastomus oscitans*	LC	U
4	Ashy Prinia	*Prinia socialis*	LC	U, B
5	Bank Myna	*Acridotheres ginginianus*	LC	U
6	Baya Weaver	*Ploceus philippinus*	LC	B
7	Black Drongo	*Dicrurus macrocercus*	LC	U
8	Black-crowned Night-heron	*Nycticorax nycticorax*	LC	U, B
9	Black-headed Gull	*Larus ridibundus*	LC	B
10	Black-headed Ibis	*Threskiornis melanocephalus*	NT	U, B
11	Black Kite	*Milvus migrans*	LC	U, B
12	Black-winged Stilt	*Himantopus himantopus*	LC	B
13	Brahminy Kite	*Haliastur indus*	LC	U, B
14	Brahminy Starling	*Sturnia pagodarum*	LC	U
15	Brown-headed Gull	*Larus brunnicephalus*	LC	B
16	Blue-tailed Bee-eater	*Merops philippinus*	LC	U
17	Cattle Egret	*Bubulcus ibis*	LC	U
18	Common Coot	*Fulica atra*	LC	U
19	Common Kingfisher	*Alcedo atthis*	LC	U, B
20	Common Moorhen	*Gallinula chloropus*	LC	U
21	Common Myna	*Acridotheres tristis*	LC	U
22	Coppersmith Barbet	*Psilopogon haemacephalus*	LC	U
23	Dusky Crag Martin	*Ptyonoprogne concolor*	LC	U
24	Eurasian Curlew	*Numenius arquata*	NT	U
25	Eurasian Marsh-harrier	*Circus aeruginosus*	LC	B
26	Eurasian Spoonbill	*Platalea leucorodia*	LC	U
27	Glossy Ibis	*Plegadis falcinellus*	LC	U
28	Great Egret	*Ardea alba*	LC	U, B
29	Greater Coucal	*Centropus sinensis*	LC	U
30	Greater Flamingo	*Phoenicopterus roseus*	LC	B

31	Grey Heron	*Ardea cinerea*	LC	U
32	House Crow	*Corvus splendens*	LC	U
33	House Sparrow	*Passer domesticus*	LC	U
34	Indian Cormorant	*Phalacrocorax fuscicollis*	LC	U, B
35	Indian Golden Oriole	*Oriolus kundoo*	LC	B
36	Indian Pond-heron	*Ardeola grayii*	LC	U
37	Indian Robin	*Saxicoloides fulicatus*	LC	B
38	Indian Roller	*Coracias benghalensis*	LC	U
39	Indian Spot-billed Duck	*Anas poecilorhyncha*	LC	U
40	Jacobin Cuckoo	*Clamator jacobinus*	LC	B
41	Large-billed Crow	*Corvus macrorhynchos*	LC	U, B
42	Lesser Flamingo	*Phoeniconaias minor*	NT	B
43	Lesser Whistling-duck	*Dendrocygna javanica*	LC	U
44	Little Cormorant	*Microcarbo niger*	LC	U
45	Little Egret	*Egretta garzetta*	LC	U
46	Little Grebe	*Tachybaptus ruficollis*	LC	U
47	Long-tailed Shrike	*Lanius schach*	LC	B
48	Northern Shoveler	*Spatula clypeata*	LC	U
49	Oriental Darter	*Anhinga melanogaster*	NT	U
50	Oriental Honey-buzzard	*Pernis ptilorhynchus*	LC	U
51	Painted Stork	*Mycteria leucocephala*	NT	B
52	Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	LC	U
53	Pied Kingfisher	*Ceryle rudis*	LC	U
54	Plain Prinia	*Prinia inornata*	LC	B
55	Purple Heron	*Ardea purpurea*	LC	U
56	Purple Swamphen	*Porphyrio porphyrio*	LC	U
57	Red Turtle -dove	*Streptopelia tranquebarica*	LC	U
58	Red-vented Bulbul	*Pycnonotus cafer*	LC	U, B
59	Red-wattled Lapwing	*Vanellus indicus*	LC	U, B
60	River Tern	*Sterna aurantia*	VU	B
61	Rose-ringed Parakeet	*Alexandrinus krameri*	LC	B
62	Rosy Starling	*Pastor roseus*	LC	U
63	Ruddy Shelduck	*Tadorna ferruginea*	LC	U
64	Spot-billed Pelican	*Pelecanus philippensis*	NT	U
65	White-breasted Kingfisher	*Halcyon smyrnensis*	LC	U
66	White-breasted Waterhen	*Amaurornis phoenicurus*	LC	U
67	White-browed Bulbul	*Pycnonotus luteolus*	LC	U
68	White-eared Bulbul	*Pycnonotus leucotis*	LC	B
69	Wire-tailed Swallow	*Hirundo smithii*	LC	B
70	Wood Sandpiper	*Tringa glareola*	LC	B

LC-Least Concern, NT-Near Threatened, VU-Vulnerable,
U-Udayamarthandapuram Bird Sanctuary, B-Bhandup Pumping Station

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Nymphaea rubra Roxb. ex Andrews (Nymphaeaceae), a medicinally important species from Kabar lake Ramsar site

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Kabar Lake in Begusarai district of North Bihar was declared as the first Ramsar site from Bihar during 2020. The wetland is known to provide habitat for a variety of flora and fauna. *Nymphaea rubra* Roxb. ex Andrews (Nymphaeaceae), is a common aquatic species found in the wetlands of North Bihar during the months of July to January. *Nymphaea rubra* Roxb. locally known as 'Lal kamal', was collected from Kabar lake (Lahar ghat, 25.597128 N, 86.161591 E, Alt 21 m) in Begusarai district during the course of documentation of floristic diversity of wetlands of North Bihar in the month of November, 2019.

The genus *Nymphaea* L. (Nymphaeaceae Salisb.) is widespread in tropical and temperate regions comprising of about 40-50 species, growing in open waters of lakes, swamps, ponds, ditches, marshes (Guruge *et al*., 2016). While the species is native to Bangladesh, Mitra (1993) has listed its distribution across India, Srilanka, Myanmar, Malaysia, Thailand, Laos, Cambodia, Vietnam, Indonesia and the Philippines. In India it is distributed in Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Tamil Nadu and West Bengal.

The plant is known by several common names in India namely, Indian Red Water Lily, Crimson Water Lily, Red Water Lily, etc. The regional names include, Lal Shapla, Lal Shaluk in Bengali; Lal kamal, Rakta Kamal in Hindi; Atti in Tamil; Thaamara in Telegu, etc.

The plant and its parts are used in the treatment of several ailments like dysentry (Hassan *et al.*,1988) dyspepsia, diarrhea and piles; palpitation of heart (Sarkar *et al.,* 2008). During the survey around Kabar Lake we met two traditional medical practitioners who informed us the use of the petals of freshly collected flowers in treating menstrual pain.

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Checklist of birds from select wetlands from Perambalur District, Tamil Nadu

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Introduction

Wetlands are one of the most important ecosystems on earth and it also called "biological supermarket" because of the extensive foodchain and rich biodiversity (Mitsch and Gosselink, 2000). Wetlands are the important bird habitats as they use them for feeding, roosting and breeding (Weller, 1999 and Stewart, 2001). In India, wetlands face several anthropogenic activities like, release of domestic sewage, industrial effluents, dumping of solid waste, over-exploitation of the natural resources and conversion of wetlands into barren lands. As in many tropical countries, thousands of acres of natural wetlands were lost in India due to various factors, that results in drastic reduction of wetlands with the migratory birds moving to other sites for their nesting. Among the various habitats, wetlands are considered as one of the most threatened in the world (Prasad *et al,* 2015).

Study area

The Present study was conducted in three different wetlands i.e. Thuraimangalam Lake, Aranarai Lake and Kurumbalur Palayam Lake in Perambalur District, Tamil Nadu. Thuraimangalam Lake is located at Latitude 11°13'30.28"N and Longitude 78°53'12.26"E and is 376 feet elevation above the sea level with an area of around 57.9 hectares. The Aranarai Lake with an area of 33 hectares located at Latitude 11°13'58.39"N and Longitude 78°51'18.44"E, 423 feet above the sea level. The Kurumbalur Palayam Lake situated in Kurumbalur village (Latitude 11°14'31.96"N Longitude 78°48'25.51"E) and 480 feet above the sea level with an area of 71.5 hectares. The freshwater lakes receive water from Pachamalai hills and rainwater. Avifauna was observed during the October 2019 and January 2020 for two months.

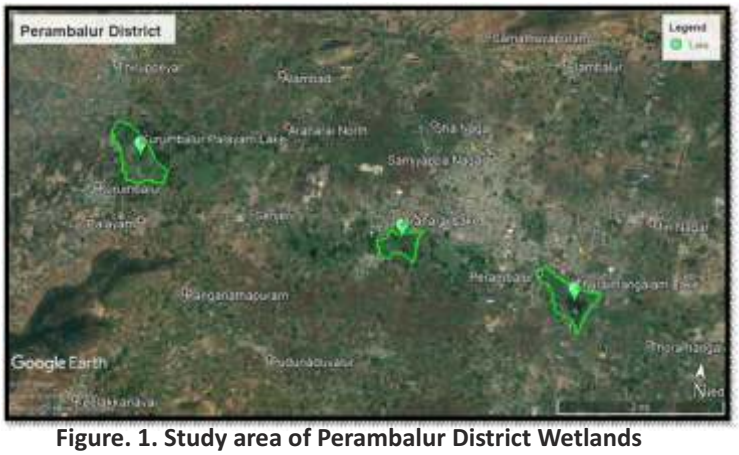

Figure. 1. Study area of Perambalur District Wetlands

Methods

Birds were observed from October 2019 and January 2020 following the line transect method during early morning 7:00 am to 10:00 am as the bird activity was high during this time of the day (Bibby *et al*, 1998). During the field visit, photos were taken using Nikon D3300 camera with zoom lens 55 – 500mm and the bird checklist (Table 1) was prepared following Grimmett *et al.* (2011) and www.ebird.org.

Result and Discussion

A total of 68 species of birds were observed in the three different wetlands of Perambalur District that belong to 16 orders and 36 families (Table 1). Maximum species diversity was recorded from Kurumbalur Palayam lake with 49 species followed by Thuraimangalam lake (48 species) and Aranarai lake (44 species). Many birds are attracted to the three wetlands including migrants, waterfowls, swimmers, divers, waders and terrestrial birds. The terrestrial birds were high in numbers as compared

to the water birds. The maximum bird species recorded were from the order Passeriformes followed by Pelicaniformes and Charadriiformes. The order Passeriformes represented by 27 species of birds contributed 39.7% (Figure 2) to the total list. A minimum of one species were recorded for the orders Podicipediformes, Suliformes, Psittaciformes, Cuculiformes, Strigiformes, Apodiformes and Piciformes. Among the 68 species recorded seven types of feeding habits were observed during the study period i.e. Insectivorous (33.82%), Carnivorous (20.59%), Omnivorous (23.53%), Piscivorous (2.94%), Frugivorous (5.88%), Nectarivorous (2.94%) and Granivorous (10.29%). The difference in species diversity can be attributed to the surrounding landscape as the Aranarai lake has high human influence as compared to Kurumbalur Palayam lake which has more agricultural land surrounding the wetland. At Aranarai lake we observed encroachment of wetland coupled with sewage release, and solid waste dumping impacting the wetland as well as the diversity of wetland birds.

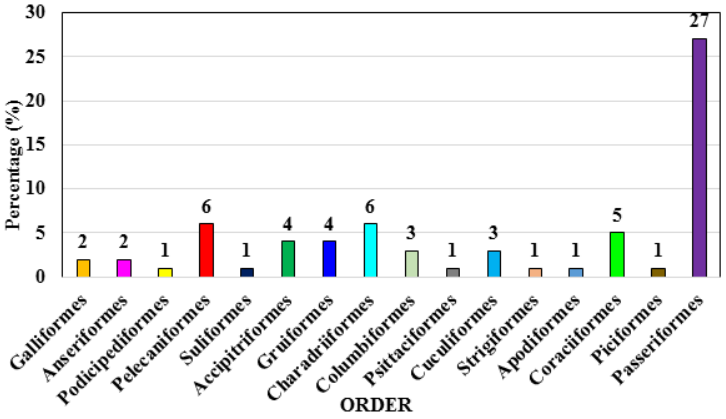

Figure. 2. Percentage wise avifaunal order from study areas

Conclusion

From the brief comparative study we observed that the three wetlands are important habitats for a variety of bird species. The diversity was mainly governed by the surrounding landscape and anthropogenic influences like sewage release, solid waste dumping and urbanisation. In order to conserve the three wetlands the Wetland (Conservation & Management) Rules (2017) should be employed.

Jacobin Cuckoo
(*Clamator jacobinus*)

Eurasian Moorhen
(*Gallinula chloropus*)

Spotted Owlet
(*Athene brama*)

Red-wattled Lapwing
(*Vanellus indicus*)

White-browed Bulbul
(*Pycnonotus luteolus*)

Red-vented Bulbul
(*Pycnonotus cafer*)

Table. 1. Avifaunal checklist in three different wetlands of Perambalur District, Tamil Nadu

S. No	Order	Family	Common Name	Scientific Name	Food Habit	KPL		ARL		TML	
						1	2	1	2	1	2
1	Galliformes	Phasianidae	Grey Francolin	*Francolinus pondicerianus*	O	-	-	-	-	√	√
2			Indian Peafowl	*Pavo cristatus*	O	-	√	√	-	√	√
3	Anseriformes	Anatidae	Lesser Whistling Duck	*Dendrocygna javanica*	O	-	-	-	-	-	√
4			Indian Spot-billed Duck	*Anas poecilorhyncha*	O	√	-	√	-	√	√
5	Podicipediformes	Podicipedidae	Little Grebe	*Tachybaptus ruficollis*	C	√	√	√	√	-	√
6	Pelecaniformes	Threskiornithidae	Glossy Ibis	*Plegadis falcinellus*	C	-	√	-	√	-	-
7		Ardeidae	Indian Pond-Heron	*Ardeola grayii*	C	√	√	√	√	√	√
8			Grey Heron	*Ardea cinerea*	C	-	√	-	-	√	-
9			Purple Heron	*Ardea purpurea*	C	-	√	-	-	-	-
10			Cattle Egret	*Bubulcus ibis*	I	√	√	√	√	√	√
11			Little Egret	*Egretta garzetta*	C	√	√	-	√	√	-
12	Suliformes	Phalacrocoracidae	Little Cormorant	*Microcarbo niger*	P	√	√	√	√	√	√
13	Accipitriformes	Accipitridae	Black-winged Kite	*Elanus caeruleus*	C	-	√	-	√	√	-
14			Black Kite	*Milvus migrans*	C	-	√	-	√	-	-
15			Brahminy Kite	*Haliastur indus*	C	-	√	-	-	-	-
16			Shikra	*Accipiter badius*	C	-	-	-	-	√	-
17	Gruiformes	Rallidae	White-breasted Waterhen	*Amaurornis phoenicurus*	O	-	√	-	-	√	-
18			Grey-headed Swamphen	*Porphyrio poliocephalus*	O	-	√	-	-	-	-
19			Eurasian Moorhen	*Gallinula chloropus*	O	-	-	-	√	-	√
20			Eurasian Coot	*Fulica atra*	O	√	√	√	√	√	√
21	Charadriiformes	Recurvirostridae	Black-winged Stilt	*Himantopus himantopus*	I	√	-	-	-	√	-
22		Charadriidae	Red-wattled Lapwing	*Vanellus indicus*	I	√	√	√	√	√	√
23			Yellow-wattled Lapwing	*Vanellus malabaricus*	I	-	-	-	-	√	-
24			Little Ringed Plover	*Charadrius dubius*	I	-	√	-	-	√	-
25		Scolopacidae	Common Sandpiper	*Actitis hypoleucos*	C	-	√	√	-	-	-
26			Wood Sandpiper	*Tringa glareola*	O	-	-	-	-	-	-
27	Columbiformes	Columbidae	Eurasian Collared-Dove	*Streptopelia decaocto*	G	-	-	√	√	√	-
28			Spotted Dove	*Streptopelia chinensis*	G	√	√	√	-	√	√
29			Rock Pigeon	*Columba livia*	G	√	√	-	-	√	-
30	Psittaciformes	Psttiaculidae	Rose-ringed Parakeet	*Psittacula krameri*	G	√	√	√	√	√	-
31	Cuculiformes	Cuculidae	Jacobin Cuckoo	*Clamator jacobinus*	O	-	-	-	√	-	-
32			Asian Koel	*Eudynamys scolopaceus*	O	√	√	√	√	√	√
33			Southern Coucal	*Centropus sinensis parroti*	O	√	-	√	√	-	-
34	Strigiformes	Strigidae	Spotted Owlet	*Athene brama*	C	-	-	-	√	-	-
35	Apodiformes	Apodidae	Asian Palm-Swift	*Cypsiurus balasiensis*	I	√	√	√	√	√	√
36	Coraciiformes	Coraciidae	Indian Roller	*Coracias benghalensis*	I	√	√	√	-	-	-
37		Alcedinidae	White-throated Kingfisher	*Halcyon smyrnensis*	C	√	√	√	-	√	√
38			Common Kingfisher	*Alcedo atthis*	P	√	-	-	-	-	-
39		Meropidae	Blue-tailed Bee-eater	*Merops philippinus*	I	√	√	√	√	√	√
40			Green Bee-eater	*Merops orientalis*	I	-	-	-	-	√	-
41	Piciformes	Megalaimidae	Coppersmith Barbet	*Psilopogon haemacephalus*	F	-	-	-	-	√	-
42	Passeriformes	Aegithinidae	Common Iora	*Aegithina tiphia*	I	√	-	-	-	-	-
43		Laniidae	Brown Shrike	*Lanius cristatus*	I	-	-	-	-	-	-
44		Dicruridae	Black Drongo	*Dicrurus macrocercus*	I	√	-	√	√	√	√
45		Corvidae	House Crow	*Corvus splendens*	O	-	-	√	√	√	√
46			Indian Jungle Crow	*Corvus macrorhynchos culminatus*	O	√	√	√	√	√	√
47		Hirundinidae	Barn Swallow	*Hirundo rustica*	I	√	-	√	-	√	√
48		Pycnonotidae	Red-vented Bulbul	*Pycnonotus cafer*	F	√	-	√	√	√	√
49			White-browed Bulbul	*Pycnonotus luteolus*	F	√	-	-	√	√	-
50		Cisticolidae	Ashy Prinia	*Prinia socialis*	I	√	-	√	-	√	-
51			Plain Prinia	*Prinia inornata*	I	√	-	√	-	√	-
52			Zitting Cisticola	*Cisticola juncidis*	I	√	-	-	-	-	-
53			Common Tailorbird	*Orthotomus sutorius*	I	√	√	-	-	√	-
54		Leiothrichidae	Large Grey Babbler	*Turdoides malcolmi*	C	-	-	-	√	-	-
55			Yellow-billed Babbler	*Turdoides affinis*	O	√	-	√	√	√	-

S. No	Order	Family	Common Name	Scientific Name	Food Habit	KPL		ARL		TML	
						1	2	1	2	1	2
56	Passeriformes	Sturnidae	Common Myna	*Acridotheres tristis*	O	√	√	√	√	√	√
57		Muscicapidae	Oriental Magpie-Robin	*Copsychus saularis*	I	-	-	√	-	√	-
58			Indian Robin	*Saxicoloides fulicatus*	I	-	√	√	-	-	-
59			Pied Bushchat	*Saxicola caprata*	I	√	-	-	-	-	-
60		Dicaeidae	Pale-billed Flowerpecker	*Dicaeum erythrorhynchos*	F	-	-	-	-	√	-
61		Nectariniidae	Purple Sunbird	*Cinnyris asiaticus*	N	√	√	-	√	-	√
62			Purple-rumped Sunbird	*Leptocoma zeylonica*	N	√	√	√	√	√	√
63		Passeridae	House Sparrow	*Passer domesticus*	G	-	-	-	-	√	-
64		Ploceidae	Baya Weaver	*ploceus philippinus*	G	-	-	√	-	-	-
65		Estrildidae	Scaly-breasted Munia	*Lonchura punctulata*	G	-	√	-	-	√	-
66		Motacillidae	White-browed Wagtail	*Motacilla maderaspatensis*	I	-	√	√	√	√	√
67			Grey Wagtail	*Motacilla cinerea*	I	-	√	-	√	-	-
68			Paddyfield Pipit	*Anthus rufulus*	I	-	-	√	-	-	√
TOTAL						**34**	**35**	**33**	**31**	**43**	**26**

KPL – KurumbalurPalayam Lake, ARL – Aranarai Lake, TML – Thuraimangalam Lake

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Indian Pond Heron
(*Ardeola grayii*)

Common Myna
(*Acridotheres tristis*)

Webinar on Wetlands

The SACON ENVIS Resource Partner, amidst the prevailing pandemic, conducted a Webinar on Wetlands on January 13th 2021 as part of World Wetlands Day 2021 titled "**Get Inspired by DST Inspire Fellows**". We had two Govt. of India DST Inspire fellows associated with SACON as speakers covering different aspects of wetlands. Zoom was used as the platform for the webinar delivery and considering the overwhelming response received from over 500 participants, the webinar was also streamed live on YouTube channel. The participants comprised of college students, researchers and faculty from various institutions of the country. Dr. Goldin Quadros, Principal Scientist & ENVIS Coordinator introduced the speakers and welcomed the participants.

The first speaker Dr. Mythreyi Devarajan, from the Ecotoxicology Division, SACON spoke on the topic titled **"Wetlands are not your Wastelands – A Pallikaranai Case study"**. In her talk Dr. Mythreyi gave an overview of wetlands, ecosystem services and anthropogenic threats to wetlands. Pallikaranai being her study area, she discussed the threats and the huge impacts of dumping waste to a wetland. Furthermore, she explained how carbon and methane emissions, biomining and dredging are making the wetland area to shrink. She also shared some views on scientific ways to dump waste and suggested that Pallikaranai can be saved if there is a collective will to do so.

Mr. Ankit Moun, the second speaker and Inspire fellow associated with Environmental Impact Assessment Division shared his experience of working with the otters. He gave a detailed presentation around the topic "**Species at Risk: case study from South India**". Mr Ankit gave an overview of his study area, otter species, their distribution and threats. Furthermore, he discussed about the areas occupied by the otters and habitat status of the otters in Tungabhadra Otter Conservation Reserve. He compared the habitat variables between otter and Non-otter sites and concluded with the necessity for habitat restoration to achieve conservation.

The participants had several interesting questions that were clarified by both the speakers. The webinar ended with the vote of thanks proposed by Dr. Goldin Quadros. The registered participants were provided with e-certificates based on attendance.