

Avifauna diversity at the Mahindra World City Campus, Suburb of Maraimalai Nagar, Southern part of Chennai, Tamil Nadu, India

C. Arivazhagan¹, B. Rathinasabapathy² and V. Kalaiarasan³

<https://doi.org/10.56343/STET.116.013.002.005>

<http://stetjournals.com>

¹Trustee, Indo American Wildlife Society, Chennai - 600 033, Tamil Nadu, India

²Ecologist, Pitchandikulam Forest Consultants, Adyar Eco Park, No. 6/103, DGS Dinakaran Salai, Raja Annamalai Puram, Chennai - 600 028, Tamil Nadu, India

³Project Officer, Chennai Rivers Restoration Trust, No. 6/103, DGS Dinakaran Salai, Raja Annamalai Puram, Chennai - 600 028, Tamil Nadu, India

Abstract

The avifauna of Mahindra World City (MWC) Campus, Chennai was recorded. Sixty one bird species were recorded. The study suggested increasing native tree cover along the MWC campus as the most effective long-term strategy to improve bird diversity in this suburb area.

Key words: avifauna, diversity, Importance Value, IUCN category, species composition

Received : March 2018

Revised and Accepted : January 2019

INTRODUCTION

Birds are the most ubiquitous animals that can be easily seen around us. Their ability to fly has always been a matter of envy and fascination to the young and the old alike. This specialization is achieved by adaptations such as their characteristic feathers, streamlined body, wings, a beak with no teeth and lightweight but strong hollow bones. Birds, like mammals are warm-blooded or endothermic. They are also social and communicate with each other using visual signals, calls and usually eggs are laid in a nest and incubated by the parents who care for the hatchlings. Some species undertake long distance annual migrations, and many do short distance, irregular movements. Birds are important for humans because they not only provide food, but also perform innumerable services like pollination, seed dispersal and pest control. They also provide guano (droppings) which is used as fertilizers.

Around 1,260 species of birds are known in India of which nearly 10% of these may be commonly seen within the Chennai Urban area (Rathinasabapathy, *et al*, 1996). Depending on the diversity of habitats that the landscapes offer, cities in South India tend to support anywhere between 60 to 150 species of birds

(Daniels and Arivazhagan, 2008). A smaller fraction of these birds might actually breed within cities. Conventionally, birds that occur throughout the year in a locality and breed within it are called "residents". All other birds are "visitors". Birds that arrive and leave in a predictable manner are "seasonal" visitors. Others are "sporadic" visitors. The present study was attempted to document the avifauna of MWC, Chennai in an extent of 2km radius.

STUDY AREA

Mahindra World City Chennai (Fig.1) is located on NH45, and spread is over 1550 acres. Mahindra World City Chennai was established in 2002 and is India's

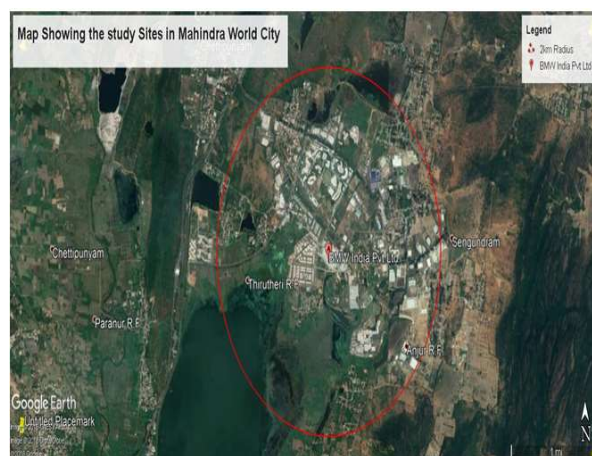


Fig.1. Map Showing the study area of Mahindra World City (MWC), Chennai

*Corresponding Author :
email:

first functional Special Economic Zone (SEZ). MWC Chennai is promoted in a PPP between Mahindra Group and Tamil Nadu Industrial Development Corporation Ltd (TIDCO). The business zone is divided into three sector specific SEZs for IT, Auto Ancillaries and Apparel & Fashion Accessories, and a Domestic Tariff Area. It houses more than 60 blue-chip

companies including BMW, Infosys, Wipro, BASF, Renault-Nissan, Timken, Lincoln Electric, Heat & Control, Dorma, Fujitec, Parker, NTN Bearings, Lear Automotive, TVS Group of companies, Force Motors employing more than 38000 people. MWC Chennai is also India's first IGBC Gold (Stage 1) certified Green Township.

Table 1. List of study area in 2km radius of MWC Campus

S. No.	Study Environment	Name of the Places
1	Wet Lands	Veerapuram Lake, Anjur Lake, Anumanthi Lake, Kolavai Lake,
2	Reserve Forest	Theanmalpakkam RF,
3	Village Environment	Teamalaipakkam, Anjur, Anumanthapuram, Veerapuram, Anumanthi
4	Factory Area	BMW and surrounding area

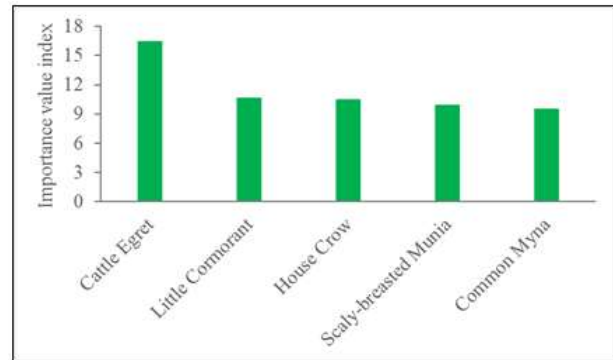


Fig.2. The five most common species determined by the Importance value index

Table 2. Ecological information of the bird species recorded in and around Mahindra City.

S. No.	Common Name	Scientific Name	Relative abundance	Relative frequency	Importance value index	IUCN Status
1	Little Grebe	<i>Tachybaptus ruficollis</i>	2.17	1.75	3.92	Least Concern
2	Indian Pond Heron	<i>Ardeola grayii</i>	3.94	4.8	8.75	Least Concern
3	Cattle Egret	<i>Bubulcus ibis</i>	11.24	5.24	16.48	Least Concern
4	Whitebreasted Waterhen	<i>Amaurornis phoenicurus</i>	0.39	0.87	1.27	Least Concern
5	Purple Moorhen	<i>Porphyrio porphyrio</i>	0.79	1.31	2.1	Least Concern
6	Asian Openbill Stork	<i>Anastomus oscitans</i>	2.56	1.31	3.87	Least Concern
7	Indian spot-billed duck	<i>Anas poecilorhyncha</i>	0.2	0.44	0.63	Least Concern
8	Little Cormorant	<i>Phalacrocorax niger</i>	8.09	2.62	10.71	Least Concern
9	Little Egret	<i>Egretta garzetta</i>	0.79	1.31	2.1	Least Concern
10	Eurasian Coot	<i>Fulica atra</i>	4.14	2.18	6.33	Least Concern
11	Broad Billed Sandpiper	<i>Calidris falcinellus</i>	0.2	0.44	0.63	Least Concern
12	Pied Wagtail	<i>Motacilla alba</i>	0.59	1.31	1.9	Least Concern
13	Grey Heron	<i>Ardea cinerea</i>	0.2	0.44	0.63	Least Concern
14	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	1.38	2.18	3.56	Least Concern
15	Pied Kingfisher	<i>Ceryle rudis</i>	0.2	0.44	0.63	Least Concern
16	Small Blue Kingfisher	<i>Alcedo atthis</i>	0.39	0.87	1.27	Least Concern
17	Green bee-eater	<i>Merops orientalis</i>	1.78	3.49	5.27	Least Concern
18	Chestnut-headed bee-eater	<i>Merops leschenaulti</i>	0.39	0.44	0.83	Least Concern
19	Ashy Wood Swallow	<i>Artamus fuscus</i>	0.39	0.44	0.83	Least Concern
20	Asian-brown Flycatcher	<i>Muscicapa dauurica</i>	0.2	0.44	0.63	Least Concern
21	Red-Wattled Lapwing	<i>Vanellus indicus</i>	0.39	0.87	1.27	Least Concern
22	Red-vented Bulbul	<i>Pycnonotus cafer</i>	1.18	1.75	2.93	Least Concern
23	Roseringed Parakeet	<i>Psittacula krameri</i>	1.78	1.31	3.09	Least Concern
24	Pied Cuckoo	<i>Clamator jacobinus</i>	0.2	0.44	0.63	Least Concern
25	Asian Koel	<i>Eudynamis scolopaceus</i>	0.79	2.18	2.97	Least Concern

S. No.	Common Name	Scientific Name	Relative abundance	Relative frequency	Importance value index	IUCN Status
26	Greater Coucal	<i>Centropus sinensis</i>	0.39	0.87	1.27	Least Concern
27	Paddyfield Pipit	<i>Anthus rufulus</i>	1.97	3.06	5.03	Least Concern
28	Oriental Magpie Robin	<i>Copsychus saularis</i>	0.59	1.31	1.9	Least Concern
29	Indian Robin	<i>Copsychus fulicatus</i>	3.35	3.93	7.28	Least Concern
30	Indian Roller	<i>Coracias benghalensis</i>	1.18	2.62	3.8	Least Concern
31	Eurasian Hoopoe	<i>Upupa epops</i>	0.2	0.44	0.63	Least Concern
32	House Crow	<i>Corvus splendens</i>	5.72	4.8	10.52	Least Concern
33	Large-billed Crow	<i>Corvus macrorhynchos</i>	2.37	3.49	5.86	Least Concern
34	Common Kestrel	<i>Falco tinnunculus</i>	0.39	0.87	1.27	Least Concern
35	Shikra	<i>Accipiter badius</i>	0.2	0.44	0.63	Least Concern
36	Black Kite	<i>Milvus migrans</i>	0.39	0.44	0.83	Least Concern
37	Rock Pigeon	<i>Columba livia</i>	2.96	3.49	6.45	Least Concern
38	Spotted Dove	<i>Streptopelia chinensis</i>	0.59	1.31	1.9	Least Concern
39	Black Drongo	<i>Dicrurus macrocercus</i>	3.55	5.24	8.79	Least Concern
40	Common Myna	<i>Acridotheres tristis</i>	4.73	4.8	9.54	Least Concern
41	Black-headed Myna	<i>Sturnia pagodarum</i>	1.18	1.31	2.49	Least Concern
42	Rosy Starling	<i>Pastor roseus</i>	0.39	0.44	0.83	Least Concern
43	Rufous Treepie	<i>Dendrocitta vagabunda</i>	0.2	0.44	0.63	Least Concern
44	Common Iora	<i>Aegithina tiphia</i>	0.2	0.44	0.63	Least Concern
45	Yellow-billed Babbler	<i>Turdoides affinis</i>	2.76	0.87	3.63	Least Concern
46	Common Tailorbird	<i>Orthotomus sutorius</i>	0.79	1.31	2.1	Least Concern
47	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	0.39	0.87	1.27	Least Concern
48	Loten's Sunbird	<i>Cinnyris lotenius</i>	1.18	1.75	2.93	Least Concern
49	House Sparrow	<i>Passer domesticus</i>	1.58	1.75	3.32	Least Concern
50	White Browed Wagtail	<i>Motacilla maderaspatensis</i>	0.39	0.44	0.83	Least Concern
51	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	0.2	0.44	0.63	Least Concern
52	Indian Pitta	<i>Pitta brachyuran</i>	0.2	0.44	0.63	Least Concern
53	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	0.2	0.44	0.63	Least Concern
54	Spotted Owlet	<i>Athene brama</i>	0.2	0.44	0.63	Least Concern
55	Scaly-breasted Munia	<i>Lonchura punctulata</i>	7.3	2.62	9.92	Least Concern
56	Black-caped Swallow	<i>Notiochelidon pileata</i>	0.39	0.44	0.83	Least Concern
57	Indian Peafowl	<i>Pavo cristatus</i>	1.58	0.87	2.45	Least Concern
58	Asian paradise flycatcher	<i>Terpsiphone paradis</i>	0.39	0.87	1.27	Least Concern
59	Pied Bushchat	<i>Saxicola caprata</i>	0.79	1.75	2.54	Least Concern
60	Grey Francolin	<i>Francolinus pondicerianus</i>	2.17	2.62	4.79	Least Concern
61	Common Swift	<i>Apus apus</i>	4.54	3.49	8.03	Least Concern

MWC Chennai is currently home to over 2,000 families across its four multi-format residential projects. Residents have convenient access to nearby commercial and recreational areas. The CBSE-affiliated Mahindra World School, a hospital, banks and ATMs, a commercial centre with retail outlets and a food court, a child care centre, the MWC Club and a business hotel are all located within MWC Chennai.

METHODS

The study area was divided in to wetlands, reserve forest, village environment and factory area covering (Table 1) in 12 sampling points, using standard point count method to count the birds in and around the Mahindra World City. The birds identification was done using The Book of Indian Birds, by Salim Ali (2002).

Table 3. List birds sighted in different areas of MWC Campus, Chennai.

Bird Species	BMW Factory	Green Belt Area	Fields and Scrub border	Hillock and Reserve Forest	Wet Lands
Little Grebe					+
Indian Pond Heron	+				+
Cattle Egret	+	+			+
Whitebreasted Waterhen					+
Purple Moorhen					+
Asian Openbill Stork					+
Indian spot-billed duck					+
Little Cormorant					+
Little Egret					+
Eurasian Coot					+
Broad Billed Sandpiper					+
Pied Wagtail					+
Grey Heron					+
White-throated Kingfisher			+		+
Pied Kingfisher					+
Small Blue Kingfisher					+
Green bee-eater			+	+	+
Chestnut-headed bee-eater			+		
Ashy Wood Swallow				+	
Asian-brown Flycatcher				+	
Red-Wattled Lapwing			+		+
Red-vented Bulbul			+	+	
Roseringed Parakeet			+	+	
Pied Cuckoo				+	
Asian Koel			+		
Greater Coucal				+	
Paddyfield Pipit			+	+	
Oriental Magpie Robin			+		
Indian Robin	+		+	+	
Indian Roller				+	
Eurasian Hoopoe			+	+	+
House Crow	+		+	+	+
Large-billed Crow			+	+	
Common Kestrel			+		
Shikra	+		+	+	+
Black Kite				+	
Rock Pigeon		+		+	+
Spotted Dove			+		+
Black Drongo		+	+	+	
Common Myna	+	+	+	+	
Black-headed Myna			+	+	

Bird Species	BMW Factory	Green Belt Area	Fields and Scrub border	Hillock and Reserve Forest	Wet Lands
Rosy Starling				+	
Rufous Treepie			+		
Common Iora				+	
Yellow-billed Babbler			+	+	
Common Tailorbird		+	+	+	
Purple-rumped Sunbird				+	
Loten's Sunbird	+	+	+		
House Sparrow			+	+	
White Browed Wagtail					+
Eurasian Golden Oriole			+		
Indian Pitta				+	
Coppersmith Barbet			+		
Spotted Owlet				+	
Scaly-breasted Munia				+	
Black-caped Swallow				+	
Indian Peafowl			+		
Asian paradise flycatcher		+	+		
Pied Bushchat			+	+	
Grey Francolin			+	+	
Common Swift			+		

Plate.1. Avifauna observed in and around Mahindra World City





Indian Pond Heron



Common Sandpiper



Large Pied Wagtail



White-breasted Waterhen



Asian Openbill-Stork



Grey Heron



Cattle Egret



Ashy Wood Swallow



Indian Robin (Female)



Purple Sunbird



Shikra



Black Drongo



Asian Paradise-flycatcher



Little-green Bee-eater



Yellow-billed Babbler



Redvented Bulbul



Indian Roller



Redwattled Lapwing



Grey Francolin



Rosy Starling



Rock Pigeon



Paddy-field Pipit



Common Myna



Asian Brown Flycatcher



Large-billed Crow



Spotted Dove



Purple Moorhen



Large Egret



Whitethroated Kingfisher

RESULTS AND DISCUSSION

Ecological information of the bird species recorded in and around Mahindra City is given table 2 and list birds sighted in different areas of MWC Campus, Chennai is given in table 3.

The species estimation curve generated in the Estimate S software (ver. 9.1) uses the number of bird species recorded during the survey to estimate the maximum number of bird species which can be found in the habitat. We observed 61 bird species through our point count survey. The Chao 2 non-parametric estimator, which is known to provide best estimate of species diversity from abundance data, predicted the presence of 61 bird species from the study area. The gradual increase in the estimation curves indicates that the asymptotic values for the bird diversity is almost achieved in our samples. Both the diversity indices,

Shanon's index and Simpson's Reciprocal Index ($1/D$) provided relatively higher values, 3.48 and 22.36 respectively. This higher diversity index values indicates the good diversity of birds in the study area.

Species composition

The most common species in the study area was determined by the Importance Value Index, which is the sum of relative abundance and relative frequency of each species encountered in the survey. Cattle Egret was found to be the most common species ($IVI=16.5$) followed by Little Cormorant ($IVI=10.7$) and House Crow ($IVI=10.5$) (Fig.2). Almost 50 % of the birds ($n=30$) are encountered rarely, ie. encountered in 3 e" samples or individuals.

The results show that high density and diversity of birds are found in reserve forest and wetlands, when compared to that of the factory and green belt area.

The high diversity of birds found in the reserve forest and wetlands indicates that availability food resources and green cover in both the sites. On the other hand low diversity and density of birds in the factory and surrounding area shows that not much green cover and less availability of food would impact on bird diversity. Therefore, increasing green cover and maintaining a well-balanced mix of vegetation in the factory area will enhance the species diversity of birds and compensate, for negative effect of built up area. The study recommends that increasing native tree cover along the MWC campus would impact the most effective long-term strategy to improve bird diversity in the suburb area.

REFERENCE

- Daniels, R.J.R and Arivazhagan, C. 2008. 150 Animals of IIT -Madras, Pocket Guide Published in Golden Jubilee Function. IIT -Madras.
- Rathinasabapathy, B., Rajarathinam, R., Kalairasan, V. and Venkatraman, C. 1996. Avifaunal composition of the scrub jungle habitats in and around Chennai. In Proceedings of the Pan Asian Ornithological Congress. Ed. By V.S. Vijayan, Laitha Vijayan S.Bhubathy and P. Balasubramanian. P. 35-40.
- Salim Ali, 2002 .The Book of Indian Birds. Bombay Natural History Society, Oxford University press. Pp 409. <https://doi.org/10.5962/bhl.title.43949>