



Science Arena Publications
Specialty Journal of Biological Sciences

ISSN: 2412-7396

Available online at www.sciarena.com

2019, Vol, 5 (2): 12-18

Studies on the Density of Birds in Railway Colony, Madurai

Thavamani Malar Meenakshi, Antony Joseph Thatheyus*

PG & Research Department of Zoology, the American College, Madurai, India.

*Corresponding Author

Abstract: *Birds are incredibly fascinating and have captured our imagination since the earliest times. They are both visually and acoustically conspicuous organisms in most ecosystems. As birds are comparatively easy to identify, they have attracted the attention of humans. Hence the present work has been designed to study the density of birds in Railway Colony, one of the lung areas of Madurai. The study was carried out for six months from March 2018 to August 2018. Regular monitoring of the birds was carried out every fortnight in the selected five regions of the study area by making transect counts and recording their number for the entire study period. The survey revealed the presence of twenty four species of birds belonging to nine orders and eighteen families. Shannon index, Shannon Evenness and Simpson's indices of birds were also estimated. Twenty four species of birds were recorded belonging to nine orders and eighteen families.*

Keywords: *Birds, Aves, Species, Density, Madurai.*

INTRODUCTION

Bird community evaluation has become an important tool in biodiversity conservation and for identifying conservation actions in areas of high human pressure. All types of birds are incredibly fascinating and have captured our imagination since the earliest times. The Indian subcontinent is very rich in biodiversity. According to an estimate, 1300 bird species are found in Indian subcontinent, out of the more than 9000 bird species of the world and over 13% of the world's bird fauna are found in India (Grimmett *et al.*, 1998). It is suggested that the avifauna is important for the good health of the ecosystem as these birds play various roles as scavengers, pollinators and predators of insect pests (Padmavati *et al.*, 2010). They are natural wonders of song, colour, flight and display. With so many diverse types of birds, learning about them is an exciting adventure. Birds contribute most significantly to the diversity of terrestrial habitats. Birds also have a special role in conservation as they not only help identify areas most worth saving, but also have the capacity to realize the significance of conservation (Daniel, 1994).

Among species, birds have an important place because they are visible and highly valued by humans. Birds are one of the best and in some cases the only best to monitor the short and long term environmental changes. Herons and egrets are recognized as important biological indicators of environmental changes in wetlands from time immemorial. Aristotle in 340 BC described the behaviour of cranes which could be used to forecast the weather. Furthermore, fishermen from the seventeenth century had used flocks of seabirds as indicators of fish abundance in coastal wetlands. Due to this in recent days more attention has been given to conservation, monitoring and ecological studies of birds in different habitats (Newton, 1995). Hence the present work has been undertaken to study the density of birds in Railway Colony, one of the lung areas of Madurai city.

Materials and Methods

Study area

The study was conducted from March 2018 to August 2018 at Railway Colony in Madurai. Madurai located at 9.93° N 78.12° E, has an average elevation of 101 metres. The city of Madurai lies on the flat and fertile plain of the River Vaigai, which runs in the northwest- southeast direction through the city, dividing it into almost two equal halves. The climate is tropical and the summers are much rainier than the winters in Madurai. In Madurai the average annual temperature is 28.8°C and the average rainfall is 840mm.

The Railway Colony is a residential area meant for the employees and their families of Southern Railways in Madurai, Tamil Nadu. A recreation center, living quarters for the employees, temple, church and a marriage hall are all located within the premises of the colony. The railway colony is strategically located, very near the Madurai Junction railway station. The colony also has an entry from the Karimedu market area, thus serving as a conduit for residents and non-residents alike who want to enter the Karimedu market and the surrounding areas from the Periyar bus stand. The latitude of the Railway Colony, Madurai, Tamil Nadu, India is N 9°55.2437' and the longitude is E 78°6.5902'. The Railway Colony is located with the GPS coordinates of 9.9249°N, 78.1066°E (Fig 1). The study area was divided into five different locations as office, park, church, red ground and quarters.

Survey of Birds

The study was carried out for six months from March 2018 to August 2018. Regular monitoring of the birds was carried out every fortnight by making transect counts and recording their number for the entire study period. The birds were observed during early morning from 6.00am to 8.00am. Different species of birds were observed. The study of bird species was carried out by random walk, using transect method. Pair of binoculars and digital camera was used. For identifying birds, field guides were used (Ali, 2002; Grimmett *et al.*, 1998).

Results

Avian diversity study was undertaken in Railway colony, Madurai from March 2018 to August 2018. Totally twenty four bird species were recorded belonging to several orders and families. Table 1 shows the species of birds observed in Railway colony, Madurai. Order Passeriformes was represented with eleven species while Cuculiformes and Pelecaniformes were with three species each followed by Coraciiformes with two species and finally Columbiformes, Piciformes, Psittaciformes, Accipitriformes and Strigiformes with one species each in Railway colony. Table 2 exhibits the list of bird species observed in Railway colony from March to August 2018. It indicates the presence and absence of birds and *Psittacula krameri* was more in number during all months. In June maximum number of species of birds was present. March and April had minimum number of bird species. Table 3 shows number of birds in five selected areas. The density of birds of the different families is exhibited in Fig.1. Families Corvidae and Cuculidae exhibited the highest density followed by Ardeidae and Nectariniidae. Figure 2 shows the prevalence of birds. Order Passeriformes (46%) exhibited the highest followed by Pelecaniformes (13%), Cuculiformes (13%), Coraciiformes (8%), Accipitriformes (4%), Columbiformes (4%), Psittaciformes (4%) and Strigiformes (4%).

Discussion

As a result of six months (March 2018 to August 2018) observation in the Railway colony, twenty four bird species were recorded belonging to different orders and families. Diversity of avifauna is one of the most important ecological indicators to evaluate the quality of habitats. More number of birds was observed in red ground and quarters area. *Eudynamis scolopacea*, *Corvus splendens*, *Psittacula krameri* and *Acridotheres tristis* were recorded in highest numbers. Railway colony had more number of trees and so the birds were able to survive. Most of the species had local movement for their food resources. Some of the aquatic birds were

observed in the present study including *Halcyon smyrnensis* and *Ardeola grayii*. The occurrence of these birds in the area suggests that the area provides a favourable condition for feeding.

In the present study, twenty four species of birds are recorded. Even though the Railway colony had more number of trees, due to human habitation and noise pollution which interrupt the habitat of birds, less number of birds was noticed. There was a fluctuation in number of birds during study period. This may be due to influence of season in this area. Apart from that, several reports confirmed that seasonal variation, local migration pattern, reproductive behaviour, latitude and the regional and global microclimate events and erratic climate may also influence the number of birds in any habitat (Pittock, 2003). However a detailed long term study in this aspect is required to know the exact factors which influence the fluctuation in the study area. The species composition of a specific area or a community is interlinked to biotic interactions (Terdalkar *et al.*, 2005). Ornithologists and bird watchers in India agree that the contemporary knowledge about the status of common birds in the subcontinent is highly needed.

The study area has a potential as a habitat for birds. But density has been decreasing due to human disturbances. It appears that human-induced disturbances and possibly presence of variety of foraging sites contribute to the variation of abundance, composition, richness and diversity of species. Further detailed long term studies are necessary to know about the breeding biology and habitat preference of birds in this area.

Conclusion

As a result of six months observation, twenty four species of birds were recorded belonging to nine orders and eighteen families. In birds, Passeriformes dominated with eleven species of total avifaunal species richness.

Acknowledgement

The authors thank the authorities of the American College, Madurai, Tamil Nadu, India for the facilities and encouragement.

References

1. Ali S. 2002. The Book of Indian Birds. Oxford University press, India.
2. Daniels RJ. 1994. A landscape approach to conservation of birds, *Journal of Bioscience* 19: 503-509.
3. Grimmett R, Inskipp C, Inskipp T. 1998. Pocket Guide to the Birds of Indian Subcontinent. Oxford University press, India.
4. Newton I. 1995. The Contribution of some recent research on birds to ecological understanding. *Journal of Animal Ecology* 64: 675 – 696.
5. Padmavati A, Alexandar R, Anbarashan M. 2010. Avian Diversity in and around Diha. *Our Nature* 8: 247-253.
6. Pittock B. 2003. Climate change: An Australian guide to the science and potential impacts, Australian Green house office, Canberra.
7. Terdalkar A, Sameen K, Kulkarani AS, Berde VB. 2005. Avian diversity in and around Mangroves bhatye estuary, Ratangiri, Maharashtra. *Journal of Aquatic Biology* 20: 79-83



Fig.1. Study Area- Railway colony, Madurai- Google road map

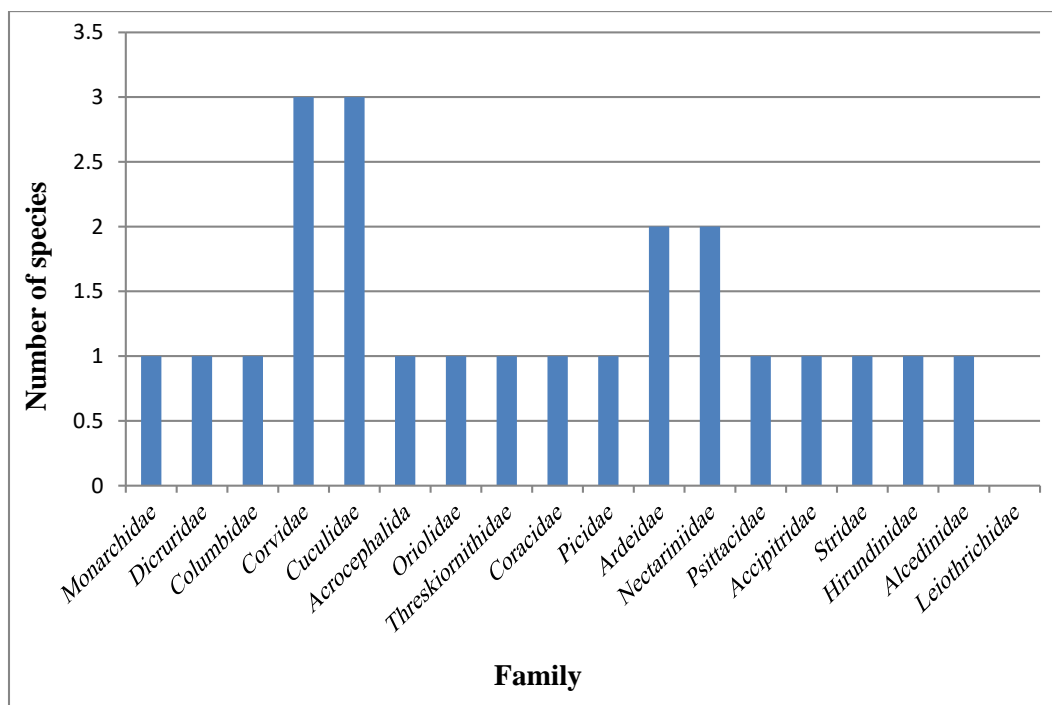


Fig.2. Density of birds observed in Railway colony, Madurai from March 2018 to August 2018

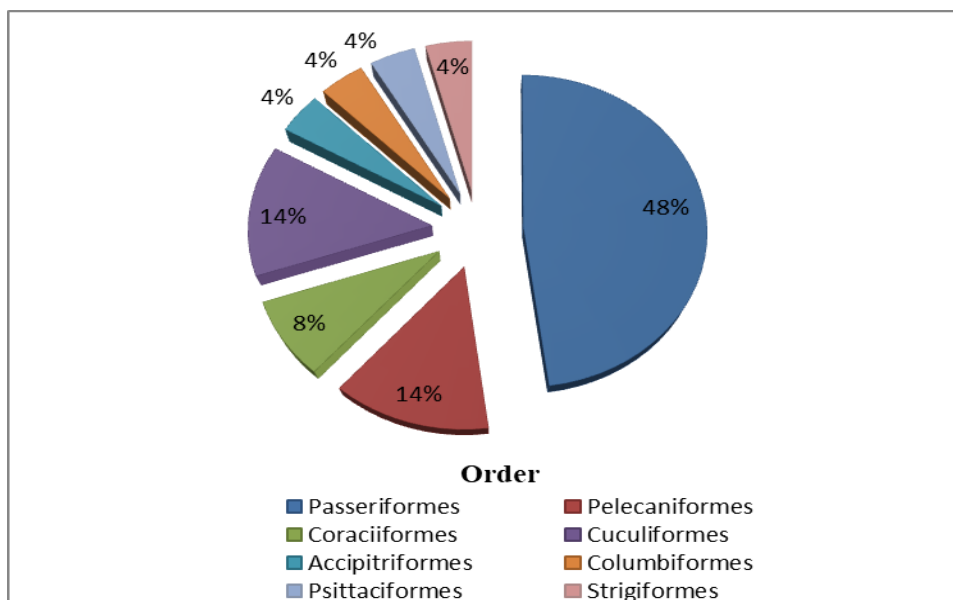


Fig.3. Pie diagram showing prevalence of Avian orders in Railway colony, Madurai from March 2018 to August 2018

Table 1. Avian species observed in Railway colony, Madurai from March to August 2018

S.NO	Common Name	Scientific Name	Order	Family	Iucn Category
1.	Asian Paradise Flycatcher	<i>Terpsiphone paradise</i>	Passeriformes	Monarchidae	LC
2.	Black Drongo	<i>Dicrurus macrocerus</i>	Passeriformes	Dicruridae	LC
3.	Blue Rock Pigeon	<i>Columba livia</i>	Columbiformes	Columbidae	LC
4.	Common Crow	<i>Corvus splendens</i>	Passeriformes	Corvidae	LC
5.	Common Hawk Cuckoo	<i>Hierococcyx varius</i>	Cuculiformes	Cuculidae	LC
6.	Common Koel	<i>Eudynamys scolopacea</i>	Cuculiformes	Cuculidae	LC
7.	Common Myna	<i>Acridotheres tirstis</i>	Passeriformes	Acrocephalida	LC
8.	Greater Coucal	<i>Centropus sinensis</i>	Cuculiformes	Cuculidae	LC
9.	Golden Oriole	<i>Oriolus kundoo</i>	Passeriformes	Oriolidae	LC
10.	Ibis	<i>Threskiornis aethiopicus</i>	Pelecaniformes	Threskiornithidae	LC
11.	Indian Roller	<i>Coracias benghalensis</i>	Coraciiformes	Coracidae	LC
12.	Lesser Golden-backed Woodpecker	<i>Dinopium benghalense</i>	Piciformes	Picidae	LC
13.	Night Heron	<i>Nycticorax nycticorax</i>	Pelecaniformes	Ardeidae	LC
14.	Pond Heron	<i>Ardeola grayii</i>	Pelecaniformes	Ardeidae	LC
15.	Purple rumped Sunbird	<i>Leptocoma zeylonica</i>	Passeriformes	Nectariniidae	LC
16.	Purple Sunbird	<i>Cinnyris asiaticus</i>	Passeriformes	Nectariniidae	LC
17.	Raven	<i>Crovis corax</i>	Passeriformes	Crovidae	LC
18.	Rose ringed Parakeet	<i>Psittacula krameri</i>	Psittaciformes	Psittacidae	LC
19.	Rufous Tree pie	<i>Dendrocitta vagabunda</i>	Passeriformes	Corvidae	LC
20.	Shikra	<i>Accipiter badius</i>	Assipitriformes	Accipitridae	LC

21.	Spotted Owl	<i>Athene brama</i>	Strigiformes	Stridae	LC
22.	Swallow	<i>Hiirundo rustica</i>	Passeriformes	Hirundinidae	LC
23.	White throated Kingfisher	<i>Halcyon smyrnensis</i>	Coraciiformes	Alcedinidae	LC
24.	Yellow billed Babbler	<i>Turdoides affinis</i>	Passeriformes	Leiothrichidae	LC

LC- Least Concern

Table 2. Number of birds observed in Railway colony, Madurai from March to August 2018

S. No	Name	March		April		May		June		July		August		Total
		I	II	I	II	I	II	I	II	I	II	I	II	
1.	<i>Accipiter badius</i>	3	-	-	2	-	1	1	1	1	-	-	-	9
2.	<i>Acridotheres tirstis</i>	31	14	31	28	40	21	67	100	87	37	19	32	507
3.	<i>Ardeola grayii</i>	11	2	3	3	2	2	1	7	4	3	1	-	39
4.	<i>Athene brama</i>	1	-	-	-	-	-	-	2	2	2	1	2	10
5.	<i>Centropus sinensis</i>	-	-	2	1	1	-	-	1	-	-	1	-	6
6.	<i>Cinnyris asiaticus</i>	-	1	7	-	3	-	3	3	-	-	1	3	21
7.	<i>Columba livia</i>	9	8	9	10	15	5	7	14	6	7	1	1	92
8.	<i>Coracias benghalensis</i>	6	-	2	5	1	2	1	4	3	2	2	2	30
9.	<i>Corvus splendens</i>	18	37	41	46	47	61	44	82	50	29	43	40	538
10.	<i>Crovis corax</i>	14	4	4	-	7	7	5	13	5	5	7	5	76
11.	<i>Dendrocitta vagabunda</i>	4	4	7	2	9	4	18	5	6	2	4	5	70
12.	<i>Dicrurus macrocercus</i>	5	14	2	1	2	5	6	9	7	4	-	3	58
13.	<i>Dinopium benghalense</i>	1	-	1	1	3	5	4	6	5	2	5	2	35
14.	<i>Eudynamis scolopacea</i>	18	47	51	53	61	25	28	43	81	37	33	25	837
15.	<i>Halcyon smyrnensis</i>	2	-	1	-	3	2	1	2	2	1	2	1	17
16.	<i>Hierococyx varius</i>	-	1	-	-	-	1	-	-	-	-	-	-	2
17.	<i>Hiirundo rustica</i>	7	1	-	9	1	4	-	4	3	-	-	-	29
18.	<i>Leptocoma zeylonica</i>	6	1	6	6	5	2	4	11	2	2	2	2	49
19.	<i>Nycticorax nycticorax</i>	-	-	-	1	-	-	-	-	-	-	-	-	1
20.	<i>Oriolus kundoo</i>	1	-	-	-	-	-	-	-	-	2	-	-	3
21.	<i>Psittacula krameri</i>	47	61	42	9	72	61	60	96	34	38	74	82	679
22.	<i>Terpsiphone paradise</i>	-	-	-	-	1	-	-	-	-	-	-	-	1
23.	<i>Threskiornis aethiopicus</i>	3	-	1	-	-	-	-	-	12	-	-	-	16
24.	<i>Turdoides affinis</i>	13	2	14	17	11	11	13	27	23	25	18	19	193
	Total	200	218	224	194	284	219	263	430	333	198	214	234	3318

Table 3. Number of birds observed in five sites in Railway colony, Madurai from March to August 2018

S.No	Species	Office	Park	Church	Red Ground	Quarters
1.	<i>Accipiter badius</i>	3	4	2	-	-
2.	<i>Acridotheres tirstis</i>	91	109	94	81	123
3.	<i>Ardeola grayii</i>	7	5	14	10	3

4.	<i>Athene brama</i>	-	-	1	-	9
5.	<i>Centropus sinensis</i>	2	3	-	1	-
6.	<i>Cinnyris asiaticus</i>	1	4	2	11	3
7.	<i>Columba livia</i>	12	11	39	15	6
8.	<i>Coracias benghalensis</i>	13	4	-	13	-
9.	<i>Corvus splendens</i>	99	92	110	104	99
10.	<i>Crocyus corax</i>	1	6	4	10	52
11.	<i>Dendrocitta vagabunda</i>	9	8	10	26	16
12.	<i>Dicrurus macrocerus</i>	21	8	10	26	16
13.	<i>Dinopium benghalense</i>	4	2	4	11	18
14.	<i>Eudynamys scolopacea</i>	86	70	106	129	120
15.	<i>Halcyon smyrnensis</i>	3	2	4	8	1
16.	<i>Hierococyx varius</i>	1	-	-	-	1
17.	<i>Hirundo rustica</i>	6	8	11	3	1
18.	<i>Leptocoma zeylonica</i>	20	3	11	9	6
19.	<i>Nycticorax nycticorax</i>	-	-	1	-	-
20.	<i>Oriolus kundoo</i>	-	-	2	-	1
21.	<i>Psittacula krameri</i>	126	125	151	127	147
22.	<i>Terpsiphone paradise</i>	-	1	-	-	-
23.	<i>Threskiornis aethiopicus</i>	4	12	-	-	-
24.	<i>Turdoides affinis</i>	22	43	50	66	12