



Diversity of avifauna in Sanyasykarau regions of Lathuvadi, Namakkal, Tamil Nadu, India

R Vallarasu, A Krishnamoorthi, T Chinnamani

Department of Zoology, Arignar Anna Government Arts College, Namakkal, Tamil Nadu, India

Abstract

Birds are the only feathered creatures in the world. They are winged, bipedal, warm blooded, and egg laying vertebrate animal. The avifaunal diversity in the ecosystem, act as a pollinators, seed dispersal agent, scavenger and predators of insect pest and also important indicator to evaluate different habitats both qualitatively and quantitatively. The present investigation was conducted in Sanyasikaradu regions of Namakkal district, Tamil Nadu during September-2022 to February 2023. A total of 35 species were observed and recorded belong 8 orders of 24 families. All the birds recorded in the study area were categorized into 7 ecological groups based on their feeding habits insectivorous 14 species (34%), omnivorous 10 species (28%), carnivorous 4 species (14%), granivorous 3 species (10%), piscivorous 2 species (7%), frugivorous and nectivorous one specie (3%). Among the 35 bird species 27 for resident, 5 for local migrant and 3 for migrant. Based on the abundance out of 3 species 9 were very common, 16 were common, 7 were occasional and 3 rare species observed during study period.

Keywords: Biodiversity, avifauna, insectivorous, granivorous, frugivorous, bio-indicator, migrant

Introduction

Biodiversity discovered on earth comprises several millions of various living organisms that result from about 3.5 billion years of evolution. It is a measure of the relative diversity among organisms present in different ecosystem (Emerson and Brwnt 2005) [6]. Biodiversity is not distributed evenly on earth. Birds are one of the most prominent species on the earth. They are the only feathered creatures in the world. They are winged, flying, bipedal, warm-blooded, egg laying vertebrate animal. It includes the tiny humming bird (5cm) which is not bigger than a man's thumb, and the Ostrich (2.5m) which stands as high as a pony. They include birds which can fly thousands of miles and others like Penguins which cannot raise themselves off the ground. Some birds weave elaborate nests like the weaver bird and others which lay their eggs on the ground without any preparation. Some of it makes too long journey every year and others spend their lifetime in the vicinity of one garden. Everyone enjoys the beauty of their forms, coloring, the vivacity of their movement, the buoyancy of their flight and sweetness of their songs. The bird watching is a good hobby of humans. Every year water birds fly thousands of kilometers across a vast range of climates and habitats, in response to the urge to nest or to avoid adverse weather conditions (Kumar and Gupta, 2009) [12].

According to American museum of Natural History reported that there are about 18,000 bird species in the world. A check list of birds of India authored by Grimmett et.al, (2011) [7] reported about 1,370 species of birds present in India, that is 13% of total bird species in the world and which includes 141 endemic species. Tamil Nadu is known for its rich diversity of avifauna with more than 450 species including several endemic and conservation prioritized species (Islam and Rahmani, 2004) [9]. Forest attracts a large number of birds because of the habitat associated with the vegetation of trees. Birds are one of the leading groups affected by forest loss (Sekercioglu, 2012) [18].

In many developing countries, a large number of wildlife survives outside areas. Among all wild life, avifauna is one of the most common wildlife in urban areas such as

neighbor hoods and cities. Many birds' population have been declining as a result of landscape changes due to urban expansion (Srohbach *et al.*, 2009). The abundance of bird species indicates the healthy status of an ecosystem owing the availability of safe habitat for nesting or roosting, food sources and water. The geographic location of a land may determine how and when birds will use it or use adjacent habitat (Manikannan, 2011) [13]. The study aimed at preparing a checklist of birds and their abundance and distribution within the Sanyasikaradu regions of Lathuvadi regions of Namakkal district.

Materials and Methods

Study area

The study area of Sanyasikaradu is situated in the Lathuvadi village of Namakkal taluk of Namakkal district. The locaion of the study area is Latitude 11^o 174402 N and Longitude 78^o 166816 E. Sanyasikaradu regions is quite hostile for birds and also some areas within the region ie quit silent which indirectly promote the birds diversity. This region consists of variety of numerous trees which provides wide range of bird habitat. The present study, following five areas was selected a) Sanyasikaradu hill, b) Arignar Anna Government Arts college campus, c) Hostel campus, d) Residential area and e) Adjoining farmland.

Bird's survey

Bird survey was conducted by using point count method. The point count sampling design consists of a series of points at which birds were counted and observed to identify the avifaunal diversity abundance and distribution in Sanyasikaradu regions, with an aid of Olympus 8 x 40 DPS Binocular and photographed by using Nikon 3300 with zoom lens 55 to 200 mm lens. Bird survey was conducted, during the day morning 6 to 9 am and evening 3 to 6 pm regularly during the study period from September 2022 to February 2023. The observed birds were identified by using standard field guides (Grimmett *et al.*, 2011 and Ali, 2012) [3, 7]. The vernacular name of the birds noted down. Considering the feeding guild, the birds were categorized as

insectivore, piscivorous, omnivore, Granivore, frugivore and carnivore following available literature (Ali, 2012) [3]. The birds were categorized based on the migratory status into resident, migrant and local migrant. The statistical analysis were calculated by using MS-Excel 2010 software.

Results and Discussion

After continuous observation of 181 days, that is from September 2022 to February 2023, identified a total of 35 species of bird belonging to 8 orders and 24 families, which are listed in the table-2, Fig.1. The vernacular name and scientific name of birds were identified by using standard field guide (Ali and Ripley, 1981). Out of these, Passeriformes was the most dominantly distributed in the study period and which consists of maximum representation with 17 species under 14 families. Followed by Coraciiformes order consists of three families with three species and Galliformes has two families with five species. Other orders with minimum of one species each were observed. Each bird species has its own preference and requirements in terms of food, roosting and nesting (Ricklefs, 2003) [14].

More diverse the vegetation greater is the variety of bird life, there is a direct relationship between vegetation diversity and bird diversity (Sing, 2008). Water birds and wetlands are inseparable elements. Birds inhabiting wetlands for feeding, breeding, nesting or roosting were defined as water birds (Kumar and Gupta, 2009) [12]. Abundance of water birds in a particular wetland mainly depends on availability of food, nesting sites and predation risk. It was considered as a good bio-indicators and also useful for studying the various environmental problems (Menon, 2012). Sanyasikaradu region is quite hostile for birds, it is a silence zone, free from all kinds of disturbance and also has wide range of trees which provide best habitat for birds. The rich bird diversity is due to the considerable number of trees in fallow land and boundary of agricultural fields accommodates large number of bird population. There is a fluctuation of birds in different months during the study period, this may be due to the influence of the season as well as climate change and agricultural practices that drives the birds away from the study area.

The feeding guild provided the habitat preference about the birds. Based on the feeding guild Omnivore bird was the most dominant species with 14 (34%) individual and it was followed by Insectivores 10 species (28%), Carnivore 4 species (14%), Granivore 3 species (10%), Piscivore 2 species (7%), Frugivore and Insectivore one species (3%) respectively (Table-2, Fig.3) There are several factors that influence changes in bird populations such as availability of food, location of nesting sites, availability of nesting materials, invasive flora, predators, competitors, introduced diseases and environmental changes (Anula, 2015) [4].

However, habitat loss is considered a top among the others. At this educational institution like Government college campus, Trinity college campus and Jai Vikash School with natural vegetations serves as a good habitat for bird community. The species diversity and distribution in the study area will be higher because the area is not disturbed due to anthropogenic activities. It is evident from this study, that Omnivorous and Insectivorous birds constitute majority of the bird community in the study area.

The migratory status of the birds in Sanyasikaradu region revealed that most of the birds were resident 27 species (77%), 5 species (14%) belong to local migrant and 3 species (9%) were migrant (Table-2, Fig.4). Due to geographical and environmental reasons a particular birds may appear, increase or decrease in number and disappear as the habitat changes (Jude *et al.*, 2022) [10]. Birds are key species maintaining the ecological balance (Haslem and Bennett, 2008) [8]. Apart from that several reports confirmed that seasonal variation, local migration pattern, reproductive behavior, latitude and the regional and global microclimatic events and erratic climate might also influence the bird number in any habitat (Romano *et al.*, 2005) [15]. In the present study also, increasing rainfall level during the study period may lead to increasing the species richness in the study area.

During the present study, 35 bird species belonging to 8 order with 26 families were recorded. Out of these, the order Passeriformes consists of maximum representation with 17 species under 13 families. The majority of birds observed in the present investigation were resident birds 77%. Similar result was reported by many researchers previously. Carlton *et al.*, (2020) [5] reported 34 bird species, out of these Passeriformes order consists of maximum representation with 13 species under 11 orders in the Cauvery river banks area of Tiruchirappalli. Jude *et al.*, (2022) [10] documented Passeriformes was the most dominantly distributed order with 5 species during the study period at Swamythooppu salt pan, Kanyakumari. Based on the abundance 9 species were very common (26%), 16 species were common (45%), 7 species were occasional (20%), and 3 species were migrant (6%, table-2, fig2). In the present study, the agricultural field surrounding Sanyasikaradu probably provide food, shelter and suitable foraging ground for the resident birds. The data obtained from this study will provide some useful information to understand more about their population, migration movements and distributions.

According to Salim Ali (2003) [16], birds are the friends of the farmer and not the foes, because they destroy the insects that affect the plan species. Birds constitute an important component of agro ecosystems and role of birds in the agro-ecosystem is going more and more attention. As depredators of insects, birds stand supreme among the vertebrate. The insectivores birds play an economically significant role in mangrove ecosystem by the way of controlling the insects that destroy the products in all the stages especially during pest outbreak the birds are the only natural and eco-friendly saviour of the plants (Sandilyan, 2013) [17].

The analysis of avifaunal diversity is an ecological tool which acts as a crucial indicator for the qualitative and quantitative assessment of different habitat. Birds are exposed to more airborne particles, because they have a higher breathing rate and spend more time in open air. Polycyclic Aromatic Hydrocarbons (PAHs), toxic chemicals may cause reduced egg production and hatching, increased brood abandonment and reduced growth. Increased ozone levels may reduce species diversity. Ecosystem conversion and degradation contribute to habitat fragmentation. Loss of habitat from agricultural conversion and urbanization are most important factor behind the constant loss of biodiversity. The changes in vegetation could impact the

quality and quantity of habitat which can further affect diversity, abundance and distribution of birds (Aggrawal *et al*, 1998)^[1].

Birds play an important role in maintaining the ecological balance. They keep the environment clean by acting as scavenger, protect the plant community by destroying the insect pests and other vermin, help fertilizing the plants through pollination, support for better survival of the plants through seed dispersal and supply nutrient rich manure through their excreta. Bird’s parameters such as species richness, evenness and diversity of birds are frequently used as indicators of habitat quality (Waller, 1999). According to

Kiros *et al*, (2018)^[11], variations in bird species variety, richness and abundance are linked to vegetation composition, which affects food supplies, nesting and protection based on habitat preference and feeding. There was a variation in number of birds during the study period. This may be due to fluctuation of climate in this area. The present study provide baseline data for monitoring birds diversity in this region and create awareness on documenting birds in other regions and also this information will be help in future for species specific work on avifaunal and launching conservation strategies.

Table 1: Month wise number of species and birds observed during the study period

S. No	Month and year	Number of species	Number of birds observed
1	September 2022	25	1370
2	October 2022	28	1893
3	November 2022	30	2867
4	December 2022	34	3254
5	January 2023	35	3416
6	February 2023	33	2748

Table 2: List of bird species observed in Sanyasikaradu region and their order, family, residential Status, abundance and food habit of birds from September 2022 – February- 2023

S.No	Order name	Family name	Common name	Scientific name	Status	Food habit	Abundance
1	Passeriformes	Stuumidae	Common myna	<i>Acridotheres tritis</i>	R	OV	VC
2			Brahminy starling	<i>Stumus pagodarum</i>	LM	OV	O
3		Corvidae	Jungle crow	<i>Corvus macrorhynchos</i>	R	OV	C
4			House crow	<i>Corvussplendens</i>	R	OV	VC
5		Pycnonotidae	Red vented bulbul	<i>Pycnonotus cafer</i>	R	IV	C
6			White browed bulbul	<i>Pycnonotus luteolus</i>	R	OV	O
7		Timalidae	Common babbler	<i>Turdoies caudatus</i>	R	OV	VC
8		Moticillidae	Paddy field pipit	<i>Anthus rufulus</i>	LM	IV	C
9		Aegithinidae	Common iora	<i>Aegithina tiphia</i>	R	IV	VC
10		Ploceidae	Baya weaver	<i>Ploceus philippinus</i>	R	IV	O
11		Campephagidae	Black headed cuckoo	<i>Coracina melanopicra</i>	R	OV	C
12		Nectariniidae	Purple rumped sunbird	<i>Leptocoma zeylonica</i>	R	NV	R
13		Dicruidae	Black drongo	<i>Dicrurus macrocercus</i>	R	IV	C
14		Hirundinidae	Redrumped swallow	<i>Hirundo daurica</i>	R	IV	C
15		Ploceidae	House sparrow	<i>Passer domesticus</i>	R	IV	VC
16		Mimidae	Northern macleing bird	<i>Mimus polyglotus</i>	R	OV	VC
17		Muscicapidae	Pied buschart	<i>Saxicola caprae</i>	R	OV	C
18	Coraciformes	Upupidae	Hoopor	<i>Upupa epops</i>	M	IV	R
19		Meropidae	Green bee eater	<i>Merops orientalis</i>	R	IV	C
20		Coracodae	Indian roller	<i>Coracias benghalensis</i>	R	CV	C
21	Ciconiformes	Ardeidae	Cattle egret	<i>Babulcus ibis</i>	R	CV	C
22			Large egret	<i>Casmerodius albus</i>	R	PV	O
23			Indian pond heron	<i>Ardeola grayii</i>	LM	PV	O
24			Purple heron	<i>Ardea purpurea</i>	M	CV	R
25	Piciformes	Picidae	Wood pecker	<i>Dinopium benghalense</i>	R	IV	O
26	Columbiformes	Columbidae	Rock pigeon	<i>Columba livia</i>	R	GV	VC
27			Spotted dove	<i>Spilopelia chinensis</i>	LM	GV	C
28	Psittaciformes	Psittaculidae	Green parrot	<i>Psittacula krameri</i>	R	FV	VC
29	Falconiformes	Accipitridae	Shikra	<i>Accipiter badius</i>	R	CV	C
30			Brahminy kite	<i>Haliastur indus</i>	M	CV	O
31	Galliformes	Pharianidae	Indian peafowl	<i>Pavo cristatus</i>	R	OC	VC
32			Brown quill	<i>Synoinuesy psisophorus</i>	R	CV	C
33			Grey francolin	<i>Franccolinus pondicerianus</i>	M	OV	O
34		Ralidae	Coot	<i>Fulica atra</i>	R	OV	C
35			White breasted water	<i>Ammauroni phoenicurus</i>	R	OV	C

R- Resident, M- Migrant, LM- Local Migrant, C- Common, VC- Very Common, O- Occation, OV- Omnivorous, CV- Carnivorous, IV- Insectivorous, GV- Granivorous, PV- Piscivorous, FV- Frugivorous, NV- Nectivorous.

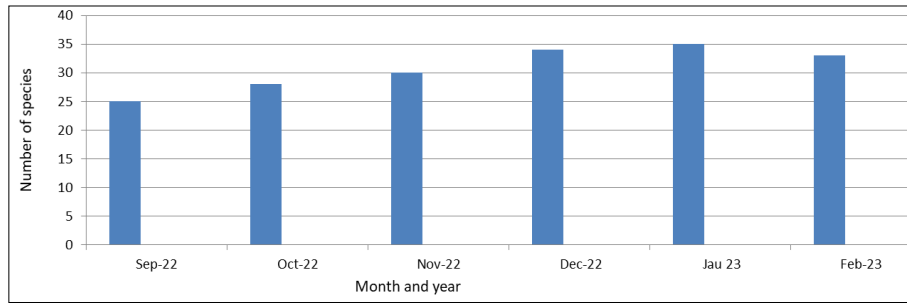


Fig 1: Month wise number of species observed during study period from Sanyasikaradu region

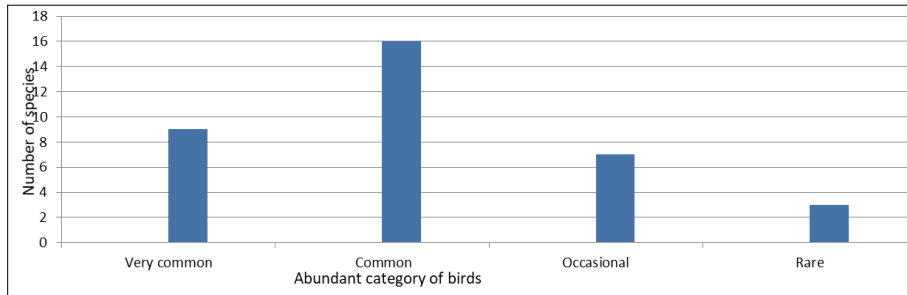


Fig 2: Abundant category of bird species in Sanyasikaradu region

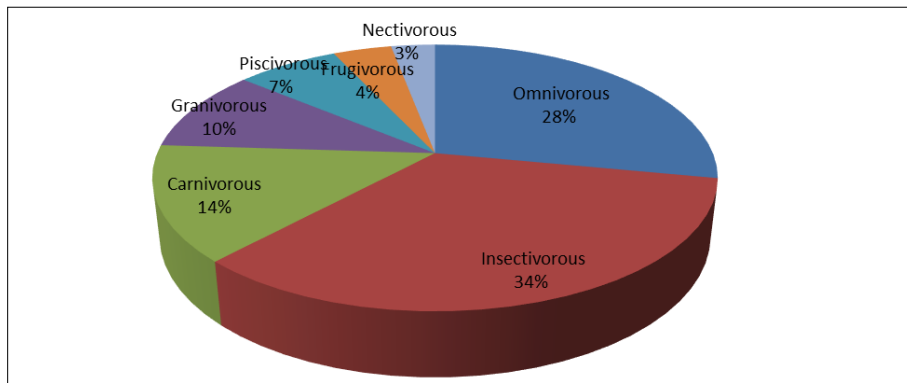


Fig 3: Percentage of food habits of birds observed in Sanyasikaradu region

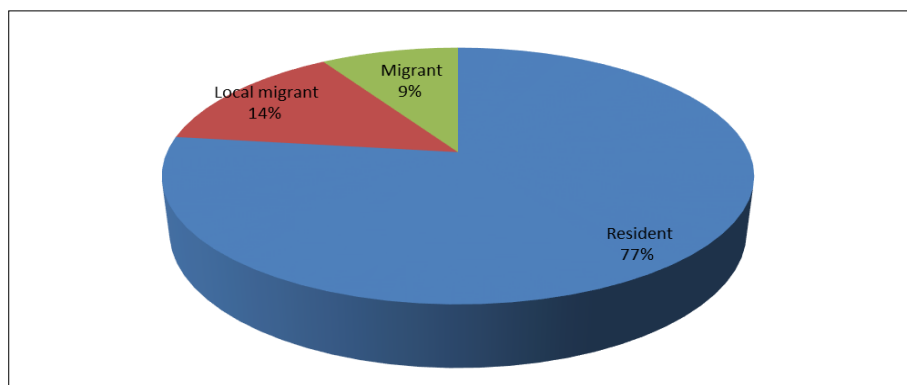


Fig 4: Migratory status of avifauna in Sanyasikaradu region

References

1. Aggrawal A, Tiwari G, SA Harsh. Diversity and Density estimation of Birds of the Indian Institute of Forest Management Campus. Bhopal, India. J. Thret Tax,1998:7:2-12.
2. Ali S and S. Ripley. Compact Handbook of Birds of India and Pakistan. 2nd Edition, Oxford University Press, 1987.
3. Ali S. The Book of Indian birds,13th Revised Edition, Bombay Natural Society, Oxford University Press, 2012.
4. Anula J. Studies on the satus of the birds in habituating Sirpur Lake Indore, MP, with reference to the changing environment. Research Journal of Recent Sciences,2015:(4):18-21.
5. Carlton R, Parvatha Vardhini S, and B D Samuel. Avifaunal diversity on the banks of River Cauvery, Tiruchirappalli, Tamil Nadu, India. Aegaeum Journal,2020:8(8):728-734.
6. Emerson and C. Brwnt 2005 Species diversity can drive speciation. Nature,2005:434:1015–1017.

7. Grimmett R, Inskipp C, T Inskipp. Birds of the Indian subcontinent. Oxford University Press, New Delhi, 2011, 528.
8. Haslem A, AF Bennett. Birds in agricultural mosaics: the influence of landscape pattern and country side heterogeneity. *Ecological Applications*,2008:18:185-196.
9. Islam MZ, AR Rahmani. Important bird areas in India: priority sites for conservation. *Indian Birds Conservation Network: Bombay Natural History Society and Birdlife International UK*,2004:18:1133.
10. Jude D, Karthick M, Ram kumar R, Sathyananth M, Stephenraj D, R Azhagu Raj, *et al.* Avifaunal Diversity of Swamythooppu salt pan, Kanyakumari, Tamil Nadu, India. *International Journal of Zoological Investigations*,2022:8(1):138-151.
11. Kiros S, Afework B, K Legese. Preliminary study on bird diversity and abundance from Wabe fragment forests around Gubersub city and Wolkite town south western Ethiopia. *International Journal of Avian and Wildlife Biology*,2018:3(5):333-340.
12. Kumar P and S.K. Gupta. Diversity and abundance of wetland birds around Kurukshetra, India. *Our Nature*,2009:7:187-192.
13. Manikannan R. Diversity of waterbirds in the Point Calimere wildlife sanctuary, Tamil Nadu, India. Ph.D. Thesis, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India, 2011.
14. Ricklefs RE. Global diversification rates of passerine birds. *Proc. Royal Soc. London – series B: Biological Science*,2003:270:2285-2291.
15. Romano M, Barberis I, Pagano F, J Maidagan. Seasonal and inter annual variation in water bird abundance and species composition in the Melincue Saline Lake, Argentina *Eur J Wild Res*,2005:51:1-13.
16. Salim Ali. The book of Indian Birds. Bombay Natural History Society. Bombay, 2003.
17. Sandilyan S. Birds could boost agricultural prospects. *Science Report*,2013:50(2):18-26.
18. Sekercioglu CH. Birds' functional diversity and ecosystem services in tropical forest, agroforest and agricultural areas. *J. Ornithol*,2012:153:153-161.
19. Singh S. Garden birds of elhi, Agra and Jaipur. *Wisdom tree, Darya Ganj*. New Delhi, 2008, 111.
20. Strohbach MW, Haase D, N Kabisch. Birds and the city: Urban biodiversity, land use and socioeconomics. *Ecology and Society*,2009:14(2):31-45.
21. Weller MW. Wetland bird habitat resources and conservation implications. Press syndicate of the University of Cambridge, United Kingdom, 1999, 543.