

Assessment of native and migrant bird species in a riverine ecosystem of India

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Available online at: www.isca.in, www.isca.me

Received 14th January 2019, revised 28th July 2019, accepted 4th August 2019

Abstract

The present study aims to classify the native and migrant bird species recorded during the summer season in Ranganathittu Bird Sanctuary of Karnataka State. Bird survey was conducted during the summer season in the month of March, April and May inside Ranganathittu Bird Sanctuary (RBS), located on the bank of river Cauvery. Readings were recorded on every weekend, during Saturday and Sunday of the summer season. The birds were recorded during morning from 06:00AM to 09:00 AM, and at the evening from 04:00 PM to 06:00 PM using belt transect method. Birds were classified into native and migrant species based on direct observations. Although RBS is having a specific percentage of nested native bird species, there was almost a significant percentage of migrant bird species were recorded during the study. Total numbers of 2890 birds were recorded during the study which belongs to 84 different species and majority of them were native and relatively good percentage of migrant species were observed. More number of aquatic birds was recorded from the migrant bird species group. The study revealed that relatively good percentage of migratory bird species nests in RBS during summer season. Birds require explicit natural assets for generation and for different exercises for their survival. Among both transient and local or non-transitory species alike, satisfactory nourishment for the youthful has all the earmarks of being essential in figuring out where, just as when, a species will breed. Also, study shows that RBS is a preferred habitat for migratory birds during summer season.

Keywords: Bird sanctuary, migratory birds, native birds, Ranganathittu and riverine ecosystem.

Introduction

A Winged animal has been depicted as a 'Feathered Biped'. This depiction is well-suited and exact, and can apply to no other creature¹. The feathered creatures which possess wetlands for settling, nourishing and perching are extensively characterized as water birds. This incorporates bunches prevalently known as the waterfowl, waders/shorebirds and seabirds. Likewise, there are quantities of different feathered creatures, for example, kingfishers, raptors and a few passerines, which additionally biologically rely upon wetlands and are known as wetland subordinate and related winged animals/birds². Wetland winged animals assume a critical job in human lives socially, and logically as a nourishment asset, other than being perfect markers of the wellbeing of a wetland. These birds have obviously attracted man since time immemorial and find mention in many ancient epics. The feathered creatures are warm blooded creatures, i.e., whose temperature stays pretty much consistent and free of the encompassing temperature. This is in contradistinction to reptiles, creatures of land and water and fishes which are wanton creatures their body temperature changes with the hotness or fridgidity of their environment.

Bird migration is one of the fascinating aspects of a bird behavior. Many species migrate locally or over long distances to

avoid adverse climatic conditions and in search of food. There are few birds which are seen only during a definite period of the year and they disappear for the rest of years. The periodical movement called migration is seen mostly in harsher weather conditions or during the scarcity of food. Birds cannot reproduce successfully during intense cold weather conditions or during inadequate food. Thus they usually desert their nuptial grounds before such conditions appear; they migrate from their contra nuptial (wintering places). Migration is the greatest adventure in the bird's life³. Ladakh with its unique temperate high altitude landscape and rich biodiversity gain much conservational value and needs much importance from avian point of view so as to expedite conservation of the rare and endangered birds of this region, especially the black-necked cranes, which is quite endemic to the higher Himalayas, Ladakh and peripheral region⁴. Exceptionally differed climatic conditions, remarkable territories, extended length of inland, woodland and beach front regions draws in and underpins a one of a kind gathering of avian species round the year⁵. A sum of 106 winged creatures having a place with 52 families was recorded amid the investigation covering a region of around 93 hectares at Indian Institute of Forest Management, Bhopal. The present study shows the density and diversity of both native and migrant bird species during summer season.

Materials and methods

Study area: The study was undertaken in Ranganathittu Bird Sanctuary located on the bank of the river Cauvery in Mandya district, Karnataka state, India. Sanctuary western part nestles between 12. 24' N to 12.25' N latitude and 76.39'E to 76.40'E longitude, and the eastern part between 12.22'N to 12.23' N latitude and 76.48'E to 76.49' E longitude. Elevation varied from 690mts to 715mts furthermore frigidness from 11° to 37°C. Yearly precipitation is about 800mm.

Ranganathittu covers an area of 0.67 sq.km which was given a status of Bird Sanctuary on the 1st day of July 1940 by the then Kings of Mysuru kingdom, considering Dr.Salim Ali, an Ornithologist who use to visit the area for his study and research on birds. The greater part of the sanctuary area has riverine forest ecosystem. Species of Bamboo, Eucalyptus, Figs, Jamun and Acacia are planted in most of the sanctuary zone. A very rare species called *Iphigenia mysorensis* is found in and around the sanctuary zone. Some of the other common floral species incorporates *Terminalia arjuna*, *Albizzia amara*, *Barringtonia racemosa*, *Pandanus spp.*, *Syzygium cumini* and *Derris indicain* and around the sanctuary limits.

Belt transect method was used to record the bird population⁶. Since, this sanctuary is a riverine ecosystem, we had to use boat for our transect studies. During the transect study, the spectator recorded the information on the sightings of flying creatures,

number of birds located and opposite separation from the line at which species was located. Just those perceptions existing in 20m of either side of the transect line were recorded⁷. The assessment was led amid summer season during the morning time zone between 06:00 AM to 09:00AM and at the evening time zone between 04:00 PM to 06:00 PM, usually where there will be maximum bird activity during the selected time zone⁷.

The birds were observed either by binocular or by naked eyes depending upon the distance. Bird count was made by boating near the islands of the sanctuary. Field guides were used for identifying the birds^{1, 5}. Birds were classified into native and migrant species based on direct observation⁸. Shannon Wiener diversity index was studied.

Results and discussion

We surveyed the birds along 48 transects for three months during summer season, in the months of March, April and May. Transect length was averaged to 1 km and covered totally 48 km in three months. Habitats in these transect were mostly wetland.

Around 2,890 number of birds and 84 different species of birds were observed on transects during the three months (Table-1). In a span of three months, the five most abundant species recorded were Indian pond heron, Cattle egret, Painted stork, Shikra and Common babbler.

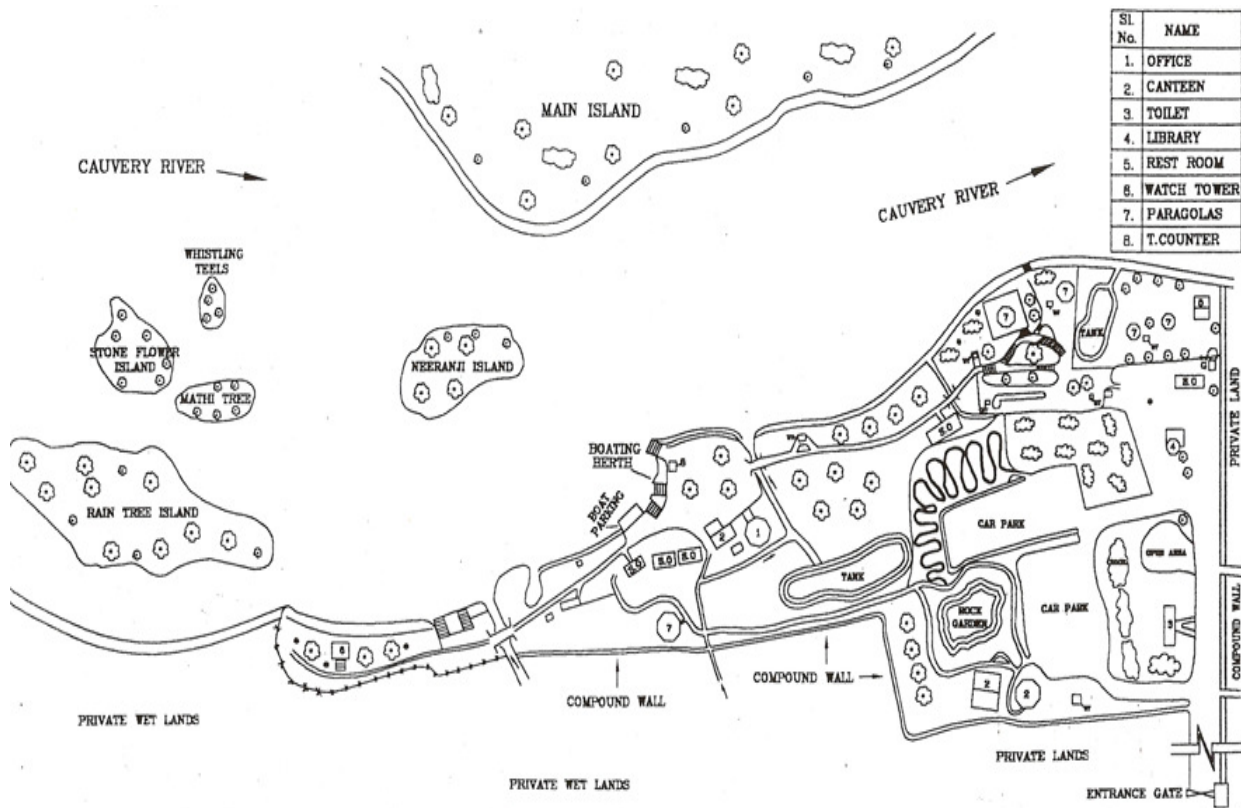


Figure-1: Layout map of Ranganathittu Bird Sanctuary.

Table-1: List of bird species recorded in the study area.

Sl. No	Common name	Zoological names of the species	Order	Family	Native (N)/ Migratory (M)
1	Brown Headed Barbet	<i>Megalaimazeylancia</i>	Piciformes	Megalaimidae	N
2	White Cheeked Barbet	<i>Megalaimaviridis</i>	Piciformes	Megalaimidae	N
3	Coppersmith	<i>Megalaimahaemacephala</i>	Piciformes	Megalaimidae	N
4	Common Hoopoe	<i>Upupaepops</i>	Bucerotiformes	Upupidae	N
5	Stork-Billed Kingfisher	<i>Pelargopsiscapensis</i>	Coraciiformes	Alcedinidae	N
6	Pied Kingfisher	<i>Cerylerudis</i>	Coraciiformes	Alcedinidae	N
7	Beach Stone-curlew	<i>Esacusmagnirostris</i>	Charadriiformes	Burhinidae	N
8	Brahminy Kite	<i>Haliasturindus</i>	Accipitriformes	Accipitridae	N
9	Grey Headed Fishing Eagle	<i>Ichthyophagaichthyaetus</i>	Accipitriformes	Accipitridae	N
10	Eurasian Marsh Harrier	<i>Circus aeruginosus</i>	Accipitriformes	Accipitridae	N
11	Little Cormorant	<i>Phalacrocoraxniger</i>	Suliformes	Phalacrocoracidae	N
12	Darter	<i>Anhinga melanogaster</i>	Suliformes	Anhingidae	N
13	Great Egret	<i>Ardea alba</i>	Pelecaniformes	Ardeidae	N
14	Little Egret	<i>Egrettaarazetta</i>	Pelecaniformes	Ardeidae	N
15	Median Egret	<i>Egretta intermedia</i>	Pelecaniformes	Ardeidae	N
16	Indian Pond Heron	<i>Ardeolagrayii</i>	Pelecaniformes	Ardeidae	N
17	Purple Heron	<i>Ardeapurpurea</i>	Pelecaniformes	Ardeidae	N
18	Gery Heron	<i>Ardeacinerea</i>	Pelecaniformes	Ardeidae	N
19	Black Crowned Night Heron	<i>Nycticoraxnycticorax</i>	Pelecaniformes	Ardeidae	N
20	Black Headed Ibis	<i>Threskiornismelanocephalus</i>	Pelecaniformes	Threskiornithidae	N
21	Eurasian Spoonbill	<i>Platalealeucorodia</i>	Pelecaniformes	Threskiornithidae	N
22	Painted Stork	<i>Mycterialeucocephala</i>	Ciconiiformes	Ciconiidae	N
23	Asian Open Billed Stork	<i>Anastomusoscitans</i>	Ciconiiformes	Ciconiidae	N
24	White Spotted Fantail	<i>Rhipiduraalbicollis</i>	Passeriformes	Rhipiduridae	N
25	Asian Paradise Flycatcher	<i>Terpsiphoneparadisii</i>	Passeriformes	Monarchidae	N
26	Grey Tit	<i>Parus major</i>	Passeriformes	Paridae	M
27	White-browed Wagtail	<i>Motacillamaderaspatensis</i>	Passeriformes	Motacillidae	N

28	Common Sandpiper	<i>Tringahypoleucos</i>	Charadriiformes	Scolopacidae	N
29	White Breasted Water Hen	<i>Amaurornisphoenicurus</i>	Gruiformes	Rallidae	N
30	Red Wattled Lapwing	<i>Vanellusindicus</i>	Charadriiformes	Charadriidae	N
31	Black Winged Kite	<i>Elanuscaeruleus</i>	Accipitriformes	Accipitridae	N
32	Indian River Tern	<i>Sterna aurantia</i>	Charadriiformes	Laridae	N
33	Streak-throated Swallow	<i>Hirundofluvicola</i>	Passeriformes	Hirundinidae	N
34	Cattle Egret	<i>Bubulcus ibis</i>	Pelecaniformes	Ardeidae	N
35	Grey Francolin	<i>Francolinuspondicerianus</i>	Galliformes	Phasianidae	N
36	Spot Billed Duck	<i>Anaspoecilorhyncha</i>	Anseriformes	Anatidae	N
37	White Naped Woodpecker	<i>Chrysocolaptesfestivus</i>	Piciformes	Picidae	N
38	Blue Tailed Bee Eater	<i>Meropsphilippinius</i>	Coraciiformes	Meropidae	N
39	Blue Faced Malkoha	<i>Phaenicophaeusviridirostris</i>	Cuculiformes	Cuculidae	N
40	Asian Palm Swift	<i>Cypsiurusbalasiensis</i>	Caprimulgiformes	Apodidae	N
41	Alpine Swift	<i>Tachymarptis melba</i>	Caprimulgiformes	Apodidae	N
42	Brown Fish Owl	<i>Ketupazeylonensis</i>	Strigiformes	Strigidae	M
43	Common Indian Nightjar	<i>Caprimulgusasiaticus</i>	Caprimulgiformes	Caprimulgidae	N
44	Common Snipe	<i>Gallinagogallinago</i>	Charadriiformes	Scolopacidae	N
45	Black Winged Stilt	<i>Himantopushimantopus</i>	Charadriiformes	Recurvirostridae	N
46	Shikra	<i>Accipiter badius</i>	Accipitriformes	Accipitridae	N
47	Oriental Honey Buzzard	<i>Pernisptilorhynchus</i>	Accipitriformes	Accipitridae	N
48	Large Cormorant	<i>Phalacrocorax carbo</i>	Suliformes	Phalacrocoracidae	N
49	Black Ibis/Red naped Ibis	<i>Pseudibispapillosa</i>	Pelecaniformes	Threskiornithidae	N
50	Spot Billed Pelican/Grey Pelican	<i>Pelecanusphilippensis</i>	Pelecaniformes	Pelecanidae	N
51	Asian Woollyneck/White-necked Stork/Woolly-necked Stork	<i>Ciconiaepiscopus</i>	Ciconiiformes	Ciconiidae	N
52	JavanLeafbird	<i>Chloropsiscochinensis</i>	Passeriformes	Chloropseidae	M
53	Rufous Backed Shrike/Long-tailed Shrike	<i>Laniusschach</i>	Passeriformes	Laniidae	N
54	Golden Oriole	<i>Oriole oriolus</i>	Passeriformes	Oriolidae	M
55	Black Drongo	<i>Dicrurusmacrocerus</i>	Passeriformes	Dicruridae	N

56	Asian Brown Flycatcher	<i>Muscicapadaaurica</i>	Passeriformes	Muscicapidae	N
57	Indian Robin	<i>Saxicoloidesfulicata</i>	Passeriformes	Muscicapidae	N
58	Pied Bushchat	<i>Saxicolacaprata</i>	Passeriformes	Muscicapidae	N
59	Rosy Starling	<i>Sturnusroseus</i>	Passeriformes	Sturnidae	N
60	Red Rumped Swallow	<i>Hirundodaurica</i>	Passeriformes	Hirundinidae	N
61	Dusky Crag Martin	<i>Hirundoconcolor</i>	Passeriformes	Hirundinidae	N
62	Wire Tailed Swallow	<i>Hirundosmithii</i>	Passeriformes	Hirundinidae	M
63	Red Vented Bulbul	<i>Pycnonotuscafer</i>	Passeriformes	Pycnonotidae	N
64	Plain Prinia	<i>Priniaainornata</i>	Passeriformes	Cisticolidae	N
65	Ashy Prinia	<i>Priniasocialis</i>	Passeriformes	Cisticolidae	N
66	Streaked Fantail Warbler	<i>Cisticolajuncidis</i>	Passeriformes	Cisticolidae	N
67	Oriental White Eye	<i>Zosterospalpebrosus</i>	Passeriformes	Zosteropidae	N
68	Tickell's Flowerpecker/Pale-billed Flowerpecker	<i>Dicaeumerythrorhynchos</i>	Passeriformes	Dicaeidae	N
69	Blyth's Reed Warbler	<i>Acrocephalusdumetorum</i>	Passeriformes	Acrocephalidae	N
70	Lesser Whitethroat	<i>Sylvia curruca</i>	Passeriformes	Sylviidae	N
71	Common Chiffchaff	<i>Phylloscopuscollybita</i>	Passeriformes	Phylloscopidae	M
72	Greenish Leaf Warbler	<i>Phylloscopustrochiloides</i>	Passeriformes	Phylloscopidae	N
73	Common Babbler	<i>Turdoidescaudatus</i>	Passeriformes	Leiotrichidae	N
74	Spotted Munia/Scaly-breasted munia	<i>Lonchurapunctulata</i>	Passeriformes	Estrildidae	N
75	Brown Skua	<i>Catharactaantarctica</i>	Charadriiformes	Stercorariidae	M
76	Mandarin Duck	<i>Aix galericulata</i>	Anseriformes	Anatidae	M
77	Lesser White-fronted Goose	<i>Ansererythropus</i>	Anseriformes	Anatidae	M
78	Bean Goose	<i>Anserfabalis</i>	Anseriformes	Anatidae	M
79	Caspian Plover	<i>Charadriusasiaticus</i>	Charadriiformes	Charadriidae	M
80	Sharp-tailed Sandpiper	<i>Calidrisacuminata</i>	Charadriiformes	Scolopacidae	M
81	Northern Wheatear	<i>Oenantheoenanthe</i>	Passeriformes	Muscicapidae	M
82	Arctic Warbler	<i>Phylloscopus borealis</i>	Passeriformes	Phylloscopidae	M
83	Red-breasted Merganser	<i>Merguserrator</i>	Anseriformes	Anatidae	M
84	Baikal Teal	<i>Sibirionettaformosa</i>	Anseriformes	Anatidae	M

Total of 68 Native and 16 Migratory birds were recorded during the study. Among 15 orders of the birds recorded during the study, Passeriformes was the highest (35.7%) followed by Pelecaniformes (14.2%), Charadriiformes (10.7%), Accipitriformes and Anseriformes (7.1%) and others (Figure-2).

Grey Tit, Brown Fish Owl, Javan Leafbird, Golden Oriole, Wire Tailed Swallow, Common Chiffchaff, Brown Skua, Mandarin Duck, Lesser White-fronted Goose, Bean Goose, Caspian Plover, Sharp-tailed Sandpiper, Northern Wheatear, Arctic Warbler, Red-breasted Merganser and Baikal Teal were the 16 different migrant species identified during the study (Table-1).

Recorded Migratory bird species were classified into 4 different orders; Passeriformes (31.2%) was the highest among all other

orders followed by Anseriformes (31.2%), Charadriiformes (18.7%) and Strigiformes (6.2%) (Figure-3).

The act of bearing offspring's starts from the months of January to March, as abundant food and protection is available in this place, different kinds of birds arrive here for bearing their offspring's thereafter they return to their places of origin with their offspring's. Most of these birds coming here are from local area, some are migrated from different countries and they attract the onlookers. The best time to visit this place is between Aprils to November. The conservation of these birds in this area is an essential undertaking from environmental perspective. Further research on conservation of riverine ecosystems is necessary to know about the bird behavior, diversity and density in this area.

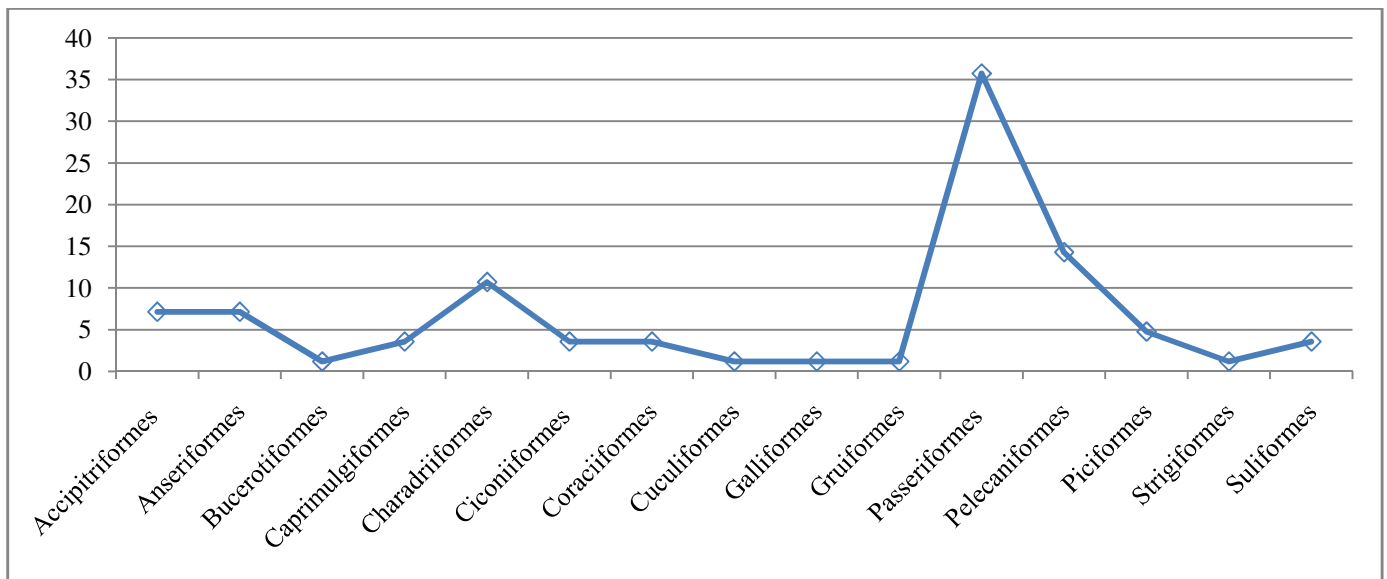


Figure-2: Order wise composition of recorded bird species.

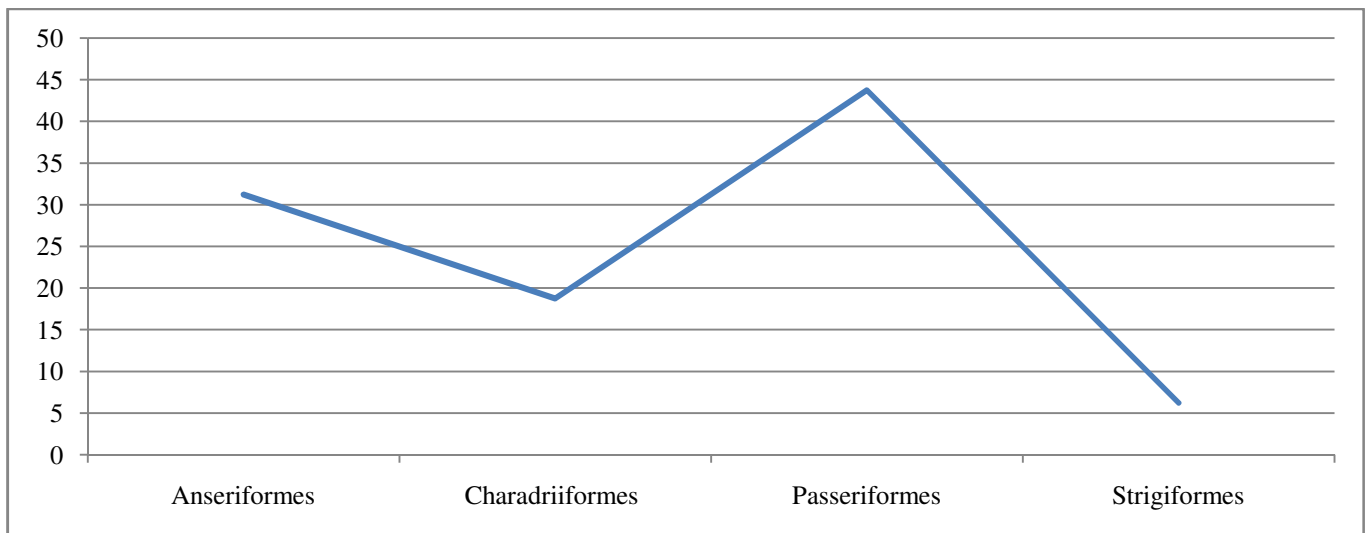


Figure-3: Order wise composition of recorded migrant bird species.

Conclusion

The study analyzed the influence of various factors in the event and dissemination of bird communities in Ranganathittu bird sanctuary. Continuity and variability of the habitat seems to be the prime factor deciding the bird population in any area. Structural heterogeneity of the habitat decides the composition and richness of the bird community that inhabits it.

Furthermore, migrant species which fluctuate in abundance independently of others is being influenced by a different constellation of regulatory factors, not merely the vegetation type. These factors appear to operate at different spatial and temporal scales (e.g. winter vs. summer, local vs. migrant, patterns of food abundance, etc.). Thus to understand bird community dynamics, one must consider the ecological responses of the individual species comprising that community.

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