INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY
© VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No. MH-659/13(N)
www.vmsindia.org

STUDIES ON ADAPTATIONS OF TERRESTRIAL BIRD SPECIES IN SELECTIVE MANGROVE ECOSYSTEMS IN DEVGAD TEHSIL [DIST.: SINDHUDURG]

Mangesh Nishikant Jamble[1] and Sukhada M. Jamble[2]
[1] Department of Zoology, Sant Rawool Maharaj Mahavidyalaya, Kudal - 416520 [Sindhudurg]
[2]Department of Zoology, Shri. S. H. Kelkar College, Devgad – 416613 [Sindhudurg]
mangeshjamble@gmail.com

Abstract:

Rich avifaunal diversity in mangrove ecosystems is a bio-indicator of the health and productivity of the ecosystem. Avifaunal species richness is usually seen in geographical areas of mangrove ecosystems in different parts of Devgad tehsil. Along with typical aquatic birds, several varieties of terrestrial birds are also assembled in the ecological interactions of the mangrove systems. As the birds are ecologically sensitive indicator organisms, adaptations of terrestrial birds found in vicinity of mangroves were studied to see their extent of dependence on mangrove systems along with the seasonal fluctuations. For the purpose, mangrove ecosystems from different geographical locations in Devgad tehsil were selected. The studies were carried out during a period of two years from August 2014 to November 2016. The observations were analyzed with some interesting conclusions. It was observed that out of the total species found in Devgad tehsil, almost 65% bird species are mangrove dependent. It has been further estimated that out of those 65% species, 30% species were of terrestrial birds. Those species of terrestrial birds were not found to be 100% dependent on mangrove swamps; but they were observed to be partially or timely dependent for feeding, roosting and to some extent for nesting. It has been detected that some typical terrestrial bird species are also adapted for feeding in the swamps of mangroves, especially during low tides. The feeding frequency of such birds and their stay in and around the mangroves has also been detected to be considerable. Those species were observed to be feeding and roosting among regular aquatic birds without facing any stress of competition and interspecific conflicts.

Keywords: Mangrove ecosystems, terrestrial birds, feeding, roosting, Devgad

Introduction:

Sindhudurg district is a tourism district of south Konkan located on west coast of Maharashtra. It has been endowed by a wide range of biodiversity. It represents a fascinating variety of natural habitats. Avifaunal diversity is obviously observed over very wide range including about 255 species of birds distributed in different geographical zones in the district.

Devgad is a village town in the district. It is a coastal place having few beautiful sea shores and estuarine lines. Mostly all the estuarine coasts bear dense mangrove vegetations on their both sides. It should be further essentially noted that significant clutches of human populations live close to those shores for their bread and butter obtained from the fishing practices and concerned businesses.

Mangroves are known as the most productive ecosystems. Their role in the enrichment, protection and maintenance of coastal biodiversity cannot be ever ignored. They generate a unique environment for the growth and assemblages of wide variety of aquatic and terrestrial animal species. It has been estimated that a wide range of avifauna utilize the mangrove grounds for their roosting and feeding acts as well as other interactions in the concerned study area. Especially they have been observed to utilize the mudflats and all possible coastal terrestrial habitats in the vicinity. Due to that, a thick meshwork of interactions is observed among the birds in the area. In the overall geographical area of Devgad Tehsil, almost 134 species of birds were detected throughout the study period. Out of them, 87 bird species were observed in the selected three mangrove habitats. Overall 63 species of them were found to be interacting with mangrove ecosystems as well as human establishments in vicinity. Remaining 24 species were found to be confined to human civilizations close to the shores. Many bird species were found to explore the mangroves for their daily food and roost. Some varieties use them only for roosting. Some species were found to use the mangroves as temporary resting places throughout the day.

Material and methods:

a] Study area:

Three different creeks were selected from the overall geography of the Devgad Tehsil. They were Wadatar-Malai, Girye-Rameshwar and Mithbav creeks.

Mithbav creek is present at a distance of 25 km in the North of Devgad town. Wadatar-Malai creek lies at an approximate distance of 8 km away from the Devgad town in its North. Girye-Rameshwar creek is in its South-West at an approx. distance of 20km.

Wadatar-Malai creek has rocky-muddy mix habitat. Its maximum area is covered by mudflats with significantly thick mangroves along its shores and islets in the basin. Mithbav creek represents more or less the same scenario.

Girye-Rameshwar creek is different from them by having a mixed habitat involving patches of

sand, terrestrial scrubby forest, cultivated plants, scattered rocky patches as well as dispersed mangroves. There is natural absence of a wide mudflat throughout. Mudflats here are thin. But still the important fact here is comparative shallow basin of the creek which forms a convenient feeding ground for many bird species.

b] Methodology:

1] Visits to the selected creeks were planned at a regular time interval of 15 days.

2] Bird observations and identification was specifically done by using a capable binoculars.

3] Spot photography was done by using a competent digital Nikon cool pix camera with 21X Zoom.

4] The observations were made mainly during the early mornings or in the evenings.

5] The studies were carried out during the period of one year from August 2014 to November 2016.

Results and discussion:

In the study undertaken, total 87 species of birds were observed assembled with the mangrove systems in Devgad tehsil. It indicates that about 65% of the avian diversity in tehsil area depends on mangroves for their sustenance. Of them, 63 species were associated with mangroves. Out of those 63 species, 26 species were terrestrial and found to be partially adapted for the mangrove swamps for fulfilling some of their basic life requirements. They are partially adapted because at times, they can locally migrate to get their requirements from the other sources available in the nearby human settlements and terrestrial substratum. Some of the species represent their mangrove dependence in context to the changing seasons while some of them show it throughout the year. Those species has been listed below in table 1.1.

Table 1.1 Checklist of the terrestrial avifauna partially depending on the creeks:

Sr. No.	Common English name	Scientific Name	Creek	Mode of Occ.	Freq^{n}	Dependence on creeks and Mangroves
1	Common Pariah Kite or Black Kite	*Milvus migrans*	W, M	OT	C	Feeding, Roosting
2	Brahminy Kite	*Heliaster indus*	A	OT	C	Feeding, Roosting, Nesting
3	Small blue Kingfisher or Common Kingfisher	*Alcedo atthis*	A	OT	C	Feeding
4	White breasted or White throated Kingfisher	*Halcyon smyrensis*	A	OT	C	Feeding
5	Indian Pond Heron or Paddy bird	*Ardeola grayii*	A	OT	C	Feeding
6	Night Heron or Black crowned Night Heron	*Nycticorax nycticorax*	A	OT	C	Feeding, Roosting
7	Little Green Heron or Green backed Heron	*Butorides striatus*	M	NM, NS	O	Feeding
8	Cattle Egret	*Bubulcus ibis*	A	OT	C	Feeding, Roosting
9	Red Wattled lapwing	*Vanellus indicus*	A	OT	C	Feeding
10	Jungle Crow or Large billed Crow	*Corvus macrorhynchos*	A	OT	C	Feeding, Roosting
11	House Crow	*Corvus splendens*	A	OT	C	Feeding, Roosting
12	Thick billed Flowerpecker	*Dicaeum agile*	W, M	NS	O	Feeding
13	Black Drongo or King Crow	*Dicrurus adsimillis*	A	OT	O	Feeding
14	Rufous Back Shrike or Long tailed Shrike	*Lanius schach*	G, M	OT	C	Feeding
15	Coppersmith or Crimson Breasted Barbet	*Megalaima haemacephala*	A	OT	C	Nesting
16	Small Green Bee-eater	*Merops orientalis*	A	OT	C	Feeding
17	White browed Wagtail	*Motacilla maderaspatensis*	W, M	NS	O	Feeding
18	Magpie Robin or Oriental Magpie Robin	*Copsychus saularis*	A	OT	C	Feeding
19	Purple Rumped Sunbird	*Nectarinia zeylonica*	G, M	OT	C	Feeding
20	Purple Sunbird	*Nectarinia asiatica*	G, M	OT	C	Feeding
21	Black hooded Oriole	*Oriolus xanthornus*	W, M	OT	O	Feeding
22	Lesser Golden Backed Woodpecker or Black Rumped Flame-back	*Dinopium benghalense*	W	NM	C	Feeding & Nesting
23	Red Vented Bulbul	*Pycnonotus cafer*	W, M	NM	C	Feeding
24	Red Whiskered Bulbul	*Pycnonotus jacosus*	W	NM	C	Feeding
25	Common Indian Myna	*Acridotheres tristis*	A	OT	C	Feeding, Roosting
26	Jungle Myna	*Acridotheres fuscus*	A	OT	C	Feeding, Roosting

Abbreviations:

Mode of Occurrence: OT: Observed Throughout the Year**, NM**: Not observed in Monsoons, **NS**: Not observed in summers, **NW**: Not observed in winters.

Frequency of Occurrence C: Common, **O**: Occasional

Creeks: W: Wadatar-Malai, **G:** Girye-Rameshwar, **M:** Mithbav, **A:** All

It has been observed that from those 26 species, maximum species were dependent mainly for food on mangrove trees or the related habitats in the ecosystem. Some of them were depending for food as well as roosting also. Ex.: Lapwings, crows and kites. Several other species do show any dependence on mangroves as a food resource but explore the same for temporary perching places on their routes. Ex.: Common rufous treepie. Some bird species like crested serpent eagle, white ibis and Asian openbill stork were observed seasonally. But they were found to be specifically restricted to mudflats for feeding and roosting. Some typical species like purple sunbird, purple rumped sunbird and woodpeckers were seen as vagrant visitors in the study area. They were observed to feed on their natural food which was available in the form of mangrove flowers and bark of the mangrove trees respectively. Woodpeckers were occasionally detected to nest in the stems of bigger old mangrove trees in Wadatar-Malai creek region. The success of the nesting was not studied in the course. Some other bird varieties like small warblers, tailor birds, pigeons and doves were found to be the picnic visitors of the mangroves during low tides. They were observed not to miss the chance of getting a different type of food over there if it is easily available there.

It should be pinpointed here that no competition for food and nesting sites was observed throughout the study period. The probable reason was that both the requirements were adequately available.

Besides, the fact that should be focused here is that in spite of the species richness i.e. 87 bird species among the mangroves; the population density of each species was considerably low. It was also found to be a reason for minimum competition for food and nesting sites. It has been observed that the main business of the mankind living in vicinity of the Wadatar-Malai estuary is fishing and collection of the other marine animals like molluscs. Hence the birds like raptors have obvious food options like dead fishes and dead oysters as well as fishes being sundried. Rest of the terrestrial species observed were found to have minimum and scattered populations. That was also a reason for reduction in the scope for any competition. It has been also observed that the natural predators like crows and domestic cat produce a little ecological stress along with seasonally changing food sources and quantities.

Conclusion:

Thus here it can be concluded that some terrestrial bird species partially depend on the mangrove ecosystems along the creeks selected for the study in Devgad tehsil of Sindhudurg district in Maharashtra state. The dependence is fluctuating according to the seasons and according to the abundance of the basic needs.

References:

1] Ali Salim : The Book of Indian Birds (Reprint 1992), Publication of Bombay of Natural History Society.

2] Ali Salim and Dillon Ripley; A pictorial Guide to the Birds of the Indian Subcontinent (IInd edn.1989); BNHS, Mumbai

3] Grimmet Richard & Inskipp Tim : Birds of the Indian Subcontinent (2003); BNHS

4] Current Checklist of Birds of Konkan; Third Konkan 'Pakshimitra' Conference, 25th-26th December, 1999; held at Khed [District: Ratnagiri]

5] Jamble M. N.: "Survey of the Avifauna of the Sindhudurga District in Maharashtra in relation to the Biology of Some important Bird Species.", Ph. D. Thesis, University of Mumbai-2010.

6] Pawar Prabhakar R.: "Species diversity of birds in mangroves of Uran (Raigad), Navi Mumbai, Maharashtra, West coast of India"; Journal of Experimental Sciences 2011, 2(10): 73-77, ISSN, pp 2218-1768

7] Malwadkar A. M.: "A Contribution To Avifauna Of Uran (Raigad), Maharashtra, Indiaj; Aqua.Biol. Vol. 26 (1), 2011: 21-25

8] S. Karangutkara,*, N. Walmikia, B. Yengala, S. Vedpathaka, R. Pillaia, S. Salvia, V. Joshilkara: "Mangroves and associated faunal diversity of Kolak Estuary, Vapi, Gujarat; Sjournals : Health, Safety and Environment (2013) 1(7) 173-187, ISSN 2345-2838

9] K.M. Vijaya Kumar and Vijaya Kumara: "Avifaunal diversity of mangrove ecosystem, Kundapura, Udupi district, Karnataka, India, Recent Research in Science and Technology2011, 3(10): 106-110, ISSN: 2076-5061