

MANGROVES ASSOCIATED AVIFAUNA OF SAKHARTAR CREEK, RATNAGIRI, MAHARASHTRA.

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Abstract :

The mangrove ecosystem provides an excellent habitat for birds. To understand the association between mangroves and birds, avifauna from the mangroves and surrounding areas of Sakhartar creek, Ratnagiri was studied from January to December 2019. The species diversity and density of birds in and around mangroves, mudflats, and riverside of Sakhartar creek (17.038646° N, 73.3009225° E) was studied at regular intervals. Exposed mudflats at ebb tide, served as ideal feeding grounds for winter visitors. Members of families Ardeidae, Charadriidae, Phalacrocoracidae, and Scolopacidae showed dominance over other families. The study shows good biodiversity and abundance of avifauna in the estuarine region.

Key words: Avifauna, Sakhartar creek, Biodiversity, Mangroves

Introduction:

Mangroves are among the world's most productive ecosystems that protect the coastal populations and support coastal fisheries and livelihood. Due to the ever-growing population and urbanization, the mangroves around the globe are degrading and there is a need to understand these fragile ecosystems to conserve their biodiversity. Mangrove vegetation plays an important role for birds, they use mangroves as breeding, roosting, and feeding habitats (Mancini *et al* 2018).

Nowadays, marine ecosystems are also becoming popular as resources of recreation and tourism. Due to the encroachments of human beings in the marine and estuarine regions, for various purposes, the biodiversity in certain areas is disturbed and under threat of destruction (Kathiresan, 2002).

The important estuaries along the Ratnagiri coast include Bhatye estuary, Kalbadevi creek, Jaitapur creek, Bankot creek, Sakhartar creek, Shirgaon, etc. In the present work, an attempt has been made to study the diversity of avifauna associated with mangroves in one of the most important estuarine ecosystem of Sakhartar creek along Ratnagiri coast.

Birds are one of the best indicators of the environmental quality of any ecosystem (Ripley, 1978). The Council of Environmental Quality (USA) identified birds as the commonly used indicators of environmental change (Morrison, 1986). Most of the birds have specific habitat requirement from season to season, a loss of which may lead to their extinction. Human interference and their activities are mostly responsible for degradation of mangroves. Protection of the mangrove inhabiting birds will require effective management of the entire mangrove habitat.

Material and Methods

The Study Area

Sakhartar estuary is located in Ratnagiri district of Maharashtra state on the west coast of India. It extends between 17°03'14.95"N latitude and 73°16'18.93"E longitude to 16°59'36.56"N latitude and 73°16'21.90"E longitude. Wetlands comprise intertidal mudflats, mangroves, salt marsh, sand beach, dunes, tidal creeks, etc.. It experiences semi-diurnal tides, with two high and two low tides daily.

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The study area, Ratnagiri is situated at 17.038646°N, 73.3009225°E (Fig.1) and having an area of about 50,209 sq miles. The coastline of Ratnagiri district is 250 miles long and marked with several islands, which is a result of drowned topography. This area is known for the mangroves on the mud flats and the clam fauna like *Meretrix meretrix*, *Katelysia opima* and *Geloina proxima*. In the present studies, preliminary observations have been carried out on the diversity of avifauna of Sakhartar mangroves.

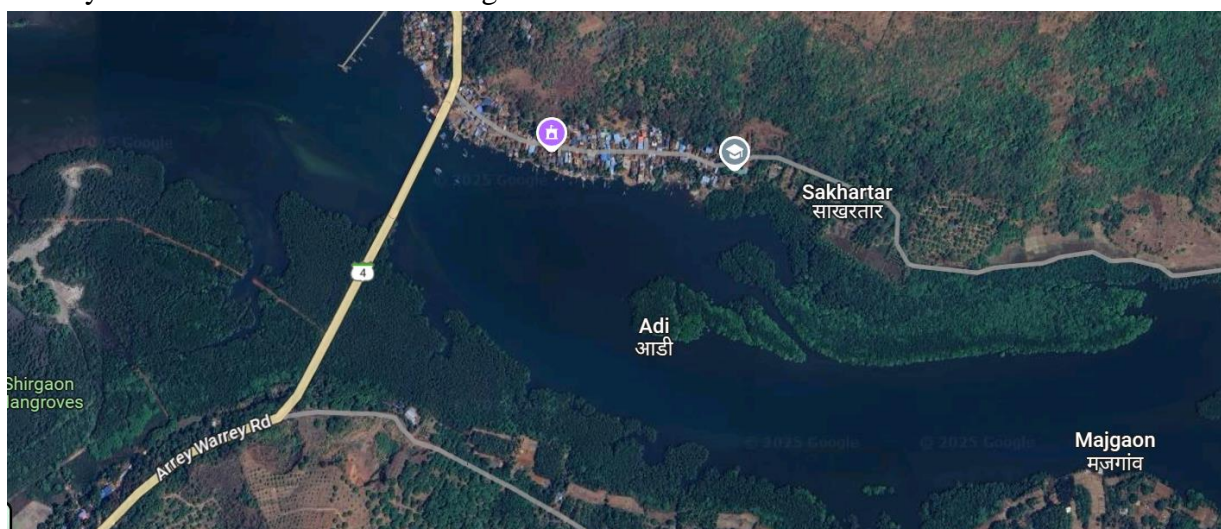


Fig. 1 Map showing study area, Sakhartar creek, Ratnagiri (17.038646°N, 73.3009225°E)

Methods

The present study was carried out to understand the diversity status of birds over a short period and hence fortnight census of birds was conducted from January 2019 to December 2019. Monthly observations were undertaken to analyze the occurrence of migratory birds during the particular season. The observations were made during the early morning hours or evening, just an hour and a half before sunset. The observed birds in the present study were categorized according to their occurrence throughout the study period as suggested by Ali (1996). Resident (R) Birds are indigenous and residing in the area throughout the year and

hence are local. Resident migrants (RM) are birds that migrate locally within the country, while Migrant (M) birds arrive in the area under study during a particular season.

The visual count and vantage count method was followed for the bird census and when possible the birds were observed from a boat to get a closer look at the species. Avifauna was observed by using Olympus binoculars (10 x 50 magnification). In cases where the number was too large to count, an approximation was made with the help of binoculars. Advantage of high tide and low tide was considered, to monitor different occurrences of waders and piscivorous birds. The avifauna was identified by using standard literature for the classification and nomenclature of birds (Ali and Ripley, 1995, 2001; Pande *et al.*, 2003).

Results and Discussion :

The present study revealed the presence of 45 species of birds belonging to 9 orders, 18 families, and 34 genera. Out of these, 21 species were resident, 10 migrant, 14 local migrants, 7 winter migrants, 16 uncommon, 14 common, and 13 rarely occurring species were observed. Individuals of the family Ardeidae were found to be dominant, representing 10 species.

Bhargavi *et al.* (1996) in their study on wetlands recorded a total of 45 species of birds belonging to 13 families, while Prashant *et al.* (1994) in their study of the coastal area of Nellore district recorded 78 species of birds. During the present study, 32 species of wetland birds are noticed. Quadros (2001) in his study on Thane creek reported 55 species of birds, while Maharashtra Nature Park, Mahim, Mumbai (2000) had published the list of 84 species of birds sighted in their area. While Duraimurugan *et al.* (2017) reported 57 bird species comprising 30 families and 10 orders in the man-made mangrove of Karaikal district from South India. Among the 57 species, 23 species were water birds.

Table 1: Mangrove associated bird species from Sakhartar creek, Ratnagiri

Orders	Families	Species	Common name	Number of birds	Status
Pelecaniformes	Phalacrocoracidae	<i>Phalacrocoraxniger</i> (Vieillot, 1817)	Little Cormorant	23	R.LM/C
		<i>Phalacrocoraxcarbo</i> (Linnaeus, 1758)	Great Cormorant	06	LM/ r
Ciconiiformes	Ardeidae	<i>Egrettaagarzetta</i> (Linnaeus, 1766)	Little Egret	136	R.LM/C
		<i>Egrettaularis</i> (Bosc, 1792)	Western Reef-Egret	17	LM/C
		<i>Ardeacinerea</i> (Linnaeus, 1758)	Grey Heron	05	LM/ UC
		<i>Casmerodiusalbus</i> (Linnaeus, 1758)	Large Egret	57	LM/ C
		<i>Mesophoyxintermedia</i> (Wagler, 1829)	Median egret	28	R.LM/C
		<i>Bubulcus ibis</i> (Linnaeus, 1758)	Cattle egret	25	R.LM/C
		<i>Ardeolagrayii</i> (Sykes, 1832)	Indian Pond-Heron	23	R.LM/ UC
		<i>Butoridesstriatus</i>	Little	10	M/r

		(Linnaeus, 1758)	green Heron		
		<i>Ardeacinerea</i> (Linnaeus, 1758)	Grey Heron	01	M/r
		<i>Dupetorflvicollis</i> (Latham, 1790)	Black Bittern	05	LM/ UC
	Coconiidae	<i>Anastomusoscitans</i> (Boddaert, 1783)	Asian open Bill-Stork	02	LM/r
	Threskiomithidae	<i>Plegadisfalcinellus</i> (Linnaeus, 1766)	Glossy Ibis	03	LM/r
		<i>Threskiornismelanocephalus</i> (Latham, 1790)	Oriental White Ibis	02	LM/ UC
Falconiformes	Accipitridae	<i>Elanuscaeruleus</i> (Desfontaines, 1789)	Black shouldered Kite	04	LM/r
		<i>Milvusmigrans</i> (Boddaert, 1783)	Black kite	10	R/C
		<i>Haliastur Indus</i> (Boddaert, 1783)	Brahminy Kite	13	R/C
Charadriiformes	Charadriidae	<i>Charadriusdubius</i> (Scopoli, 1786)	Little Ringed Plover	12	MR/C
		<i>Charadriusalexandinus</i> (Linnaeus, 1758)	Kentish Plover	20	WM/r
		<i>Charadriusmongolus</i> (Pallas, 1776)	Lesser Sand plover	10	M/UC
		<i>Vanellusindicus</i> (Boddaert, 1783)	Red-wattled Lapwing	32	R/C
		<i>Vanellusleucurus</i> (Lichtenstein, 1823)	White tailed Lapwing	12	M/r
	Scolopacidae	<i>Gallinagogallinago</i> (Linnaeus, 1758)	Common Snipe	06	WM/UC
		<i>Numeniusarquata</i> (Linnaeus, 1758)	Eurasian Curlew	06	M/UC
		<i>Tringatotanus</i> (Linnaeus, 1758)	Common Redshank	28	WM/C
		<i>Tringaochropus</i> (Linnaeus, 1758)	Green Sandpiper	25	M/C
		<i>Actitishypoleucos</i> (Linnaeus, 1758)	Common Sandpiper	24	M/C
		<i>Numeniusphaeopus</i> (Linnaeus, 1758)	Whimbrel	02	
	Laridae	<i>Larusbrunnicephalus</i> (Jerdon, 1840)	Brown-headed Gull	160	WM/r
		<i>Larusridibundus</i>	Black	45	WM/r

		(Linnaeus, 1766)	headed Gull		
		<i>Sterna albifrons</i> (Pallas, 1764)	Little Tern	03	WM
Psittaciformes	Psittacidae	<i>Psittaculakrameri</i> (Scopoli, 1769)	Rose-ringed Parakeet	29	R/UC
Cuculiformes	Cuculidae	<i>Eudynamys scolopacea</i> (Linnaeus, 1758)	Asian Koel	03	R/UC
Apodiformes	Apodidae	<i>Cypsiurus balasiensis</i> (J.E.Gray, 1829)	Asian Palm-Swift	07	R/UC
Coraciiformes	Alcedinidae	<i>Alcedo atthis</i> (Linnaeus, 1758)	Small Blue Kingfisher	14	R/UC
		<i>Halcyon smyrnensis</i> (Linnaeus, 1758)	White breasted Kingfisher	07	R/C
	Bucerotidae	<i>Anthracerous coronatus</i>	Malbar Pied Hornbill	05	R/r
	Meropidae	<i>Merops orientalis</i> (Latham, 1880)	Small Bee-eater	10	R/C
Passeriformes	Hirundinidae	<i>Hirundo rustica</i> (Linnaeus, 1758)	Common Swallow	07	R/C
	Motacillidae	<i>Motacilla alba</i> (Linnaeus, 1758)	White Wagtail	03	R/UC
		<i>Motacilla cinerea</i> (Tunstall, 1771)	Grey Wagtail	05	R/UC
	Dicruridae	<i>Dicrurus macrocerus</i> (Vieillot, 1817)	Black Drongo	04	R/UC
	Corvidae	<i>Corvus splendens</i> (Vieillot, 1817)	House Crow	15	R/C
		<i>Corvus macrorhynchos</i> (Walger, 1827)	Jungle Crow	10	R/UC

Key: R, Resident; M, Migrant; LM, Local Migrant; WM, Winter Migrant; UC, Uncommon; C, Common; r, Rare

Egrets were seen throughout the study period and were most abundant in number. Their dominance over other species of birds is due to their nesting period and the location of their nesting sites in the mangroves of Sakhartar creek. They are commonly found in the estuarine region and get their food in this ecosystem. Hence can be considered as residents and local migrants of this area. Bird species of the family Scolopacidae were observed feeding on the mudflats of the mangrove island. Most of them were winter migrants. Mudflats are feeding grounds for these visitors, which also indicate rich macro and meiofauna such as crabs, polychaetes, and some mollusks on these mudflats.

Birds like Little Cormorant, Western Reef Egrets, Indian Pond Heron, Black Bittern,

etc. were seen in the middle zone of the study area. Their presence towards the riverine side of the estuary was rare and more towards the seaside or towards the mouth of the estuary. Some species such as White Throated Kingfisher, Lesser Pied Kingfisher, Red-Wattled Lapwing, and some species of Sandpipers like Marsh Sandpiper were observed to be present throughout the entire estuary.

As per the data available, the sighting of 113 bird species belonging to 14 orders and 41 families in the Bhatye estuary, Ratnagiri (Taware et al, 2012). Though during present study, we couldn't site all the birds reported, an extensive survey of Sakhartar creek may increase on record of the number of birds in this area. This is the first report of studies on Avifauna in the Sakhartar creek.

The present studies show that the mangrove islands present along the estuarine zone show presence of a maximum number of avifauna as compared to the sea side of the estuary or towards the mouth of the estuary. The probable reason could be the settlements of the fishermen community along the coast, especially near the mouth of the estuary, may be responsible for disturbances in this particular area. Apart from the above, mangrove cutting was also seen at a couple of places and human encroachments were also evident. If such activities continue then it may destroy the roosting and breeding sites of most of the bird species.

Conclusion:

Maximum diversity was observed in the months of November and December 2019. The present study is comprised of a detailed survey of avifauna of Sakhartar Creek, Ratnagiri, which will contribute to providing baseline data, for planning effective management to study bird diversity and provide clues for developing this creek as an ecotourism center. Further studies on their relation with other biotic factors will be useful in understanding their ecology.

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