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(II)

Bagagahan in Bhitarkanika: A Real Habitat for Asian Open Billed Stork

The Bhitarkanika mangroves is an estuarine region of Brahmani- Baitarani in the North-Eastern corner of Kendrapara district of Orissa intersected by a network of creeks with Bay of Bengal on the East. The alley between the meandering creeks and rivers, houses the second largest viable mangrove eco-system of India. Its 672 km^2 of mangrove forest and wetland provides home to well over 215 species of birds including winter migrants from central-Asia and Srilanka. Bhitarkanika present assortment of climatic conditions, habitats, microhabitat diversity includes agricultural fields, rivers, fresh water ponds, rich mangrove vegetation, tidal rivers, creek and creek lets, estuaries, mud flats, fresh water and brackish water wetlands, river line islands, off shore islands, muddy and sandy coast line etc. which provide home for a varied and large number of animal species. Mangroves serve as roosting, nesting, feeding, breeding and nursery ground of tidal rivers in tidal forests and in the estuarine food web. The animals that are associated with the mangroves cover a wide range of vertebrate and other invertebrates including protozoans and zoo planktons. The habitat *Bagagahan* just 500m from the creek is the heronry provides nesting and living space to Asian open billed stork and local migratory birds. Mangrove ecosystem supports a range of interconnected food chains which directly sustain the fisheries to exist (Das and Palita, 2014). Algae and detritus sustain shrimps and prawns which provide a food source for bird species. Fish and prawns spend most of their adult life at sea and return to the mangrove areas where they spend their early life.

The virgin stretch lush green mangroves, migrating birds and turtles, the menacing estuarine crocodiles, meandering water courses, tranquil surrounding intercepted by the chirping of birds and the ever embracing nature, enthralls visitors from near and far off places to flock these unique places of Forester, Scientists and have abundant food for thought and exploration. The unique bio-diversity, beckon the visitors to the nature's lap. Therefore, this write up give the publicity campaigns as *Bagagahan;* heronry of Asian open billed stork and brings the facts to limelight, which is yet to catch up with the available boulevard.

Table 1: Lists of a few faunal species at the Bagagahan and adjacent area.

Sl.No	Scientific name	Common name	General habitat	Family
The Amphibian				
1	*Bufo melanostictus*	Common Indian Toad	lowland habitats, from upper beaches and riverbanks to human-dominated agricultural and urban areas	Bufonidae
2	*Polypedates maculates*	Common Tree Frog	Trees and Shrubs, manmade accommodations	Rhacophoridae
3	*Rana cyanophlyctis*	Indian Skipper Frog	Ponds, paddy fields, temporary pools and streams; even in polluted water bodies.	Dicroglossidae
4	*Rana limnocharis*	Indian Cricket Frog	Most open wet habitat types	Dicroglossidae
5	*Rana tigerina*	Indian Bull Frog	Fresh water wetlands and aquatic habitats generally avoid coastal and forest areas.	Dicroglossidae
The Fishes				
1	*Boleophthaemus* sp.	Mudskipper	Most fascinating of intertidal life of mangrove and mudflat habitats, 6 sps recorded	Gobiidae
2	*Hilsa illisha*	Ilisha	Marine, freshwater; brackish, pelagic-neritic, anadromous,	Clupeidae
3	*Lates calcifer*	Bhetki	Freshwater, brackish and marine including streams, lakes, billabongs, estuaries and coastal waters.	Latidae
4	*Mustus gulio*	Kanna	Freshwater; brackish, demersal, anadromous	Bagridae
5	*Mullet* sp.	Khainjo	Coastal waters of the tropical, subtropical and temperate zones	Mugilidae
6	*Oryzias melastigma*	Rice fish	Brackish waters, estuaries, shallow lagoons and swamps	Adrianichthyidae

Sl.No	Scientific name	Common name	General habitat	Family
The Snake				
1	*Ptyas mucosus*	Indian rat snake	Wide variety of habitat	Colubridae
2	*Cerberus rhynchops*	Dog faced Water Snake	Salt tolerant species	Hemalopsidae
3	*Ahaetulla nasutus*	Common Green whip snake	Prefer dense green vegetation of low height mixed, dry and moist deciduous forests, found both in hills and plains.	Colubridae
4	*Python molurus*	Indian Python	Swamps, marshes, rocky foothills, woodlands, jungle and river valleys	Pythonidae
5	*Bungarus caerulens*	Common Indian krait	Variety of habitats	Elapidae
The Crabs				
1	*Horse shoe crab(Limulus polyphemus)*	Raj kakra	Sandy coastal floor of tidal flats	Lumlidae
2	*Red crab(Gecarcoidea natalis)*	Lal kakra	Smooth, mire and underneath pits	Gecarcinidae
The Lizard				
1	*Calotes versicolor*	Indian Garden Lizard	Variety of habitats	Agamidae
2	*Chamaeleon zeylanicus*	Indian Chameleon	Scrublands, dry deciduous and secondary forests	Chamaeleonidae
3	*Varanus salvator*	Water Monitor Lizard	Semi-aquatic and wide range of habitats	Varanidae
4	*Varanus bengalensis*	Indian Monitor Lizard	Dry semiarid desert habitats to moist forest, agricultural land	Varanidae
The Avifauna				
1	*Halcyon pileata*	Black caped kingfisher	Wide range of habitats	Alcedinidae
2	*Todiramphus chloris*	Collard kingfisher	Coastal areas, particularly in mangrove swamps, farmland, open woodland, grassland and gardens	Alcedinidae
3	*Halcyon amauroptera*	Brown winged kingfisher	Agricultural areas, swamps, marshes, near ponds, lakes.	Alcedinidae
4	*Halcyon capensis*	Stork billed kingfisher	Well-wooded habitats near lakes, rivers, or coasts	Alcedinidae
5	*Halcyon smyrnesis*	White throated kingfisher	Variety of habitats	Alcedinidae
6	*Ceryle rudis*	Pied Kingfisher	Lower river valleys, estuaries, reedy inlet	Alcedinidae
7	*Alcedo atthis*	Common kingfisher	Slow-flowing rivers, in mangrove creeks and in swamps	Alcedinidae
8	*Halcyon coromanda*	Rudy kingfisher	Forest areas from the temperate to tropical zones	Alcedinidae
9	*Anastomus oscitans*	Asian open bill	Inland wetlands	Ciconiidae
10	*Phalacrocorax niger*	Little cormorant	Subtropical/tropical mangrove vegetation, inland wetlands	Phalacrocoracidae
11	*Egretta garzetta*	Little egret	Wetland, mudflats, marshland and tidal estuaries or small streams	Ardeidae
12	*Nycticorax nycticorax*	Night heron	Wetland, mudflats, marshland and tidal estuaries or small streams	Ardeidae
13	*Ardea cinerea*	Grey heron	Lowlands, shallow water body	Ardeidae
14	*Anhinga rufa melanogaster*	Darter	Freshwater, brackish wetlands	Anhingidae
15	*Casmerodius albus*	Large egret	All kinds of inland and coastal wetlands	Ardeidae
16	*Threskiornis melanocephalus*	White ibis	Coastal wetlands and extreme lowlands	Threskiornithidae
17	*Bubulcus ibis*	Cattle egret	Terrestrial and aquatic habitat	Ardeidae
18	*Ardea purpurea*	Purple heron	Marshes, lagoons and lakes surrounded by dense vegetation	Ardeidae

Fig. 1: Panoramic view of nesting place of Open billed stork looks like a depressed waterless well.

19th September 2011 at 7.30 o'clock, our group members comprised of Twenty nine Forest Range Officer trainee with Director, Andhra Pradesh Forest Academy and local DFO, Rajnagar Div, Kendrapara District of Orissa toward inside the *Bagagahan* for regular trip of Bhitarkanika mangrove forest as part of our East India tour.

Botanization and Zoolization has been done with the help Botanists, Zoologists from our batch, Forest officers and local people (sarung; boatman) in this area. During the visit all flora and available fauna were only recorded with their common/scientific name and no specimen were collected. The nest, chicks etc. of open billed were observed from the watch tower, distance just 100m approx from the heronry by the naked eye as well as Nikkon Binoculer. Especially, the tree species were recorded which generally are used by Asian open billed stork and the growth status of the tree *sps* in surrounding and nesting area were observed.

Among the most common mangrove species available in this area, bird used five species of plants; *Excoecaria agallocha* (Guan), *Heritiera fomes* (Bada Sundari), *Cynometra iripa* (Singada), *Hibiscus tiliaceus* (Bania), *Tamarix troupii* (Jagula) for nesting in the heronry (Gopi *et al.,* 2002). The birds start arriving at this heronry from the first week of June and the nesting process get over by the end of November. According to the Divisional Forest Officers observation, the relative abundance of various species of birds and nesting varies every year. The Asian open billed which constitutes approximately 60% of the total nesting birds, feed exclusively on mollusks meat that they obtain from the agricultural fields, surrounding the National Park since the area is a deltaic region and the land is very fertile, the farmers hardly use any agrichemicals in their agricultural fields (Gopi and Panday, 2007). So, the chemicals free agricultural fields provide enough food for the storks to sustain.

The intertidal zones, mudflats & the forested wet lands provide an ideal habitat to a large number of resident birds as well as Open billed stork (Table 1). The tree canopy of Bhitarkanika mangrove ecosystem has certain distinctions (Ghosh *et al.,* 2015). Particularly in the Heronry areas retarded tree growth and the surrounding areas browsed twig of the plant were observed. It just look like depressed waterless well (Fig. 1).

Since mangroves are a common property resource, it is an uphill task to protect or conserve the ecosystems unless; the principal stakeholders are involved in the process. In India, mangroves are distributed in all the bio-geographic regions and exhibit significant ecological diversity, primarily because of the variability of climate conditions and the changing topography. Even many protected areas face serious conservation problems, despite their status. Also, very few of India's protected areas were chosen to specifically conserve birds.

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