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Environmental Assessment of Avi-Faunal Study Ofgokharkuda - A Coastal Village Eco-Complex of Ganjam District, Odisha, India

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Abstract

The coastal faunal diversity maintained natural process, upholding the environmental assessment throughout the world by playing a vital role in sustaining of coastal ecosystem. A total 123 number of bird species recorded from in and around the Gokharkuda, a coastal village of coastal Ganjam district of Odisha. During field study it was found that out of total 123 species, family Scolopacidae belongs to 13 no of species and most are mostly dominant family followed by Ardeidae (10). The animal kingdom of the coastal village Gokharkuda is efficiently and ecologically very important. Survivability of the coastal village eco-complex is flourished with these small numbers of faunal richness by pollination. Appropriate planned management needs for coastal village ecosystem conservation for futures' balance with human life. The recent assessment gives an idea of particular Avi-fauna at coastal marine village eco-complex of Ganjam district in Odisha, India.

1. Introduction

Coastal fauna are limited and are generally neglected group, especially in the Indian context, but contain unique faunal elements. The harsh coastal conditions have lead to a poor faunal and floral diversity, but most of the existing organisms are highly adapted and specialised to overcome

drastic cruel environmental situation (Balachandran et al., 2020 & Mahapatra et al., 2013).

Bird watching are very common, everyone curiously observe and enjoy its different colorful beautiful feathers, free flying capability on the top of sky, the cheeriness of their unique incredible mesmerizing musical tuned songs to attract nature. They are pre bio indicator for environmental

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assessment of our biodiversity. Rapid decrease of bird population specifies the sensitiveness of disastrous environmental pollution. Coastal bird species are the most vulnerable (Sekercioglu et al., 2012) and approximately 100-150 numbers of birds extinct due to global climate change. Coastal Birds are very important role played in several tropic levels of food web ecosystem, served as potential pollinators, scavenging carcasses, destroyers of insect and pests, cycling of nutrient, seed dispersal in the coastal environment of Ganjam.

Avifauna shows maximum diversity among Indian subcontinent is well-known for its rich and variedness whose taxonomy, distribution and habitat characteristics are well documented in India encompasses 1340 species; out of 9,900 birds of the world which contribute more than 15% of the world's bird species (Reddy et al., 2013). Environmental assessment of bird community has become an important tool in biodiversity management for identifying conservative actions with high human pressure. Most of the birds are aesthetically significant to mankind and Bird-watching has become one of the most popular recreational activities around the world, has direct economic benefits as well as indirect reimbursement through numerous citizen science programs involving bird-watchers (Patra & Chakrabarti, 2014).

The natural disasters with anthropogenic activities increase the flood, drought, deforestation situation; the changing pattern in land use, natural resources and seasonal climatic changes decreasing global diversity of birds (Grimmett et al., 2013). Habitat destruction along with electro-magnetic radiation of telephone towers are an alarming factor for decreasing the bird fertility. Most of the birds require specific habitats from season to season for nesting; foraging, roosting and loss of such habitats may lead to their extinction (Debata et al., 2014). For easy commercial growth cutting of old traditional nesting trees is also responsible for avian habitats limitation. Therefore, many species of birds may be forced to reside in the urban areas for breeding and feeding purpose (Palei et al., 2017).

The frequency of seasonal migratory birds' activities and habitats increases due to less anthropogenic interference in sanctuaries of Odisha in recent time (Das et al., 2013; Pattnaik et al., 2022) and in also protected natural forests (Pradhan et al., 2016).

Urbanization and numerous crowds gave to avian species have a preference to new unexplored least interference habitats of wildlife reserve forests and sanctuaries (Giri et al., 2020; Palei et al., 2017; Palei et al., 2014; Palei et al., 2012; Reddy et al., 2013 & Sinha et al., 2011). The seasonal migratory birds attracted to educational campus for more peaceful space and least threat surroundings near urban area (Lenka & Singh, 2021; Mallik et al., 2015; Sethy et al., 2015 and Pattnaik et al., 2016). The seasonal variation affects the birds feeding, breeding and habitats behaviors in aquatic wetland areas (Pradhan et al., 2013; Pattnaik et al., 2022). The midwinter change the geographical surroundings of bird habitats (Balachandran et al., 2020; Changder et al., 2015; Panda et al., 2021; Pattnaik et al., 2022) prefer to stay long time for availability of food and shelter.

2. Study Area

The coastal Ganjam district located between 18° 58' N and 84° 11' E the coastal marine fishing village named Gokharkuda; major focused site comes under Palibandha G.P. (Gram Panchayat) of Ganjam block and Tahasil of Ganjam district is a single revenue village faced towards the Bay of Bengal and at the end point of neighbor village Purunabandha Rushikulya river mouth cross. The space in between village and the seashore area are restricted for Olive Ridley sea turtle congregation for seven months each year for their favorable mass nesting condition. Almost each season are moving the area throughout the year. Rainy season's starts in-between mid June to October end, winter season start from November to February end and summer falls from March to June mid. Rainfall measured from 10.2 mm to 376.4 mm in calendar year. The minimum and maximum temperature varied from 12°C to 39°C observed.

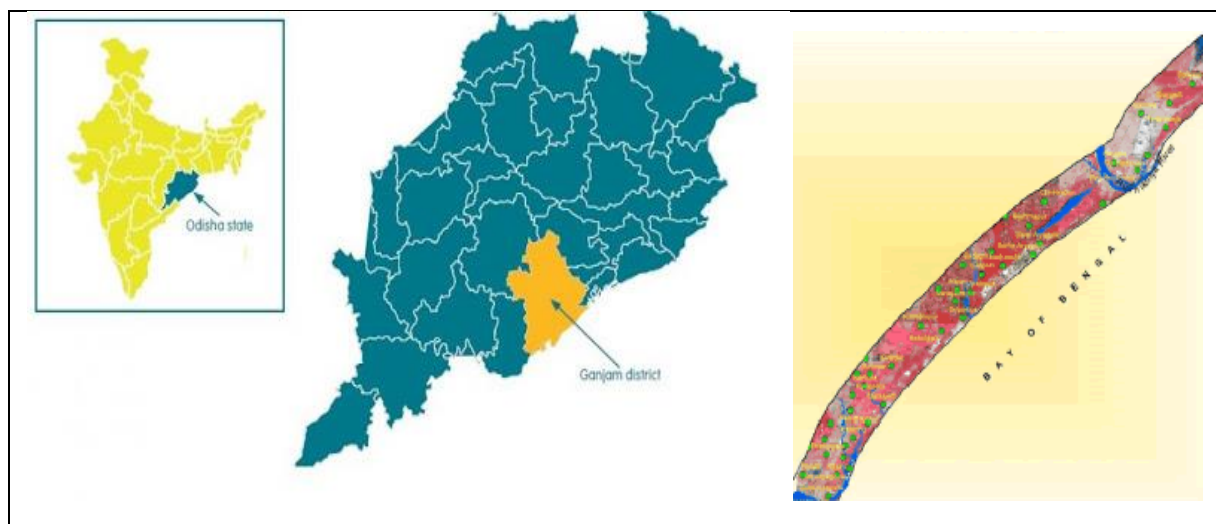


Figure - 1: Show the Study area of coastal village Gokharkuda studied during 2014 to 2019.

3. Methodology

During the 2014 to 2019 a long period the Avifauna survey of this particular coastal village was occurred. Assessments was conducted at the study site's adjacent open forest areas, grasslands, scrublands, agricultural habitats and residential places; at water bodies and sea shore lines. Traditional bird lovers cum bird watchers help, taken in this regard. Huge information gathered from local village fisher-folk communities along with field official staffs of forest department to identify birds species presence in the confined region, are familiar these place. Standard literatures were used for birds' identification. The species from the adjacent village area were recorded based on direct sightings. During the early morning hours in between 06.30 AM to 08.30 AM and before evening from 04.30 PM to 06.30 PM are searched at the edges of all water bodies and streams primarily in the sunset hours. During interaction with local people who frequent visit the forest to collect their food, fodder and fuel. Pictorial representations of particular species were

used in the form of field guides (Manakadan & Pittie, 2001; Kumar, 2005).

The aim of the present study was enlightened distributional pattern of birds in the adjacent and peripheral area of this particular coastal village eco-complex of Ganjam coast. The species occurring within the study area are discussed in the following sections:

4. Results

According to movement and seasonality occurrence, sight frequency bird investigation was done in between village periphery and coastal dry deciduous forest along with Sea Shore. The finding Avifauna are categorized according to their family.

The detailed species which are identified at coastal village eco-complex adjacent place of Gokharkuda village tabulated with zoological scientific name and common name in the table no. 1 at given below according to handbook (Ali, 2002).

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Table -1– Avi-faunal Status of Coastal village eco-complex of Gokharkuda village of Ganjam, Odisha

Sl.No	Name	Scientific Name	Family
1	Shikra	<i>Accipiter badius</i>	Accipitridae
2	Bank Myna	<i>Acridotheresginginianus</i>	Sturnidae
3	Common Myna	<i>Acridotherestrictis</i>	Sturnidae
4	Common Sandpiper	<i>Actitishypoleucos</i>	Scolopacidae
5	Common Kingfisher	<i>Alcedoatthis</i>	Alcedinidae
6	White breasted Waterhen	<i>Amauornisphoenicurus</i>	Rallidae
7	Common Teal	<i>Anascrecca</i>	Anatidae
8	Eurasian Wigeon	<i>AnasPenelope</i>	Anatidae
9	Spot billed Duck	<i>Anaspoecilorhyncha</i>	Anatidae
10	Asian Openbill	<i>Anastomusoscitans</i>	Ciconiidae
11	Darter	<i>Anhinga melanogaster</i>	Anhingidae
12	Little Swift	<i>Apusaffinis</i>	Apodidae
13	Grey Heron	<i>Ardeacinerea</i>	Ardeidae
14	Goliath Heron	<i>Ardea goliath</i>	Ardeidae
15	Intermediate Egret	<i>Ardeaintermedia</i>	Ardeidae
16	Purple Heron	<i>Ardeapurpurea</i>	Ardeidae
17	Indian Pond Heron	<i>Ardeolagrayii</i>	Ardeidae
18	Jungle babbler	<i>Argyastriata</i>	Leiothrichidae
19	Spotted Owlet	<i>Athenebrama</i>	Strigidae
20	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae
21	Curlew Sandpiper	<i>Calidrisferruginea</i>	Scolopacidae
22	Little Stint	<i>Calidrisminuta</i>	Scolopacidae
23	Long-toed Stint	<i>Calidrisubminuta</i>	Scolopacidae
24	Great Egret	<i>Casmerodiusalbus</i>	Ardeidae
25	Red-rumped Swallow	<i>Cecropisdaurica</i>	Hirundinidae

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26	Greater Coucal	<i>Centropussinensis</i>	Cuculidae
27	Pied Kingfisher	<i>Cerylerudis</i>	Cerylidae
28	Red wattled Lapwing	<i>CharadriidaeVenellus</i>	Charadriidae
29	Little Ringed Plover	<i>Charadriusdubius</i>	Charadriidae
30	Jerdon's Leaf bird	<i>Chloropsisjerdoni</i>	Chloropseidae
31	Brown headed Gull	<i>Chroicocephalusbrunnicephalus</i>	Laridae
32	Purple Sunbird	<i>Cinnyrisasiaticus</i>	Nectariniidae
33	Western Marsh Harrier	<i>Circus aeruginosus</i>	Accipitridae
34	Rock/common Pigeon	<i>Columba livia</i>	Columbidae
35	Indian Robin	<i>Copsychusfulvicatus</i>	Muscicapidae
36	Oriental Magpie Robin	<i>Copsychussaularis</i>	Muscicapidae
37	Indian Roller	<i>Coraciasbenghalensis</i>	Coraciidae
38	Indian Jungle Crow	<i>Corvusculminates</i>	Corvidae
39	Large Billed Crow	<i>Corvusmacrorhynchos</i>	Corvidae
40	House Crow	<i>Corvussplendens</i>	Corvidae
41	Asian Palm Swift	<i>Cypsiurusbalasiensis</i>	Apodidae
42	RufousTreepie	<i>Dendrocittavagabunda</i>	Corvidae
43	Fulvous-breasted Woodpecker	<i>Dendrocoposmacei</i>	Picidae
44	Lesser Whistling Duck	<i>Dendrocygnajavanica</i>	Anatidae
45	Pale-billed Flowerpecker	<i>Dicaeumerythrorhynchos</i>	Dicaeidae
46	White bellied Drongo	<i>Dicruruscaerulescens</i>	Dicruridae
47	Black Drongo	<i>Dicrurusmacrocerus</i>	Dicruridae
48	Little Egret	<i>Egrettaarazetta</i>	Ardeidae
49	Black shouldered Kite	<i>Elanuscaeruleus</i>	Accipitridae
50	Ashy-crowned Sparrow Lark	<i>Eremopterixgriseus</i>	Alaudidae
51	Asian Koel	<i>Eudynamysscolopacea</i>	Cuculidae
52	Indian Silverbill	<i>Euodicealabarica</i>	Estrildidae
53	Common Eurasian Coot	<i>Fulicaatra</i>	Rallidae

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54	Water cock	<i>Gallicrex cinerea</i>	Rallidae
55	Common Snipe	<i>Gallinago gallinago</i>	Scolopacidae
56	Pintail Snipe	<i>Gallinago stenura</i>	Scolopacidae
57	Common Moorhen	<i>Gallinula chloropus</i>	Rallidae
58	Red Spurfowl	<i>Gallus domesticus</i>	Phasianidae
59	Asian pied Starling	<i>Gracupica contra</i>	Sturnidae
60	Black Capped Kingfisher	<i>Halcyon pileata</i>	Alcedinidae
61	White throated Kingfisher	<i>Halcyon smyrnensis</i>	Halcyonidae
62	White bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	Accipitridae
63	Brahminy Kite	<i>Haliastur Indus</i>	Accipitridae
64	Black winged stilt	<i>Himantopus himantopus</i>	Recurvirostridae
65	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Jacanidae
66	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	Ardeidae
67	Long-tailed Shrike	<i>Lanius schach</i>	Laniidae
68	Black headed Gull	<i>Larus ridibundus</i>	Laridae
69	Jack Snipe	<i>Lymnocyrtus minimus</i>	Scolopacidae
70	Coppersmith Barbet	<i>Megalaima haemacephala</i>	Ramphastidae
71	Brown headed Barbet	<i>Megalaima zeylanica</i>	Megalaimidae
72	Green Bee-Eater	<i>Merops orientalis</i>	Meropidae
73	Little Green Bee-eater	<i>Meropus orientalis</i>	Meropidae
74	Intermediate Egret / Median Egret	<i>Mesophoyx intermedia</i>	Ardeidae
75	Bronze winged Jacana	<i>Metopidius indicus</i>	Jacanidae
76	Little Indian cormorant	<i>Microcarbo nigripes</i>	Phalacrocoracidae
77	Black Kite	<i>Milvus migrans</i>	Accipitridae
78	Grey Wagtail	<i>Motacilla cinerea</i>	Motacillidae
79	White-browed wagtail	<i>Motacilla madagascariensis</i>	Motacillidae
80	Painted Stork	<i>Mycteria leucocephala</i>	Ciconiidae
81	Purple Sunbird	<i>Nectarinia asiatica</i>	Nectariniidae

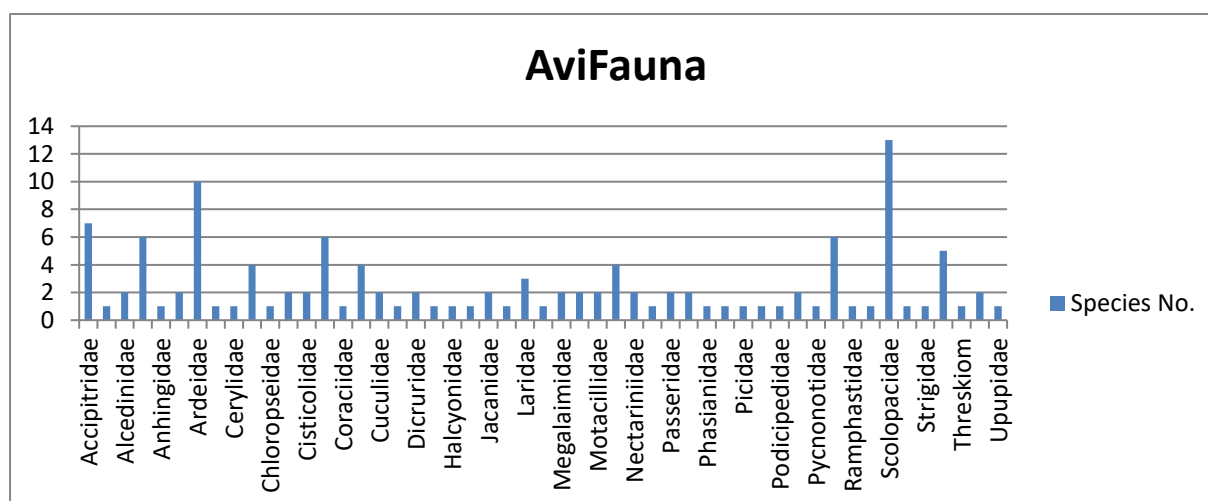
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82	Cotton Pygmy Goose	<i>Nettapuscoromandelianus</i>	Anatidae
83	Eurasian Curlew	<i>Numeniusarquata</i>	Scolopacidae
84	Indian Grey Hornbill	<i>Ocyerosbirostris</i>	Bucerotidae
85	Black-Hooded Oriole	<i>Oriolasxanthornus</i>	Oriolidae
86	Common Tailorbird	<i>Orthotomussutorius</i>	Cisticolidae
87	House sparrow	<i>Passer domesticus</i>	Passeridae
88	Common Peafowl	<i>Pavocristatus</i>	Phasianidae
89	Chestnut-shouldered Petronia	<i>Petroniaxanthocollis</i>	Passeridae
90	Little Cormorant	<i>Phalacrocoraxniger</i>	Phalacrocoracidae
91	Glossy Ibis	<i>Plegadisfalcinellus</i>	Threskiornithidae
92	Baya Weaver	<i>Ploceusphillipinus</i>	Ploceidae
93	Grey headed Swampfen	<i>Porphyriopoliocephalus</i>	Rallidae
94	Purple Swampfen	<i>Porphyrioporphyrio</i>	Rallidae
95	Plain Prinia	<i>Priniaainornata</i>	Cisticolidae
96	Black Ibis / Red-naped Ibis	<i>Pseudibispapillosa</i>	Threskiornithidae
97	Coppersmith Barbet	<i>Psilopogonhaemacephalus</i>	Megalaimidae
98	Plum headed Parakeet	<i>Psittaculacyanocephala</i>	Psittacidae
99	Rose-ringed Parakeet	<i>Psittaculakrameri</i>	Psittacidae
100	Red-vented Bulbul	<i>Pycnonotuscafer</i>	Pycnonotidae
101	Pied Bushchat	<i>Saxicolacaprata</i>	Muscicapidae
102	Indian Robin	<i>Saxicoloidesfulicatus</i>	Muscicapidae
103	Spotted Dove	<i>Spilopeliachinensis</i>	Columbidae
104	Laughing Dove	<i>Spilopeliasenegalensis</i>	Columbidae
105	Crested Serpent Eagle	<i>Spilornischeela</i>	Accipitridae
106	River Tern	<i>Sterna aurantia</i>	Sternidae
107	Common Tern	<i>Sterna hirundo</i>	Laridae
108	Spotted Dove	<i>Streptopeliachinensis</i>	Columbidae
109	Eurasian Collared Dove	<i>Streptopeliadecaecto</i>	Columbidae

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110	Chestnut-tailed Starling	<i>Sturniamalabarica</i>	Sturnidae
111	Brahminy Starling	<i>Sturniapagodarum</i>	Sturnidae
112	Little Grebe	<i>Tachybaptusruficollis</i>	Podicipedidae
113	Ruddy Shelduck	<i>Tadornaferruginea</i>	Anatidae
114	Black headed Ibis	<i>Threskiornismelanocephalus</i>	Threskiorn
115	Yellow-footed Pigeon	<i>Treronphoenicopterus</i>	Columbidae
116	Spotted Redshank	<i>Tringaerythropus</i>	Scolopacidae
117	Common Greenshank	<i>Tringanebularia</i>	Scolopacidae
118	Green Sandpiper	<i>Tringaochropus</i>	Scolopacidae
119	Marsh Sandpiper	<i>Tringastagnatilis</i>	Scolopacidae
120	Common Redshank	<i>Tringatetanus</i>	Scolopacidae
121	Common Hoopoe	<i>Upupaepops</i>	Upupidae
122	Red wattled Lapwing	<i>Vanellusindicus</i>	Charadriidae
123	Yellow wattled lapwing	<i>Venellusmalabaricus</i>	Charadriidae

A total of 123bird species were recorded from the study area. The details of species are mentioned in table - 1.



The Graph -1 shown the number of species belongs to avifauna families.

A total 123 species of coastal birds with 50 families were recorded. Of all the families Scolopacidae having 13 species , Ardeidae (10), Accipitridae (7), Anatidae,Columbidae and Rallidae (6 species each), Sturnidae (5) and Charadriidae,Corvidae

and Muscicapidae(4 species each), Laridae(3), Apodidae,Ciconiidae,Cisticolidae,Cuculidae,Dicruridae,Jacaniidae,Megalaimidae,Meropidae,Motacillidae,Nectariniidae,Passeridae,Phalacrocoracidae,Phasianidae,Psittacidae and Threskiornithidae (2 species

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each) Alcedinidae, Alaudidae, Anhingidae, Bucerotidae, Cerylidae, Chloropseidae, Coraciidae, Dicaeidae, Estrildidae, Halcyonidae, Hirundinidae, Laniidae, Leiothrichidae, Oriolidae, Picidae, Ploceidae, Podicipedidae, Pycnonotidae, Ramphastidae, Recurvirostridae, Sternidae, Strigidae, Threskiom and Upupidae (1 species each). It is expected that this study would provide a preliminary database for the coastal birds of this area for the further research.

As picture taken little bit difficult. Brahminy Kite (*Haliasturindus*), Shikra (*Accipiter badius*), Black Kite (*Milvus migrans*) were listed as Schedule I as per Wildlife Protection Act, 1972. Black-headed Ibis (*Threskiornis melanocephalus*), Eurasian Curlew (*Numenius arquata*) and River tern (*Sterna aurantia*) are listed as near threatened as per IUCN Classification (IUCN version 2016-2).

5. Conclusion

The village area constantly losing their dry deciduous forests and salty climatic agricultural forestry due to over utilization of resources by anthropogenic pollution, loss of natural habitat demolition, more alteration with environmental degradation by continual loss with human hindrance gave a negative impact on survivability of both migratory and seasonal bird's habitat. The scarcities of hiding habitat place, spotting availability of small carnivorous animals and scavengers are distracted the bird attitude. The localities of peripheral biodiversity control the coastal village ecosystem with livelihood generation requirements partially or fully with the basic needs like food and shelter for animal kingdom which depends on the particular village eco-complex. The people of this coastal ecosystem are completely depending on the fishing activities at the Bay of Bengal sea shore. Commercial Anthropogenic judicious utilization of this coastal area for economical development vanish a lot of vegetation on which the fauna survive and nourish themselves is very important for threatened ecosystem. The coastal fauna with vegetation should be protected, for ecological food chain maintenance which is also washed by high tidal rough sea water and also seasonal coastal cyclonic storms. The coastal village eco-complex area's communities are familiar with all mentioned

animals' behavioral activities. A continual management of biodiversity conservation should need to maintain for threatened faunal ecology which also support the local fisher folk of coastal village eco-complex of Odisha.

Olive ridley turtles' native nesting occurred along the sea shore line of Gokharkuda and Chilika Lake, world's largest brackish water lagoon is its adjacent place. As a result, various migrated birds are visit frequently for new safe shed, shelter with nature lovers, wildlife researchers, bird watchers on this study place which developed as a mini eco-tourism hotspot for nine months; will also help to take initiation for conserve bird populations in coastal district of Ganjam. For increasing a variety of birds get-together in one place; need continual planned environmental assessment for conservation of avifauna habitat with growing of coastal village eco-complex of particular marine ecosystem including sustainable livelihood opportunities generating, bird habitat related forest area rising need at coastal Odisha. A specific village based eco-tourism hub creates by the support of confined fisher folk community's straight involvement.

Acknowledgement:

The survey was conducted by the research author with standard methodologies and taking support of local village community, bird lovers and watchers, wildlife activist and also forest departmental staff. A long-term depth study need for all migratory, seasonal and wild fauna identification with habitat behavior through literature and field research.

Conflict of Interest Statement:

We the research authors have declared that, there is no conflict of interest.

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