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Opportunities of Nature Tourism Potential for Pulicat Lake with a Focus on Bird Watching Activity

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Abstract: This paper aims to examine the potential for ecotourism development in the Pulicat Lake, a proposed Ramsar site situated in the Indian states of Andhra Pradesh and Tamil Nadu. Pulicat Lake has enormous potential for tourism and recreation; however, it is inevitable to ensure sustainable development in the region. The data for the study was collected using various methods, including case study techniques, qualitative interviews, observations, and information obtained from secondary sources. The study aimed to identify the sustainability dimensions of the location, including economic impact and income generation potentials through employment opportunities like field guides and travel companions. It is also examined the social impact on the local community and the development efforts made to reduce environmental pressures while conserving the flora and fauna. Additionally, the study discusses the possibilities and strategies for ornithological ecotourism at Pulicat Lake.

Keywords: avitourism; sustainable tourism; community-based tourism; economic feasibility; Pulicat Lake; India

Introduction

Ecotourism is a collaborative endeavor involving authorities, the tourism industry, local communities, and tourists themselves. Its aim is to provide visitors with the opportunity to explore authentic areas, appreciate nature and culture, and engage in learning experiences, all while ensuring the reasonable use of resources and fostering sustainable development" (Björk, 2000). Ecotourism integrates the three aspects of sustainable development, which includes, social, economic, and ecological impact (Das & Chatterjee, 2015; Fennell, 2001; Weaver, 2005). Given the detrimental impacts on both social and ecological aspects caused by the mass tourism, ecotourism emerges as a viable alternate solution (Weaver, 2001). As a result, the principles of ecotourism have expanded beyond ecological consideration such as nature focused activities and conservation efforts. They now encompass social values such as education, fair sharing (equitable) of benefits, ethical practices, and sustainable development (Donohoe & Needham, 2006).

Avitourism (Bird-watching tourism) is an emerging niche area of nature-based tourism (Bigges et al., 2011), this integrates all the three dimensions of sustainable development such as economic, social, and environmental (Li et al., 2013). Providing bird-watching tourism brings forth various benefits, such as promoting ecological conservation and safeguarding biodiversity. In addition, this form of tourism is sustainable as it contributes to the well-being of local communities and upholds land ownership rights (Pubhakka et al., 2011).

The existing literature reveals a significant knowledge gap in understanding the utilization of avitourism as a viable tourism product and its potential for promoting conservation efforts and sustainable development. Although research on avitourism predominantly focuses on North

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America, there is a pressing need to formulate strategies in developing countries to achieve sustainable outcomes (Steven et al., 2015); To address this gap in knowledge, this study explores the role of avitourism in integrating with ecotourism, as well as its prospects for fostering local community development and environmental conservation.

The objectives of the study are to identify the prospects of ecotourism in the proposed Ramsar site. To examine the opportunities, this study strives to check the avian population in the destination, the uniqueness of Pulicat lake, local communities residing nearby the lake, harmonizing nature and communities, field guide and travel companion, education and training, for promoting bird-watching and ecotourism. In this regard, this study employs a case study method to explore the objectives mentioned earlier.

The study is organized as follows: In section two, we delve into the literature concerning bird-watching tourism in India. Section three outlines the research method employed to address our research objectives. Moving forward, sections four and five analyze the findings and explore their implications, both in terms of theoretical insights and practical applications. Finally, in section six, we present our conclusion, drawing upon the study's outcome.

Literature Review

Bird Watching Tourism

The study by Kutzner (2019) elaborated on the social-ecological resilience of bird-watching tour operations in the destination of Otago Peninsula, New Zealand. The strategies adopted by the tour operators for the environmental change escalated the engagement and activities on environmental conservation, collaboration to resolve the crisis, assistance on predation management, diversification of tour products by offering novel tour experience, customized the tour products, emphasis on conserving nature, and reducing the impact of climate change and reducing the pressure on exploiting the natural resources. The prospects of bird watching are examined in Poland (Kronenberg, 2016). The study conducted a SWOT analysis to identify the possibilities of bird watching given the diverse number of avifauna in the ecosystem. The weakness of the place is that the infrastructure is in the developing stage and inadequate to disseminate information on avitourism. The threat faced by the destination involves environmental degradation. On the other hand, in Zywkowo, Poland, the economic value associated with ecosystem services is explored related to white storks (Czajkowski et al., 2014). The findings indicate that people travel long distances for bird watching in the village. This study elaborates on the prospects of income that local communities can derive from avitourism. The other study identified that irrespective of bird watchers or pedestrians, some bird species judge the movement of bird enthusiasts as threatening and disturbing and also examined how the birdwatchers influence the escape distances of the East African bird species (Radkovic et al., 2017).

Bird-Watching Ecotourism in India

The present-day ecotourism in India may be traced back to the British period (Ranade, 2008). The Union Ministry has a specific plan for promoting ecotourism in the country with a mandate of responsibility and sustainability involving locals as of high importance. The State governments are keen on attracting tourists to explore various destinations and play a vital role in the eco-tourism initiative of identifying potential ecotourism spots in their respective states (Kannan, 2005). India is home to three bio-geographic zones (Indo-Malayan, Palaearctic, and Afro-Tropical), and varied climatic, topography and habitats attribute one of the bird-rich countries in the world with over 1330 species and about 14% of the world's avifauna (Clements, 2007). In developed countries, the lakes, backwater areas, and beaches are used as a resource for ecotourism, nature-based tourism, and leisure tourism as they attract millions of tourists. As for India, the nation lacks planning due to a lack of knowledge in using ecosystem services other than regular ecotourism projects involving the local community. Birds are essential components of biodiversity; their healthy populations serve as a benchmark for the health of our ecosystems. Birdwatching is a major component of wildlife tourism

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and is one of the most rapidly growing pursuits. The mode of tourism is popular among western travellers who are increasing worldwide because of the paradigm shift in western society more environmentally concerned 'green' paradigm (Kellert, 1985; Applegate & Clark, 1987; Burger et al., 1995; Adams et al., 1997; Weaver, 2008). The trend is observed not only in the developed countries but also in developing countries like India (Karanth et al., 2012; Karanth et al., 2008), reflected in forming e-groups for birds (Birds of Bombay, Birds of NE India, Birds of Pune, Kerala Birders, Tamil birders etc.,), natural history and bird photography where participants make remarkable contributions. Unlike the developed countries, India is lagging in bird conservation because of the low priority given to conserving birds, the focus being on large mammals, which needs to be rectified. Pulicat Lake is one of the potential sites for a bird-watching ecotourism destination in India, where tourists can explore every facet of the tourism destination. It can be included in the tourist attractions list on India's tourism portals. Therefore, this paper is focused on and attempts to provide suggestions and alternate means of conserving and managing Pulicat Lake.

Study Area

Pulicat Lake (13° 40′ N and 80° 11′ E) is situated on the south coast of Andhra Pradesh and the north coast of Tamil Nadu on the eastern seaboard of India (Figure 1). It is spread over 720 sq. km and is India's second-largest brackish water lake after Chilika in Odisha. The geographical regions of the lake are declared as bird sanctuaries. The history and culture of Pulicat Lake date back to 300 B.C. and has been described as a grand port operational since the 15th century, prominently figured on the nautical charts of indigenous and foreign sea-faring communities along the east coast of India. The Cholas, Nayak, and Mogul rulers fought to garner its abundant port revenues. The entire area is vast, brackish to saline, with extensive mudflats. The historical Buckingham Canal runs along the eastern edge parallel to the Bay of Bengal, from Pedda Ganjam (15° 39 N and 80° 15′ E) in Andhra Pradesh (north) to Marakanam in Tamil Nadu (south). The sea influences the ecosystem at various places throughout the lake through inlets (at Durgarajupatnam, Rayadurg and Pazhaverkadu) connecting the lake with the Bay of Bengal, which is vital for the flora and fauna of Pulicat Lake. During the monsoon, freshwater enters this ecosystem through Swarnamukhi, Kalangi and Arani rivers.

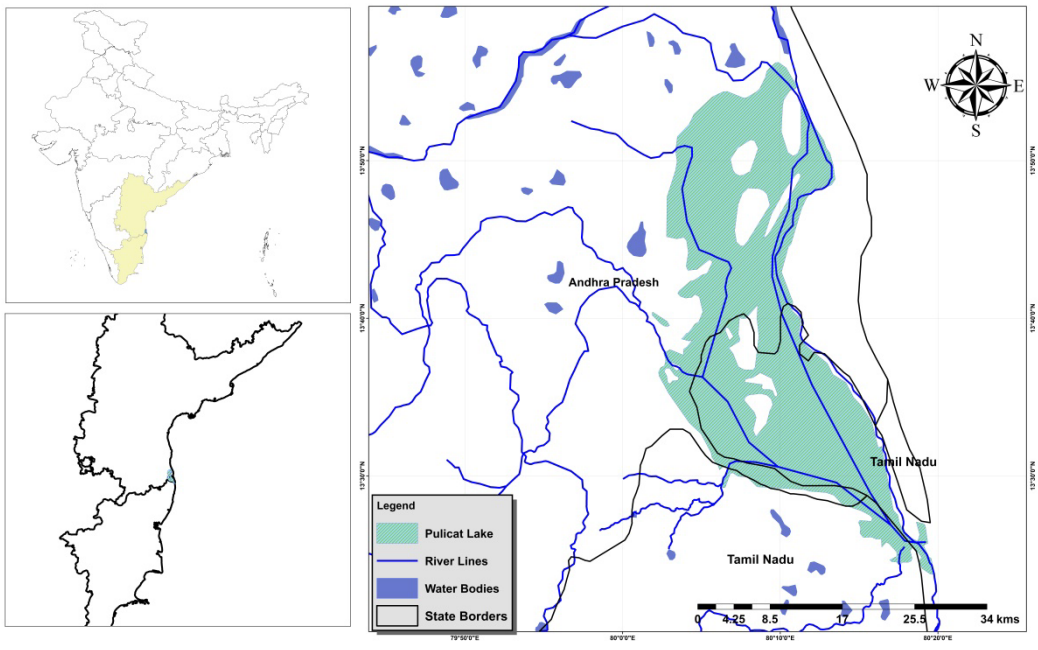

Figure 1. Map of Pulicat Lake.

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The lake has several islands, of which the large ones are Sriharikota, Irakkam, Venadu and Pernadu. The vegetation comprises Tropical Dry Evergreen Forests (TDEF) declared Reserved Forests. The east coast of India is a bio-geographic unit recognized for three important flyways: Central Asian-South Asian Flyway, East Asian-Australian Flyway and the Western (or Central) Pacific Flyway. It has been estimated to be wintering ground for millions of waders and is an essential and overlapping migration route for different species of water birds (Mundkur, 2006; Straw et al., 2006). Pulicat Lake is an important coastal flyway used by several pelagic and coastal migrants, linking Point Calimere in Tamil Nadu with Chilika in Odisha (Kannan & Pandiyan, 2012). The lake supports five heronries (Kannan et al., 2008), harbouring 12 species of threatened birds (Islam & Rahmani, 2004).

Methodology

The data for this paper is collected based on field surveys, observations, and interactions with visitors and students. The study covers a period from 2000 to 2013 by participating in the flamingo festival and learning from the queries regarding images of bird photographs taken at Pulicat Lake by visitors and birdwatchers. The observations and interaction with visitors showed their interest in learning about birds and understanding the Pulicat ecosystem. However, many visitors were found ignorant about the name of the birds, bird books, binoculars, and location to sight birds. In addition to such direct data collection, published information on the avifauna of Pulicat Lake was also examined (Taher & Pittie, 1989; Rao & Mohapatra, 1993a; Rao & Mohapatra, 1993b; Rao & Mohapatra, 1994; Rao & Mohapatra, 1996; Mohapatra & Santharam, 1992; Taher & Pittie, 1996; Taher, 1996; Sivakumar & Manakadan, 2003; Sivakumar & Manakadan, 2005; Sivakumar & Manakadan, 2006; Kannan et al., 2008; Manakadan et al., 2009; Manakadan & Sivakumar, 2003; Manakadan & Sivakumar, 2004; Kannan & Pandiyan, 2012; Jacobson, 2010; Kannan, 2012; Manakadan et al., 2009; Govindan et al., 2015) to assess its potential and feasibility for promoting bird watching ecotourism in Pulicat Lake as a destination. As the English names of birds' usage differed between books, to follow and encourage broad consistency in the use of bird's English names among birdwatchers, the works of Rasmussen & Anderton (2005) and Gill & Wright (2006) are followed. BirdLife International follows the same directives and is the reconciled version of different names in authoritative works; thereby, the birdwatchers and communities communicate and help in streamlined bird conservation and reporting. The non-systematic assessment of the communities living in and around Pulicat Lake can be used in this initiative for continued support and involvement on a sustainable basis. Bird-watching packages are designed and recommended based on field observations in the Pulicat area. The importance of the packages is (a) each group of birds is peculiar and unique, (b) predicting the birdwatcher's interest in a group is diverse, and (c) attracting beginners and intermediate birdwatchers and tourists. The strength and weaknesses of Pulicat Lake for implementing bird-watching ecotourism were analysed. The allied activity, especially feasibility, is kept in mind that the visitors should get the opportunity to personally and directly experience nature. To experience nature in different ways, opportunities if lead to greater understanding, appreciation, and enjoyment, increase public participation and contribute directly to the conservation of the lake biodiversity and benefit local communities by highlighting bird conservation.

Results and Discussion

Birds of Pulicat Lake

Pulicat Lake holds about 52.4% of bird species reported from Andhra Pradesh, 22.7% for India, and 4.4% from the world. A total of 251 species belong to 17 orders, and 67 families were reported from Pulicat Lake. Of the total species, 38.2% (96 species) appears to be residents, 37.5% (94 species) seems to be winter migrant, 19.9% (50 species) seems to be seasonal migrants, 0.8% (2 species) appears to be seasonal visitors, and 3.6% (9 species) appear to be vagrant. Of these, 44.6% (110 species) are water birds, and 11.6% (29 species) are birds of prey. Because of the vision and convenience, ecotourism packages were designed for birds of Pulicat under six categories, namely: Resident water

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birds (Package 1), Migrant water birds (Package 2); Shorebirds (Package 3), Resident Land and Forest birds (Package 4), Migrant Land and Forest birds (Package 5) and Birds of Prey (Package 6) (Tables 1–6). The recommended packages represent the idea of using ecosystem services in a business, though this requires feasibility studies and expert consultations.

Geographical Uniqueness

The success of the tourism destination depends on transport, easy access, and the seasonality of a destination. Pulicat Lake is the second largest lake in India, with extensive geography naturally located in a strategic position. Pulicat can be quickly accessed and linked with various places. A fillip benefit for this destination is having a link with the National Highway (NH – 5, Chennai-Kolkatta highway), which has extensive connectivity with State highways and district roads. The lake can be accessed at various points from the southern and northern parts. Pulicat Lake can be reached from the south region at Tada, Bheemulavaripalem, Arambakkam, and Ramapuram. From the central area, it can be reached from the Sullurpet (towards the east) and the northern part via Naidupeta (town), connected to the village roads in Pulicat Lake. Pulicat Lake can also be reached by train from Chennai, as time-bound trains are running between Chennai (Tamil Nadu) to Sullurpet (Andhra Pradesh). The easy accessibility enables interested tourists to spend their weekend breaks, day trips, educational tours, or during their stopover on a long journey on the national highway. Secondly, weather conditions at different tourist destinations are crucial determinants of tourist attraction and arrival. The seasonality of Pulicat Lake can be recognized as follows from the tourist point of view: winter (January to February) and summer (March to May). For bird watchers, the monsoons are one of the prime factors stimulating them to pay a worthy visit. The season at Pulicat Lake is the South-west monsoon season (June to September) and the North-east monsoon (October to December). However, being an aquatic ecosystem, Pulicat attracts large numbers of water birds, and the best season for bird watching is from November to March (Tables 2–7). In terms of management viewpoint, Pulicat Lake is open throughout the year and provides free access, which needs to be regulated by implementing the visitor's fees system or following the suggestions mentioned (Karanth & DeFries, 2011; Karanth & DeFries, 2010) if applicable.

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Table 1. Recommended birdwatching package list of resident waterbirds of Pulicat Lake and its adjoins.

S. No.	English Name	Species Name	Order	Family	Status in Pulicat	Seasonality											
						January	February	March	April	May	June	July	August	September	October	November	December
						Winter		Summer				SWM			NEM		
1.	LITTLE GREBE	*Tachybaptus ruficollis*	Podicipidiformes	Podicipediade	R	•								•	•	•	•
2.	SPOT-BILLED PELICAN	*Pelecanus philippensis*	Pelecaniformes	Pelecanidae	R	•	•	•	•	•	•	•	•	•	•	•	•
3.	LITTLE CORMORANT	*Phalacrocorax niger*	Pelecaniformes	Phalacrocoracidae	R	•	•	•	•	•	•	•	•	•	•	•	•
4.	INDIAN SHAG	*Phalacrocorax fuscicollis*	Pelecaniformes	Phalacrocoracidae	R		•										
5.	LITTLE EGRET	*Egretta garzetta*	Ciconiformes	Ardeidae	R	•	•	•	•	•	•	•	•	•	•	•	•
6.	GREAT EGRET	*Egretta alba*	Ciconiformes	Ardeidae	R	•	•	•	•	•	•	•	•	•	•	•	•
7.	INTERMEDIATE EGRET	*Egretta intermedia*	Ciconiformes	Ardeidae	R		•	•									
8.	GREY HERON	*Ardea cinerea*	Ciconiformes	Ardeidae	R	•	•	•	•	•	•	•	•	•	•	•	•
9.	PURPLE HERON	*Ardea purpurea*	Ciconiformes	Ardeidae	R	•	•	•	•	•	•	•	•	•	•	•	•
10.	EASTERN CATTLE EGRET	*Bubulcus coromadus*	Ciconiformes	Ardeidae	R											•	•
11.	INDIAN POND-HERON	*Ardeola grayii*	Ciconiformes	Ardeidae	R	•	•	•	•	•	•	•	•	•	•	•	•
12.	STRIATED HERON	*Butorides striata*	Ciconiformes	Ardeidae	R	•	•			•							•
13.	BLACK-CROWNED NIGHT-HERON	*Nycticorax nycticorax*	Ciconiformes	Ardeidae	R	•	•	•	•	•	•	•	•	•	•	•	•
14.	YELLOW BITTERN	*Ixobrychus sinensis*	Ciconiformes	Ardeidae	R		•						•				
15.	CHESTNUT BITTERN	*Ixobrychus cinnamomeus*	Ciconiformes	Ardeidae	R						•		•		•		
16.	BLACK BITTERN	*Ixobrychus flavicollis*	Ciconiformes	Ardeidae	R			•	•								
17.	PAINTED STORK	*Mycteria leucocephala*	Ciconiformes	Ciconidae	R	•	•	•	•	•	•	•	•	•	•	•	•
18.	ASIAN OPENBILL	*Anastomus oscitans*	Ciconiformes	Ciconidae	R	•	•	•	•					•	•	•	•
19.	BLACK-HEADED IBIS	*Threskiornis melanocephalus*	Ciconiformes	Threskiornidae	R		•	•	•	•							
20.	LESSER WHISTLING-DUCK	*Dendrocygna javanica*	Anseriformes	Anatidae	R				•						•		
21.	COTTON TEAL	*Nettapus coromandelianus*	Anseriformes	Anatidae	R		•	•									
22.	INDIAN SPOT-BILLED DUCK	*Anas poecilorhyncha*	Anseriformes	Anatidae	R				•	•							
23.	SLATY-BREASTED RAIL	*Gallirallus striatus*	Gruiformes	Rallidae	R	•	•	•							•	•	•

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24.	WHITE-BREASTED WATERHEN	*Amaurornis phoenicurus*	Gruiformes	Rallidae	R	•	•	•				•	•	•	•	•	•
25.	COMMON MOORHEN	*Gallinula chloropus*	Gruiformes	Rallidae	R	•	•					•	•	•	•	•	•
26.	COMMON KINGFISHER	*Alcedo atthis*	Coraciiformes	Alcedinidae	R	•	•	•	•	•	•	•	•	•	•	•	•
27.	WHITE-BREASTED KINGFISHER	*Halcyon smyrnensis*	Coraciiformes	Alcedinidae	R	•	•	•	•	•	•	•	•	•	•	•	•
28.	LESSER PIED KINGFISHER	*Ceryle rudis*	Coraciiformes	Alcedinidae	R	•	•	•	•	•	•	•	•	•	•	•	•

R = Resident; SWM = South-west monsoon; NEM = North-east monsoon; • = possible sighting occurs.

Table 2. Recommended birdwatching package list of migrant waterbirds of Pulicat Lake and its adjoins.

S. No.	English Name	Species Name	Order	Family	Status in Pulicat	Seasonality											
						January	February	March	April	May	June	July	August	September	October	November	December
						Winter		Summer				SWM				NEM	
1.	LARGE CORMORANT	*Phalacrocorax carbo*	Pelecaniformes	Phalacrocoracidae	VAG	•											
2.	ORIENTAL DARTER	*Anhinga melanogaster*	Pelecaniformes	Phalacrocoracidae	SM	•			•	•			•				•
3.	LESSER FRIGATEBIRD	*Fregata ariel*	Pelecaniformes	Fregatidae	VAG							•					
4.	WESTERN REEF-HERON	*Egretta gularis*	Ciconiformes	Ardeidae	SM											•	
5.	EURASIAN BITTERN	*Botaurus stellaris*	Ciconiformes	Ardeidae	WM			•									
6.	WOOLLY-NECKED STORK	*Ciconia episcopus*	Ciconiformes	Ciconidae	WM		•										•
7.	WHITE STORK	*Ciconia ciconia*	Ciconiformes	Ciconidae	VAG	•											
8.	GLOSSY IBIS	*Plegadis falcinellus*	Ciconiformes	Threskiornidae	SM		•									•	•
9.	INDIAN BLACK IBIS	*Pseudibis papillosa*	Ciconiformes	Threskiornidae	VAG		•	•									
10.	EURASIAN SPOONBILL	*Platalea leucorodia*	Ciconiformes	Threskiornidae	SM				•	•		•					
11.	GREATER FLAMINGO	*Phoenicopterus ruber*	Ciconiformes	Phoenicopteridae	SM	•	•	•	•	•	•	•	•	•	•	•	•
12.	LESSER FLAMINGO	*Phoeniconaias minor*	Ciconiformes	Phoenicopteridae	SM	•				•			•				•
13.	BAR-HEADED GOOSE	*Anser indicus*	Anseriformes	Anatidae	WM	•											•
14.	RUDDY SHELDUCK	*Tadorna ferruginea*	Anseriformes	Anatidae	WM	•											
15.	COMB DUCK	*Sarkidiornis melanotos*	Anseriformes	Anatidae	WM	•											
16.	GADWALL	*Anas strepera*	Anseriformes	Anatidae	WM	•											
17.	EURASIAN WIGEON	*Anas penelope*	Anseriformes	Anatidae	WM	•		•									•

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18.	NORTHERN SHOVELER	*Anas clypeata*	Anseriformes	Anatidae	WM	•									
19.	NORTHERN PINTAIL	*Anas acuta*	Anseriformes	Anatidae	WM	•									•
20.	GARGANEY	*Anas querquedula*	Anseriformes	Anatidae	WM										•
21.	COMMON TEAL	*Anas crecca*	Anseriformes	Anatidae	WM	•									
22.	MARBLED TEAL	*Marmaronetta angustirostris*	Anseriformes	Anatidae	VAG		•								
23.	RED-CRESTED POCHARD	*Rhodonessa rufina*	Anseriformes	Anatidae	WM	•	•								
24.	COMMON POCHARD	*Aythya ferina*	Anseriformes	Anatidae	WM			•							
25.	TUFTED DUCK	*Aythya fuligula*	Anseriformes	Anatidae	WM	•									•
26.	WATER RAIL	*Rallus aquaticus*	Gruiformes	Rallidae	VAG					•					
27.	RUDDY-BREASTED CRAKE	*Porzana fusca*	Gruiformes	Rallidae	SM	•									
28.	PURPLE SWAMPHEN	*Porphyrio porphyrio*	Gruiformes	Rallidae	SM	•	•	•							
29.	EURASIAN COOT	*Fulica atra*	Gruiformes	Rallidae	SM		•								
30.	BLACK-CAPPED KINGFISHER	*Halcyon pileata*	Coraciiformes	Alcedinidae	SM	•									

SM = Seasonal Migrant; VAG = Vagrant; WM = Winter Migrant; SWM = South-west monsoon; NEM = North-east monsoon; • = possible sighting occurs.

Table 3. Recommended birdwatching package list of shorebirds and seabirds in Pulicat Lake and its adjoins.

S. No.	English Name	Species Name	Order	Family	Status in Pulicat	Seasonality											
						January	February	March	April	May	June	July	August	September	October	November	December
						Winter		Summer				SWM			NEM		
1.	PHEASANT-TAILED JACANA	*Hydrophasianus chirurgus*	Charadriiformes	Jacanidae	SM	•	•	•									•
2.	PAINTED SNIPE	*Rostratula benghalensis*	Charadriiformes	Rostratulidae	WM	•											
3.	PACIFIC GOLDEN PLOVER	*Pluvialis fulva*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•			•		•	•
4.	GREY PLOVER	*Pluvialis squatarola*	Charadriiformes	Charadriidae	WM	•		•						•	•	•	
5.	COMMON RINGED PLOVER	*Charadrius hiaticula*	Charadriiformes	Charadriidae	WM	•	•										
6.	LITTLE RINGED PLOVER	*Charadrius dubius*	Charadriiformes	Charadriidae	SM	•	•	•	•	•	•	•	•	•	•	•	•
7.	KENTISH PLOVER	*Charadrius alexandrinus*	Charadriiformes	Charadriidae	SM	•	•	•	•	•	•	•	•	•	•	•	•
8.	LESSER SAND PLOVER	*Charadrius mongolus*	Charadriiformes	Charadriidae	WM					•	•	•	•	•	•		
9.	GREATER SAND PLOVER	*Charadrius leschenaultii*	Charadriiformes	Charadriidae	WM			•					•				

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10.	YELLOW-WATTLED LAPWING	*Vanellus malabaricus*	Charadriiformes	Charadriidae	SM				•	•	•		•										
11.	RED-WATTLED LAPWING	*Vanellus indicus*	Charadriiformes	Charadriidae	R	•	•	•	•	•	•	•	•	•	•	•							
12.	PINTAIL SNIPE	*Gallinago stenura*	Charadriiformes	Scolopacidae	WM	•	•	•															
13.	COMMON SNIPE	*Gallinago gallinago*	Charadriiformes	Scolopacidae	WM	•	•	•	•								•	•	•				
14.	JACK SNIPE	*Lymnocryptes minimus*	Charadriiformes	Scolopacidae	WM	•	•																
15.	BLACK-TAILED GODWIT	*Limosa limosa*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•		•	•	•	•	•						
16.	WHIMBREL	*Numenius phaeopus*	Charadriiformes	Charadriidae	WM			•			•		•			•							
17.	EURASIAN CURLEW	*Numenius arquata*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•	•	•	•	•	•	•						
18.	SPOTTED REDSHANK	*Tringa erythropus*	Charadriiformes	Charadriidae	WM			•	•	•													
19.	COMMON REDSHANK	*Tringa totanus*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•	•	•	•	•	•	•						
20.	COMMON GREENSHANK	*Tringa nebularia*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•	•	•	•	•	•	•						
21.	MARSH SANDPIPER	*Tringa stagnatilis*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•			•	•	•	•						
22.	GREEN SANDPIPER	*Tringa ochropus*	Charadriiformes	Charadriidae	WM						•				•		.						
23.	WOOD SANDPIPER	*Tringa glareola*	Charadriiformes	Charadriidae	WM	•	•	•	•				•	•	•	•	•						
24.	TEREK SANDPIPER	*Xenus cinereus*	Charadriiformes	Charadriidae	WM				•														
25.	COMMON SANDPIPER	*Actitis hypoleucos*	Charadriiformes	Charadriidae	WM	•	•	•	•	•		•	•	•	•	•	•						
26.	RUDDY TURNSTONE	*Arenaria interpres*	Charadriiformes	Charadriidae	WM					•													
27.	GREAT KNOT	*Calidris tenuirostris*	Charadriiformes	Charadriidae	WM									•									
28.	RED KNOT	*Calidris canutus*	Charadriiformes	Charadriidae	WM																		
29.	LITTLE STINT	*Calidris minuta*	Charadriiformes	Charadriidae	WM	•	•	•	•	•			•	•	•	•	•						
30.	LONG-TOED STINT	*Calidris subminuta*	Charadriiformes	Charadriidae	WM	•	•	•	•	•	•	•	•	•	•	•	•						
31.	TEMMINCK'S STINT	*Calidris temminckii*	Charadriiformes	Charadriidae	WM	•	•	•	•	•					•	•	•						
32.	DUNLIN	*Calidris alpina*	Charadriiformes	Charadriidae	WM	•																	
33.	CURLEW SANDPIPER	*Calidris ferruginea*	Charadriiformes	Charadriidae	WM					•			•										
34.	RUFF	*Philomachus pugnax*	Charadriiformes	Charadriidae	WM	•	•	•	•	•			•	•	•	•	•						
35.	BLACK-WINGED STILT	*Himantopus himantopus*	Charadriiformes	Recurvirostridae	WM	•	•	•	•	•			•	•	•	•	•						
36.	PIED AVOCET	*Recurvirostra avosetta*	Charadriiformes	Recurvirostridae	WM	•	-	•	•	•	•					•	•						
37.	RED-NECKED PHALAROPE	*Phalaropus lobatus*	Charadriiformes	Phalaropinae	WM									•	•								
38.	EURASIAN THICK-KNEE	*Burhinus oedicnemus*	Charadriiformes	Burhinidae	R	•	•	•	•														
39.	ORIENTAL PRATINCOLE	*Glareola maldivarum*	Charadriiformes	Glareolidae	SM						•	•	•										
40.	SMALL PRATINCOLE	*Glareola lactea*	Charadriiformes	Glareolidae	SM	•																	
41.	HEUGLIN'S GULL	*Larus heuglini*	Charadriiformes	Laridae	WM	•																	
42.	GREAT BLACK-HEADED GULL	*Larus ichthyaetus*	Charadriiformes	Laridae	WM	•	•	•															

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43.	BROWN-HEADED GULL	*Larus brunnicephalus*	Charadriiformes	Laridae	WM	•		•							•	•
44.	BLACK-HEADED GULL	*Larus ridibundus*	Charadriiformes	Laridae	WM	•		•							•	•
45.	GULL-BILLED TERN	*Gelochelidon nilotica*	Charadriiformes	Sternidae	WM	•		•	•	•	•			•	•	•
46.	CASPIAN TERN	*Sterna caspia*	Charadriiformes	Sternidae	WM	•		•	•	•	•			•	•	•
47.	COMMON TERN	*Sterna hirundo*	Charadriiformes	Sternidae	WM	•		•	•	•	•			•	•	•
48.	LITTLE TERN	*Sterna albifrons*	Charadriiformes	Sternidae	WM											•
49.	BLACK-BELLIED TERN	*Sterna acuticauda*	Charadriiformes	Sternidae	WM	•										•
50.	BLACK TERN	*Chlidonias niger*	Charadriiformes	Sternidae	VAG	•								•		
51.	WHITE-WINGED TERN	*Chlidonias leucopterus*	Charadriiformes	Sternidae	WM		•								•	•
52.	WHISKERED TERN	*Chlidonias hybridus*	Charadriiformes	Sternidae	WM						•					•

R – Resident; SM – Seasonal Migrant; WM – Winter Migrant; VAG – Vagrant; SWM = South-west monsoon; NEM = North-east monsoon; • = possible sightings occurs .

Table 4. Recommended birdwatching package list of resident land and forest birds of Pulicat Lake and its adjoins.

S. No.	English Name	Scientific Name	Order	Family	Status in Pulicat	Seasonality											
						January	February	March	April	May	June	July	August	September	October	November	December
						Winter		Summer				SWM			NEM		
1.	GREY FRANCOLIN	*Francolinus pondicerianus*	Galliformes	Phasianidae	R	•	•	•	•	•	•	•	•		•		
2.	RED SPURFOWL	*Galloperdix spadicea*	Galliformes	Phasianidae	R	•	•	•			•	•					
3.	GREY JUNGLEFOWL	*Gallus sonneratti*	Galliformes	Phasianidae	R	•	•	•	•	•	•	•	•	•	•	•	•
4.	YELLOW-LEGGED BUTTONQUAIL	*Turnix tanki*	Gruiformes	Turnicidae	R	•	•	•	•	•	•	•	•	•	•	•	•
5.	BARRED BUTTONQUAIL	*Turnix suscitator*	Gruiformes	Turnicidae	R	•	•	•				•	•				
6.	INDIAN STONE-CURLEW	*Burhinus indicus*	Charadriiformes	Burhinidae	R	•	•	•	•	•	•	•	•	•	•	•	•
7.	ROCK DOVE	*Columbia livia*	Columbiformes	Columbidae	R	•	•	•	•	•	•	•	•	•	•	•	•
8.	LAUGHING DOVE	*Streptopelia senegalensis*	Columbiformes	Columbidae	R	•	•	•	•	•	•	•	•	•	•	•	•
9.	SPOTTED DOVE	*Streptopelia chinensis*	Columbiformes	Columbidae	R	•	•	•	•	•	•	•	•	•	•	•	•
10.	ROSE-RINGED PARAKEET	*Psittacula krameri*	Psittaciformes	Psittacidae	R	•	•	•	•	•	•	•	•	•	•	•	•
11.	SOUTHERN COUCAL	*Centropus sinensis*	Cuculiformes	Cuculidae	R	•	•	•	•	•	•	•	•	•	•	•	•

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12.	PLAINTIVE CUCKOO	*Cacomantis merulinus*	Cuculiformes	Cuculidae	R	•	•					•	•	•	•	•	•
13.	COMMON HAWK CUCKOO	*Heirococcyx varius*	Cuculiformes	Cuculidae	R	•	•						•	•	•	•	•
14.	INDIAN JUNGLE NIGHTJAR	*Caprimulgus indicus*	Caprimulgiformes	Caprimulgidae	R	•	•	•									•
15.	INDIAN LITTLE NIGHTJAR	*Caprimulgus asiaticus*	Caprimulgiformes	Caprimulgidae	R	•				•	•						•
16.	ASIAN PALM SWIFT	*Cypsiurus balasiensis*	Apodiformes	Apodidae	R	•	•	•	•	•	•	•	•	•	•	•	•
17.	LITTLE SWIFT	*Apus affinis*	Apodiformes	Apodidae	R	•	•	•	•	•	•	•	•	•	•	•	•
18.	LITTLE GREEN BEE-EATER	*Merops orientalis*	Coraciiformes	Meropidae	R	•	•	•	•	•	•	•	•	•	•	•	•
19.	INDIAN ROLLER	*Coracias benghalensis*	Coraciiformes	Coracidae	R	•	•	•	•	•	•	•	•	•	•	•	•
20.	COMMON HOOPOE	*Upupa epops*	Coraciiformes	Upupidae	R	•	•	•	•	•					•	•	•
21.	JERDON'S BUSH LARK	*Mirafra affinis*	Passeriformes	Alaudidae	R	•	•	•	•	•	•	•	•	•	•	•	•
22.	ASHY-CROWNED FINCH-LARK	*Eremopterix griseus*	Passeriformes	Alaudidae	R	•	•	•	•	•	•	•	•	•	•	•	•
23.	ORIENTAL SKYLARK	*Alauda gulgula*	Passeriformes	Alaudidae	R	•	•	•	•	•	•	•	•	•	•	•	•
24.	PADDYFIELD PIPIT	*Anthus rufulus*	Passeriformes	Motacillidae	R	•	•	•	•	•	•	•	•	•	•	•	•
25.	COMMON WOOD SHRIKE	*Tephrodornis pondicerianus*	Passeriformes	Prionopidae	R	•	•					•	•	•	•	•	•
26.	RED-WHISKERED BULBUL	*Pycnonotus jocosus*	Passeriformes	Pycnonotidae	R	•	•										
27.	RED-VENTED BULBUL	*Pycnonotus cafer*	Passeriformes	Pycnonotidae	R	•	•	•	•	•	•	•	•	•	•	•	•
28.	COMMON IORA	*Aegithina tiphia*	Passeriformes	Aegithinidae	R	•	•	•									
30.	CHESTNUT-SHOULDERED PETRONIA	*Petronia xanthocollis*	Passeriformes	Passeridae	R			•	•								
31.	INDIAN ROBIN	*Saxicoloides fulicata*	Passeriformes	Muscicapidae	R	•	•			•	•					•	•
32.	ORIENTAL MAGPIE ROBIN	*Copsychus saularis*	Passeriformes	Muscicapidae	R	•	•				•						
33.	WHITE-RUMPED SHAMA	*Copsychus malabaricus*	Passeriformes	Muscicapidae	R	•	•			•	•						•
34.	YELLOW-BILLED BABBLER	*Turdoides affinis*	Passeriformes	Timallidae	R	•	•										•
35.	ZITTING CISTICOLA	*Cisticola juncidis*	Passeriformes	Cisticolidae	R	•	•	•	•								
36.	GREY-BREASTED PRINIA	*Prinia hodgsonii*	Passeriformes	Cisticolidae	R	•	•	•									
37.	ASHY PRINIA	*Prinia socialis*	Passeriformes	Cisticolidae	R	•	•	•									•
38.	PLAIN PRINIA	*Prinia inornata*	Passeriformes	Cisticolidae	R	•	•										•
39.	COMMON TAILORBIRD	*Orthotomus sutorius*	Passeriformes	Cisticolidae	R	•	•					•	•	•			
40.	PALE-BILLED FLOWERPECKER	*Dicaeum erythrorhynchos*	Passeriformes	Dicaeidae	R	•				•	•	•	•	•			
41.	PURPLE-RUMPED SUNBIRD	*Nectarinia zeylonica*	Passeriformes	Nectariniidae	R	•			•	•	•	•					
42.	PURPLE SUNBIRD	*Nectarinia asiatica*	Passeriformes	Nectariniidae	R				•	•	•	•	•				
43.	LOTEN'S SUNBIRD	*Nectarinia lotenia*	Passeriformes	Nectariniidae	R	•	•	•	•	•	•	•	•	•			
44.	INDIAN SILVERBILL	*Lonchura malabarica*	Passeriformes	Nectariniidae	R	•	•	•	•	•	•	•	•	•			

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45.	WHITE-RUMPED MUNIA	*Lonchura striata*	Passeriformes	Estrildidae	R	•	•	•	•	•	•	•	•	•			
46.	BLACK-HEADED MUNIA	*Lonchura malacca*	Passeriformes	Estrildidae	R	•	•	•	•	•	•	•	•	•			
47.	HOUSE SPARROW	*Passer domesticus*	Passeriformes	Passeridae	R	•	•	•	•	•	•	•	•	•	•	•	•
48.	BAYA WEAVER	*Ploceus philippinus*	Passeriformes	Ploceidae	R		•	•	•								
49.	COMMON MYNA	*Acridotheres tristis*	Passeriformes	Sturnidae	R	•	•	•	•	•	•	•	•	•	•	•	•
50.	BLACK DRONGO	*Dicrurus macrocerus*	Passeriformes	Dicruridae	R	•	•	•	•	•	•	•	•	•	•	•	•
51.	ASHY WOODSWALLOW	*Artamus fuscus*	Passeriformes	Artamidae	R	•	•	•									
52.	HOUSE CROW	*Corvus splendens*	Passeriformes	Corvidae	R	•	•	•	•	•	•	•	•	•	•	•	•
53.	INDIAN JUNGLE CROW	*Corvus macrorhynchos*	Passeriformes	Corvidae	R	•	•	•	•	•	•	•	•	•	•	•	•

R = Resident; SWM = South-west monsoon; NEM = North-east monsoon; • = possible sighting occurs.

Table 5. Recommended birdwatching package list of migrant land and forest birds of Pulicat Lake and its adjoins.

S. No.	English Name	Scientific Name	Order	Family	Status in Pulicat	Seasonality											
						January	February	March	April	May	June	July	August	September	October	November	December
						Winter		Summer			SWM					NEM	
1	BLUE-BREASTED QUAIL	*Coturnix chinensis*	Galliformes	Phasianidae	SM						•						
2	LESSER FLORICAN	Sypheotides indica	Gruiformes	Otidae	SM	Not seen from 2000 to 2016											
3	ORIENTAL TURTLE DOVE	Streptopelia orinetalis	Columbiformes	Columbidae	SM						•						
4	RED COLLARED DOVE	Streptopelia tranquebarica	Columbiformes	Columbidae	SM	•											•
5	ORANGE-BREASTED GREEN PEGION	Treron bicincta	Columbiformes	Columbidae	SM	•		•								•	
6	PLUM-HEADED PARAKEET	Psittacula cyanocephala	Psittaciformes	Psittacidae	SM				•								
7	BLUE-FACED MALKOHA	Phaenicophaeus viridirostris	Cuculiformes	Cuculidae	SM	•	•										
8	CHESTNUT-WINGED CUCKOO	Clamator coromandus	Cuculiformes	Cuculidae	WM	•	•	•								•	•
9	PIED CUCKOO	Clamator jacobinus	Cuculiformes	Cuculidae	SM						•						
10	KOEL	Eudynamys scolopacea	Cuculiformes	Cuculidae	SM					•	•	•	•				

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11	GREY-BELLIED CUCKOO	Cacomantis passerinus	Cuculiformes	Cuculidae	SM	•	•	•	•											
12	DRONGO CUCKOO	Surniculus lugubris	Cuculiformes	Cuculidae	SM														•	
13	SMALL CUCKOO	Cuculus poliocephalus	Cuculiformes	Cuculidae	WM				•	•										
14	SAVANNA NIGHTJAR	Caprimulgus affinis	Passeriformes	Caprimulgidae	WM															•
15	BLUE-TAILED BEE-EATER	Merops philippinus	Coraciiformes	Meropidae	WM	•	•	•										•	•	•
16	COPPERSMITH BARBET	Megalaima haemacephala	Piciformes	Capitonidae	SM				•											
17	BLACK-RUMPED FLAMEBACK	Dinopium benghalense	Passeriformes	Picidae	SM	•	•				•									
18	INDIAN PITTA	Pitta brachyura	Passeriformes	Pittidae	SM		•	•												
19	BARN SWALLOW	Hirundo rustica	Passeriformes	Hirundinidae	WM	•	•	•				•	•	•	•	•	•			
20	RED-RUMPED SWALLOW	Hirundo daurica	Passeriformes	Hirundinidae	WM		•		•											
21	WIRE-TAILED SWALLOW	Hirundo smithii	Passeriformes	Hirundinidae	SM	•		•												
22	FOREST WAGTAIL	Dendronanthus indicus	Passeriformes	Motacillidae	WM	•		•	•				•	•	•	•	•			
23	WHITE WAGTAIL	Motacilla alba	Passeriformes	Motacillidae	WM	•	•													
24	WHITE-BROWED WAGTAIL	Motacilla maderaspatansis	Passeriformes	Motacillidae	WM	•														
25	WESTERN YELLOW WAGTAIL	Motacilla flava	Passeriformes	Motacillidae	WM	•	•													
26	GREY WAGTAIL	Motacilla cinerea	Passeriformes	Motacillidae	WM		•	•												
27	LARGE CUCKOO SHRIKE	Coracina macei	Passeriformes	Campephagidae	WM		•													
28	BLACK-HEADED CUCKOO SHRIKE	Coracina melanoptera	Passeriformes	Campephagidae	WM		•	•												
29	ASHY MINIVET	Pericrocotus divaricatus	Passeriformes	Campephagidae	WM		•													
30	SMALL MINIVET	Pericrocotus cinnamomeus	Passeriformes	Campephagidae	VAG						•									
31	ASIAN PARADISE FLYCATCHER	Terpsiphone paradisi	Passeriformes	Monarchidae	SM		•	•												
32	BLACK-NAPED MONARCH	Hypothymis azurea	Passeriformes	Monarchidae	SM			•												
33	WHITE-BROWED FANTAIL	Rhipidura aureola	Passeriformes	Rhipiduridae	SM	•	•													
34	WHITE-BROWED BULBUL	Pyconotus lutelus	Passeriformes	Pycnonotidae	SM	•	•	•	•											
35	BROWN SHRIKE	Lanius cristatus	Passeriformes	Laniidae	WM				•	•				•						
36	BAY-BACKED SHRIKE	Lanius vitatus	Passeriformes	Laniidae	WM	•														•
37	LONG-TAILED SHRIKE	Lanius schach	Passeriformes	Laniidae	WM	•	•													•
38	ORANGE-HEADED THRUSH	Zoothera citrina	Passeriformes	Turdidae	WM		•	•												
39	ASIAN BROWN FLYCATCHER	Muscicapa latirostris	Passeriformes	Muscicapidae	SM	•		•												
40	BROWN-BREASTED FLYCATCHER	Muscicapa muttui	Passeriformes	Muscicapidae	SM			•												
41	RED-THROATED FLYCATCHER	Ficedula parva	Passeriformes	Muscicapidae	SM	•		•												
42	BLUE-THROATED FLYCATCHER	Cyornis rubeculoides	Passeriformes	Muscicapidae	WM	•	•	•	•					•	•	•	•			
43	TICKELL'S BLUE FLYCATCHER	Cyornis tickelliae	Passeriformes	Muscicapidae	SM		•	•												

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44	INDIAN BLUE ROBIN	Luscinia brunnea	Passeriformes	Muscicapidae	WM	•	•	•									
45	YELLOW-EYED BABBLER	Chrysomma sinense	Passeriformes	Timallidae	SM		•	•									
46	BLYTH'S REED-WARBLER	Acrocephalus dumetorum	Passeriformes	Sylviidae	WM	•											•
47	THICK-BILLED WARBLER	Acrocephalus aedon	Passeriformes	Sylviidae	WM	•	•	•									•
48	GREENISH WARBLER	Phylloscopus trochiloides	Passeriformes	Sylviidae	WM	•	•	•	•					•	•	•	•
49	LARGE-BILLED LEAF WARBLER	Phylloscopus magnirostris	Passeriformes	Sylviidae	WM	•											
50	LESSER WHITETHROAT	Sylvia curruca	Passeriformes	Sylviidae	WM	•	•										
51	ORIENTAL WHITE-EYE	Zosterops palebrosus	Passeriformes	Zosteropidae	SM		•	•									
52	BRAHMINY STARLING	Temenuchus pagodarum	Passeriformes	Sturnidae	SM		•										
53	ROSY STARLING	Sturnus roseus	Passeriformes	Sturnidae	WM			•									•
54	COMMON STARLING	Sturnus vulgaris	Passeriformes	Sturnidae	WM		•										
55	EURASIAN GOLDEN ORIOLE	Oriolus oriolus	Passeriformes	Oriolidae	SM		•	•									
56	ASHY DRONGO	Dicrurus leucophaeus	Passeriformes	Dicruridae	SM	•		•									
57	WHITE-BELLIED DRONGO	Dicrurus caerulescens	Passeriformes	Dicruridae	SM												•
58	BRONZED DRONGO	Dicrurus aeneus	Passeriformes	Dicruridae	SM						•						
59	SPANGLED DRONGO	Dicrurus hottentottus	Passeriformes	Dicruridae	SM							•					
60	RUFOUS TREEPIE	*Dendrocitta vagabunda*	Passeriformes	Artamidae	SM		•	•	•								

SM = seasonal migrant; WM = winter migrant; VAG = Vagrant; • = possible sighting occurs.

Table 6. Recommended birdwatching package list of birds of prey of Pulicat Lake and its adjoins.

S. No.	English Name	Species Name	Order	Family	Status in Pulicat	Seasonality											
						January	February	March	April	May	June	July	August	September	October	November	December
						Winter		Summer				SWM				NEM	
1.	BLACK BAZA	*Aviceda leuphotes*	Falconiformes	Accipitridae	WM		•									•	
2	ORIENTAL HONEY-BUZZARD	*Pernis ptilorhyncus*	Falconiformes	Accipitridae	VAG			•									
3	BACK-WINGED KITE	*Elanus caeruleus*	Falconiformes	Accipitridae	R								•				

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4.	BLACK KITE	*Milvus migrans*	Falconiformes	Accipitridae	R									•									
5.	BRAHMINY KITE	*Haliastur indus*	Falconiformes	Accipitridae	R	•	•	•						•	•	•	•	•					
6.	WHITE-BELLIED SEA-EAGLE	*Haliaeetus leucogaster*	Falconiformes	Accipitridae	R	•	•	•	•	•	•	•	•	•	•	•	•						
7.	WHITE-RUMPED VULTURE	*Gyps bengalensis*	Falconiformes	Accipitridae	SV			•	•								•	•					
8.	INDIAN VULTURE	*Gyps indicus*	Falconiformes	Accipitridae	SV				•														
9.	SHORT-TOED EAGLE	*Circaetus gallicus*	Falconiformes	Accipitridae	R									•									
10.	CRESTED SERPENT-EAGLE	*Spilornis cheela*	Falconiformes	Accipitridae	R			•									•	•					
11.	MARSH HARRIER	*Circus aeruginosus*	Falconiformes	Accipitridae	WM	•	•																•
12.	PALLID HARRIER	*Circus macrourus*	Falconiformes	Accipitridae	WM		•	•															
13.	PIED HARRIER	*Circus melanoleucos*	Falconiformes	Accipitridae	WM	•																	•
14.	MONTAGU'S HARRIER	*Circus pygargus*	Falconiformes	Accipitridae	WM		•																•
15.	INDIAN SHIKRA	*Accipiter badius*	Falconiformes	Accipitridae	R	•																	•
16.	BESRA SPARROWHAWK	*Accipiter virgatus*	Falconiformes	Accipitridae	WM		•																
17.	WHITE-EYED BUZZARD	*Butastur teesa*	Falconiformes	Accipitridae	R	•																	•
18.	GREATER SPOTTED EAGLE	*Aquila clanga*	Falconiformes	Accipitridae	SM	•	•																
19.	BOOTED EAGLE	*Hieraaetus pennatus*	Falconiformes	Accipitridae	SM	No information exists on which month the species was sighted																	
20.	OSPREY	*Pandion haliaetus*	Falconiformes	Pandionidae	WM	•																	•
21.	COMMON KESTREL	*Falco tinnunculus*	Falconiformes	Falconidae	WM	•	•																
22.	AMUR FALCON	*Falco amurensis*	Falconiformes	Falconidae	WM			•										•					
23.	PEREGRINE FALCON	*Flaco peregrinus*	Falconiformes	Falconidae	WM													•					
24.	COMMON BARN-OWL	*Tyto alba*	Strigiformes	Tytonidae	R	•	•	•	•	•	•	•	•	•	•	•	•						
25.	INDIAN SCOPS-OWL	*Otus bakkamoena*	Strigiformes	Strigidae	R	No information exists on which month the species was sighted																	
26.	INDIAN EAGLE-OWL	*Bubo bengalensis*	Strigiformes	Strigidae	R	•	•	•	•	•	•	•	•	•	•	•	•						
27.	BROWN FISH OWL	*Ketupa zeylonensis*	Strigiformes	Strigidae	R	No information exists on which month the species was sighted																	
28.	MOTTLED WOOD OWL	*Strix ocellata*	Strigiformes	Strigidae	R	•	•		•														•
29.	SPOTTED OWLET	*Athene brama*	Strigiformes	Strigidae	R	•	•	•	•	•	•	•	•	•	•	•	•						

R – Resident; SM – Seasonal Migrant; SV – Seasonal Visitors; VAG – Vagrant; WM – Winter Migrant; SWM = South-west monsoon; NEM = North-east monsoon; • = possible sighting occurs.

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Development of Local Communities

In Pulicat, three significant communities, directly or indirectly, depend on the lake's natural resources: fishers, agricultural, and tribal communities. These communities live on either side of the lake or at the margins or in the nearby villages from where they have easy access. About 60,000 people belonging to the fisher community depend on this lake for livelihood. The increasing fisher folk population and dwindling fishery resources have added complexity and conflicts among the community due to the lack of fishing space. This has further escalated the exploitation of fishery resources due to modernized boats and fishing gear, which collapse and worsen the lake's ecological balance.

Similarly, there is a sizeable population of agricultural communities bordering the lake. The major crops cultivated around the lake's borders are paddy, black gram, and groundnut, which are rain-fed and seasonal (one-time crop in a year). Naturally, the lake bordering fields are coastal sandy and saline forms, unsuitable for profitable yields. Limited availability of fodder for their livestock drives them to less earning from the jobs. Compared to the above two communities, the most critical and vulnerable groups of people are the 'Yanadis,' an ethnic group that lives and is dependent on Pulicat Lake. These groups live in poverty and work mainly as laborers in menial jobs. Many of these people go fishing in Pulicat Lake, ponds, and streams and sell them in the nearby villages or towns. Yanadi is good at traditional medical knowledge and healing; however, their poverty results in the non-utilization of their capabilities.

Integrating Environmental Conservation and Upliftment of Local Communities

Bird watching is an essential component of conducting ecotourism in a planned and sustainable manner to utilize the ecosystem services economically without affecting the environment. Preliminary observation suggests that three communities exist that are economically disadvantaged, viz., fishers, agricultural and tribal (ethnic groups) in the area. However, in 1997 under the plan to improve the Biodiversity Conservation management in protected areas in the state, the government implemented Eco-development activities in and around the protected areas (Government of Andhra Pradesh, 1997). The plan has moral rules and regulations laid down to benefit communities, locals, and forestry resource dependents, including eco-tourism as one of the components throughout the state. The active participation and involvement of Eco - Development Committee (EDC) members have reduced in the Pulicat Lake area. The inhabitants and dependents of Pulicat Lake were not much aware of ecosystem services. Regular and active functioning, with a narrow focus on protected area conservation, risks overlooking local needs in areas where people and natural ecosystems must coexist (Merson et al., 2012). Therefore, it is the need of the hour to renew their bond with nature by adding bird watching and ecotourism as Pulicat Lake components.

Field Guide and Travel Companion

There are reference books (Grimmett et al., 1999; Ali & Ripley, 1987; Grimmett et al., 1998; Rasmussen & Anderton, 2005) and field guides on birds (Grimmett et al., 1998; Kazmierczak, 2000; Ali, 2002; Grewal, 1995; Ali, 1996; Kazmierczak & Singh, 1998; Kazeierczak & Perlo, 2000; Grimmett & Inskipp, 2005) that exclusively deal on birds and are well known to professionals and advanced birders. Additionally, several published scientific information concerning Pulicat Lake describes the history, culture, science, natural history, and economic resources. Professionals and advanced birdwatchers use the same. The success of conservation efforts depends on public participation. Unfortunately, many bird books are focused on professional touch covering all species together or groups of specialist birds and presented with much scientific information. The general public, beginner birdwatchers, and intermediate and amateur birders cannot understand the information. However, for bird-watching ecotourism as the sub-sector of the tourism industry, field guides and photo guides are crucial for bird-watching and are one of the best sources for field marks used to identify birds in the field. As Pulicat Lake is at a strategic point, the arrival of the public from all

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corners of India and the foreigners could increase if implemented in an organised manner. Therefore, choosing a language is one of the essential constraints when giving information about birds and the ecosystem to target all groups of people. Communication and sharing the information can be enhanced among the birding groups and with the professionals. Hence, it should not be restricted to one language. All the materials (books, pamphlets and handouts) prepared about the birds of Pulicat shall be in two regional languages (Telugu and Tamil), one national language (Hindi), and a global language (English).

Education and Training

The tribes and local communities in the Pulicat have indigenous knowledge of their social and cultural aspects. However, when describing or explaining it to tourists professionally, the targeted people in the communities have to be better equipped. In India, there are about a hundred dialects used by the communities. Therefore, choosing a single language for promoting bird-watching tourism in Pulicat may be a severe disadvantage. To educate about birds and bird watching, the targeted communities shall be trained in widely spoken words as part of their survival language skills to interact and communicate with the visitors. This may reduce domestic traveler's difficulty and attract more birdwatchers and tourists to Pulicat Lake, who perceive bird watching as an industry. Bird watching can be done with the naked eye, but it requires visual enhancement devices like binoculars, spot-scopes and telescopes. There are essential tools for visually identifying birds and closely observing bird behaviour. Through conceptual and methodological field programmes, the communities must be trained in using and handling optics (binoculars, spotting scopes and telescopes). It is vital to insist that they record their sightings and observations in the notebook or by providing a designed datasheet and reporting or maintaining records. Such strategies will be helpful for the management of avian conservation.

Implications

Theoretical Implications

The study provides insights into ecotourism literature by examining the prospects of bird-watching ecotourism in the proposed Ramsar site - Pulicat Lake, India. The findings provide the factors wherein the stakeholders need to be accounted for in the destination to accomplish sustainability. Identifying the most commonly observed avian species, providing education and training, providing benefits to local communities, and environmental conservation are possibly significant to develop tourists' experiences.

The study on bird-watching tourism contributes to the ecotourism literature by integrating bird-watching tourism and ecotourism and by demonstrating the economic, social, and environmental aspects of ecotourism development. The study also contributes by stating the diverse avian population in the proposed Ramsar site's geographical uniqueness, integrating social and environmental aspects, local communities' development, and providing adequate training to imbibe knowledge and skills.

First, the result of this study has demonstrated the avian diversity and potential bird-watching ecotourism in the proposed Ramsar site - Pulicat Lake (Table 1). The availability of the birds throughout the year has been recorded systematically. Greater Flamingos are the charismatic species found in the destination, which can be positioned to attract birdwatchers and tourists. Studies have shown that the availability of these birds has motivated and increased tourists' arrival to the tourism destinations (Yosef et al., 2012).

Secondly, it has elaborated on the geographical uniqueness of the destination. The destination is accessible from different parts of India and foreign countries. The literature has stated that accessibility and a decent infrastructure is prerequisite to attract tourists to the destination (Bhattacharya et al., 2003). In this regard, developing an infrastructure conducive to tourists is inevitable in the ecotourism destination (Cabral & Dhar, 2020).

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Third, the findings have identified the need to develop Pulicat Lake's local communities and stated to utilise the indigenous knowledge by the fishermen, agricultural and tribal communities. The findings align with the literature that implementing ecotourism enhances the local communities' development in the tourism destination (Scheyvens, 1999; Lee, 2013). The principle of ecotourism includes involving and engaging the local community (Das & Chatterjee, 2015) and cooperating with local authorities to engage in conservation efforts and disseminate the benefits to the local people (Stone & Wall, 2004).

Fourth, the study states the integration of environmental conservation and the development of local communities. The literature has observed the conflict between local communities and environmental conservation. For instance, in India, most of the protected areas do not have any tourist orientation programmes, which has resulted in the uncontrollable entry of tourists into the tiger reserves and negatively impacted the behaviour of the wildlife (Banerjee, 2010).

Fifth, the results have shown the necessity of drafting a tourist field guide and travel companion. The literature has stated the importance of the tour guide in achieving sustainability in the tourism destination (Weiler & Ham, 2002; Weiler & Kim, 2011).

Sixth, the study stated that education and training are essential to enhance the local communities' knowledge, skills, and abilities, which are essential to enhance service quality (Dhar, 2015). Providing environmental training develops environmental competencies (Cabral & Dhar, 2019) and results in environmental performance (Cabral & Jabbour in press). Such measures are required to provide tourists with a memorable experience and ensure sustainable development.

Practical Implications

The study aims to identify the prospects of bird-watching ecotourism in the proposed Ramsar site, primarily in the context of Pulicat Lake, India. The study provides valuable outputs for the local forest department to attract tourists by rendering a unique tour product to the visitors. The presence of a diverse avian population can be utilized to increase customer satisfaction in the proposed Ramsar sites by positioning it as an ecotourism initiative. This motivates the forest department to conserve the natural resources and support the tribal communities who depend on the lake for livelihood.

The findings of this study suggest insights for managers of tourism destinations in other potential sites. Pulicat Lake shed an example where bird-watching and ecotourism can be integrated to develop a tour product that attracts tourists and bird-watching enthusiasts to the destination. It is evident that Greater Flamingos and Spot-billed Pelicans are observed in the lake throughout the year. This can attract tourists and boost their willingness to pay for ecotourism that can be used for conservation activities and earnings for the local communities.

Providing adequate resources to visitors is an essential prerequisite for bird-watching ecotourism. The Forest Department and the lake management need to provide the types of equipment, especially binoculars, to enhance the visitors' experience. In the destination, which promotes bird watching, it is essential to spot various species of birds in the destination.

Conclusion

The tourism industry is highly competitive, with destinations vying for the attention of tourists. To enhance awareness and competitiveness, engaging activities such as bird watching and ecotourism have been identified as valuable products (Valentine, 1992). Unfortunately, the significance of ecotourism and environmental preservation often goes unrecognized due to a lack of coordination and cooperation among stake holders responsible for these areas (Chockalingam & Ganesh, 2010; Chaudhry et al., 2013). Achieving sustainable ecotourism in the long term necessitates careful planning, implementation and monitoring. Therefore, it is crucial to develop site-specific ecotourism policies and plans for Pulicat Lake. By empowering the marginalized community living in Pulicat Lake, ensuring their access to education and equal participation in society, scalable and sustainable financial institutions can be established through microfinance schemes. However, a comprehensive study is required to quantify the potential of bird-watching tourism and bird conservation for pullicat lake as part of this multidisciplinary initiative. To prevent detrimental

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effects and commercialization, a forward-thinking, consistent plan should be devised, involving ecologists, conservationists, communities, and stakeholders to safeguard the environment and ecological balance. The State Forest Department, in collaboration with the tourism department, should oversee all ecotourism-related operations near Pulicat Lake. Conserving birds undoubtedly brings substantial economic benefits, and various opportunities exist to engage communities and locals in bird-watching tourism. Effective organization and implementation of these efforts will not only generate revenue and foster community development but also contribute to bird conservation.

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