



Biodiversity of Chilika and Its Conservation, Odisha, India

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Available online at: www.isca.in

Received 01st November 2012, revised 10th November 2012, accepted 15th November 2012

Abstract

This paper identifies the uniqueness of the largest brackish water habitat in Asia, i.e. Chilika. The lagoon supports a unique assemblage of marine, brackish water and fresh water biodiversity. Four types of crocodiles, 24 types of mammals, 37 types of reptiles, 726 types of flowering plants, 5 types of grasses and mangroves are present here. People of 122 villages and 8 towns on the bank of Chilika depend upon its biodiversity for their livelihood. Marine produce and tourism activities around the lagoon contribute significantly to the economy of Odisha State.

Keywords: Biodiversity, Chilika Lake, Lagoon, Avifauna

Introduction

Biological diversity refers to variety of life forms we see around us. It encompasses a diverse spectrum of mammals, birds, reptiles, amphibians, fish, insects and other invertebrates, plants, fungi and micro-organisms such as protista, bacteria and virus. Biodiversity is recognized at three levels: i. Species diversity, e.g. cow, human or mango tree etc. ii. Genetic diversity refers to variation within individual species e.g. dogs like Alsatian, Spaniel etc. or mangoes like Lengda, Totapalli etc. iii. Ecosystem diversity refers to diversity of habitats.

Biological diversity, comprising of millions of plants, animals and micro-organisms, the genes they contain and the intricate ecosystems they help build into the living environment, is our priceless heritage that helps enrich our life and provide security to man and other living beings. Their loss will mean irreparable damage to the intricate web of life.

Chilika lagoon, situated in the east coast of India connecting the Bay of Bengal, is the largest brackish water wet land and one of the Ramsar sites in India. The lagoon supports a unique assemblage of marine, brackish water and fresh water biodiversity. A pollen analysis study indicates that the oldest sediments in the lake are 13,500 years old. At that time, Chilika was a river mouth or a river delta with fresh water vegetation. With increase in the sea level, after 9,500 years, the area became an estuary with mangrove vegetation. The lagoon is divided into four sectors like Northern, Central, Southern and Outer channel. The average water spread area of the lagoon is 1055sq.km. It covers an area of 1165sq.km. in the rainy season and 965 sq.km. during summer. "Ramsar Convention" was held in the Iranian City of Ramsar on 2nd February 1971 with a view to identifying wetlands of international importance for their conservation. Our country joined this convention in 1982. The Chilika lake and Bhitarkanika mangroves of Odisha have been designated as "Ramsar sites" in 1991. On the bank of the lake there are 8 fairly

large towns and 122 villages. 70% of the population in these habitations depend upon fishing as the only means of their livelihood. A revenue of about 70million rupees is collected from 25 revenue villages on its bank annually. On an average 2.5lakh tourists visit this lake every year.



Figure –I
Chilika Lake

400 types of vertebrates are seen in this lake. Many endangered and vulnerable species are also present here. Genetic diversity is also seen here on a wide spectrum. At Chilika 4 types of crocodiles, 24 types of mammals, 37 types of reptiles and amphibians are seen. 726 types of flowering plants, five types of grasses and mangroves are also present here.

Research Methodology

A visit was undertaken to the site during the year 2010 and biodiversity of Chilika Lake was noted. Various information and data were collected during interaction with local inhabitants as well as the Chilika Development Authority.

Results and Discussion

The following fauna and flora were detected during the study period.

Irrawaddy Dolphin in Chilika lagoon: Presence of endangered Irrawaddy dolphins have been recorded in Indian subcontinent from Chilika lagoon on the east coast and in the tributaries of the Sundarban delta, West Bengal. These species are generally confined to sections of the river with water levels of 8-10m during the dry season. These are protected under the Wild Life Protection Act, 1972. The presence of such species indicates a rich piscine population in three types of ecosystem present in the Chilika lagoon. Due to salubrious ambience in the lagoon, at present 156 I. Dolphins are scattered over different sectors of the lagoon. These dolphins play a vital role not only in maintaining the ecosystem but also providing a good source of economy on the ground of tourism to local stake holders. Therefore, the management of Chilika Development Authority and forest department are trying hard to conserve the species from unusual mortality. The recent status of dolphin of Chilika shows that their number is increasing and their mortality rate has been reduced but still their natural habitat should be conserved in a more scientific way. Moreover, people who are directly or indirectly involved with the species should think about their survival and coexistence in nature for a sustainable ecosystem.



Figure -2
Irrawady Dolphins

Brachyuran Crabs of Chilika: Chilika lagoon has a rich Brachyuran crab diversity with 35 species reported in 2007 spread over nine families. In 2010, presence of ten new species spread over eight families was also recorded. These are of the family Grapsidae, Leucosida, Ocypodidae, Potrunidae, Gecarcidae, Calappidae, Parthenopidae and Majidae. Crabs make up 20% of all marine crustaceans caught, farmed and consumed world wide. Crabs of Chilika Lagoon provide a boost to the economy of the local people.



Figure -3
Crabs

Fisheries of Chilika: Various types of fishes are found in Chilika. They come from different rivers and seas. The total number of fish species is reported to be 158, along with a variety of phytoplankton, algae and aquatic plants. The lake has different salinity conditions in different seasons. Hence the fish fauna is not of uniform habitat.



Figure -4
Fishes of Chilika



Figure-5
Avifauna

On the basis of habitat, 150 are marine, 24 are fresh water and 119 are brackish water species. Commonly found fishes are Milk fish (*Chanos chanos*), Sparidae (*Calamus bajonda*), Ompok (*Ompok bimaculatus*), Wallago attu, Bhekti (*Lates calsifer*) etc. The rich brackish water fish fauna has, over the years, witnessed sudden reduction in quantum of catch of the native varieties like mullets, sea bass and *Utrophus seratensis* which are most popular fishes of the lake. For their conservation, Chilika Development Authority (CDA) and department of fisheries have implemented various measures. Govt. has imposed a complete ban on fishing at Palur canal outer channel during December-January and also over the capture of Khainga, Bhekti of size 150mm or more. According to a report of CDA, in the year 2011-2012 the production of fish was 14220 metric ton generating a revenue of about 143 crore rupees. In recent times, the number of some endangered fishes like Hilsa has witnessed a surge.

In this lake, 28 types of prawn as well as 38 types of crab are available. There are 212 sites for catching fish.

The avifauna of Chilika is highly diverse. The largest congregation of migratory birds occurs during September to January. In the central part of Chilika, a huge marshy island "The Nalabana Bird Sanctuary" is located which is spread over an area of 15.53sq.km. 147 species of family Anatidae have been identified¹ here. Out of this, presence of 75% of all water fowls are recorded around Chilika. 5-7 lakhs of migratory birds visit the lagoon annually. The lagoon hosts over 205 species (2004 census) during peak migratory season². Birds travel from as far as Caspian sea and remote parts of Russia, Kazakhstan, Mongolia, Central and South-East Asia to Chilika. The birds of Himalayas and Ladakh area also migrate here during winter season. The avifauna of Chilika is well documented which includes 205 species under 16 orders and 42 families. Out of these 92 are intercontinental migrants and rest are local migrants. The avian congregation in the lagoon includes 32% aquatic, 22% waders and 46% terrestrial. 22 species of Plover and Sand Piper, 14 species of Gull and Tern, 13 species of Eagle and 11 species of Heron and Egret have been identified in this area. Some of the endangered species like Spoon-billed, Sand piper, Asian Dowitcher, Goliath Heron, Peregrine Falcon, White

bellied sea eagle are listed under threatened species often seen here as winter migrants.

Conservation status: Wetlands are vital ecosystems that provide livelihood for the millions of people who live in and around them. The value of wetland system to the earth and to human kind is of paramount importance for sustainable development. The area of Chilika lake in the early nineties was 914sq.km. Today it is restricted to only 800 sq.km. Its degradation is so severe that the Chilika Development Authority was formed to restore and conserve the lake. Although India is a party to the Ramsar convention, it does not have strong national laws to prevent the misuse of wet lands. A study published by the Salim Ali Centre for Ornithology and Natural History, Coimbatore says that between 1991-2001, India lost 40% of its wetland. The National Wetland Conservation Programme was started in 1987. India's wetlands are extraordinarily diverse – ranging from lakes and ponds to marshes, mangroves, backwaters and lagoons, and play a vital role in maintaining water balance, flood prevention, biodiversity and support food security and livelihoods.

The salient features of the policies adopted for conservation of Chilika fisheries under Marine Fisheries Act introduced in 1988 are i. Fishing by any method is prohibited in Palur canal throughout the year. ii. Capture of Khainga, Kabla, Bhekti below 150mm size and prawn like Bagda and Chapra varieties below 100mm size by any means is prohibited throughout the year. iii. Fishing is completely prohibited in the outer channel of Chilika lake during the months between December and January. iv. No fishing by means of net shall be allowed in the outer channel throughout the year. v. At Balugaon, Khordha fishery training centre has been established. Training programmes for fishery extension officers, officers of marine science department and fish cultivation are also imparted here.

Conclusion

Chilika is one of the hotspots of biodiversity in India with unique ecological status having both the fresh water and salt water characteristics creating an extremely productive environment due to efficient nutrient cycle. The lagoon, in view of its biodiversity, has turned out to be an excellent centre for research and tourist attraction.

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