

CHILIKA: A GREAT LAKE NEEDS HUGE ATTENTION

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Chilika, the largest brackish water lagoon in Asia, is famous for its rich biodiversity and infamous for conflicts around the resources. Prawns, birds, dolphins and climate change keep the lake in news always. All these bring both posterity and problems to the lagoon.

Famed as a tourist's paradise, the pear shaped Chilika lake is believed to have been a part of the sea during the lower Holocene period. It is only during the Upper Holocene that the lake took its present shape as a cut-off body from the sea due to formation of spits and barrier bars. It thus got separated from the sea and the current formation is said to be about 5000 years old. Chilika lagoon, with a water spread of about one thousand square kilometres, is situated between latitude 19°28' and 19°54' N and longitude 85° 05' and 85° 38' E. A unique ecosystem with estuarine character that combines marine and brackish water, it extends from Southwest corner of Puri and Khurda districts to the adjoining Ganjam District in the state of Odisha.

In reality, the area of the lagoon varies between 1165 and 906 square kilometres, respectively during monsoon and summer seasons. During winter, it invites more than a million migratory birds. In fact, it is known as the largest wintering ground for migratory water-fowls found in the Indian sub-continent. It is one of the most important biodiversity hot spots of the nation. Some of the rare and endangered species listed in the IUCN Red List of threatened animals inhabit the lake area for at least a part of their life cycle. This includes the Irrawaddy Dolphins and Barakudia limbless skink.

Based on salinity and depth, researchers divide the lake broadly into four ecological sectors: the southern zone, central zone, northern zone and the outer channel. The lake is dotted with about 106 islands, prominent among them are Mahisa, Berhampura, Nalabana, Kalijai, Somolo, Honeymoon, Breakfast and the Birds islands. Chilika is also rich in fishery resources as well. At least two hundred thousand fisher folks sustain their livelihood from the lake. Among the islands, the Nalabana, spreading over an area of 15.53 square kilometres, attracts the maximum number of migratory birds. It was notified as a Wildlife Sanctuary in the year 1987. Based on its rich biodiversity and socio-economic importance, Chilika lake was designated by the Government of India as a Ramsar Site in 1981, especially as an important Water-fowl habitat. It is also included in the list of Wetlands selected for intensive conservation and management by the Ministry of Environment, Forests and Climate Change, Government of India.

A Lagoon is for its Water

Chilika lagoon, for the water it bears, is a famed tourist destination. A nature lover and photographer like me always find himself astonished by the bountiful beauty of Chilika. Blue, red, orange, yellow... the colours of the vast horizon of Chilika changes with the colours of the sun at different times of the day. Sun rise and sun set become most beautiful here. What is that water and where it comes from?

The fresh water to the lagoon is fed mostly by Mahanadi, the mother river of Odisha and one among the India's major rivers. Mahanadi's contribution comes via two of its branches – Daya and Bhargavi. However, Mahanadi contributes nearly half of fresh water flow to Chilika. The lagoon used to receive tidal flow from the sea through a 32 kilometre long inlet channel. Seven kilometres of this, at the tail portion, got defunct long back. Chilika's ecosystem is delicate. Large inflow of fresh water from the incoming rivers and saline water coming in from the tidal channel maintain a salinity gradient that sustains both brackish and fresh water species.

Besides the Mahanadi, several small rivers contribute to the fresh water flow of Chilika. Salia, Kumbhi and Kusami are three such rivers which flow from the Eastern Ghats and bring in lot of fresh water as well as sediments into the lake. During the monsoons, flood water from all the rivers dilute the salinity of the lagoon and cause siltation. These sediments fuel weed growth, especially along the northern shore. The lake is already very shallow and the monsoon sediment load makes it further such. The lake's average depth in its northern side is one and half meters, while on the southern side it is about two and half to

three meters. On the south-western side, the lake also receives water from a command area canal project. Sedimentation by far is the greatest challenge the lake faces. The lake has been shrinking. Large scale deforestation in the rivers and hills; and unsustainable land use practices are considered to be the main cause for this.

Siltation and More, Problems Galore

An analysis of the LANDSAT Thematic Mapper Data of the Chilika Lake for 1989 and 2000 showed that the lake is shrinking. The data clearly indicate the shrinkage of the lake (emergence of land) in the western and the north-eastern sides. The shrinking of the lake in the western part is because of the silting made by the rivers flowing from the Eastern Ghats. In the north-eastern side, numerous islands have been emerged which are made up of silt and sand-dunes carried out by the offshore long current from the Bay of Bengal. The emergence of the new islands is constantly choking the 100-meter long mouth of the Chilika Lake to the Bay of Bengal. So, there is always a problem for discharge of the silt to the Bay of Bengal, which were carried out by the rivers from the Eastern Ghats. This study pointed out that the lake shrunk by almost 200 square kilometres in that decade.

In fact, the shrinkage and change in water composition has affected the fishery resources of Chilika badly. The Chilika Development Authority (CDA) was forced to open a new mouth in 2000 to maintain the water quality in which the rich fish diversity and other species thrive in such a lagoon. It has raised the fish catch once again as the choked mouth had reduced it drastically. However, the lake's problems are far from being over.

As a newsletter of the CDA and Wetland International notes, "changes in hydrological conditions have triggered changes in lake vegetation posing new management challenges. The opening of new mouth and increase in salinity regimes have led to drastic decline in area under water hyacinth. At the same time, has rapidly invaded north and north-western segments of lake. The overall area under aquatic vegetation which had reduced from 501.02 square kilometres in 1999 to 172 square kilometres in 2001 has again increased to 285.96 square kilometres in 2007. Spread of it is impacting the overall lake ecology, hampering movement of boats and fishers and leading to accelerated siltation".

Both human impacts and climate change impacts are now affecting Chilika drastically. There is already a long standing battle between the traditional fishing communities and non-traditional fishing communities in the lake which keeps the lake always in tremendous political and social problems. There have been fierce battles between these communities. Permission to commercial prawn farming in the lake in the 80s also started a lot of problems. Exploitative and ecologically insensitive fishing gears have put the fishery resources of the lake under tremendous pressure and threat. Use of chemicals in farming in the catchment areas of the feeder rivers and in the islands has become another major problem. Increased load of tourism has emerged as yet another problem.

Needed Faster Action to Restore Lost Glory

Chilika is certainly losing its past glory. The water spread is shrinking, encroachment is increasing, pollution of water is spreading, siltation load is getting larger and poaching too is growing. The lake is under tremendous pressure at the moment. There have been several efforts at both government and non-government level. However, Chilika certainly needs more focus. According to scientists, the life span of the lake was estimated to be about ten thousand years. It has already crossed half way mark. Owing to the problems the lake faces, one doubts, it would hardly cross another few centuries only. Death of Chilika would not only mean a huge ecological loss but also a lot of socio-economic conflicts. The traditional fishermen would be at great loss.