

Dolphins of Chilika Wetland : The Wonder of Odisha

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Chilika : A Unique Wetland

Chilika is popularly known as Chilika lake. In fact, Chilika is a brackish water lagoon since three sides of this water body are surrounded by land mass where as one side is connected to the sea, that is, Bay of Bengal. Moreover, it is the largest brackish water lagoon



Irrawaddy (Irawady) dolphin of Chilika Wetland.

in Asia with estuarine character which is situated on the east coast of India. The lagoon is a highly productive ecosystem with rich fishery resources. The lagoon is broadly divided into four natural sectors based on salinity and depth which are named as (i) Southern Zone, (ii) Central Zone, (iii) Northern Zone and (iv) the outer channel. It covers 24 islands (Table 1) out of which the island

of significance and prominence are Kalijai, Nalabana, Somolo, Honeymoon, Breakfast and Birds' island. The Nalabana island was notified as the Wildlife Sanctuary in 1987 considering its spectacular features as a suitable habitat for the birds and nursery ground for fisheries. The maximum water spread area is 1165 sq.km where as the minimum water spread area is 906 sq.km with the total island area 223 sq.km. This lagoon covers three districts namely Puri, Khurda and Ganjam.

Table-1 Physical status of Chilika Wetland

Physiographical Status	Description
Geographical location	(i) Latitude – 19° 28' - 19° 54' North (ii) Longitude – 85° 05' 85° 38' East
Border or Boundary	(i) East – Bay of Bengal (ii) West – Rocky hills of Eastern <i>ghats</i> (iii) North – Alluvial plain of Mahanadi Delta (iv) South – Rocky hills of Eastern <i>ghats</i>
Coverage of district	(i) Puri (ii) Khurda (iii) Ganjam

Measurement	(i) Maximum length– 64.30km (ii) Maximum breadth–18.00km (iii) Minimum breadth-5.00km
Water spread Area	(i) Maximum – 1165 sq. km (ii) Minimum – 906 sq. km
Spit (sand bar)	(i) Length – 60 km (ii) Width – 0.6 km to 2.0km
Total area of islands (23 islands)	223 sq. Km
Catchment area	3987 sq. Km
Number of rivers and rivers and rivulets	52
Number of mouth of lagoon	02 (in front of village Sipakuda and Gabakunda)
Major ecodivisions	(i) Northern sector (ii) Central sector (iii) Southern sector (iv) Outer channel
Depth	0.38 to 6.2 m

Source : The Atlas of Chilika, 2008, Chilika Development Authority, Bhubaneswar, Odisha.

Another addition of Chilika lagoon is Chilika wetland. Wetlands are the interface between land and water systems which include ponds, lakes, swamps, marshes, mangroves, coral reefs and rice fields, shallow coastal marine water, intertidal mud, sand and flats, intertidal forested swamps intertidal salt and freshwater marshes and brackish water lagoons. Most of them are emotional. Wetlands also include rivers and streams including seasonal rivers, inland deltas, riverine flood plains, freshwater lakes, freshwater ponds, shrub swamps, freshwater swamp forests, geothermal wetlands including hot springs. Wetlands are defined as the lands transitional between terrestrial and aquatic ecosystems where the water table is usually at or near the surface or the land is covered by shallow water (Mitsch and

Gosselink, 1986). The soil must remain waterlogged or submerged for whole or part of the year.

Under the text of Ramsar Convention (Article 1.1), wetlands are defined as areas of marsh, pen, peatland or water, whether natural or artificial, permanent or temporary with water that is static or flowing, fresh or brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters. Broadly five major wetlands are recognised which are as follows.

1. Marine (Coastal wetlands including coastal lagoons, rocky shores and coral reefs)
2. Estuarine (deltas, tidal marshes and mangrove swamps)
3. Lacustrine(lakes)
4. Riverine (rivers and streams)
5. Palustrine (marshes, swamps and bogs).

But according to Ramsar Classification, wetland is grouped into three types such as (i) Marine and coastal wetland, (ii) Inland wetland and (iii) Human-made wetland.

Chilika : A Ramsar Site

Ramsar is the name of a place of Iran city. The Convention of Wetlands of International importance as water fowl habitat often known as the Ramsar convention from its place of adoption in Iranian city of Ramsar on the Southern shore of the Caspian Sea on 2nd February, 1971 is an intergovernmental treaty which provides the framework for international cooperation for the conservation of wetlands. Ramsar is the first of the modern global intergovernmental treaty on the conservation and sustainable use of natural

resources. Basing on the rich biodiversity and socio-economic importance, Chilika was designated as Ramsar site on 1st October, 1981 (01.10.1981) especially as an important waterfowl habitat. Since Chilika faced various problems, it was included in the Montreux Record in 1993.

Odisha enjoys 16277.5 hectares of inland wetland and 185431.75 hectares of coastal wetland. Out of this, 204 are natural wetlands while 141 are man-made wetlands. Although Chilika has got recognition at both national and international level, but it had been facing certain problems caused both by natural hazards as well as anthropogenic pressure. To streamline the process and develop the lagoon ecosystem, the Chilika Development Authority (CDA) was created by the Government of Odisha in 1991 as an autonomous body. The problems were siltation, shifting of the mouth of Chilika, loss of salinity, extensive growth of weeds, depletion of fishery resources and aquaculture. The important anthropogenic pressures are regular exploitation of fishery resources like fishes, prawns and crabs, regular machine boating which creates noise and turbulence in water and visitors' pollution to the aquatic body.

Dolphin : An Attraction of Chilika

Most of the visitors, scientists, artists, biologists, ornithologists, naturalists and ecologists including common human beings discuss as to the dolphins of Chilika. Satapada of Chilika is highly famous for dolphins. But what are dolphins? Dolphins are mammals like cows, horses, monkeys, elephants and men. But these are aquatic mammals. Who are mammals? Mammals are groups of animals which are characterised by three features such as (i) presence of hair on the body, (ii) presence of external ear (pinna) and

(iii) presence of mammary glands (breasts). But aquatic mammals don't have first two features because of aquatic adaptation or mode of life where as third feature is totally present. That means these animals don't lay eggs instead they give birth to young ones or babies and babies after birth take milk from the mammary glands of the mother.

Mammals which are seen in sea, are grouped into three types namely (i) Cetacea, (ii) Sirenia and (iii) Pinnipedia (Table 2). Cetacea group includes aquatic mammals like whales, dolphins and porpoises. The second group Sirenia includes aquatic mammals such as sea cows and manatees. The last group includes mammals like seals, sea lions and walruses. Marine mammals which are stated above, mostly give an appearance exactly like fishes. Therefore, common people speak whales as whale fish, porpoises as porpoise fish and dolphins as dolphin fish. But these are not at all fishes. Interestingly enough, Indian Ocean embraces both cetaceans and sirenians. In fact, dolphins are found both in sea and fresh water or brackish water. Some species are distributed in freshwater where as some are found in brackish water. Chilika is famous for a typical species of brackish water dolphin (Irrawaddy dolphin) or Irrawaddy dolphin)

Table-2 Different types of Marine Mammals

Group	Example of aquatic mammal
1. Cetacea	whales, dolphins, porpoises
2. Sirenia	seacows, manatees
3. Pinnipedia	seals, sealions, walruses

Structural features of dolphins

There are several types of dolphins which are distributed both in marine and freshwater (table 3).

Table-3 different types of dolphins

Common Name	Scientific Name
1. Common dolphin	<i>Delphinus delphis</i>
2. River dolphin or Irawadi dolphin or Irawaddi dolphin	<i>Orcaella brevirostris</i>
3. Risso's dolphin	<i>Sotalia fluviatilis</i>
4. Bottlenose dolphin	<i>Grampus griseus</i>
5. Amazonian dolphin or boutu	<i>Tursiops truncatus</i>
6. Chinese river dolphin	<i>Inia geoffrensis</i>
7. Gangetic dolphin or susu	<i>Lipotes vexillifer</i>
8. La Plata dolphin	<i>Platinista gangetica</i>
	<i>Blainvillei</i>

It is always confusing to have two animals known by the same name but belonging to very different families, especially when they live in the same areas. Now where is this more true than in case of the dolphin, a mammal, and the dolphin, a fish. The mammal has first claim to the name since it has been known from Greek and Roman times. When the name was first given to the fish was unknown. It was almost certainly given by ocean-going seamen, and probably arose from the similar shape and jumping habits of both animals. In fact, there are only two species of dolphin fish in a family (Coryphaenidae) of their own. The first species is *Coryphaena hippurus* and the second one is commonly called as pompano dolphin having scientific name *Coryphaena equiselis*.

The characteristic features of dolphins are as follows.

1. Dolphins are fish-like mammals but not fishes. They possess a fish like body.
2. Body has finlike structures called flipper and fishlike tail at the posterior part of the body.
3. The common dolphin is up to 8 feet long and weighs up to 80 kg.
4. All river dolphins are small, the largest reaching a maximum length of about 8 feet, the smallest being only 3.5 feet.
5. The beak is narrow and sharply cut off from the forehead.
6. The jaws have 40-44 teeth on each side of the upper and lower jaws.
7. The common dolphin is black, sometimes, with brown or violet and light spots above and white below. A dark stripe runs from eye to snout. Around Malaya and neighbouring islands, Common dolphins may frequently be dark grey. Irawadi dolphin looks like a small, light coloured pilot whale.
8. Marine or sea dolphins belong to the family Delphinidae where as freshwater dolphins came under the family Platanistidae.
9. The freshwater dolphins have long slender Jaws which form a narrow beak and there is a noticeable neck. They are generally lighter in colour, often being grey, pale brown, pink or white and their eyes are even smaller than usual.
10. The Gangetic dolphin is sightless.
11. Dolphins of the genus *delphinus* are found between New Guinea and Australia, form South Africa across the Indian Ocean and all along the west pacific to Japan.
12. Of several species of river dolphins, some live in the Amazon, some in the River Plate, some

in the Kamerun River of West Africa, some in Indian rivers and some in the Yangtze.

13. Many aspects of common dolphin's habits, life history and physiology are very similar to those described for the bottlenose dolphins. Their diving and swimming mechanism are very much alike, but common dolphins cannot stay submerged so long. The usual length of a dive is 2-3 minutes.

14. Common dolphins are among the fastest cetaceans.

15. Common dolphins travel in schools which, as in the bottlenose dolphins are made up of both sexes and all ages.

16. The food is fish, squid and cuttlefish in case of common dolphins. But all river dolphins feed on fish and crustaceans.

17. The breeding behaviour in both the categories of dolphins is same and seems to be similar. In Gangetic dolphin breeding takes place from April to July, the young being born 8-9 months later.

18. The babies cling to their mothers. The flippers of freshwater dolphins are broader, shorter and more sand like than those of marine dolphins.

Conservation of Irrawaddy Dolphins

Irrawaddy dolphins (fig.1) have attracted the attention of tourists all over the world because of their nature, feature and behaviour. CDA has been taking initiative not only for the all-round development of the wetland but also for the population of the dolphin diversity. Each year an attempt is made to undertake the census of dolphin. This year in 2012 the calculation was completed in January 2012. It was reported and observed that the population has declined to 145 from 156 (Table 4).

Table-4 Census of Irrawaddy Dolphin of Chilika Lagoon.

Sl. No	Year	Adult	Young Adult	Baby	Total	Death
1.	2003	70	11	08	89	16
2.	2004	103	10	11	124	11
3.	2005	102	08	01	111	17
4.	2006	119	07	05	131	04
5.	2007	115	15	05	135	08
6.	2008	115	17	06	138	06
7.	2009	111	18	17	146	10
8.	2010	129	14	15	158	01
9.	2011	131	21	04	156	01
10.	2012	121	14	10	145	01

This declined number in 2012 has created a serious concern among environmentalists. The exact or possible reasons are yet to be explored. However, it is expected that most probably, the dolphins must have migrated to the sea through the mouth of Chilika. Steps are being taken to detect the locomotory and migratory behaviour of the dolphins with the collaboration of Tokyo University for which an MoU (Memorandum of Understanding) has been signed. Some steps are expected to maintain the population in future.

Conclusion

Chilika as a wetland is spectacular as far as floral and faunal diversity is concerned. But it is a matter of regret that everyday it faces some amount of anthropogenic pressure. At least dredging activities and regular fishing and boating need to be regulated or controlled. This would certainly improve and strengthen the ecological status, faunal enrichment and overall Biodiversity dynamics. Hope, the initiative of CDA would, no doubt, promote the ecological scenario and Chilika can regain its original glory and history.

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