

Integrated coastal zone management of Chilka Lake

The Chilka Lake in Orissa is one of the largest wet land in the world (1000 sq km area) habited by migratory birds and by a special type of dolphins. This lake is the livelihood for about 100,000 fishermen and also acts as drainage for Mahanadhi river basin. The old mouth on the northern side of lake was not flushing properly and hence the tidal exchange was not sufficient to maintain the quality of brackish water.

The project on **Integrated coastal zone management of Chilka Lake** (opening of a new mouth based on numerical model study and dredging of channels linking the north east and western sides costing Rs. 50 crores) was coordinated by Prof. R. Sundaravadivelu in association with Chilka Development Authority (CDA), CWPRS, Poona and NIO, Goa.

The sea water interaction with lagoon has significantly diminished and the maximum salinity has dropped (22.31ppt in 1957-1958 to around 10ppt in 1961-64, but appears to have stabilized after the rapid drop). The decrease of salinity level has a great adverse impact on the biodiversity as well as fisheries of the Chilika lake

This is due to

- Occurrence of sedimentation in the Chilika lake and its coastal vicinity.
- Narrowing down of the Chilika lake mouth and decrease of its depth.
- No major effort has been made to understand comprehensively the sedimentation process, lake-sea water interactions and tidal flushing in the Chilika lake.
- The salinity levels show remarkable variations, both temporally and spatially. A complex combination of freshwater discharge, evaporation, wind condition and tidal inflow of seawater govern the seasonal changes in salinity levels. Salinity levels in Chilika vary along the north – south gradient.
- Due to shallow depth of the lagoon the salinity concentration fluctuates between 1 – 3 ppt between the surface and bottom. The lagoon is brackish over most of its area and varies from fresh water (0 ppt) adjacent to the Daya river mouth to hyper – saline level (42 ppt) in the outlet channel during the dry period.

CWPRS has carried out the numerical model study to estimate the tidal prism and determining the width and depth of the mouth. IIT Madras has proposed the dredging methodology and NIO Goa has carried out the EIA study.

The artificial mouth was opened on 23rd September 2000, which reduced the length of the outflow channel by 18km. The dredging of the channel was completed before opening the new mouth.

