



# CMFRI

## NEWSLETTER

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ALTERED  
RIVER FLOW



A THREAT  
TO  
THE LIFELINE  
OF  
COASTAL WATERS

Un-impounded rivers provide energy for a number of vital processes in down stream estuaries and coastal areas upon which healthy fisheries are dependent. Freshwater and sediment inputs from rivers play a major role in sustaining estuarine and coastal ecosystems. The silicate inputs from rivers fertilize the seas by stimulating the production of diatoms which fuel food webs and play a crucial role in the biological uptake of CO<sub>2</sub> by the ocean. In the last few decades, human activities have caused enormous changes both in the nature and quantity of these inputs along the coasts of India. Analysis of historic data on river discharge covering 30 major east and west flowing rivers of India showed that fresh water discharged into coastal waters were reduced at an alarming rate due to damming or river diversions. Any water management that reduces the river runoff by 25% will result in negative effects on coastal and estuarine ecosystems.

The Central Marine Fisheries Research Institute has successfully completed a research project on the **Impact of dams on river run-off into sea and changes in the nutrient and productivity profile of coastal waters** with a funding of Rs. 76 lakhs under the National Agricultural Technology Project (NATP). The project was carried out at Mangalore, Cochin, Veraval and Visakhapatnam in collaboration with the Department of Microbiology, College of Fisheries, Mangalore during 2000-2003.

The investigation was carried out along six rivers on the west coast; *Sharavathi* and *Nethravathi* in Karnataka, *Mahe* and *Periyar* in Kerala and *Bhadar* and *Netravati* in Gujarat and three rivers on the east coast; *Sarada*, *Godavari* and *Gosthani* in Andhra Pradesh.

Results of the study indicated that the river discharge rate was found to be influencing the nutrient biogeochemistry, productivity and sediment flux in the estuarine and coastal waters. Water salinity and pH showed significant negative correlations with river discharge and high saline conditions were observed in the estuarine and river mouth areas with low river discharge. Reduction in runoff has reduced some of the river mouths into high saline creeks and affected the estuarine and mangrove habitats in Gujarat coast. Levels of BOD, ammonia and toxic trace metals (Cd, Pb, Cu and Zn) in the estuarine and coastal waters were also found to be high in areas with low river discharge. Similarly, sediment bound sand, total silica and nutrients were positively related while silt, clay and toxic metals were negatively correlated with river discharge.

The study shows that the hydrological alterations can introduce subtle changes in the chemistry of rivers with long-term consequences for coastal ecosystems. The findings of the present study are very important with reference to the proposed river linking projects in our country.