

## EVALUATION OF AQUACULTURE IMPACT ON COASTAL ECOSYSTEMS USING HIGH RESOLUTION SATELLITE DATA: A CASE STUDY ALONG EAST COAST OF BAY OF BENGAL

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Aquaculture has a significant role in rural development. It not only contributes in the generation and replenishment of wild stocks of commercially important aquatic species but also is a source of export revenue. In the present paper an attempt is made to monitor and analyze the ecological and other changes resulted due to Aquaculture practices in and around Kolleru lake in Andhra Pradesh using high resolution satellite data and data base management adopting geographical information system (GIS).

Kolleru lake, the biggest fresh water body in Asia extending over an area of about 179 sq. kms., is confined within the latitudes 16° 33' 54.52" N and 16° 45' 33.86" N and longitudes 81° 05' 07.52" E and 81° 21' 02.84" E situated in the Krishna, Godavari basin. This lake is a sanctuary for a few hundred thousands of migratory birds. The ecosystem of this region has been endangered by wetland Paddy cultivation and weed infection resulting in significant reduction of drinking water to 50 bordering villages besides a relocation and shift of migratory birds to some extent.

Over the last few decades remote sensing technology has been used increasingly by the scientific community to describe and monitor a variety of systems on a local or global scale. In the present study Geometrically rectified digital base map covering the study area was prepared using revenue tehsil (administrative) maps on 1:63, 360 scale based on Land sat – TM, IRS – Liss – II, Liss – III and PAN data. Standard digital data enhancement techniques were used for interpretation accuracy. The final thematic maps have been prepared through image analysis on-screen digitization and visual interpretation of the processed data. Necessary field checks are carried out for the same. For the generation of thematic maps ERDAS IMAGINE image processing software is used.

The present work has brought out the significant changes in the lake from 1989 to 1999. Fishpond cultured area in the lake has increased from 8.25 sq. kms., (825 hectares) to 67.17 sq. kms., (6717 hectares). While wetland Paddy cultivation has gone through a drastic enhancement from 7.27 sq. kms. to 22.24 sq. kms. In the year 1989 the lake was with full of flood water. The aquaculture practice has disrupted the traditional patterns of land. The deliberate blocking of water outflow for the aquaculture and Paddy cultivation practices is leading to disastrous consequences of floods. A proper and scientific monitoring of the lake such as the one carried out in the present study, will significantly contribute to the preservation of the lake and its ecological systems.