

## Wetland Mapping using High Resolution Satellite Images in the Jaffna Peninsula

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**Abstract:** Wetlands are among the world's most productive environment and important for ecological process as well as for their rich biodiversity. Unique and rare plant and animal species can be found in different wetlands in all over the world. Sri Lanka is a tropical country and it has rich biodiversity. According to the Asian wetland directory, 41 wetland sites were identified in Sri Lanka as international importance (Scott, 1989). Jaffna Peninsula has seven identified wetland sites and also has been identified as an important Birds area (Central environmental Authority, 2005). Number of wetland conservation projects was implemented to identify and maintain wetland area in Sri Lanka. However, North and Eastern provinces did cover such kind of activities due to the long lasting ethnic war. There is lack of updated and base line information regarding the wetland sites in the North and East of Sri Lanka. In fact, information on wetland location, size, type and its characteristics are either out dated or no detail information which are significant to facilitate the conservation and management of wetland. This study was carried out to prepare a detail wetlands map for updating and generating base line information regarding the wetland in the Jaffna Peninsula using satellite images and Geographic Information Techniques (GIS). This information is vital for proper planning and implementation of any conservation and wise use management programme of wetland. Remote sensing and GIS are widely used techniques to identify map and characterize the wetland types and its resources from the global to local scales. In this study, wetland mapping and characterization have been carried out from satellite images and the field survey. High resolution satellite images acquired by Quickbird satellite in 2010 have been used. Satellite images have been downloaded from Google Earth Pro. Images in the Google Earth Pro are available for Downloading at higher resolutions. The images which were in true colour were recorded using radiations in the bands of Red, Green, Blue and Infrared. The resolution of Pan (Black & white) image is 0.6 meters and MS image (color) 2.4 meters. Based on the classification of National Wetland Directory of Sri Lanka, wetlands of the Jaffna Peninsula were identified and mapped. The images were visually interpreted and carried out digitizing by onscreen method since as its higher resolution. Digitized layer was imported into GIS environment to develop database for each of identified wetland types and produce final wetlands map of Jaffna Peninsula. This study has been successful in identifying spatial pattern of wetlands and provides useful information for wetland conservation and management in the study area.

**Keywords:** Wetland, Satellite images, GIS, Conservation