

ASSESSMENT OF MANGROVE DEFORESTATION USING LANDSAT IMAGERIES IN TANBI WETLANDS COMPLEX, GAMBIA

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Abstract: Mangroves constitute an area of great ecological importance. Regular assessment and monitoring of this ecosystem is thus an integral part of environmental management. The extensive mangrove systems and mud flats of the Tanbi Wetlands Complex, Gambia are important for ecotourism, spawning and as habitats for aquatic, monkeys, and bird species. Fish and oyster from these wetlands provide the human population in this region with their daily protein supply. Mangrove cutting, rice cultivation, vegetable gardening, oyster collection, shrimp fishing, and undocumented accidental oil spills from the storage depot during unloading affect ecologically sensitive areas of the mangrove forest cover of the Tanbi Wetlands Complex. The environmental consequences can be compounded if there are no effective measures taken. This study aims to use Landsat imageries for assessment of mangrove deforestation during the period 2000-2013 in the Tanbi Wetlands Complex of Gambia. Various spatial and non-spatial data were collected for field surveys and accuracy assessment of the mapping results. The data were processed through the following steps: (1) geometric correction to account for geometric errors between Landsat images, (2) image classification using the maximum likelihood classifier, and (3) validation of the classification results using the ground reference data collected during the field surveys in 2013. The results obtained from the change detection analysis showed that mangrove forests declined over the 13-year period. Thus, there is an urgent need to address further destruction of this valuable ecosystem.

Keywords: Mangroves, Landsat, Tanbi Wetlands Complex, Gambia