

**REMOTE SENSING AND GIS APPROACH FOR
ASSESSMENT AND CONSERVATION OF
SEAGRASS BEDS IN THE COASTAL STRETCH
ALONG GULF OF MANNAR**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University
in partial fulfillment of the requirements of
the degree of
Bachelor of Science in Aquatic Resources Technology
by

MANOHARAN NAVEENAN

**Aquatic Resources Technology Degree Programme
Faculty of Animal Science and Export Agriculture
Uva Wellassa University**

2014

Abstract

Seagrasses perform multiple functions for the existence of marine environment. They not only provide beneficial ecological services to the environment, but also for coastal human population as well. However, increasing anthropogenic activities in coastal environment has lead this valuable resource to face depletion. The continuous loss of seagrass will lead to adverse effects on the marine ecosystems therefore, conservation of this aquatic flora is important. Although Sri Lanka has a rich diversity of coastal ecosystems including seagrass there is little information on seagrass communities. This study integrates remote sensing and Geographic Information Systems (GIS) to assess the distribution of seagrass in the coastal stretch of Gulf of Mannar, extending from Kudiramalai point to Mannar town. The high resolution imagery of IKONOS was used for the study. The satellite images were subjected to pre-processing that included layer stacking, sensor merge, geometric, radiometric and atmospheric corrections, masking and several image enhancement techniques. Supervised and unsupervised classifications were performed to compare their accuracies. Previously collected field data was used for the supervised classification. Accuracy assessment was done using error matrix method. Results showed that unsupervised classification provided higher overall accuracy (75%) than supervised classification (58%). The mapping of seagrass distribution based on results obtained by accuracy assessment concluded that seagrass distribution is 10.87% in the study site.

Keywords: remote sensing, Gulf of Mannar, IKONOS, seagrass, GIS