IDENTIFICATION AND MAPPING OF SPATIAL DISTRIBUTION OF FLOATING AQUATIC PLANTS IN TANKS USING REMOTE SENSING AND GIS

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ABSTRACT

An attempt was made to identify and map the floating aquatic plants in a small tank called "Mahawewa" in Puttlam district of western Sri Lanka, since most Sri Lankan dry zone tanks are affected by the invasive floating aquatic plants (IFAP) creating many ecological and socio-economic problems. There are no sufficient studies on IFAP spatial distribution to manage and conserve these valuable cascade ecosystems in the country.

Increasingly, efforts are made to avoid invasions or eradicate or control established IFAPs. It has long been recognized that Remote Sensing (RS) and Geographical Information System (GIS) could contribute to this, for instance through mapping actual IFAS distribution and areas at risk of invasion. Potentially GIS could also be used as a synthesizing tool for management of interventions aiming at invasive species control.

This study is an attempt to identify the IFAS spatial distribution using IKONOS satellite imagery analyzing Electro-Magnetic Radiation (EMR) emitted by different species. IKONOS Multi Spectral Scanning (MSS) imagery was used to obtain NDVI classification of the tank. Classified classes were identified using the sampling data, Quick Bird imagery

and digital photographs of the study area. Finally, IKONOS MSS imagery was classified according to the derived classes. Error estimation was done to find the accuracy of the FAP classification. Based on these results, FAP extent was quantified.

Accordingly images are analyzed to identify major FAP spread and GIS mapping can be done in a large scale. GIS software allows generating geo-referenced large scale maps of IFAP locations and abundances. These maps can be used to quantify the threat of IFAP, and assist in management decisions and future monitoring.