Remote sensing for mapping RAMSAR heritage site at Sungai Pulai Mangrove Forest Reserve, Johor, Malaysia.

ABSTRACT

The Sungai Pulai Mangrove Forest Reserve (SPMFR) is the largest riverine mangrove system in Johore. In 2003 about 9,126 ha of the Sungai Pulai mangrove was designated as a RAMSAR site. RAMSAR sites are wetland areas that are deemed to have international importance and are included in the List of Wetlands of International Importance. The SPMFR plays a significant socio-economic role to the adjacent 38 villages. Satellite remote sensing is a useful source of information where it provides timely and complete coverage for vegetation mapping especially in mangroves where the accessibility is difficult. This study was carried out to identify and map land cover types using SPOT-4 imagery at the Sungai PulaiRAMSAR site and its surrounding areas. Through unsupervised classification technique a total of seven classes of land cover type were mapped, where about 90% mapping accuracy was gained from the accuracy assessment. Later, vegetation densities were classified into five levels namely very high, high, medium, low and very low based on crown density scale using vegetation indices model such as NDVI, AVI and OSAVI. Results from NDVI and OSAVI model were almost similar but AVl model detected more on medium vegetation which did not show the real ground condition. The study concludes that SPOT-4 imagery was able to discriminate mangrove area clearly from other land covers type. Vegetation indices model can be used as a tool for mapping vegetation density level in the SPMFR and its surrounding area. Therefore Vl:s models from remote sensing are useful to monitor and manage the mangrove forest for sustainable management and preserve the SPMFR as a RAMSAR site in Peninsular Malaysia.

Keyword: Conservation Management; Mangrove mapping; RAMSAR site; Remote sensing.