

# MANGROVE CHANGES ANALYSIS BY REMOTE SENSING AND EVALUATION OF ECOSYSTEM SERVICE VALUE IN SUNGAI MERBOK'S MANGROVE FOREST RESERVE, PENINSULAR MALAYSIA

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## Abstract

Mangrove forests are an important ecosystem and provide socio-economic value to human being. Despite their great value, mangroves are one of the highest rates of degradation of any global habitat, where the rate is about 1% area per year. In fact, the socio-economic value and ecosystem services of mangrove as natural product are undervalued. The ecosystem services provided by mangroves are often ignored by the ongoing process of mangrove conversion. This forces a major reason why the conservation of this ecosystem is not a popular alternative. Thus, the main objective of this study is to evaluate the changes of mangrove forest and valuing their ecosystem services. SPOT 5 imageries year 2000 and 2010 has been used for change detection analysis. The vegetation index such as NDVI and AVI and unsupervised classification technique were carried out in image processing. In order to obtain the value of the socio-economic impact from the mangrove changes and biodiversity disturbance, the ecosystem service valuation (ESV) model was applied. Results show that the total value of the existing mangrove forest ecosystem service was RM1, 901,859.84. The value per unit area is about RM 1,650.92 /ha. The total value of others were RM161, 33.2 (crop land), and RM3, 107,500 (water bodies), respectively. In conclusion Sungai Merbok's Mangrove Forest Reserve is very important for coastal ecology where the orientation of the mangrove ecosystem is huge and good to provide essential services for community as well as and maintain ecological balance to the coastal environment.

**Keywords:** Mangrove, ecosystem service valuation, changes detection, remote sensing.