

Identification of Mangrove Patches and its Species Using Remote Sensing and Field Method in Ranong Province, Thailand

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Abstract

Mangrove ecosystem is one of the important coastal ecosystems for biodiversity, coastal protection and daily livelihood of millions of people in coastal developing countries including Thailand. This study was conducted in Ranong Province, Thailand with the aim to identify and determine the mangrove patches distribution and its species. Remotely sensed data was used and revealed that the mangrove forest was existed in each district. Mueng district is considered as the area where the highest number of mangrove patches found with the totale 17 patches. The smallest patch number was identified in Kra Buri district with a total of only 3 patches. Most of the patches were formed clumped, elongated with medium and large sizes and were located along the Andaman seacoast. The Point Centered Quarter (PCQ) field method was employed for floristic inventory. The Result indicated that there were 19 identified mangrove species with 4 dominant taxa namely, Rhizophora, Avicennia, Ceriops and Bruguiera found in Ranong and these types would be considered as the choice for mangrove reforestation. This result derived from this study may useful for various stakeholders in Ranong such as local government units, non-governmental organization and decision-makers and could be served for mangrove management and coastal landscape planning in that area.

Keywords: mangrove patch, coastal environment, biodiversity

INTRUDUCTION

Mangroves, a forested coastal wetland type occupy nearly 75 percent of the world's coastlines, capable of growth and reproduction in areas inundated daily by seawater (Heald and Odum, 1975, Aksornkoae *et al.*, 1992; Smith and Smith, 2004; Doydee *et al.*, 2008). They contribute to habitat complexity and the diversity of the associated fauna of the ecosystem (Hutchings and Saenger, 1987; Othman, 1994; Tri *et al.*, 1998; Lee, 1998). They provide also the protection for habitats which are suitable for breeding and nursery ground for many shrimps, crabs and fish (Sasekumar *et al.*, 1992; Barbier and Stand, 1998). They also have important indirect services such as shoreline stability and water quality (Buot, 1994; Janssen and Padilla, 1999; Anongponyoskun and Doydee, 2006).

Mangrove wetland serves local people with a wide range of species and materials, ranging from mangrove wood products used for fuelwood, fishing gear and housing, to fish, mollusks, crustaceans and other aquatic species which are eaten or sold for income (Immink, 1996; Lee, 1998; Macintosh *et al.*, 2002). Mangrove patches in Ranong are one of coastal features with large areas. Thus, identification and determination of mangrove distribution through the use of

effective tool such as Remote Sensing is needed and the field method is also necessary to increase the classification of mangrove species in the study area.

MATERIALS AND METHOD

The study area is located in Ranong Province (9° 43' N to 9° 57' N and 98° 29' E to 98° 39' E) in the southwest coast of Thailand (Figure 1) and about 568 km south of Bangkok. Ranong is geographically characterized with long expanses of sandy beaches, unspoiled upland and mangrove forests, waterfalls, parks and a biosphere reserve zone. The remotely sensed data (Landsat-5 TM) was gathered from Geo-informatics and Space Technology Development Agency (GISTDA) on October 10, 2007. In each mangrove patches site, the coordinates were determined using a Global Positioning System (GPS) receiver with estimated accuracy of 10 m or better. To validate the coordinates, georeferencing technique was applied to recheck the collecting localities of study area (Doydee, 2005; Bantayan, 2006).

Landsat-5 TM and field observation were used to identify and examine the mangrove distribution based on the result of False Color Composite method (FCC) in which Red, Green, Blue layers were applied for Infrared, Red and Green band respectively. This FCC was obviously