

MAPPING OF MANGROVE FOREST AT KUALA SUNGAI SEMERAK,
PASIR PUTEH, KELANTAN USING AERIAL PHOTOGRAPH

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Mapping of mangrove forest at Kuala Sungai Semerak, Pasir Puteh, Kelantan Using Aerial Photograph / Zailani Maspin.

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**MAPPING OF MANGROVE FOREST AT KUALA SUNGAI
SEMERAK, PASIR PUTEH, KELANTAN USING AERIAL
PHOTOGRAPH**

**BY
ZAILANI BIN MASPIN**

**A project report submitted in partial fulfillment of the requirements for
the degree of Bachelor of Science (Marine Science),
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**Faculty of Applied Science and Technology
UNIVERSITY PUTRA MALAYSIA
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ABSTRACT

Mangrove forest area in Kelantan is smallest. This area is important in balancing and stabilizing the natural ecosystem as a shelter, breeding ground and buffer against erosion. This forest is treated to extinction if proper step in controlling and managing is not enforced. This study involves the use of aerial photograph and ground survey in determining the distribution and species of mangrove in this area. Ground survey is important in this study for it is to determine the accuracy of aerial photo interpretation. Aerial photograph with scale 1 : 20 000 taken in 1995 was used. The overall accuracy of the map is 84.5%. Result shows that the distribution of mangrove forest in the area is divided into 6 classes with are *Rhizophora-Avicennia*, *Rhizophora-Bruguiera*, *Avicennia-Sonneratia*, *Avicennia-Ceriops*, mixed mangrove and *Nypa fruticans*. There are 12 species of exclusive mangrove, 6 species of non-exclusive mangrove and 2 species of associate mangrove present. The study area covers an area of 100.6 hectares where 15.2 ha. are covered by *Rhizophora-Avicennia* forest, 17.2 ha. by *Avicennia-Sonneratia* forest and 48.4 ha. are *Nypa fruticans*. The dominant species are *Rhizophora*, *Avicennia*, *Ceriops* and *Nypa fruticans* for they cover 63.98% of the area with a density of 2660 tree/ha. The closure of river mouth in 1995 makes this area a closed estuary. This condition makes the sedimentation rate per year high, which amounted to 2.31 cm/year. Type of soil that dominated a mostly silt (56.52%), while 30.15 are sand and 13.06 is clay. This high sedimentation rate will one day result in sealing off the area and cover by mangrove forest. It can be concluded that aerial photograph can be used to identify species, classes and mapping distribution of mangrove for the purpose of conservation and proper management. The use of latest technology and large scale of aerial photograph is recommended to get a better result.

ABSTRAK

Secara amnya hutan paya bakau di negeri Kelantan masih belum diuruskan dengan sempurna. Hutan ini mungkin mengalami kepupusan jika langkah pengawalan dan pengurusan tidak dikuatkuasakan. Walaupun kawasan ini adalah kecil namun ia penting dalam keseimbangan dan kestabilan ekosistem semulajadi seperti menahan hakisan, perlindungan dan pembiakan. Kajian yang menggunakan kaedah foto udara dan kerja lapangan dapat menentukan taburan hutan paya bakau dan spesis yang didapati di kawasan ini. Foto udara yang berskala 1 : 20 000 pada tahun 1995 digunakan dalam kajian ini. Kerja lapangan adalah penting dalam kajian ini untuk penentuan kejituan penafsiran foto udara. Keputusan menunjukkan taburan pokok bakau di kawasan ini terbahagi kepada 6 kelas pokok bakau iaitu *Rhizophora-Avicennia*, *Rhizophora-Bruguiera*, *Avicennia-Sonneratia*, *Avicennia-Ceriops*, mixed mangrove dan *Nypa fruticans* di mana 12 spesis adalah bakau benar, 6 spesis bakau tak benar dan 2 spesis bakau bersekutu. Kaedah foto udara ini dapat menentukan ketepatan 84.5%. Keluasan kawasan kajian ini adalah meliputi kawasan seluas 100.6 hektar di mana 15.2 hektar adalah kawasan *Rhizophora-Avicennia*, 17.2 hektar adalah kawasan *Avicennia-Sonneratia* dan 48.4 hektar adalah kawasan *Nypa fruticans*. Spesis *Rhizophora*, *Avicennia* dan *Nypa fruticans* merupakan spesis paling dominan yang terdapat di kawasan ini iaitu meliputi 63.98% dengan kepadatan dirian 2 660 pokok/hektar. Kawasan muara yang ditutup pada tahun 1995 menjadikan kawasan ini muara yang tertutup. Keadaan ini menyebabkan kadar pemendapan sedimen setiap tahun adalah tinggi iaitu kira-kira 2.31 cm/tahun. Jenis tanah di kawasan ini adalah didominasi oleh tanah jenis selut iaitu meliputi 56.52% sementara 30.15% adalah pasir dan 13.06% adalah liat. Secara keseluruhannya dapat disimpulkan bahawa kaedah foto udara yang digunakan dapat mengenalpasti dalam pengelasan, spesis dan pemetaan taburan hutan paya bakau bagi tujuan pemuliharaan serta pengurusan yang lebih terancang dimasa hadapan. Penggunaan teknologi terkini dan skala yang lebih besar adalah disarankan agar mendapat keputusan yang lebih baik.