

DISTRIBUTION OF POLLEN IN SEDIMENT UNDER *Sonneratia* s.p  
STAND STRUCTURE AT PULAU TIMUN, KELANTAN DELTA, TUMPAT

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FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
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**DISTRIBUTION OF POLLEN IN SEDIMENT UNDER *Sonneratia* s.p STAND  
STRUCTURE AT PULAU TIMUN, KELANTAN DELTA, TUMPAT**

**By**

**Rafidah Binti Rosli**

**Research Report submitted in partial fulfillment of  
The Requirement for the degree of  
Bachelor of Science (Marine Science)**

**Department of Marine Science  
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DEPARTMENT OF MARINE SCIENCE  
 FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
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**DECLARATION AND VERIFICATION  
 FINAL YEAR RESEARCH PROJECT**

It is hereby declared and verified that this research report entitled:

**Distribution of Pollen in Sediment under *Sonneratia* s.p Stand Structure at Pulau Timun, Kelantan Delta, Tumpat by Rafidah binti Rosli, Matric No. UK16785** have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the **Degree of Science (Marine Science)**, Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu.

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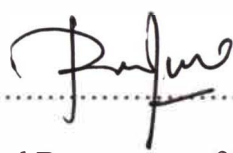
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## ABSTRACT

The lower reaches of River Kelantan formed a vast delta (1200ha) consisting a bay, mangrove and estuarine environments on the north-east coast of peninsular Malaysia. The mangroves at the delta in Tumpat were composed of *Nypa fruticans*, *Sonneratia caseolaris*, *Avicennia alba*, *Rhizophora apiculata* and *Rhizophora mucronata*. The sampling has been done firstly by set up the plot under *Sonneratia* sp. mangrove stand. Within the plot, the sediment has been collected by using D-core to the depth of 50cm. The sediments then been divided into five layers. Then it's been sieved under different mesh sizes by using vacuum pump. The pollen than have been observed and counted. From the study, it shows that the core gives the same sediment texture which is silty loam. Silty loam is soil material that contains 50% or more silt and 12 to 27% clay, or 50 to 80% and less than 12% clay. For the pollen species distribution, even though the studies were done under *Sonneratia* sp stand structure, but there are other species of pollen dominated the study area. It shows that the spore and *Acrostichum* sp. is easy to found at each layer of sediment. The percentages of spore found in core are 33.95%, *Ahrostichum* sp. is 33.88% and *Sonneratia* sp. is 14.86%. For the basic structure between life pollen and pollen within sediment, they don't have any difference between these two difference pollen. Their aperture, sculpture and shape just the same for each species.



## ABSTRAK

Sungai Kelantan membentuk delta yang luas (1200ha) termasuk pantai, hutan paya laut dan kawasan muara di Persisiran Timur Laut Semenanjung Malaysia. Hutan paya laut di kawasan delta yang terletak di Tumpat ini terdiri daripada *Nypa fruticans*, *Sonneratia caseolaris*, *Acennia alba*, *Rhizophora apiculata* dan *Rhizophora mucronata*. Kajian pertamanya dilakukan dengan menetapkan plot di bawah struktur *Sonneratia* sp. Sedimen dikumpul dengan menggunakan *D-core* dengan kedalaman 50cm. Sedimen tersebut kemudiannya dibahagikan kepada lima lapisan dimana setiap lapisan kemudiannya akan ditapis di bawah penapis yang berbeza saiz mesh dengan menggunakan pam vakum. Kemudian, debunga (pollen) yang diperolehi dikenalpasti dan dihitungkan. Hasil kajian yang dilakukan, menunjukkan bahawa keseluruhan sedimen adalah sama iaitu daripada tanah liat berlumpur. Bagi taburan spesies debunga di dalam sedimen pula menunjukkan bahawa walau pun kajian di jalankan di bawah struktur *Sonneratia* sp., namun terdapat spesies lain yang mendominasi sedimen di kawasan tersebut. Spora dan *Acrostichum* sp. lebih mudah ditemui di setiap lapisan sedimen. Peratus spora yang ditemui ialah 33.95%, *Acrostichum* sp. 33.88% dan *Sonneratia* sp. adalah 14.86. Bagi struktur asas debunga pula, didapati tiada perbezaan ketara antara debunga hidup dan debunga di dalam sedimen. Kedua-duanya menunjukkan saiz aperture, sculpture dan bentuk yang agak sama bagi setiap spesies.