

SEDIMENT DISTRIBUTION AND SUBSURFACE MAPPING
OF COTUWATUMBAH, COTAW, TERENGGANU

RESEARCH REPORT

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Wetlands, Setiu, Terengganu / Mohd Zaini Mustapa.

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SEDIMENT DISTRIBUTION AND SUBSURFACE MAPPING OF SETIU
WETLANDS, SETIU, TERENGGANU

By

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Research report submitted in partial fulfillment of
the requirement for the degree of
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Department of Marine Science
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Universiti Malaysia Terengganu
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**JABATAN SAINS MARIN
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PROJEK PENYELIDIKAN I DAN II**

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Sediment Distribution and Subsurface Mapping of Setiu Wetlands, Setiu, Terengganu oleh **Mohd Zaini Bin Mustapa**, No. Matrik: **UK 10017** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah **Sarjana Muda Sains (Sains Samudera)**, Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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Dedication

This thesis is dedicated to Mēk and Āyah, abe kee, abe mat, kak ra and to my dearest person. Thank for your support and guidance.

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LIST OF ABBREVIATIONS/ SYMBOLS

Ø	Phi
km	Kilometre
m	Meter
cm	Centimetre
mm	Millimetre
µm	Micrometer
g	Gram
3D	Three-dimensional
ha	Hectare
%	Percentage
°	Degree
'	Minute
N	North (Utara)
E	East (Timur)
C	Celsius
GPS	Global Positioning System
ppt	Part per thousand
kHz	kilo-Hertz

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ABSTRAK

Kajian untuk menentukan taburan dan ciri-ciri saiz sedimen telah dijalankan di sekitar kawasan lagun dan pantai Setiu Wetlands. Sampel sedimen telah diambil dari 39 stesen di kawasan lagun dan 8 stesen di kawasan pantai. Julat saiz min adalah di antara 0.06 hingga 2.52 ϕ dan 2.12 hingga 2.69 ϕ bagi kedua-dua enapan kawasan lagun dan dasar pantai masing-masing. Keseluruhannya, sedimen di kawasan kajian kebanyakannya terdiri daripada partikel kasar hingga halus. Sebahagian besar daripada tersebut mempunyai kepencongan negatif. Ini menunjukkan bahawa kawasan kajian dipengaruhi oleh tindakan ombak dan arus yang kuat. Kajian ini yang juga menggabungkan survei geofizikal telah dijalankan di sekitar kawasan pantai. Teknik seismik profil sub-dasar beresolusi tinggi adalah merupakan kaedah piawai yang digunakan untuk memetakan ciri-ciri geologi dan mengesan struktur di bawah permukaan dasar laut. Data yang diperoleh daripada rekod seismik telah digunakan untuk mentafsirkan pemantul-pemantul seismik. Pentafsiran ini melibatkan tiga pemantul (lapisan) utama dan mempunyai taburan rupa bentuk yang seragam di semua stesen. Lapisan pertama merupakan permukaan dasar yang terdiri daripada pasir halus, manakala lapisan kedua kebanyakannya terdiri daripada pasir sederhana kasar. Lapisan ketiga boleh ditakrifkan sebagai lapisan berganda. Informasi geologikal yang beresolusi tinggi mengenai kawasan kajian telah dapat disediakan melalui survei yang dijalankan. Diharapkan sistem yang diguna pakai ini dapat menjadi salah satu cara yang efektif untuk menggambarkan struktur sub-dasar laut dan boleh digunakan dalam kajian sedimen dan penerokaan sumber marin di peringkat yang lebih tinggi.

ABSTRACT

Study was carried out around the lagoon and coastal area of Setiu Wetlands in order to determine the general characteristics and grain-size distribution. Sediment samples were collected from 39 stations of lagoon area and 8 stations of coastal area. The mean size ranged between 0.06 to 2.52 ϕ and 2.12 to 2.69 ϕ for both the lagoon and coastal sea-bottom sediments respectively. Generally, the sediments in the study area consist mostly of coarse to fine particles. The major portions of the sediment are negatively skewed. This indicates that the study area is under the influence of rather strong wave and current action. This study which also combined with the geophysical survey was conducted near the coastal zone of the study area. High resolution seismic sub-bottom profiling technique is the standard method employed to map geological features and locate structures below the surface of the seafloor. Data obtained from seismic records were used to interpret the seismic reflectors. The seismic interpretation considered three main reflectors (layers) and distributed with uniform pattern in all stations. The first layer is the seabed consists of fine sand, while the second layer consists mainly of medium sand. The third layer can be defined as the seabed multiple. This survey provided geological information with high horizontal and vertical resolution of the study area. By using this system hopefully, could be an effective way to image the marine subsurface structures and can be used in the higher degrees of sedimentary research and marine resource exploration.