

THE SURVIVAL AND GROWTH RATE OF DIFFERENT SPECIES OF  
*Acropora* CORAL BY TRANSPLANTATION PROCESS AT  
DIFFERENT DEPTH AT BIDONG ISLAND WATER

NUR HIDAYAH BINTI HUSEIN

FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU

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THE SURVIVAL AND GROWTH RATE OF DIFFERENT SPECIES OF *Acropora*  
CORAL BY TRANSPLANTATION PROCESS AT DIFFERENT DEPTH AT BIDONG  
ISLAND WATER

BY

NUR HIDAYAH BINTI HUSEIN

Research report submitted in partially fulfillment of  
the requirement for the degree of  
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**DEPARTMENT OF MARINE SCIENCE  
 FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
 UNIVERSITI MALAYSIA TERENGGANU**

**DECLARATION AND VERIFICATION REPORT  
 FINAL YEAR RESEARCH PROJECT**

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

**The survival and growth rate of different species of *Acropora* coral by transplantation process at different depth at Bidong Island water by Nur Hidayah Binti Husein Matric No. UK16996** have been examined and all errors identified have been corrected. This report submitted to the Department of Marine Science and as a partial fulfillment toward obtaining the Degree of Marine Biology, Faculty of Maritime Study and Marine Science, University Malaysia Terengganu, Terengganu, Malaysia.

Verified by:

  
 .....

Principal Supervisor

Name: Prof Madya Dr. Mohamed Kamil bin Abdul Rashid

Official stamp:   
 PROF. MADYA DR. MOHAMED KAMIL ABDUL RASHID  
 Timbalan Dekan (Siswazah & Penyelidikan)  
 Fakulti Pengajian Maritim dan Sains Marin  
 Universiti Malaysia Terengganu (UMT)  
 21030 Kuala Terengganu.

Date: 24.4.2011

Second Supervisor

Name:

Official stamp:

Date:.....

  
 .....

Head of Department of Marine Science

Name: Dr. Razak bin Zakariya

Official stamp:

Date: 29/4/11

**DR. RAZAK ZAKARIYA**  
 ketua Jabatan Sains Marin  
 Fakulti Pengajian Maritim dan Sains Marin  
 Universiti Malaysia Terengganu  
 (UMT)

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## ABSTRACT

This study was done in order to analyze and determine the survival and growth rate of transplant coral of two species of *Acropora* corals which were *Acropora cervicornis* and *Acropora elseyi* at three different depths. The transplant coral were monitored over 7 months in a reef in the Bidong Island started from July 2010 until February 2011. Transplants were in variety of sizes of coral (range from 6 cm until 16 cm) and deployed at three depths (3m, 5m and 7m). The measurement of coral by using vernier caliper was taken in three times in July 2010, October 2010 and February 2011. The water physical parameter was taken by using YSI Hydrometer/ Hydrolab meter. Specimens at the shallow depth had more rapid growth than the deeper ones. Mortality was equal to both species and the depth. A growth rate of coral transplant was decreased with depth but the initial growth rate was higher for the first three month. The *Acropora cervicornis* growth rate was 0.451 cm month<sup>-1</sup> in 3 meter depth, 0.481 cm month<sup>-1</sup> in 5 meter depth and 0.457 cm month<sup>-1</sup> in 7 meter depth. The average growth rate was not in the consistent value may cause by the coming Northeast Monsoon season and others factors. The *Acropora elseyi* growth rate was 0.513 cm month<sup>-1</sup> in 3 meter depth, 0.472 cm month<sup>-1</sup> in 5 meter depth and 0.46 cm month<sup>-1</sup> in 7 meter depth. This result showed the exponentially decreased of growth rate toward depths.

## ABSTRAK

Projek ini dilakukan untuk menganalisis dan menentukan tahap kelangsungan hidup dan pertumbuhan karang transplantasi dari dua spesies karang *Acropora* iaitu *Acropora cervicornis* dan *Acropora elseyi* pada tiga kedalaman yang berbeza. Karang transplantasi dipantau lebih kurang 7 bulan di perairan di Pulau Bidong bermula dari bulan Julai 2010 hingga Februari 2011. Transplantasi adalah dalam pelbagai saiz karang (berkisar antara 6 cm hingga 16 cm) dan dilakukan di tiga kedalaman (3m, 5m dan 7m). Pengukuran karang dengan menggunakan carliper sorong diambil dalam tiga kali pada bulan Julai 2010, Oktober 2010 dan Februari 2011. Parameter fisiologi air diambil dengan menggunakan YSI Hydrometer / Hydrolab meter. Spesimen di kedalaman cetek mempunyai pertumbuhan lebih cepat daripada yang lebih dalam. Kematian adalah sama dari segi spesies dan kedalaman. Kadar pertumbuhan transplantasi karang menurun dengan kedalaman tetapi kadar pertumbuhan awal lebih tinggi untuk tempoh tiga bulan pertama. *Acropora cervicornis* mempunyai kadar pertumbuhan  $0.451 \text{ cm bulan}^{-1}$  di kedalaman 3 meter,  $0.481 \text{ cm bulan}^{-1}$  di kedalaman 5 meter dan  $0.457 \text{ cm bulan}^{-1}$  di kedalaman 7 meter. Kadar pertumbuhan tidak mempunyai nilai konsisten adalah disebabkan oleh musim monsun timur laut dan faktor lain. The *Acropora elseyi* mempunyai kadar pertumbuhan  $0.513 \text{ cm bulan}^{-1}$  di kedalaman 3 meter,  $0.472 \text{ cm bulan}^{-1}$  di kedalaman 5 meter dan  $0.46 \text{ cm bulan}^{-1}$  di kedalaman 7 meter. Keputusan ini menunjukkan penurunan secara eksponen laju pertumbuhan terhadap kedalaman.