

COMPOSITION AND DISTRIBUTION OF
CORALS AND MACROALGAE IN PULAU
BIDONG AND THE ISLAND'S PROPOSED
MANAGEMENT PLAN

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Abstract of thesis presented to the Senate of Kolej Universiti Sains dan Teknologi
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***"I live for those who love me,
for those who know me true;
For the heaven that smiles above me,
and awaits my spirit too.
For the cause that lacks assistance,
for the wrong that needs resistance,
For the future in the distance,
and the good that I can do."***

- G.L. Banks, *My Aim*

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Pulau Bidong is a small island off the coast of Terengganu, which has been subjected to unregulated development in the past, but it is presently not inhabited. Plans are underway to develop the island as an ecotourism destination and also a stopover for fishermen. Therefore, the objectives of this study were to determine the distribution and abundance of corals, macroalgae and other benthic life forms in the coral reefs, and propose a management plan for the island based on the present and planned activities for the island.

The Line Intercept Transect and belt transect methods were used to assess the health of the coral reefs at six stations around Pulau Bidong and one station off Pulau Karah nearby. Overall, the coral cover at Pulau Bidong ranged from fair to excellent, with an average of 46.4% (fair). The two major types of corals found were branching corals of the Family Acroporidae (18.9%), and massive corals (16.8%) of the Families Poritidae and Faviidae. There was also a large proportion of coral rubble covered with algae (24.4%). The major types of invertebrates found were giant clams (*Tridacna* spp), and holothurians (*Holothuria atra*, *H. edulis*, *Stichopus chloronotus*).

coral reef organisms.

QH 95.8

all 76...
QH 77 - 77

coral reef plantsⁱⁱⁱ

coral reef conservation

coral reef animals.

QH 77 - 77

coral reef ecology -

QH 54.5 ✓
✓ coral reef ecology

A total of 24 species of macroalgae were identified. The majority belonging to the Division Rhodophyta (10 species), followed by Division Chlorophyta (nine species), and Division Heterokontophyta, Class Phaeophyceae (five species). The most species were found at Pasir China (16 species) off Pulau Bidong, followed by the station off Pulau Karah (10 species) and Pasir Tenggara (seven species), which is also off Pulau Bidong. Macroalgae from the Division Chlorophyta was recorded mostly at Pasir China (seven species), while Rhodophyta dominated Pulau Karah (five species). *Amphiroa zonata*, found at Pulau Karah, was previously not found in Malaysia and Singapore. *Asparopsis taxiformis* was found only at Station 4 (Teluk Gua).

Furthermore, a total of 20 fish species from 11 families were captured during samplings around the islands of Bidong and Karah using hooks and lines and portable traps. Most of them, such as *Thalassoma lunare*, *Parapeneus barberinus*, *Upeneus bensasi*, *Plectropomus leopardus*, *Promicrops lanceolatus*, *Cephalopholis* spp., *Epinephelus* spp. and *Scarus* spp., were demersal fish, depending on coral reefs for food and shelter.

The Chlorophyll *a* values of Pulau Bidong and Pulau Karah were in the normal range for tropical seas (not exceeding 1.0 mg/m³) and was found highest in the middle water column of Station 7, East Bidong (0.310 mg/m³), and lowest (0.045 mg/m³) in the surface water column of Pulau Karah. The mean value for all sampling sites and water columns was 0.130 mg/m³. The ranges for temperature (26.9 °C to 30.7 °C), salinity (30.2 ppt to 33.4 ppt) and Secchi disc (13 m to 20 m) were also in the normal range for the South China Sea.

A management plan was formulated using all the data acquired during the project duration. Based on the physical characteristics of Pulau Bidong, fish-pen culture is not suitable in Pulau Bidong, but seaweed rehabilitation and culture is recommended because it is more environmentally friendly. Also, due to its limited carrying capacity, Pulau Bidong is more suitable for camping and day trips, but not as an island resort. Old infrastructures should be renovated and reused, so that new structures are not needed.