

IMPORTED FRESH WATER IMPACT ON THE STRUCTURE OF
CORAL COMMUNITIES IN REDANG ISLAND

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**IMPORTED FRESH WATER IMPACT ON THE STRUCTURE OF CORAL
COMMUNITIES IN REDANG ISLAND**

By

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ABSTRACT

Since the 16th August 1998, an average of 115,000 gallons per day of fresh water was supplied to Redang Island from the Setiu River in mainland Terengganu. This study showed that this imported of fresh water had minimal impact on the coral reefs near Redang Estuary to date but changes in the water quality of the estuary, especially at Teluk Pandan (S4), were detected.

The tourist industry is the main factor, which controls the amount of imported fresh water consumption. The water quality of Teluk Siang and Tanjung Telaga Batu are found to be the same as before the installations of water pipe line. Mixing of fresh water and seawater in the estuary, especially at Teluk Pandan, have decreased water salinity, temperature and pH.

There were a total of 105 species of hard corals from 12 families documented in this study. The respective study sites of Teluk Siang and Tanjung Telaga Batu were classified as leeward reefs, whereas Chagar Hutang as a windward reefs while Pulau Lima as a seaward reefs. The average of live corals coverage in study sites is 33.656 ± 7.75 %. In reefs recovering from high sedimentation, encrusting, massive and especially branching corals (*Acropora formosa*, *A. yongei* and *A. sp. (C2)*) are more successful and dominant.

Although the environmental conditions have become better, some impact still exists. Local disturbances as well as alteration of salinity, temperature and pH of seawater are the new major factors. The authority and the people itself should take proper action in protecting and conserving the reef before it is too late.

ABSTRAK

Semenjak 16 hb Ogos 1998, sejumlah 115,000 galon air tawar sehari disalur daripada Sungai Setiu, tanah besar Terengganu ke Pulau Redang. Kajian ini menunjukkan bahawa buat sekarang, bekalan air telah memberi kesan yang minimal ke atas terumbu karang sekitar Kuala Redang, tetapi, perubahan kualiti air di kuala, terutamanya di Teluk Pandan telah dikesan.

Aktiviti pelancongan merupakan faktor utama yang mempengaruhi jumlah penggunaan bekalan air. Kualiti air laut di Teluk Siang dan Tanjung Telaga Batu adalah sama sebelum dan selepas pemasangan air paip. Percampuran antara air laut dan air sungai di kuala, terutamanya di Teluk Pandan, telah menunjukkan penurunan kualiti air dalam salinity, suhu dan pH.

Sebanyak 105 spesis daripada 12 famili karang Scleractinians telah ditemui. Pengelasan ke atas terumbu karang telah dibuat, di mana Teluk Siang dan Tanjung Telaga Batu ialah "leeward reefs", Chagar Hutang ialah "windward reefs" manakala Pulau Lima ialah "seaward reefs". Purata karang hidup yang terdapat dalam kawasan kajian ialah $33.656 \pm 7.75\%$. Dalam proses pemulihan daripada pengaruh kekeruhan, taburan karang jenis "encrusting", "massive" dan terutamanya "branching" (*Acropora formosa*, *A. yongei* and *A. sp. (C2)*) adalah paling banyak dan utama.

Walaupun keadaan persekitaran air laut telah beransur baik, tetapi sesetengah pengaruh masih wujud. Di mana pengaruh setempat dan perubahan kemasinan, suhu serta pH air ialah tiga faktor baru yang penting. Pihak yang berkuasa dan penduduknya patut mengambil tindakan yang sewajarnya dalam melindungi dan memulihara terumbu karang sebelum terlambat.