

A COMPARATIVE STUDY OF DIVE SITES AND THE IMPACT BY DIVERS  
AT THE CORAL REEF OF PULAU REDANG

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BY

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## ABSTRACT

A comparative study of dive sites at Pulau Redang showed that the coral reefs were still in good condition with overall live coral cover averaging  $61.29 \pm 9.35\%$ . Coral bleaching events which occurred during April and June caused death to some corals. This resulted in macroalgal blooms in some dive sites with Che Esa being the most seriously affected. Mak Cantik and Che Esa were the two most popular dive sites due to the abundance of marine life, water clarity, shallow depth and strategic location. Divers made moderate contact to the reef substrate where 56% of divers have at least one contact and 8% of them caused discernible damage to the reef. Fin kick (62%) was the most common type of contact by divers to the reef and it was related to the level of experience of divers. The most vulnerable type of coral contacted by divers were the non-Acropora encrusting and soft corals. Frequency of contact by divers was not related to the reef composition and type of coral growth form. Contact with reef was also found not related to divers' gender, experience, dive qualification and period since their last dive. However, the maximum upper limit of contact by divers with the reef decline with increasing experience of divers. Dive operators were not aware on the impact by divers. Practices such as eliminating the use of gloves and compulsory check-out dive can help minimize the impact by divers to the reef. The most heavily dive area in Redang was Mak Cantik with 1,753 dive per year. Diving activities in Redang have not exceed the threshold carrying capacity of 5000-6000 dives per site per year as proposed by Hawkins and Roberts (1997).

## ABSTRAK

Kajian pada lokasi menyelam di Pulau Redang menunjukkan batu karang masih dalam keadaan yang baik di mana secara keseluruhan liputan purata batu karang hidup adalah  $61.29 \pm 9.35\%$ . Fenomena “bleaching” batu karang yang berlaku antara bulan April and Jun telah menyebabkan kematian sebahagian batu karang. Akibat daripada itu, penambahan populasi makroalgae berlaku di lokasi menyelam dan Che Esa merupakan kawasan yang paling serius dijejas oleh keadaan ini. Mak Cantik dan Che Esa adalah lokasi menyelam yang paling popular kerana kaya dengan pelbagai hidupan laut, kejernihan air, kedalaman yang sederhana dan lokasi yang strategik. Penyelam membuat sentuhan sederhana dengan batu karang di mana 56% daripada penyelam membuat sekurang-kurangnya satu sentuhan dengan batu karang dan 8% daripada mereka telah menyebabkan kerosakan kepada batu karang. Sentuhan dengan fin (62%) merupakan cara berhubung yang paling biasa dan sentuhan dengan fin adalah didapati berkait dengan pengalaman penyelam. Batu karang yang paling biasa disentuh oleh penyelam adalah jenis “non-Acropora encrusting” dan “soft corals”. Kekerapan sentuhan oleh penyelam adalah tidak berkaitan dengan komposisi batu karang dan jenis pertumbuhan batu karang. Sentuhan ke atas batu karang juga tidak berkait dengan jantina, pengalaman, kualifikasi menyelam dan tempoh tidak menyelam. Namun didapati had atas maxima sentuhan oleh penyelam dengan batu karang mengurangkan dengan peningkatan pengalaman penyelam. Operator menyelam tidak mengambil berat tentang kesan oleh penyelam kepada batu karang. Penggunaan sarung tangan dan mengadakan “check-out dive” dapat mengurangkan kesan penyelam kepada batu karang. Mak Cantik merupakan lokasi menyelam yang paling kerap dikunjungi dengan sebanyak 1,753

selaman dalam satu tahun. Aktiviti menyelam di Redang masih lagi tidak melebihi had keupayaan membawa iaitu sebanyak 5000-6000 selaman per lokasi per tahun sebagaimana yang dicadangkan oleh Hawkins dan Roberts (1997).