

NORMAN REEF ENVIRONMENTAL MONITORING PROJECT 1987-88

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SUMMARY

The establishment of a tourist destination pontoon serviced by 300 seat international catamarans on Norman Reef to the NE of Cairns prompted the GBRMPA to require an on-going biological monitoring program to be implemented. The aims of the program were to attempt to establish the effect such intensive tourist operations were having on the reef community; specifically on the percentage cover of encrusting organisms, the height of coral colonies and the density of selected fish species.

Surveys of corals, other encrusting organisms and fishes were made at 4 sites on Norman Reef between March 1987 and June 1988. Sites were: adjacent to the Great Adventures pontoon; in the area of Great Adventures semi-submersible operation; adjacent to the Deep Sea Divers Den main mooring; and at an undisturbed control area. A total of 35 permanent 20m line transects were used to measure the cover of corals and other encrusting organisms. Measures of coral height were also made at each site. Fishes were counted along 5 haphazard 50 x 20m transects at each site.

Corals were only affected directly by the pontoon, either by shading or mooring chain abrasion. This affected an area of about 365 square metres of potential coral habitat (hard substratum beneath the pontoon), and resulted in the loss of 32 square metres of live hard coral (a 4.3% reduction against the 4.6% increase in both control sites). As a result coral height was significantly reduced at this site, but the mean height reduction per coral colony was only 6.4cm.

Diver activities did not have any detectable effect either on coral cover or coral height at any of the potentially affected sites in the time scale of this survey.

This survey indicated that operating semi-submersibles occasionally touch the reef; there was a 2m long gouge in the coral basement across one of the semi-sub transects, and an approximately 50cm high knob of coral missing from the end of another, that were both almost certainly the result of semi-sub bumps. However, both these observed incidents resulted in negligible coral damage and there were no significant reductions either in coral cover or coral heights in the semi-sub transects.

There were no significant effects detected on the abundance of any of the other groups of encrusting organisms, including macroalgae, turfing algae, sponges and soft corals.

Fish were obviously affected by tourist activities with small numbers of several species attracted to the activity sites, especially the pontoon site. In the final survey there were moderately high numbers of 6 species in the immediate vicinity of the pontoon that were either absent or uncommon at the other 2 sites, probably due to the daily fish feeding activities made from the pontoon. There were no detectable reductions in any of the species counted, although there were indications that chaetodontids had decreased in numbers immediately beneath the pontoon, probably as a result of the reduction in coral cover.

With the exception of a few small patches immediately beneath the pontoon there were no deleterious effects on aesthetics in the reef communities of the survey sites during the 12 months of this survey. Norman Reef is aesthetically very spectacular, mainly

as a result of rich coral communities and consistently clear water. Any degradation of the coral communities would have a noticeable effect on aesthetics but this has not occurred to date

It is recommended the the Norman Reef monitoring program be continued and expanded because of increased use of the reef by tourist operators and to establish the longer term effects of such intensive albeit non-exploitative use.