

## SUMMARY

The aims of this study were to investigate the effects of sediment run-off caused by the construction in late 1984 of a coastal road through rainforest catchments on the coral communities of the Cape Tribulation fringing reefs. In the absence of any pre-construction baseline we relied on surveys of two similar control locations north and south of the potential impact location adjacent to the new road catchment to determine the significance of any changes that occurred. The southern control was adjacent to the long-established portion of the road south of Cape Tribulation and the northern control adjacent to a small undisturbed catchment.

Depth stratification in the coral communities was measured at several sites and it was decided to confine the surveys to the expanse *Montipora*/clumping *Acropora* assemblage that was dominant between 2-4 m below MSL. In deeper water a suite of more massive corals such as *Galaxea* and *Hydnophora* was present but this depth strata was not represented at many of the sites and was excluded from the annual surveys.

Four sites were established in each location and five permanent 20 m intersect line transects set up to survey coral communities at each site in 1985. These transects were resurveyed prior to the wet season each year from 1985 to 1988. Post wet season surveys proved to be impossible due to SE weather conditions and very poor water visibility.

At the time of the initial survey there was no evidence of coral death caused by sediment run-off during the 1984/85 wet season in spite of evidence from Bonham (1985) of extensive sediment run-off into the coastal environment from the new road site. Coral cover was high in all three locations with a grand mean cover of just over 50%. A small cyclonic episode in April 1986 caused an overall 23% reduction in coral cover to a grand mean of 39% in 1986 and there was a further slight reduction to 37.5% caused by a widespread coral bleaching episode in February 1987. Both these disturbances caused consistent reductions across all three locations. No disturbances occurred in 1988 and coral cover increased by 33% back to the initial levels of about 50% in all locations.

Five haphazard transects surveyed concurrently at each site showed a less distinct pattern but were basically similar. Haphazard transects were also surveyed annually at five shallow reef sites in the new road location where silt laden water had been observed running directly across the fringing reef during a flight over the area in February 1985. No significant temporal changes were recorded at these sites between 1985 and 1988.

Monitoring of ten large coral colonies at each site suggested that these larger colonies, that may not have been adequately sampled using the line transects, were not adversely affected during the three years of this survey.

Fish communities on these fringing reefs are considerably different from those on offshore reefs. There is a relatively low diversity of reef fishes in this region with low numbers of herbivores and low numbers of the larger piscivores such as coral trout. There is a suite of species that appear to be confined to the fringing reef environment, and a further group of species that are only found on offshore reefs to the south of the

Whitsunday Region. There were no changes detected in the fish communities of the new road location during this study that were not also evident in the control locations

This study suggests that there has been no effect on the coral communities of the Cape Tribulation fringing reefs that can be attributed to the run-off of sediments from the new road location. It is our contention that these fringing reefs are healthy, supporting a rich growth of a wide variety of coral species, and able to cope with acute disturbances such as cyclones and coral bleaching episodes with minimal disruption.

We suggest that permanent monitoring sites be established on a variety of fringing reefs to look at long term changes in coral communities that may be due to man-induced changes to the coastal environment in an attempt to test the widely held perception that many fringing reefs are either degraded or suffering chronic siltation stress.