

**GREAT BARRIER REEF MARINE PARK AUTHORITY
TECHNICAL MEMORANDUM GBRMPA-TM-14**

**SEDIMENTARY FRAMEWORK OF
MAINLAND FRINGING REEF DEVELOPMENT,
CAPE TRIBULATION AREA**

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SUMMARY

Mainland fringing reefs with a diverse coral fauna have developed in the Cape Tribulation area primarily upon coastal sediment bodies such as beach shoals and creek mouth bars. Growth on steep rocky headlands is minor. The reefs have extensive sandy beaches to landward, and an irregular outer margin. Typically there is a raised platform of dead reef along the outer edge of the reef, and dead coral columns lie buried under the reef flat. Live coral growth is restricted to the outer reef slope. Seaward of the reefs is a narrow wedge of muddy, terrigenous sediment, which thins offshore.

Beach, reef and inner shelf sediments all contain 50% terrigenous material, indicating the reefs have always grown under conditions of heavy terrigenous influx. The relatively shallow lower limit of coral growth (ca 6m below AHD) is typical of reef growth in turbid waters, where decreased light levels inhibit coral growth.

Radiocarbon dating of material from surveyed sites confirms the age of the fossil coral columns as 5680-6110 ybp, indicating that they grew during the late post-glacial sea-level high (ca 5500-6500 ybp). The former thriving reef-flat was killed by a post-5500 ybp sea-level fall of ca 1 m.

Although this study has not assessed the community structure of the fringing reefs, nor whether changes are presently occurring, it is clear the corals present today on the fore-reef slope have always lived under heavy terrigenous influence, and that the fossil reef-flat can be explained as due to the mid-Holocene fall in sea-level.

A medium term programme is required to record sediment loading and coral community structure, and to establish the environmental vulnerability of these reefs.

KEYWORDS: Cape Tribulation, fringing reef, siltation, sea-level high

Technical memoranda are of a preliminary nature, and represent the views of the author/s, not necessarily those of the Great Barrier Reef Marine Park Authority.

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