Murdoch Point-Cape Flattery QLD03.05.02

Regional Setting

The dominant regional processes influencing coastal geomorphology in this region are the wet tropics to humid sub-tropical climate, south-east trade winds, mega-meso tides, strong tidal currents, low to moderate south-east seas (local wind-waves), the dominantly terrigenous sediments with interrupted northerly longshore sediment transport (low-moderate), the El Nino Southern Oscillation (driving sea-level variability, tropical cyclone frequency, beach erosion/accretion cycles); and the Madden-Julian Oscillation (driving weather patterns including monsoons and tropical cyclones).

Regional hazards or processes driving large scale rapid coastal changes include: tropical cyclones, storm surges, river flooding, and variable longshore sand transport.

This compartment extends from Murdoch Point to Cape Flattery.

Justification of Sensitivity

The sensitivity rating is a 3:

- There is evidence of erosion and extensive blowouts but, given existing extensive reserves of silica sand dunefields, this is unlikely to be a major erosional issue over the next 100 years.
- To the north, multiple recurved spits are fed by sediments from the Jeannie River (Short 2006), delivering quartz sand to the river mouth shoals, which are then reworked northward by both the waves and flood tide currents. Sand is actively moving northward, including extensive subtidal ridges.
- Further south, beaches are supplied with sand from the Cape Flattery dunefield.

Other comments

- Jeannie River currently delivers around 240 kt/yr of suspended sediment, which is roughly 3.2 times what it would be under natural vegetation and runoff conditions (see Brodie et al 2011), although bedload is only likely to comprise ~10% of the total.
- Impacts of cyclonic events are likely to be more severe, with longer beach recovery times.
- The northern end of the compartment appears to be actively leaking sediment to the north along migrating sand spits.

Confidence in sources

Medium confidence in sources.

Additional Information (references and links)

Belperio, A.P., 1978, An inner shelf sedimentation model for the Townsville region, Great Barrier Reef: Marine Geology, 31, 90-106.

GHD, 2012, Coastal hazard adaption strategy for Townsville City Council, 76 pp.

Hopley, D., and Murtha, G.G., 1975, The Quaternary Deposits of the Townsville Coastal Plain: Townsville, Department of Geography, James Cook University.

Hopley, D., 1975, An introduction to the geomorphology of the Townsville region, Department of Geography, James Cook University.

Hopley, D., 1978, Geographical Studies of the Townsvile area, Monograph Series Occasional Paper 2: Townsville, Department of Geography, James Cook University, p. 143.

Hopley, D., 1978, An introduction to the geomorphology of the region (Townville), in Hopley, D., ed., Geographical studies of the Townsville area: Townsville, Department of geography, James Cook University, p. 37-42.

Pringle, A.W., 1996, History, geomorphological problems and effects of dredging in Cleveland Bay, Queensland: Australian Geographical Studies, v. 34, p. 58-80.

Short, A D, 2000, *Beaches of the Queensland Coast: Cooktown to Coolangatta.* Sydney University Press, Sydney, 360 pp.

https://www.ehp.qld.gov.au/coastalplan/coastalhazards.html