

GREAT BARRIER ISLAND REPORTING AREA

Great Barrier Local Board

JULY 2014

STATE OF AUCKLAND MARINE FACTSHEET



GREAT BARRIER ISLAND

RIMU is working with research company EcoGIS to map rocky reefs in the Hauraki Gulf using satellite imaging technology. Currently, there is no large-scale mapping of intertidal (area exposed to air between low and high tide levels) and subtidal (underwater) rocky reefs in New Zealand, meaning we have no detailed knowledge of how much of a particular subtidal habitat exists or how often it changes. RIMU uses multispectral analysis of satellite imagery to identify both physical habitats (reefs, sand and mud) and biological habitats (kelp forest, urchin barrens, algae areas) on Hauraki Gulf rocky reefs down to a depth of 15 metres (limited by light penetration). So far, results from this work show us that for Great Barrier Island there are approximately 24 km² of rocky reef. Of this total, 74% (or 18 km²) is subtidal while the remaining 26% (or 6 km²) is intertidal. The coverage of large brown seaweeds found on the subtidal reefs was estimated to be 72% (or 13 km²), making this the dominant habitat found on these subtidal reefs. Subtidal reefs at Great Barrier Island had 2% (or 0.3 km²) classed as having urchin barrens, while other small areas were classed as either bare rock, or had "turving alga" assemblages present.

Recently we completed a research program to assess whether elevated nutrients were contributing to the presence of a green algae (*Microdictyon umbilicatum*) washing up on the beaches of Tryphena Harbour. The program ran from October 2012 to February 2014 using a range of techniques including: underwater video, water and seaweed sampling, and nutrient isotope analysis (a type of nutrient fingerprinting).

Nutrient levels of the surrounding oceanic waters are similar between Tryphena harbour, adjacent Great Barrier Island sites and

Bathing beach water quality was tested at three Great Barrier Island beaches during the 2013/14 summer period. Across all three beaches, 57 tests were completed and 93 per cent of these passed the recreational bacteria guidelines.

Leigh on the mainland. The isotope analysis of *Microdictyon* tissue suggests that human generated sources of nutrients periodically contribute to nutrient loading within the harbour.

The unique physical setting of Tryphena Harbour likely facilitates the presence of *Microdictyon*. The harbour floor is dominated by coarse sand and shell hash providing substrate for *Microdictyon* attachment, while the harbour itself is protected from large ocean swells and clear oceanic water provides optimal growing conditions.

Overall, the results do not provide strong evidence that the proliferation of *Microdictyon* in Tryphena Harbour is due to elevated nutrient levels in this location. However, the optimal physical conditions for seaweed growth within Tryphena Harbour mean that even relatively small amounts of anthropogenic-sourced nutrients will likely promote the long-term persistence and proliferation of *Microdictyon* within the harbour.

GREAT BARRIER ISLAND MONITORING SITES



In the absence of comprehensive data for some areas, report cards are not available. In these areas fact sheets have been generated until more information is collected.

FIND OUT MORE

This report card is part of a series prepared by the Auckland Council's Research, Investigations and Monitoring Unit, which undertakes monitoring and research to provide information and evidence to inform the council's activities and reporting. Auckland's environment must be healthy and resilient in order to support life and lifestyle. More report cards can be found at aucklandcouncil.govt.nz/stateofauckland. The report card series includes reporting on freshwater, marine, soil, terrestrial, air, capacity for growth, demographics and quality of life.

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