Healthy and thriving:

intertidal rocky shore surveys on Kāpiti and Mana Islands

A summary of 'Kāpiti and Mana Island Rocky Shore survey, 2019' prepared by Salt Ecology for Greater Wellington Regional Council, supported by the AirNZ/DOC Marine Sentinel Sites Programme

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Cover: Researchers at Waiorua Bay, Kāpiti Island. *Photo: GWRC/Salt Ecology*

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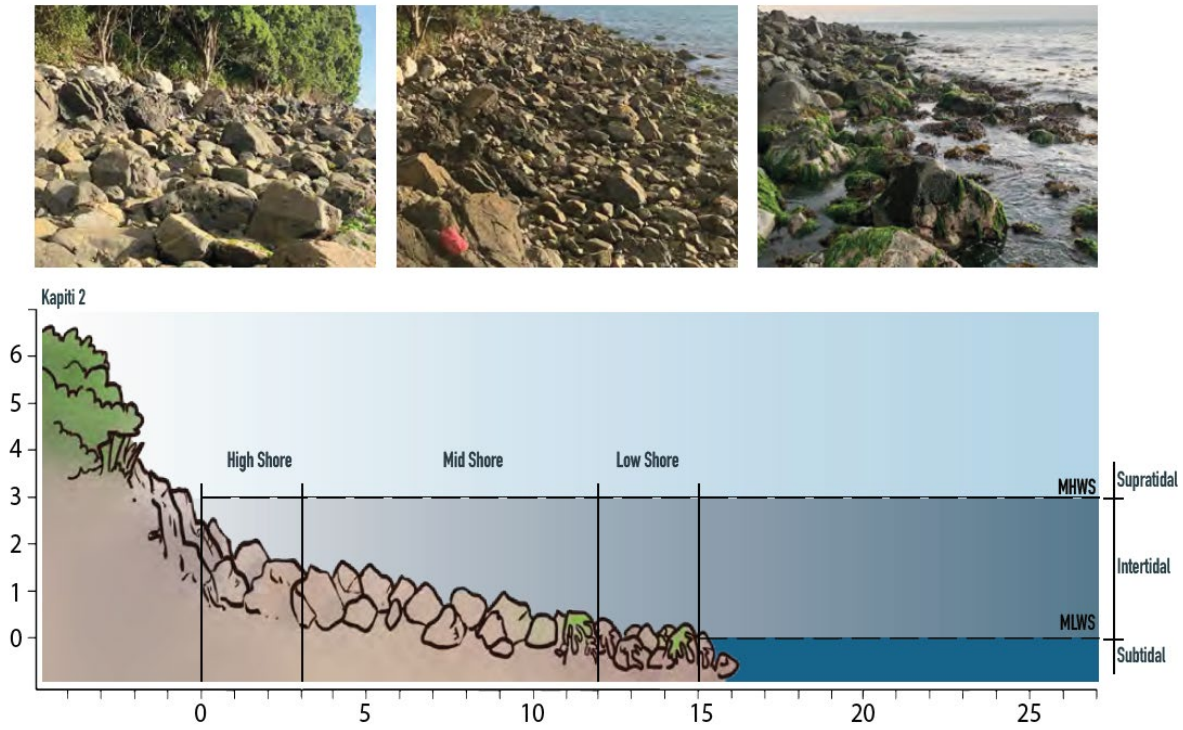
Intertidal Rocky Reefs

Intertidal rocky reefs are found where rocks meet the sea. The intertidal zone is the area where the seashore is dry at low tide and covered by the sea at high tide. Depending on the slope of the rocks and the range of the tide, intertidal rocky reefs range from wide to narrow and from vertical to flat. The plants and animals living on these reefs are used to changeable conditions. They are exposed to the sun's heat and the drying effects of the wind, the powerful surge of waves, and the ebb and flow of food and predators carried on the tides. These are harsh conditions compared to the stable environment in the sea. But the rich variety of holes, crevices, overhangs, and rock pools found on intertidal rocky reefs teem with life. They support an incredible diversity of species uniquely adapted to the challenging environment.



The intertidal zone sits between high and low tide points, so anything living here must be suited to a constantly varying environment. Image: GWRC/Salt Ecology.

Of New Zealand's 15,000 kilometres of coastline, about two thirds are rocky reefs. Keeping intertidal rocky shores healthy is an important part of protecting our marine environment. These reefs are very productive, and when in good condition they make food for many animals, including humans. They also provide shelter and habitat for many species and help regulate our climate.

Intertidal rocky reefs are also important because they are well understood. We can monitor the number and variety of species and use this to detect human impacts. Threats to intertidal reefs include fishing, trampling and pollution, like nutrients, heavy metals and sediments from land runoff. Invasive species and changing climate can also cause harm. When reefs are impacted by these threats, vulnerable species become rarer and species diversity goes down.

2019 Kāpiti and Mana Surveys

Through ecological surveys, we can assess the health of intertidal reefs. By finding out what species are present, we can detect changes in health over time or variations in health between reefs in different areas. For example, we can compare remote, unimpacted reefs to those influenced by runoff from land. To detect such differences, we need solid baseline information on the plants and animals present at healthy reefs.

In 2019, we surveyed the intertidal rocky reefs on Kāpiti and Mana islands off Wellington's west coast in a collaboration with the Greater Wellington Regional Council. The surveys were supported by the Marine Sentinel Sites Programme funded by Air New Zealand. Salt Ecology designed and led the fieldwork and technical report preparation.

The surveys recorded the species on the intertidal rocky shores of three sites on the eastern shores of Kāpiti Island, including one in the Marine Reserve, and one site on Mana Island. The intertidal area of the Kapiti Marine Reserve was last monitored in 1968, and the three other sites had never been surveyed before.

The surveys found healthy communities of seaweeds and animals. As is common on rocky shores, the intertidal area had distinct zones, or communities. On the bare rock high on the shore lived hardy species such as marine snails (known as top shells or periwinkles) and surf barnacles. In the lower part of the shoreline near the ocean lived species which need more water, such as the brown algae known as Neptune's necklace. Like other rocky shores, the exposed upper intertidal area had fewer organisms than the habitats of the lower intertidal, which is more frequently underwater.

Two sites can be remarkably different, even within meters of each other. Image: GWRC/Salt Ecology.

The Kāpiti Marine Reserve has been in place for almost 30 years and the surveys showed little difference between the Marine Reserve and the other sites. All the sites surveyed were very healthy. This is most likely because they are remote from human development: adverse effects on such shores mainly come from development on land or the impacts of visitors.

In the Marine Reserve, the 2019 survey found similar species to the 1968 survey. This shows that the intertidal rocky shore appears as healthy as 50 years ago and is a great sign that despite ongoing development in the wider region, these offshore islands are in great condition. The surveys give a snapshot of what healthy, unimpacted, intertidal rocky shores might look like, and provide good reference sites against which resource managers like Greater Wellington Regional Council can assess the comparative health of other reefs in the

region. Surveying the same sites over time will also help us to understand how climate change impacts, such as sea level rise, ocean acidification and extreme weather events affect rocky reef intertidal communities.

For a full copy of the GWRC report please visit: http://www.gw.govt.nz/document-library-2/detail/1458

Gazing down at Kāpiti's shoreline. Image: Brandon Skilton (License CC BY-NC-ND 2.0)