

Kia Ora!

Welcome to the *Recover* newsletter Issue 2 from the Marine Ecology Research Group (MERG) at the University of Canterbury. *Recover* is designed to keep you updated on our MBIE funded earthquake recovery project called RECOVER (Reef Ecology, Coastal Values & Earthquake Recovery). This second issue profiles some of the recent work done by our team out in the field!

Juvenile paua research

We have had a busy past few months doing some experimental fieldwork. This included a pilot study looking at some semi-artificial reef installations to see if juvenile paua would use some rock-filled cages for cover/shelter. These were designed to provide optimal habitat for wild paua, and possibly to use as deployment structures for paua reseeding efforts. In just a couple weeks we found that all sorts of animals had voluntarily crawled into the cages, including plenty of black and yellow paua aged 1-2 years. We were pretty excited at this response, which showed that the cages provided good protection for young paua. We're following this up with some more experiments using the cages to test ideas about paua recruitment.



Figure 1: Research associate Shawn Gerrity turns over small boulders in the search for juvenile paua.

📷 David Schiel



Figure 2: One of our 'paua motels'. 📷 Shawn Gerrity

Paua population monitoring

Monitoring of intertidal paua populations along the Kaikōura coastline has yielded some interesting findings. It looks like overall the hot summer hasn't adversely affected the vulnerable juveniles, who seem to be growing more quickly than we expected. Recaptured seed paua, identified by the blue shell material at their apex from hatchery diet, have shown phenomenal growth rates since being seeded a year ago. Paua that grow quickly will reach predator release sooner, the size at which they are less likely to be eaten. The natural population is now dominated by larger paua between 80-100mm in length, and many will likely soon migrate out into the adult reproductive pool. Overall, it appears paua abundance at surveyed sites is on the rise, despite some cases of infiltration by loose gravels and sediments, and the presence of large predators such as sea stars. Unfortunately some locations along the coast are still in a degraded state, with the bare reefs eroding and showing little signs of recruitment by algae and invertebrates.

Hotspots for Banded Dotterels

Our coastal survey teams have been covering large parts of the coastline investigating earthquake changes on both rocky and sandy shores. In early December we completed a baseline survey of where Banded Dotterel nesting sites are found, all the way from Oaro to Marfells Beach. That was a lot of walking for our team of three!

The dotterel hotspot information fills a gap for coastal planning, especially where the beaches have changed. We found that hotspots occur in discrete areas along the coast. Protecting these areas is important since the ground-nesting birds are extremely vulnerable to threats. One of the best known locations is in South Bay where local researcher Ailsa Howard has been conducting a study on breeding success. Ailsa has found that the success rate is very low, suggesting that more needs to be done to help these birds!

Seaweed recovery experiments

Before the earthquake, several reefs around the Kaikōura Peninsula and in the Cape Campbell area used to be covered by the seaweed *Hormosira banksii* (also known as Neptune’s necklace), but these lush algal forests were almost completely lost as a

result of the uplift. It was shown by previous studies of MERG that these algal beds supported much of the biodiversity of intertidal reefs, which are now depauperate of other algae and small animals. We are now trying to aid the recovery of *Hormosira* by creating “oases” with shade and moisture in the middle of the hot, bare reefs. These are created by installing shade cloth canopies on top of water pools chiselled into the rock. We hope that they will gradually be colonized by *Hormosira* and that this could be a good starting point for this species to spread to wider areas of reef. This experiment was set up in December 2018 at Wairepo reef in Kaikōura (between Jimmy Armers beach and the seal colony on the northern side of the peninsula) and will be replicated at other sites if successful.

— thanks for tuning into *Recover!*



Figure 3: Location of dotterel nesting sites in South Bay.

Shane Orchard

Inset: two views of an ‘oasis’ installed on Kaikōura peninsula.

Tommaso Alestra

Thanks to our research funders:



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Contact Information

Shane Orchard / Zoe Smeele
Marine Ecology Research Group
School of Biological Sciences, University of Canterbury
Phone: 03 369 5200
Email: info@merg.nz
www.merg.nz



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