MFA Mussel Restoration Project – January & February 2021 Update

Recycled shell experiment

20 tonnes of mussels were deployed in January at two locations in the inner Pelorus Sound. The team at Aroma harvested the mussels and they were cleared of any nuisance biofoulers by hand before transfer to the seafloor. The mussels were deployed on top of recycled shell and mud/sand to compare the effects that the recycled shell can have on mussel restoration. The mussels will be assessed every six months to look at survival, density, growth, and condition.

The recycled shell that was deployed in August 2020 appeared to have settled well onto the seafloor, with minimal starfish and some algae growth (See Figure 1). The mussel deployment went well with three plots of mussels on mud and three plots of mussels on shell at both locations. Aquaculture NZ came out to film the mussel deployment and should be releasing a video soon.

One-year check on the original mussel experiment

Survival of the mussels that were placed on the seabed one year ago in January 2020 was high across four of the five sites after one year. The highest mortality was at Grant Bay, which had a mean loss of 40% of the mussels, while all other sites were less than 11%. The higher mussel mortality at Grant Bay is likely the result of starfish predation with 135 large starfish being found there, which was more than double the number collected from all the other sites combined. Although the losses of mussels at Grant Bay are disappointing, three of our five sites had more than 94% survival (Maori Bay, Te Mara, Weka).

During our one-year check on the mussel plots we also performed our second biodiversity assessment on the plots. The biodiversity was assessed separately for three different levels: 1) Infauna - including organisms living in the sediment beneath the mussel plots and in the sediment at the control plots, 2) Epifauna - the organisms living inside or on the mussel plots and on top of the sediment for the control plots, 3) Pelagic -the mobile organisms in the water column above and in the vicinity of the mussel and control plots. We are excited to start diving into this data to explore the impact the mussel plots are having on the ecosystem.

Third mussel experiment

Our third mussel experiment is in the planning process. We will shortly be submitting a resource consent to the Marlborough District Council and have received our biosecurity approval from MPI. This experiment will take place in the Kenepuru Sound as that is where our current mussels are surviving the best.

Havelock mussel festival

The Havelock mussel festival is coming up on March 13th. Trevyn and I will be presenting our work there so feel free to stop by and have a chat about the project.

As always, if you have any questions or comments on this project, please feel free to reach out to Emilee Benjamin via email at egol669@aucklanduni.ac.nz.

Figure 1: Top Left-Recycled shell layer without any live mussels on top at Fairy Bay. Top Right- Mussels in dense plots the day after they were deployed. Bottom Left- Transect tape running across the newly deployed mussels to measure the distance of the plot. Bottom Right- Diver performing a density measurement of the mussels.

Figure 2: Top Left-Blue cod and spotties on the one-year old mussel plots from the original deployment. Top Right- An 11-armed starfish eating a mussel. Bottom Left- Diver measuring the distance the mussels have spread since first deployed one-year ago. Bottom Right- Diver taking sediment samples from under the mussel plot to assess change over time.