

Mussel Restoration Project for the Marlborough Sounds - June 2022 Update

Intertidal Restoration Trials

Background

Wild mussel beds once covered extensive areas of Pelorus Sound, but were dramatically overharvested in the 1960s and 1970s, leaving only around ~3% of the wild mussels compared to historical extent. The Pelorus Sound Mussel Restoration Project has trialled restoration efforts for these lost beds at 3-5 metres depth and seen high survival. Historically, mussels also thrived in the lower intertidal zone, or areas exposed to air on extreme low tides. However, while mussel restoration to this area is less expensive and easier to monitor, trials overseas have had very low survival. Following on the success of our deeper-water restorations, we were excited to test if we could restore mussels into shallow areas and still maintain high survival rates. To test this theory, we worked with Just Mussels Ltd to restore 5 tonnes of mussels to three locations in Kenepuru Sound in June 2021, half of which we restored to the intertidal and half of which we restored to the shallow subtidal (~1 metre depth) as a comparison.

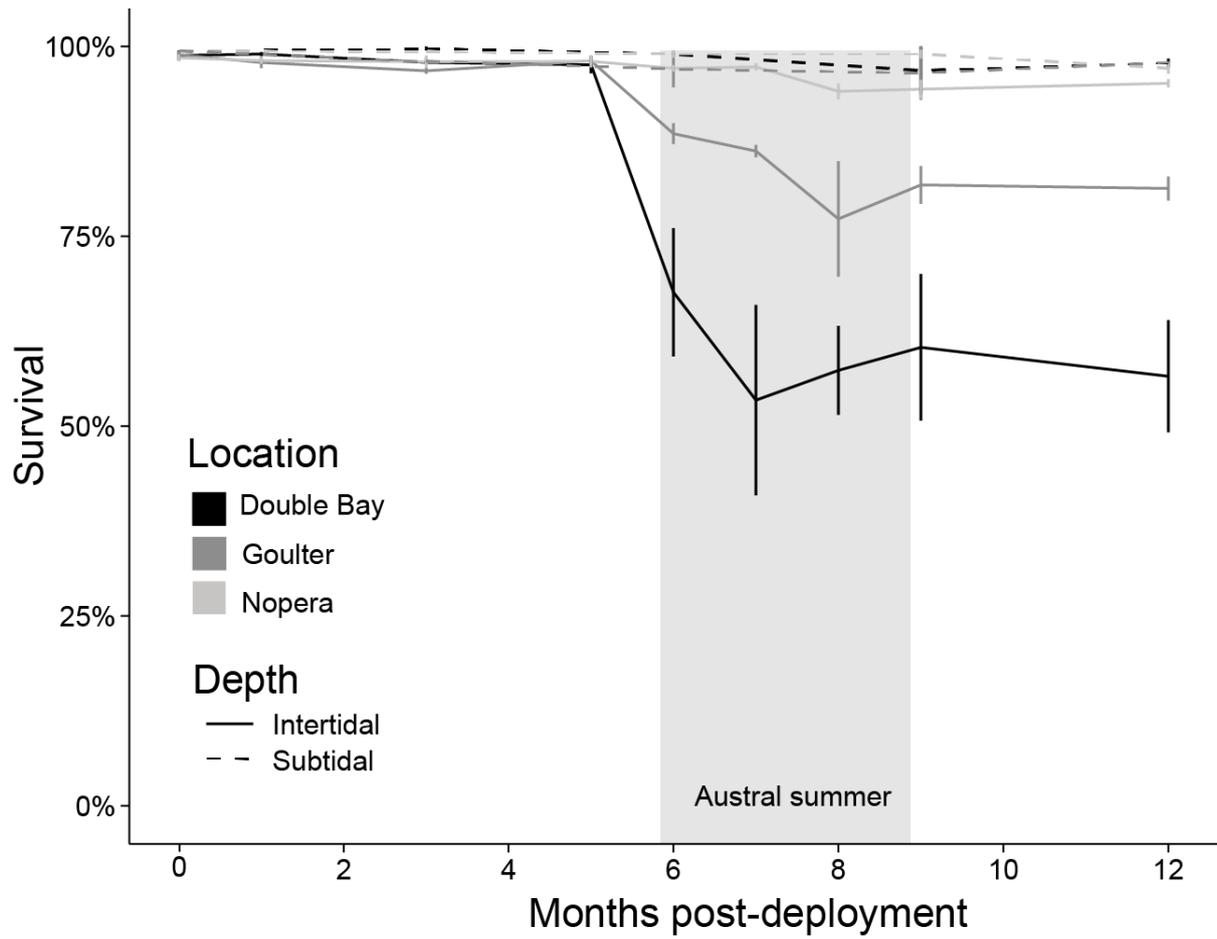
Early Results

It has now been one year since we first restored the mussels! Over that year we have monitored them monthly to check on their survival as well as their growth rate, condition index, and any evidence of recruitment. These one-year results reveal some interesting trends. First, the mussels we restored to the shallow subtidal have survived very well (>95% survival). Second, the mussels we restored into the intertidal had varied survival depending on how high up the shoreline we restored them. Natural variations in the seabed at our three locations meant that there were slight differences in how long the intertidal mussels at each location were exposed to the air. For example, at our Nopera location the mussels were only exposed for around 2 hours on spring low tides while at Double Bay they were typically exposed for 3 hours. While this difference may seem small, it appears to have had big impacts on their survival! At Nopera the intertidal mussels had a similar survival to subtidal restored mussels (>95%) while at Double Bay only ~60% of the intertidal mussels survived after one year. Mussel deaths in the intertidal almost exclusively occurred during the summer months, with the greatest mortality occurring from December to January, suggesting that high summer temperatures are responsible.

We are still digging through the data, especially the condition index and growth data, but these early results are positive as they show that successful intertidal mussel restoration is possible as long as we are careful to only restore in areas low enough on the shoreline. I hope this has provided interesting insights into some of the mussel restoration work going on in the area and I will continue to update with more information and results! As always if you have any comments or feedback, please feel free to reach me at ttoo112@aucklanduni.ac.nz!

Cheers,

Trevyn Toone, Ph.D. Researcher, University of Auckland (based in Nelson)



Mussel survival from June 2021 to June 2022 at the three locations and two depths in Kenepuru Sound.



A restored intertidal mussel bed in Nopera



A restored subtidal mussel bed in Nopera

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