

## **MFA - September Monthly Update - for the Industry Advisory Group**

### **Understanding the Historic Decline of Intertidal Green-lipped Mussels**

#### **Historical Data and Interviews**

Mussel beds were once extensive on the shorelines of much of the Pelorus Sound, especially along the Kenepuru where harvesting was common. It's been widely accepted that these intertidal populations have since decreased, but the exact extent and cause of this decline is unknown. The last scientific surveys on these wild green-lipped mussels were conducted in the late 1960's – meaning there's a fifty-year data gap in our understanding of wild mussel populations. In an attempt to fill this gap and understand why wild mussel beds have disappeared I've begun a project to interview long-term residents of the Sounds to compile their local knowledge on the extent and decline of these beds.

Interviews began after final ethics approval was granted in August. A half dozen long-term residents (40+ years in the area) have been interviewed and the goal is to interview around ten more before the end of the year for a total of 15-20 interviews. Residents are asked about their memories of historic intertidal mussel beds in the area, changes to these mussel populations over time, and general environmental changes they've seen. These interviews are then compiled to generate a fuller picture of intertidal mussel beds in Pelorus Sound over the last seven decades, their decline, and potential environmental and human-generated factors behind this decline.

While I've only conducted a handful of interviews so far, a consensus has begun to emerge of widespread historical intertidal mussel beds in the 1960s and prior, followed by widespread handpicking leading to a population crash in the 1970s. Residents report low populations since the crash with no evidence of natural recovery of populations despite the end of the handpicking industry. Residents have also identified a number of environmental conditions that may be responsible for this lack of natural recovery, and future interviews will be useful for clarifying the extent of some environmental changes. If you or anyone you know is a long-term resident of the area and would be interested in being helping provide local knowledge of shoreline changes, I'd love to hear from you and my email can be found below!

#### **Re-surveys of the Kenepuru**

To supplement the information gained from interviews, I'm also conducting a resurvey of the coastline of Kenepuru Sound initially surveyed in reports from the late 1960's. The goal of this re-survey is to provide a direct comparison between the historical and current extent of intertidal mussel beds in exactly the same areas. Additionally, the resurvey helps ground-truth some of the information gained during the interviews, allow for investigation of factors associated with the surviving wild mussel populations, and clarify other potential changes to the population like mussel size and community density.

So far I've resurveyed around half of the Kenepuru, from Te Mahia to Kenepuru Head, and plan on surveying the north side in the coming month. Results from the first half indicate that intertidal green-lipped mussel populations are still present along much of the Kenepuru – over 25,000 mussels along the 20 km surveys so far! The bad news is that these mussel populations are nowhere near historical numbers, based on both historical surveys and local knowledge from interviews. While historical surveys describe beds of over 70 mussels per square metre and residents have recalled dense rings of mussel reefs in the intertidal, the current populations rarely pass even 5 mussels per square metre and are mostly scattered individuals. Additionally, the current mussels I've found in the Kenepuru are smaller than historic mussels – about 4 cm smaller on average than mussels found in historic surveys. This

phenomenon has been confirmed by residents who identify the current largest mussels I've found in the Kenepuru as the smallest size class that were historically sold during mussel picking. This size change may be a result of the loss of reef structure but finishing the resurveys will provide more information.

I hope this has provided an interesting look into some of the intertidal work going on and I'll 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](mailto:ttoo112@aucklanduni.ac.nz)!

Cheers,

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Figure 1. Area of the Kenepuru currently surveyed (black) and still to be surveyed (yellow). Red sections have over 5 mussels per square meter.



Figure 2. Intertidal mussels found during a survey (left) and an area typical of those where mussels have been recorded (right).