Marlborough Sounds regional study

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Introduction

The Marlborough Sounds is a large and ecologically diverse area with multiple values, that is also facing a range of environmental stresses (e.g. land use changes, bottom fishing). Its marine habitats have become degraded over time, and with this the presence and abundance of shellfish, a functional group of organisms critical to sustaining healthy seabed habitats and the wider ecosystem, have also declined considerably.

This project is investigating how Ecosystem Based Management can be used to manage and improve shellfish populations, by producing a decision support tool in the form of an interactive (and updatable) mapping product to visualise the current state – and state of knowledge - of shellfish and their habitats that can then be used to prioritise Ecosystem Based Management activities and future restoration efforts.

Aims

We aim to inform and enhance Ecosystem Based Management practices for improving shellfish populations and habitats, by providing a pathway and plan that can guide future management actions and priorities. Specifically, we will

1. Map current distributions of shellfish and their habitats;
2. Model the expected distributions of shellfish and their habitat;
3. Develop a longer term Ecosystem Based Management plan for shellfish in the Marlborough Sounds.

This includes identifying local aspirations for shellfish recovery and the information and activities required to achieve these, e.g. prioritising research and/or activities for shellfish restoration.
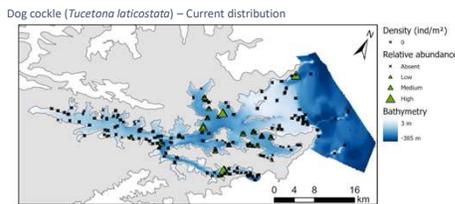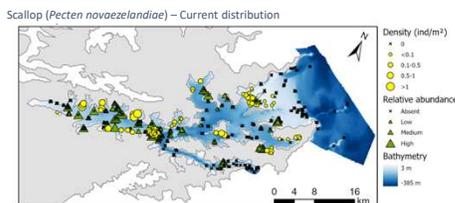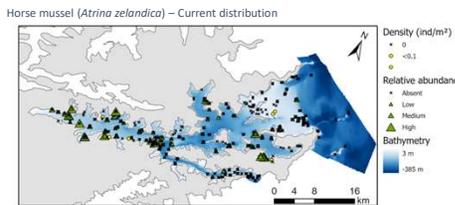
Key findings

- Unable to map Te Hoiere/Pelorus Sound, largely due to lack of recent environmental information (Table 1);
- In Tōtaranui/Queen Charlotte Sound, sufficient data for predictive modelling for three shellfish species only: scallops, horse mussels, dog cockles;
- Agreed focal area of interest is outer Tōtaranui/Queen Charlotte Sound, in the area of Meretoto/Ship Cove to East Bay.

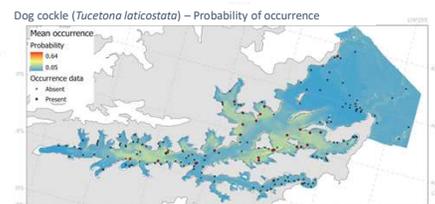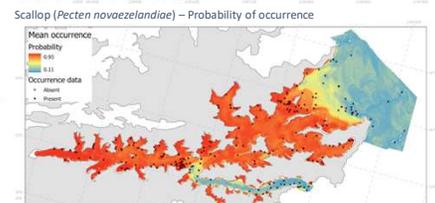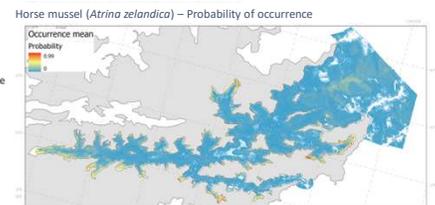**Table 1.** Summary of shellfish and environment information, by species/location.

*data are marginal due to low numbers of records, or lack of sediment data needed for modelling.

Information on sediments is limiting throughout **Te Hoiere** → questionable for modelling because sediment data (type) is key.

Current shellfish distributions

Horse mussel (*Atrina zelandica*) – Current distribution

Scallop (*Pecten novaezelandiae*) – Current distribution

Dog cockle (*Tucetona laticostata*) – Current distribution

Predicted shellfish distributions

Horse mussel (*Atrina zelandica*) – Probability of occurrence

Scallop (*Pecten novaezelandiae*) – Probability of occurrence

Dog cockle (*Tucetona laticostata*) – Probability of occurrence

Tools & resources

- Comprehensive dataset of shellfish and environmental information for Te Hoiere/Pelorus Sound and Tōtaranui/ Queen Charlotte Sound;
- Maps of current and predicted distributions of selected shellfish (scallops, dog cockles, horse mussels) in Tōtaranui/Queen Charlotte Sound;
- Maps of predictive distributions of scallops, dog cockles and horse mussels in Tōtaranui/Queen Charlotte Sound;
- Newsletter style summaries.

July 2021 — Stage 2 proposal submitted

December 2022 — Species distribution map(s) finalised

March 2023 — Predictive distribution models completed and made available to research team

June 2023 — Intervention activities planned and prioritised with area-based teams

December 2023 — Recommendations for long-term management to improve shellfish health are developed for project team

March 2024 — A summary of projects findings and recommendations co-developed with iwi and stakeholders, is finalised

Next steps

- Korero with interested communities;
- Explore and empirically validate our predictive models, with a focus on outer Tōtaranui/Queen Charlotte Sound focal areas;
- Prioritise Ecosystem Based Management activities and future restoration efforts in within the focal areas;
- Recommendations for longer term management needs.

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