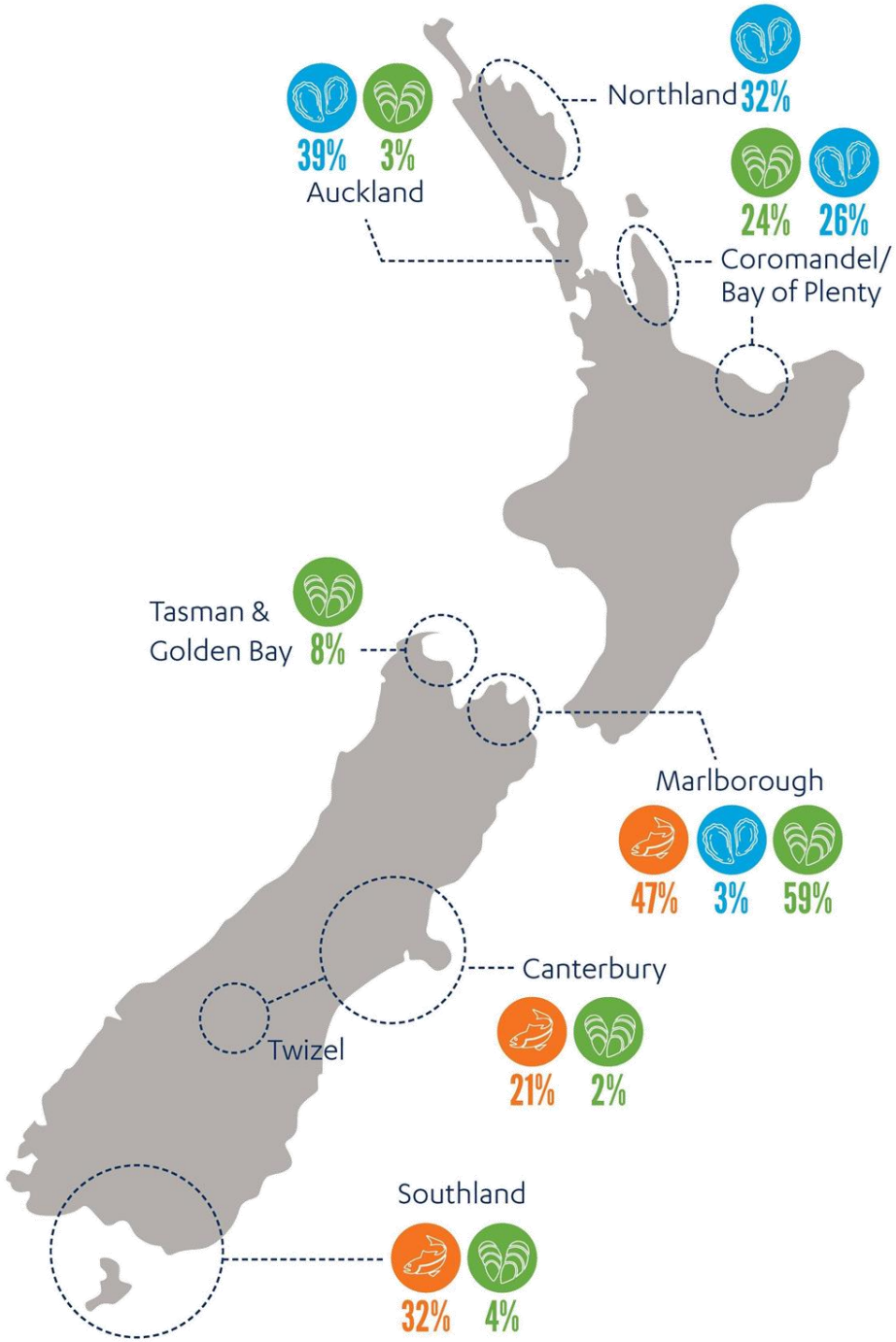
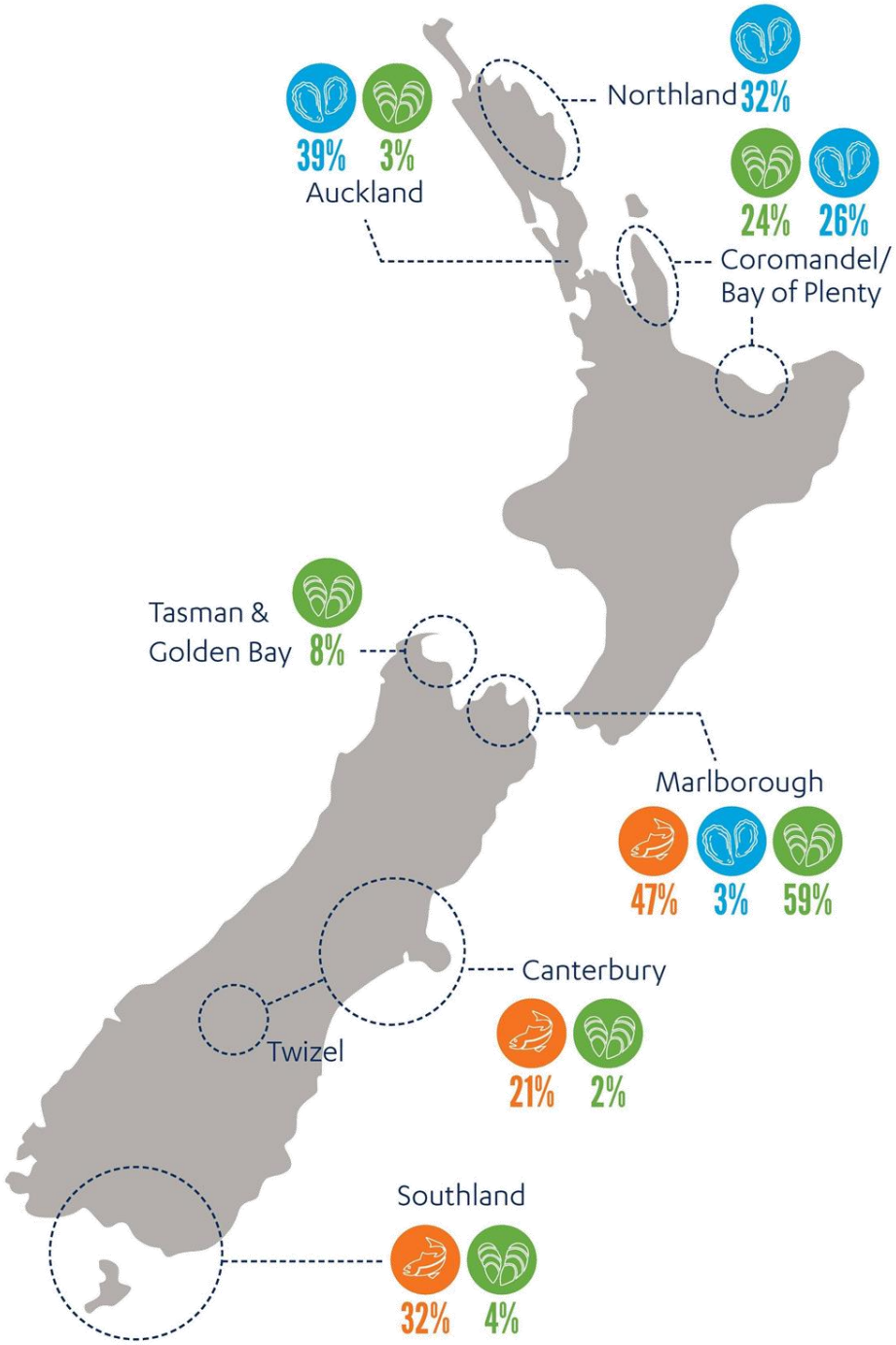
Is mussel farming helping to restore degraded seafloor habitats?

Al Alder, Leigh Howarth, Fabio Weiss, Javier Atalah


Northland 32%
39% 3%
Auckland
24% 26%
Coromandel/
Bay of Plenty
Tasman &
Golden Bay 8%
Marlborough
47% 3% 59%
Canterbury
Twizel
21% 2%
Southland
32% 4%

AQNZ



A Global Monitoring, Evaluation and Learning Framework for Regenerative and Restorative Aquaculture

Helping Nature Thrive Through Aquaculture

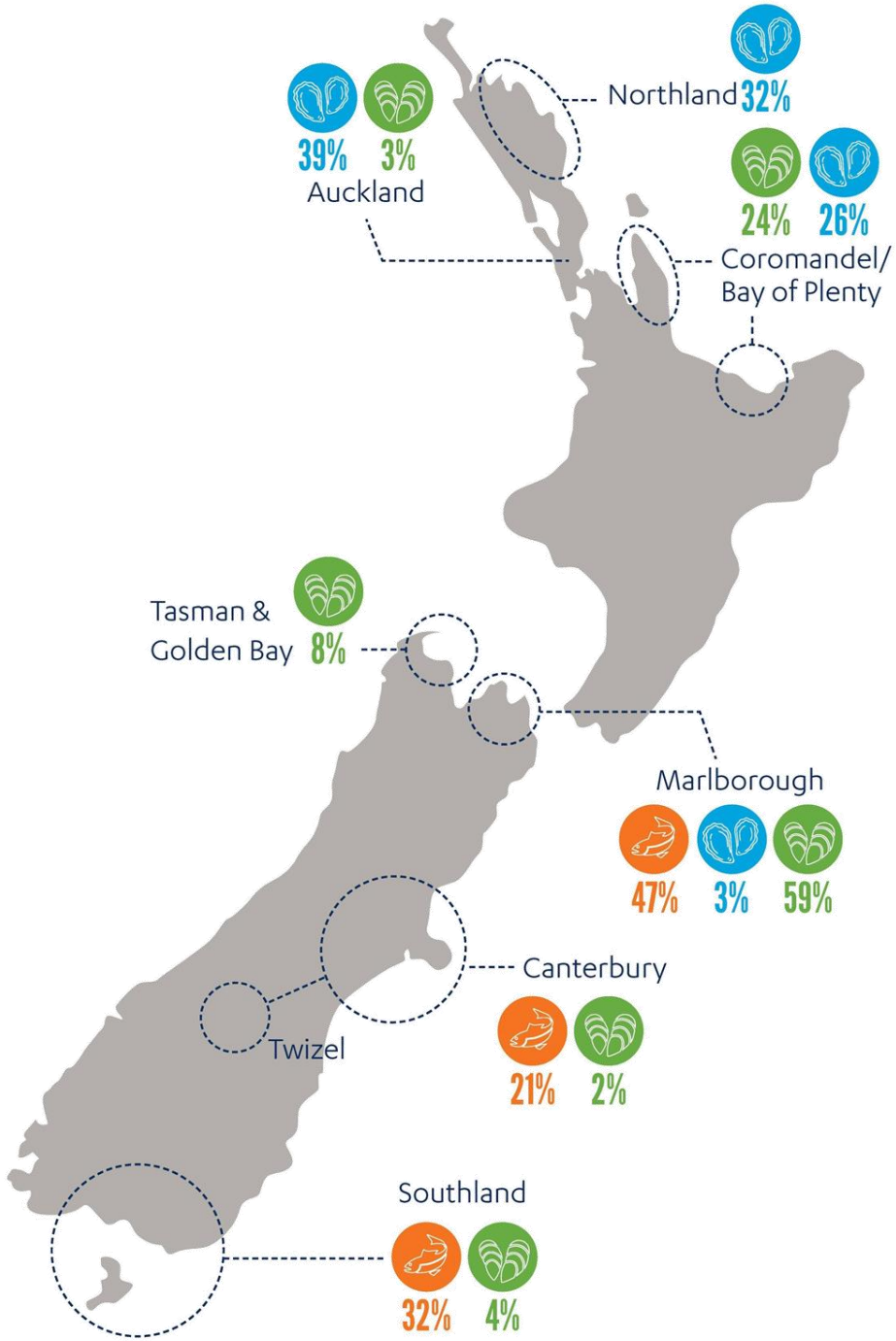
The Nature Conservancy

Habitat and biodiversity

Water quality

Climate change

AQNZ



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Key questions

Is consent monitoring data able to detect whether:

Mussel farming is increasing the structural complexity of the seafloor?

The accumulation of biogenic material supports distinct benthic communities and ecological function?

This signals some form of seafloor recovery?

Methods

Collate

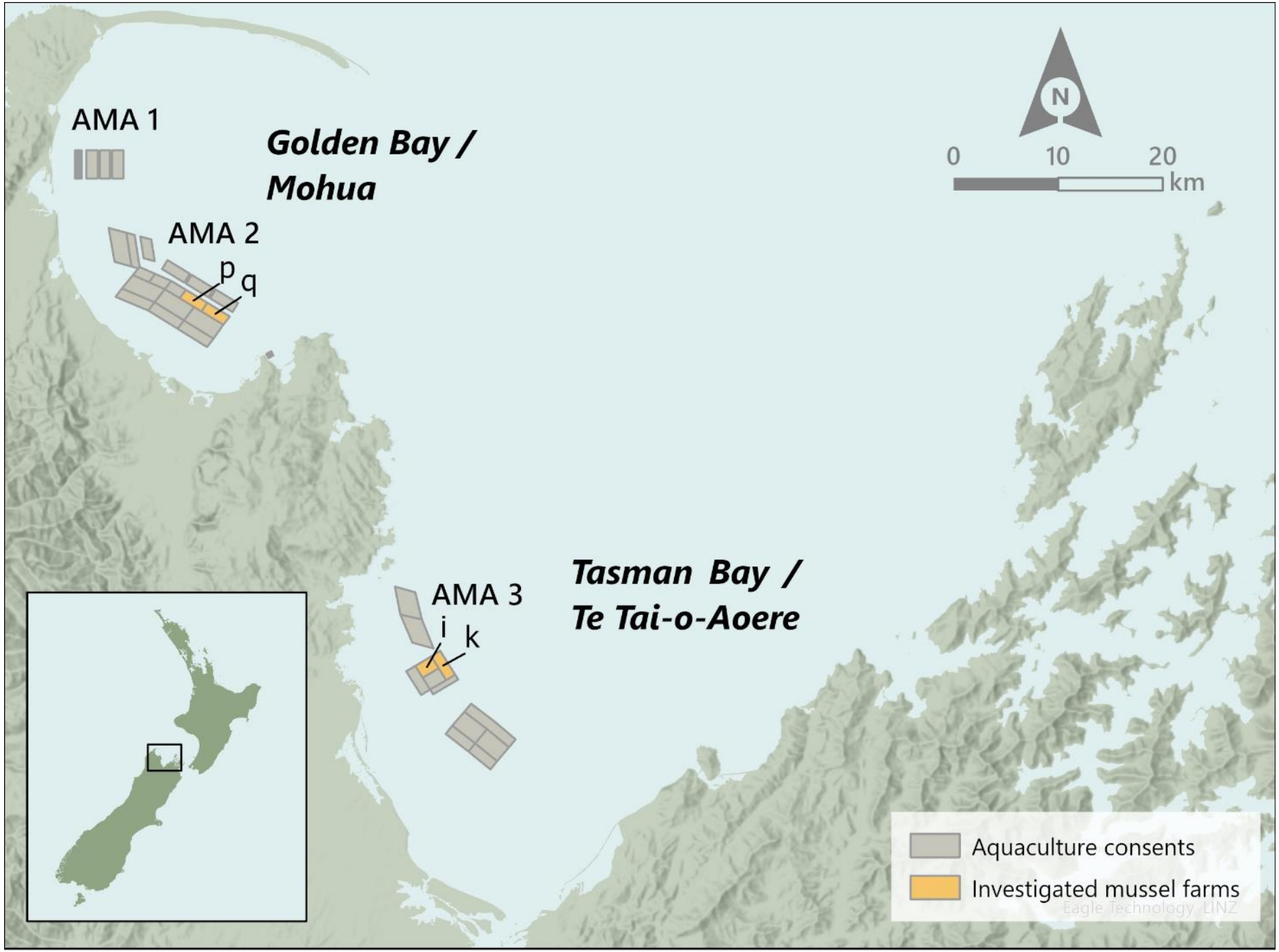
Re-analyse

Assess & discuss

A.I. generated

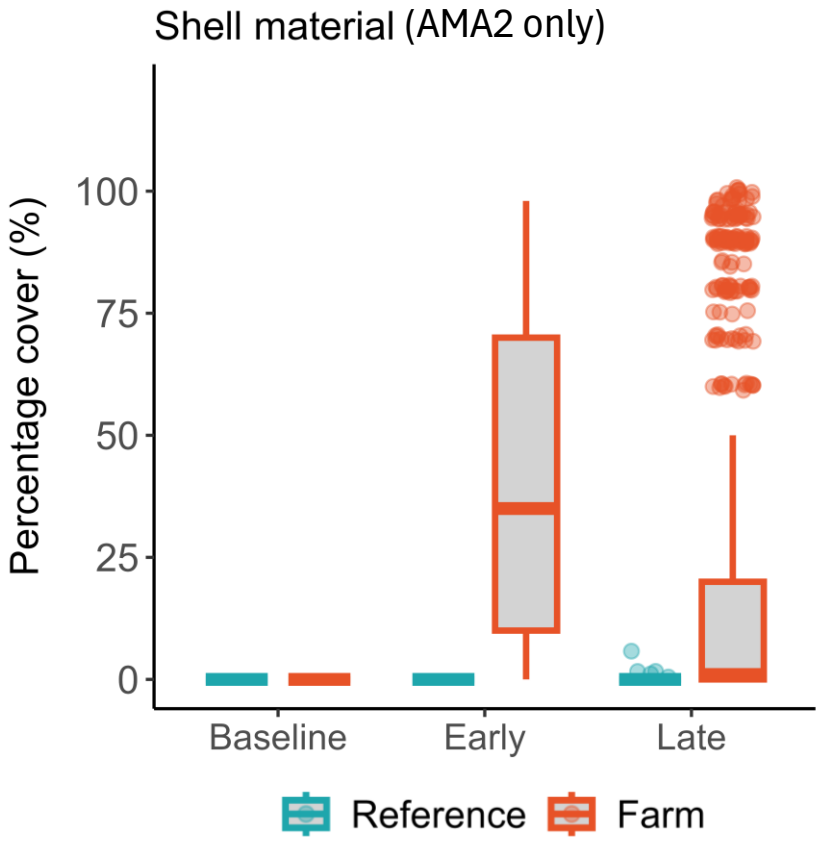
Methods

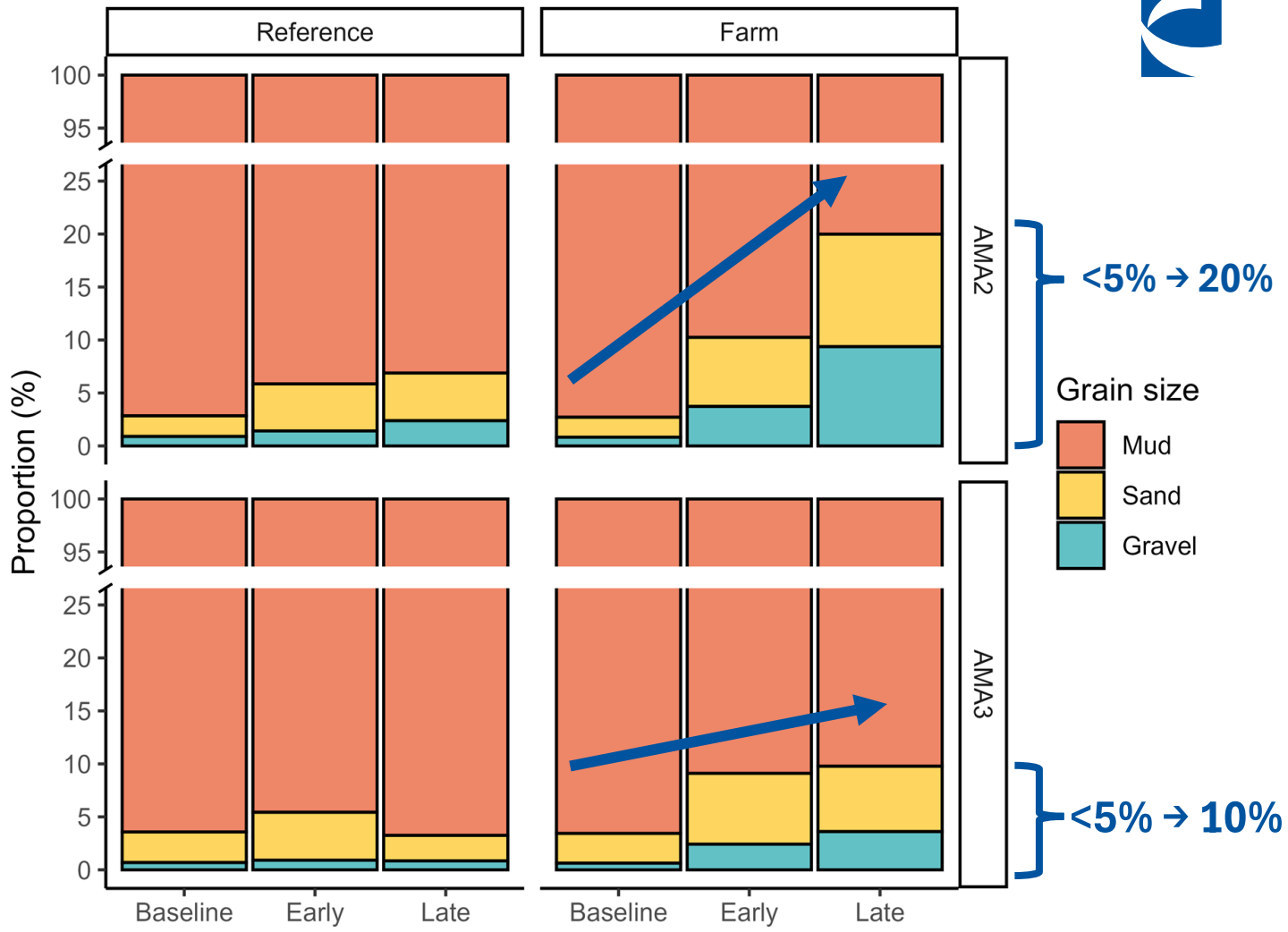
- Study focus on Tasman and Golden Bay
- > 6,000 ha consented for shellfish aquaculture
- Baseline benthic surveys, and repeated ~ 2 years until 2021
- BACI datasets allowed for comparisons of: **baseline**, **early (<3 years)**, and **later (>9 years)** stages of farming



Results

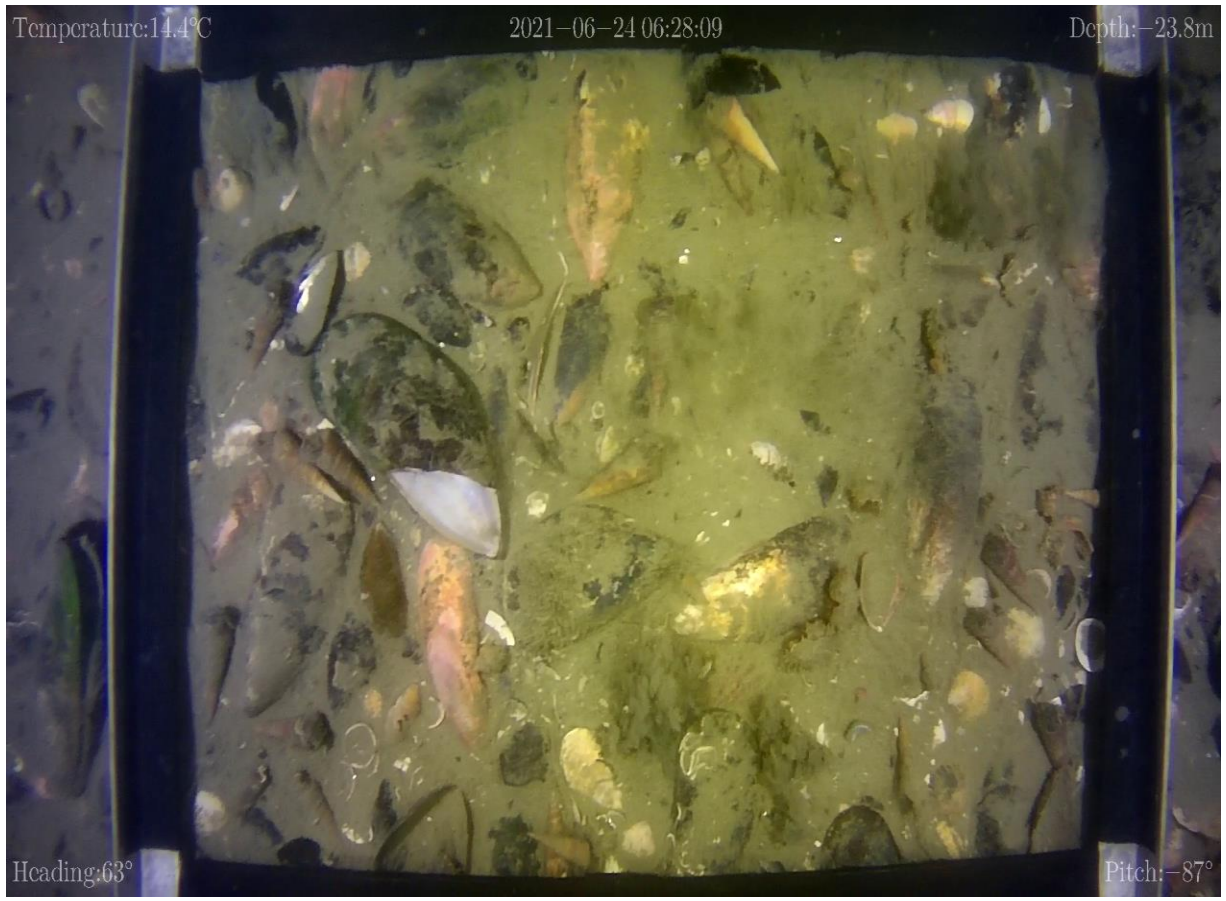
Sea floor complexity





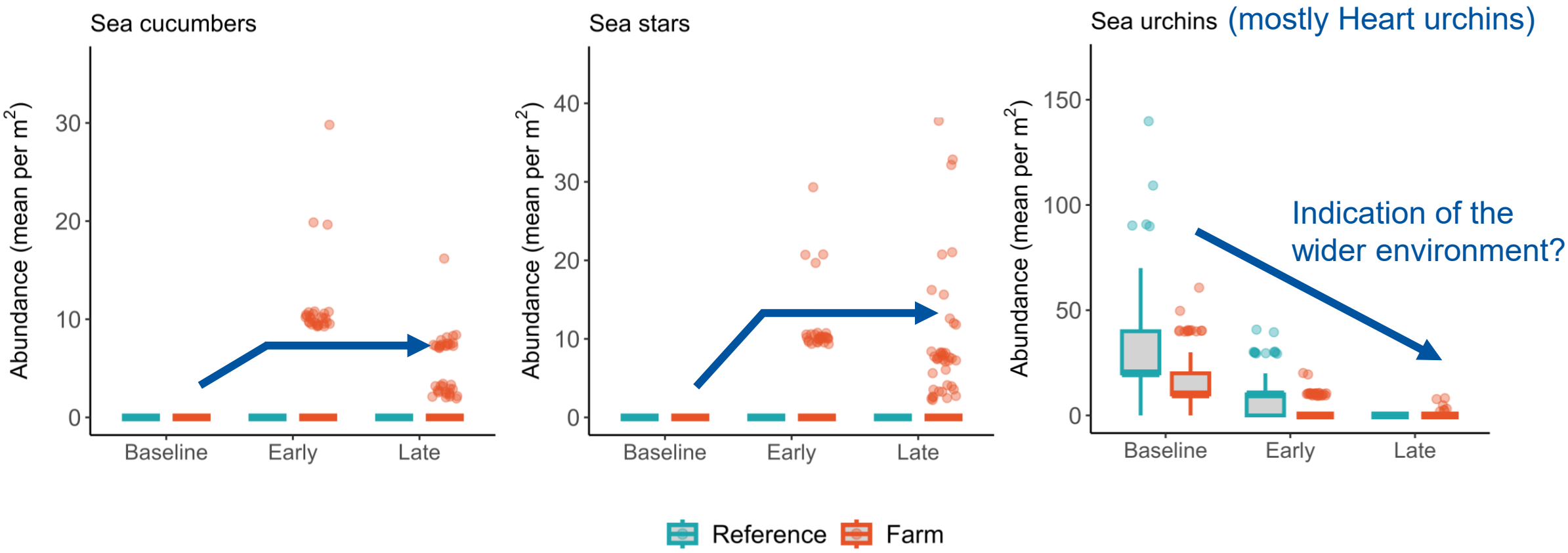
Reference

Farm



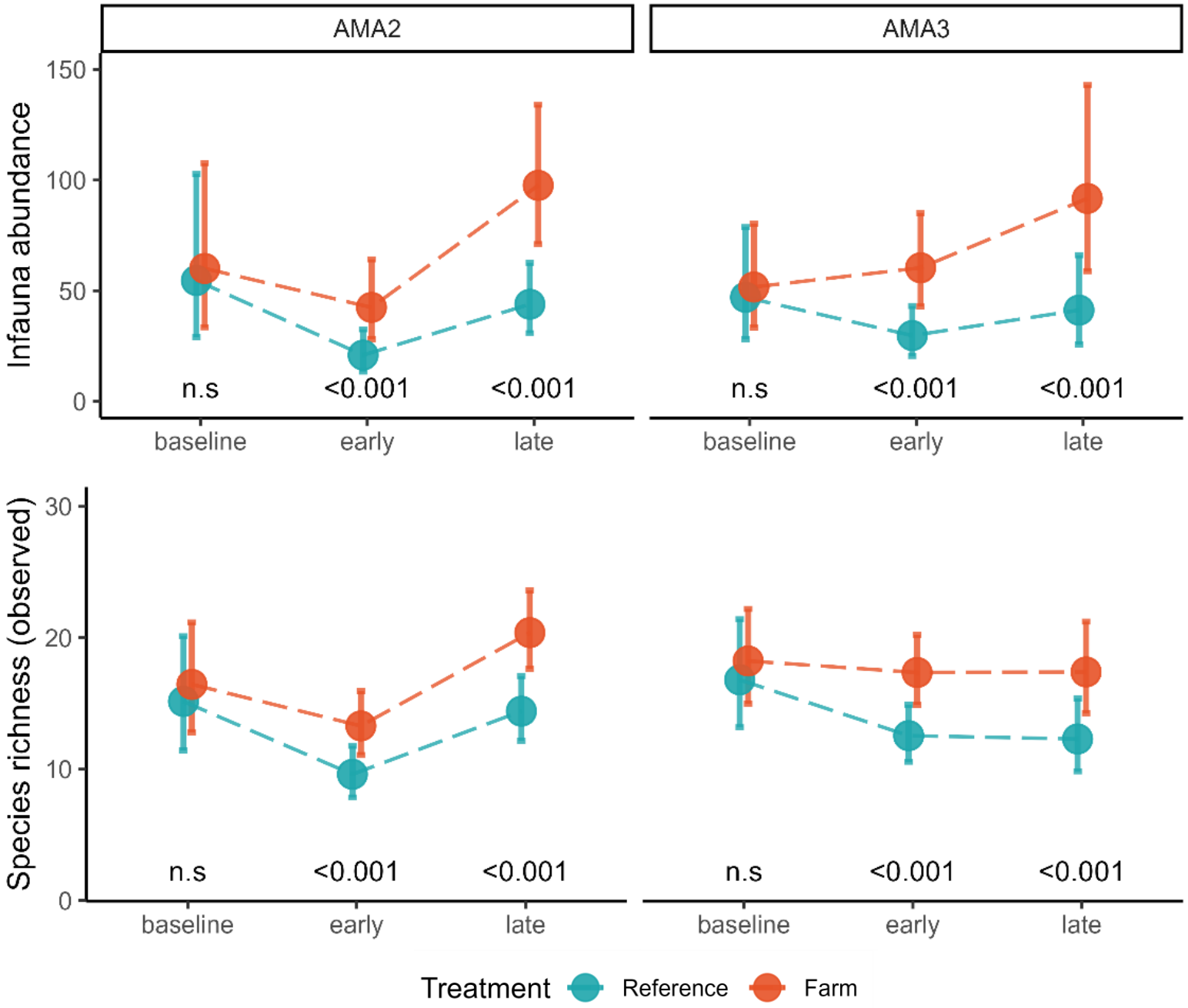
Results

AMA2 epifauna

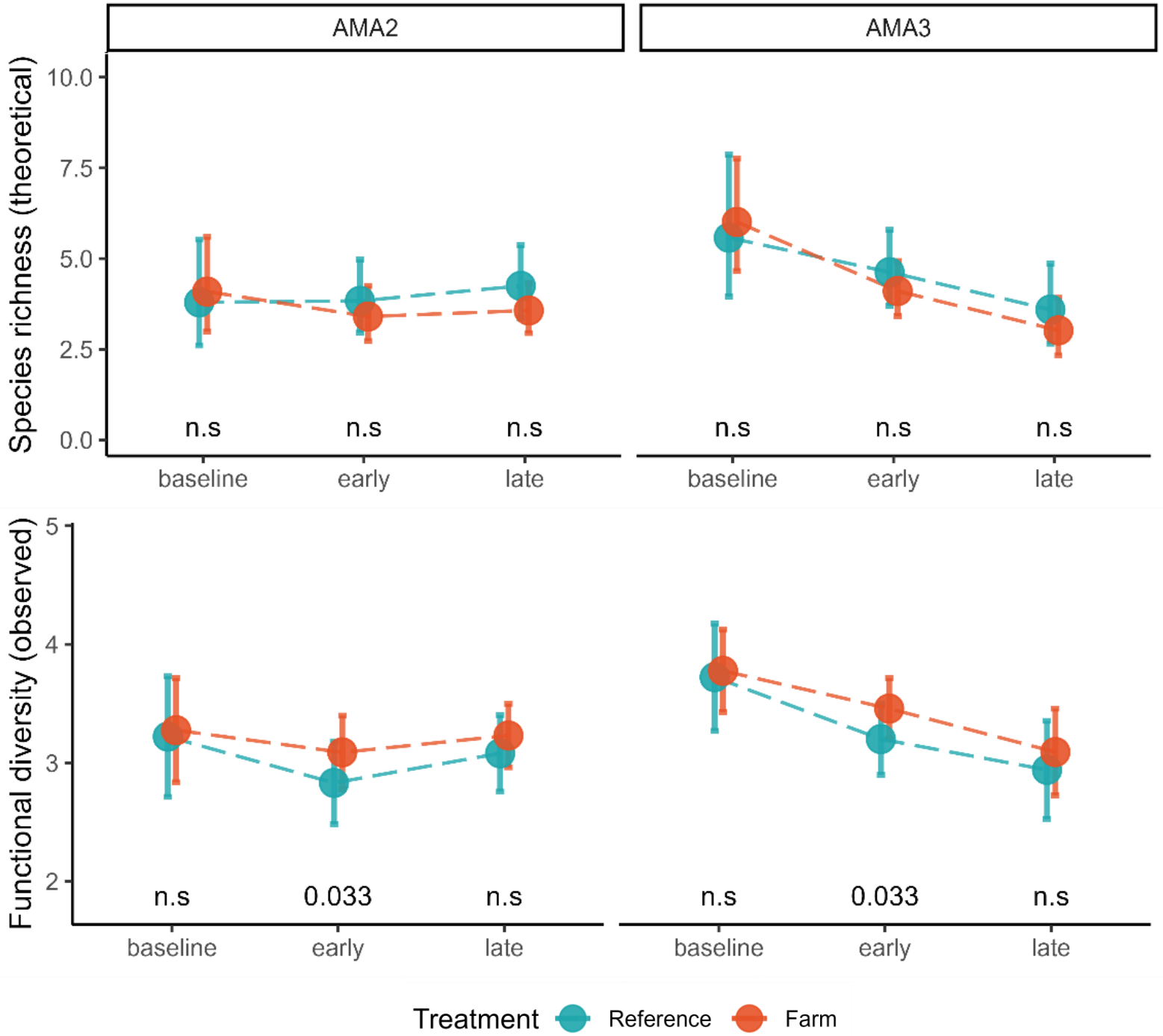


Results

infauna

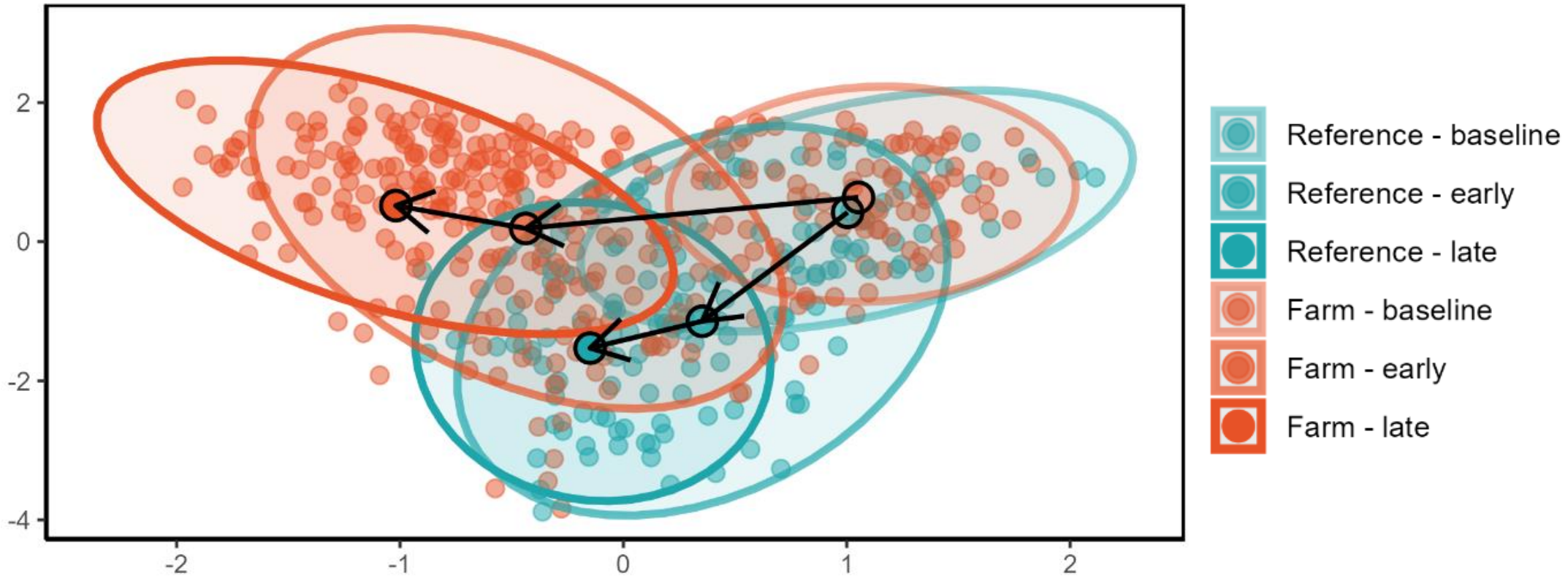


Results
infauna



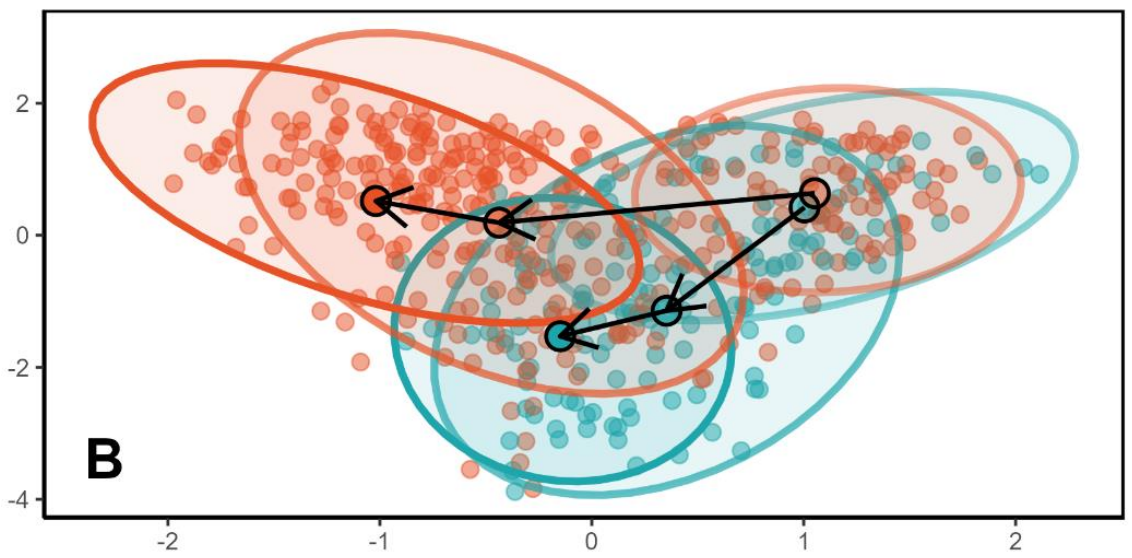
Results

infauna

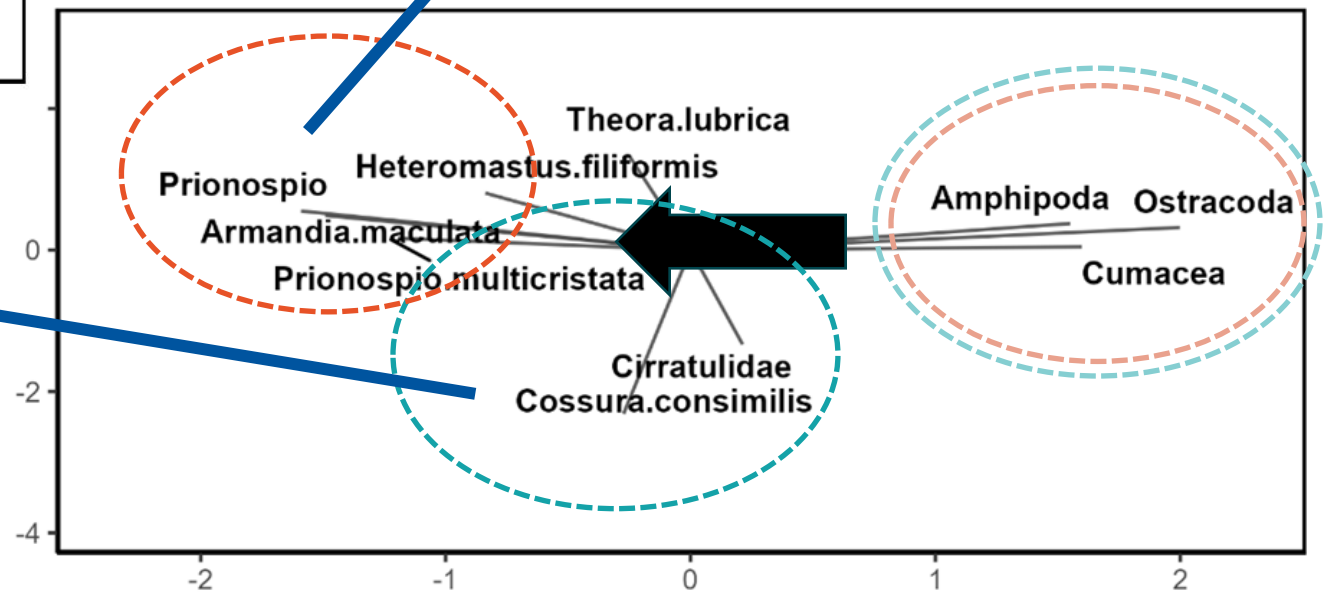


Results

infauna

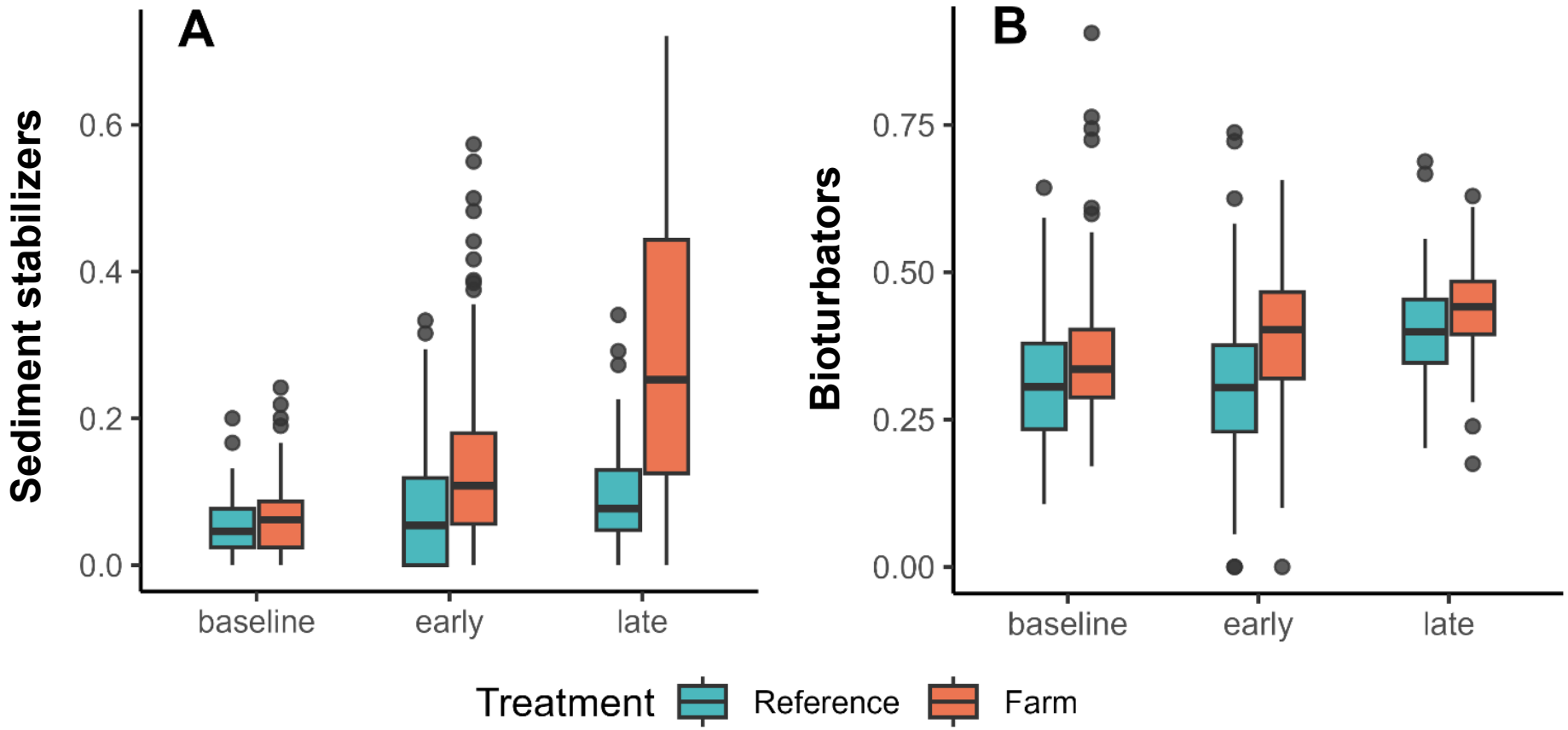


Indicators of enrichment?

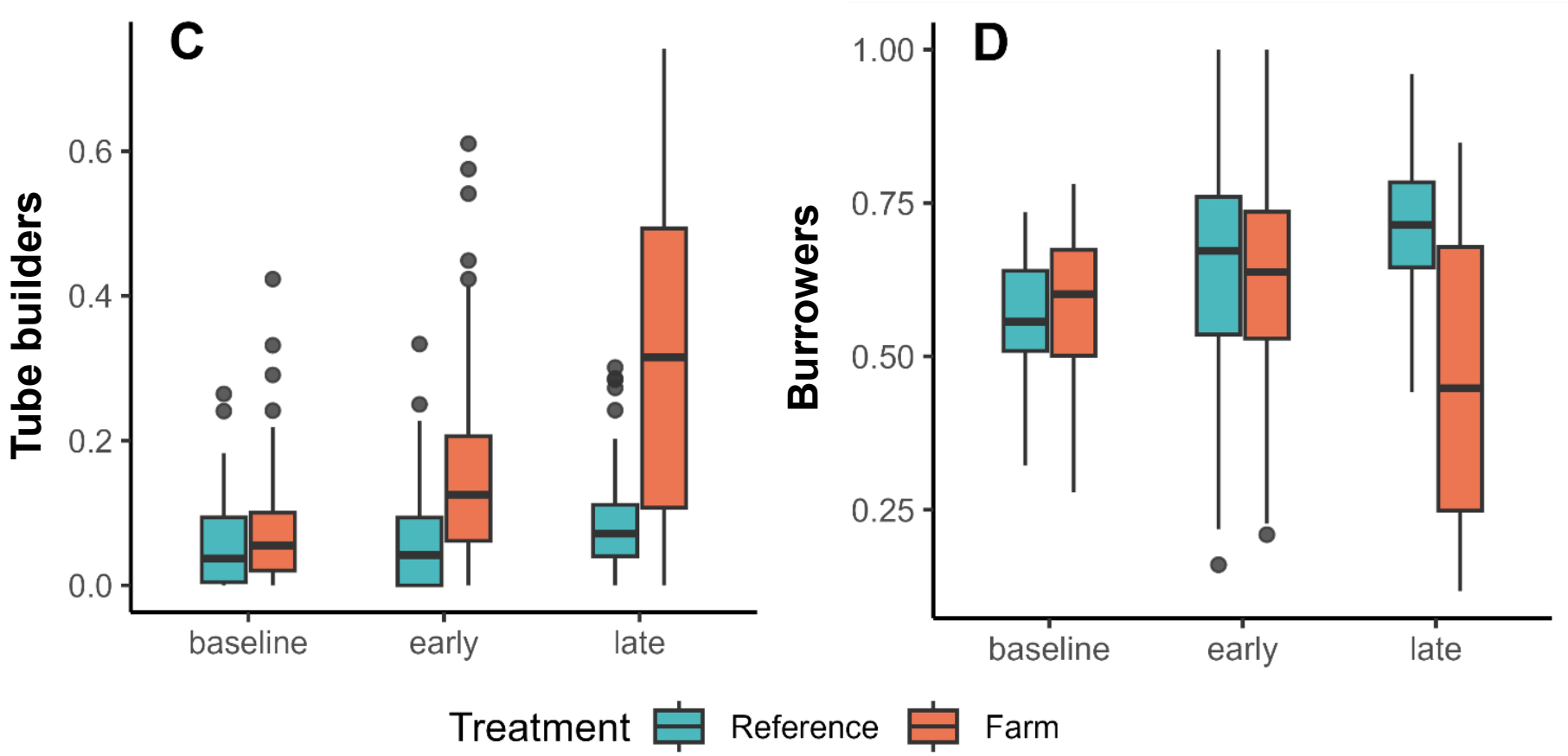


Indication of the wider environment?

Results
Functional traits



Results
Functional traits



Bigger picture

BioOne COMPLETE

Multi-Spatial and Temporal Assessments of Impacts and Recovery of Epibenthic Species and Habitats Under Mussel Farms in the Marlborough Sounds, New Zealand

Authors: Davidson, Robert J., Scrimgeour, Garry J., Richards, Laura A., and Locky, David

Source: Journal of Shellfish Research, 43(1) : 15-28

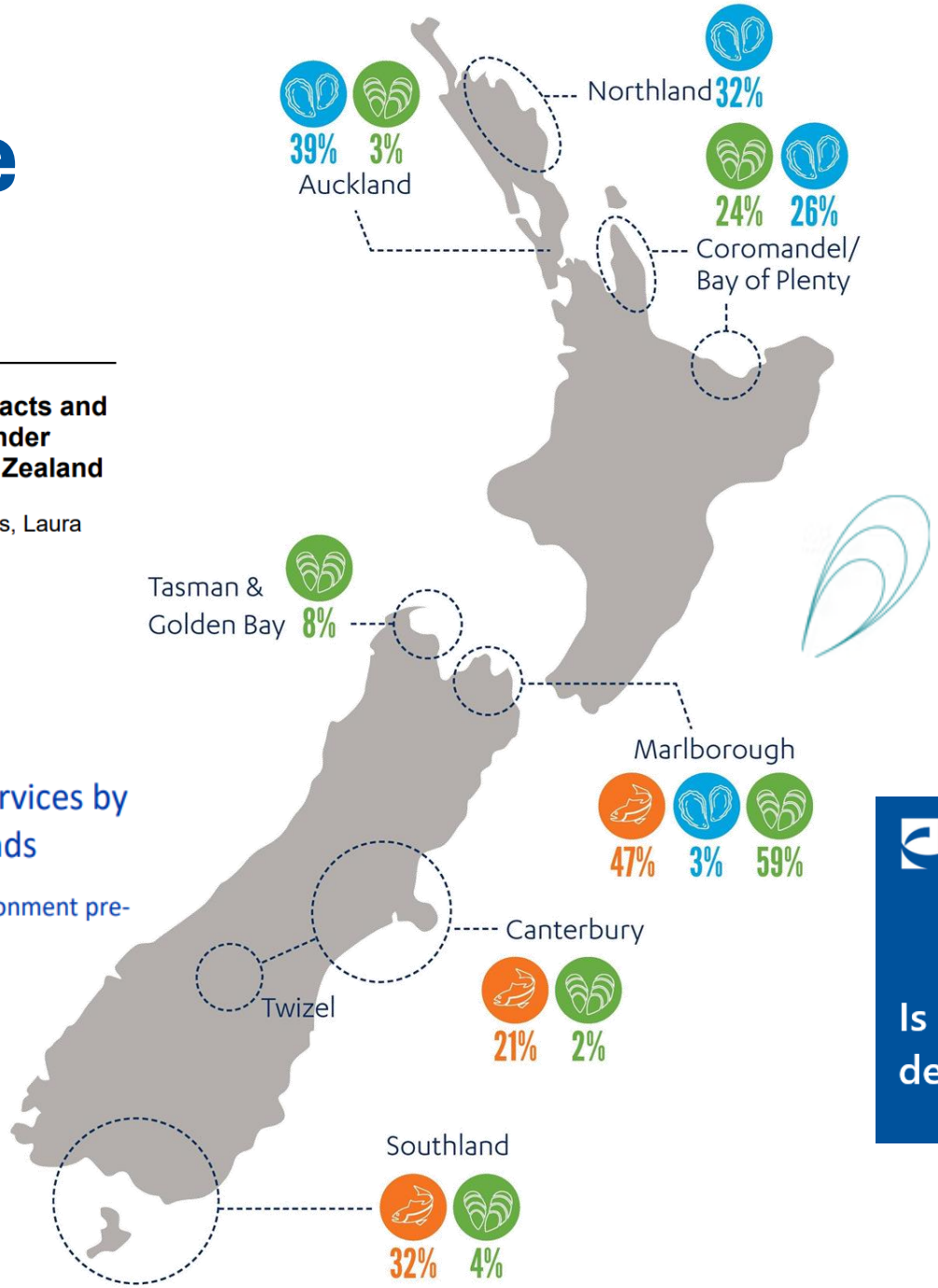
Published By: National Shellfisheries Association

URL: https://doi.org/10.2983/035.043.0102

Provision of ecological and ecosystem services by mussel farming in the Marlborough Sounds

A literature review in context of the state of the environment pre- and post-mussel farming

Prepared by:
Jeanie Stenton-Dozey
Niall Broekhuizen



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Shellfish Restoration Research in New Zealand

CAWTHRON

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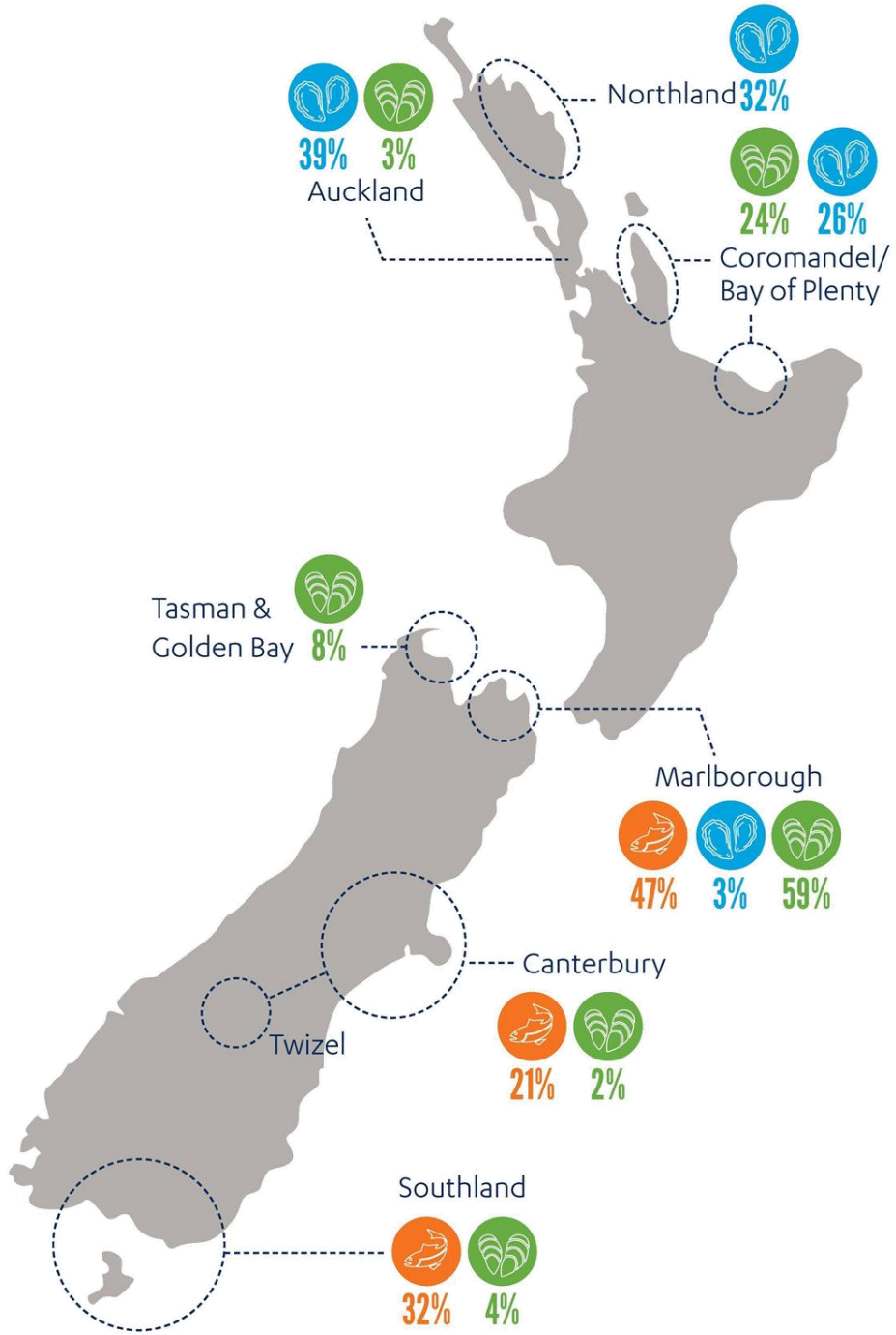
Bigger picture

- Habitat complexity?
  - Indications of seafloor coarsening over time – likely due to shell material
- Distinct communities?
  - Yes, when compared to reference sites
- Enrichment or restoration?
  - Classic metrics lean towards enrichment
  - Functional classification lean towards restoration or recovery



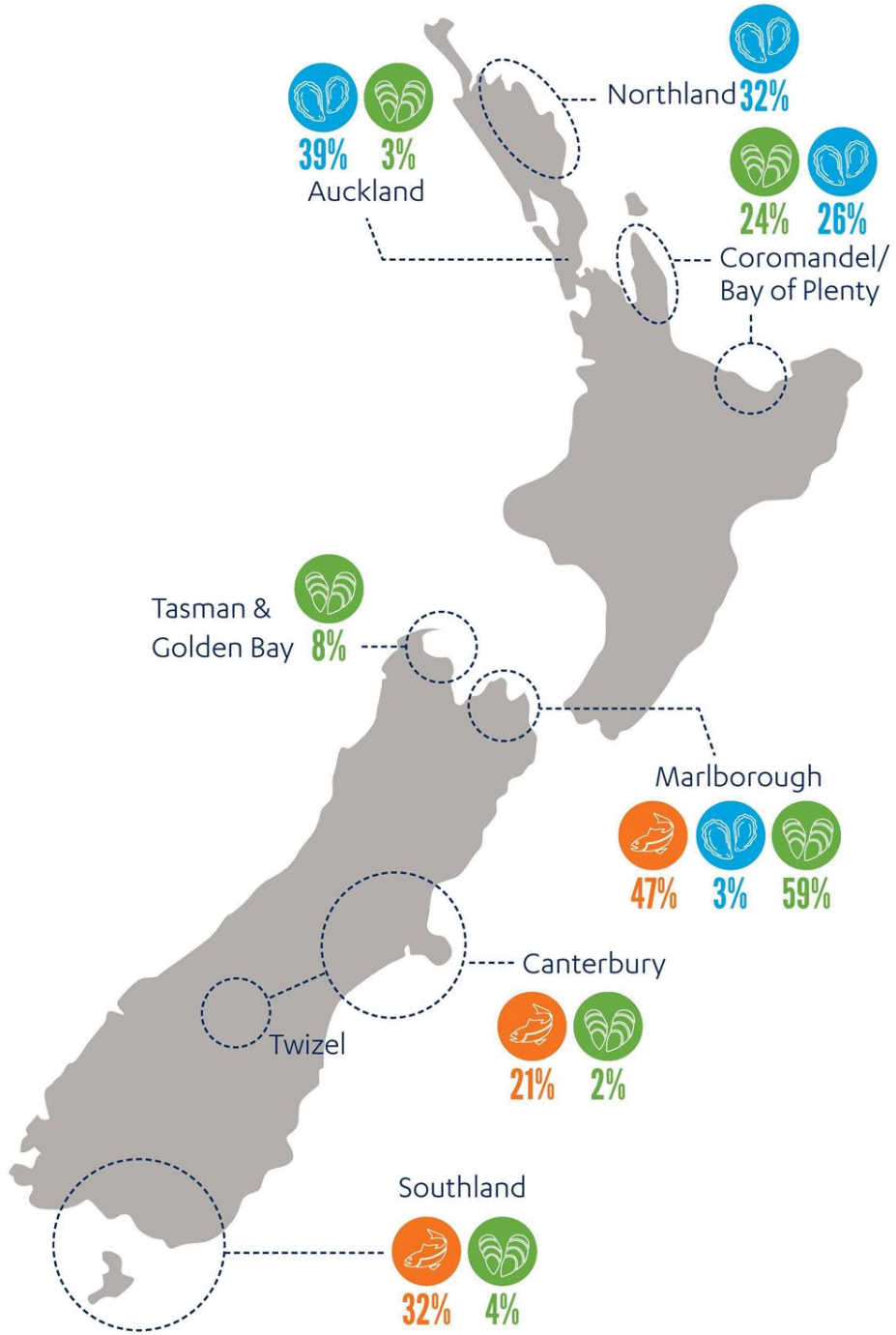
AQNZ

Bigger picture

- Enrichment or restoration?

Caveats and considerations:

- Lost natural reference systems = lack of comparison
- Evaluation of restored reefs ongoing
- Mussel persistence?
- Restoration vs Recovery vs Better than nothing?

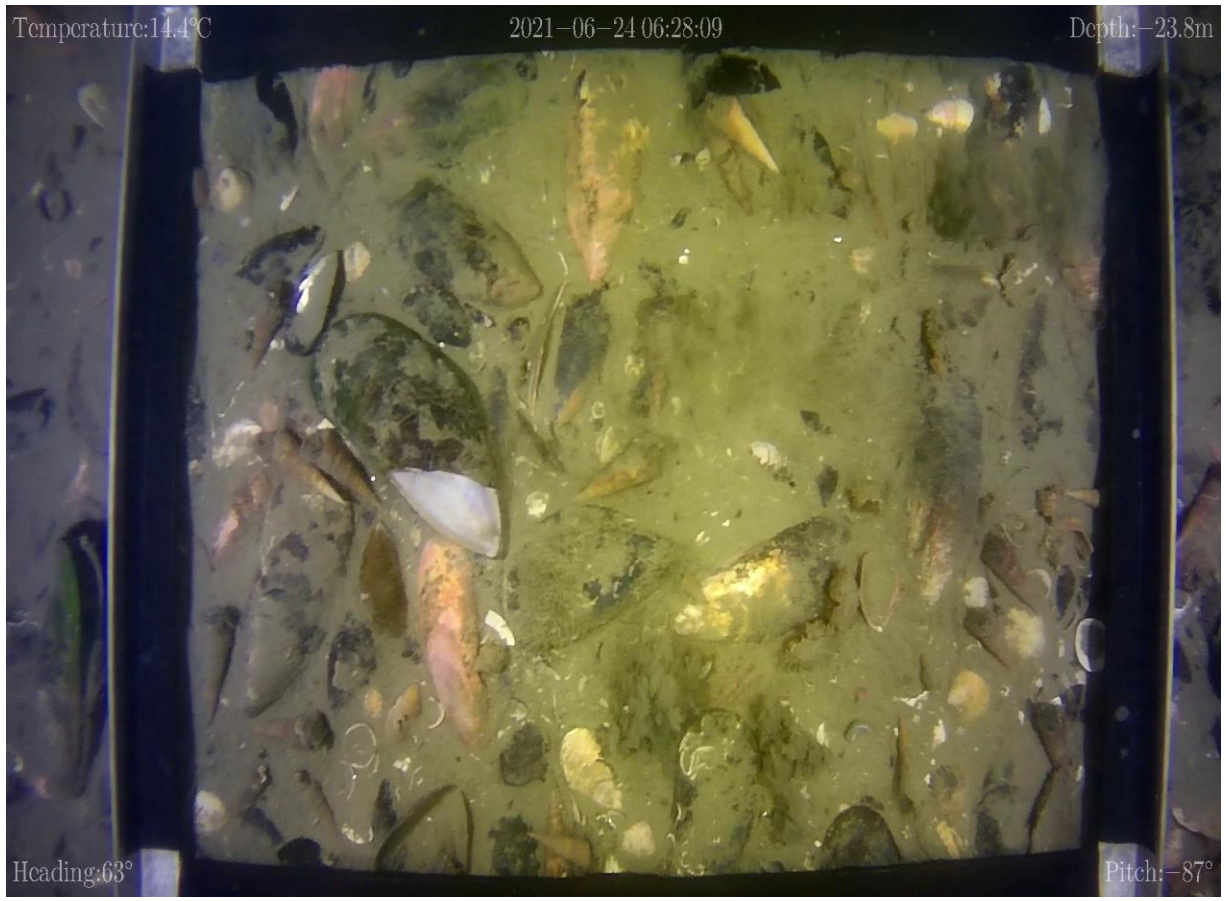


AQNZ

Enrichment or recovery?

Reference

Farm



Enrichment or recovery?

Reference

Farm

Enrichment or recovery?

Farm

Restored bed

Revive our Gulf


mfa
MARINE FARMING ASSOCIATION


enviroLink


MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI


Patai?
Revive our Gulf