Tsleil-Waututh Nation
PEOPLE OF THE INLET

Fisheries and Oceans Canada | Pêches et Océans Canada

Partnership in Science and Stewardship: The səlilwətaɬ / Tsleil-Waututh Nation and Fisheries & Oceans Canada Collaborations in Burrard Inlet

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Salish Sea Roundtable, December 2, 2025

Outline

1) Tsleil-Waututh Nation **(TWN)** Overview

2) Burrard Inlet Environmental Science and Stewardship Agreement **(BIESSA)**

3) Collaborative Projects
   - Crab Telemetry Pilot
   - Clam Beach Research
   - Indian River Watershed

4) Final thoughts

Tsleil-Waututh Nation

PEOPLE OF THE INLET

Tsleil-Waututh people have lived along the coasts of Burrard Inlet for thousands of years.

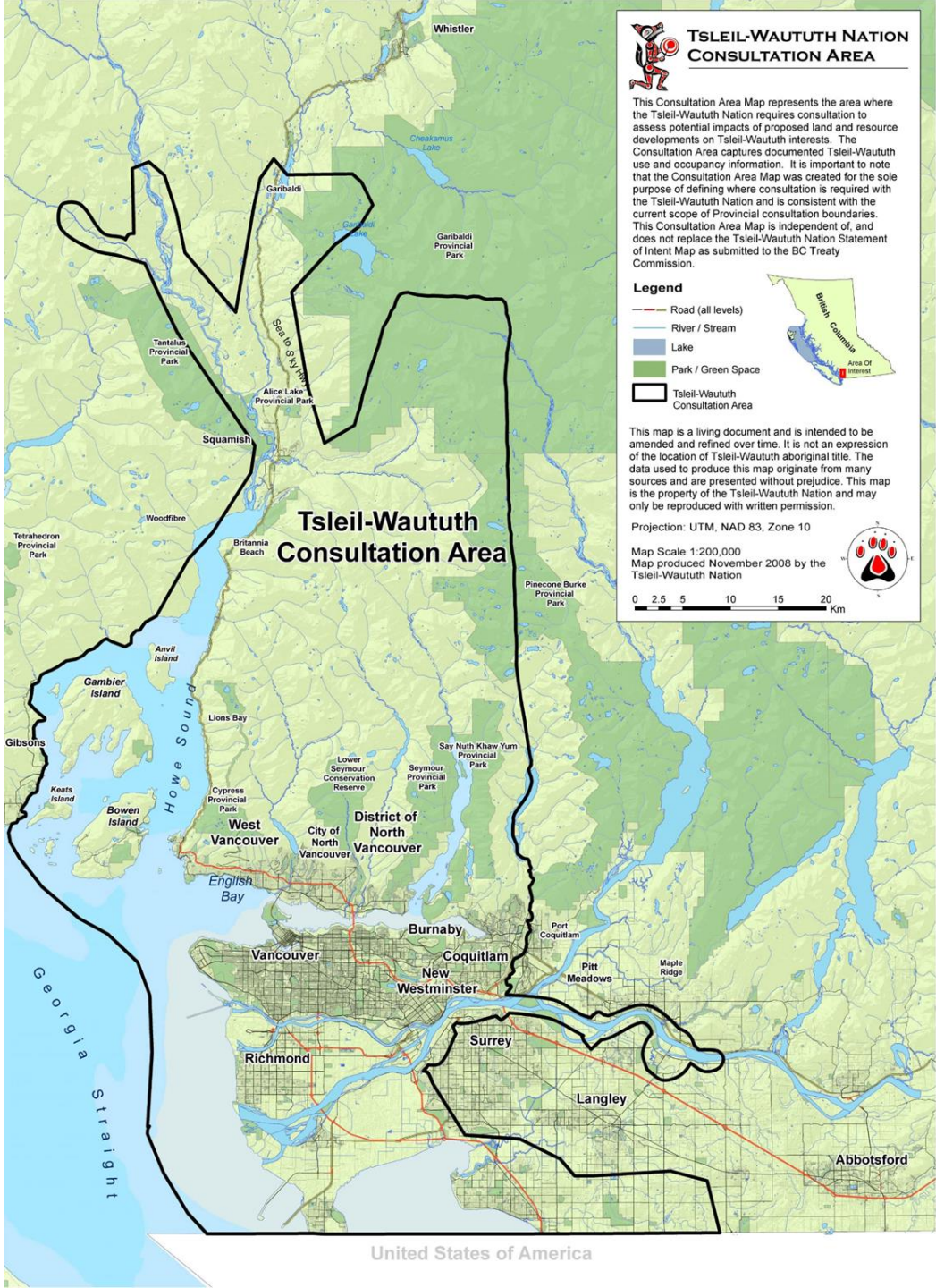
TWN had a population of ~10,000, down to a few dozen due to contact and disease.

The current population is about 700.

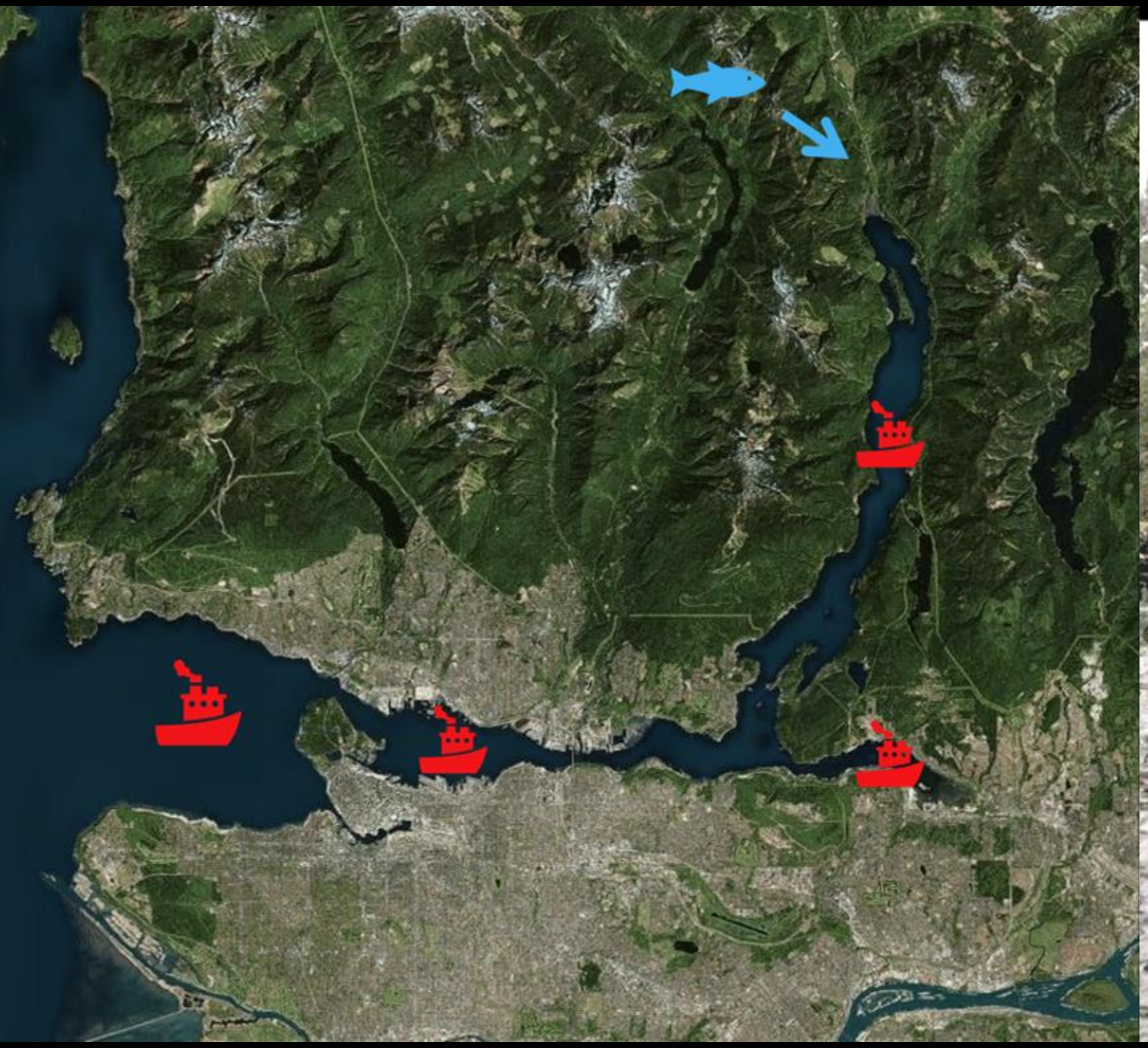
Moving with the seasons and available resources, the villages TWN occupied were all along the shores and waterways of the Inlet.

The main villages are: Whey-Ah-Wichen, təmtəmíx̱ʷtən and Inlailawatash.

TWN fished, hunted, and gathered all throughout the territory and relied heavily on marine resources for 90% of their diets. They always maintained stewardship responsibilities to protect the health of the territory, and practiced sustainable harvesting.



Treaties Lands Resources (TLR), and Field Crew

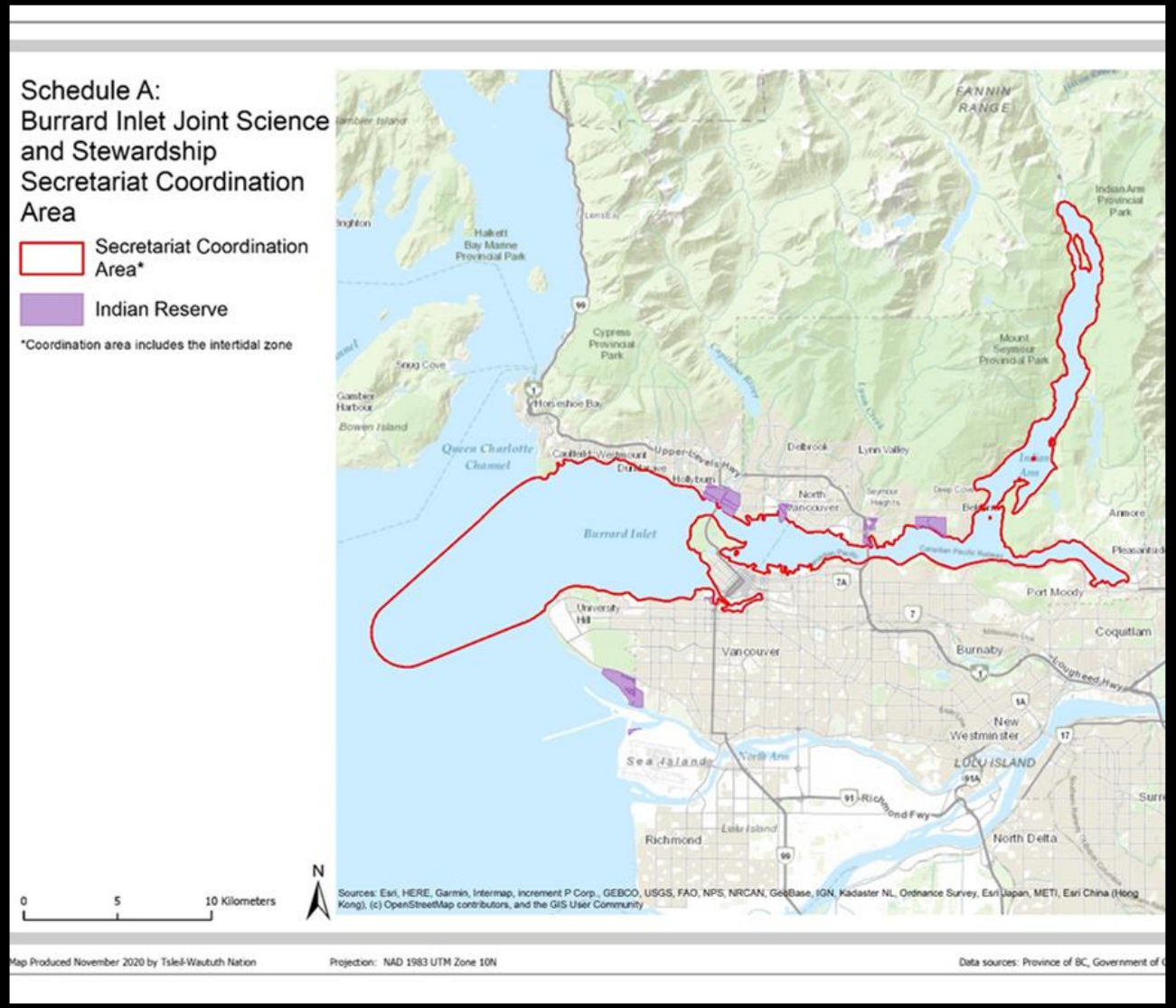


2017: Completion and release of the Burrard Inlet Action Plan (BIAP)

Created a vision for environmental stewardship on the Inlet

Coming soon: Updated BIAP

Burrard Inlet Environmental Science and Stewardship Reconciliation Agreement (BIESSA)



Nation-to-Nation Reconciliation Agreement intended to foster coordination and collaboration between the Tsleil-Waututh Nation and Canada

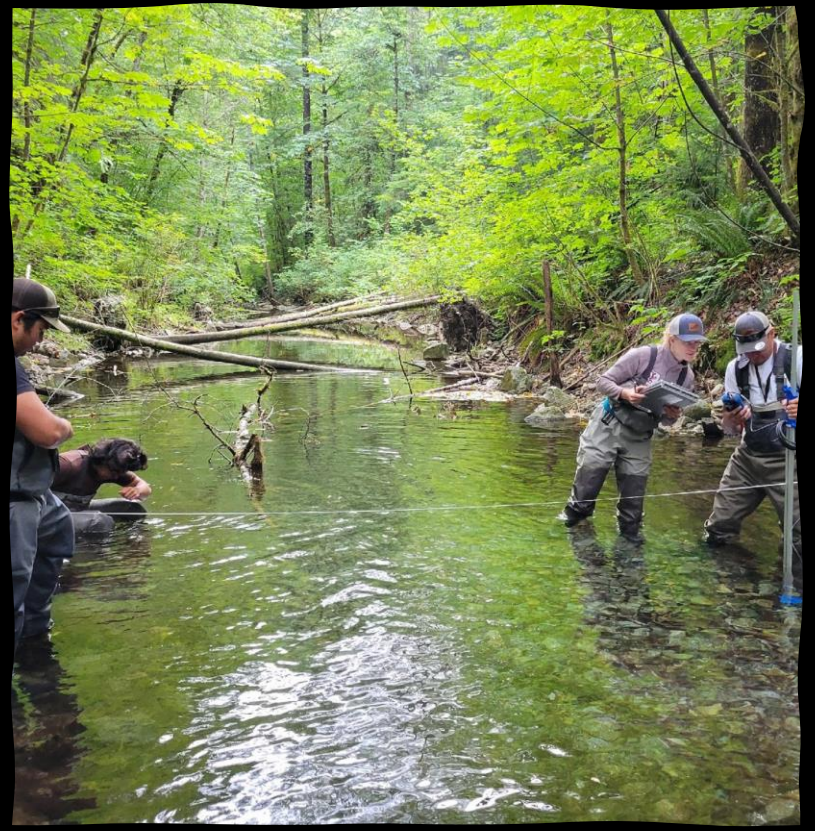
- Signed in August of 2021
- Fisheries and Oceans Canada (DFO), Environment and Climate Change Canada, Transport Canada, Crown Indigenous Affairs and Northern Affairs Canada, TWN

Includes consistent funding to TWN over 10 years

Collaborative Projects

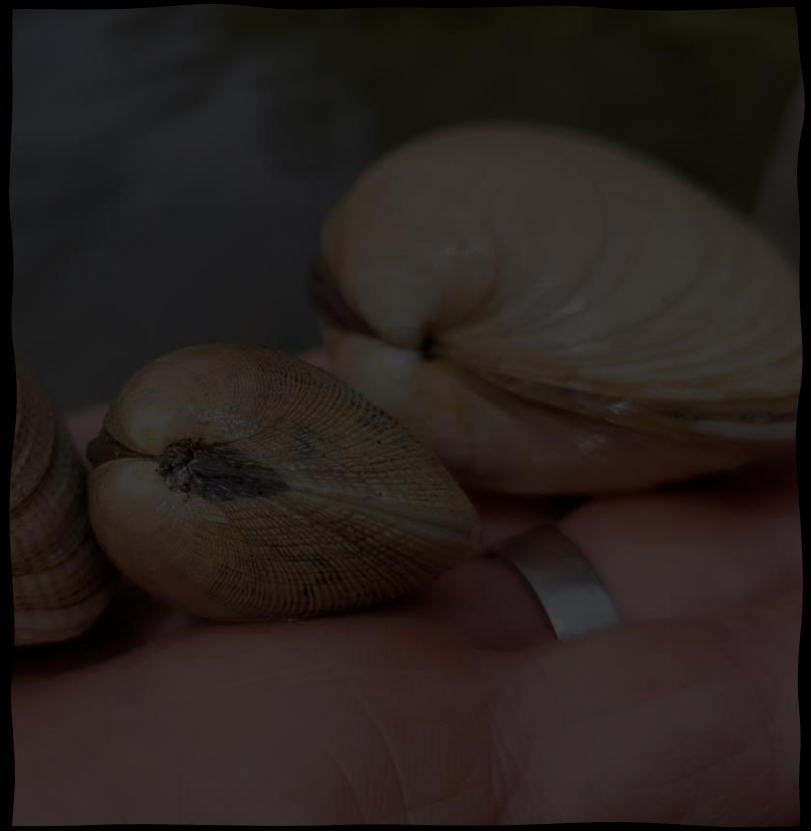
1. Crab telemetry pilot

2. Clam beach research



3. Indian River Watershed

Collaborative Projects



1. **Crab telemetry pilot**

Crabs TWN context

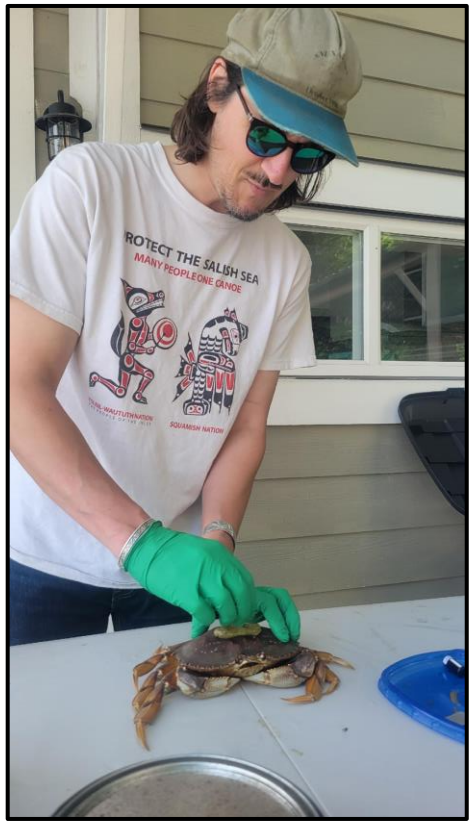
Crabs TWN context

Burrard Inlet Crab telemetry – Pilot Study

Objectives

Better understand Dungeness crab movements and home ranges in key regions within TWN territory.

Develop capacity for future potential acoustic tracking work in Burrard Inlet (crab or other species)



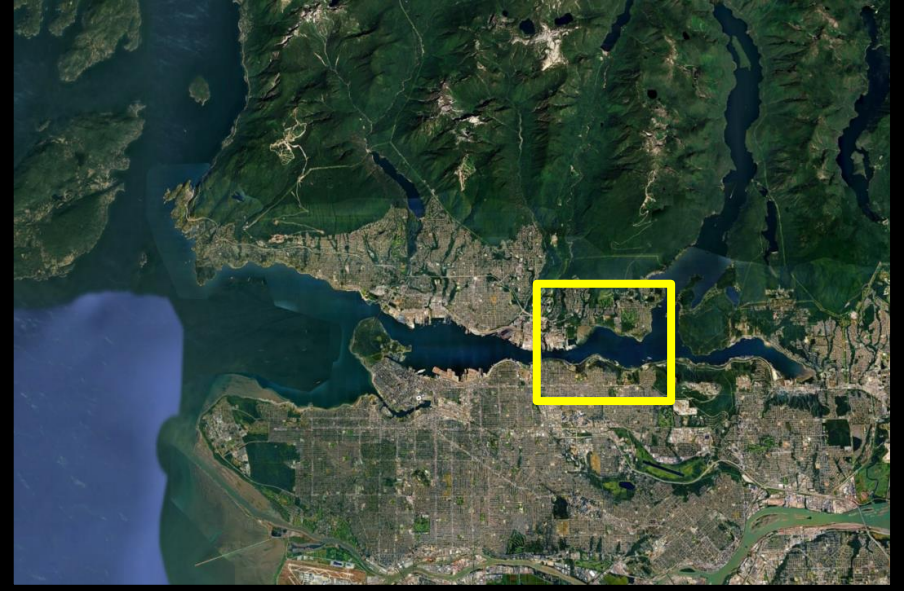
Tracking Methods

2024: 17 crabs tagged in three areas

- active tracking

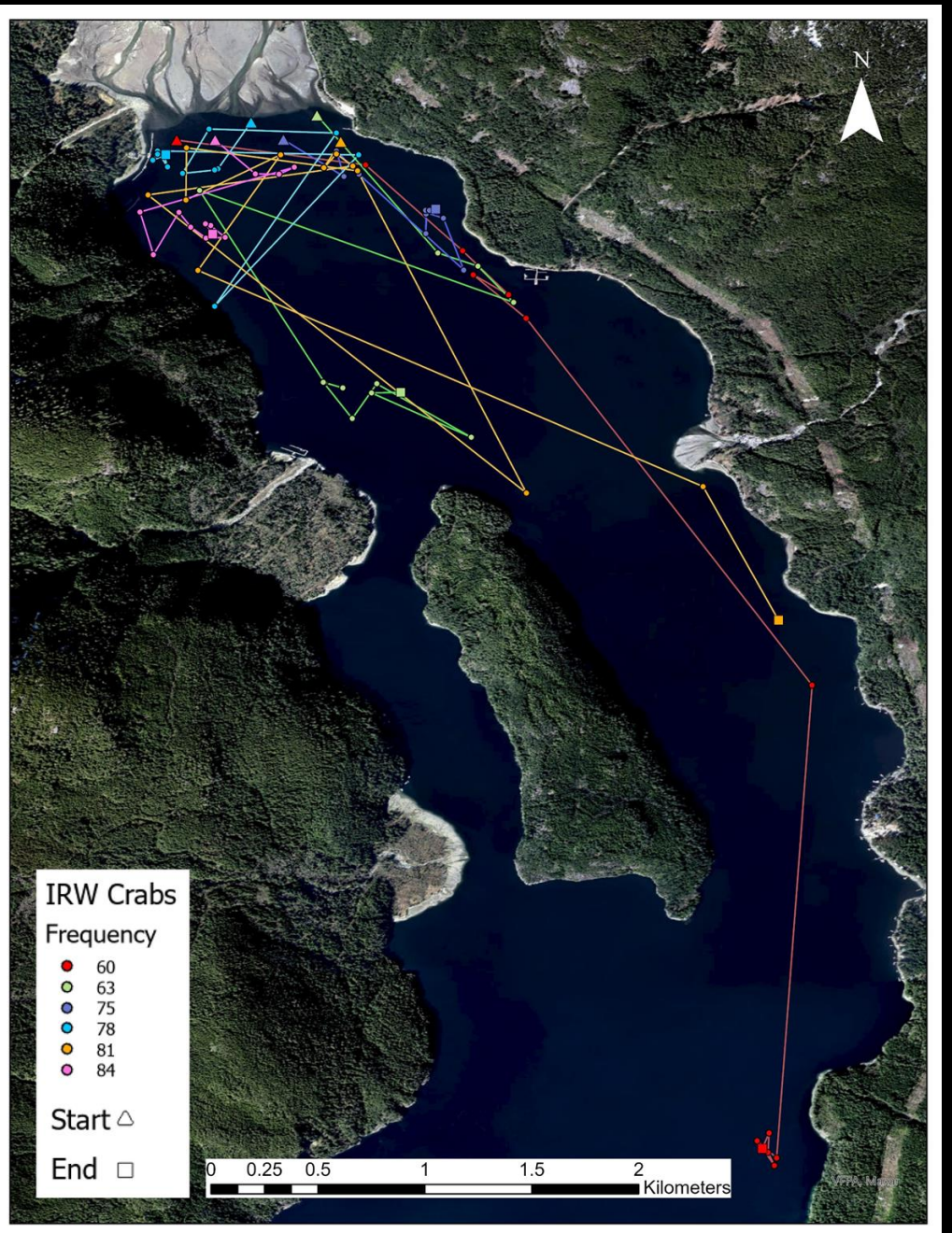
2025: 30 crabs tagged – focus on one area

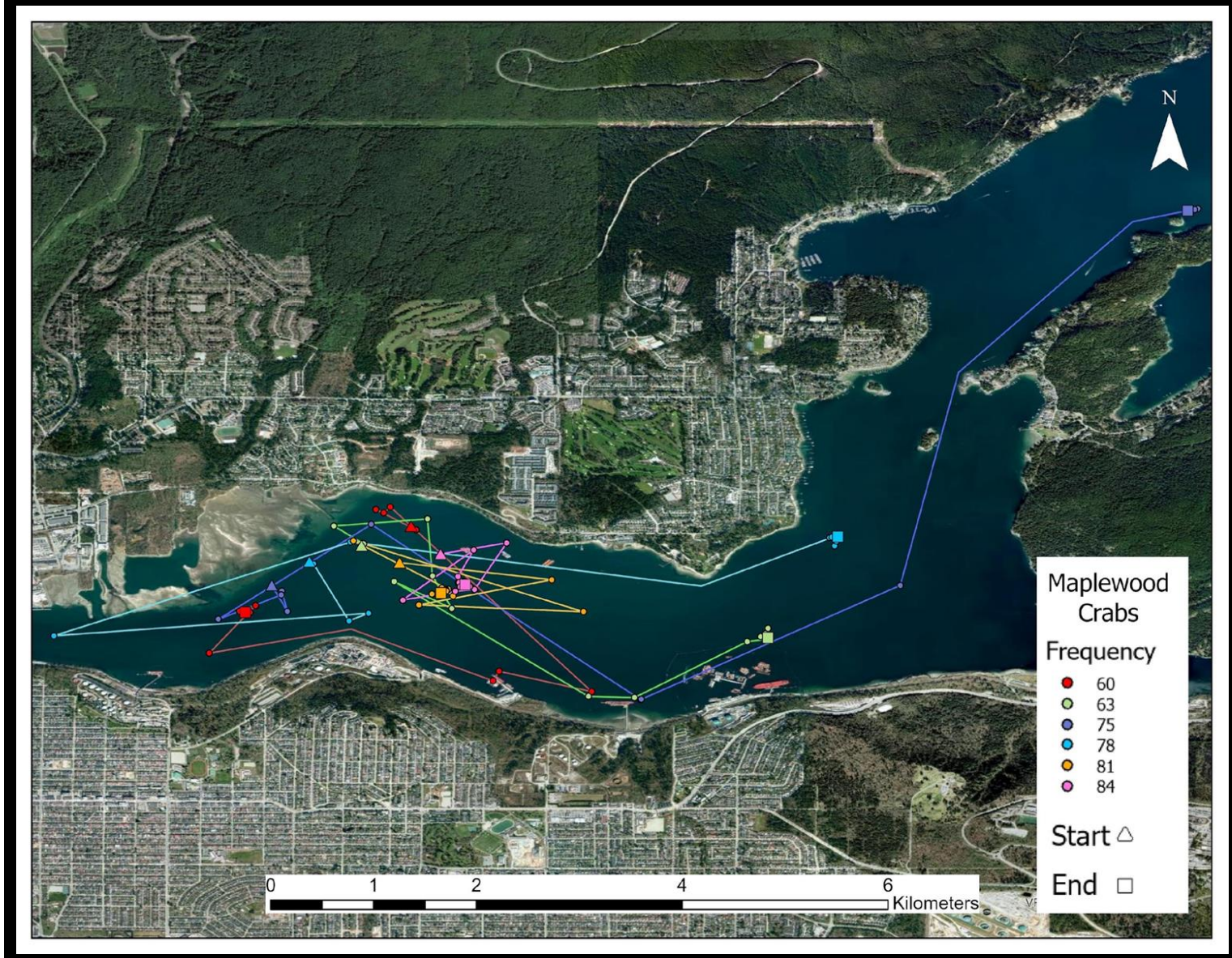
- passive and active tracking



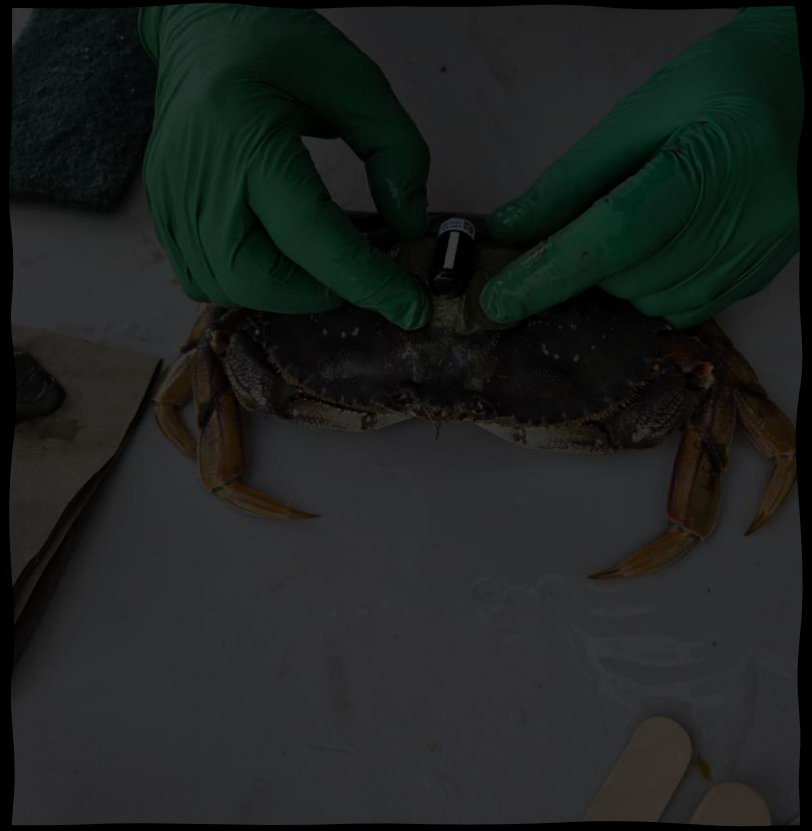
800209
800210
800202
800201
800192
800204
800191
800200
800193
800190

2024 Movements





Collaborative Projects



2. Clam beach research

Clams TWN context

Historically, bivalves were one of the four main food sources for TWN

- **1972**: Clam fishery closed on Burrard Inlet due to contamination from industrial development
- **2001**: TWN begins working with ECCC towards a limited clam harvest
- **2012**: Began small scale clam surveys
- **2016**: Successful first opening of a limited clam harvest in Burrard Inlet
- **2021**: MSc project studying clam species distribution and abundance

Clam Surveys: est. 2012

Burrard Inlet Collaborative Clam Beach Research

Objective

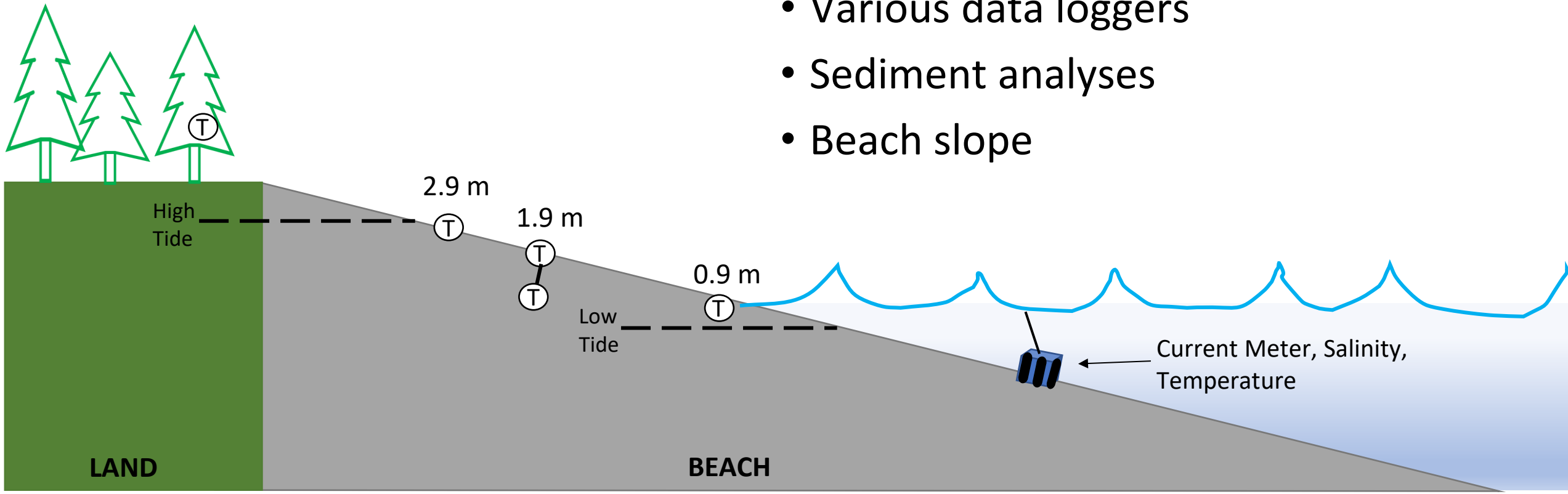
Monitor environmental and physical factors at key clam beaches in Burrard Inlet and gain a better understanding of factors influencing clam productivity and invasive species

Clam Beach Locations

Beach Schematic

Clam population surveys at each beach paired with:

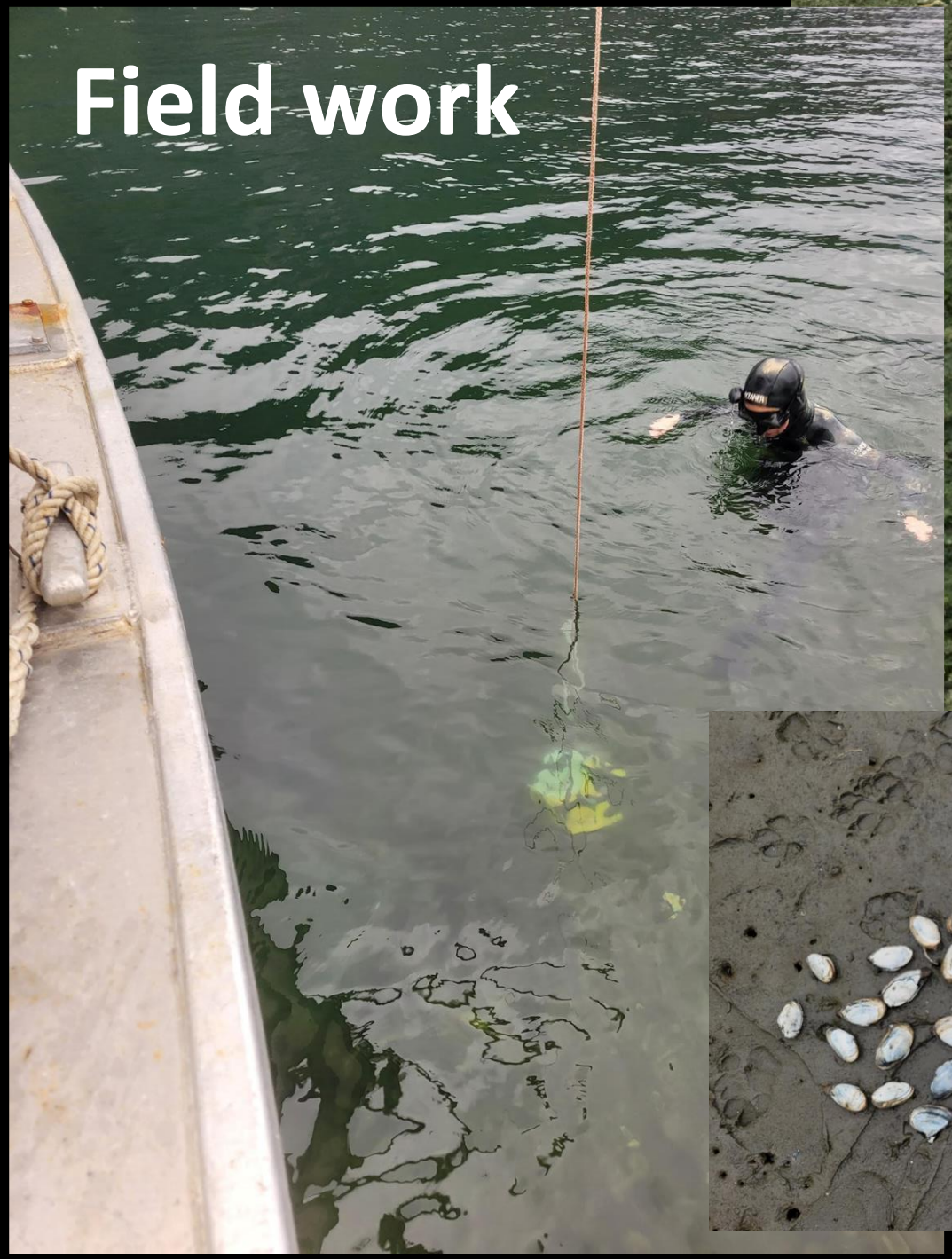
- Various data loggers
- Sediment analyses
- Beach slope



T = Temperature Logger

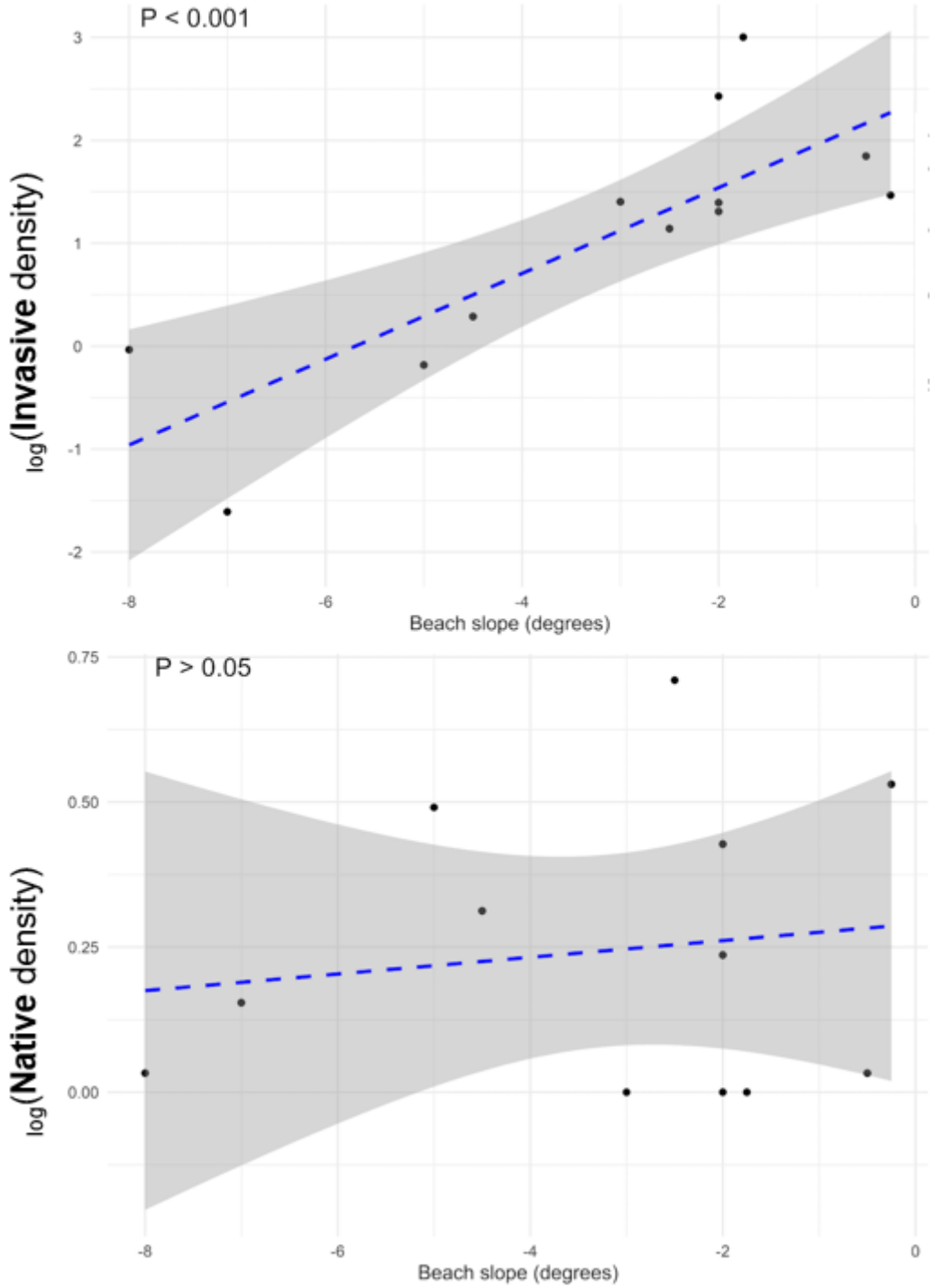
= "subtidal" mooring

Field work



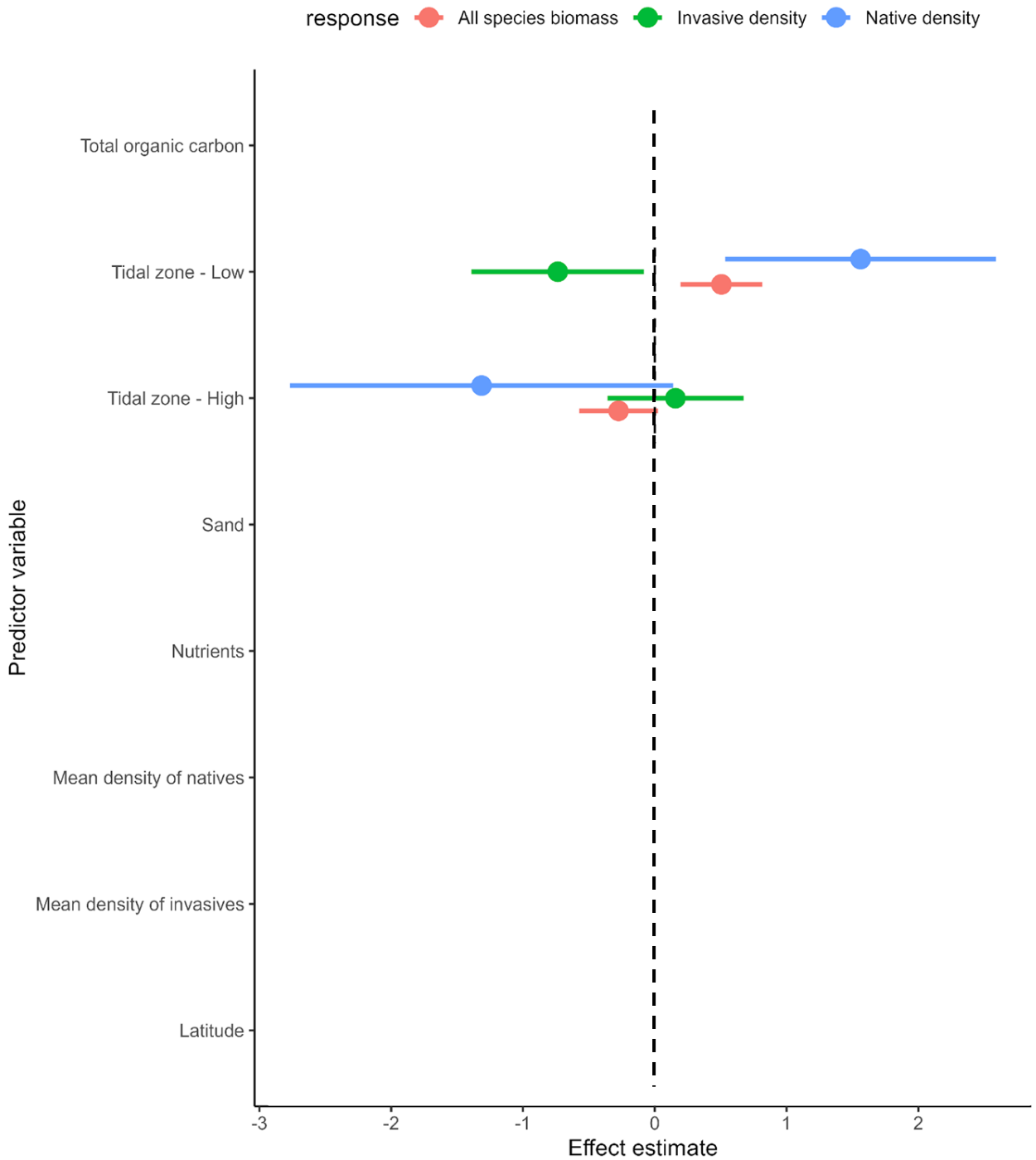
Emerging trends

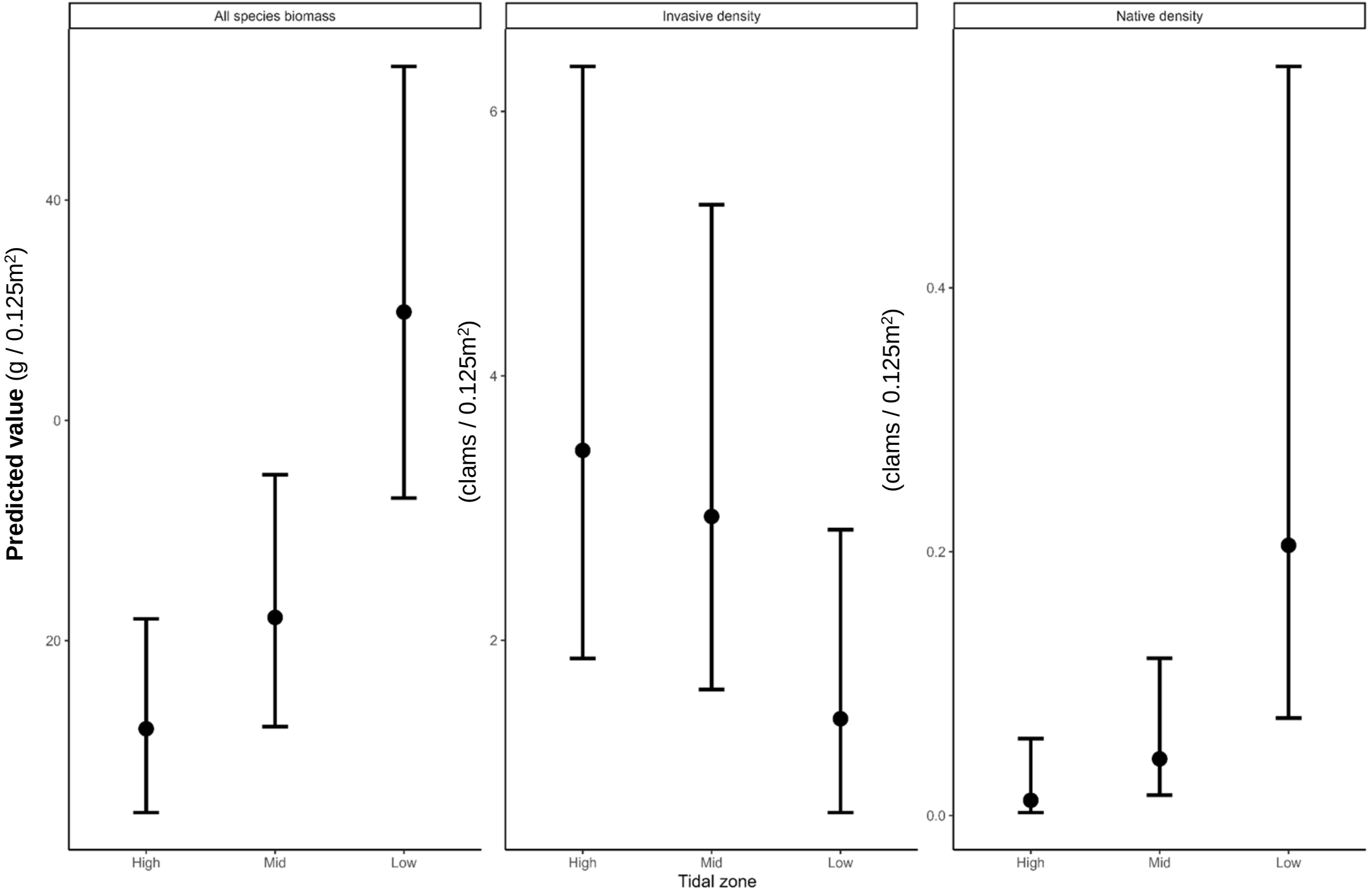
- Beach slope



Emerging trends

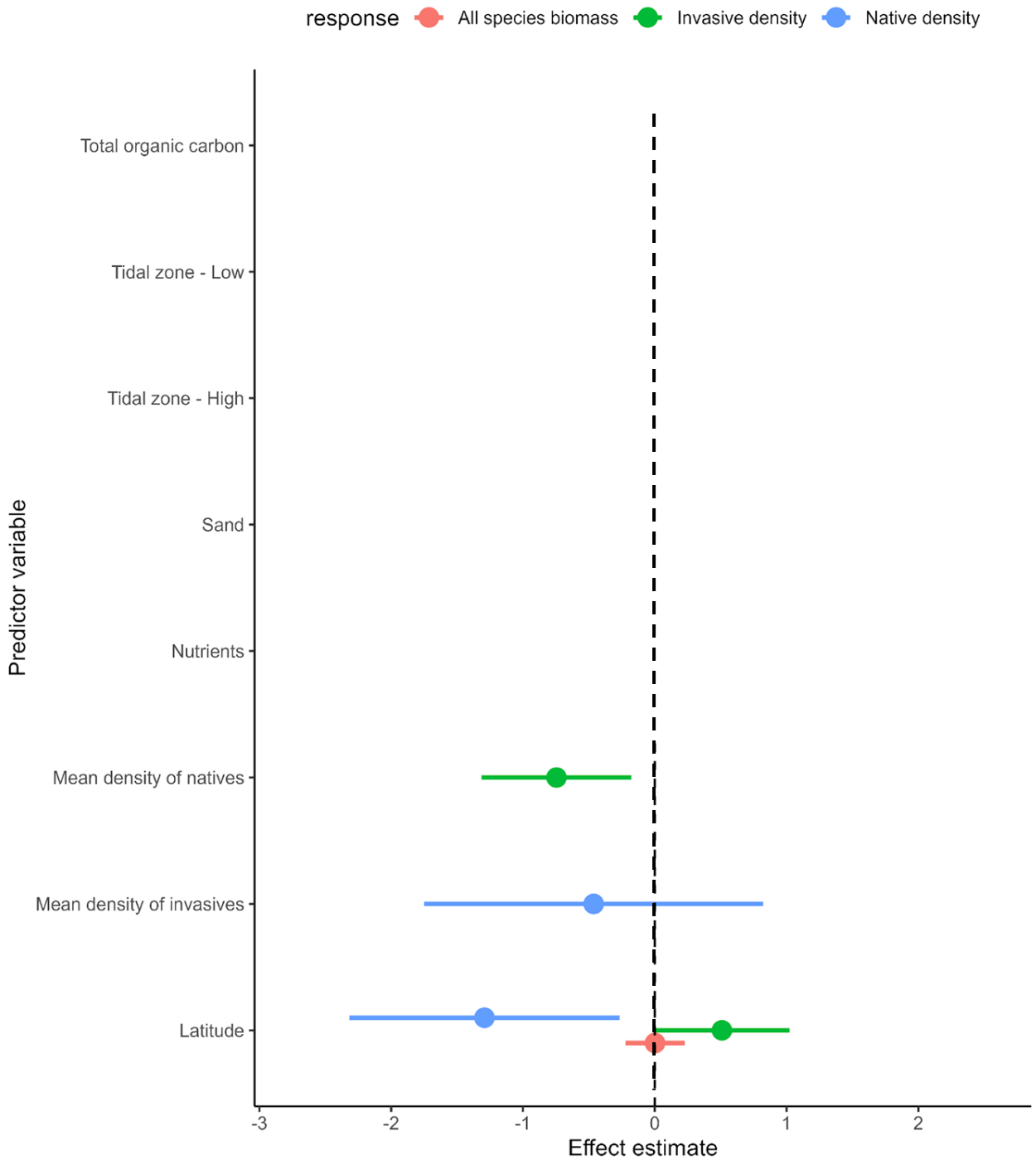
- Tidal zone stratification (native vs invasive)
- Spatial ‘separation’ natives vs invasives
- Nutrients (Native spp.)




All species biomass
Invasive density
Native density
Predicted value (g / 0.125m²)
(clams / 0.125m²)
(clams / 0.125m²)
40
0
20
6
4
2
0.4
0.2
0.0
High
Mid
Low
Tidal zone

Emerging trends

- Tidal zone stratification (native vs invasive)
- Spatial ‘separation’ natives vs invasives
- Nutrients (Native spp.)



Emerging trends

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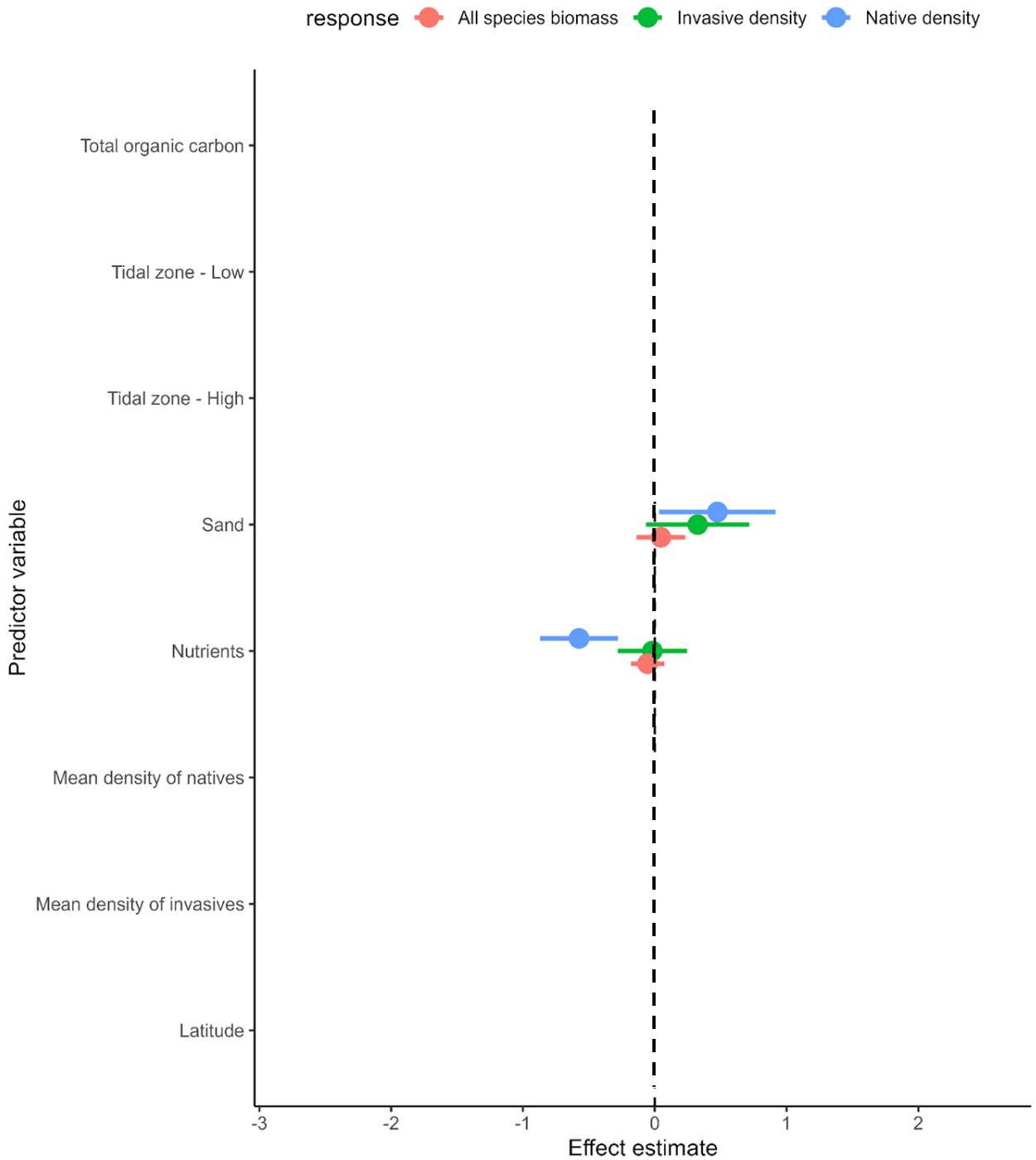
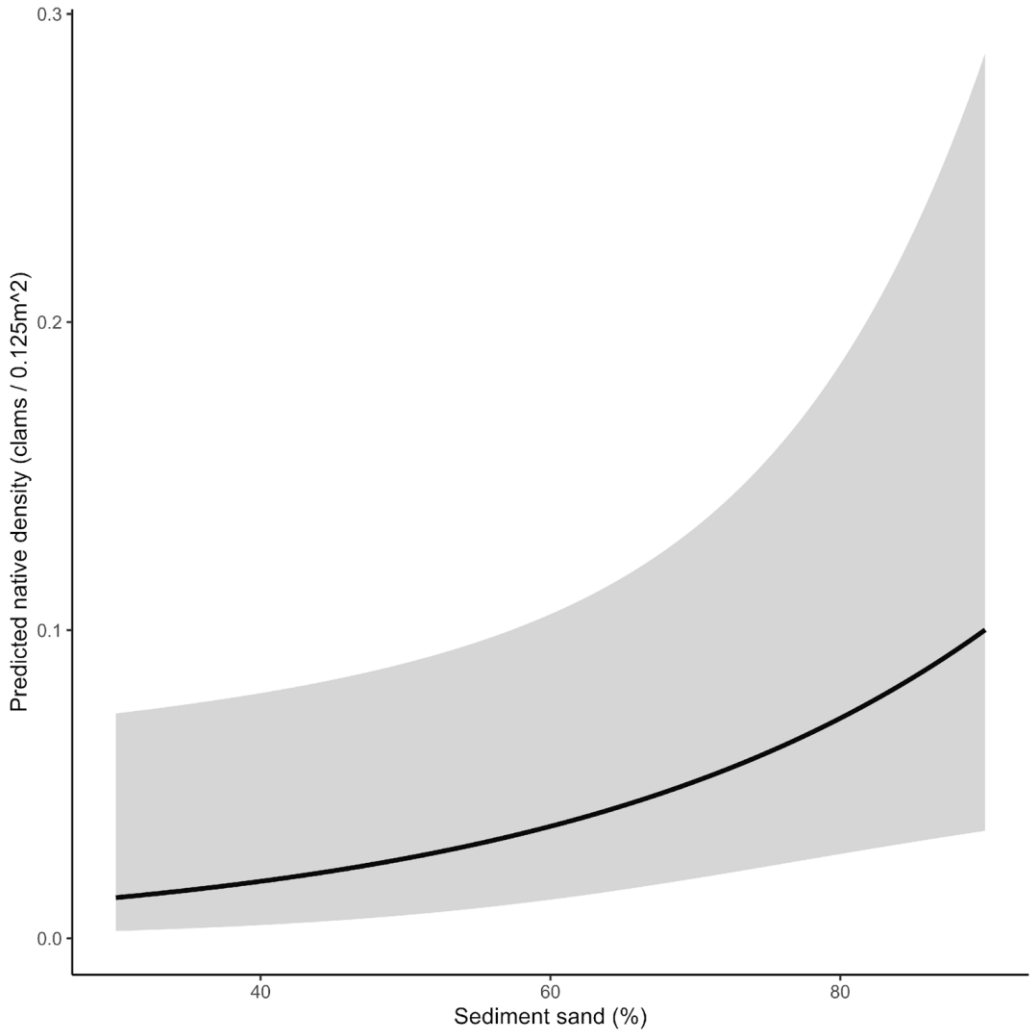
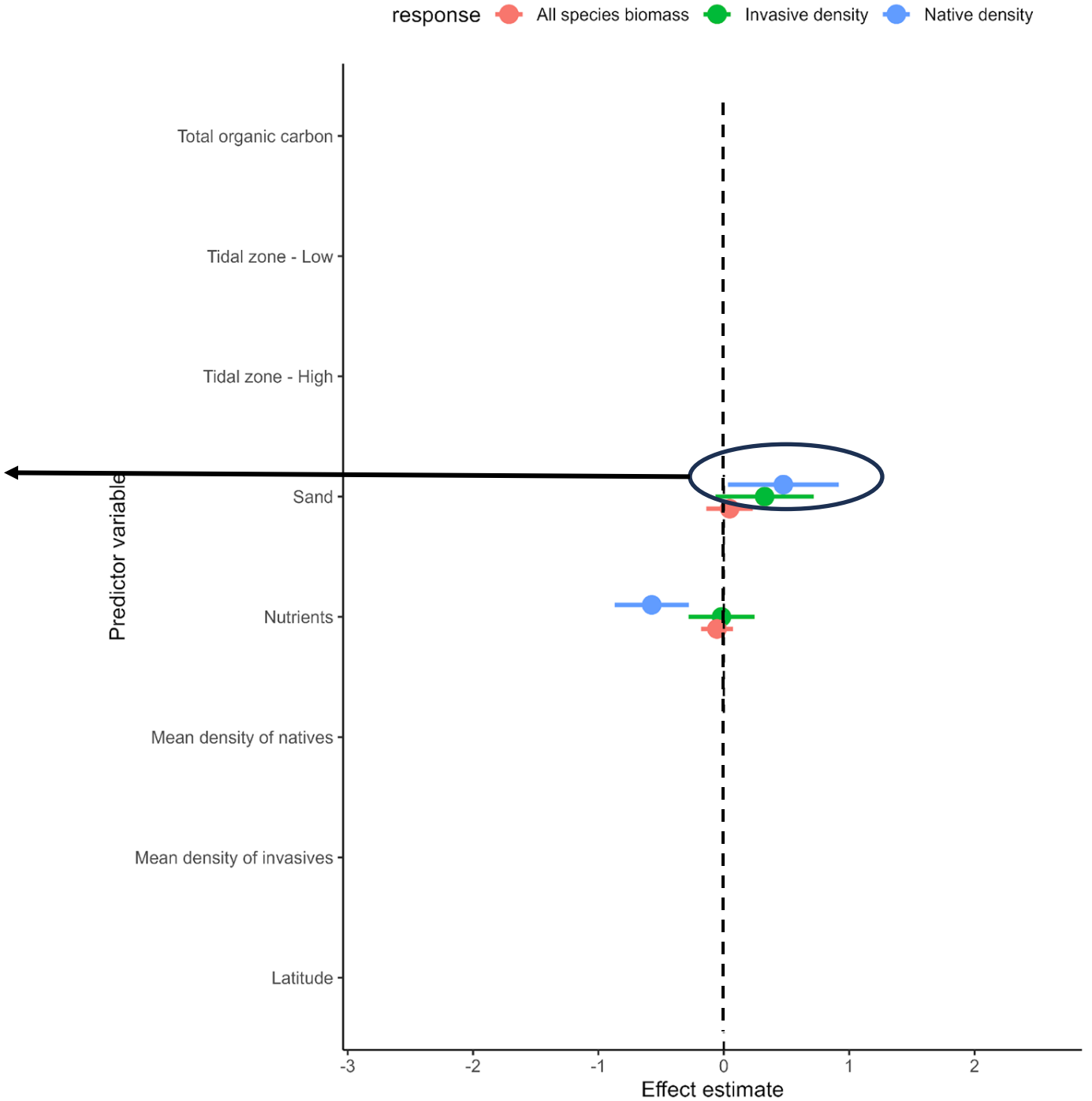
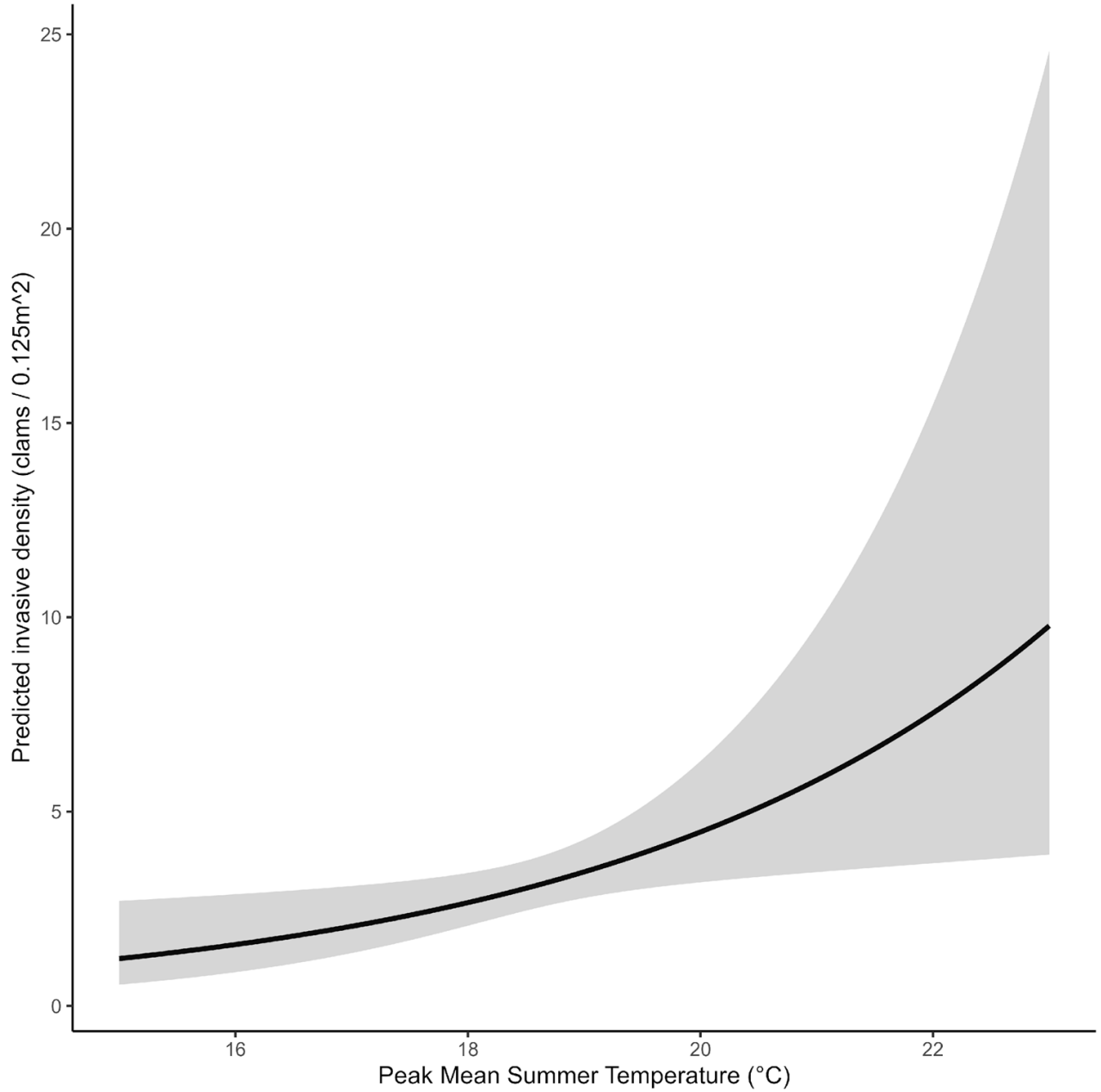



0.3
0.2
0.1
0.0
Predicted native density (clams / 0.125m^2)
40
60
80
Sediment sand (%)

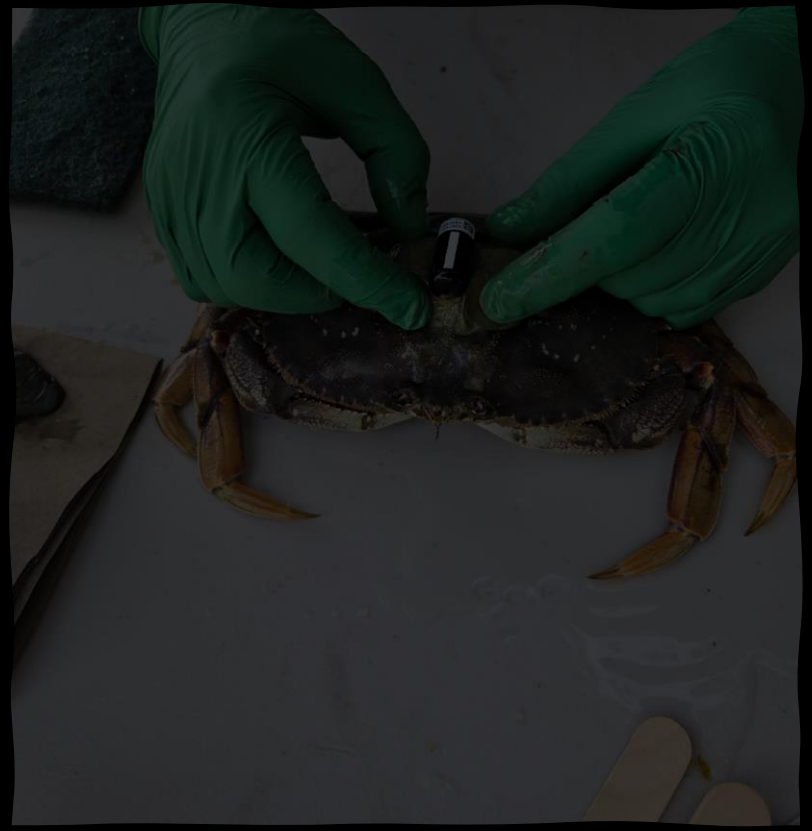

response
All species biomass
Invasive density
Native density
Total organic carbon
Tidal zone - Low
Tidal zone - High
Sand
Nutrients
Mean density of natives
Mean density of invasives
Latitude
Predictor variable
-3
-2
-1
0
1
2
Effect estimate

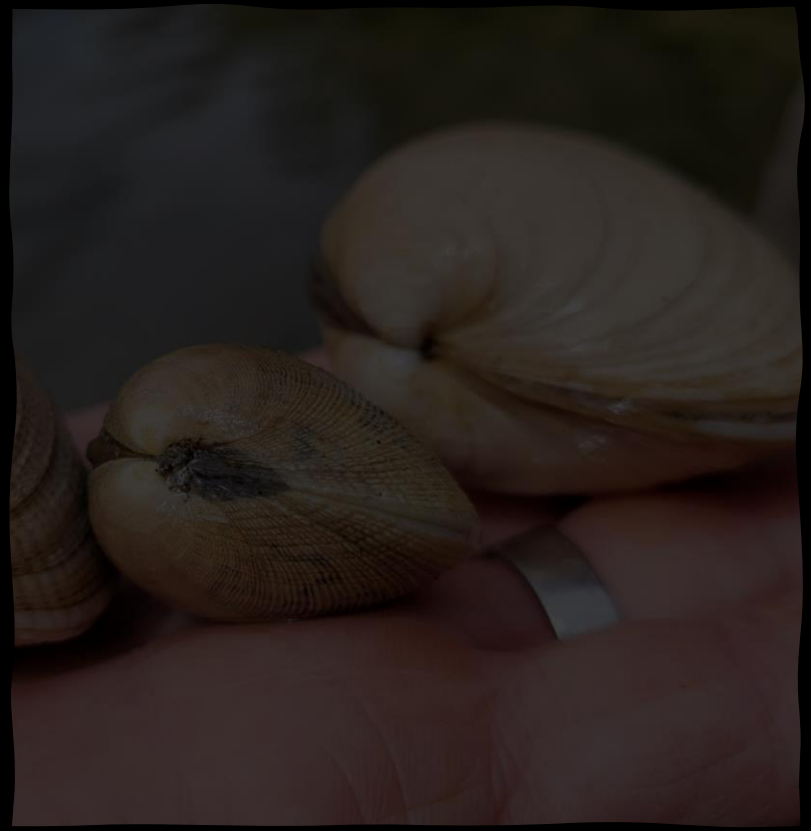
Emerging trends

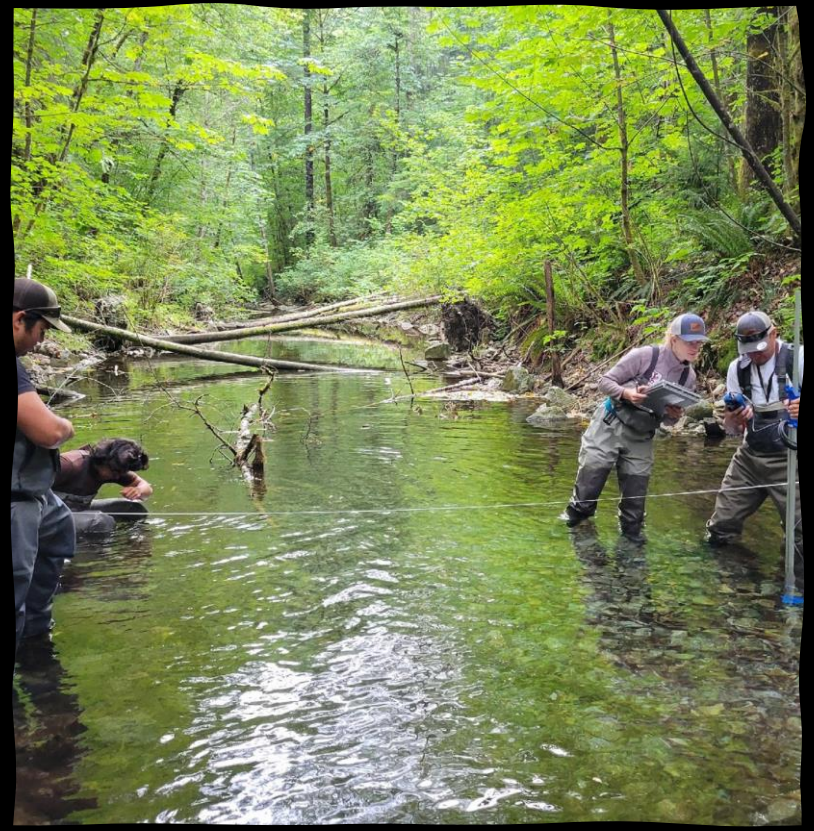
- Tidal zone stratification (native vs invasive)
- Spatial ‘separation’ natives vs invasives
- Nutrients (Native spp.)
- Temperature and beach slope



Collaborative Projects







3. Indian River Watershed

xʔəlilwətaʔɬ/Indian River Watershed (IRW) Context

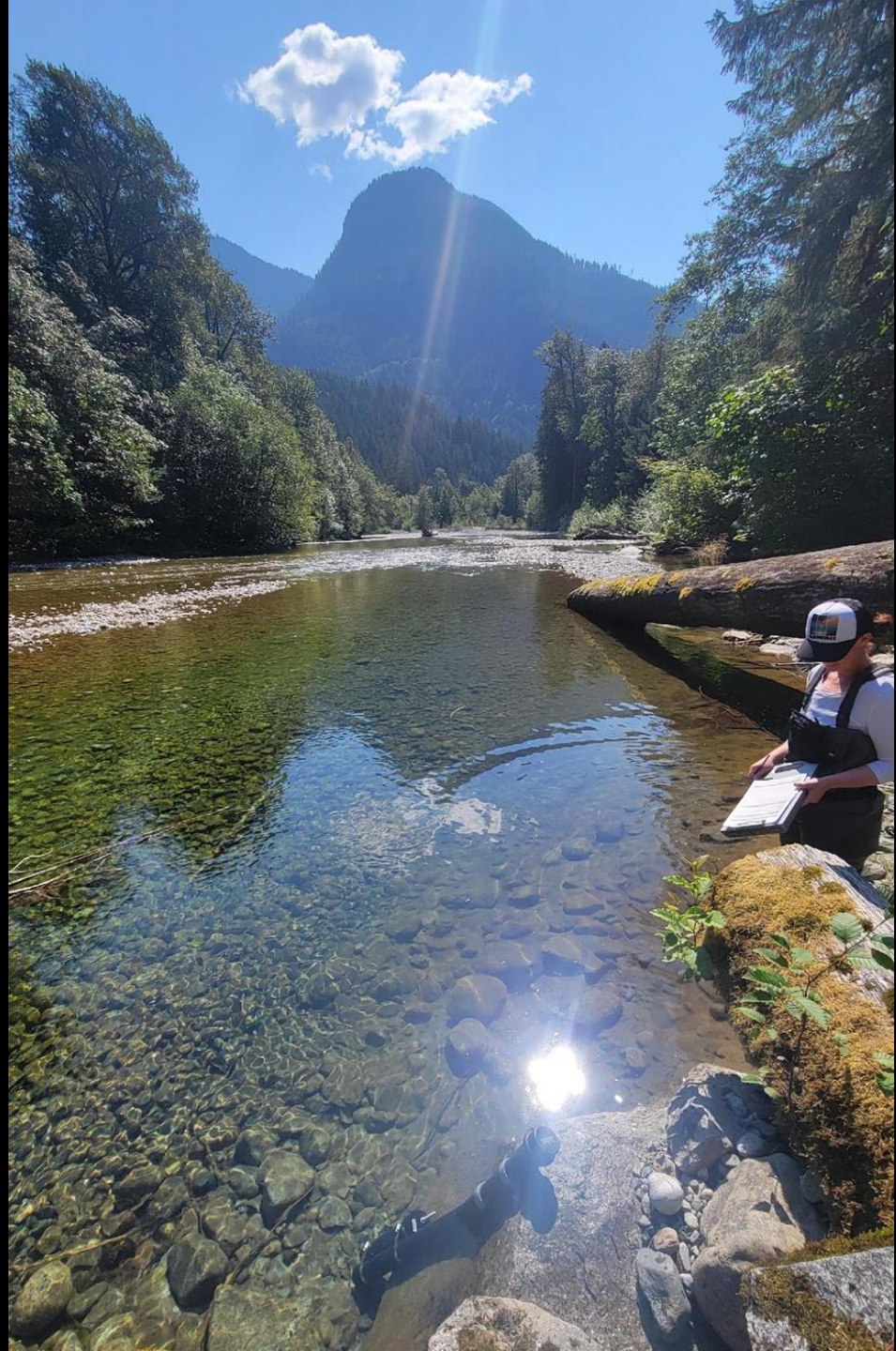
- Considered by many TWN members as the “heart” of the territory
- Inlailawatash village site is located in the estuary and was the home base for salmonid harvesting
- TWN has been conducting fisheries stewardship work in the IRW since the late 1980s
- In 2023, we started environmental monitoring with DFO

Indian River Watershed – Drought

Dissolved oxygen research

Objectives

- Study dissolved oxygen in context of water levels and densities of salmon to better understand factors leading to hypoxia in a coastal system
- Knowledge of what conditions might flag the need for mitigation/intervention to minimize impacts to fish



Dissolved oxygen logger locations 2024 and 2025

INDI19

INDI26

INDI18

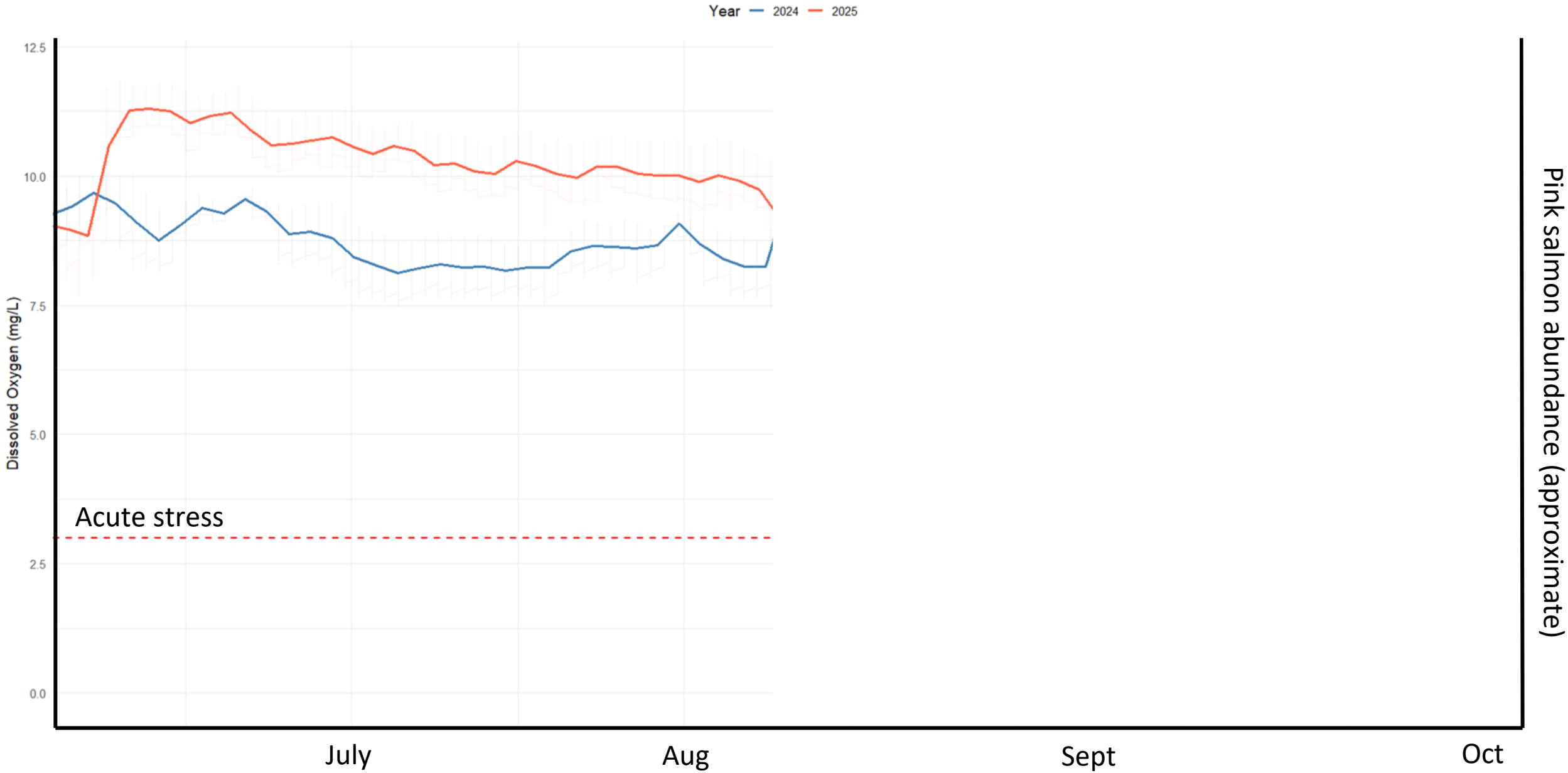
INDI24

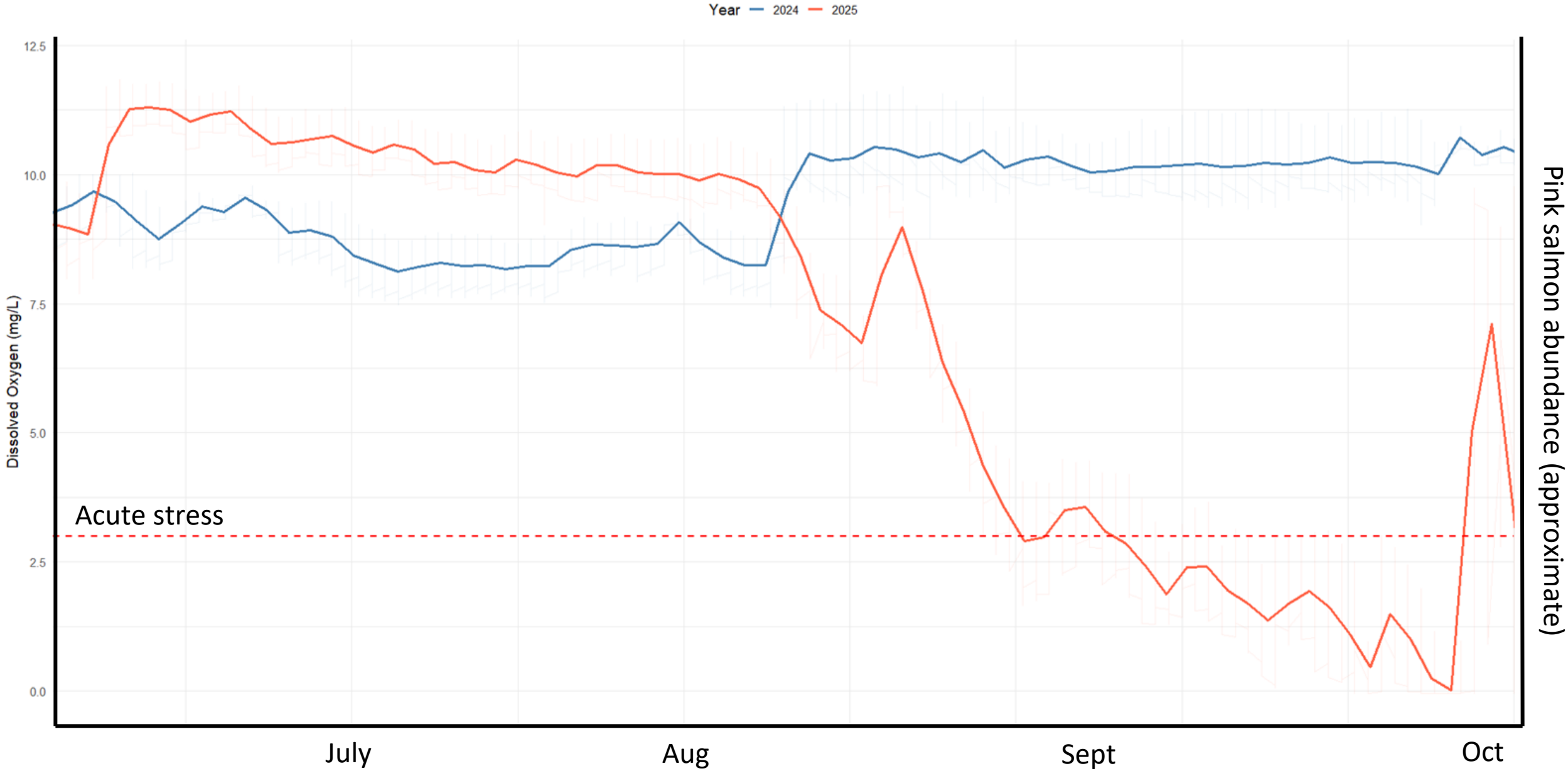
2022 & 2023 dry up location

Image © 2024 Airbus

D.O. logger with paired depth logger

Paired with spawner abundance surveys by TWN field crew


Year
2024
2025
12.5
10.0
7.5
5.0
2.5
0.0
Dissolved Oxygen (mg/L)
Acute stress
July
Aug
Sept
Oct
Pink salmon abundance (approximate)


Year 2024 2025
12.5
10.0
7.5
5.0
2.5
0.0
Dissolved Oxygen (mg/L)
Acute stress
July
Aug
Sept
Oct
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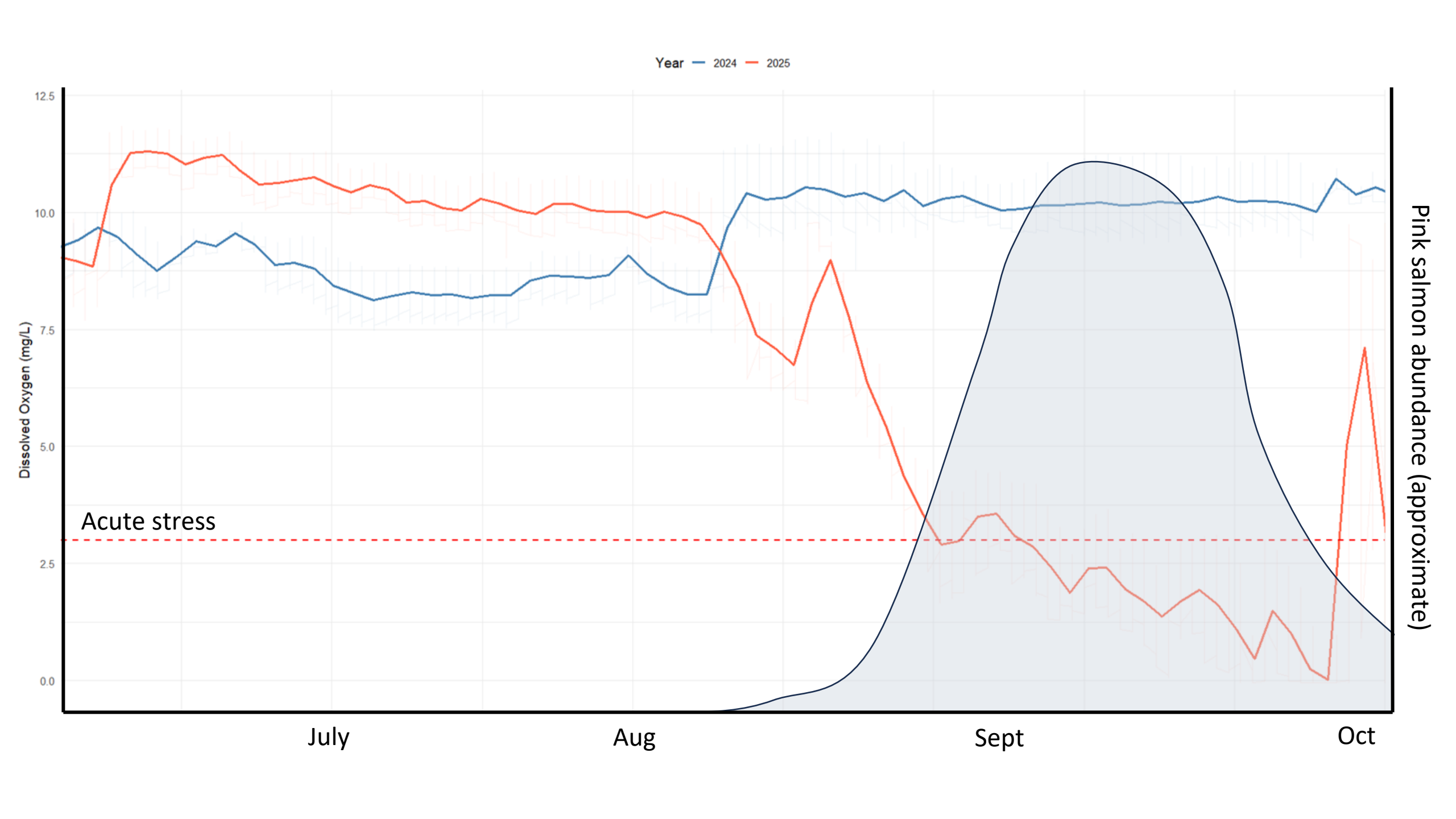

Year
2024
2025
12.5
10.0
7.5
5.0
2.5
0.0
Dissolved Oxygen (mg/L)
Acute stress
July
Aug
Sept
Oct
Pink salmon abundance (approximate)

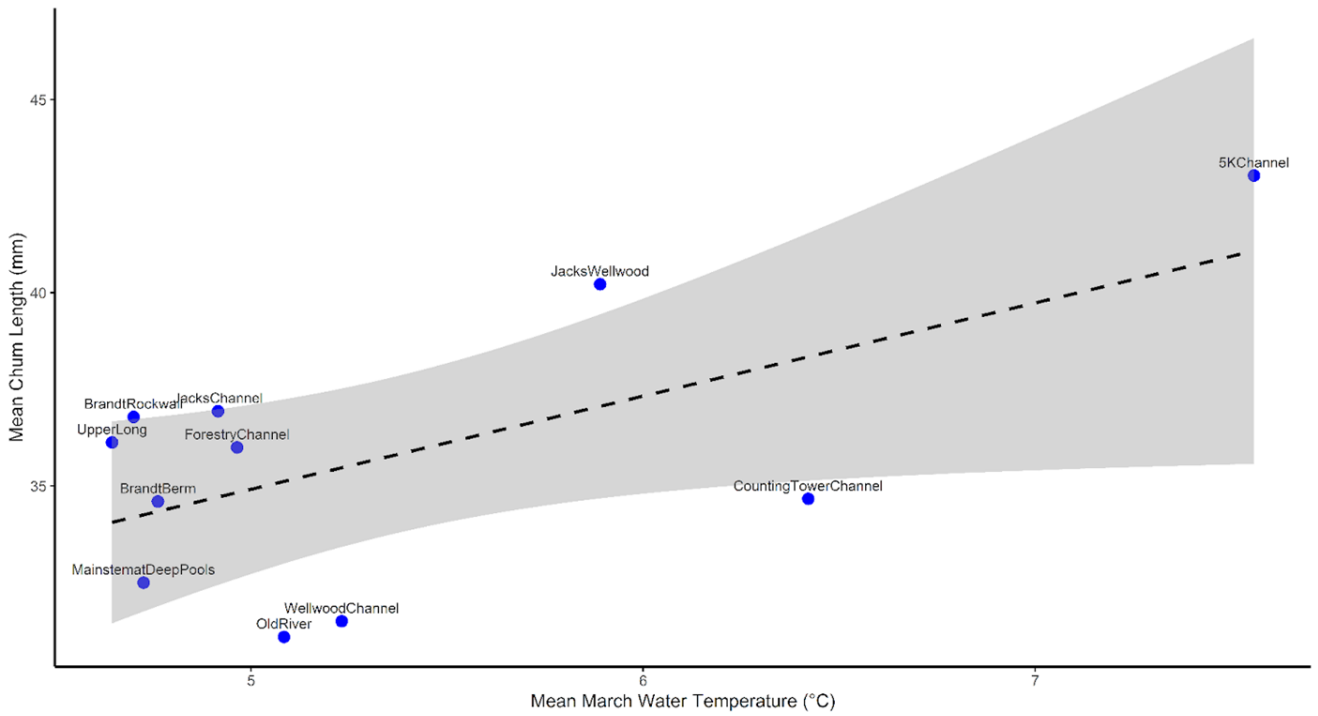
July 2025

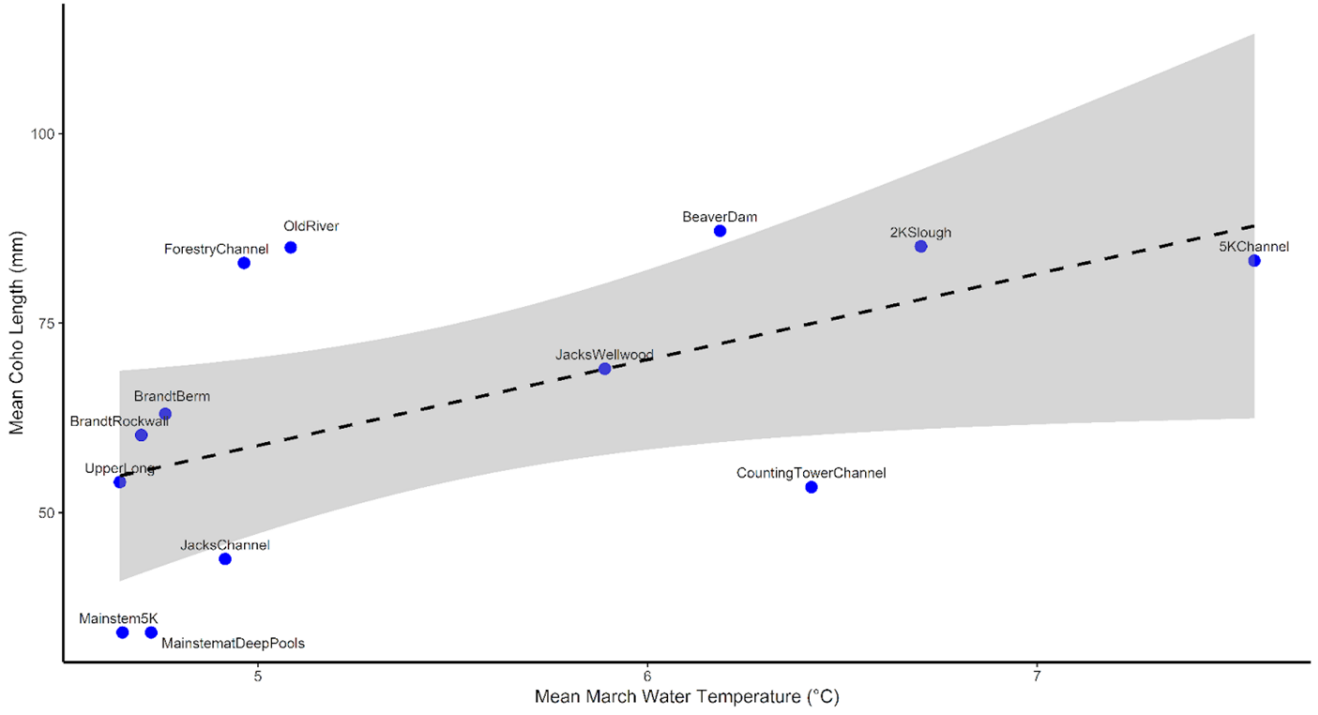
July 2025

Sept 2025

IRW Minnow Trapping and Temperature Data Report

- Pulling together temperature and minnow data for 15 sites
- Looked for any significant trends between catch per unit effort (CPUE) and temperature, and fork length and temperature





IRW Minnow Trapping and Temperature Data Report

Key Findings:

- larger chum and coho body sizes in warmer sites in March
- higher coho CPUE in warmer sites
- highest coho CPUE was found at a mainstem site dominated by large woody debris (LWD)

Final thoughts

- Success is coming from relationship – working together, pairing complementary datasets
  → To better identify and study complex ecological systems in a changing climate

- Benefits of BIESSA
  → Stable, long term funding for science/stewardship for TWN
  → Allows for flexibility to fund emerging priorities
  → Forum for coordination and collaboration within an area of complicated overlapping jurisdiction

Questions?

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