Sally Carson, NZMSC Director

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NEW ZEALAND MARINE STUDIES CENTRE

COASTAL PEOPLE : SOUTHERN SKIES
Centre of Research Excellence

University of Otago
ŌTĀKOU WHAKAIHU WAKA

Portobello Marine Laboratory

RV Polaris

www.marine.ac.nz www.mm2.net.nz

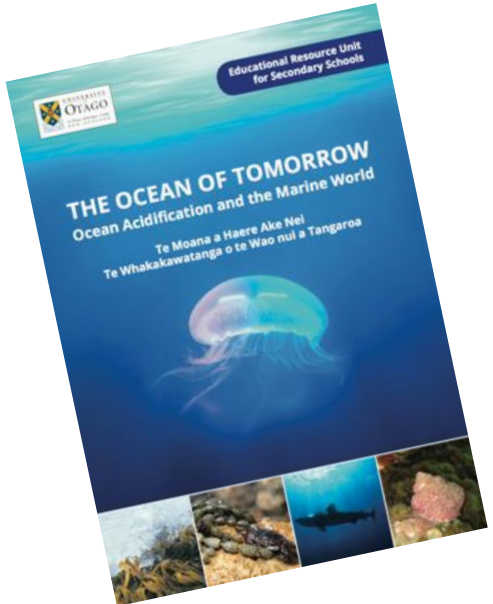
Hands-On Science

NEW ZEALAND MARINE STUDIES CENTRE

Enriching Local Curriculum

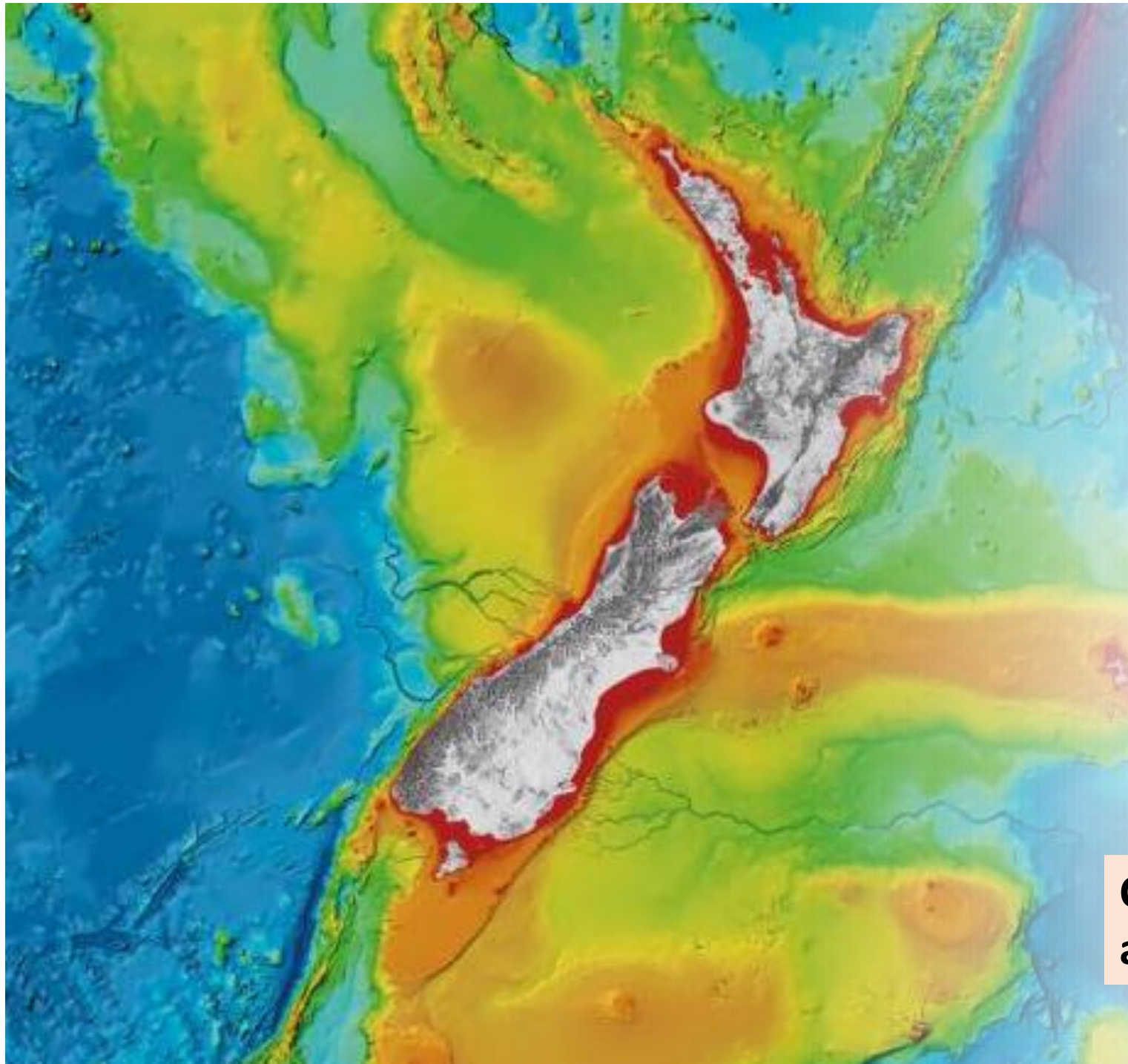
Field and laboratory

Place-based



Authentic science

www.marine.ac.nz



NZ's Ocean is Big!

- NZ has > 15,000 km of coastline
- NZ's EEZ is one of largest in the world
- Subtropical to subantarctic
- Sheltered harbours to deep canyons
- <1% protected

Celebrate our coastal environment and actively care for it!

17,000 Marine Species

- 10% global marine biodiversity
- Half only found in NZ waters
- Over 4000 still undescribed

Build environmental awareness (e.g. record local species)

Our Ocean is changing….

- Sea level is rising
- Sea is becoming more acidic
- Ave temperature is rising, Heatwaves more extreme
- Storm events increasing (waves, sediment input etc.)

Dead and dying paua on a Kaka Point beach. PHOTO: EVELYN THORN

August 2022, after high rainfall event

Stuff ☰ environment

Mass bleaching of native sea sponges in Fiordland shocks scientists

Hamish Cardwell of RNZ • 19:15, May 16 2022

Ray's Bream – May 2022

Environmental monitoring (e.g. record change)

World beneath the waves..

Provide opportunities for ‘hands-on’ experiences

(e.g. Clubs have coastal facilities, boats, wharves, shorelines)

Engage in ’citizen science’ projects

(e.g. Clubs have knowledge of the local area)

Embrace local experts

(e.g. collaborate with community initiatives and research projects)

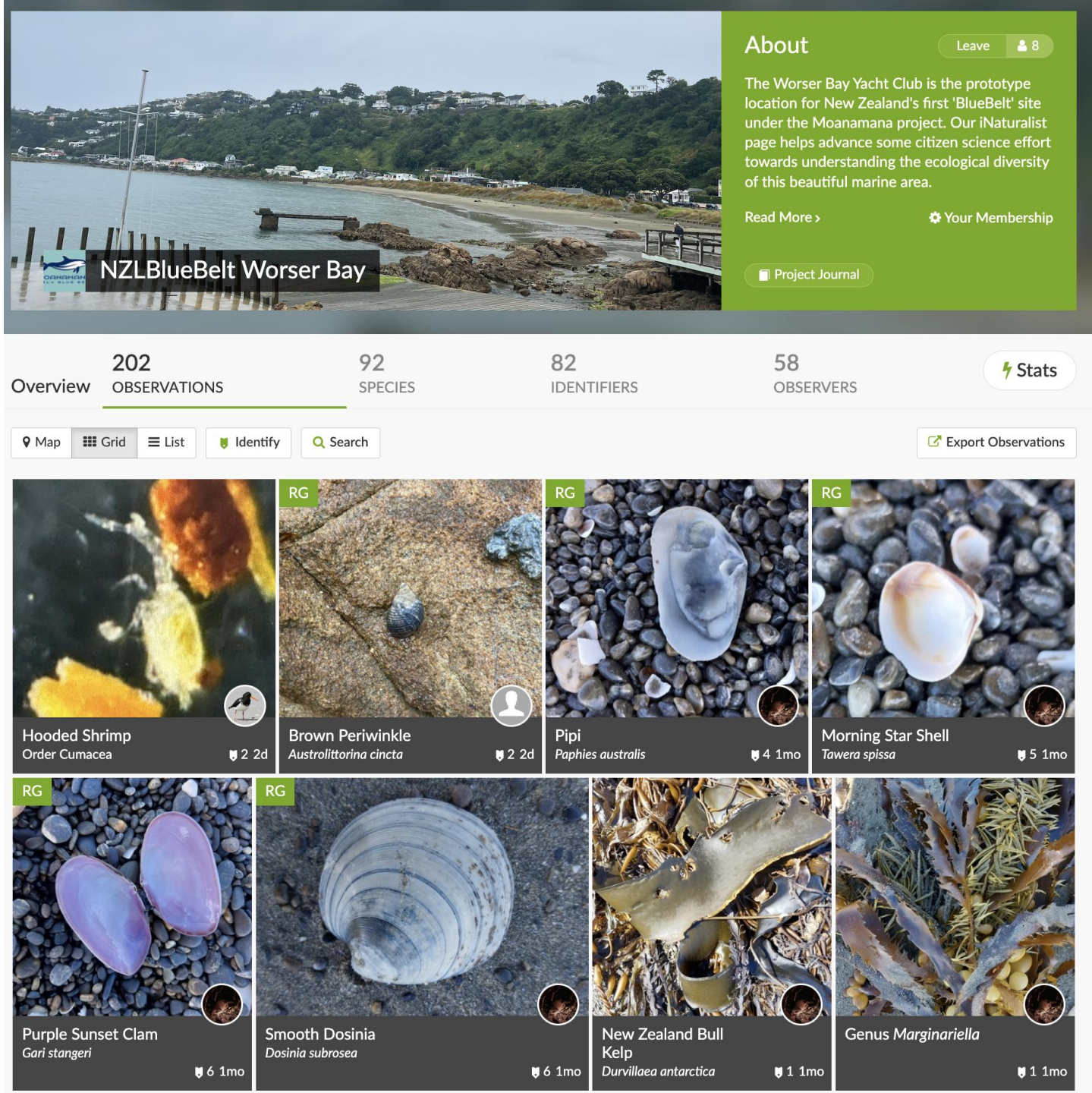
Marine Metre 2

www.marine.ac.nz

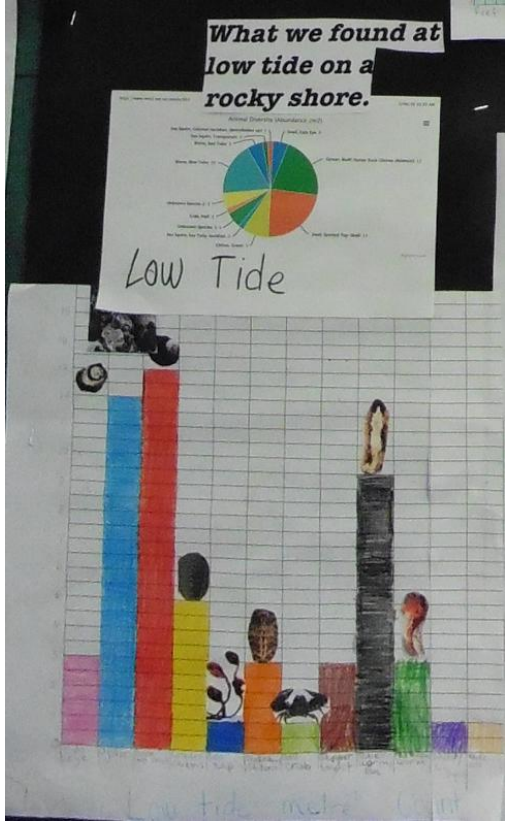
iNaturalist

https://www.inaturalist.org

- Identification of local species by experts
- Create a species list for your local area
- Record seasonal events (e.g. whale migration, jellyfish stranding)
- Connects with scientists and local community



Moving beyond data donation…



Where? *Describe features of a suitable study site.*

Why? *Who might be concerned about the dredging of the harbour and why?*

Sediment and Seashores

Research Plan

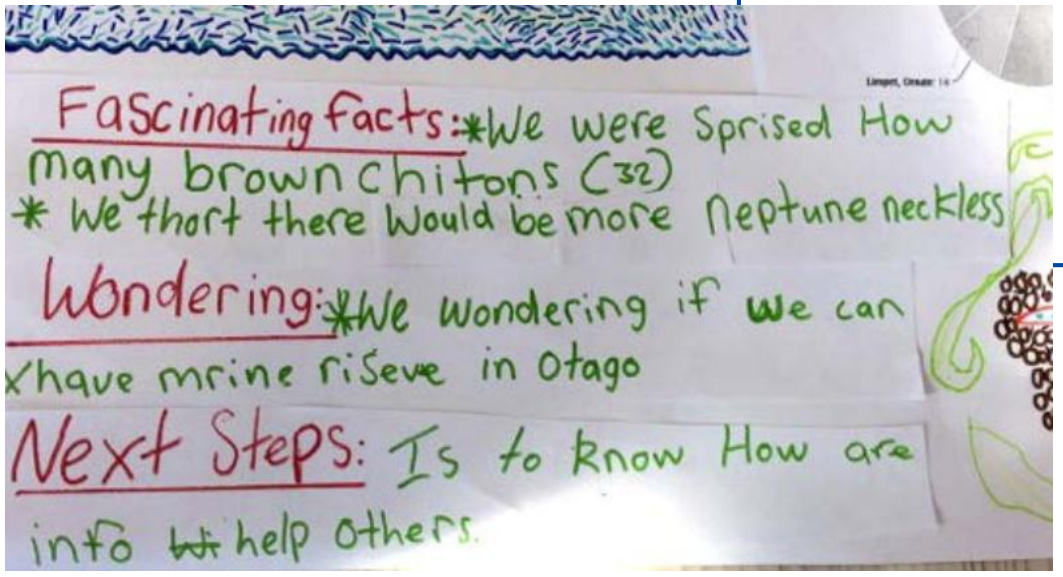
Our Question:

.....

.....

What? *What should we measure / record?*

When? *When should we go and what equipment / resources do we need?*

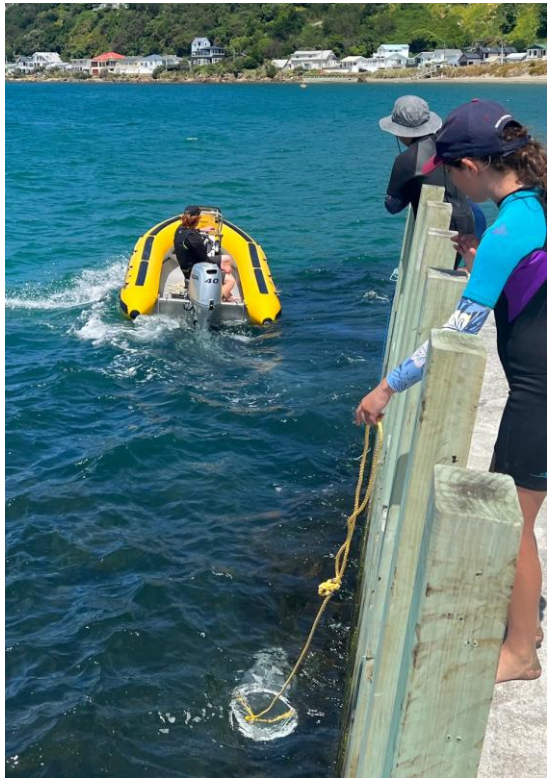


Asking questions of local relevance…

MOANAMANA
NZL's BLUE BELT

MONITORING

OCEAN HEALTH

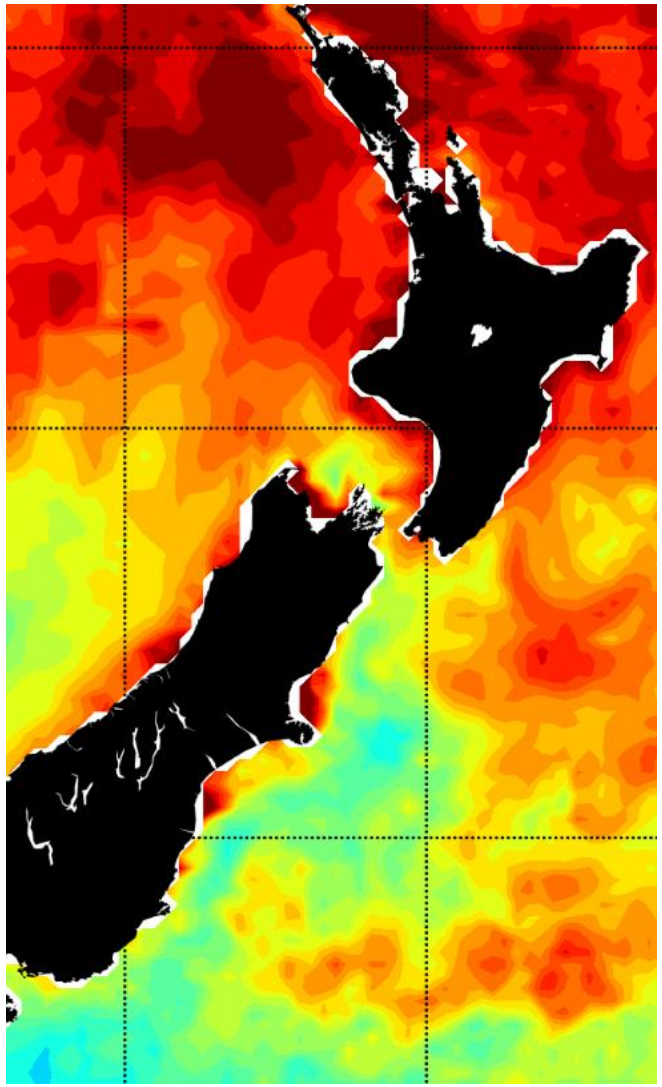


What can our akonga do to help?

Your mission is to work with your community as citizen scientists to monitor changes that are taking place in your local marine environment, and use this knowledge to create a NZL Blue Belt site that helps restore mana to the moana at your place.

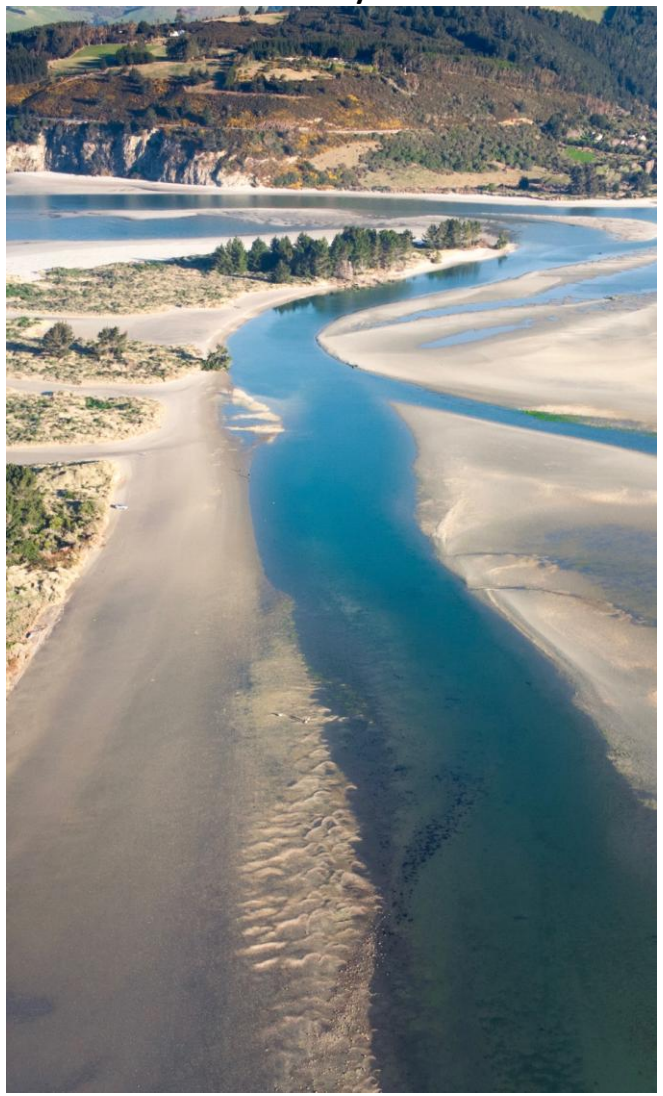
Measuring Environmental Conditions

Temperature



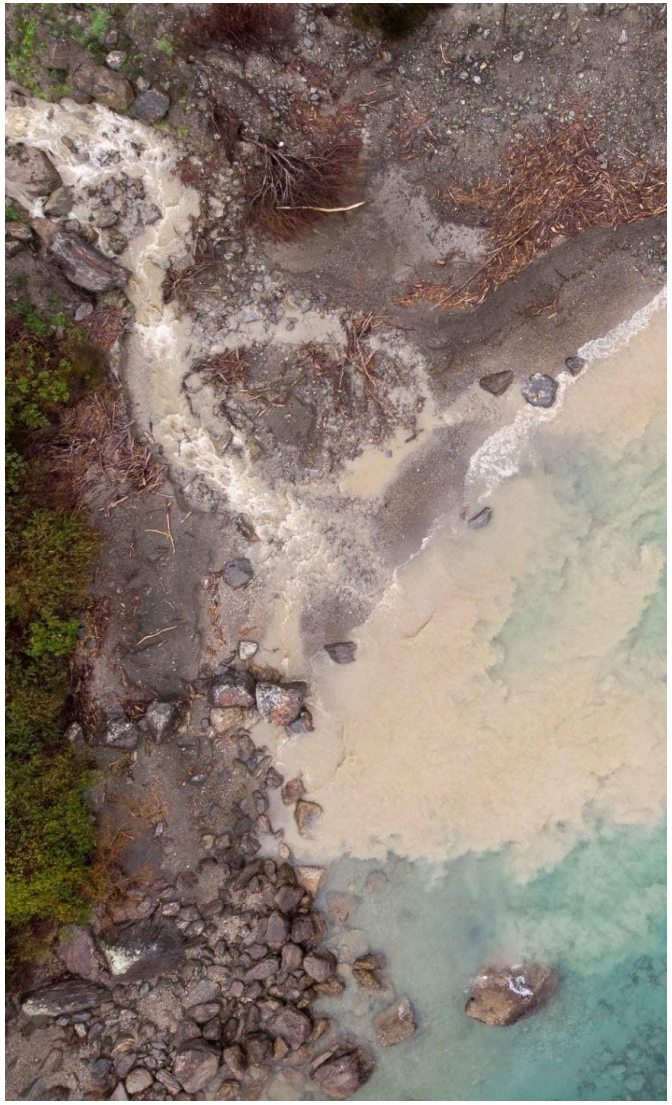
www.moanaproject.org

Salinity



Moanamana App – under development

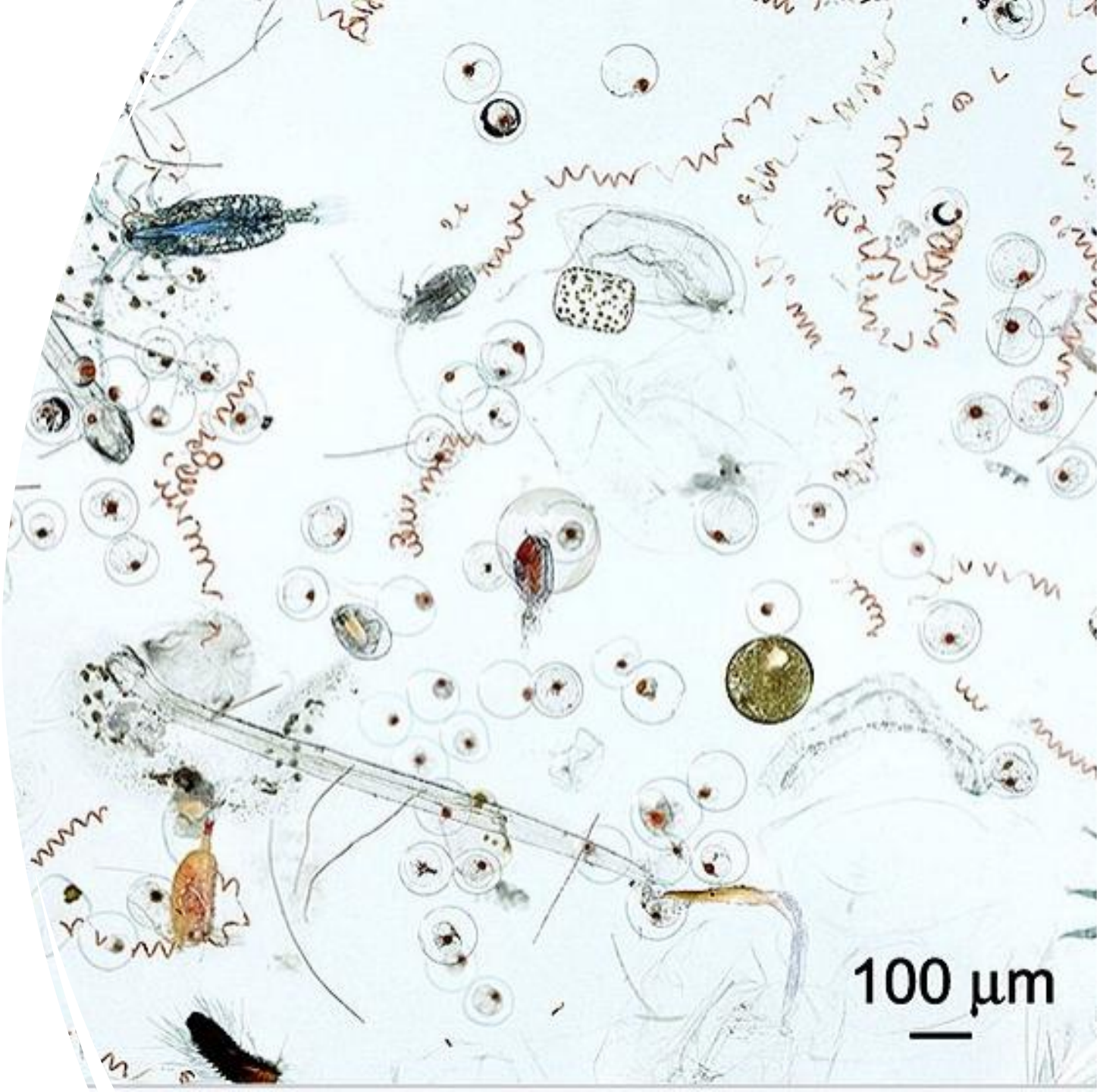
Clarity



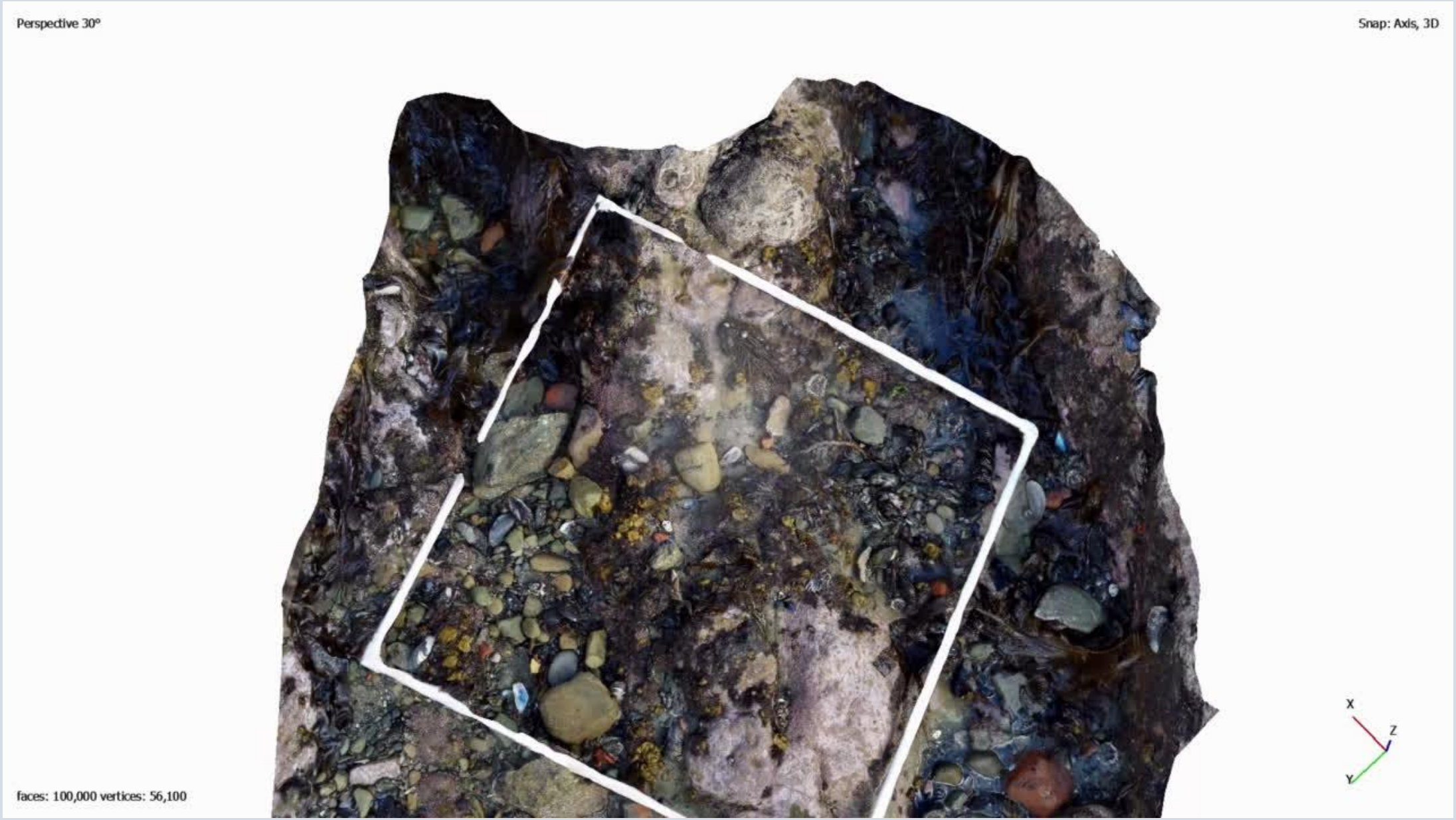
www.secchidisk.org

Monitoring Biological Communities

- **Marine Metre Squared sur**veys to monitor biodiversity in intertidal areas.
- **Photogrammetry models** to create digital 3D representations of the shoreline.
- **Underwater transect surveys** to record species along designated marine zones.
- **Plankton surveys** to monitor diversity of microscopic marine life.
- **Baited remote underwater video (BRUV) surveys** to monitor subtidal communities.
- **Settlement plate surveys** to monitor settlement of marine larvae over time.



Photogrammetry - Mapping our shoreline one square metre at a time



Pause

Teacher Feedback..

*“**Inspiring** and well thought-out.”*

*“Excellent to see the resources available for Moanamana and **build links** with the yacht club.”*

*“It is so **accessible to so many levels** and abilities with so many resources to support it.”*

*“Opportunity to consider how the Rūna resources, Sailing experience with local club and other EOTC activities can fit together more coherently with with **greater purpose**.”*

*“The **practical science** would be great to introduce and commit to long term - collecting **meaningful data** to a local area.”*

Getting Started…

- Explore partnerships and collaboration (facility use during winter)
- Connect with local experts / offer workshops (Shark spy, Love Rimu, Rimu)
- Engage with community events (Penguin project)
- Present to club members
- Leverage school and parents
- Share your stories (newspaper, social media)
- Clean Club (audit and tools)

Primary pupils on quest to protect marine area around Worser Bay Boating Club

8:07 pm on 13 June 2024

Share this

Pretoria Gordon, Journalist
pretoria.gordon@rnz.co.nz

Worser Bay School students have been looking into the marine ecosystems around Worser Bay Boating Club in Seatoun. Photo: Supplied

https://www.rnz.co.nz/news/national/519486/primary-pupils-on-quest-to-protect-marine-area-around-worser-bay-boating-club

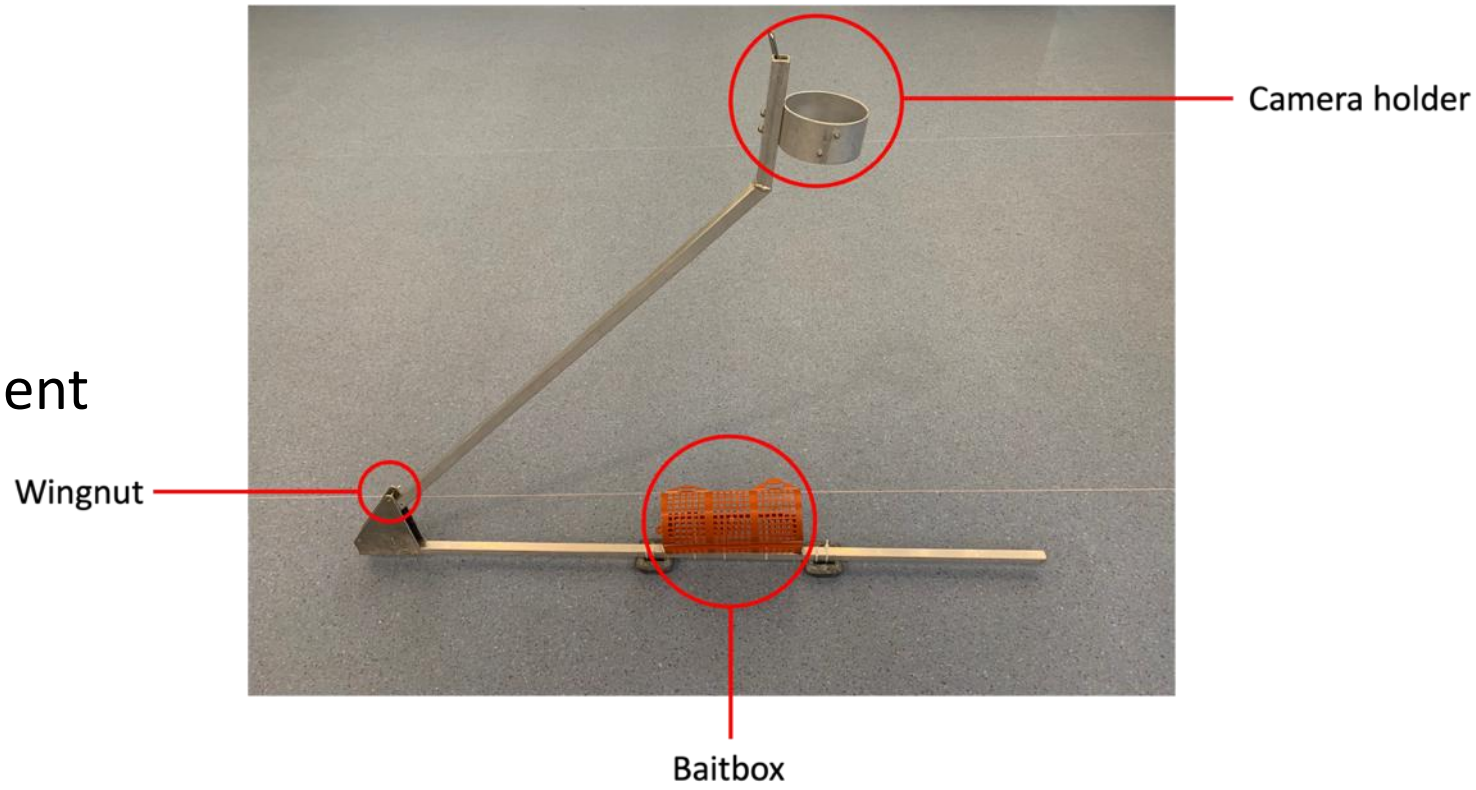
YNZ Clean Club programme

- **Builds on Clean Regatta Momentum**
  A natural next step for clubs already engaged with Sailors for the Sea's Clean Regatta initiative.
- **Practical Audit & Goal-Setting Tool**
  Helps clubs assess current environmental practices and set achievable sustainability goals.
- **Focus on Core Environmental Practices**
  Encourages clubs to get the basics right—especially in waste reduction and resource management.
- **Demonstrates Club Leadership**
  Showcases your club's commitment to sustainability, setting an example for members and the wider community.

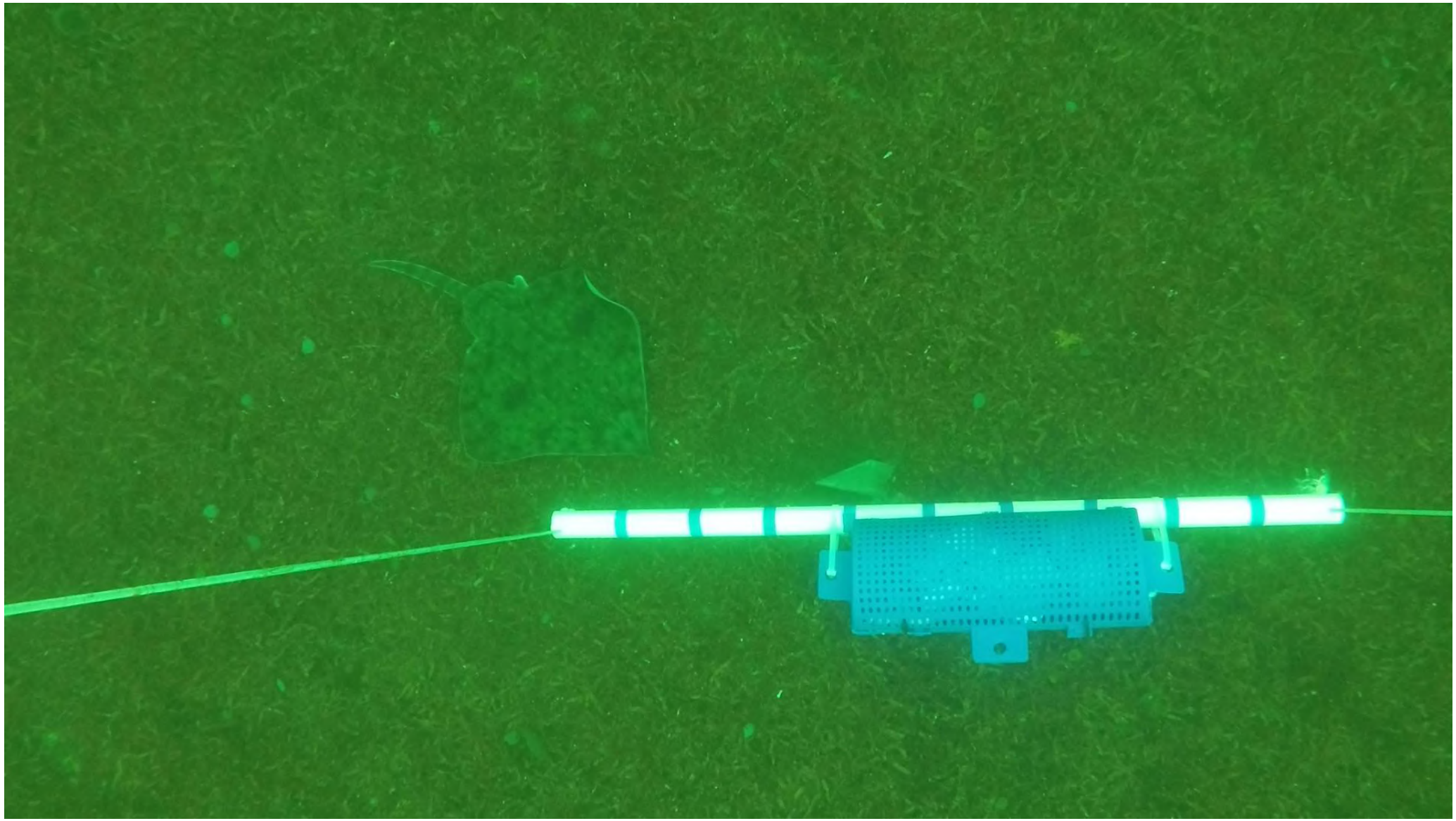
Challenge – Skills for Subtidal Monitoring

– Build your environmental awareness

- Work as a team (2-4)
- Observe videos from BUV
- Record
  - Types of fish see
  - Max number of each species
  - Observations about environment



BUV #1 –Rakiura

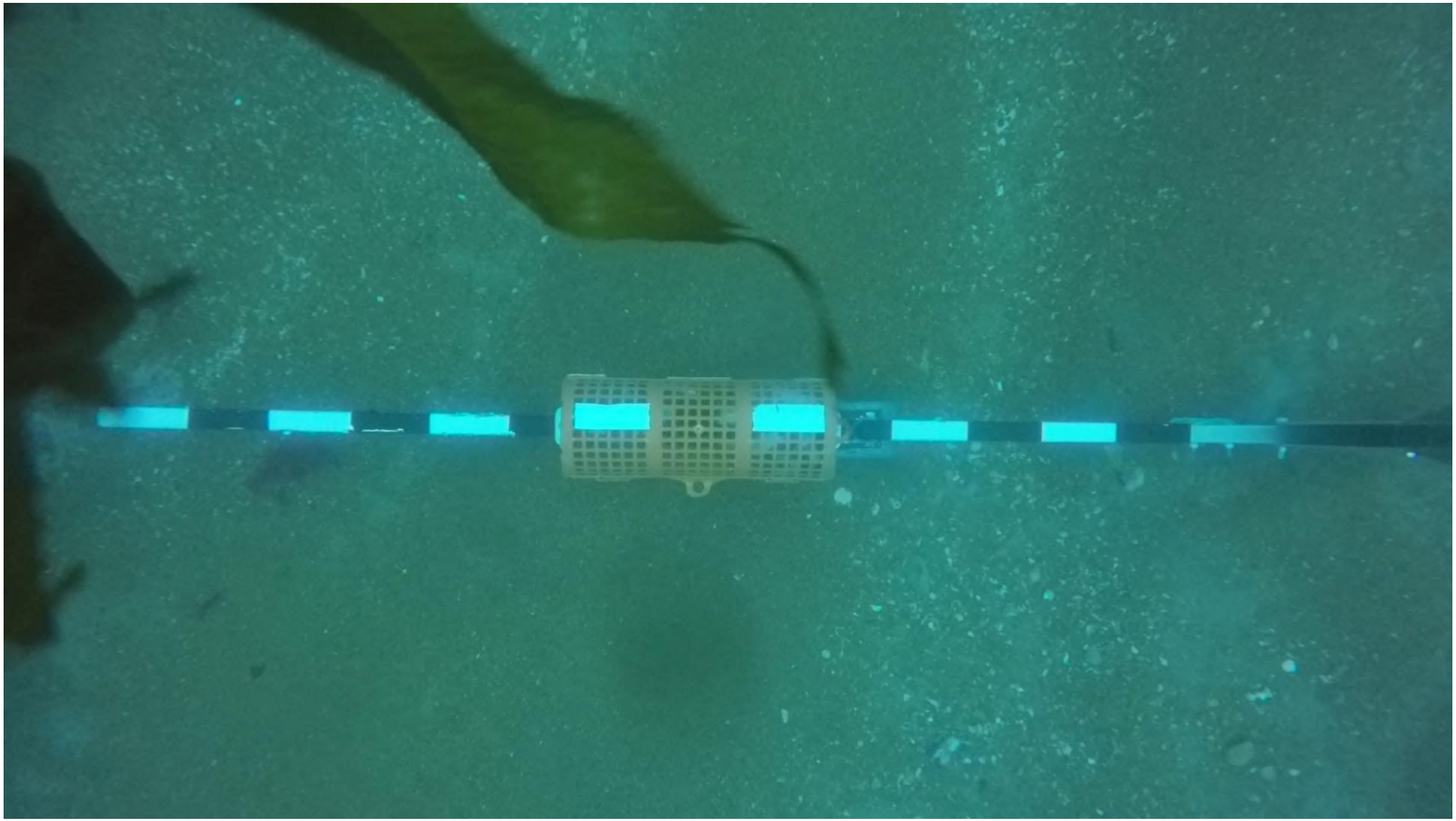


Rakiura, Bull Point

BUV #2 – Taranaki

Taranaki, Urenui

BUV # 3 - Otago



Otago, Shag Point

Check your observational skills…

Rakiura, Bull Point			Taranaki, Urenui			Otago, Shag Point	
Species	MaxN		Species	MaxN		Species	MaxN
Rough skate	1		Snapper	4		Bluecod	63
Spiny dogfish	1		Spotty wrasse	1			
Sevengill	2		Silver Sweep	5			
Blue cod	1		Bluecod	1			
Richness	4			4			1
Shannon-Weiner	1.33			1.16			0
Simpsons	0.72			0.64			0

Scoring:

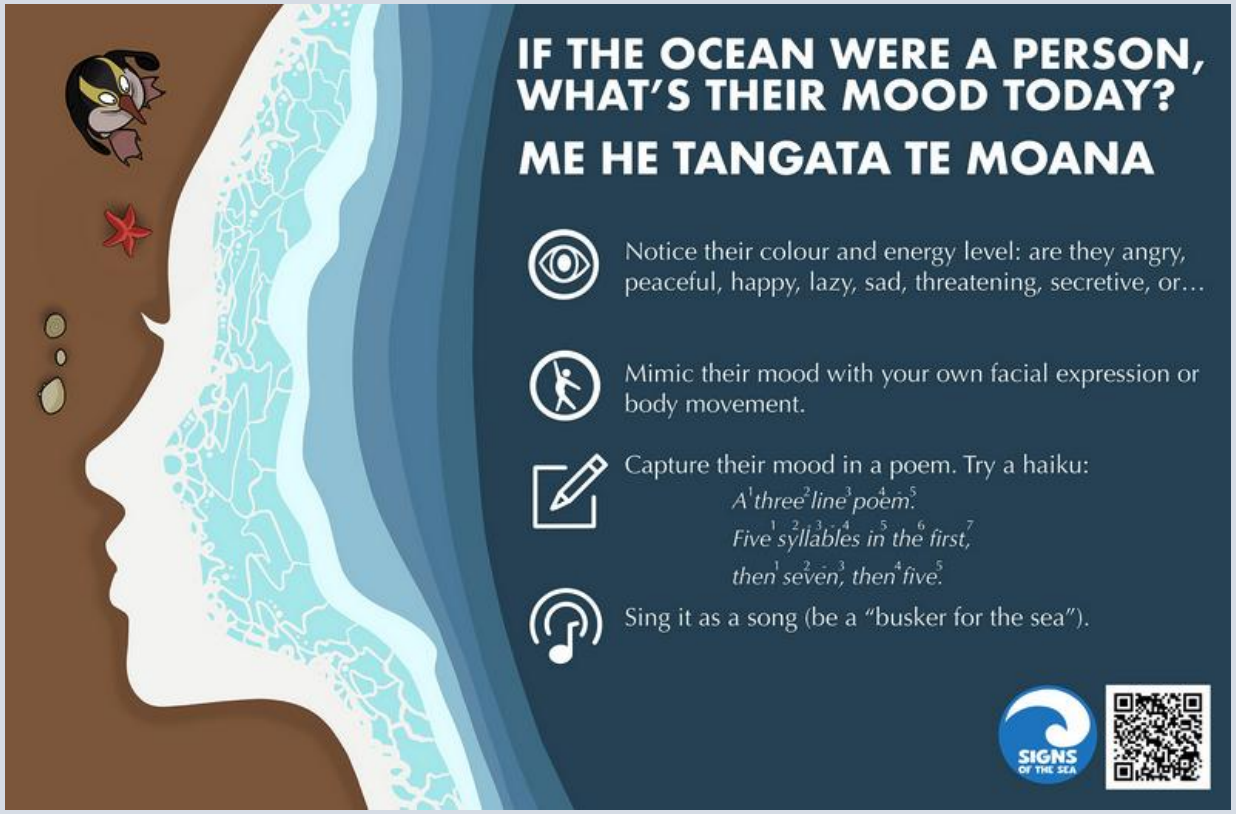
- 1 point for each fish species identified correctly
- 1 point for correct Max count
- A bonus point for additional observations

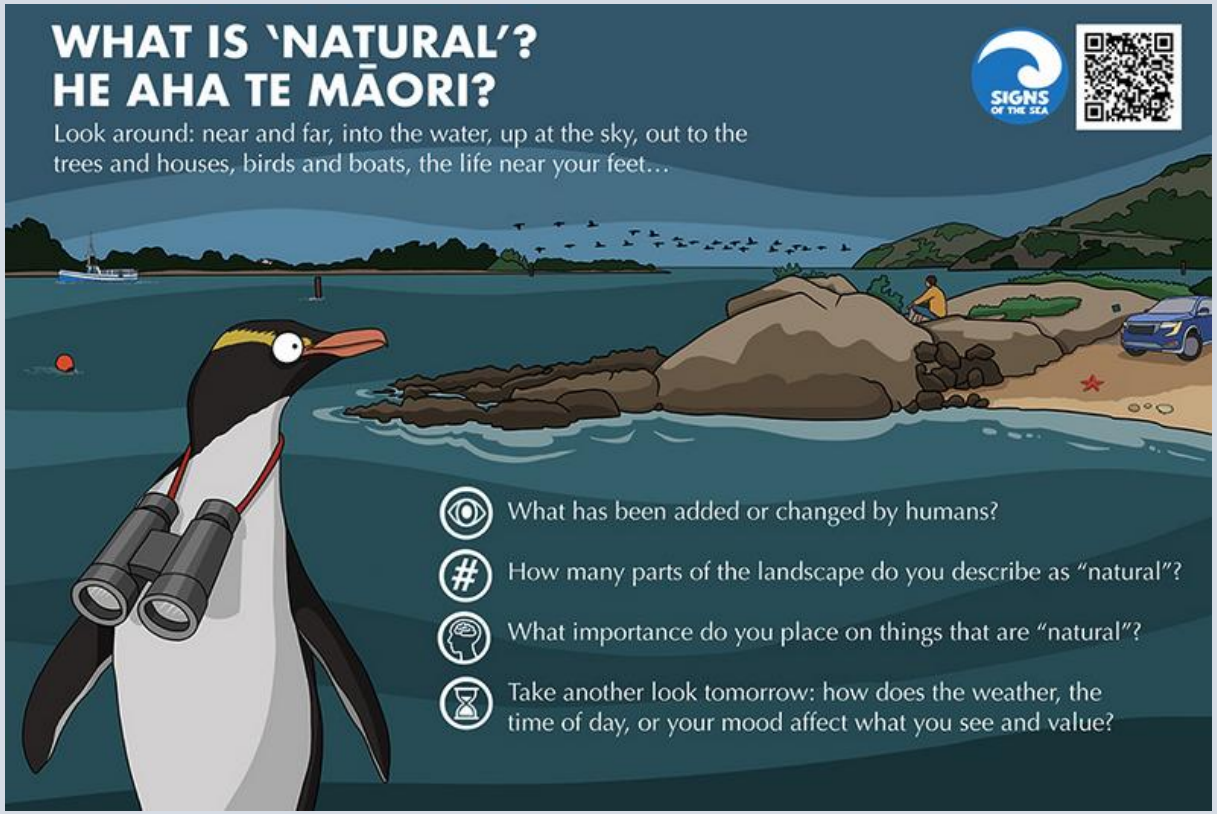
Highest Score wins!

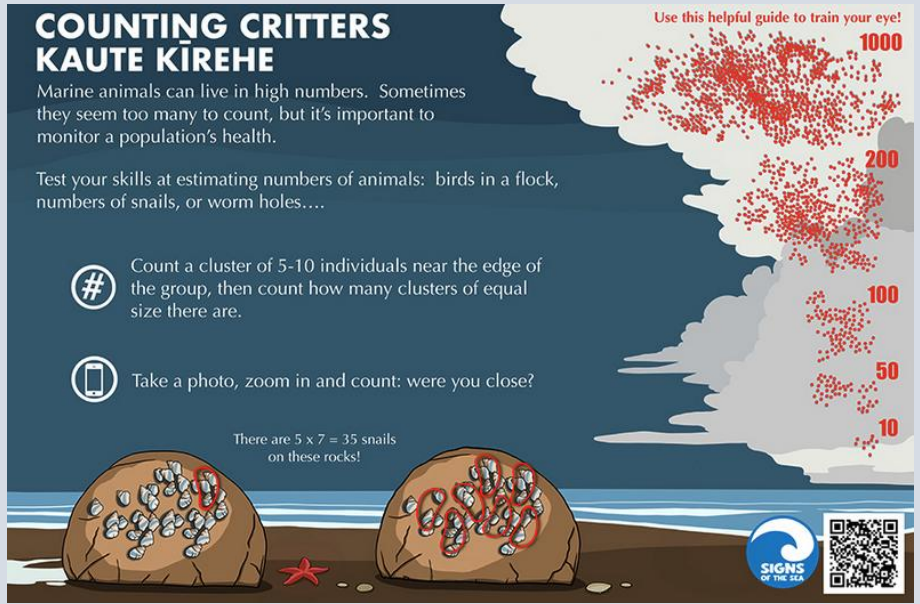
Signs of the Sea

Simple (and quick) activities that build environmental awareness

https://www.otago.ac.nz/marine-studies/resources/signs-of-the-sea



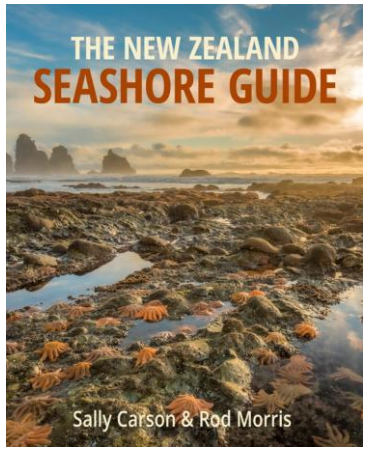




Resources Available…

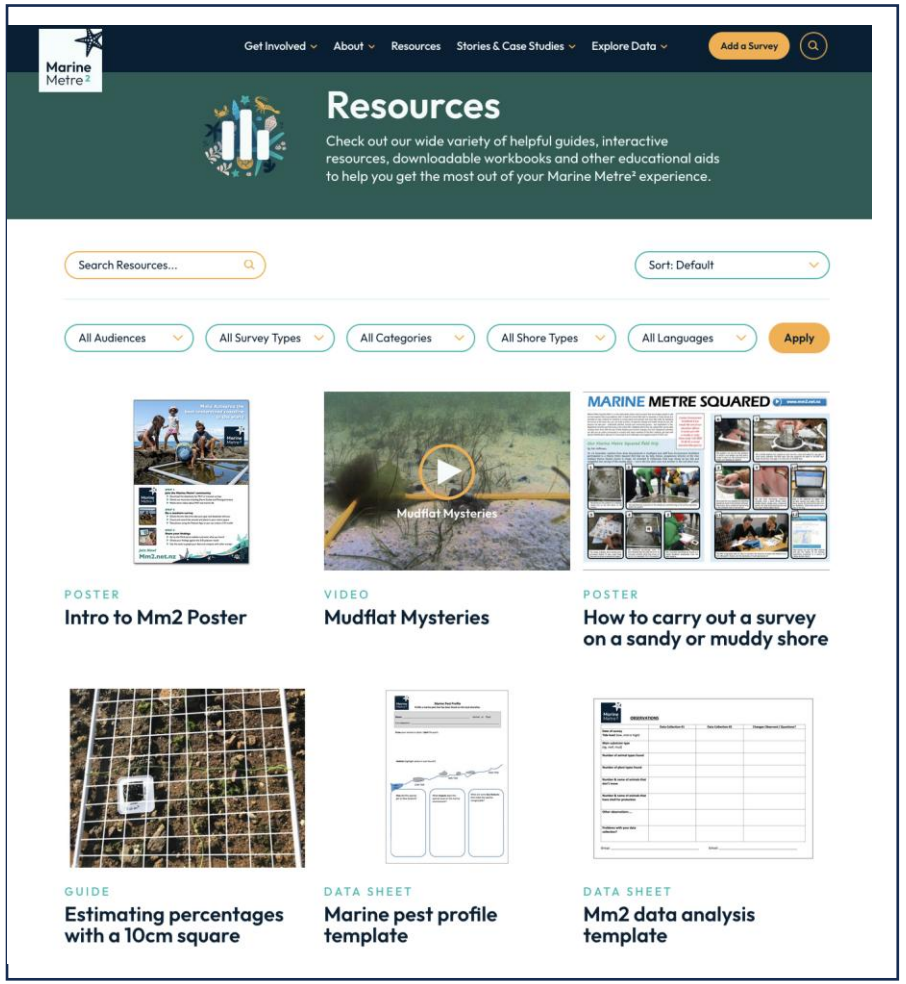
NZMSC

BLAKE NZ-VR



www.marine.ac.nz

Experiencing Marine Reserves



www.mm2.net.nz

Science Learning Hub Pokapū Akoranga Pūtaiao

Seaweek.

YOUNG OCEAN EXPLORERS
Young Ocean Explorers

Range of museums, outdoor education centres, aquarium, wildlife centres etc.

https://www.runa-yachtingnz.org.nz/moanamana-

Grow Environmental Citizens

Collective purpose

- Shared questions / interest provides motivation for further monitoring
- Facilitation supports local application of tools

Place-based

- Project provides a reason to engage with their local environment
- Local relevance increases motivation to engage in environmental citizenship behaviours.

Networks for learning and questioning

- Connecting data with larger environmental issues
- opportunity for participants to extend and grow involvement

*Students understand the **value of a healthy ecosystem** and how they can participate in conservation action!*