

Heni Unwin



Heni on a fish survey dive, Tuhua/ Mayor Island, Tauranga

Born where and when

Ōtautahi / Christchurch, 1991; Ngāti Tūwharetoa, Ngāti Kahungunu ki Wairoa, Ngāti Rongomaiwahine, Ngāi Tūhoe, Te Atihaunui-a-Papaarangi.

Schools

Saint Albans Primary School, Hilmorton and Avonside High Schools, Ōtautahi.

How she got into science

“When I was 10 I went on a trip to Rarotonga with my family. The first time I snorkelled, looking at the fish and corals I had so many how and why questions and knew it was what I wanted to do. I decided I wanted to be a marine scientist. Through high school I did all the science papers and really liked chemistry. Doing the experiments seemed logical, playing round with chemicals was fun.”

Heni (with plait) and friends refloating stranded pilot whales, Ohope Beach, Bay of Plenty.



Training and jobs

BSc in chemistry, University of Otago
Graduate Diploma in Marine Sciences, University of Auckland

Diploma in Marine Studies, Bay of Plenty Polytechnic. “I did the BoP Polytechnic diploma because I learnt practical knowledge - how to dive, work on boats, save whales and dolphins, survey underwater environments.”

Scuba Dive instructor, Great Barrier Reef
Volunteer surveyor, Great Barrier Reef Marine Park Authority, surveying the reef at Blue Pearl Bay, Whitsundays every week

Data collector, NIWA

Laboratory technician, Asure Quality
“I analysed milk powders for safety in the trace elements lab; I learnt a lot of skills transferable to other types of science.”

Kairangahau/ Researcher, Cawthron Institute, Nelson, implementing Mātauranga Māori in science projects.

Field of science

Marine science, Chemistry, Mātauranga Māori.

Research examples

Monitoring the sustainability of fisheries

Interviewing Auckland recreational fishers for an annual NIWA survey about their catch species, size, fishing spots and methods, and collecting kahawai otoliths (earbones) to find out their age. Measuring size against age can tell you how sustainable the fishery is.





Top of the mast on Solway Lass near the Great Barrier Reef.

Tracking your plastic

Heni was part of a team that created a website to show where plastic travels when it gets into the sea. They built a tracking engine using the physics of tide, winds and

currents to create a simulation. Heni wrote the text, incorporated Māori kaitiakitanga of the ocean, and interviewed groups of students to test the website.

Remote mussel monitoring

Heni was in a team that created a smart mussel buoy to send information about the health of your mussel farm to a computer. The developing technology includes underwater communications for ROV (Remotely Operated underwater vehicle), laser spectroscopy analyses of phytoplankton in the water, and telemetry communications. Heni is also developing a biological sensor on mussels, to measure their rate of closing or opening. The mussels can tell you about the environment because too much sediment or toxic algae makes mussels close. If the environment is healthy, they stay open to feed.

Working with mātauranga Māori

“I try to interweave mātauranga Māori and science in all my projects. I want it to be meaningful and reciprocal. I work with iwi, hapū, kaumatua, Māori scientists and Māori organisations, developing and maintaining those relationships. For the plastic tracker I worked with a Kura Kaupapa (Māori school) - they were my focus group - and as a thank you I taught some introductory science classes in Māori.”

How she finds things out

“Lots of trial and error - having a go and if it’s not right, trying something else. For example, we encased the mussel monitoring sensors in an epoxy marine glue to make them waterproof, but it only lasted 18 days. We tried soldering wires to the signal reader; putting a tube like a straw over the top; using a hair dryer-type heater that shrinks and encases the wire and sensor. We had to change the magnets because they weren’t powerful enough. We had about 20 different changes to different parts or the whole system but we finally got it to work. The next step is to analyse all the data, which I am sure will take a lot more trial and error.”



Heni in the lab with Drew McGlashen from Waimea High School.

What she likes about science

- Different ways you can help your community and the environment
- Seeing how matauranga Māori and science can benefit each other
- Learning and trying out different things every day.
- “Watching students use the website to see how far plastic goes across the seas, seeing them light up and make the connections with our environment”

Links

- [Virtual plastic tracker.](#)
- [Monitoring mussels by computer.](#)
- [Determining the age of fish](#), NIWA.

Ngā Kupu

- [Ahumoana](#) - Aquaculture
- [Kirihou](#) - Plastic
- [Kuku](#) - Green-lipped mussel
- [Mātai koiora moana](#) - Marine biology
- [Mātai matū](#) - Chemistry
- [Pae tukutuku](#) - Website
- [Tai](#) - The tide

Te Aka Māori Dictionary



NZASE

New Zealand Association of Science Educators

Representing the needs of science teachers