

# PSP collaborative science projects

*The Participatory Science Platform (PSP) supports collaborative science projects involving schools, communities and scientists, who investigate locally important research questions and problems in the South Auckland, Taranaki and Dunedin regions.*

*Projects must involve scientists, students and communities working together. The scientists need opportunities for high-quality research that harnesses local knowledge and contributions from schools and communities. Students need an issue that engages them and has relevant and inspiring learning opportunities, with a chance to work alongside scientists and locals.*

*And the project also needs science professionals and students to work with local businesses, Māori collectives and organisations, and community-based organisations. Any of the three – schools, scientists, or community organisations – can lead a project and apply for grants of up to \$20,000 in the November funding round.*

*NZASE Science Communicator Mike Stone describes three teachers' experience with their students in three different projects - local curriculum in action.*

## Project Reef Life

**T**his Taranaki project, running since 2016, is led by Karen Pratt from a local diving club, and seeks to learn more about a local reef. The collaboration involves the South Taranaki Underwater Club, two schools (Hāwera High School and Pātea Area School) and two iwi (Te Kaahui o Rauru and Te Rūnanga o Ngāti Ruanui Trust).

Like many reefs, this one was unnamed; it was known to divers and fishers only by its location, 11km offshore in water 23m deep. It has come to be called the Project Reef.

Anna Campbell, HoD Science at Hāwera High School, has been involved for several years in Project Reef Life. It involves a real-life context for her students to learn about

many things: diversity, ocean currents, how to observe plankton under a microscope, and how to dissect a fish to find otoliths (to tell their age). The physics of diving was an engaging lesson for students, where local experts brought in their gear to show students how it all worked. "The project really helped me link students' learning to real life – a local curriculum," Anna said.

Her students have listened to and worked with experts – marine biologists, DoC and water quality specialists from the local council. "Having people with special skills come into the classroom is a real bonus," says Anna. "I found the community wanted to link to the school but didn't know how."

Students have had the opportunity to catch and release fish, trawl for plankton, analyse Baited Underwater Videos (to see what is attracted by the bait), sample the coast and snorkel. They would have had a dive experience but for lockdown. In 2017 students presented to the Science and Education Committee at Parliament, and had behind-the-scenes visits at NIWA and Te Papa. The students also had the chance to be involved in a documentary made about the project, *Reef Revolution Film*, both as themselves and with animations of their drawings. In another local PSP project (Fish, Food and Fringes project

*As part of Project Reef Life, Pātea Area School students designed Pātea Pou, lining the way to Pātea beach.*

*Baited underwater video was used in Project Reef Life and Shark Spy 2, pictured, using bait to attract sea life in view of a camera.*



**NZASE**

New Zealand Association of Science Educators

Representing the needs of science teachers

led by Josephine Fitness) students also set a pitfall trap at Nowell's Lake and collected and analysed the data, comparing it to data another school collected at Lake Rotokare.

As well as the real life contexts, Anna's students enjoy learning and using new skills. A significant number have gone on to tertiary studies in related fields, with one now working in environmental science for the regional council. Others have used the experience to springboard them into Sir Peter Blake's Inspire course. Students have also used data they collected in WITT Taranaki Science and Technology Fair projects. One group won \$600, which they donated back to the project.

Local iwi have been involved in many ways, most noticeably in [murals and pou in Pātea](#) and on the road to the beach.

Anna Campbell has been involved with Sir Peter Blake Trust's Inspire program of environmental leadership. She found this program a useful stepping stone to build up confidence, knowledge and experience of education outside the classroom. As a direct result she has developed a more hands-on course with real-life context and local curriculum links for the students to engage with.

Project Reef has been so successful that they now have a permanent exhibition at Puke Ariki, which many schools visit to learn more about their local marine environment.

## Monitoring stream health

This was an opportunity taken up by Sarah Wilson, a science teacher, and Merel Kroonenberg, her HoF at Ōtāhuhu College. Sarah was doing her masters and needed a student research project to show the development of their critical thinking skills.

Merel and Sarah approached [WaiCare](#), a water quality monitoring, education and action programme across the Auckland region. They went to a WaiCare training day in the Waitakere Ranges where they learnt how to monitor stream health.

Sarah took her Year 10 extension class to test the water quality at Little Huia Stream in the Waitakere Ranges and at the Ōtāhuhu section of the Tamaki Estuary, then compared

the data. They looked at kaitiakitanga, what it means to be guardians of our waterways and what could be done about the poor stream health in the Ōtāhuhu Estuary.

These South Auckland students were hesitant at first; Sarah said many had not been to the Waitakere Ranges before and "were outside their comfort zone". However, once they started they thrived, enjoying the environmental aspects and readily getting into the water to collect water samples and net macro-invertebrates. The water was not deep and there were plenty of adults, some in the water with them.

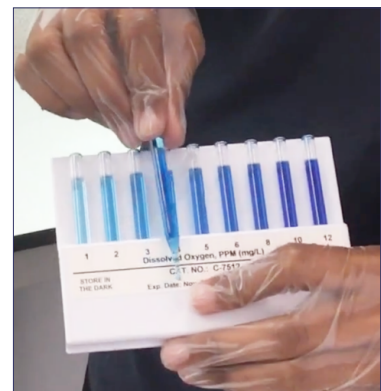
Sarah enjoyed being out in the field with her students and would love to do it again (she is now teaching in Australia). While Waicare has kits available for loan, Ōtāhuhu College used the funding to buy kit components for the school, so they could continue collecting data year on year.

Sarah suggests making sure you teach the theory beforehand; she did some but in hindsight more would have helped. She also said that "some of the chemical tests were quite involved; we needed to practice on a small scale first before getting out in the field."

This school is part of the Otahuhu Community of Learning and to pass on the knowledge and share the benefits of the funding, Sarah's class taught some primary students at Ōtāhuhu School how to monitor stream health, peer-to-peer.

## Shark Spy 2

Matt Direen teaches at Macandrew Bay School, a semi-rural school on the Dunedin Harbour. He has been involved with the Shark Spy project in both 2020 and 2018. Shark spy is a citizen science initiative run



Top: OC students sampling Little Huia Stream. Bottom: An OC student checks dissolved oxygen in a water sample. Photo: Karen Wilson.



Macandrew Bay School students at the NZMSC touch tanks on the boat.



by the New Zealand Marine Studies Centre (NZMSC) and funded by a Curious Minds grant from MBIE. Centre director Sally Carson says Dunedin is a ‘hot spot’ for shark abundance and diversity, but the lack of basic information about many species has limited conservation, management and policy initiatives.

Shark Spy collects information about sharks in New Zealand by analysing baited underwater video (BUV).

At the start, scientist Rob Lewis from NZMSC came into Matt’s classroom. He talked about the science of sharks, explained what the sampling involved and decided on the inquiry question with the students. Then the 26 Year 4 and 5 students went out to the NZMSC for the day, including several hours on the harbour in the NZMSC boat.

For some students just being on a boat was a new experience, but this year they also saw a little blue penguin. Rob and the students set up the bait and the cameras and deployed the gear at two sites, leaving it there for a while and recording the species that came into view. The students also had time at the NZMSC experiencing the touch tanks and some of the other outside tanks.

Two weeks later Rob brought videos into class for the students to analyse in groups. They had to identify the visible species and record the number.

Matt finds this project fits really well with his focus on the Nature of Science – he and Rob talk with the students about acting as scientists for the day. It also links with the Science Capability of Interpreting data. Matt said the kids really enjoyed the project – “they were buzzing when they came off the boat. The students who are challenged by bookwork were engaged and found themselves more than capable.”

## Other PSP-funded projects

- [Restoring native ecosystems on Wanaka’s lake front](#) (scroll down a bit).
- [Burying cotton underwear to investigate soil health](#) in Otago (scroll down).
- [Investigating the effect of caterpillar browsing on kawakawa potency](#), Otago (scroll down).
- [Building an automated, solar-powered irrigation system from a rainwater tank](#) to maintain a South Auckland school garden over the summer.
- [Distilling natural products](#), Taranaki.
- [Monitoring frog populations](#), Taranaki.
- [Monitoring local invertebrates in the riparian margins](#) as indicators of restoration progress in Taranaki.

## Ngā Kupu

**Aroturuki** – To monitor

**Ataata** – Video

**Hāora** – Oxygen

**Kōawa** – Stream

**Mahi tahi** – Collaborate, co-operate

**Mangō** – Shark

**Māunu** – Bait

**Momo** – Species

**Pūkawa** – Reef

**Tipako** – Sample, sampling

**Whai wāhi** – Participate, engage.

From Te Aka Maori Dictionary and Paekupu

## References

[Reef Revolution](#), short documentary on Project Reef Life.

[Reading under the Sea](#) in *Connected* 2018, L4. [SouthSci manages South Auckland projects](#), delivered by COMET.

[Curious Minds Taranaki manages Taranaki funding](#), delivered by Venture Taranaki.

[Otago Science into Action manages Otago funding](#), delivered by Otago Museum.

## Funding

Seed funding (\$2,000) enables schools to connect with other potential collaborators; project funding is up to \$20,000. Contact the three organisations above.