

Growing tuna kuwharuwharu at school

Jackson Vogt and his school have been working with Ngāti Pāoa to grow eels and release them into the local stream. It has provided a great context for student learning.

Kuwharuwharu Longfin Eel Conservation Project

Jackson Vogt is in charge of the Maker Space at Point England School in eastern Tāmaki Makaurau. In 2018 he partnered with Ngāti Pāoa to access \$10,000 of Curious Minds funding to build and maintain an eel tank.

The two partners wanted to take juvenile eels, grow them for three terms and then release them back into Tāmaki estuary. Ngāti Pāoa own the tank and the tuna and provide expertise for the project. The school houses the tank onsite and uses it for student learning.

Tuna kuwharuwharu

These tuna (long-finned eels) are an endemic and endangered species (on a par with kiwi). Despite this it is still legal to export them live to China! The tuna live in shaded parts of waterways, and as five-year-old adults migrate to Tonga to breed. The small eggs hatch into larvae and are carried by the tides back to Aotearoa. Here they transform into glass eels, which swim up their home streams where they grow into adults.

The project needs eels 80-100cm long – any smaller and they will be eaten. These tuna are sourced from the Waikato River – older teachers from Glen Innes told Jackson they used to be able to catch tuna in the local river but it became too polluted.

The tank

The 15 eels are housed in a 1,000L tank, a bulk liquid carrier with corrugated iron covering the side and a lid in the top. It is stored in a shipping container, lit by neon lights on a timer. The tank has sand and terracotta pipes for the tuna to hide in; “you find them squashed up inside,” says Jackson.

The tank is serviced by Dave Cooper, an expert in native fish and aquaculture systems like this. Once a term, he backflushes the filter and replaces about 20 percent of the water. Dave says “Eels have a reputation for being quite slimy but that is only a reaction to the stress of being caught.”

Jackson says “The tank stays remarkably clean. Normally the eels are covered in a thin film of slime and this does not seem to go into the water.”

Electronic monitoring

Tuna do best in a tank kept dark 24 hours a day. “We have now installed night-vision streaming cameras,” says Dave, “so students can log in and watch them behaving normally – their behaviour is quite different when they are being fed.”

Tuna kuwharuwharu at Western Springs, Tamaki Makaurau. Photo: Peter Harrison, CC BY 2.0, Wikimedia Commons.

Students with Jackson beside the eel tank in the shipping container. Photo: Sandy Lagitupu.



“The cameras worked well, but the first one was destroyed by the eels – they are now better protected.” As well as the night vision cameras, Reef Synergy also installed remote sensors that detect aspects of water quality – pH, temperature, salinity and ORP (a measure of oxygen levels), making the tuna easier to keep an eye on in the weekends and the holidays.

“We learned by trial and error”, says Jackson. “The tuna needed to be kept in the dark in cool water – in the summer we found we needed to add ice to the tank! Eels normally hide in holes, catching food that passes by, or dead animals on the river bottom. We only need to feed them surimi once a month, and live mealworms less often closer to release.”

Dave adding substances to protect the eels' slime coat. Photo: Jackson Vogt.



An eel rises out of the water to grab surimi. Image: Sandy Lagitupu.

Release

The tuna are caught in long-handled nets and put in 40L tubs with an oxygen pump. They are then driven to the release site, an old pa site near Panmure Yacht Club, sacred to Ngāti Pāoa. The eels are walked into the river by students, teachers and Ngāti Pāoa singing waiata.

Learning

Students at Point England School enjoy visiting the tank with Jackson and Mahu. They help weigh out food, and hand-feed it to the tuna. They also check the water quality readings and [have made a video of one visit](#) – students wrote, filmed and edited their video

Dave is impressed with what he has seen: “The kids get enthusiastic about different aspects of the tuna and their care, to the point where some students with behaviour issues at other times are fully engaged here. They learn while they are having fun.” he says.

Students learn about the life cycle and migration of the eels. There is a large Tongan population at the school and they enjoy making this link to the eel spawning grounds. Some students talked about sending the tuna on their way back to Tonga on their release.

In the classroom

If studying tuna in years 1-6, students could also -

- Create art and waiata about tuna, or write a poem or short story (you could submit one to the [publishers of the School Journal](#)).
- Learn about the different types of endemic tuna and how to identify them.
- Share stories of eeling and try to catch some.
- Use a map with a scale to work out how far the eels travel to get to Tonga.
- Ask Point England School if small groups could visit or access video or sensor data; [email Jackson](#).
- Make an eel game about the life of the eel; e.g., a puzzle, animation, or use Scratch.
- Observe some tuna in the wild, e.g. [online](#), in a local stream, or at [Pūkaha Mt Bruce](#). Explore its habitat and conditions.
- Through rangahau, find out how in te ao Māori the eels were caught, processed and cooked.
- Sit and talk, kanohi ki te kanohi, with a kaumātua, e.g., about local tikanga (kawa) and pūrakau about tuna, and where they are found locally.



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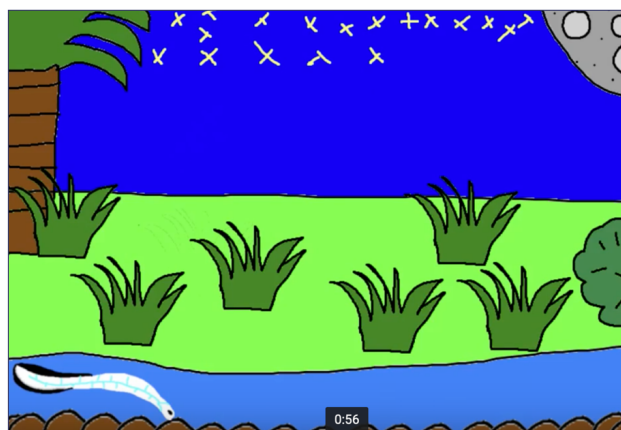
- Read stories, e.g. ‘Zip and Zap’, ‘Weka in a flap’, ‘Weka gets wet’, ‘Nan in a net’, or ‘The long swim’ in *Ready to Read Phonics Plus*, Curriculum L1. Or read from the *School Journal*, as below.
- To develop skills in persuasive or report writing, write a letter to the government about the need to keep endangered species in Aotearoa and not allow them to be exported.
- Ask students to consider why concepts like mauri are so important to Māori and why eels have mauri. Ask what they could do to ensure the eels hold onto their mauri and stay healthy for the future.
- Ask students to consider bigger issues like sustainability or kaitiakitanga; “We are guardians of our world”. Get students to think about what is endangered in their school area and what they could do to be drivers of change – maybe their own local version of Pt England’s idea.

Useful readings

- ‘My brother Benjamin & the eels’, *School Journal* (SJ), 1992, Part 1, No. 2 (story).
- ‘Song of Wairewa’, *SJ*, 1993, Part 3, No.1 (poem).
- ‘Four eeling tales’, *SJ*, 1993, Part 3, No. 1, (kaumatua stories).
- ‘Our tame eels’, *Children as authors*, No. 1, 1997 (article about befriending eels).
- ‘The puru tuna’, *SJ*, 2001, Part 4, No. 1 (article about catching eels).
- ‘The tame eels of Anatoki’, *SJ*, 2003, Part 1, No. 4 (article about tame long-finned eels).
- ‘Gifts from the moon’, *SJ*, 2006, Part 4, No. 3 (story about finding eels at the beach).
- ‘Pacific paradise’, *SJ*, 2010, Part 4, No. 2 (article on the eel life cycle).
- ‘Hinaki’, *SJ Story Library*, No. 4 (article on traditional methods).



Dave shows a student how the water pump is controlled.
Photo: Jackson Vogt.



Right: Excerpt from Kairah’s animation showing a glass eel. Image: Sandy Lagitupu.



A baby glass eel, after the larvae stage and before pigmentation.
Peabody Museum of Natural History, Yale University, USA.
Photo: Gregory Watkins-Colwell.

Ngā Kupu

- Kaitiakitanga** – Guardianship
- Kanohi ki te kanohi** – Face to face
- Kurawai** – Water tank
- Mauri** – Life essence
- Rama tuna** – To catch eels by torchlight
- Rangahau** – Researching traditional knowledge
- Tāmaki Makaurau** - Auckland
- Tuna heke** – Migrating or short-fin eel
- Tuna hinahina** – Short-fin eel
- Waiata** – Song, chant.

Te Aka Māori Dictionary

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