## NZASE resource

Continuing our series on mātauranga Māori in the science classroom, NZASE Science Communicator Mike Stone talks to Ben Chisnall about his units on native fish and shellfish.

en Chisnall is the Head of Science at Te Kuiti High School. He has been teaching there for 18 years, and before that he was a biologist with Fisheries and NIWA.

In 2012 he added two Pūtaiao unit standards to his assessment kete (these are used to assess Te Marautanga curriculum). Ben saw this as a means of both engaging the school's 60 percent Māori students and immersing them in mātauranga Māori.

The unit standards explore the importance of aquatic species to local Māori, with one about freshwater (US 19535) and one about salt water (19531), now each worth five credits (formerly two), with a focus on fish and shellfish. For each standard, students choose two species and describe their importance to local Māori, the tikanga/protocol in harvesting and processing, and explain the species' habitat and adaptations for survival, including their life history/whakapapa. [As of publication, these standards will stay in 2023.]

The students learn first about the freshwater species (usually tuna/eel and kakahi/ freshwater mussels), and then marine species (kahawai and kakahi/green lipped mussels). Ben starts the unit with a video of tuna (eels) being caught on Te Roto o Wairewa (Lake Forsyth), then explores Science Learning Hub resources on the longfin eel and its life cycle and migration. Students find te reo vocabulary associated with tuna as they explore why this species is important to local iwi, and how it is caught and processed.

Ben asks students if there is anyone in their whānau or hāpū who can help the class make relevant mahi ā-ringa. He says "each marae has its weavers, harakeke/ flax harvesters and hunter-gatherers. Some years we get a lot of whānau involvement, sometimes there's little response and experts are hard to access. It's great when the aunties come in and show the students how."

econdary students

studying tuna

"Generally its easier if we do overnight camps or stay at the marae. Trips like these are great as they really embed the learning and get the group working together - that collaboration is important, the stronger helping the less able."

Students learn the importance of karakia when harakeke is harvested and how to treat and process the natural fibre, "some weaving it to make 30m fishing lines with a hook, as well as hinaki nets and baskets for the smoker. We have also built weirs and eel pots using advice from experts or online links." Each iwi and hapu hook made have their own way of making these resources.

When it's hard to take an overnight trip away, Ben lays a hīnaki net and the class

Hīnaki are baited and placed in a river current. The eel enters the inverted hole at one end and becomes trapped nzetc. victoria. ac.nz

A harakeke fishing line and an attached of bone, wood and harakeke. Photo: Ben Chisnall.









retrieves it and collects the eels. "We wash the eel to remove the slime, then cut it up and smoke it, using mānuka wood. The metalwork guys make up small smokers or sometimes we make a bigger one in the

kahawai. Photo: Ben Chisnall.

Two

students school grounds. It only takes 20 minutes or so smoking to cook, then we have a kai hākari." In different years the class uses different species for the hākari - kahawai are easier to process and smoke, but kuku/green-lipped mussels are easily boiled over heat or smoked in baskets, then eaten outside with tartare sauce. They have also used paua and mullet.

> Students can show their learning in a variety of media - here students are asked to write their own poem, waiata or story. They also create posters or PowerPoints, using photos of the things they made. Most students make a model/diorama showing the mahinga kai harvesting and processing (and can answer questions about it as part of their assessment). Once the freshwater model is made, students can add the marine aspect. Students can work and be assessed in groups, pairs or individually. If a student chooses to write their assessment in te reo Māori, Ben finds a colleague or local to translate it.

Ben also uses Google Classroom for posting pictures of whiteboard notes, providing links to resources and videos used in class, and putting up exemplars. He finds this helps with engagement, and those away can see what the class has been doing. Students can use check sheets to monitor their progress in meeting the criteria of the standard.

Colleagues have taken on a similar approach - "a few years ago Mary Scobie explored dye and harakeke with her students for another Pūtaiao unit standard (there are several)." Ben will try this other unit on chemistry with his class later in the year.

"Student response to this approach varies", Ben says "the majority are enthralled and hook in. I try to find that button that lights up their eyes."

Initially the school had misgivings and worried about perceived hurdles, but the unit is now well supported. Ben really likes the flexibility of this approach. "I can have students at different stages, and they can see their progress. I am getting traction with mātauranga Māori." He is using more te reo Māori in his teaching practice, and using theme approaches with more practical and oral components within other assessments."

## Possible classroom activities

If studying tuna with years 7-10, students could also -

- Learn about classification of vertebrates in general and fish in particular.
- Explore how tuna breathe, feed, move, reproduce, and the purpose of their slime.
- Test the quality of the water they swim in (see our Testing freshwater article) and explore the importance of water quality to mauri for local iwi and hāpu.
- · Find out what eels feed on, and what their prey feed on, to draw a food web.
- Learn about our different types of eels - compare and contrast and learn how to identify them.

Research the behaviour of eels especially as it relates to moon cycles and maramataka

Compare and contrast the effects of the traditional eel preservation method (e.g.,



For the assessment, Kauri Calvert sings his waiata with Te Whaiaro, from video by Ben Chisnall.





A student diorama of the harvesting and processing of tuna. Photo: Ben Chisnall.

From <u>Te Aka Maori Dictionary</u>

smoking) with more recent techniques (such as freezing, using smoke condensates or canning).

• Find out why eels are endangered and what can be done to improve their survival, and explain why kaitiakitanga is such an important concept for te taiao.

• Share stories of eeling (their whanau and hāpū too) and try to catch some.

• Follow the journey of the eels down a local river to the sea, in canoes or on inner tubes, staying at marae along the way and talking with kaumātua and other eel experts (as in Learning journey on the eel trail, Education Gazette, 28, 3, 2011).

• Through rangahau, find out how in te ao Māori eels were caught, processed and cooked.

• Talk, kanohi ki te kanohi, with a kaumātua, e.g., about local tikanga (kawa) and pūrakau about tuna.

• Read the <u>On the Move article</u> about migration in *Connected* L3, 2016.

## Useful teacher resources

NZ Geographic, 2010, <u>Taniwha</u> [article on long-fin eels - three free articles a month].
Te Ara Encyclopedia of NZ, 2021, <u>Eels</u>.
Department of Conservation, <u>Eels</u> [links to more classroom activities and videos].
Science Learning Hub, 2019, <u>Longfin eels</u> [Includes video and more activities].
NCEA 91605 L3 2018 <u>Bio exam question on</u> speciation and eel migration, <u>and answers</u>.

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## Ngā Kupu

Aho – Fishing line <u>Hīnaki</u> – Eel trap or pot Kai <u>hākari</u> – Feast <u>Kuwharuwharu</u> – Longfin eels <u>Mahi ā-ringa</u> – Crafts (e.g., weaving) <u>Mahinga kai</u> - Food-gathering place <u>Matau</u> – Fish hook <u>Pā tuna</u> – Eel weir <u>Rama tunu</u> – To catch eels by torchlight <u>Rangahau</u> – Research traditional knowledge <u>Tuna heke</u> – Migrating eel <u>Tuna hinahina</u> – Shortfin eel.



A woven basket that has been used for smoking tuna. Photo: Ben Chisnall.

