

3. TOREPARU WETLAND A RESEARCH PARTNERSHIP JOURNEY

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Ngā mihi

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Tēnā kei te repo, he matuku noho puku

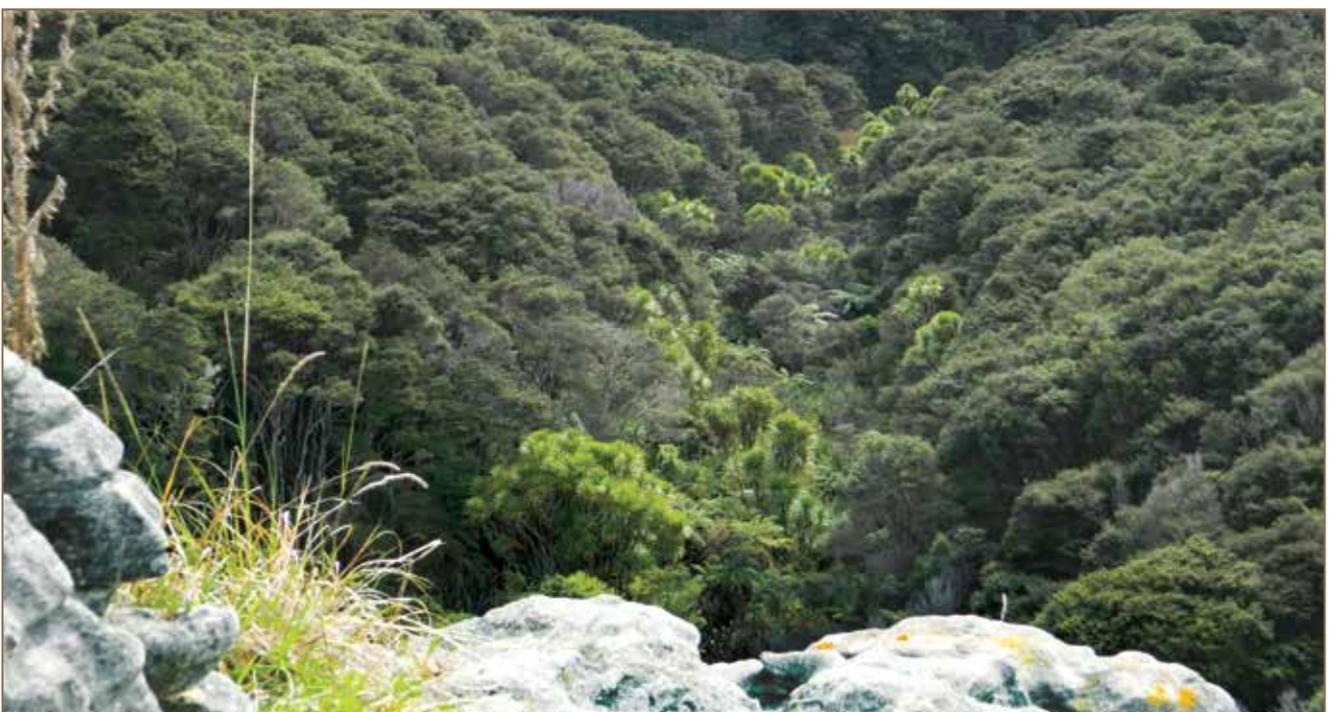
In the marsh the bittern sits in silence

ABOUT TOREPARU

Located along the Waikato West Coast, between the mountain of Karioi and Ōtea Harbour is the Toreparu wetland, a 223 ha repo (swamp) at the head of the Toreparu Stream. This wetland is considered a significant site for the *toi whenua* of the area (the customary designation for hapū (subtribes) holding ancestral rights to a particular area), Ngāti Whakamarurangi and Tainui. Te Kōwhatu, Te Ruataniwha, and Te Kaitiaki are old boundary markers that lie within the wetland that feed numerous tributaries, the principal ones being the Waimāori, Waitomotomo, and Matahahaia streams. At the northern end of the wetland is Horokawau, a 310 acre block, which, after the sale of the Ruapuke block in 1855, was set aside as a Native Reserve for Ngāti Whakamarurangi. It was a significant cultivation area as well as the site of a large waterfall. From 1820 onwards, the land surrounding the Toreparu wetland was occupied by tribes whose lineages were Ngāti Hauā, Ngāti Whakamarurangi/Tainui, Ngāti Whare, Ngāti Hourua, and Ngāti Naho. The principal settlements were at Te Mākaka and Mōtakotako, and their descendants still live on the land around the Toreparu.

I really want to thank Mōtakotako Marae and Taruke for your support, time and knowledge throughout this project. I could not have done it without you and hope that the outcomes from this will support your aspirations for the wetland and for your hapū. I also want to thank the surrounding landowners, the University of Waikato, my MSc supervisors Ian Duggan and Shaun Awatere, Te Pūtea Whakatipu Trust for my scholarship and of course my whānau and friends for their ongoing support both in the field and out.

- Ngā mihi Mahuru



A native plant-dominated arm of the wetland provides a guide and direction for current restoration initiatives. Photo: Mahuru Robb

The Toreparu wetland is rich in cultural history. The remains of numerous pā (fortified place) and kāinga (settlement) sites on the north and south sides overlooking the length of the wetland attest to the abundance of resources it once provided, such as, tuna (freshwater eels), piharau (lamprey), inanga (whitebait), kākahi (mussels), etc. as well as materials for building, netmaking, clothing, dyeing, and bird snaring. Te Kōkiri and Te Awa a Heketoru were important pā tuna (eel weir) sites, with numerous other sites for setting hīnaki (eel basket) throughout the Toreparu.

Toreparu wetland is surrounded by a mixture of regenerating native bush, farmed pasture, and karst limestone outcrops. The repo itself has patches of mostly native plants, with the centre of the wetland covered in grey willow, spreading east up the wetland. Some of the southern arms of the Toreparu are surrounded in regenerating native bush and have a variety of native plant species such as tī kouka (cabbage tree), harakeke (NZ flax), rushes and sedges, raupō, ponga (sliver fern), and native ferns. These provide a guide to what the wetland once looked like, and what the kaitiaki (guardians) want to achieve through a combination of pest control, fencing, and restoration planting in the Toreparu catchment.

Carrying out the scientific-based field work and CHI assessment.
Photo: Mahuru Robb



Carrying out the scientific-based field work and CHI assessment. Photo: Mahuru Robb



This site had an abundance of kokopū and was dominated by native plants. The brown water was due to iron-floc, a naturally occurring, iron-oxidizing bacteria that creates the soft brown growths seen to the left of the net. Photo: Mahuru Robb



He kahu kē i te waru, kei te matuku e hū ana i te repo

A hawk screaming in the eighth month, a bittern booming in the marsh

(From the ancient lament 'Whakarongo e te rau')

WORKING TOGETHER FOR BETTER OUTCOMES

In 2013, Mahuru worked with a kaitiaki group from Mōtakotako Marae which is adjacent to the Toreparu wetland as part of her MSc project looking at how mātauranga Māori (Māori knowledge) and science worked together to assess the health of wetlands. Although she does not have a direct whakapapa (genealogy) link to the toi whenua associated with the Toreparu, her involvement was through whānau relationships and a mutual desire to restore and rejuvenate the Toreparu wetland.

For Taruke (Ngāti Whakamarurangi), *“the heart of kaitiakitanga (exercise of guardianship) is the concept of equilibrium, both between and among species, humans, the animate and inanimate. Equilibrium can only be achieved when the importance of those relationships are recognised, fostered, maintained and protected. Like the matuku (Australasian bittern), the Toreparu repo has lain silent in the face of rampant willow invasion, exotic predators, stock damage, and public apathy. But we know it is possible to rejuvenate and restore this amazing area where the boom of the bittern can again be heard by all. This can only come about when we all shoulder the wheel, so to speak, as hapū, ecologists, researchers, community groups, farmers, statutory bodies, and others to collaborate using our combined knowledge, skills, and resources to give voice to this special place. We have been extremely fortunate to have Mahuru working with us*

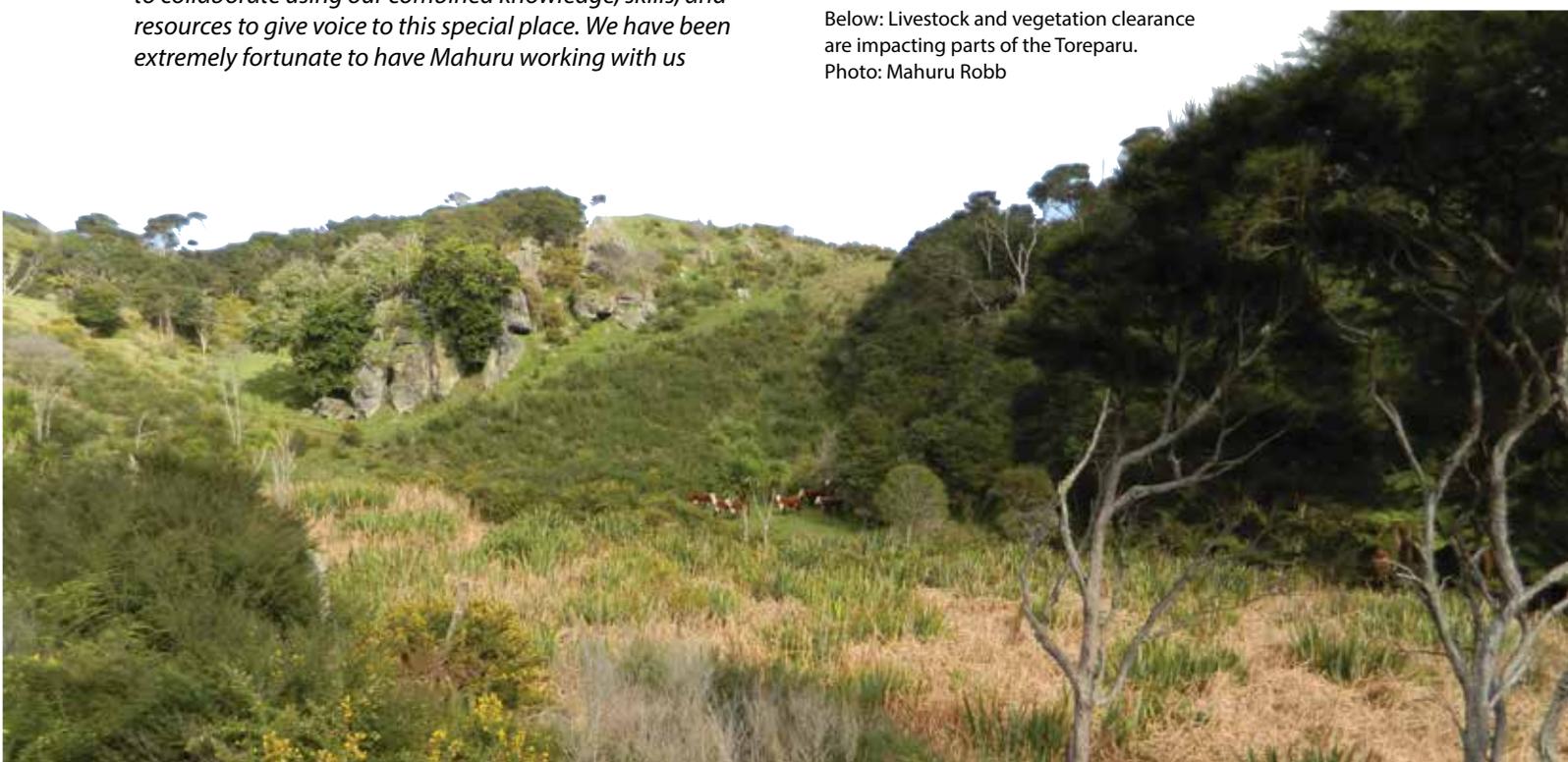
and assisting us, her passion and knowledge has been invaluable, ā mā pango mā whero ka oti pai ai te mahi.”

Mahuru's role was to focus on the science monitoring and to help facilitate the development of a wetland Cultural Health Index (CHI) with the kaitiaki. The CHI was adapted from previous models, with alterations of indicators to suit the Toreparu and the hapū.

“I think it is really important to note that this project would not have happened without the support of kaitiaki and the hapū. This provided a foundation of trust, open and honest communication, and for me, the work was more meaningful as I wanted the research outcomes and process to provide benefits for the toi whenua, and of course the wetland.

The personal relationship and the one as researcher are not mutually exclusive. The approaches that I took, and the responsibility that I felt to support toi whenua aspirations, and the outcomes that I was looking for obviously had a very personal element to them. The relationships that were built and strengthened throughout this project, like any relationship, require maintenance and communication. Based on my experiences working at the Toreparu and subsequent collaborative research experiences with other iwi (tribes) and hapū groups, I have summarised some of the important steps to working together to restore the health of wetlands.”

Below: Livestock and vegetation clearance are impacting parts of the Toreparu.
Photo: Mahuru Robb



COLLABORATION AND HOW TO DO IT

The research relationship must be collaborative throughout the whole process – from the seed of the project being planted to the end.

As a researcher, it is important to think of these projects as growing along the way. If you go in with a set agenda and outcomes, you are going to miss opportunities for mutual growth and understanding, and you are obviously not going to create a mutually beneficial relationship. And the research world is well overdue for moving on from the "researcher vs the researched" mentality.

The steps outlined below (Fig. 1) identify the process we used at the Toreparu, which may be helpful for others. The process was iterative and reiterative, to make sure the project was providing useful outcomes for our hapū research partners and, obviously, for the wetland as well.

So what has this all meant in terms of restoring the Toreparu? The collaborative approach discussed in this chapter produced a comprehensive wetland assessment that used a combination of wetland CHI and science approaches. The comparative assessment confirmed that cultural values and working closely with toi whenua results in a holistic, more detailed picture of wetland health and highlights key focus areas for future restoration, that could not be captured by using science alone.

This work has put the Toreparu in the spotlight as a priority wetland for restoration. The restoration project will be led by toi whenua and the catchment landowners, with

support from the Waikato Regional Council, Te Papa Atawhai – Department of Conservation, and Manaaki Whenua – Landcare Research. The restoration of the Toreparu is currently in the planning stage and it is hoped to have more details and updates online soon.

KEY LEARNINGS FROM THE RESEARCH PARTNERSHIP

- Research partnerships with marae (Māori social and cultural centre), hapū, and iwi kaitiaki need to be collaborative from the beginning. The relationship that is built will be the foundation for the success of the project
- Researchers need to be open and accepting of mātauranga Māori, and not impose their views or values on this. Mātauranga Māori is valid in itself
- Be aware that science, in this context, is a tool and a useful approach for collecting information
- Māori research partners need to be resourced and funded for their work. Unfortunately, many projects do not factor this in
- Māori and non-Māori research partners should familiarise themselves with kaupapa Māori research methodologies (an approach underpinned by Māori values)
- Collaborative research is an iterative, dynamic, and learning experience. It is important that we listen and look beyond our disciplines for solutions to help our environment and those who are connected to it.

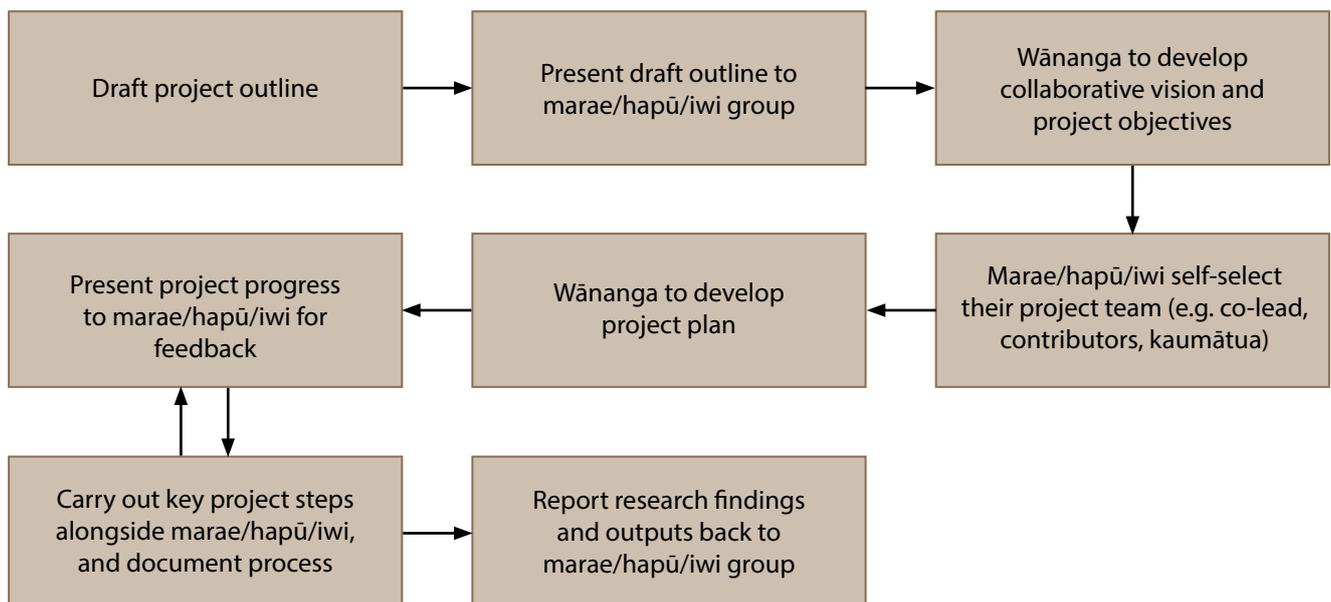


Figure 1. Toreparu research relationship collaborative process

Kei te matuku e hū ana i te repo, 'Hu'!

The bittern makes a deep booming call in the swamp, 'Hoo'!

WHAT CAN WE DO TO SUPPORT THE CONTINUED BOOMING OF THE MATUKU?

Emma Williams and Andrew Styche
(Te Papa Atawhai)

The matuku (Australasian bittern, *Botaurus poiciloptilus*) is an important wetland bird species, but due to its shy (cryptic) behaviour, it can be difficult to study. It is highly endangered, with current populations in Aotearoa New Zealand predicted to be under 900 birds. Much of the decline has been attributed to the destruction of its preferred wetland habitats, making wetland restoration all the more important. However, in reality, threats will be numerous because bitterns nest on the ground and have specific foraging behaviours that make them highly susceptible to predators and changes in prey accessibility.

Matuku produce a distinctive low, booming call that sounds rather like air-blowing across a bottle. In general, these calls are associated with territorial defence and mate attraction during the breeding season. The booms are key indicators for monitoring bittern populations, i.e. people monitoring them listen for the boom, note the direction (N, S, W, E) from which the boom is coming and the time heard to distinguish between individuals calling, and thus estimate the number of individual males in the population. In general it is assumed every male has at least one female; in reality male bitterns are polygynous, meaning they can have more than one female. Also they will still call even if they have not found a mate, suggesting that booming males could have anything between zero and five females.



Matuku/Australasian bittern. Photo: Craig Bullock

For some hapū and iwi, the matuku formed both an important component of cultural information transferral (via carvings, waiata (songs), karanga (welcome call) and our reo (language)), and also part of some hapū/iwi diets. However, with the huge decrease in their numbers, the focus is now on increasing their populations through habitat restoration, and monitoring programmes. The growing recognition of the important connection between matuku habitat and inanga spawning habitat deserves greater exploration with whānau.

WHAT CAN WE DO TO HELP OUR MATUKU?

Key actions we can take to build our understanding of the matuku based on our collective mātauranga (knowledge).

Kōrero (speak) with local kaumātua (elders) and other whānau (family) members about the matuku:

- **The socio-cultural value of the matuku?** How did whānau/tūpuna (ancestors) interact with the bird? Has this changed, and if so, how and why?
- **What are the local names (if any) for the matuku, and other species are they connected (whakapapa)?** What plants, other birds, insects, and fish were also found in the same habitat? Have these animals and plants also changed in physical appearance, distribution or population size? This is fundamental to building a bigger, more holistic picture of connections and associated health and wellbeing of the whole system.
- **Where were populations of matuku? Has their distribution changed in the past compared with the present?** Identifying remnant wetland areas within the rohe (region) of importance to the whānau, and how they relate to whānau memories of matuku locations.
- **What do the matuku and the habitat they lived in look like, smell like, and sound like?** Our senses (eyes, nose, and ears) are very good at picking up changes, providing important information about population densities and quality of their habitats.

Observations

- **Population features** – The absence of birds could suggest that survival is low. Similarly, sightings of birds that are very dark in colour could suggest few juveniles are making it to breeding age. In general:
 - Adult bitterns of breeding age are brown and darker on their backs and wings
 - 1st year birds are lighter, with more buff-yellow mottling on their wings.
- **Predators** – reasons why you may be seeing more adults and fewer juveniles are numerous and difficult to determine. However, one possibility is predators. Bitterns are ground nesters, which makes females, eggs, and chicks particularly vulnerable to cats, ferrets, stoats, and dogs.
- **Food sources** – another possibility (worse for juveniles but could also affect adults) is that food sources can become inaccessible to bitterns for

prolonged periods. Availability and accessibility of food appear to be critical to bittern survival:

- **Availability – Is your wetland drying out?** If the wetland dries out it can reduce the availability of small prey items, such as frogs, fish, and tuna. If so, bitterns may not have access to prey during these periods.
- **Accessibility – Does your wetland have deep drains?** And does water become concentrated in these drains, drying out completely elsewhere during summer? Bitterns rely on shallow water in areas with protective vegetative cover to feed, e.g. raupō stands. Catching food in deep drains is difficult because of the steep sides. In areas where water levels become too shallow and are without cover, bitterns will not forage because of exposure.

Smell

- A change might suggest changes to the air quality, or subtle shifts in the types and health condition of plants in the habitat. It can also provide information about the condition of water and soil in the wetland, e.g. decomposition may cause a rotten egg smell.

Sounds

- Changes to the times when the birds boom can provide important information about changes to the natural maramataka (calendar); but also consider changes to other sounds in the wetland habitat of matuku – are other wetland birds still calling too? Frogs?
- Males go through several changes to produce booms:
 - Quiet, croaky booms at the start
 - Louder booms as the season progresses
 - Frequency and loudness of booming tapers off, in general, around egg laying (September/ October).
- **When does booming peak in your wetland? Does this change in relation to other changes in the environment?** The timing of the booming peak may change if breeding success has changed. It may be possible for booming to peak sooner or later than expected; more than once; or not at all. For example, if extreme water-level changes or predators cause nests to fail and there is still time to breed, males may start booming again to compete for females that are available and fancy-free once more.

WANT TO LEARN MORE?

Note: If you are having problems with the hyperlinks below, try copying and pasting the web address into your browser search bar.

References

More on collaborative research:

www.landcareresearch.co.nz/science/portfolios/enhancing-policy-effectiveness/vmo/planning-and-decision-making/matauranga-maori

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Harmsworth G 2002. *Coordinated Monitoring of New Zealand Wetlands, Phase Two, Goal 2: Maori Environmental Performance Indicators for Wetland Condition and Trend*. Palmerston North, Landcare Research: 1–66.

Useful websites

<http://nzbirdsonline.org.nz/species/australasian-bittern>

<http://doc.govt.nz/nature/native-animals/birds/birds-a-z/australasian-bittern-matuku>

Author research

Mahuru's Masters research thesis:

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