



# Te Matau a Māui project update

## Final report

### August 2021

*Native species thrive where we live, work and play*



Wireless cage trapping in Cape to City

*Photo: Pouri Rakete-Stones*

Prepared by the Te Matau a Māui Project Management Team

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## Executive summary

This report was intended to be the final report for the Aotearoa Foundation following the completion of the funding extension and agreed milestones. The Predator Free Hawke's Bay project however has a further twelve months to complete the possum eradication and predator suppression as part of Whakatipu Māhia. Maintenance of the trapping networks in Cape to City and Poutiri Ao ō Tāne will also continue. A major milestone as part of the contract with PF2050 Ltd is for a close out report that highlights all of the learnings. The report will be comprehensive, spanning the past 10 years of the projects, covering technical outputs, project management, operations, the importance of people, the challenges and the lessons learned. This close out report is to be completed by June 2022 and will be provided to the Aotearoa Foundation as a final report of the project.

A highlight from the first half of the year was hosting the Predator Free 2050 hui where predator free projects from all over the country gathered to share and learn from each other's achievements and challenges. The overwhelming message was the importance people play in the success of the projects and all projects were able to share inspiration and energy for the year to come.

Some of the highlights over the last six months have included:

- Māhia residents witnesses another rare native species visiting the peninsular. A matuku (Australasian bittern) was photographed by a shepherd on Pongaroa Station. Matuku are nationally critical, and rarely seen. Their presence on the peninsular is significant, and another important species to benefit from the project.
- The project team hosted the PF2050 hui for predator free projects from across the country (which now number 17). Members of the team also attended the recent Predator Free summit hosted by DOC in Wellington, and a workshop on stoat eradication hosted by PF2050 Ltd.
- Following a constructive research hui in Lincoln in April which included Taranaki, Wellington and Dunedin projects, the project team have signed the 2021-22 research contract with Manaaki Whenua Landcare Research (see research update for detail). This hui also highlighted the importance of a national research strategy for predator free.
- Three project reports have been completed, an update on the possum home range study underway on Māhia, and two reports on the Cape to City bird and biodiversity monitoring programmes. All these outputs inform project team management decisions.
- Two Good Reads have been published to the project website, an article on the recently published NZ Journal of Ecology paper on the PAPP trial in Poutiri Ao ō Tāne, and an article that was first published in the NZ Biosecurity Institute's magazine over summer on some of the innovation that's been a part of the Māhia possum eradication. Two newsletters were distributed via Mailchimp.
- Two hikoi were held in the first quarter of 2021. Ngāti Pāhauwera's hikoi to Waipapa-a-iwi marae in late March saw whanau come from as far afield as Christchurch, Wellington, Auckland and Tauranga.
- Three teacher workshops have been held, including a very successful day in Wairoa alongside Ruud Kleinpaste and EnviroSchools.
- Robyn and Megan, TMAM educators are now based at EIT. With the official milestones for Poutiri Ao ō Tāne and Cape to City coming to a close they will be able to continue their

critical work connecting people back with nature. Their popular professional development and trainee teacher workshops will continue, enabling teachers the confidence to teach the curriculum using the environment as a context.

- The Māhia field team recently undertook a letter box drop for urban residents of Māhia, asking if there was any interest in hosting a possum bait station or rat trap on the property. The team had a brilliant response from residents and bach owners.
- The Māhia field team have almost completed the bait station network across Phase 2 despite some challenges with wet weather heading into winter. Central Districts Pest Control Ltd have been working in the Māhia Scenic Reserve, aiming to reduce possums to less than 1% RTC (residual trap catch). Once that is complete our field team will undertake the final mop up and install the monitoring network of lured trail cameras.

Over the next twelve months, the project team will complete the possum eradication and >85% reduction of mustelids and feral cats on the Māhia Peninsular. This will include designing and implementing the possum barrier at the neck of the peninsular, the design and implementation of the proof of absence monitoring network in Phase 2, and the incursion response plan.

# 1. Project management update

In February 2021, PF2050 Ltd advised that the funding ring fenced for the expanded Māhia project into mustelid and rat eradication had been redirected to other projects. The community have yet to agree on the best mechanism for governance. PF2050 Ltd agreed to fund a facilitator which would enable these conversations to continue with the goal to reach agreement. This would enable this kind of project in the future to work well using the excellent work done to date in the Whakatipu Māhia project as the foundation for success.

Current milestones for the existing Whakatipu Māhia possum eradication and predator suppression to June 30 2022 continue to be met.

Following two resignations from the Cape to City community advisory group, and the nature of the project moving more into business as usual it was decided the group has served its purpose well and would be brought to a close.

The Te Matau a Māui project management team meetings have likewise wrapped up earlier in June in line with the Te Matau a Māui contract with the Aotearoa Foundation formally ending. Over the next 12 months, HBRC members of the project team will start to transition into HBRC's business as usual biosecurity programmes as the project reaches the end date.

Following her departure in September 2020, Melissa's role at DOC has not been replaced. Her role is being covered by other members of the team.



Attendees of the May 2021 PF2050 workshop hui, held in Napier.

## 1.1 Engagement with Māori

Two hikoi were held in the first quarter of 2021.

Over 60 whanau gathered at Waipapa-a-iwi marae in late March from as far afield as Christchurch, Wellington, Auckland, Tauranga, and Hastings/Napier. Following the powhiri and morning tea, the hikoi proceeded up Tawhirirangi Maunga with stunning 180-degree views, followed by lunch and kaikorero. Much was learnt and discussed around whakapapa and the work Ngāti Pāhauwera Development Trust are currently involved in.

No more Hikoi are planned with the completion of TMAM funding. These hikoi have been very successful, adding real value for tangata whenua and we will look for opportunities to continue these in the future.

Hapū members continue to be engaged through the Poutiri Ao ō Tāne Community Advisory Group.

The project lead continues to work with Maungaharuru Tangitū Trust who are currently developing their long term vision for Poutiri Ao ō Tāne and how they can lead the project into the future with support from HBRC. The final plan is due 31 January 2022.



Ngāti Pahauwera's hikoi to Waipapa-a-iwi marae.

*Photo: Theresa Thornton*

## 2. Workstream update: 1 January – 30 June 2021

### 2.1 Research and monitoring



Trail camera image of possum on the Māhia Peninsula.

*Photo: Pouri Rakete-Stones*

There have been a number of research projects completed over the last six months, this brings the total number of reports completed as part of Te Matau a Māui to 62. The most recent ones are summarised below.

- [Predator and biodiversity response monitoring in Cape to City: annual report 2021](#) This report supports ongoing conclusions from the monitoring undertaken in Cape to City. Results demonstrate that predator control has reduced the relative abundance of stoats and ferrets, and that the initial knockdown was successful in reducing the relative abundance of feral cats, but this has not been maintained over time. Native lizards and invertebrates are also more abundant in the treatment area and have increased over time.
- [Possum home range and movement behaviour on Mahia Peninsula](#) This report provides an update on the possum collaring to determine home range size of possums on the Māhia Peninsula which directly feeds into management decisions for the eradication operation. 10 adult possums were GPS collared in January 2021, and the comparative analysis will begin once data has been collected in September 2021.
- [Cape to City bird count survey](#) This report highlights the large areas of exotic forest that have recently been logged has impacted on bird abundance in the project area, particularly of toutouwai (NI robin), tūī, and riroriro (grey warbler). Reduced predator numbers appear

to be benefiting birds within the project footprint, particularly wetland species, and has increased overall diversity on the Maraetōtara Plateau.

Research project report still to come for 2020-21 include;

- Analysing eDNA samples of invertebrates in different-aged manuka plantings.
- Repeat the Possum Control Area social survey to identify factors influencing landowner's interest in possum eradication and their willingness to participate in, and contribute to, the programme.

The 2021-22 research contract has now been signed with Manaaki Whenua Landcare Research and now includes five projects;

- Refine planned surveillance network across Mahia in the proof of absence framework to estimate the probability of eradication. Report by August 31, 2021.
- Continue to measure possum home range size and mobility in three habitat types on Mahia Peninsula. Final report November 30, 2021. We propose a full comparison of data with the pre-eradication period by allowing the GPS collars to collect data until early October (depending on battery life expectancies). Whilst we are downloading data this month, we will upload new schedules to the collars to enable them to continue collecting data beyond July 31. This will improve the robustness of the data and allow analysis of pre- and post-eradication home range size and mobility.
- Help design a post-eradication surveillance network to remain confident of possum absence by accounting for incursion risk, including natural dispersal and assisted dispersal. Report by December 31, 2021.
- Analyse trends in rabbit and predator spotlight data to measure response of rabbits to predator removal. Report by January 31, 2022. Rabbit responses to predator removal is highly contentious and requires solid data to resolve it. We will analyse data collected by HBRC staff inside and outside the Cape-to-City footprint. Given the sensitivity of this subject, we propose publishing the work in a peer-review science journal as a credible reference source.
- Artificial intelligence for analysis of data from vertically oriented cameras. Report by February 28, 2022. Vertically oriented cameras are being used to minimise the number of false positive triggers. However, the AI software needs to be trained to recognise images from these cameras and be operable on Trap.NZ. We will produce a model for possums and other predator species by sorting images by day/night and species, building a fusion model that combines Trap.NZ and HBRC images, develop a multi-cropping decision-making algorithm, undertake cross-validation and fine tune parameters.



## 2.2 Community engagement



Wairoa nature-based learning teacher workshop.

*Picture: Megan McBride*

Community engagement activities over the last six months have included two [newsletters](#), media releases, teacher training workshops, popularising the science outputs through the projects ‘[good reads](#)’ and ongoing facebook posts.

The first “Learning in Nature” teacher workshop for 2021 was held in Wairoa. ‘The Bugman’ Ruud Kleinpaste shared the vision and importance of Nature-based learning with 18 teachers from Wairoa’s Early Childhood Centres, Kindergarten, Primary, Secondary and Intermediate schools. Cape to City/Predator Free Hawke’s Bay Education Coordinators Megan and Robyn were privileged to assist with this workshop funded as part of the Air NZ Environmental Trust grant to EIT and organised by EIT Hawke’s Bay Environment and Sustainability Manager Emma Passey, with support from Wairoa Enviroschools facilitator, Jenni Scothern.

With the grant coming to an end, we were keen to see the “Learning in Nature” kaupapa continued. The residual grants funds (~\$92k see financial report) will be used to support the employment of Robyn and Megan at EIT to further enhance and expand the reach of the Ōtātara Outdoor Learning Centre and “Learning in Nature”. A formal funding agreement has been developed between DOC and EIT. This is a wonderful result from several years of building relationships with EIT, supporting the attaining of AirNZ Trust funding to continue the education work started by the project. This move means the team can continue their critical work connecting people back with nature. The popular professional development and trainee teacher workshops will continue, enabling teachers the confidence to teach the curriculum using the environment as a context, and will enable those principles to be further integrated into all of EIT’s courses and degrees and to further their vision around an integrated approach to sustainability.

While the project team is no longer leading the Nature Shed at the Hawke's Bay Show, they are still connected to the process which is led by HBRC's EnviroSchools co-ordinator Sally Chandler. The Aquarium are key partners in the Nature Shed this year, and we are hopeful that the Show will go ahead this year. The show was unable to have public events due to COVID 19 last year.

Volunteer hours for the last six months were 160. Overall volunteer hours are down due to less translocation associated activity and Covid-19.

## 2.3 Biodiversity and species



Matuku photographed on Māhia Peninsula.

*Photo: Boydie Hirini*

Over the last six months there have been no further translocations, but kākā and seabirds continue to be monitored.

Following the confirmed return of tītī and possible kōruru to the seabird site over summer, the team are considering the possibility of an additional translocation of tītī to further strengthen its long term success. This would need to be undertaken next March and scoping is underway by DOC who would lead and fund this.

Kākā continue to be observed on a regular occurrence in Boundary Stream, as do unbanded toutouwai (NI robin) on the Maraetōtara Plateau indicating successful breeding in the reserves.

Four matuku (Australasian bittern) were sighted in April on the Māhia peninsular. These birds are nationally critical, with a population estimate of less than 900 in the 1980's and known declines at stronghold sites since then. Matuku are very shy and hard to spot - often adopting their 'freezing' stance, with bill pointed skyward. Mostly they make their presence known by the distinctive 'booming' call of the males. Matuku are very sensitive to disturbance and have suffered from continual destruction of their wetland habitat. Hopefully with ongoing habitat protection and enhancement, and predator control that these birds will flourish on the peninsula.

## 2.4 Habitat restoration

Maintenance of the plantings has been completed.

## 2.5 Pest control



Maungarongo Hemopo checking a wireless leghold trap

*Photo: Andrew Richardson*

Bait station installation across Phase 2 of the Whakatipu Māhia possum eradication is almost complete. This means the field team will be able to focus on the mop up of any remaining possum individuals, and on predator trapping for feral cats and mustelids.

Following the decision not to pursue an exemption from DOC to use brodifacoum in the Māhia Scenic Reserve, the team put the knockdown of possums out for tender to HBRC's approved contractors. This performance-based contract (target <1% RTC) was awarded to Better Nature Ltd. (previously Central Districts Pest Control Ltd) in February, with on ground work starting 18<sup>th</sup> March. After eight weeks of an intensive control operation using double-tap and feratox baits, monitoring results failed to meet the <1% threshold with a returned 13.3% RTC. Better Nature reworked the area using ground set legholds and have to date removed and additional 1,053 possums from the 375ha reserve. The field team have supported this work with increased baiting along adjacent forestry and scrub areas. Work is due to finish this month and will be re-monitored.

The project team have also negotiated with a contractor based in Taranaki to undertake surveys using possum detector dogs. A ground truthing visit is planned for mid-August which will be followed with two surveys over the next 12 months to validate the proof of absence monitoring in Phase 1.

The proof of absence monitoring network in Phase 1 has been operational since October 2020. A handful of possums have been detected in both the wirelessly monitored legholds and the lure trail camera network. Modelling indicates that eight weeks of zero detections across this network design is required to reach 95% confidence of zero density.

The time taken to process the images from the 99 trail cameras that are deployed has been improved by using a piece of software developed by Zero Invasive Predators called Classifier. The team have also recently employed a student on a casual contract who can process the images as the SD cards are returned from the field.

The design of Phase 2 (9000ha) monitoring networks is underway using the Manaaki Whenua Proof of Absence model (and the species eradication web interface) as part of the 2021-22 research contract.

The project team are also working with a landholder on the peninsular to install a possum fence to reduce the pressure of possums moving into the eradication area. This fence design is being used in the Predator Free Dunedin project and has been tested by Zero Invasive Predators. The fence will be supported with a variety of tools including wirelessly monitored legholds and cage traps.

Due to using brodifacoum as the primary removal tool, the total number of possums removed is unknown. However, to date numbers caught in mop-up traps totals 395 (known) possums (plus 1,053 from the Scenic Reserve), 50 cats, 125 rats, 116 hedgehogs and 1 stoat have been removed from the peninsular. No ferrets have been recorded in any capture devices, or trail cameras, however weasels and stoats have both been detected on lured trail cameras, and our first stoat catch was recorded on 16th December 2020.

The quarterly Cape to City and Poutiri Ao ō Tāne trap checks have been completed for this period.

The tracking tunnels results for rats in Boundary Stream in May was 5%, significantly lower than the spikes previously recorded for the May monitor in previous years (2018, 2019 and 2020). This low tracking rate continues from 4% in November 2020, and 7% in August 2020.

Targeted rat control was carried out in and around Mohi Bush and 100 acre bush to support the toutouwai/North Island robin during their breeding season. Toutouwai were translocated to Mohi bush in 2015 and a recent bird survey has shown that numbers are stable.

### **3. Work planned for 1 July 2021 – 30 June 2022**

In the next 12 months the project team will focus on:

#### **3.1 Research and monitoring**

- Four research projects will be completed.

#### **3.2 Community engagement and education**

- There will be further Teacher professional development workshops and workshops will continue with trainee teachers at EIT.
- The education facilitators will continue to work with Bledisloe School on a programme at the Ōtātara Outdoor Learning Centre, as part of a research programme under the AirNZ Environment Trust and EIT partnership.
- Publication of Good Reads will continue.
- Maungaharuru Tangitū Trust will undertake some work scoping where to next for the Poutiri Ao ō Tāne project and develop an implementation plan.

#### **3.3 Biodiversity and species**

- An additional tītī translocation will be scoped to top up the population following recent expert advice.

#### **3.4 Habitat restoration**

- Releasing and maintaining plantings are complete.

#### **3.5 Predator control**

- Cape to City and Poutiri Ao ō Tāne maintenance trap checks will continue.
- Rat monitoring will continue at Boundary Stream and self-resetting rat traps will be maintained.
- Over the final 12 months of the Predator Free Hawke's Bay project, the possum eradication and predator suppression will be completed across the Māhia peninsular.

## Appendix 2: Project outputs over last six months

Note: For full list of project outputs between January 2015 and August 2019 see August 2019 Interim report. For updates beyond that see latest Interim reports at <https://www.pfhb.nz/resources/>

Title	Description
<b>Research and monitoring</b>	
Peter Sweetapple and Dave Latham 2021. Possum home range and movement behaviour on Māhia Peninsula. Annual progress report, June 2020.	<a href="https://www.pfhb.nz/assets/Article-Documents/Mahia-Possums-Interim-Report-June-2021.pdf">https://www.pfhb.nz/assets/Article-Documents/Mahia-Possums-Interim-Report-June-2021.pdf</a>
Al Glen, and Jo Peace 2021. Predator and biodiversity response monitoring in Cape to City: annual report 2021. Unpublished Manaaki Whenua Landcare Research Contract Report LC3982, prepared for Hawke's Bay Regional Council.	<a href="https://www.pfhb.nz/assets/Article-Documents/Predator-and-biodiversity-monitoring-annual-report-2021.pdf">https://www.pfhb.nz/assets/Article-Documents/Predator-and-biodiversity-monitoring-annual-report-2021.pdf</a>
Kahori Nakagawa, 2021. Cape to City bird count survey report.	<a href="https://www.pfhb.nz/assets/Article-Documents/Cape-to-City-Bird-Count-Survey-Report-June-2021.pdf">https://www.pfhb.nz/assets/Article-Documents/Cape-to-City-Bird-Count-Survey-Report-June-2021.pdf</a>
<b>Engagement</b>	
White Pine Bush evening teacher workshop with Ruud Kleinpaste and Enviro Schools	
Youth Climate Change Workshop with Enviro Schools	
Wairoa teacher workshop with Ruud Kleinpaste and Enviro Schools	
EIT ECE Environments Workshop	Environments and learnings: intentional teaching
EIT ECE Early maths and science concepts workshop	Science disciplines
EIT ECE Research group	
EIT - Julie Whye	Pedagogy and curriculum, third year candidate teachers

Connected to Nature: Teacher Workshop. Our places, our stories	Hosted by Kohupātiki Marae. Matariki themed.
Good Read on innovations in Whakatipu Māhia	<a href="https://www.pfhb.nz/resources/newsletters-and-good-reads/article/59/number-eight-wire-key-to-whakatipu-mhia-possum-eradication">https://www.pfhb.nz/resources/newsletters-and-good-reads/article/59/number-eight-wire-key-to-whakatipu-mhia-possum-eradication</a>
Good Read on PAPP trial in Poutiri Ao ō Tāne, recently published in NZ Journal of Ecology.	<a href="https://www.pfhb.nz/resources/newsletters-and-good-reads/article/57/promising-results-from-a-large-scale-papp-trial-in-hawkes-bay">https://www.pfhb.nz/resources/newsletters-and-good-reads/article/57/promising-results-from-a-large-scale-papp-trial-in-hawkes-bay</a>
PFHB May 2021 Newsletter	<a href="https://mailchi.mp/bbb1e48dcb55/predator-free-hawkes-bay-may-newsletter">https://mailchi.mp/bbb1e48dcb55/predator-free-hawkes-bay-may-newsletter</a>
PFHB July 2021 Newsletter	<a href="https://mailchi.mp/708455c90d8e/predator-free-hawkes-bay-july-newsletter">https://mailchi.mp/708455c90d8e/predator-free-hawkes-bay-july-newsletter</a>
<b>Species and biodiversity</b>	