

tongariro

THE JOURNAL

2019 to 2021

The Covid-19
delayed issue

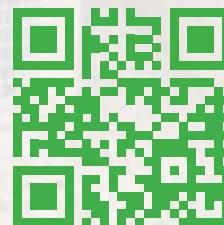
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Department of
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Te Papa Atawhai

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Issue #26

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Photo: Douglass Bagg

FROM THE EX-PRESIDENT



NICOLA ETHERIDGE

EX-PRESIDENT

This is my last note as outgoing President of Project Tongariro and what an enjoyable experience it's been. I would like to wish Mike all the best as the incoming President and look forward to seeing what great work PT continues to do under his leadership.

This journal covers two years from 2019 to 2021, due in most part to the disruption of the Covid lockdown. I hope you enjoy reading what the team has been up to.

This period not only saw a steady stream of pests killed, huge volunteer hours, delivering work through a lock down, lots of trees planted and weeds killed,

New Zealand's goal of being predator free by 2050 is huge to say the least but what an amazing goal to aspire to nonetheless.

We also secured significant resourcing which provides a lot more certainty for staff and our projects. It's been a milestone in that regard, so a huge shout out to our core funders for your support (Bay Trust and the Len Reynolds Trust) and of course without whom we couldn't achieve what we do.

New Zealand's goal of being predator free by 2050 is huge to say the least but what an amazing goal to aspire to nonetheless. Our wild places and animals need all the assistance we can afford them and with organisations like Project Tongariro in action we might just have a chance as a cumulative restoration workforce across New Zealand. That's something I still want to be a part of and is a real



Getting high on Ruapehu. *Photo: Jumpstory*

tribute to those who care and give time to protecting New Zealand's special places and animals.

While I'm leaving my role as President, I'm not leaving the area or my interest in conservation of the majestic and oh so beautiful central plateau. I want to thank the staff, volunteers and board for your support and dedication to conservation in the Tongariro region. I'll still be around so this is just 'take care & I'll see you again soon'

Ka Kite ano

Nic

FROM THE PRESIDENT



MIKE O'SULLIVAN

PRESIDENT

Kia ora koutou

Having been brought up in Rotorua, the Tongariro National Park and Taupō district has been a stomping ground since I was young enough to be slung into an old tramping pack and carted out on day tramps and skiing trips in the early 60's. In 2013 I relocated back to Taupō after spending time in Australia, Indonesia and various countries in Africa to start a sustainable mineral company which aimed to recover high value minerals from the geothermal brines being discharged from geothermal power stations. Like many others a walk around Lake Rotopounamu initiated me into the work being undertaken by Project Tongariro and



Mangatepopo Valley, Tongariro National Park.
Photo: Jumpstory

the more I learnt about our organisation the more I wanted to volunteer.

In late 2020 I was asked if I would be interested in participating on the board of Project Tongariro with Nicola Etheridge needing to spend more time with her young family in Wellington. My initial thoughts were, what does a person from the extractive resource industry bring to an environmental organisation brimming with conservation talent. In discussions with Paul it was highlighted that Project Tongariro can no longer be classified as a small conservation organisation with limited focus but instead it must be viewed as a significant organisation with multiple

Like many others a walk around Lake Rotopounamu initiated me into the work being undertaken by Project Tongariro

branches, a significant operating budget and projects covering a large portion of the central plateau. Paul insisted that my experience on various boards as well as time guiding the development of companies from concept to fruition would be of value to Project Tongariro, I hope to prove him right.

I would like to thank Nicola for holding the fort since she took over from Paul and especially for agreeing to extending her term as President until February this year which allowed me to complete a major development with the company I co-founded, Geo40.

I would like to thank Paul and his dedicated team of Kiri, Robyn, Rachel and Sian and the Project Tongariro Board for the outstanding mahi they have put in over the last twelve months on our various projects which now stretch from Wairakei to Ohakune. Finally I would like to thank all of you, without your efforts we would not have been able to achieve a fraction of what has been done over the last year.

Nga mihi

Mike

PROJECT TONGARIRO DIRECTOR'S REPORT



PAUL GREEN

DIRECTOR

Tena kotou

Thanks to all our Tongariro Journal contributors including DOC who have helped ensure an interesting mix of conservation stories over the last two years. A special thanks to Dave Wakelin who continues to provide his editorial expertise.

A decision was made last March when Covid arrived to defer completion of the planned 2020 Tongariro Journal and incorporate stories into a 2021 edition.

Covid 19 quickly threw uncertainty at Project Tongariro just as it did for the entire world!

The announcement of an imminent lockdown quickly determined cancellation of the planned Ring of Fire event at Mt Ruapehu where we were to have provided hut warden marshals .

Staff quickly prepared a Covid Management Contingency Plan where we examined what a lockdown and its various levels of management would mean for each program of work in terms of staff, volunteers, our outcomes and our budgets. We quickly shared this with our Executive, any partners and our funders.

We realised there would be an immediate and probably long term impact on Kids Greening Taupō. Adding to this uncertainty, Rachel Thompson had only recently succeeded Thea de Petris as Coordinator when Thea left to undertake her PhD at Waikato University. And her assistant Sian Moffitt was relatively new too. Rachel and Sian quickly launched into developing amazing "on line "learning resources that have been greatly valued by kids, teachers and parents throughout the country and even Australia. And they quickly established weekly zoom meetings for their Kids Leadership Group that had only just been appointed.



Saving the kiwi. (See Page 74). Photo: Jumpstory

We realised that back country predator trapping was going to be severely impacted in Level 4 and probably Level 3 whereas there was no reason to limit front country trapping once we were out of Level 4. But approval was needed from landowners who may take an ultra conservative response!

Project Tongariro is very appreciative of multi year funding received from both Bay Trust and Len Reynolds Trust.

Our site restoration work was halted in Level 4 but often manageable by close neighbours in Level 3 with people wanting to feel useful in a safe way at an uncertain time. But public plantings were not possible until Level 2 when they could be safely managed.

I thank Kiri te Kano our Project Tongariro Coordinator, Robyn Ellis, our Greening Taupō and Predator Free Taupō Coordinator along with Rachel and Sian for their positive contributions whilst working from home for extended periods whilst in most cases coping with family pressures too. Possibly their most difficult task was dealing with my technical deficiencies at our regular Zoom updates! Morale was high and positive throughout.

It was sad seeing the difficulties faced by event organisations who we have partnerships with and had to cancel events. It was great relief to see the 2021 Tussock and Goat events completed successfully. These events are well supported by our members who enjoy their helping participation and knowing they have assisted with our fund raising.

I have been particularly pleased to see the growing success of Mahi Aroha. Project Tongariro has played an increasingly major role in planning the programme and arranging activities. We now have a group of leaders who have been able to succeed those of us who have slowed down. Our DOC partner has been challenged a little to include a good mix of activities but there are a number of DOC staff who do share our enthusiasm and I thank them!

Project Tongariro is very appreciative of multi year funding received from both Bay Trust and Len Reynolds

Trust. These grants enable us to plan ahead with much more confidence. We have received many other grants . Contact Energy has enabled us to commit to a second KGT Coordinator which is a real boost.

I thank our members and supporters who help in so many ways. It was sad to see Nic stand down as President because of family needs but we are very fortunate to have Mike O'Sullivan take over. Mike has a great deal of business experience which we will value.

I would like to particularly thank Lucy Roberts for her tenure as Treasurer. Lucy took over the role without relevant experience but with a commitment to learn and serve. Job well done Lucy and you can now enjoy a less stressful time continuing as an Executive member.

Our big challengers ahead are developing relationships as Treaty Settlements are implemented and secondly to build our membership and activities on the southern side of the mountain. We have really enjoyed our long relationship with Ngati Rongomai and the role we have had in assisting them restore wetland values on the Waitotaka River. As that work is completed I hope we can develop new opportunities with Iwi who will play an increasing role in conservation.

Nga mihi
Paul
Director Project Tongariro



The Tongariro Alpine Crossing. (See page 100) Photo: Jumpstory

MAKING THE MOST OF THE CHALLENGES OF 2020



**RACHEL
THOMPSON**

**KIDS GREENING
TAUPŌ EDUCATION
COORDINATOR**

After almost 20 years of teaching, I was very excited to take on a new role in 2020, as the Kids Greening Taupō Education Coordinator. This role has enabled me to use my strengths in teaching through inquiry learning and through the use of our natural environment. It has also allowed me to upskill, learning more about New Zealand's biodiversity, restoration and conservation. It has been an honour to take over from Thea Depetris, to learn from her,

and to be mentored by her. I am thoroughly enjoying being on the awesome Project Tongariro team, and coordinating the wide range of wonderful mahi that Kids Greening Taupō (KGT) are part of.

KGT started the year with a fantastic opportunity to collaborate with Kiwis for Kiwi and take part in the Kiwi Contact programme. This allowed us to take all of our Student Rangers on trips to the Crombie Lockwood Kiwi Burrow at Wairakei Golf + Sanctuary to see baby kiwi in the incubation facility. Five groups of Rangers from local schools were able to learn all about kiwi, why they are so unique, and the ways that they are being protected. Taupō Intermediate students even had the chance to prepare a kiwi chick to be released to Sanctuary Mountain.

Just as we got into our work with schools the Covid-19 pandemic hit. The Level 4 status had a big effect on how KGT carried out our usual work, as



Students from Tauhara Primary School at the 2020 Arbor Day Planting Event. *Photo: Sian Moffitt*

we were unable to run our community events, or to visit schools and kindergartens. However, Sian and I continued our environmental mahi in other ways instead. Our goal was to connect children and their whanau to nature, and to spread messages about conservation, while people were home in their 'bubbles'. We managed to successfully do this through an online forum, sharing daily Instagram and Facebook Nature Connector posts. These posts were simple challenges and activities to get families connecting with nature in their backyard and local green space.

They were very popular and were shared widely by schools, ECE centres, conservation groups and members of the community. I think everyone realised at that time, more than ever, how important it was for our health and well-being to get outdoors and connect with nature.

Covid 19 changed the way that we worked this year, but brought with it unexpected silver linings. It delayed our work with our core schools and forced us to work with them in a more flexible way.



Rachel demonstrating how to plant to a group at the Arbor Day Planting 2020. *Photo: Sian Moffitt*

Post lockdown we decided to turn these Nature Connectors into permanent resources on our website. We have continued to add to these and now have over 200 Nature Connectors published. The feedback that we have had is that people love having a New Zealand site that brings all the great environmental education resources available together in a one-stop-shop. The National DOC Education team think they are a great resource too, and asked us if they could promote them through their newsletter to schools.

During lockdown, we also wanted to provide educational resources for our teachers, student leaders, and student rangers. We did this by setting up an Online Nature Classroom that was able to be used by students who were homeschooling, or by teachers, who could share it with their students through their own online learning platforms.

This was used by schools all over the country. The Online Nature Classroom, now 11 separate units with different themes, was made in collaboration with local experts from DOC, Science Learning Hub, Kiwis for Kiwi, Para Kore, The Taupō Community Gardens and other organisations. These are now resources on our website, being used by teachers in New Zealand schools as the basis for inquiry units.

We had great feedback on our online resources from people all over New Zealand, and even overseas. More FM interviewed us about them, and promoted them, and articles were published in the NZ Herald online and the national



Student leaders 2020 with their welcome packs. *Photo: Rachel Thompson*



Student leaders at their student-led planting day 2020. *Photo: Rachel Thompson*

Stuff website. This publicity allowed us to continue to promote KGT and to build brand recognition, even during a time where we were unable to physically be out in the community.

Having never met in person, our Student Leaders began their work with us through weekly Zoom meetings. 30 students and two teachers on Zoom together seemed like a challenge, but we ended up having 12 fantastic online meetings before we finally got to meet on the ground! Online meetings also allowed us to continue our work with Taupō EEC (Environmental Education Collaborative) and our Collaborative Cousins (other similar community conservation education groups in New Zealand). We continued networking and supporting each other through a time of adapting to ever-changing and often unknown circumstances. Together, we also ran events and teacher professional development workshops online.

After lockdown, we hit the ground running! In the first month back on the ground, we took part in four planting days, helping plant 7000 trees. Our Arbor Day planting for schools was successful

despite Covid-19 restrictions at the time, with groups from 7 schools signing up, and 140 children attending. This was followed by an amazing collaborative planting day with Tūwharetoa Māori Trust Board, working with tamariki from Te Kura Kaupapa Māori o Whakarewa | Te Reo Ki Tūwharetoa. A workshop the day before the planting for a group of environmental leaders from the kura was an awesome collaborative session run with the support of Tūwharetoa Māori Trust Board, Taupō District Council, and Greening Taupō. These tamariki went on to use their new skills and be leaders on the planting day. This format

was a great way of linking local organisations, local schools, leadership opportunities, and education, through the context of a planting day and is something that KGT are keen to do more of with other groups in the future.

KGT has always held planting events, but this year decided it was necessary to also promote the importance of maintaining restoration areas after planting. A very successful community watering day to help out our scorched lakeside planting, and a fun mulching day to spread mulch around our



The Tūwharetoa Planting Day 2020. *Photo: Rachel Thompson*

river planting, were popular events with schools. The students enjoyed helping out our young plants, and learning new skills in the process. We often involve students in the 'Wicked Weeder' sessions with our local volunteers too. This allows our youth to understand about identifying the invasive plant species and removing them. They love using tools such as loppers and really enjoy the physical aspect of the work when weeding our restoration sites.

KGT was used as one of two examples of good practice at implementing a United Nations Sustainable Development Goal, Quality Education, in an international lecture to principals hosted by the University of Bangalore. Our work being shared internationally is very exciting for us!

Another positive development for the KGT programme this year has been the promotion of the Contact Energy Take Action Fund. Schools and ECE centres were able to apply for this funding through KGT to support their restoration and conservation projects. We were able to provide 12 schools with donations totaling \$8500. We're excited to see how these projects develop.

Covid 19 changed the way that we worked this year, but brought with it unexpected silver linings. It delayed our work with our core schools and forced us to work with them in a more flexible way. We have had to focus on what is important to each school, their teachers, their students and their environments, then design personalised plans that are focused on meeting these needs in the best way possible. Our student leadership team benefited from having extra meetings online, and our planting days were very popular, with a more diverse range of volunteers than ever before. As Project Tongariro Director, Paul Green, has noted:

"I am observing how the program and this cohort of students have grown their leadership skills along with their practical knowledge of restoration planting. At planting days their leadership skills are evident in their communication with volunteers and in lots of enthusiastic and confident participation in all aspects of restoration. They are inspiring to the community volunteers adding another value to being part of the day. Via facebook I am witnessing the same leadership and enthusiasm as to how they run their formal leadership meetings."

Paul Green, Director Project Tongariro

Overall, 2020 was a great year for Kids Greening Taupō. We may have been unable to complete our usual work during lockdown, but other areas of our work had time to grow and flourish. We made the

most of this time to promote KGT and our message, while also collecting, collating and creating resources for future use. We are proud of reaching our goals and achieving our outcomes through different means, connecting people with nature during a time when it was more important than ever.

A YEAR OF SUCCESSFUL PROJECTS



DAVE LUMLEY

**OPERATIONS MANAGER
CENTRAL NORTH ISLAND**

Looking back on this past year -despite all its challenges, it is satisfying to reflect on the many highlights achieved within our Central Plateau District and be reminded that so many of these are due in large part to the continuing volunteer efforts of our many and varied community partners.

Cascade Hut upgrade

Cascade hut has completely been refurbished inside and out. The project was financed and overseen by the Backcountry Trust with the work carried out by North Island Sika Foundation members. New exterior cladding was added using colour steel corrugate iron, a new roof, a new woodshed, a new covered deck and a fresh coat of paint inside. The exterior colour scheme was chosen to blend the hut into the shadows of the beech forest. It looks fantastic and is a great example of what can be achieved by working together with our partners.



A full hut refurbishment completed by local Sika Foundation members Aaron Brebner, Alex Giesen, Anton Stokman and Ron Lenzen and Mike Main.
Photo: Dave Lumley



Nina Manning & Jo Mendonca on the North side of Mt Pihanga, with Lake Rotopounamu and Lake Taupō in the background. *Photo: Dave Lumley*

The Kaimahi Project has allowed for the continued employment of three staff who otherwise would have become unemployed due to COVID-19.

Pihanga Heather

Since 2002, Heather (*Calluna vulgaris*) has been controlled on Mt Pihanga by the department and annually since 2009. The large open area of sub alpine scrub above the bush line on Mt Pihanga is listed as being part of the significant site named 'Tongariro National Park - Mt Pihanga, Kakaramea + Pukepoto E.A. and Lake Rotopounamu.'

This part of the site is significant due to the sub-alpine scrub as well as Alpine red tussock herb fields. Although other weeds including *Pinus contorta*, Douglas fir, Broom and Grey willow have been found on Pihanga in



Wāhine from a number of different organisations conducting Heather control on Mt Pihanga (From left to right: Jo Mendonca, Kiri Te Wano, Shirley Potter, Cher Mohi, Nina Manning, Emma Haitana, Tania Hendry, Karen Ardin, Anita Porima, Courtney Fox, Brenda Lawson, Candace Graham). *Photo: Dave Lumley*

the past, the biggest threat to this vegetation type is Ling Heather. Since 2018, the department has engaged with Ngati Turangitukua and as per the hapū's request and tikanga, only wāhine have been carrying out the work on the maunga. The control programme is working with Heather now contained with the seed source reducing and more scarce.

Rangitaiki Conservation Area

Rangitaiki Conservation Area has received another boost of funding for wilding pine control from the Forestry Fiscal Package (now called Kaimahi Project), with an extra \$85,000 which provided another 56ha to receive wilding pine ground control on site. The Kaimahi Project has allowed for the continued employment of three staff who otherwise would have become unemployed due to COVID-19. Greater coverage on the weed control that had been planned initially can now be provided, and will contribute to a higher protection



Control area of Wilding Pines (in red). *Photo: Dave Lumley*

rate towards the frost flats and its threatened plants. Rangitaiki has also been added to the National Wilding Conifer Programme, a multi-agency project funded through MPI to control wilding pines nationally.

Whakaipo Bay

DOC together with Te Kapa o Te Rangīita hapu and Te Kotahitanga o Ngāti Tūwharetoa (TKNT) will be piloting a restoration project at Whakaipo Bay, based on the vision and aspirations of hapu. 123 hectares of land is included in this plan for restoration, with over 270,000 plants. This project will also offer local employment, training, personal development, enterprise and education opportunities.

Kaimanawa Wild Horses

The Kaimanawa Ranges are home to a population of feral horses known as the Kaimanawa Wild Horses. The department began a population management programme in 1993 to keep the horse herd to a practicable level. A smaller horse population protects the habitat, improves the horse's condition, and reduces effects on the land. The unique tussock grassland where the horses roam contains threatened plants, including at least 16 species in the New Zealand Threat Classification System, some of which are found nowhere else in the world. Many of these plants occur in habitats that can sustain very little disturbance from horses. The herd has been kept to 300 in order to maintain genetic diversity, but to minimise the damage that they cause to rare plant species found within their habitat. This is

currently achieved by an annual muster within the Waiouru Military Training Area in which horses are removed and re-homed. The muster process is well-established and has been fine-tuned over the last quarter of a century. However, finding suitable homes for wild horses is challenging, and inevitably results in some compromise to horse welfare, at least in the short-term.

Today, the department manages the horses by working with its partners in the Kaimanawa Wild Horse Advisory Group (KWHAG) comprising New Zealand Defence Force, Department of Conservation, Ngāti Rangī, Forest & Bird, New Zealand SPCA, horse re-homing groups (Kaimanawa Heritage Horses and Kaimanawa Wild Horse Preservation Society), vets and adjoining land owners. The amount that this count exceeds the target population of 300 becomes the target number for removal in the annual muster. For the 2021 muster, 125 horses were successfully re-homed.



Wild Kaimanawa Horses – Waiouru Military Training Area. *Photo: Dave Lumley*

MAHI AROHA JANUARY 2021



KIRI TE WANO

**PROJECT TONGARIRO
COORDINATOR**

In January 2021 Project Tongariro teamed up again with DOC to produce the 57th annual Mahi Aroha Summer Programme. We had a fabulous lineup of 23 events and trips all around the central plateau. The programme is focused on connecting New Zealanders with opportunities to enjoy and protect their environment.

Project Tongariro joined other local community groups such as, Central North Island Sika Foundation, the Environmental Education Collaborative and the Mangawhero walkway trapping group to inspire and encourage people to explore our local wildernesses. We had local experts such as volcanologist Dr Harry Keys lead trips on Mt Ruapehu and Mt Tongariro, talking about our volcanic heritage, and Cam Speedy a local Wildlife Biologist and CNI Sika Foundation member who hosted people on the Boyd to Oamaru Helihike.

This year we have had to do things differently with emphasis on volcanic and Covid-19 risks. Thankfully We didn't have any postponements due to weather, increased volcanic levels or Covid-19 level



Boyd-Oamaru Helihike participants are flown to and from the start and finish in the Kaimanawa rangers.
Photo Candace Graham



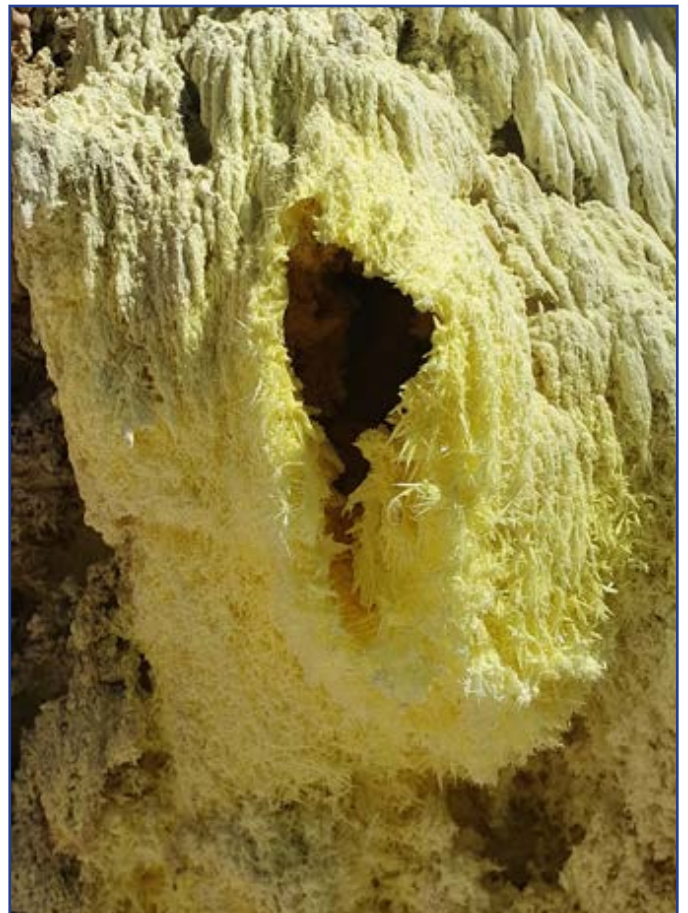
Varied landscapes on the Boyd-Oamaru Helihike. *Photo Candace Graham*



Lake Rotokawa Geothermal Visit with trip leaders Harry Keys and Karen Williams. *Photo Candace Graham*

increases. Of the 23 events and trips, there were 18 trips that required people to book a spot and 10 trips or events that required payment. In total there were 250 people who booked using Project Tongariro's new booking system on our website.

The automated new booking system helped hugely with efficiencies in communicating with people as the booking system sent confirmation emails and reminder emails of upcoming events, including trip leader contact details. Booked people could also update their bookings by themselves too. This has set us up well for 2022's calendar of events, and all community partners are keen to participate again!



A sulphur fumerole at Lake Rotokawa. *Photo: Candace Graham*

OHINETONGA RESERVE DAY WITH NGAKONUUI SCHOOL



**SARAH
CULL-LUKETINA**

**COMMUNITY RANGER
DOC TONGARIRO**

I recently came out to Ohinetonga reserve to talk to kids from Ngakonui school about kiwis, bats and introduced predators! The kids were fascinated by the taxidermied animals I had brought along and asked me many questions about taxidermy – a subject I know very little about. Fortunately, once they got over their disappointment about my lack of knowledge in how to prepare dead animals for display, they realised they could talk to me about something I do know about – native species conservation.

to use the tracker to find the toy. More quickly than even some adults, such as myself, learnt to use radio trackers.

Ohinetonga reserve is a fantastic place for kids to learn about fauna and flora – as there is an abundance of it in place. The kids enjoyed foraging for fungi, seeing fantails and tomtits flit around, and learning about the traplines which enable native birds to flourish in this reserve.

It is very important we educate kids and the wider public about such issues as predator control, habitat destruction, and the importance of conserving endangered wildlife. Public interest in conservation is crucial as public pressure can change legislation around protecting wildlife, more people will want to work in conservation and more people will become volunteers – like those of Owhango Alive. Volunteers that maintain trap lines, survey for wildlife and do backyard trapping are vital for conserving wildlife where the government



Ngakonui schoolchildren with Sarah at Ohinetonga Reserve. *Photo: Sarah Cull-Luketina*

Although the kids were between 5-8 years old, they already had a keen interest in the natural world, and an understanding of conservation. There were many hands up while I was talking, and it was great to see how interested the kids were to learn about our natural heritage. I also gave the kids a chance to use a radio tracker, the very one DOC rangers use to find kiwi in Tongariro forest, to find a soft toy kiwi in the bushes. They were very excited about this activity, and I was impressed with how quickly they figured out how

and NGO's may not have the manpower or resources to carry out these activities.

DOC highly commends volunteer work by groups like Owhango Alive and Project Tongariro for the work they carry out in the region. The abundant birdsong and thriving forests in the Tongariro area are a testament to the success of their hard work.

GREENING TAUPŌ JULY 2019 - JUNE 2021



ROBYN ELLIS

**GREENING TAUPŌ
COORDINATOR**

We have continued to plan and host 10 community planting events each year with 45 000 plus native plants going into restoration projects over the last 24 months, we have been able to achieve this with the amazing support of over 2500 volunteers, It has been wonderful to see the numbers of volunteers attending community planting events continue to increase over the last 2 years. Even throughout 2020 with the uncertainty of Coronavirus, the community was keen to get involved and kept on planting and we were able to provide a safe environment for our planting community to do so.

Shawn “The Vegetator” Vennell’s passion and enthusiasm for Greening Taupō and the replanting of Wairakei Drive is unflagging with annually preparing three community planting sites a season along the drive.

It has been exciting to be collaborating with more groups and organisations for our community restoration projects, we have continued with the annual plantings with Contact Energy, Taupō District Council and Department of Conservation and recently we have had the opportunity to work alongside Tūwharetoa Māori Trust Board and The Taupō Golf Club.

In 2019 Greening Taupō was successful in securing funds for a five-year restoration project from below



Some of those who helped plant 45,000 native plants in the past 24 months. Top to bottom: Taupō Golf Club planting; The Wicked Weeders with some of the donated Mega Mitre 10 products; Proudly showing off Planting Day Certificates.
Photos: Robyn Ellis



The first Greening Taupō community planting for the 2021 season was in collaboration with the Taupō Golf Club to launch 'Project Birdlife', a Taupō Golf Club initiative to improve the area surrounding the greens for native wildlife. This season the native plants were provided by Trees that Count and Greening Taupō with fantastic encouragement from the Club manager Cliff Morgan, Club President Grant Hill and additional support from Taupō District Council. The planting on the 21st March was a great success with over 100 attending, afterwards, the plants were looked after by golf club members who regularly watered them till the rains came. For the continued success of

The Greening Taupō car with Shawn Vennell and Robyn Ellis. *Photo: Robyn Ellis*

the Control gates alongside the Waikato River. In 2019 mature wildings were felled and large areas of blackberry were controlled and mulched and the first community planting was held in June 2020. This restoration work is in line with the Tūwharetoa Māori Trust Board aspiration of enhancing and protecting this area of the Waikato River, we have had the opportunity to work alongside Tredegar Hall, Environmental Coordinator – Waikato Awa for Tūwharetoa Māori Trust Board. Tredegar was keen to lead the planting and to put the call out for all to come and join in. The June 13th community planting site at the first bend in the river below the control gates continued the native plantings that were first undertaken by Taupō intermediate students in 2000 which Tredegar was one of them and we also learnt that the first bend of the river is referred to as Te ana o Matawhero or dwelling of Matawhero.

Greening Taupō is excited to continue to work alongside Tūwharetoa Māori Trust Board with this multi-year restoration project, preparations are underway for the next planting which will be to celebrate Matariki 6th July 2021. Funding has been granted by Waikato Catchment ecological enhancement trust, Trees that Count, One Billion Trees and Tūwharetoa Māori Trust Board along with support from Taupō District Council and advice from local experts.

'Project Birdlife' including the ongoing maintenance and preparation of planting sites and annual community plantings, Taupō Golf club is sourcing future funds by a mix of grants, fundraising and encouraging support from the local golfing community and the ongoing support with Greening Taupō.

Shawn "The Vegetator" Vennell's passion and enthusiasm for Greening Taupō and the replanting of Wairakei Drive is unflagging with annually preparing three community planting sites a season along the drive.

In 2019 Shawn took on a total transformation of the 'Ledge' site which runs alongside the BBC Mountain bike Track. No rest for Shawn and his Vegetator Vennell Team, in addition to leading the Wairakei Drive plantings Shawn then undertook a contract planting



The 2021 planting in an area above the 2018 Taupō Rotary Club Planting. *Photo: Robyn Ellis*

out at Craters of the Moon putting in 5000 plants and then started another contract, under the Greening Taupō umbrella revegetating the newly developed Hub car park.

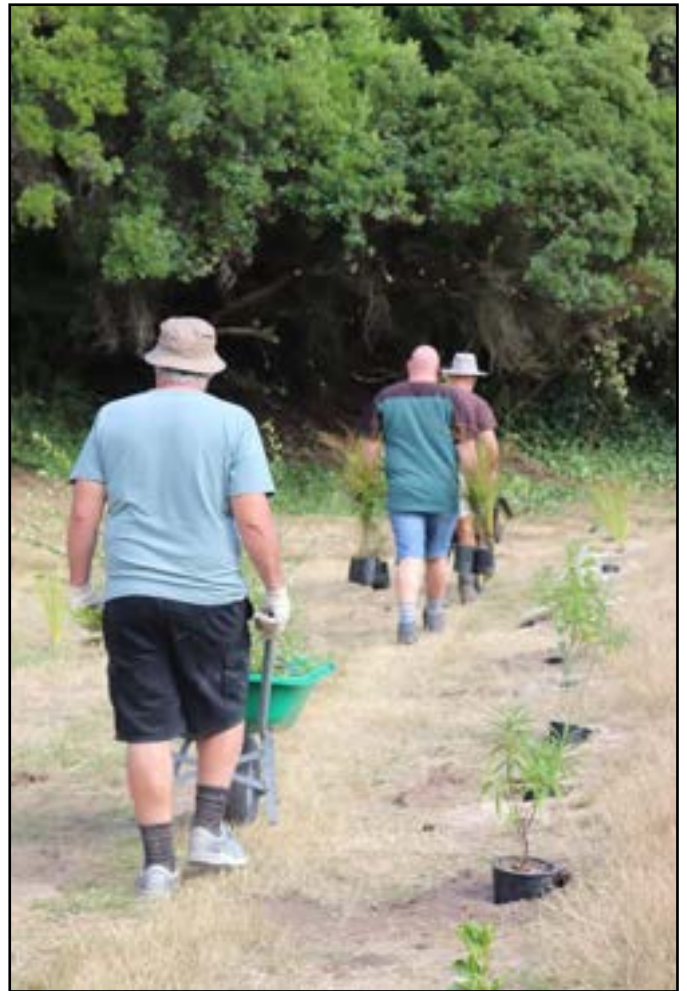
2020 with COVID 19 delaying the start of the planting season Shawn was able to provide a safe and much-needed planting opportunity for the community. The first was outside the Wairakei Golf and Sanctuary fence line the 2000 plants were placed at acceptable social distancing spaces, the Hub and then Mad man's track were all prepared for successful community plantings along the drive, Shawn along with his more serious supporters with the heavy machinery including Seays and Aaron from landclear have then gone on to transform more sites along the drive for planting in 2021 and 2022.

Summers are busy with maintenance of Greening Taupō restoration sites, Shawn was able to get two teams from Mainfreight to sweat it out in the summer heat one day rebuilding a part of Madman's track enabling it to get planted and the following day the team at Mainfreight moved 110 Cubic meters of mulch, this mulch was nicely put around 2000 plants from a 2017 community planting. Greening Taupō also provided great team-building adventures to Cheal, Taupō District Council, MARS, CAMEX and the NZ Airforce, this additional support with many hands is incredibly vital to tackle the larger projects and all helps the success of the restoration sites. Going forward, Greening Taupō is keen to continue to raise our profile and to explore and encourage more collaboration to maintain sites and restore more of the local environment.

In addition to our long-running supporters such as Wairakei Golf and Sanctuary who donate the funds raised from the annual Locals Day which is a fantastic fundraiser for Greening Taupō, Carolyn George from Tremains has



Planting alongside the River between the Intermediate plantings 2020. *Photo: Sian Moffitt*



Helpers setting up the 2021 Taupō Golf Club planting day. *Photos: Sian Moffitt*

joined up with Greening Taupō and has raised enough funds to purchase us a trailer, this is a much-needed addition along with our first vehicle that we were able to purchase with funds raised by Shawn Vennell, Quality Print, the vehicle is all sign written up with GT and KGT logos providing another great way to get our brands out there.

March 2021 we had the opportunity to submit to Taupō District Councils Long Term Plan 2021-2031, which we then presented to the council in May. Along with highlighting that the LTP was almost silent about restoration planting, we stressed the need for additional council resources for GT in preparing and maintaining sites as the parks and recreation team seem very underpowered we reminded the council about their responsibilities with appropriate urban plantings, cats and the lack of planting on the ETA. We acknowledged their present funding has been very significant in growing Greening Taupō, the contribution funds the employment of a Greening Taupō Coordinator who is vital to the community involvement and it would be a privilege to continue our partnership with Taupō District Council and maintain our momentum for the environment and the community!



Photo: Sian Moffitt



Through the support of these organisations and businesses

Kids Greening Taupō's success is made possible!



KIDS GREENING TAUPŌ - 2021 - A TIME OF GROWTH



RACHEL THOMPSON

**KIDS GREENING
TAUPŌ EDUCATION
COORDINATOR**

After building our brand and resources in 2020, this year Kids Greening Taupō (KGT) has focused on growing our work on the ground. We are very excited to now be officially working with every school in the Taupō township! This is a huge milestone for our organisation. Every primary school, intermediate school and high school have projects that they have completed, or continue to work on with KGT. We also work with a number of early childhood education centres (ECEs). We now have 22 education centres as either current or graduate KGT schools, and we have a wait list of rural schools keen to come on board when we have the capacity to work with them.

This year we added a junior leadership team to our programme in response to numerous requests from parents of keen primary school aged children wanting to be involved with KGT. We now have



Rachel and the first Junior Student Leadership Team learning from Graham at the Waipahihi Botanical Gardens. *Photo: Sian Moffitt*

over 50 students, aged 7-18, from a range of local schools in our student leadership teams. These are extracurricular teams, meeting outside of school hours to learn about conservation and biodiversity, while developing leadership skills. Having these teams allows us to have KGT student leaders taking on projects in our graduate schools, where we are no longer regularly working with rangers. These students also take the lead at our community planting days and events, showing people how to plant trees correctly, registering people, running activities, and even cooking the BBQ!

Together we decided to take on the jasmine jungle and sea of ivy encompassing their 50 year old native tree planting. We were told many times that it couldn't be done.

Last year, we identified a need for a coordinator who could speak Te Reo Māori to work with the local kura kaupapa and kohanga reo. We found funding for a part time position and excitedly advertised.

However, unfortunately despite the advertisement being shared widely and lots of interest being shown, we did not have any applicants. Recruitment of someone for this role will remain a goal for us.

Another goal of KGT has been to work more with at-risk youth. We can see the value in connecting with nature for the mental and physical wellbeing of youth from all demographics. Last year, we were excited to involve the local high school Alternative Education class in several planting and weeding opportunities.



The Senior Student Leadership Team 2021. *Photo: Sian Moffitt*

This year we have begun to support Pathways Youth Employment Programme, by providing opportunities for the young people on their course to volunteer for Greening Taupō as part of the community work



The jasmine jungle at Taupō Intermediate before the cleanup. *Photo: Rachel Thompson*



Andrea from Blue Light Taupō, checks out the Taupō Intermediate Jasmine Jungle, before the weeding begins. *Photo: Rachel Thompson*

aspect of their course. We've enjoyed seeing the participants learning about biodiversity, New Zealand native flora, and conservation, while also developing practical skills at a weeding or planting session. They are able to connect to nature, feel like they are making a difference, do physical mahi, and give back to the community. It has been a fantastic partnership that we look forward to continuing.



Taupō Intermediate students attack their garden of ivy. *Photo: Rachel Thompson*



Weeds removed during the Taupō Intermediate School gully clean up with Blue Light Taupō. *Photo: Rachel Thompson*

This year we were asked by Blue Light Taupō to work with them on a course that they are running in several local schools. This was a wonderful opportunity to collaborate with another awesome local non profit youth organisation. When we saw that at Taupō Intermediate we would have twelve classes of thirty students spending two hours each on a conservation project, we realised that we could tackle something big! Together we decided to take on the jasmine jungle and sea of ivy encompassing their 50 year old



Robyn, Sian, Tredegar Hall (Tūwharetoa Māori Trust Board) and Rachel open the 2021 Greening Taupō Day, Arbor Day Planting Event. *Photo: Katherine Davy*

native tree planting. We were told many times that it couldn't be done. Most students and staff had no idea that the native area was even there. It was covered by a layer of jasmine almost a metre thick in some parts, and reaching the top of the tallest trees. The students loved the challenge of clearing such a huge area and getting to use big tools! They wanted to see what was actually under the blanket of weeds.

Each class amazed us with how hard they worked, and the huge difference that was made in a short time. The first six classes filled 25 huge wool fadges with ivy and jasmine! They found 50 year old rimu, kauri, tanekaha, whauwhaupaku, akeake, kapuka, karamu, kowhai and more! The students and teachers are very excited about turning this space into an outdoor classroom space to use for learning. It is already filled with tui, korimako, tauhou, kereru, and piwakawaka that sang to us while we worked. The vision of having an established native forest that they can sit under to read, do art, write stories and study nature is turning into reality in a very short time. We

cannot wait to see the area when it is finished. Kids Greening Taupō was set up as a pilot project utilising the Collaborative Community Education Model (CCEM). This year we have had people from various parts of New Zealand showing an interest in setting up similar programmes in their areas. We had so many requests for people to visit and shadow us, that we ended up hosting a CCEM hui. Eleven people from Dunedin, Masterton, Hamilton, and Whakatane joined us for presentations, tours of restoration sites, meetings with sponsors, a visit to a kindergarten and school, work in a gully with a school group, a Wicked Weeder session, two student leadership meetings and a Taupō Environmental Education Collaborative (EEC) meeting.

It was a busy couple of days! It is wonderful to be able to help these new organisations to get started and to support them on their journey. The feedback that we received was that they all left feeling very inspired.



Over 1000 people came along to celebrate Greening Taupō Day at our Arbor Day Planting Event! Photo: Stevie Manunui

This is a quote from one participant:

Thank you Rachel and Sian for hosting us over those two beautiful days in Taupō. Visiting the various schools around Taupō, involved in the KGT programme was a great insight into the potential of CCEM. The way you have united the students and connected them to the wider conservation community is very inspiring. Your boundless energy and passion to provide a framework for the students to engage with authentic experiences in environmental management and action showed us what is possible. I have returned to the Wairarapa full of ideas of where we can take our programme, 'Mokomoko'. Can't wait to get started!

Sam Ludden

Each term we hold at least one teacher professional development (PD) workshop and one all-school event. This year we have already held a Bush Kindergarten/School Teacher PD workshop and a nocturnal teacher PD session with Ruud Kleinpaste. For both of these, we had schools and ECE centres requesting to bring their entire staff. We had to cap numbers and limit each school to sending two teachers only. It has been wonderful to see teachers leaving these sessions inspired and then seeing them using what they learnt to shape their school programmes.

Our Term 1 Watering Event was also a huge success with 234 attendees from six schools and two ECE centres. Representatives from nine different organisations were there to help out. Andrew Leiataua from More FM interviewed children, Mike from Taupō Premium Foods donated ice cream, EnviroSchools came to help out and brought watermelons, Taupō District Council and the Kinloch Fire Brigade filled up buckets. It was a fantastic collaborative community event.

We have just held our largest and most successful event ever, 'Greening Taupō Day'. You can read all about that in the other article! (page 98)

We really have been excited by the huge support that we have received from our community this year. By involving children in conservation and restoration work, we are growing a community that genuinely care for the Taupō environment and feel empowered to make it a better place. Our vision to provide all Taupō rangatahi with opportunities to learn about and take action for our native plants and animals has become a reality.

DOC TONGARIRO – SUMMER-AUTUMN 2021



**SARAH
CULL-LUKETINA**

**COMMUNITY RANGER
DOC TONGARIRO**



Kiwi release. Photos: Sarah Cull-Luketina

Kiwi released into Tongariro National Park

DOC rangers have just released a kiwi in Tongariro National Park. This chick was taken as an egg and

hatched at Rainbow Springs in Rotorua, and was then transferred to a creche at Wairakei Golf and Sanctuary to forage naturally.

By rearing kiwi in captivity, it increases their chances of surviving to adulthood from around 5% growing up in the wild, to around 70% upon release from the captive facility.

Once they are big enough to defend themselves against stoats, possums and other introduced predators, they are released back into the forest to live in native bush for the rest of their lives.

On release day, the kiwi had a big day of traveling - he was found under a bush at Wairakei Golf and Sanctuary and taken via golf buggy back to the truck. The chick was then transported on a LUV over the 42 traverse track and released in the forest, which he was originally taken from as an egg 8 months ago.

Sightings of uncommon native wildlife

A green gecko was sighted recently in Rangataua forest.

Green geckos (*Nautilinus spp*) are tree-dwelling, with a prehensile tail they use for climbing. They tend to shelter in crevasses during cold weather.



Green gecko (*Nautilinus spp*). Photo: Sabine Bernert

They are solitary animals, and defend their territory with aggressive displays towards other geckos. They give birth to live young, and appear to be able to

choose when to reproduce, based on environmental conditions. They are classified as 'at risk' and declining.

If you have seen these rare animals DOC would like to hear from you as we are keen to get a better picture of their distribution in the area.

Please email jhayward@doc.govt.nz to report any sightings.



Fernbird. Photo: Leon Berard

A number of fernbirds have been sighted around the Whakapapa Village walking tracks recently. Camouflaged in the bushes, the bird revealed itself with its distinctive high-pitched chirp.

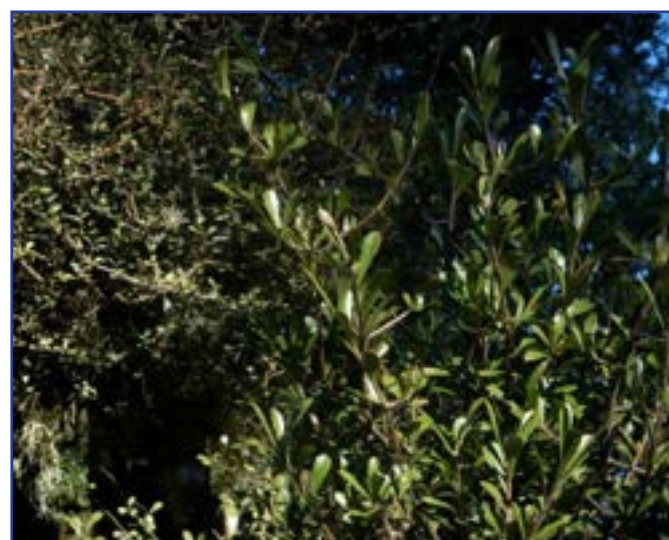
These native birds are uncommon and declining, thanks to predation by introduced predators and the destruction of 90% of New Zealand's wetlands, their primary habitat. They are rarely seen due to their secretive behaviour and camouflage.

If you want to find fernbirds, your best bet is to learn their call – you can listen to examples of their call at the following link: <http://nzbirdsonline.org.nz/species/fernbird#bird-sounds>

DOC rangers monitoring rare wetland plants

DOC Biodiversity Rangers have been monitoring *Pittosporum turneri* - more commonly known as tent pole tree or Turner's Kohuhu - in Erua Forest.

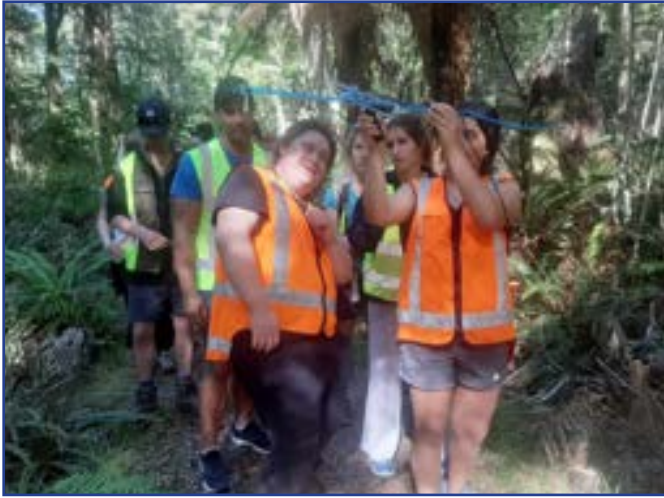
The plant is often destroyed by possum browsing - but the team found no evidence of browsing on a recent survey, indicating that there are relatively low numbers of possums in the forest.



Turner's Kohuhu (*Pittosporum turneri*) Photos: Anthony Behrens

It has bright pink flowers which send out a musky scent at night to attract moths, which pollinate the species.

The tree also has the unusual ability to revert from its adult form back to a juvenile form if conditions are not ideal for it to flower.



Students on summer camp. *Photos Sarah Cull-Luketina*

Students attend 'Kiwi Forever' camp

Recently students from local schools attended the annual Kiwi Forever camp at Tirorangi marae - put on as a collaboration between DOC, Ngati Rangi, Genesis and Ruapehu College.

Students came to learn about conservation, Māori tikanga, and how Genesis produces clean energy. During the week they learnt how to build traps and



maintain trap lines, they saw rare native birds like who in the wild, learnt how to use radio trackers to find kiwi, participated in debates around contentious conservation issues, and they had the unique experience of releasing two kiwi back into their native habitat.



New weather forecast service from NIWA

NIWA Weather has a new weather forecast service for our national parks. For Tongariro this features a handy daily video forecast and localised five-day forecasts for Tongariro Alpine Crossing, Tama Lakes, Waitonga Falls and Tongariro National Park Visitor Centre in Whakapapa Village.

Always check the forecast before you head out and remember the weather can change fast, so be prepared for all conditions.

HISTORY OF THE WHANGAEHU BUND



HARRY KEYS

EX CONSERVANCY
SCIENTIST
PROJECT TONGARIRO
MEMBER

History of the Whangaehu bund, including vegetation establishment

Introduction

The bund is a 300m long embankment up to 4.5m high and 20m wide built in 2001/02 to prevent lahars spilling from the Whangaehu catchment into the Waikato Stream and the Tongariro River catchment. It was part of work done to mitigate the risks of a large lahar that was predicted to occur when the rising Te Wai

This sudden input of acidic, sediment-laden water would have devastated the Tongariro River and its biota for weeks to months with some physical effects taking years to recover.

ā-moe/Crater Lake broke through the outlet-blocking deposit of tephra (sandy to boulder material) from the 1995-1996 eruption (as it did on 18 March 2007). Its primary aim was to increase public safety on State Highway 1 at the Waikato Stream bridge and a culvert system nearby, and in the Tongariro River. Its secondary aim was to protect the nationally important Tongariro River and Lake Taupō.

It will be 20 years next year since the bund was completed. In May last year I accompanied three

DOC staff who were not employed by DOC or not involved 20 years ago and like most current DOC staff are unfamiliar with the history of the bund. Several articles in the Tongariro magazine between 1997 and 2008 covered general progress towards managing the lahar risk but this article provides more detail about the bund itself in this context.

Why was the bund needed?

During 1997 the dam break lahar was expected between late 2000 and 2004. By 1999 the later time had been extended to 2006 but this was still the latest part of a possible range of times. Following questions asked, research in this late 90's period confirmed that a large lahar about 450 years ago had crossed over from the south-flowing Whangaehu catchment into the north-flowing Tongariro catchment on the east side of Mt Ruapehu. This sudden input of acidic, sediment-laden water would have devastated the Tongariro River and its biota for weeks to months with some physical effects taking years to recover (Scarsbrook et al 1998). Blue duck in particular could be impacted for a decade or more (DOC 1999).

When the Whangaehu River reaches the end of the upper gorge system at the foot of the glacial moraine wall 9.5km from Te Wai ā-moe/Crater Lake (at Site 2A1 on Figure 1) the height of its banks reduces to less than five metres. At higher flows it overflows its normal channel here. Tributaries from its main channel trend north and pass within a few hundred metres of tributaries of the Upper Waikato Stream. At their lowest point, interflues less than 2m high (along section B-B in Figure 1) separate the two catchments with the actual drainage divide only 50 m wide.

Lahars during the 1995 eruption and following it demonstrated that potential overflow into the Tongariro was a real concern. Lahars flooded into the northern distributaries on four occasions.

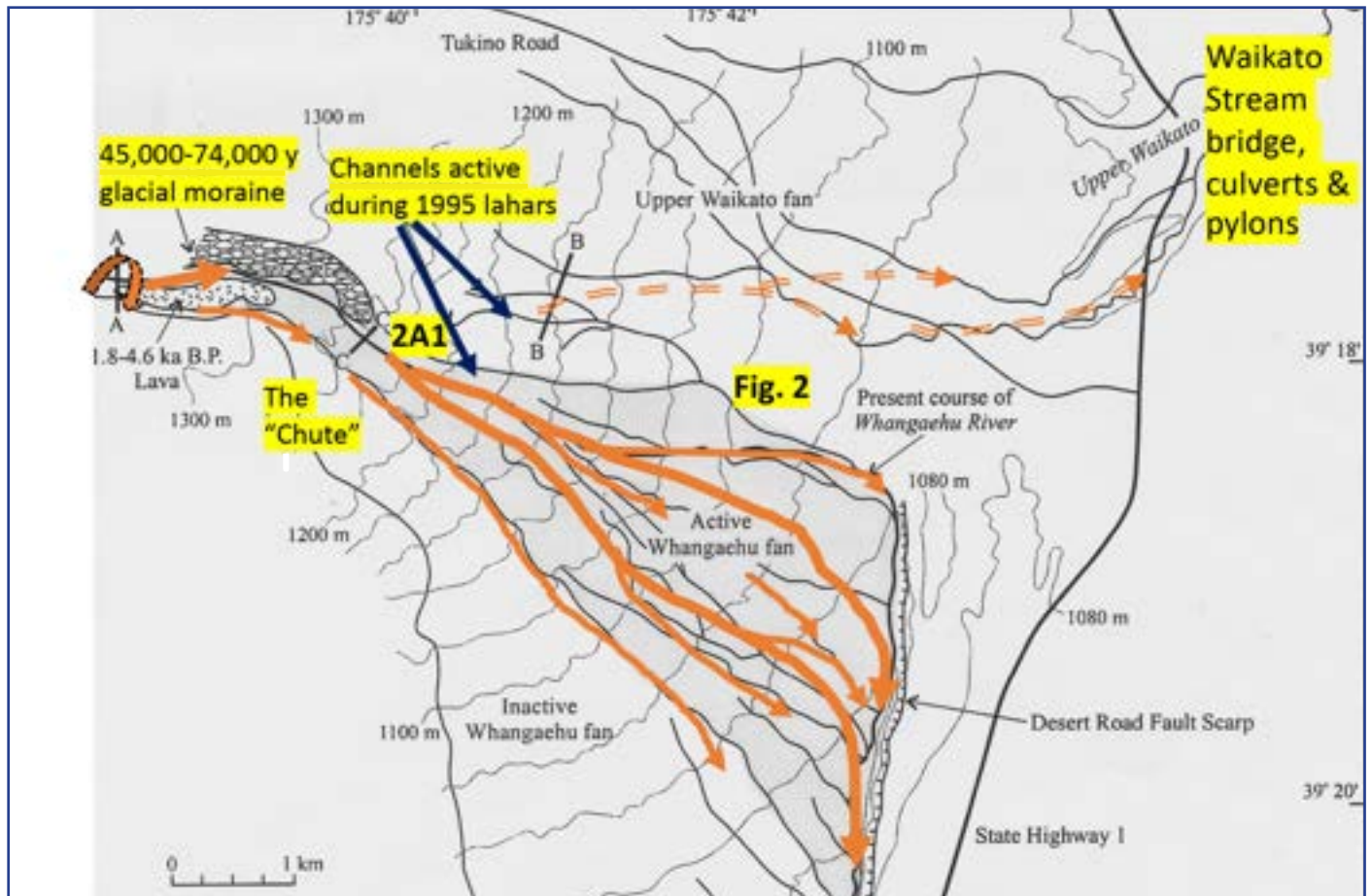


Figure 1. Map of the Whangaehu-Waikato area showing possible flow paths (dashed) for the predicted dam break lahar, actual flows and key sites in regard to the bund (adapted from Cronin et al). The bund site 2A1 (DOC 1999) was built across the head of the northern distributory channel and designed to prevent an overflow there from reaching the actual point of potential overflow into the Waikato Stream at B-B ENE of the bund. The significance of sections A-A, B-B and C-C is outlined in the text.

These were the two largest eruption lahars with peak discharges of up to $1,800 \text{ m}^3/\text{s}$, (as estimated at the section C-C) on 25 and 29 September 1995 and two rain-mobilised tephra lahars up to $750 \text{ m}^3/\text{s}$ in October 1995 (Cronin et al 1997a). The foot of the low divide was reached (e.g. Figure 2 taken at point Fig. 2 on Figure 1) but the lahars were not large enough to overtop it. Transport and deposition of large quantities of sediment during the 1995 sequence led to major and rapid aggradation of the Whangaehu channel. This showed that under some circumstances smaller lahars could overflow the main channel at C-C and a lahar with discharge greater than $1,000 \text{ m}^3/\text{s}$ might overflow the divide at section B-B and enter the Tongariro catchment. In addition the lahars flowing into the northern distributaries incised channels up to 1.5m deep at site 2A1 and together with the aggradation increased the probability of lahars flooding northward.

Estimating the size of the lahar expected and the potential for one large enough to overflow into the Waikato Stream were key requirements in this early period of the lake refilling. There was much uncertainty and time pressure to come up with answers to these difficult questions, especially if the lake filled sooner rather than later. Based on the recent geological record Cronin et al (1997b) estimated the events required to cause a lahar to enter the Upper Waikato were either a large 1 in c 300 year lahar or a 1 in c 30 year lahar following a period of aggradation on the upper Whangaehu fan. By April 1999 when the final Assessment of Environmental Effects (AEE see below) of the predicted lahar and options to mitigate it was published, calculations predicted the worst-case lahar might be about $1,940 \pm 400 \text{ m}^3/\text{s}$ at section C-C. Its flow was estimated as $20\text{-}160 \text{ m}^3/\text{s}$ at the divide overflow point (section B-B) and 2.7m deep at the Waikato Stream bridge and culvert system (Figure 1, Hancox et al 1998, DOC 1999). This was



Figure 2. Lahar deposit 1-5 days old along the foot of the divide between the Whangaehu and Waikato/Tongariro catchment during an inspection by DOC and NZ Electricity Dept (now Genesis Energy) staff on 30 September 1995.

seen as enough to damage or destroy these parts of SH1, pose some threat to anglers in the upper Tongariro (and blue duck) but be only a minor hazard at Turangi. However understanding of lahar flow at the time did not fully reflect overflow processes at section A-A (Figure 1, 3 km above site 2A1) into the southern “Chute”, so modelling did not fully reflect the likely flow downstream. By early 2007 the “clipping” of lahars larger than 1,500-2,000 m³/s at section A-A was better understood (Manville and Carrivick 2007) and could involve as much as 50% of the flow up to some undefined flow rate, but by then a solution had long had to be found and the chosen solution (the bund) had long needed to be implemented.

In the bigger, longer picture a northward migration of the main channel appears to have been occurring for tens of thousands of years with the southern part of the laharic alluvial fan system now largely inactive and more vegetated (Ken Woolfe written communication March 1999). The lava-cored moraine wall (Figure 1) thought to have been deposited around 45,000-74,000 years ago (early in the Last Glacial period, Townsend et al 2017) has disrupted that northern migration

(fortunately perhaps for the Tongariro and Waikato rivers and Lake Taupō) and allowed sediment to build up at the head of the fan. The level of this has become elevated well above areas to the north and east. The potential for a longer period of flow of acidic water in an avulsion event (i.e. capture of the Whangaehu River into the Tongariro) until engineers could route it back could not be discounted even though it was very unlikely.

Decision making process

The AEE process canvassed a number of options for mitigating the risks from the breakout. The main debate was whether to create a channel through the tephra dam in contravention of a main principle of the Tongariro National Park Management Plan to not interfere with natural processes in the special Te Wai ā-moe/Crater Lake area. Such works were also very strongly opposed by Ngati Rangī and not supported by most people and agencies making submissions on the draft AEE.

A second debate involved what to do downstream, especially if a channel was not engineered through the dam. Hancox et al 1995 had suggested a bund

might be built (option 2A1 at this site on Figure 1) and this option was seen as desirable but further discussion of it was recommended in the AEE. More risky solutions that would attempt to divert flow into the Chute were also considered, for example by deepening the channel at section A-A. The independent review of the final AEE by Prof Vince Neall (2000) of Massey University concluded that spillover into the Tongariro catchment was more likely than portrayed by the AEE and urged that the bund be built.

In December 2001 the Minister of Conservation, Sandra Lee, decided against engineering at the crater rim. By then she had requested (November 2000) DOC to investigate the bund in more detail. Following a public submission process (some reservations but no formal objections received), she approved (September 2001) an amendment to the Tongariro National Park Management Plan to allow the bund to be built.

Design and construction

Following the original scientific advice by Hancox et al (1995) and subsequent discussion, the DOC design brief distributed in May 2001 was for a 200–300 m long, 4–5 m high construction at site 2A1 able to withstand powerful lahar erosion forces for about 20 minutes (Keys 2001). It was to blend in with the natural landscape and preferably built with natural materials: concrete was not acceptable.

Work could not take place if the lake had risen above 2527–2530 m or during periods of volcanic activity because of increased risk. The Frame Group was awarded the contract and they used lahar parameters of 3,330 m³/s peak discharge and 7 m/s average flow rate to design the bund to withstand the flow height and erosive forces of the potential lahar. Two draft designs were received, reviewed by Hancox, Keys and others and finalised in August. They both involved a 300 m long, 4.5 m (maximum) high, 25 m wide ridge with 27° side slopes, running parallel the river for about 250 m before curving into the moraine. A rockfill berm to straighten out the curve would be added in the last stage of construction to maintain a low attack angle in regard to the lahar flow. The option without geotextile reinforcement was chosen by DOC.

It comprised a shallow excavation of the bund footprint, a compacted volcanic sand–small boulder core on that flanked on the river (south) side by a 1.5 m layer (1 m along the top) of graded 0.1–1.0 m diameter boulders sorted to obtain maximum density and boulder-to-boulder interlock and including a 5 m wide “sacrificial apron” (Figure 3). A 200 mm thick layer of local sand and boulder material would then cover the overall surface to match the natural ground surface.

The price was estimated in the AEE as up to \$160,000 and costed in the design as \$184,000 (with a 15% contingency). As built it cost \$204,000 and this was paid for by DOC (38%), Genesis, Transit, Environment Waikato, Taupō District Council and Transpower.

Construction started on 14 December 2001 by Doug Hood Contractors Ltd with Herwi Scheltus as the DOC project manager. The Army engineers were unable to be involved. Plant was bought in over the Army land and construction went smoothly. Response plans were developed in case of volcanic activity. The bund was completed on time in March 2002 by which time the lake was 67% full (2512 m) and two years before it reached 2527 m (95% full). The freshly exposed cover material made it quite visible when viewed a kilometre away and on its northern side an additional snowdrift was visible in the landscape during winter (to those familiar with the area).



Figure 3. Bund during construction showing boulders in the sacrificial apron on left and the main bund on the right, before the cover layer was added.



Figure 4. Helicopter view during the lahar event on 18 March 2007 looking downstream with the bund on the left. The photo was taken during rain just after peak flow and shows how the edge of the flow ran along the foot of the sacrificial apron for about half its length.

Monitoring and maintenance

It was well recognised and reiterated by the Frame Group (2001) that maintenance of the channel and the bund might be necessary from time to time, to maintain the designed protection. Visual monitoring was carried out regularly up to the lahars of March and September 2007 (and less frequently after that). The March 2007 lahar which had a peak discharge of up to 2,100 m³/s, a peak flow rate of about 7 m/s and flow depth up to 5 m near the bund (Procter et al 2009, Keys and Green 2008) just touched the side of the bund (Figure 4). It removed some ten centimeters of the cover material in one section so no repairs were necessary.

Massey University conducted differential GPS surveys in late December 2004 and after the March 2007 lahar to compare with data obtained by the Frame Group in September 2001. In both resurveys a net erosion (deepening) was found in the reach bordering the bund implying a net increase in channel capacity and indicating that the bund remained at its design capacity (Cronin et al 2005, Procter et al 2009). Cronin et al suggested that the potential for “clipping” (due to bifurcation) of the flow by overflow at section A-A (i.e. less flow at the bund) had increased by 2005 due to sediment accumulation in key sections of the channel. By 2009 Procter et al, using improved modelling informed by the March 2007 lahar, suggested a flow would have to be greater than



Figure 5. Bund from top: during construction (February 2002), a week after the lahar (24 March 2007) and on 25 April 2021.

2,500 m³/s to overtop the bund. They noted major changes to channels occurred during the 2007 lahar with migration and deepening towards the bund.

Little monitoring was done after 2012. The rational was that would only be necessary after significant storms and lahars. DOC instigated a new monitoring system in 2020.

Weathering and establishment of vegetation

The freshly exposed cover material had weathered to match the surroundings within about five years (Figure 5). The natural establishment of vegetation, particularly bristle tussock (*Rytidosperma setifolium*) has helped the bund to be virtually invisible more than a few hundred metres away and then only by its long shape.

From the time the first plant was noticed in January 2004 there was a steady increase in species detected up to 2011/12 (Figure 6). That first plant, a bristle tussock was spotted by a 14 year-old Jamie Keys, but it didn't survive. But from the next year the number of species recorded climbed from another one, the rush *Luzula banksiana* var. *migrata* to 24 in 2012. Only one additional species was recorded during the last count in May 2020. Some fern species have failed to survive but this may be because they weren't seen. Often there is only one person searching so not every species is seen on every occasion.

The establishment of vegetation is related to the probability of a seed or other propagule being in the vicinity, its germination, growth and survival. Seeds may be blown to the site or they may have originally been in the sandy cover material. The

latter only seemed likely in the rockfill berm near the moraine because more plants and species established more quickly there early on.

Elsewhere establishment and growth rates were slow. No doubt this is partly due to the climate and soil type. Which species establish as pioneers in this environment may provide lessons for which species have the best chance of surviving during revegetation projects in analogous situations. One exotic species, the smooth cats-ear daisy (*Hypochaeris radicata*) had established by March 2010 when all five plants found were removed. Seven more plants were found and removed in February 2012 but there were too many to remove by 2020.

Vegetation from the site of the bund was collected by Project Tongariro and DOC and placed in five or six stockpiles under shade cloth nearby prior to construction starting. This was in case natural establishment did not occur. It clearly has so no transplanting was required. The shade cloth was removed some years later and it is now hard to see where those stockpiles were, due to plant death and wind erosion.

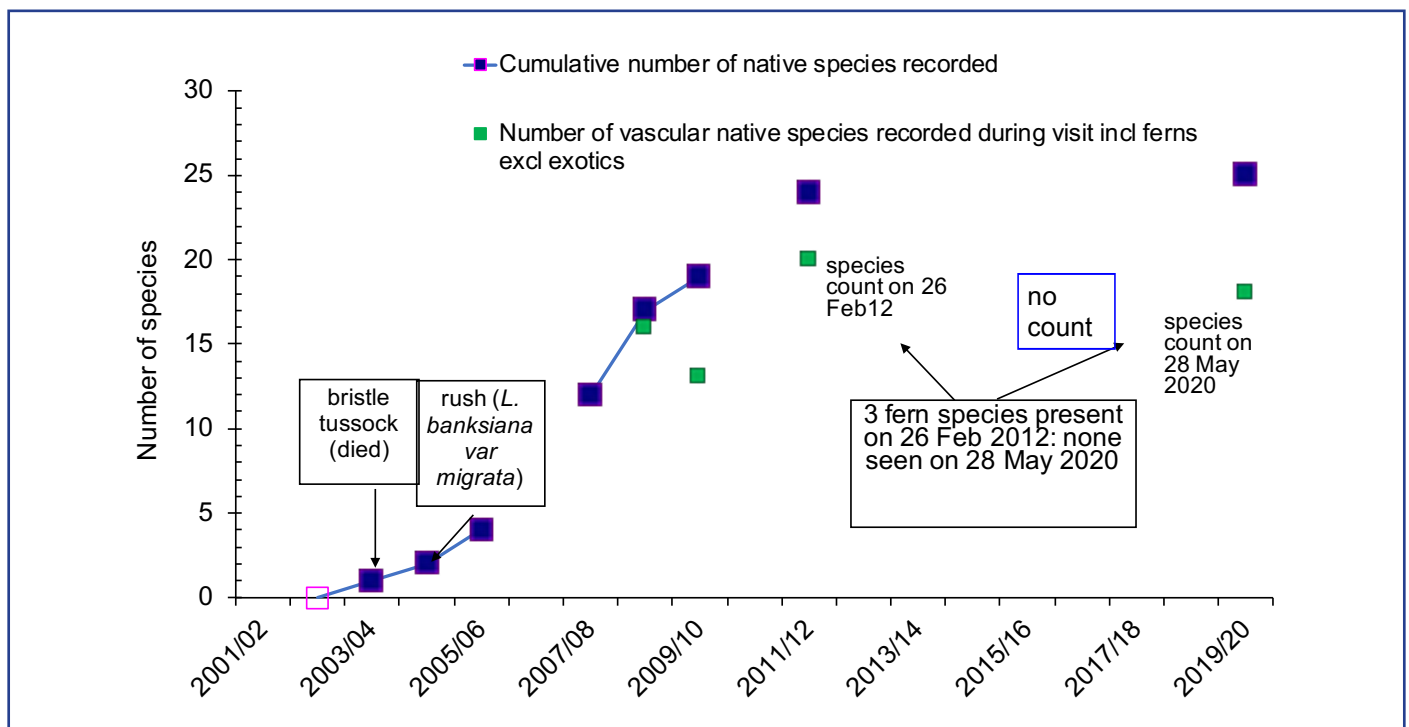


Figure 6. Pattern of native species establishment on the bund. Grateful thanks to Alana Lawrence, Lucy Roberts, Nick Singers, Shun Kikuchi, Gill Rapson and Colin Ogle for assistance in monitoring or plant identification.

Concluding comments

The bund could not be designed for very large lahars that occurred in the geological past. Four huge lahars occurred in the last 1900 years with peak flows 2- 5 times larger than historic events (Cronin et al 1997). With its design to withstand lahars up to 2,500 m³/s (as per Proctor et al's calculation) the bund might withstand lahars with peak discharges upstream as much as 4000-5000 m³/s assuming similar lahar characteristics and operation of the Chute overflow continues as it has. As it turned out most of the modelled lahar parameters matched the actual parameters of the March 2007 event reasonably well given the complexity of lahar flow dynamics, with perhaps the overflow into the Chute the most significant component of pre-lahar modelling that was hardest to model accurately. On the basis of comparisons world-wide Proctor et al (2009) thought the bund might withstand as few as two more lahars of the size of the largest historic events, especially if channel migration threatened it or aggradation reduced its capacity.

Almost 20 years after it was built the bund is still intact. Our visit in May last year showed that the closest river channel is no closer than it was in 2007 and it appears as if the channel generally has deepened at the site. The capacity of the bund to withstand lahars seems undiminished. Vegetation is continuing to grow on it and probably bristle tussock has established the most cover (Figure 7).

Our objectives of 20 years ago were all met.



Figure 7. View from the bund on 26 February 2012 looking upstream to the young lava flow and the moraine wall on the right. Bristle tussock is conspicuous among the boulder and sand cover. *Photo: Frank Katavich*

Acknowledgments

Many people in DOC helped with the bund project including Paul Green, Herwi Scheltus, Dave Lumley and Colin Lawrence. Besides funding, several other agencies also assisted including Massey University (Shane Cronin, Vince Neall and later Jon Procter), GNS Science (Graeme Hancox), Opus (Grant Webby), NIWA (Mike Scarsbrook), the Frame Group (Trevor Butler) and the Army Training Group.

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CHALLENGES AND OPPORTUNITIES 2020/21



CONNIE NORGATE

**DOC TONGARIRO
OPERATIONS MANAGER**

As part of the Government's commitment to a more active and coordinated approach to domestic and international tourism, the Department of Conservation (DOC) is investing in planning how some of its special places could be more effectively managed.

For a small number of very popular, iconic experiences such as Tongariro Alpine Crossing and Milford Sound where visitor numbers are substantial, this may include looking at what an appropriate number of visitors might be, the impacts of visitors on special values at the sites, and how to manage these numbers. DOC will be partnering with local iwi on this work.

We have recently completed periodic (six yearly) reporting to the World Heritage Committee. This is the main monitoring and reporting process for World Heritage Sites and enables the World Heritage Committee to understand the state of the World Heritage List, which will inform future planning and implementation. As a UNESCO Dual World Heritage Area this is important work for Tongariro National Park.

There are several applications to the Jobs for Nature fund for conservation projects in and around Tongariro National Park – and this could see a substantial increase in conservation effort being undertaken by DOC's partners over the next 3 years.

DOC has been working with Ruapehu Alpine Lifts (RAL) to manage a bookable system for parking for all visitors to the ski fields. While it is not easy to please everyone, a mechanism to manage numbers on peak days over winter is essential for the safety and enjoyment of all. This is also a good mechanism to manage numbers in the event of Covid-19 level changes.



It's hard to please everyone when it comes to car parking at ski fields such as Whakapapa. *Photo: Jumpstory*



Pōkākā ecosanctuary

ruapehu • tongariro

*the plateau between two historic rivers,
the Makātote & the Manganui-a-te-Ao*

***Ko te kaitiaki o te mouri
ko te tangata,
ko te kaitiaki o te tangata
ko te mouri***

*The guardian of the life-force energy is man, the guardian
of man is the life-force energy*

Like many indigenous cultures, Māori share a strong spiritual, cultural and historical relationship with their natural world. Firmly based in the traditional values and philosophies of mauri, wairua and whakapapa, mātauranga Māori serves to inspire, strengthen and manage uri bonds with the natural world and the inter-relationship of all things.

Background

Aspirations for a comprehensive Treaty of Waitangi settlement for the uri of Tamakana, Tamahaki and Uenuku (Te Korowai o Wainuiārua) are as varied as the whānau themselves. Undertaken in 2017, a consultation survey identified the key areas of: reconciliation, cultural revitalisation, partnership, land and resources, environment restoration, social and commercial revitalisation, as being integral in ensuring a sound economic base for future generations.

The Wainuiārua worldview revolves around, nurturing the mauri of Papatu-a-nuku. At the heart of the



UENUKU

kōrero is a culturally defined, intrinsic link between the health of the ngahere, or natural environment, and whānau wellbeing, "we want to be visible on our lands".

Throughout the Settlement process two priorities have been key: the return of tribal lands, and ongoing environmental issues in particular the restoration of habitat and the bio-diverse forest resources of Wainuiārua lands.

Thirty-five percent of the tribes 615,000-hectare total Treaty area of interest, including overlapping claims, is currently managed by the Department of Conservation (DOC). This includes interests in the dual World Heritage Tongariro National Park, Tongariro Forest Park, Erua Conservation Area and the Whanganui National Park. 60-percent of the Wainuiārua agreed core area of interest sit within Conservation Estate areas.

The Pōkākā Proposal

This iwi-led ecosanctuary project comprises three managed areas:

- *Te Iho (inner core)*: a 200-hectare fully fenced, pest-free inner sanctuary including a visitor centre, 'centre of excellence' for mātauranga Māori inspired environmental research & education, café and associated cultural and ecotourism related product and a tree-line sky walk.
- *Te Kiri Wai (halo)*: a 2,500-hectare community-led, managed halo with intensive pest management systems and associated ecotourism related product including guided cultural walks.
- *Te Kiri Tai (outer skin)*: includes sustained priority pest species management to support native habitat rejuvenation and the inner cores.

Integral to Te Korowai o Wainuiārua aspirations for Treaty of Waitangi settlement is an unwavering, unquestionable need to return to our ancient, traditional lands. After decades of ongoing alienation, uri want to continue their inter-generational role of kaitiaki (guardians) of our environment and again be clearly visible in our spaces.

Our rohe was once almost entirely covered by a diverse forest ecosystem interconnected by ancient walking tracks that provided whānau and manuhiri alike with wild kai. Kaumātua have long supported this reconnection and return to indigenous sustainable land management practises.

As an ecosanctuary development, Pōkākā is not only technically feasible but serves to restore the traditional habitats and bio-diverse forest resources currently only known to our kaumātua. It also supports an urgent, global need for the continued conservation of our highly endangered - if not lost - taonga species. Cultural and ecotourism development combined with education and research possibilities also strongly support this mahi and present a direct opportunity for Iwi to increase our contribution to the economic growth and job creation of our rohe and region.

If we stay true to the Wainuiārua view of the world and our core values, this opportunity will be truly unique - the first iwi-ed ecosanctuary founded on the principles of Mātauranga Māori. The potential success of Pōkākā provides us one of many opportunities to become truly visible in our rohe once again and, as we continue this hīkoi of returning to our lands our journey has been a long one however, in today's world we must again strive to ensure balance and harmony.

“In traditional times, the abundance of kākā in this space blackened the sun from shining through to the forest floor”

*Ngā mihi nui
Aiden Gilbert
Chair of Uenuku Charitable Trust
Raetihi, New Zealand*

Key Features

- Combined with the inherent benefits to the physical environment benefits, a number of economic development opportunities exist through education, research and the provision of high-quality, authentic cultural visitor experiences.
- Te taiao: protects, restores and champions Aotearoa's natural environment, culture & historic heritage
- Ngā rohe: supports partnerships between Māori tourism enterprise, iwi, hapū, tangata whenua & government
- Embraces tikanga Māori
- Ngā manuhiri: encourages regional & seasonal dispersal
- Provides a reason to stay an extra day in Ruapehu
- Is aligned to the Ruapehu brand proposition of 'Ruapehu – Our Greater Outdoors'
- Te ōhanga: creates jobs and supports increased skills development

What?

- Pōkākā will be the first predator proof, iwi-led ecosanctuary to be created in New Zealand.
- The sanctuary will be situated in part of the Erua Conservation Area known as Pōkākā, near Mount Ruapehu and the world heritage Tongariro National Park.
- It will be promoted as a cultural and ecotourism attraction, incorporating a visitor centre and café and offering wildlife tours and guided cultural walks.

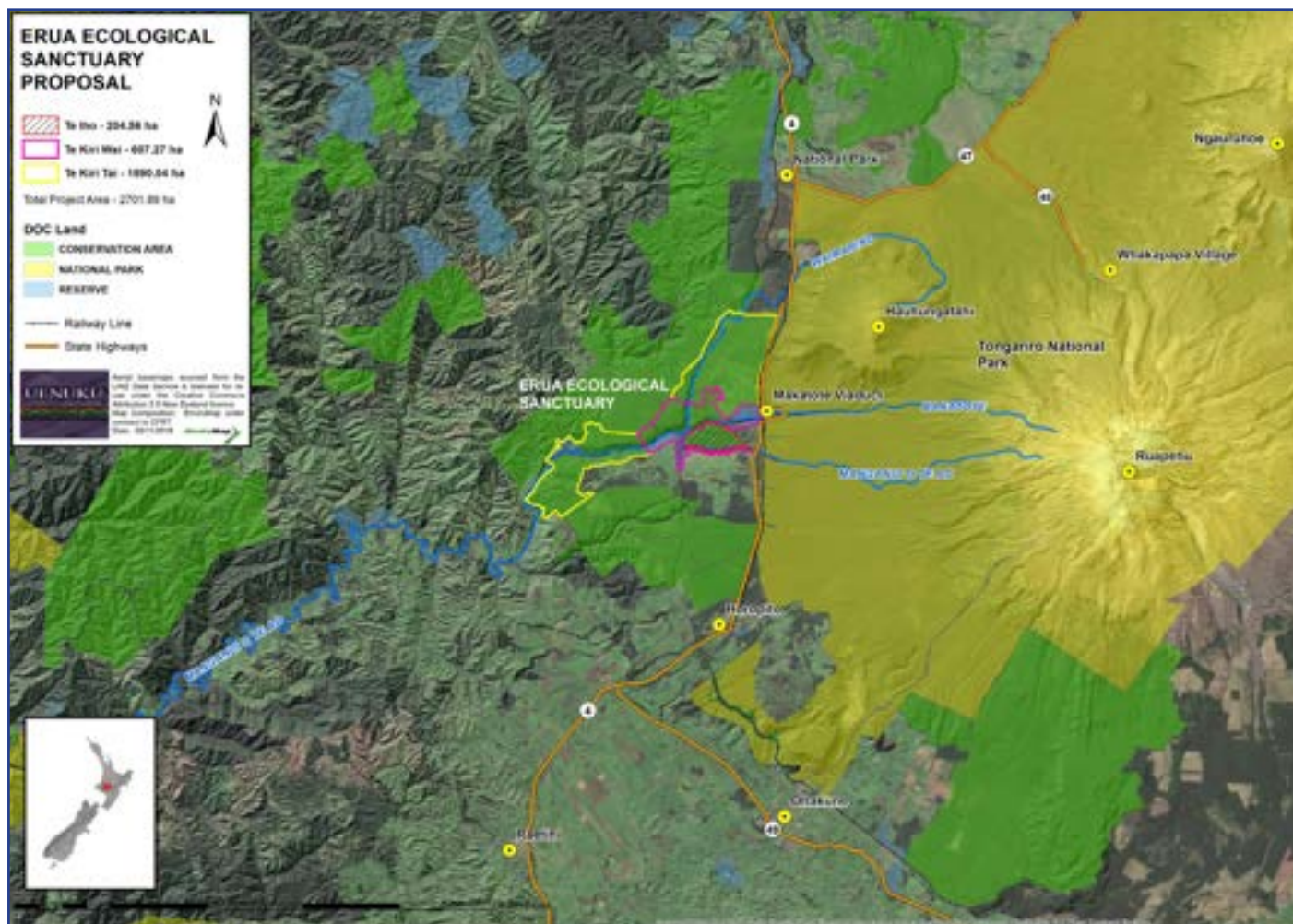
- It will also be a centre of excellence for mātauranga Māori inspired education.
- As an adjunct to the ecosanctuary, a nursery will be established to provide native plantings for both the ecosanctuary and other available land in the wider area.

Why?

- The Crown is about to return the Erua Conservation Area to the three tribes of Uenuku, Tamakana and Tamahaki. This includes Pōkākā.
- This area was named Pōkākā because of an abundance of kākā seen in ancient times. The kōrero says that during harvest the abundance of manu (native birds) in the trees was so dense they blocked the sun from shining through to the forest floor. Hence Pōkākā, a darkness caused by the abundance of the kākā.
- When the land is returned, it will not be in the condition it was in when ceded. The ecosanctuary will restore the land to something like its previous condition, through protection, pest management and the re-introduction of native flora and fauna.

Objectives

- Provide an environment which is pest-free, where current native species can flourish and where other native species can be safely re-introduced.
- Actively promote and circulate knowledge about biodiversity conservation.
- Offer the general public the opportunity to participate in biodiversity conservation management and education.



- Establish a hub for kaitiaki-based environmental education and training.
- Provide sustainable employment and training opportunities, particularly for young Māori.
- Create a centre which encapsulates the heart and spirit of local iwi and builds pride and confidence.
- Increase the productivity of iwi owned land.
- Provide visitor experiences to build the strength of the Ruapehu economy and share information and stories that add depth to visitor experiences.

Supports:

- The Manawatū-Whanganui Economic Action Plan, Te Pae Tawhiti and Ruapehu District Economic Development Strategy – the need to grow the Māori economy and create visitor sector jobs.
- The Ruapehu Regional Visitor Development Plan - the need for growing respectful visitor usage of the National Park and the surrounding areas.
- The New Zealand-Aotearoa Government Tourism Strategy - the need for effective partnerships with Māori, has as an outcome: that Tourism ‘protects, restores and champions New Zealand-Aotearoa’s natural environment, cultural and historic heritage.’
- Tourism Industry Strategy, Tourism 2025 and

- beyond - the need to disperse tourists away from the main tourist centres; kaitiakitanga is a core value.
- Conservation - supports the Government’s wider conservation policies and programmes.
- Mitigation of Climate Change – supports the Carbon Zero bill through protection of native flora and new plantings.

Benefits

- Environmental sustainability.
- Job creation (particularly for Māori) – employment opportunities will be created through both the development of the ecosanctuary and potential nursery and their ongoing operation.
- Knowledge sharing – about the importance of ecosystems through guided visitor experiences and educational programmes.
- Supporting the Māori economy - enabling Māori to realise their aspirations and maximising the return from Māori land.
- Economic growth for Ruapehu District - through visitor revenue and associated expenditure into the local economy.



Whio chick release. *Photo: Liz Brooker*

Next Steps

As an Iwi-led initiative, a fully fenced ecosanctuary would culturally be the first of its kind in New Zealand. While a fenced core and halo development at Pōkākā is technically feasible and environmentally sustainable, most importantly it is culturally acceptable.

To date Wainuiārua has received overwhelming support from uri, Local & Central Government and NGOs along with a number of businesses, industry experts and the wider Ruapehu community.

If underpinned by the Wainuiārua world view and Iwi core values, this project will not only help uri return to being visible on their lands but also preserves this unique sub-alpine environment and all its taonga species for all generations to come.

Building and financially sustaining such an enterprise is always going to be a challenge and mahi has begun to develop a detailed exploration into the financial viability and future sustainability of Pōkākā through the development of a Design & Business Case.

Supporting Partners

Key stakeholders including:

Te Puni Kōkiri, Ngā Tāngata Tiaki o Whanganui Trust, Department of Conservation, Ruapehu District Council, Forest & Bird and Horizons Regional Council have contributed funds and expertise to assist in the development of a Design & Business Case for Pōkākā.



Mount Ruapehu from the proposed ecosanctuary site at Pōkākā, Erua. *Photo: Liz Brooker*

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... mō ngā uri o Uenuku,
Tamahaki me Tamakana



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THOUGHTS ON TONGARIRO



LOU SANSON

**DIRECTOR GENERAL OF
CONSERVATION**

Once again I have the pleasure of sharing a few thoughts and observations from the wider conservation world with readers of the Tongariro Journal.

When my previous contribution was published, we were dealing with an ever-upwards spiral of visitor pressure on some of our most beautiful, culturally-important and treasured places; with Tongariro Alpine Crossing at or near the head of the list.

Trying to find ways to manage and even decrease this pressure were under discussion with whānau, hapū and iwi and with stakeholders.

Some things were close to trial and our International Visitor Levy was starting to make meaningful money available to implement interventions.

And then, almost overnight the world changed as Covid-19 struck.

International tourism stopped dead in its track and, for a time, even domestic travel ceased.

It was a pause like no other we have experienced in recent history and some interesting things came out of it.

New Zealanders started noticing nature. They enjoyed slowing down. Many began to yearn for more meaningful lives. On the other hand, those who had previously been consumed with and thriving from the tourism industry were fearing for their future.

From those two seemingly contrasting things [Mahi mō te Taiao](#) - Jobs for Nature emerged.

This programme of work will see an additional \$1.1 billion spent doing conservation work over the four years from 2020/21.



A Tomtit, one of our many delightful native birds, often seen on forest walks. *Photo: DOC*



A student planting at the Arbor Day Planting Event. *Photo: Sian Moffitt*

Critically, it has also thrown a lifeline to many in the tourism sector who were left high and dry when the international tourist flood dried up.

What emerges post-Covid will be a newly-reimagined tourism sector underpinned by a much enhanced appreciation of conservation built on the back of [Mahi mō te Taiao](#) - Jobs for Nature.

Community groups and the work they do remain very much a part of the picture with many such as Project Tongariro continuing to grow in their ambitions and delivery of conservation activities.

Through my teams on the ground, I am aware of Project Tongariro taking the lead across a wide range of initiatives, not only within Tongariro National Park where its roots lie but right across the broader Central Plateau.

Kids Greening Taupō has grown to now cover every school and most kindergartens in Taupō and is a showcase model for Community Collaborative Environmental Education projects being implemented elsewhere.

Rotopounamu continues to feel the benefits of more than a decade of concerted efforts, including Project Tongariro leading aerial 1080 pest control. It is a stunning place to visit.

Partnerships with whānau, hapū and iwi are another strength to your bow and when I see you are

embarking upon planting 40,000 trees in partnership with Ngati Rongomai on their hapū land on the Waiotaka River, it is impossible not to be impressed. Greening Taupō adds another 20,000 trees each year to that effort and I know I am only scratching the surface of your project list here. These are the things that will take New Zealand towards Predator Free 2050 and support the broader economic and social changes that will come with it.

These are the things that make us immensely proud of Project Tongariro and the people who give up their time to make these projects happen.

You are a credit to us all.

Long may your endeavours help Papatūānuku thrive. Finally, this will be my last contribution as Director General of Conservation after eight years in the role. While I leave the Department, I am not leaving conservation and will continue to be an active participant through community and other conservation organisations.

In that regard, I will always consider the people who make up Project Tongariro as friends in conservation and wish you many, many more years of success in the mahi you pursue for the good of our nature and heritage.

Nga mihinui
Lou Sanson

A DAY OUT WITH NGĀTI RANGI



KAREN GRIMWADE

PROJECT TONGARIRO
EXECUTIVE MEMBER

A Day out with Ngāti Rangī– Te Ao Tūroa (Environmental) team.

Recently Allan McKenzie and Karen Grimwade of Project Tongariro spent a day out in the Ngāti Rangī rohe with Amoa Hawira, who is a member of Ngā Waihua o Paerangi (formally known as Ngāti Rangī Trust) environmental team – Te Ao Tūroa. Caring for and connecting to the taiao/environment is one of the pillars of the Ngāti Rangī Strategic Plan, Te Ara Ki Te Moungaroa.



Near the Desert Road we catch up with the Genesis team.
Photo: Karen Grimwade

In recent years, Ngāti Rangī have worked with Genesis Energy to implement a monitoring system that allows Ngāti Rangī to build a database of information about the health of their awa/rivers in their rohe. A relationship group has been formed to maintain this agreement and work towards restoring and enhancing the health of the rivers in the Whangaehu catchment. The waterways monitored from the agreement include Tokiāhuru, Wāhianoa, Mākahikatoa, Tomowai and Whangaehu. We spent the day looking at the



Whangaehu Intake near the Desert Road. *Photo: Karen Grimwade*

Whangaehu and two of its tributaries, the Mākahikatoa and Tomowai. Ngāti Rangī have a focus on advocating



Amoa measuring the pH of the Tomowai.
Photo: Karen Grimwade



Allan McKenzie of Project Tongariro assists Amoa Hawira of Ngati Rangī Te Ao Turoa team checking the wai.
 Photo: Karen Grimwade

for water to be returned that will restore the mauri of these awa.

All of these awa have water taken out by Genesis Energy (with the exception of the highly acidic Whangaehu) at a series of intakes stretching across the south eastern slopes of Ruapehu. The water is diverted at 22 intakes in total, through the Wāhianoa Aqueduct, under the Whangaehu up to the Moawhango dam. Ngāti Rangī opposed these activities due to the effect of the health and well-being of their awa. This system is very similar to the rivers on the western side of Ruapehu that are diverted from the Whanganui catchment and end up in the Tongariro Power Scheme via Tokaanu Power Station. In this case, the eastern rivers have their water diverted from the natural flow south to the sea and are instead sent off to Rangipō Power Station, and eventually end up in Lake Taupō and so on to meet the sea 400km north at Port Waikato. It is believed that up to 20% of the water in the Waikato is diverted via the power scheme from the Whanganui and Whangaehu catchments.

So, on a lovely autumn day we travelled up through the

Karioi Forest (busy with logging trucks) towards the intakes on the northern and eastern edges of the pine plantations.

First stop, the Whangaehu River itself. This is a unique river, originating from its source, Te Wai a moe the crater lake of Ruapehu, it travels down the spectacular volcanic valley travelling east towards the Desert Road, but before it gets there, the river course abruptly turns right (south) and travels via Tangiwai and the famous train disaster site, towards the south – collecting the waters of many small tributaries on the way. The banks of the Whangaehu are like no other river, often strewn with lahar debris, a landscape of rocks and boulders. There is a raw beauty in the primal nature of this scene, and it is sobering to know that Ruapehu has shaped it, and is probably not done yet.

Amoa monitors the waters and collect data from both below and above the intakes. It can take a couple of days to get around all of the sites and involves long working days for her. The timing fits in with the Tangaroa phase of the maramataka rather than the Gregorian calendar. The waterways are measured

for; turbidity (clarity), ph (acidity), temperature and dissolved oxygen. Also, any general observation of differing or unusual conditions such as high flow, extra debris, any particular wildlife around - and a photo. Near the Desert Road, we bump into a couple of Genesis engineers and as the water flow is higher than usual Alex from Genesis gives us a quick lift to the next monitoring site. Ngāti Rangī are intent on good relations with Genesis as this means good communications, information sharing and problem-solving opportunities.

At the end of our day out, Allan and I both felt so much more informed and had a better understanding of Ngāti Rangī views on what happens to the wai/water and the health and wellbeing of their significant awa/river. Allan was particularly impressed with the monitoring scheme and the baseline information it will give all the parties that could illuminate all kinds of trends in the future.

The health of the rivers are of importance to all of us at Project Tongariro as advocates of conservation and the environment. Fresh water is going to become a more critical issue, especially as there will be more demand on electricity supplies as the population increases and the government moves the country away from dependence on oil and gas. Considering such a huge amount of the upper North Island's water comes from Ruapehu (much of it captured and diverted north), the context of our lovely day out becomes cause for serious reflection. Prior to the power scheme days, the awa flowed from the 'Mountains to the Sea', mixing with and diluting the Whangaehu River and eventually meeting



The Whangaehu riverbanks are shaped by their history of being a lahar path. *Photo: Karen Grimwade*
the sea near Whangaehu Village south of Whanganui. Now the waters meet the sea at Port Waikato just south of Auckland.

On a lighter note - one of the highlights of the day was seeing a multitude of kiwi holes in the pine forest adjacent to one of the streams, it seems somebody has been having a good beaky poke around looking for kiwi kai.

I was also heartened, I hardly saw any wilding *Pinus contorta* - even on Te One Tapu/Rangipo Desert side. Remembering the old days of tramping clubs spending weekends pulling out pine trees at the top end of Karioi Forest, it was good to see so few of those horribly invasive tree-weeds.

Another highlight - again revolving around kai - Amoa surprised us by having real coffee with cream and biscuits to have at lunchtime. I think she won't have any trouble getting us to come along again!



Only a couple of pine trees sighted on the eastern banks of the Whangaehu.
Photo: Karen Grimwade

OUTSTANDING VOLUNTEER – SHIRLEY POTTER



KIRI TE WANO

**PROJECT TONGARIRO
COORDINATOR**

Shirley Potter. If you don't know this name - then you should. If you've attended any PT planting days either beside the Waiootaka River or the Tauranga-Taupō River, you will remember Shirley! Almost anything to do with conservation in Turangi or Taupō - more than likely has a little bit of Shirley attached to it!

Since 2005 when Shirley retired and moved up to her favorite place in the world (Tauranga-Taupō, north of Turangi) and joined Project Tongariro on a more permanent basis, she (and partner Ardy) have been waging a quiet war against pests and weeds. Starting out in their own backyard it quickly spread to their neighbourhood.

It turns out that Shirley has an uncanny ability to motivate and 'infect' people with an intense dislike for pest plants and animals! Through sheer force of will (and a good amount of baking!) Shirley has managed to bring vibrancy and birdsong back to the Tauranga- Taupō region and is gleefully doing it with a small but determined group of local residents and firm friends. If you are semi retired - watch out, Shirley always has a job for you! Using all varieties of traps, guns, chainsaws, scrubbers, friends with ploughing tractors, knapsacks and motorised drills, Shirley has many tools and skills up her sleeve.

Shirley quickly became a 'go-to' volunteer and was easily talked into an initial role of Te Matapuna Wetland ranger- someone 'on the ground', someone who could keep an eye on contractors, weed growth and organise the planting of many thousands of trees in newly cleared restoration areas. Once funding for this part-time role finished, she took this experience and her liaison work with our restoration project partners - the



Department of Corrections and focused it on her 'patch', beside the Tauranga-Taupō River. It transpires that Shirley is also an excellent hustler fundraiser, and this year has kept surprising us with regular, decent donations for her project!

Shirley's ability to source workers (volunteers) is also eye-opening. If any offer of labour comes through to us, she is very quick off the mark to accept. She keeps visiting school groups and armed forces groups wanting 'conservation service' experiences - VERY busy - but happy and inspired!

Shirley is also passionate about another restoration area - Lake Rotopounamu. Both Shirley and Ardy spend many hours tramping trapping lines in their spare time. It is obvious the connection and feeling they both have for this special place. They both help manage the trapping schedule and train up new trappers who volunteer.

Shirley embodies the acronym 'JFDI' - she gets in there, no fuss, and gets the job done. Shirley has an abundance of energy and enthusiasm, and we are extremely grateful that our society and the wider community is the recipient of it! We cannot thank Shirley (and Ardy) enough for their efforts! And if you get asked to help - I hope you can!

A FULL-CIRCLE JOURNEY WITH KIDS GREENING TAUPŌ



SIAN MOFFITT

**KIDS GREENING TAUPŌ
COORDINATOR**

My journey as part of Kids Greening Taupō (KGT) began in 2015 as a passionate year 13 student at Tauhara College in Taupō.



Skink monitoring as a BLAKE NZ DOC Ambassador.
Photo: Sian Moffitt



Presenting logo concepts 2015. *Photo: Sian Moffitt*

I had just returned from the Sir Peter Blake Young Environmental Leaders Forum (YELF) when I heard about a new environmental programme starting up in Taupō called Kids Greening Taupō. In the establishing year the programme was targeted at year 9 students with the hopes of creating a manageable rolling model bringing more older students on through the years.



Sian with David Speirs (DOC).
Photo: Sian Moffitt

Despite this call for year 9 students, I kept trying to find a way to be part of the programme. I ended up taking on four different roles as part of the Student Leadership Team which taught me many environmental and leadership skills. Being part of KGT contributed to a change in my desired course of study from Design and Photography to a Bachelor of Science majoring in Ecology and Biodiversity, and Environmental Studies.

My first passion-based job!

Following half a year with KGT I had finished high school and was looking for summer work before starting my Bachelor of Science at Victoria University

The kids just blow me away with their problem solving abilities and how enthusiastic they are to make a change and get stuck in.



Sian established and coordinated Forest & Bird Youth Wellington in 2018. *Photo: Sian Moffitt*

of Wellington (Te Herenga Waka- Wellington University). KGT meetings had been based at the Taupō Department of Conservation (DOC) and I had made some amazing contacts and connections there throughout the programme. I decided I would try my luck and ask around if there would be any available summer work at the Taupō DOC office. I went on to complete a two-month internship as a partnership ranger at the Taupō DOC office; in this time my passions for native flora and fauna flourished through incredible opportunities and experiences.

for wasps, mustelids and rodents as well as skink monitoring, analysing kiwi audio recordings, blogging and advocacy.

During my third year of university, I established Forest & Bird Youth Wellington, based on my experiences with KGT and the Collaborative Community Education Model.

I also attended the New Zealand Association for Environmental Education conferences twice,

University life (or maybe extra-curricular life)

During my three years at university, I continued to grow my passion for conservation and the environment through various youth councils and opportunities.

In the summer before my third and final year of my undergraduate studies, I was selected as a Sir Peter Blake DOC Ambassador and volunteered as a Biodiversity (fauna) Ranger in Saint Arnaud, Nelson Lakes for a month. This work consisted of large amounts of pest control



Waipahihi Gully Planting 2020. *Photo: Rachel Thompson*



Planting like a ninja 2021. *Photo: Katherine Davy*

presented two talks (one for KGT and one for Forest & Bird Youth), and represented youth on a panel for environmental education for sustainability. During university breaks I remained involved with KGT activities, taking part in releasing/weeding of plants, pest control, storyboarding for a film, photographing events and helping with student speeches.



Kid Greening Taupō weeding event. *Photo: Sian Moffitt*

Full circle

Nearing the end of my degree Thea approached me with a job opportunity to join her as an Environmental Education Coordinator. I have now been working with KGT since February 2019. I absolutely love my job! At KGT I get to work with the kindergarten kids exploring their local ngahere, I teach primary school students hands-on conservation best practice, and coordinate the senior student leadership team of students aged 10-18yrs focusing on leadership in conservation, and in the community. Additionally, as an education coordinator I coordinate local restoration projects, community events and teacher professional development, working collaboratively with many local environmental educators, and programme partners, and utilise my photography and design skills to create online resources for students, teachers, and the community.

In our work we get to work with a range of people in the community, planting seeds of knowledge and growing passions for the environment whilst being out there in nature hands-on. Every day is different and that is wonderful. The kids just blow me away with their problem solving abilities and how enthusiastic they are to make a change and get stuck in.



Back in the beginning. Working as a DOC ranger summer 2015-2016. *Photo: Sian Moffitt*

I am so thankful to have been part of Kids Greening Taupō now for six years, and to see the huge impact this programme continues to have, not only locally, but nationally and internationally now too!

A CONNECTION TO GIRDLESTONE PEAK (PERETINI)



DAVE BAMFORD

**PROJECT TONGARIRO
MEMBER
TOURISM CONSULTANT**

My grandfather Owen Campbell (Poppa) was an early settler from Waipu who, like his two brothers, became a surveyor and engineer in the 1890s.

When I was working as a National Park Ranger for the Lands and Survey Department in the late 1970s/early 1980s, I learnt of Poppa's involvement in land development through his surveying work, as well as his recreational escapades to Mt Ruapehu.

In the intervening 40 years I have researched the whakapapa of my tupuna, my grandad and Great Uncle Lachlan. During the COVID-19 lockdown I had the opportunity to complete a book "The Boys from Waipu, Lachlan (Lockie) and Owen (Poppa), the Campbell Boys. Wartime tunnellers; peacetime nation builders" (<https://media.api.aucklandmuseum.com/id/media/public/d4398016-3fc5-4638-9254-9da0e17f940e/original.pdf>). Both Lockie and Poppa

worked as engineers and surveyors on the complex North Island main trunk railway line from circa 1904 to 1908.

Poppa's life in the King country consisted of surveying, camp life and recreation. His photographs show camp life in the Upper Retaruke Valley, Rangitikei and Waimarino (National Park). As well as a keen rugby player he was also an enthusiastic mountaineer while working in the Ruapehu area.

Poppa, often with Girdlestone, was an active mountaineer and climbed Mount Ruapehu, on at least five occasions ...

His survey work was often in association with his good friend Hugh (Hubert) Girdlestone. The surveyors would both have worked with their respective survey teams made up of a surveyor, a chainman, two line cutters and the cook. These teams would spend weeks or months cutting and surveying a specific large block and then return to civilisation for rest and relaxation. Raurimu, Waimarino (National Park) and Ohakune were key bases. Poppa's work focused on



Poppa as the engineer for the Rangitikei drainage scheme, circa 1912



Upper Whanganui River, circa 1907 – Poppa third from right, Hugh Girdlestone first on the left.



The "Girdlestone Plaque Team" (Poppa in the centre) was delayed in erecting the plaque by a year until February 1922.

surveying the rail infrastructure in the Waimarino area including the Makatote Bridge, the Raurimu Spiral and the rail line north of Hunterville to Raurimu. Survey work in the Upper Wanganui, Raetihi region in the 1900s is well described by Archie Bogle in "Links in the Chain".

Hugh (HEG) Girdlestone regularly wrote articles for the Wellington Post and was an active photographer.

Poppa, often with Girdlestone, was an active mountaineer and climbed Mount Ruapehu, on at least five occasions, and Ngauruhoe. These were



The "Girdlestone Plaque Team" at Round Bush Camp (below the current Mangaehuehue Hut, accessed by the old track from Kariori, 20kms east of Ohakune). Poppa in the foreground. The other team members included: Peter Keller, Arthur Johnston, Guy Girdlestone, Johnston, M. Calvin, W. Bird, W. Steward and J Ansford. February 1922.



primarily summer activities and often involved climbs from the Waihohonu Hut, built in 1903 on the northern slopes of Mount Ruapehu. This hut provided a base for ascents of Ngauruhoe and Ruapehu, usually to the Crater Lake. Poppa, with Girdlestone, also climbed the Little Matterhorn (Peretini) from Ohakune via Karori and round bush (near the Mangaehuehu hut).

After Girdlestone died, in the First World War, a team of early surveyors, including my grandad, made two attempts to install a plaque to honour Girdlestone on the summit of the Little Matterhorn, a distinctive, glaciated peak. The first attempt was in 1921 when Poppa returned to Ruapehu as part of a group packing marble, concrete, iron and drills to the top of the Girdlestone Peak (previously Peretini and then Little Matterhorn Peak), to erect a memorial to Hubert Girdlestone. Storms prevented the installation but the team returned in 1922 and successfully climbed Girdlestone Peak (Peretini).

The peak was known thereafter as Girdlestone Peak by Europeans but still known as Peretini by the local iwi, Ngāti Rangi.

Interestingly there was a H.E.Girdlestone Memorial Fund, managed by the Public Works Department, for Tararua projects proposed by the Tararua Tramping Club. Projects included financially supporting a hut near Mount Hector for which 25 pounds were



Photo top left: Poppa in military uniform

Photo above: Summer climbing on Mt Ngauruhoe

Photo below: Blyth Hut and Girdlestone (Peretini) (far right) circa 1940s

Other photos in article: Dave Bamford collection

allocated in 1924. Apparently the Girdlestone Fund was still in existence in the 1960s although I could not find any existence of it now.



An Ascent of Girdlestone Peak, Easter 2021

Last Easter, April 2021, I finally had a successful day on Girdlestone Peak / Peretini (Tongariro National Park), in perfect autumnal conditions, with my good friends Harry Keys, Karen Williams and Paul Bradshaw. It was initially a shock to discover the granite plaque to Girdlestone had been shattered fairly recently by the ravages of time and nature — frost and thaw. Yes, man passes but the land endures. It was sad seeing the broken plaque but we spent a fun hour in perfect conditions collecting bits and doing a high altitude (2658m) jigsaw puzzle. Harry was very enthusiastic and found many pieces on a steep slope below the peak. It was a reflective time — memories, families, colonial times and their actions. An interesting climb which included cramponing across the steep and very icy Mangaehuehu Glacier, lunch and finally the summit. Ten hours return. It was my third recent attempt to climb Girdlestone so very nice to have that day and share it with mountain friends.

Photo right: Harry Keys, Dave Bamford and Karen Williams on Girdlestone Peak. Dave has his book, "The Boys from Waipu," open at the page of the 'Girdlestone' team erecting the memorial plaque to Hugh Girdlestone in 1922.

Photo: Paul Bradshaw

Photo below: Dave Bamford, Harry Keys and Paul Bradshaw reconstructing the Girdlestone plaque.

Photo: Karen Williams



PT's 2020 ANNUAL GENERAL MEETING, OHAKUNE



KIRI TE WANO

**PROJECT TONGARIRO
COORDINATOR**

In mid November we converged upon Ohakune for our annual AGM weekend. We were treated to an excellent schedule of trips and events. We were based at a local club - the Rangitikei Ski Lodge. Many people started off the weekend on Friday evening meeting for dinner at a local restaurant. On the Saturday morning we met up at the Turoa Alpine Flush - a luscious alpine garden, situated right next to Turoa Ski Field's learners area - where we discussed the difficulties of managing a delicate protected conservation area in a commercial operation. We then headed halfway back down the mountain road to

visit the 1982 helicopter crash site, where we had a moving karakia to those we lost, reflections and a very fitting poem read by Karen Williams.

After a short walk back to the cars, we headed further down the road to the Rangokaupo wetland for lunch and a bush walk (and bash with a surprise stream crossing!). We then headed back to our base to tidy up for the official AGM meeting, followed by a fabulous catered dinner, complete with a fiercely contested conservation quiz. Afterwards we listened to Josh Parris, DOC's newest community ranger in Ohakune, speak about his unique conservation background, studying in the USA, and the contrasting differences between NZ and USA conservation realms.

On Sunday morning we met local residents and an enthusiastic trapping group at the Mangawhero walkway. We walked the track, checked traps and swapped trapping war-stories. The weekend finished with a final lunch held in the sun outside the Powderhorn restaurant.



The contingent visiting the crash site. *Photo: Sian Moffitt*



Top: A final lunch together on Sunday before heading home.
Photo: Kiri Te Wano

Middle: Mangawhero Walkway trapping group member, Robert Milne, introduces the Project Tongariro group to the project. *Photo: Kiri Te Wano*

Bottom: Alpine Daisy in the Turoa alpine flush.
Photo: Sian Moffitt



Sarah Gibb, Paul Green and Evelyn Cooper.

Photo: Kiri Te Wano

We are super happy to welcome these new Executive Board members voted in:

- Mike O'Sullivan (of Tauranga-Taupō) voted in as President (taking over from Nicola Etheridge in February/March 2021)
- Patricia Taylor (of Tauranga) voted in as Treasurer (taking over from Lucy Roberts in February/March 2021)
- Brenda Lawson (of Kuratau)
- Allan McKenzie (of Ohakune)

We wish to give a heartfelt thank you to these Executive Board members stepping down;

- Nicola Etheridge
- Roy Dench
- Sarah O'Sullivan
- David Eason

Tongariro Natural History Society Executive Board
14th November 2020;

- Mike O'Sullivan (President)
- Patricia Taylor (Treasurer)
- Lucy Roberts (Past Treasurer)
- Karen Williams (Original Family Representative and Honorary Vice President)
- Lesley Mochan
- Shirley Potter
- Roel Michels
- Karen Grimwade
- Jason Cameron
- Brenda Lawson
- Allan McKenzie

Also attending:

- Paul Green (Volunteer Director)
- Kiri Te Wano (Secretary & PT Coordinator)

Thanks to Karen Grimwade for her excellent leadership and planning for the AMG weekend - and to my fellow colleagues for supporting the organisation of the weekend.

GREENING TAUPŌ DAY 2021



**RACHEL
THOMPSON**

**KIDS GREENING
TAUPŌ EDUCATION
COORDINATOR**

We held our largest event ever, 'Greening Taupō Day' on June 4th 2021. This was a town-wide celebration of Greening Taupō and Kids Greening Taupō. All of the work that we do and the resources that we share, are provided free of charge, so this was a chance for people to show their support and to give back. Our goals were to lift our profile in the community, promote what we do, and also to fund-raise at the same time. I think we can well and truly say that we achieved these goals.



Taupō nui a Tia teachers and students helping prepare for the planting day. *Photos: Sian Moffitt*



Kids Greening Taupō Coordinators with Harold from Life Education. *Photo: Rachel Thompson*

The 'day' that we had planned quickly turned into a week long event. Taupō was buzzing with environmental initiatives, plantings, fundraising activities, green decorations, and people dressed in green everywhere. The 'Love Taupō' sign was even lit up in green for the week!



One of our student leaders teaching about macroinvertebrates at the Greening Taupō Day planting event. *Photo: Sian Moffitt*

We had generous prizes donated for schools and businesses that showed 'Green Spirit'. We were excited to have every local school, along with some rural schools and kindergartens sign up to join in. 25 schools and ECE centres took part in total! Taupō Intermediate took out the top prize of a \$1000 restoration planting donated by Contact Energy.



A group from Country Kidz enjoying the planting event. *Photo: Katherine Davy*

Waipahihi School and Upper Atiamuri School received prizes from Mitre 10 and really impressed us with their conservation efforts. Town Centre Taupō ran their own competition and many businesses signed up to join in.

There were fantastic green window displays all around town, staff dressed in green, and even green baking for sale. Spacecraft won the big prize, with Victoria's Cafe, The Source Bulk Foods, Kip McGrath, Get Set Events, and Huka Honey Hive taking out



Constable Ross Humphrey entertaining the kids at the planting event. *Photo: Sian Moffitt*



Albert Pointon Menswear's green window display. *Photo: Rachel Thompson*



Sian and our student leader judges at the winning shop, Spacecraft. *Photo: Rachel Thompson*
prizes too.

Many local businesses contributed to the success of this week, but several were integral to it. More FM promoted the event heavily, regularly interviewing us about the latest news on it. Korio Website Design



300 cups of soup donated by The Bistro for our hungry planters. *Photo: Sian Moffitt*

& Digital Marketing donated lots of time to help promote the event and the sponsors. Quality Print also donated lots of time and resources to make the event successful. They even ran an art competition encouraging the children of Taupō to think about what they would like to see out their window in the future. Thousands of entries were received!

As part of the celebrations we held an Arbor Day Planting Event. This involved the community

planting 4000 native trees on a previously weedy area of the roadside between the Taupō Golf Club and AC Baths. The trees were provided by Taupō District Council and Trees that Count. Taupō District Council also spent a lot of time preparing the site and digging the 4000 holes. The day before the event we had students from local high schools, local businesses and our 'Wicked Weeders' come along to help unload



Trev Terry Marine cooked 700 sausages on the BBQ!
Photo: Sian Moffitt

trucks and put the plants in the holes. We had a huge response from local businesses and organisations keen to be involved with running activities and providing food on the day of the event.

Trev Terry Marine cooked up 700 sausages and The Bistro supplied 300 cups of vegetable soup. Mynoke, an industrial scale worm farm took the paper cups to feed the worms, and sorted our waste on the day.

We had representatives from organisations such as Project Tongariro, DOC, Taupō District Council, Waikato



The Love Taupō sign turned green for the week and the hills were covered in volunteers planting 4000 trees.

Photos: Sian Moffitt

Regional Council, The Police, Taupō Fire Brigade, Civil Defence, Life Education, Blue Light, Mynoke, Taupō for Tomorrow, Waikato Enviroschools, Forest and Bird, Predator Free Taupō, and Contact Energy running activities for the children who came along.

Over 1000 people attended this day and enjoyed the range of activities, along with planting and mulching the trees. The best part was that many people could not attend our event, as they were holding their own planting events at their schools and kindergartens. There were children taking part in conservation activities and trees being planted all over town.

We were really astounded by the huge support that we received from our community during this week. People are already talking about Greening Taupō Day next year, so it looks likely to become an annual event. We cannot wait to see what next year's celebrations will look like!



Local businesses, including Source Bulk Foods, First Credit Union, Victoria's Cafe and Get Set Events went green for the week.. *Photos: Sian Moffitt*

KAIMANAWA FOREST PARK CANOPY COLLAPSE – IS IT IMMINENT?



KAREN GRIMWADE

**PROJECT TONGARIRO
EXECUTIVE MEMBER**

At the recent Tongariro Taupō Conservation Board meeting, representatives of the Sika Foundation came along to present a proposal to the Conservation Board in regard to a Sika deer research and adaptive management programme, and the location of a new, temporary hut in the Kaimanawa Forest Park, in response to observations of (natural) beech canopy dieback over large parts of the Park.

Cam Speedy and John Cook put forward their position and a presentation that a hut be located somewhere suitable in the upper Waipakihi Valley, perhaps in the alpine zone near the Thunderbolt Creek Junction. The idea being that the presence of the hut could enable Sika Foundation members and other hunters easier access and accommodation in the remote a difficult-to-get-to parts of the upper Waipakihi to try to reduce Sika densities – to help ensure canopy replacement occurs.

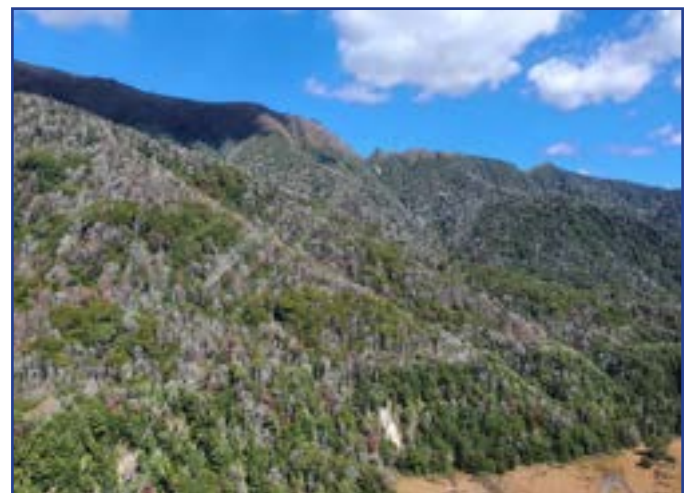
There is a good reason for this plan.

Extensive beech forest dieback has become apparent in parts of the Waipakihi Valley, along with signs of it extending into the Rangitikei – and recently recorded in the Mangamaire and Oamaru Valleys. The dieback is probably natural, caused by drought and/or other climate/pathogen related events beyond our control. But what is not natural, is that the usual surge in replacement growth from below, from the understory of saplings and seedlings, is unlikely to happen under current Sika deer densities.

This is a problem that requires the Sika population to be carefully managed at lower densities in coming years as the current canopy collapses - to allow effective canopy replacement within the normal 20 - 40 year cycle.



Waipakihi Valley April 2017 (not much dieback).
Photo: Cam Speedy



Waipakihi Valley March 2020 (lots of dieback).
Photo: Cam Speedy

The Sika Foundation are right behind this strategy. Many conservationists perceive hunters and their love of deer to be a recreation/lifestyle choice in conflict with conservation ideals of lowering deer (and other pest) numbers. But in this case the Sika Foundation fully support the conservation tenant of basic habitat protection.

Canopy collapse in the Waipakihi Valley and other threatened locations within Kaimanawa Forest Park, is not what hunters want, most hunters prefer a healthy forest and a smaller but more healthy Sika deer population. The Sika Foundation Year in Review publication asks hunters to: Become a Sika Manager, don't just be a Sika Consumer.



Mangamaire – dieback has increased dramatically since 2019. *Photo: Cam Speedy*

As Cam Speedy explained, when deer numbers are higher than the forests can sustain, the deer get sickly and skinny. Most hunters would prefer to have fewer deer but healthy deer living in a healthy forest, which contributes to a better-quality hunting experience. Thus, they support careful management of Sika numbers. The Sika Foundation are proposing this remote hut location so that hunters can more easily get to and stay in the more remote parts of the Waipakihi Valley and hunt more successfully.

At the moment it is difficult to access and so deer numbers are above levels that can be sustainably supported by the current beech forests. Cam said that we know from the Kaweka Mountain Beech Project that when Sika densities are less than ~6 deer per square kilometre, mountain beech can regenerate. This is a deer density similar to areas like Clements Road in the northern Kaimanawa Forest.

Since the Tongariro Taupō Board meeting where this problem was discussed, Cam has been on a trip into the lower Mangamaire in the Kaimanawa Remote Experience Zone (REZ). In the two years since his

last visit the die back has become notably worse with most beech trees, both old and young, badly impacted. Die back is now widespread from Waipakihi to Oamaru – so across much of the Kaimanawa Forest Park. Cam notes that although we cannot be absolutely sure it is climate related, this is the most likely explanation as the trees growing on north and west facing slopes – and even on wet terraces – have been most badly impacted. Regardless of the (natural) causes, regeneration needs to be enabled – and urgently. Carefully managing Sika densities will form part of that outcome.

Hopefully some progress can be made with a hut – even a temporary hut as this would fit in with the Kaimanawa Management Plan more readily than a permanent one. The restriction on new huts was approved before the canopy collapse problem had come onto the horizon. All plans should evolve, and a temporary hut rather than permanent hut could be a great solution that can be achieved quickly before this problem becomes an environmental disaster.

VOLCANO WATCH



HARRY KEYS, THEO CHAPMAN AND HOLLEI GABRIELSON

(PREVIOUS AND PRESENT VOLCANIC
RISK MANAGEMENT STAFF FROM
DOC-TONGARIRO)

All volcanoes at Tongariro are currently at low Volcanic Alert levels after another two years going by without eruptions in Tongariro National Park (TNP). This does not mean they have become dormant and further eruptions can be guaranteed!

Ruapehu

It will be 14 years in September 2021 since Ruapehu's last eruption (in September 2007) apart from a small surge event in July 2009. This is a very low rate historically for one of NZ's most active volcanoes. This is perhaps only matched by its quiet period between 1910 and 1935 as documented by Brad Scott in his exhaustive review published in 2013 covering the period 1830 to 2012. In the 177 years to 2012 Ruapehu had an average (known) eruption recurrence rate of 0.93 per year (excluding the eruptive episodes of 1945 and 1995-1996) for eruptive events with effects observed beyond Te Wai ā-moe/Crater Lake.

Te Wai ā-moe/Crater Lake temperatures have been above 30°C on three occasions since August 2019 and below 15°C once. The temperature cooled to 12°C in late September 2020, which was the coolest temperature in five years (largely due to temperatures deep in the vent beneath being cooler as calculated by GNS). Then the lake heated to 43°C in late December and early January 2021 with a volcanic earthquake on 26 December. On 21 December 2020 GNS raised Ruapehu's Volcanic Alert Level (VAL) to 2 (Volcanic Alert Bulletin RUA - 2020/10).

This heating period was accompanied by fairly normal bursts of volcanic tremor and a marked increase in the amount of gas passing through the lake. DOC responded by warning people not to go within 2 km of the crater and stopping concessionaires operating within that area. We discussed how to safely run the



Dome Ridge on 24 March 2021 showing effects of rockfall experienced in the summit area probably associated with another series of earthquakes in mid-March.

Photo: Harry Keys

Mahi Aroha trip on 4 January to the upper Whangaehu and bund. This was 6+ km from vent but would normally go within the lahar hazard zone there. It was run by watching the volcano carefully and keeping out of the lahar path. GNS reduced the Alert level back to 1 on 11 January 2021.

*Volcanoes are incredible,
spectacular, inspiring and
volatile forces of nature ...
people's safety can never be
guaranteed when close to an
active volcanic vent*

In the last journal we speculated if we might be about to enter a time period like 1965-1982 with sustained warmer lake temperatures, more eruptions, and most likely higher gas emission (at times at least). Since 2019 the lake stayed above 30°C for 106 days up to mid-June 2020 and for 88% of the time for 166 days up to 16 May 2021. Average temperatures have been warmer over the last 6-7 years than over the preceding 6-7 years but not high enough it seems to be consistent with an imminent more active period. But who knows!

Volcanic risk management

DOC has well-established, robust processes in place to manage volcanic risk on the three visitor-accessible volcanoes that are on public conservation land in NZ. This risk management system has been built up since the 1980s. The former departments of Scientific & Industrial Research and Lands & Survey, supported by the Ministry of Works, built the first automatic warning system (the Lahar Warning System on Whakapapa Ski Area) after hazardous eruption lahars through the ski area in 1969 and 1975. Significant eruptions in 1995-96, 2007 and 2012 led DOC and GNS to make a series of major modifications, additions and modernisation including online monitoring and alerting tools. Basic response plans and procedures were developed prior to 1995-96 but since then these have become much more comprehensive with detailed guidelines to assist managers. The impending dam break lahar of March 2007 and the Te Maari eruption provided major incentives for broadening the system, plans and procedures.

The series of multiple hazardous volcanic events and associated “near-misses” since 1969 and the lessons of Tangiwai 1953 have driven DOC’s approach. Increasingly, visitor proximity to volcanic vents has come to be managed more proactively as volcanic unrest and the potential for explosive eruptions (i.e. volcanic risk) increases. There were three important lessons from the Te Maari eruptions in August and November 2012: (1) long quiet periods at Tongariro vents (Ngāuruhoe, Red Crater and Te Maari) may be followed by useful precursor events if we can detect and react to them fast enough; (2) even “small” eruptions pose huge risks to anyone within 1-2 km; and (3) the need to be decisive in managing increasing unrest at any of the three main Tongariro vents.

New Zealand Volcanic Alert Levels (VAL) are a fundamental tool for volcanic risk management in NZ. They do not forecast future activity but provide an assessment of a volcano’s level of unrest at the time the alert level is applied and communicated.

[More about VAL on the Geonet website](#) [video about Volcanic Alerts in New Zealand.](#)

The methodology for managing volcanic risk on the Tongariro Alpine Crossing and Tongariro Northern Circuit now identifies closure points based on the VALs. Tongariro and Ngāuruhoe typically sit at VAL 0 (no volcanic unrest). When the VAL increases to 1 (minor volcanic unrest) the tracks are closed and risk assessments made. The length of this initial VAL 1 closure period is dictated by the data available, the



Te Maari erupting on 21 November 2012 *Photo: Sam Highett*

assessments and input from GNS and other subject matter experts. If DOC is confident that the probability of eruption is low, and the level of risk is tolerable, then the track is reopened. At VAL 2 and above, the track is closed until the activity has de-escalated to VAL 1 or VAL 0. Again, the assessment to reopen would involve risk assessments and expert input.

This decisive approach was mirrored at Ruapehu in the December 2020-January 2021 period noted above. However the trigger is when VAL 2 is declared since Ruapehu is so active that the VAL is never dropped below 1.



New volcanic risk sign at Knoll Ridge. *Photo: Harry Keys*



the management practices themselves will be subject to change as improvements are identified, and as progress is made in the fields of earth science and risk management. Studying processes that are associated with or reflected at Te Wai ā-moe/Crater Lake may have the potential to improve eruption predictability and reduce the risk further.

Volcanoes are incredible, spectacular, inspiring and volatile forces of nature. Visiting them can be very rewarding but it's important to recognise that despite DOC having a robust volcanic risk management system in place, people's safety can never be guaranteed when close to an active volcanic vent. A

Theo Chapman and Toby O'Hara erecting the lahar interpretation panel which warns about potential lahars in the Lahar Hazard Zone on the Tongariro Alpine Crossing.
Photo: Harry Keys

The 2019 Whakaari eruption did not materially change the management of volcanic risk at TNP. The number and potential severity of previous eruptions here, several of which were difficult to predict and were serious near-miss events, had resulted in the volcanic risk system now in place. However due to a large amount of public, media and government agency interest, DOC staff set up a page on the DOC website in 2020 explaining how they manage volcanic risk in TNP. It includes links to the documentation, which have made public and transparent. The link to the new page is: [DOC's role in managing volcanic risk at Tongariro National Park](#). This documentation, like

significant part of DOC's risk management work is notifying the public of the risk so people can make decisions on the level of risk they're willing to accept. New signage has appeared in various places in TNP as part of this. However visitors and concessionaires also need to engage with such information, be aware of potential volcanic activity when visiting volcanoes and use the information about the volcanoes that GNS and DOC have online.



Spectacular image of the currently erupting Reykjanes peninsula volcano in Iceland, taken from a webcam on 14 June 2021.



What's different? A few years ago this was the site of the Dome Equipment Shed. Built originally as the Dome shelter, following the eruptions of 1995-1996, its function was subsequently restricted to that of a monitoring equipment storage building. The structure was damaged during several volcanic eruptions from Crater Lake, in 1995 and again in 2007 when one of two climbers using the shed's lobby as a shelter was injured. The shed was demolished in February 2017. *Photo: Harry Keys*

Front row seats at an Icelandic eruption

The current eruption in the Reykjanes Peninsular in Iceland offers good insights. Several webcams accessible on Youtube have meant a worldwide audience for this eruption which maybe building a new shield volcano. Others like Dr Bruce Houghton who played a vital role which helped DOC and RAL manage risks from the 1995-1996 eruption have had some of the best field trips of their careers. It is fantastic how people have been able to visit the volcano and approach its spectacular lava flows closely. This is because the real risks are low as long as people give due regard to the level of hazard posed by flying lava close to the vents, molten lava and unstable young lava crusts. So far the authorities have had a permissive approach commensurate with the level of hazard and have even facilitated access, relying on common sense and simple warning signs. This may change if the recklessness of a few ignorant people lead to serious injuries or inaccurate publicity. More can be seen at [mbl.is](https://www.mbl.is) and <https://www.mbl.is/news/>

[youtube.com/watch?v=XwN-u4Ccygs](https://www.youtube.com/watch?v=XwN-u4Ccygs) from a cam (at the present time at least) showing the progress of the lava flow from the Geldingadalir volcano into Nátthagi valley and threatening parts of the Peninsular ring road, fibre optic cables and potentially much more. There are several other good providers including Reykjavik Grapevine, GutnTog and Daily Iceland (e.g. <https://www.youtube.com/watch?v=n1f1DmREmUo>). <https://icelandmonitor.mbl.is/news/> has news coverage in English.

Volcano Discovery provides some more scientific coverage at <https://www.volcanodiscovery.com/reykjanes/crisis2021/current-activity.html>

THE TUROA ALPINE FLUSH



KAREN GRIMWADE

PROJECT TONGARIRO
EXECUTIVE MEMBER

What Project Tongariro is doing to help project the TAF - May 2021 update

It is easy to miss the Turoa Alpine Flush (TAF) – and even when it is pointed out, then to wonder what is special about it. It is a rather easily-over-looked alpine wetland in a very central and busy location, tucked just below the Top-of-the-Road main café at Turoa Skifield.



A wide variety of plant growing in the Turoa Alpine Flush with the skifield chairlifts above.. *Photo: Karen Grimwade*



Turoa Alpine Flush – surrounded by ski field development – at risk from people (trampling), workers (machinery), construction (debris, silt) and hare browse. Ironically deer would usually be expected to be a problem – but might be deterred by the proximity to people. *Photo: Karen Grimwade*

It is the only alpine wetland – known as alpine ‘flush’ – to exist in the middle of a ski area amenities zone.

It has a bit of a history

When commercial ski lifts were first built at Turoa in 1978/79, the little wetland (known as an alpine flush) was identified as a special place and excluded from the Skifield Amenities Area. At first the little wetland was fenced, and although the early ski field operators were cynical about the point in keeping it safe – they mostly did so. But over the years the fence fell into disrepair and the staff changed over – both at the ski field and the Department of Conservation (DOC). Consequently, the poor little wetland got a bit of a



The variety of plants in the Turoa Alpine Flush – plus a bit of hare poo!. *Photo: Karen Grimwade*

battering, especially after the fence disintegrated and was not replaced. Construction above the flush resulted in silt washing into it, skiers and sledgers trudging through it and ski area workers travelling through, all these things and more, contributed to degradation. There has been hare browse and maybe deer also – hare poo being fairly easy to spot right now.

Over the years, reports were written about how special the flush was, but DOC priorities and budgets came and went – the ski area management argued that there were better wetlands nearby (I'll come to that) and why bother with this one. Through these times, somehow the Turoa Alpine Flush survived - but did not thrive.

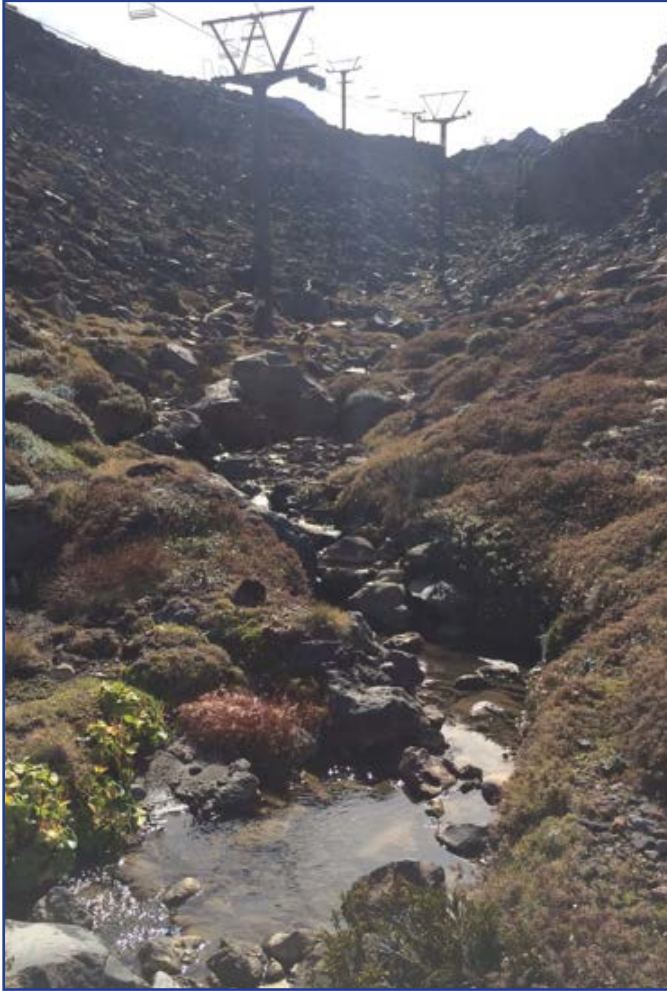
So, the eventful year of 2020 came along. Perhaps it was Covid, or the possibility of the proposed gondola footings being built near the flush, or perhaps the time was just right, but the combination of circumstances put the spotlight on the Turoa Alpine Flush and Project Tongariro resolved to advocate for the TAF as an area that we can and should do something to take care of.

Why is it special?

It is the only alpine wetland – know as alpine 'flush' – to exist in the middle of a ski area amenities zone. This location, for all the good and bad of it, is highly accessible which is a challenge, but also unique. This alpine flush, more than any of the others on the southern slopes of Ruapehu, has now become a symbol of surprising resilience.

Accessibility and resilience make this flush in particular worth protecting. Although there are other more spectacular flush areas – this one is the most likely, by far, to be visited and seen – and thus its location a challenge, and importantly, an opportunity.

There are 25 or so alpine flush wetlands of this type that exist on the south western slopes of Mount Ruapehu at an altitude of 1500 – 2000 metres above sea level. They are fuelled by springs and streams that flow over and through the volcanic rock landscape. They create their own small eco-system whereby a multitude of alpine plants cluster together in a mosaic of variety and lush alpine life. Some of the plants are incredibly tiny – others more spectacular



More than 60 plant species have been identified in the Turoa Alpine Flush. *Photo: Karen Grimwade*

such as the famous alpine buttercup (*Ranunculus*), but all thrive on the excess of water, and the company of each other in a dense formation giving mutual shelter and attracting pollinators, mostly moths and butterflies attracted to their white or yellow flowers.

There are over 100 plants species that have been identified living in the SW Alpine Flushes. Over 60 in the Turoa Alpine Flush – their small size belying the amazing diversity there. New discoveries are still being made, a newly found cress, *Cardamine panatohea* just recently discovered nearby.

So what is Project Tongariro doing?

Although a report in the 1990s suggested restoration work be done – we are fairly confident that if the flush is protected, it will gradually restore itself.

So first we had a hui – we now have DOC, RAL (ski field management) and Ngati Rangī on board with a plan. We would like to reinstall the old snow pole that measured the snow depth – which when at a suitable level gives the ski field workers the go ahead to cross on machinery without doing damage. Also,



Ranunculus seed heads. During summer these would have been large bright shiny yellow flowers.

Photo: Karen Grimwade

a new barrier/fence down the eastern side the alpine flush – to indicate to skiers and workers to take care. Conservation consultant, Herwi Scheltus, is working with RAL and DOC to achieve this. We also had safety signs printed ready for quick installation by the RAL safety officer – just to give people a bit of a heads-up to take care of the TAF. These should be installed soon – when the new fence poles go up.

We have in planning phase interpretation panels explaining exactly what the Turoa Alpine Flush is – and what it represents. Ngati Rangī would like also to introduce their story and explain how they feel about their Koro (ancestor Ruapehu). Uenuku also have their own korero and we hope they can be part of the story too. And we will talk also about Tongariro National Park and the dual World Heritage Status – none of these things are explained at Turoa – and so it is an opportunity to tell some of these stories. These things take time as anybody who has been involved in interpretation knows, but we expect a great result with good participation by all parties.

Watch this space – hopefully next year we can report progress.

We hope if visitors are more aware – they take more care.

PREDATOR FREE TAUPŌ



ROBYN ELLIS

**PREDATOR FREE TAUPŌ
COORDINATOR**

Since Predator Free Taupō's launch in June 2017, we have helped establish 25 community trapping projects from the small 9 traps in a backyard gully regularly serviced by one volunteer - to the 235 traps running alongside the Waikato river with a roster of 20 volunteers!

There is a continual demand from the community that they want to be part of the Predator Free 2050 movement to do their bit, and Predator Free Taupō can connect and support groups and individuals.

A highlight for me was to be invited over to Waihaha to be part of a team to help establish a monitoring line of tracking tunnels, DOC 200 trap placement and assess

the weed issues. I got to hang out with some amazing people! Beryl, Rick and Marilyn were so keen to learn what they needed to do to look after their environment, it is such a beautiful special place and I got to share my knowledge and learnt so much from everyone else.

Throughout 2019-2021 Predator Free Taupō has been busy with many community events such as whanau nature days, conservation week and the annual Mahi Aroha Summer programme. At these events, we have provided trap building workshops and they are usually crazy busy with young and old keen to build a trap box to take home and put in their backyard. We have had great support with ITM Taupō continuing to supply the materials for the boxes and donations and funding from Nga Whenua Rahui, Predator free trust and Waikato Regional Council have made it possible to give away Rat Traps and also provide knowledgeable workshops to teach effective trapping practises. We also work alongside Kids Greening Taupō and have been engaged with many schools teaching students about pests, how to find out what's in your backyard and all about trapping and building boxes. We have been present at local markets and were invited to be part of the DOC display at the annual Sika show. Predator Free Taupō facilitates an annual winter talk to the community and



Donated timber from Taupō/Turangi ITM gave Predator Free Taupō a huge boost, enabling many trapping boxes to be made.
Photo: Robyn Ellis



Trapping workshops and the help of young and old gets trapping boxes built quickly. *Photo: Robyn Ellis*

in August 2019 we invited the nationally recognised native wildlife expert Cam Speedy and expert deer hunter and Kaimanawa trapper Gary Harwood to share their wisdom with us and 2020 we heard from Jess Scrimgeour about ferret impacts in the Tongariro

Kiwi Sanctuary and Haydn Steel and his Journey of developing the AT220 auto trap, Wairakei Golf & Sanctuary once again hosted us for these incredible two evenings.

Predator Free Taupō has been successful in supporting smaller groups with funding applications, Wairakei Thermal Valley has been able to set up a trapping network of 35 traps with a WRC small scale fund. A DOC Community Fund application for trapping a farmland/conservation estate boundary, Kawakawa Bay was successful. Taupō Forest and Bird leading the Opepe trapping project have been successful with applications for ongoing trapping resources along with the Waikato River Trapping project which has been able to extend their trapping network with donations from the local Wairakei Business community and has extended into the Craters mountain bike park.

Predator Free Taupō has been successful in a funding application from Baytrust to contribute towards the coordinator's wages as the Department of Conservation Community grant ended in 2021 and funds from the Waikato Regional Council Environmental initiative has provided trapping resources for ongoing workshops and support for projects

Predator Free Taupō was invited to a Tauhara Maunga Joint Trusts Working Group, where they welcomed new projects that would progress the goals in the restoration and protection of Mount Tauhara. We advised the establishment of a small pest monitoring network. We then applied for funds and were successful with the WWF community conservation fund to fund this



More trap boxes and more traps means less predators. *Photo: Robyn Ellis*

project. This is now finally getting established with the first monitoring to be undertaken over Spring 2021. Katy Glenie, our amazing Predator Free Taupō Chairperson stood down from the role in late 2019. Katy provided fantastic support and contributed greatly to the Predator Free Taupō group and I very much appreciated her support. We now need to find a replacement Chairperson so please let me know if you or you know of anyone that could be considered.

With the interruption of the Coronavirus, all servicing of traps were stopped, events were cancelled and no new projects were started. Once back to the new normal we have had new projects starting up with great support from Taupō District Council keen to get all urban gullies protected. We are planning many more events and getting more traps out there into projects and backyards. Keep your lure fresh, your trap set and happy trapping!



Every Dad needs a good helper! *Photo: Robyn Ellis*

TE MATAPUNA WETLANDS RESTORATION



KIRI TE WANO

**PROJECT TONGARIRO
COORDINATOR**

Project Tongariro's 'wider' wetland restoration project Te Matapuna is now into it's 17th year. Currently we are focusing on three distinct projects in partnership with land owners and funders.

The first and longest project sees the finalisation



of the latest funding from the Waikato Catchment Ecological Enhancement Trust (WCEET). Over the last 16 year the WCEET Trust have funded over \$684,000 for Willow control in the Te Matapuna (south Lake Taupō) Wetlands. This last project finished previous work controlling willows on the Waiotaka Recreation and Scenic reserves utilizing aerial spot spraying. The Department of Conservation's local office (Turangi) have undertaken to maintain the gains we've made with WCEETs funding over a wider 71 hectares of public conservation reserve land.



Keen Rongomai kids pick up pots on a community planting day. *Photo Project Tongariro*



A Facebook advert - posters and advertising kindly designed by Hero Singers



Murray Nielson (NurseryMan for Department of Corrections) helps a Ngāti Rongomai kaumatua plant a symbolic kowhai as project partners. *Photo: Project Tongariro*

Completing this piece of work is a major milestone as this project was initially started back in 2001! Controlling willows in this important 'kidneys for Lake Taupō' landscape, has meant that wetland biodiversity has been improved and maintained. These areas are important habitat for Australasian bittern (matuku), the spotless crake (pūweto) and the fernbird (mātātā). Looking to the future, we have a few small wetland project plans on neighbouring private land that were developed by our volunteer ecologist Nick Singers that we hope to start in the near future.



Top left: Nick Singers and Warrick Simmonds laying out plants for a community plantain day April 2020

Top right: Paul Green plants a symbolic kowhai for PT as a partner in the restoration project April 2021

Bottom: A community planting group is warmly welcomed onto Rongomai Marae April 2020. *Photos: Project Tongariro*

Department of Conservation
Te Papa Atawhai

DEPARTMENT OF CORRECTIONS
ARA POUTAMA AOTEAROA

Nicholas Singers
Ecological Solutions
Innovation in conservation

Waikato
REGIONAL COUNCIL
Te Kāwhiri o Waikato

Ngāi Singens

A massive thank you to our
FUNDERS & PROJECT PARTNERS

THE CROMBIE LOCKWOOD KIWI BURROW



**HELEN
McCORMICK**

**KIWI HUSBANDRY
MANAGER**

On a mission to save the kiwi

Can you imagine an Aotearoa without the kiwi?

Neither can we.

But, the kiwi is declining at a rate of 2% every year in areas where there is no predator management – that's around 27 birds a week – which isn't good news for the ongoing survival of New Zealand's national icon.

Thanks to the work of one facility located in the centre of the North Island, though, things are looking up.

The vision

Wairakei Golf + Sanctuary just north of Taupō has become a safe haven for a variety of flora and fauna since the installation of a five kilometre predator-proof fence around the golf course since 2012. As reported in the Tongariro Journal in 2017, it has become home to South Island takahē and New Zealand falcon, and has become a crèche for North Island brown kiwi until they are big enough to be returned to their natal area.



In 2019, an exciting new addition was added to the work being done at the Sanctuary. Kiwis for kiwi, the national charity for saving the kiwi, recognised the need for additional capacity to hatch kiwi eggs, and rear the resulting chicks for release as part of a programme to boost the numbers of kiwi in forests around the North Island. There were already several facilities

This is where Kiwis for kiwi comes in. Male kiwi have a transmitter placed on their leg so they can be monitored to determine when they are incubating



A kiwi chick working hard to hatch out of an egg.

Photo: Helen McCormick



An inquisitive chick in the brooder. *Photo: Helen McCormick*

undertaking this work very successfully, most notably the National Kiwi Hatchery at Rotorua's Rainbow Springs, but to really reverse the tide of the decline of kiwi and to achieve a population gain of 2% per annum, we needed to increase the number of kiwi eggs being incubated and chicks hatched.

With this vision in mind, and thanks to Crombie Lockwood coming on board as a major sponsor, Kiwis for kiwi established a purpose-built incubation facility within the predator proof sanctuary, with the blessing



The first kiwi chick of the 2020/21 season to hatch, with (L-R) Kym Eagleson, Helen and Kelsi Thompson. *Photo: Helen McCormick*

of sanctuary's owner, Gary Lane. In October 2019, the Crombie Lockwood Kiwi Burrow opened its doors to its first kiwi eggs from Taranaki. Having opened part way through the kiwi breeding season and operations being interrupted by COVID level 4 lockdown in March 2020, the facility hatched 23 chicks in its first year. It was with great anticipation, then, that the team at the Burrow approached the 2020/21 season.

This work is achieved by a huge number of partnerships, from community-led kiwi conservation groups, iwi, DOC, landowners, businesses, and individuals.

A journey for life

But how does this programme work? It starts deep within the forests of Taranaki where kiwi still roam wild and free. But so do introduced predators such as stoats. This means that despite the best efforts of these kiwi, less than 5% of kiwi chicks that hatch in the wild will make it to adulthood, with most deaths being due to predation.

eggs. When the oldest of the two eggs is around 60 days, they are carefully lifted from under the male and transported over 250 kilometres north to the Crombie Lockwood Kiwi Burrow. On arrival, we determine if the eggs are fertile and if so, how old the developing embryo inside the egg is. This process is called candling and involves shining a bright light into the egg while in a darkened room, allowing us to see the contents of the egg. Developing eggs will be moved into an incubator and are checked twice a week until we see the first signs of hatching. From that point they are monitored twice daily

until they hatch, a process that usually takes 3-5 days.



A daily check with Kim McGuire. *Photo: Helen McCormick*

After the chicks hatch and have dried out in “fluffers” for a few days, young chicks are moved into a brooder where they can move around and explore. While a lot of kiwi behaviour is instinctive, some chicks will need help to learn how to eat the artificial diet that we give them, as we cannot provide enough of the natural food that they would eat in the wild. Once they are



A five-day old kiwi chick. *Photo: Helen McCormick*

happily eating and regain their hatch weight, they are ready for the next step in their journey.

Kōhanga strategy

Kōhanga sites are predator free sites (usually islands or fenced sites) where kiwi can live and breed in safety. For most of the chicks hatched at the Crombie Lockwood Kiwi Burrow, that site is Sanctuary Mountain Maungatautari in the Waikato. The entire 3,400-hectare mountain, which is fully fenced and predator free, is one of the largest projects of its kind in the world and has the capacity to be home to 680 pairs of kiwi.

Most kiwi chicks are ready to go to Sanctuary Mountain Maungatautari at around three weeks of age. They are microchipped and have a thorough check up, before

being released into the forest to live as a wild kiwi without the threat of predation. This is where they will live for their lifetime ... but the story isn't over yet. They will grow, find a mate and breed, and as the Kōhanga site becomes full, juvenile kiwi at over 1kg of weight (when they can defend themselves from stoats) can be returned to predator-controlled sites in Taranaki and complete the full circle. By using this Kōhanga strategy, the number of kiwi available for relocation will build quickly.

103 kiwi chicks and counting!

So, back to this season. It was a slow start with eggs just trickling in, so we initially thought we would be lucky to hatch around 60 eggs for the season. September saw us hatch just three eggs, but it was ramping up with a lot of egg arrivals. We stayed busy through October with an almost continual hatching of chicks, seeing us welcome 22. This is traditionally our busiest month so while we were happy with the numbers hatched, it didn't look like it would be a bumper season. November and December remained busy with another 15 and 10 chick arrivals respectively.

North Island brown kiwi usually have two clutches of eggs a year, and by Christmas most of the first clutch eggs have been lifted and hatched. Typically, the number of birds laying second clutch eggs is lower, so we expected a real slow down with egg arrivals



A group of local children visits the Burrow as part of a tour run by Kids Greening Taupō and Contact Energy. *Photo: Sian Moffitt*

in the new year. However, January and February saw us hatch 18 and 19 eggs, nearly as busy as our usual peak of October! At this point we were more than happy with how the season had progressed. Still, we were getting more egg arrivals, and March saw another 12 new kiwi chicks. By this point things were slowing right down and we thought we had received our last egg. We had four hatches in April with the latest chick hatching on the 18th of the month.

This brought us to 103 hatches which exceeded all expectations for the season. We still had one egg being incubated but were not expecting any more arrivals, because kiwi in the wild at this time of the year are busy feeding and building themselves up for the winter. But then we got a call that there was a male still sitting on eggs in the wild. His eggs would not be ready to lift until the 12th of May!

The final tally may not be in yet, but regardless, we have made good progress this year with building up numbers of kiwi chicks at Sanctuary Mountain Maungatautari. We often think of the chicks living their lives out in the forest and dream of their offspring returning to Taranaki.

The Power of partnerships

The team at the Burrow feels very privileged to be kaitiaki of kiwi for their short stay here. But our job is just one part of a very large process including identifying and catching kiwi in the forests, lifting and transporting the eggs, releasing the chicks, and managing predators in the forest that the offspring of these kiwi will return to.

This work is achieved by a huge number of partnerships, from community-led kiwi conservation groups, iwi, DOC, landowners, businesses, and individuals. Programmes like Mahi Aroha and Kids Greening Taupō, that we had the privilege of showing through the Burrow and hosting at the creche, are vital to spread the word and to build enthusiasm for and love of our wildlife. Without the dedication and help of all these people and organisations, it would not be possible to achieve the fantastic outcomes that we are seeing. We look forward to continuing the hard mahi to ensure that kiwi go from endangered to everywhere.



ORUATUA RECREATION RESERVE RESTORATION



SHIRLEY POTTER

**PROJECT TONGARIRO
EXECUTIVE MEMBER**

The two years, from 1 July 2019 to 30 June 2021, have been busy and productive with a conservative 4000 volunteer hours spent on a raft of tasks including; land preparation, wilding pine removal, hand releasing (weeding), planting and spray releasing of previous year plants.

Funding to enable this work has come from Waikato Catchment Ecological Enhancement Trust (WCEET), Te Uru Rakau (part of Ministry for Primary Industries billion dollar tree fund), Waikato Regional Council (WRC), DOC, the Sargood Trust and contributions from the Challenge Service Station. Te Uru Rakau

If you haven't visited the area come and take a look, we'd love to give you the tour and show you the progression of our work since 2014.

have committed to funding trees for 1 hectare per year for the next 3 years. The past two years Te Uru Rakau funds have been in memory of returned service personnel. The next three years will be in memory of our kaumatua, Jim Maniapoto. I remember conversations with Jim where he recalled flocks of kereru up Kiko road when he was a child. I hope that one day we may see those numbers of kereru again.

We have also received donations from local residents and holiday home owners to support our work – a whopping \$7,900 to date.

Hand releasing has been carried out by Project Tongariro vollies and several volunteer groups such as

the Air Force, Genesis staff, Perception Planning staff, Little Brown Kiwi students, Nga Whenua Rahui cadets and St Kentigens College. Any help is greatly valued and we hope that those involved will return to see the forest progress for years to come.



Nicky and Suzie have worked releasing our plantings since October 2020. *Photo: Shirley Potter*

Thanks to the Sargood Trust we were able to employ Nicky Schrader and Suzie Deroles part time as our main releasing crew (with me working alongside as a volunteer). Their paid work began in October 2020 and will continue until the money runs out. They are both fantastic workers with great commitment to the project.

Covid levels resulted in the postponement of our planned April 2020 planting. This was ironic, as we had finally produced a calendar for the entire years planting! The lockdown didn't slow us down too much, it just delayed our first planting day. Foot traffic through the reserve was way more than normal, so it seemed like a great opportunity to 'snag' a few helpers!

Penny and Martin were "trapped" in the area. After bumping into them at a 'safe distance' I asked if they were interested in a little weeding work? They jumped at the chance and worked for at least an hour every day for two months. And they kept thanking me for the opportunity to do something useful! Penny and Martin also came back and helped with our June 20th, 2020 planting and stayed for a few extra days to assist in their old stomping ground. They have also returned a couple of times to help out.



Our two Lockdown Legends, Martin and Penny.

Photo: Shirley Potter

There were three community planting days in 2020. The 2021 planting dates are 8th May, 17th July and 14th August. At the time of writing this we have completed the May planting with our first 2200 plants for the year in the ground.

We usually have around 50 people at each planting day which is pretty impressive for our small community. It is very pleasing to see new people turn up each time. Kaumatua Te Kanawa Pitiroi and his wife Katarina kindly set our planting days in motion with a karakia. It was with sadness that they remembered their son Mike who was with them at our planting last year.

Rotary Lower Hutt travel up for the weekend and have assisted with around 14 people on our 2020 and 2021 plantings. A lovely commitment, now in its 4th year. From July 2019 to the end of June 2021 we have planted 9939 trees.

We are endeavouring to have most of the holes dug with a post hole borer in the days before the planting day. This method allows us to plant more trees in a shorter time and hopefully results in a better planted tree. It is also easier than hand digging when there is a lot of mulched wood in the soil, as per a lot of our planting areas mulched by Bryan.

Bryan Lawrance has again been our saviour with his tractor work. Firstly creating access for spraying and then with follow up mulching work once the weeds

were sprayed and well dead. Bryan has also donated many days of work with his machines working alongside Warrick to pull over difficult pines. Warrick Simmonds and friends felled around 20 more wilding pines.

Bryan and I also pulled out an old farm fence, a horrible job as it was tangled in a mess of blackberry and trees.

Nick Singers is again a key player with planning, expert advice and, very importantly, the hard physical yards on the ground spraying the damn weeds. Ardy, Collette, Sarah and many others are all instrumental in different aspects of this project. Mark Brightwell has moved in permanently next door and is a great help assisting with weed spraying using our 100 litre spray tank on his quad bike. Our other neighbour, Pauline, has become queen of the morning teas on site and our BBQ lunch. She is a welcome sight for thirsty and hungry workers.

Thanks to DOC for removing the tangled fence wire for us, for staff to help on plant layout days, loaning us equipment, and installing 'no access' signs at the stop bank to discourage random vehicle access.

Taupō District Council kindly loan us one of their staff, Tania, and a flat deck ute for moving plants onto the site. Ian and Frances Jenkins have donated hundreds of beautiful trees each year. The trees they have donated in 2014 now have birds nesting in them. Several groups have had tours through our planting including; the Turangi garden club as part of their two yearly garden ramble, DOC staff, a regional council group and Perception Planning staff.

Predator trapping continues throughout the reserve and the bird numbers keep increasing.



Plant moving from Corrections. *Photo: Shirley Potter*



Ardy hand watering a juvenile totara. *Photo: Shirley Potter*

When the kowhai was in flower this year I witnessed a group of at least sixty tui. I believe the collective noun is a battery or ecstasy; the latter term certainly summed up my emotions!

Rabbit and hare control is frustrating and an ongoing job. Many of the rabbits' favourite plants have mesh protective cages and our friends are eating lots of rabbit casserole! Kereru numbers are growing, with a group of eleven seen in our planting area. Most exciting is the permanent presence of Miromiro (Tomtits). Just before lockdown we only had the odd single bird, since then we often see or hear at least three or four birds in the reserve. We suspect the main reason they moved in is due to their home in the pines being felled over the river. The restoration planting will be providing great habitat for these birds. One juvenile Miromiro was seen in December 2020 and several months later I witnessed a juvenile being fed – it doesn't get much better!

The last two years summer dry spells have been a big challenge for tree survival and it is the main reason for any plant loss. Thanks to some watering by hand, I estimate we lost less than 10% of our plants.

A big flood in September 2020 gave us the "opportunity" to replant around 200 trees! The timing was only a month out from our last planting so was rather unfortunate. A bonus layer of silt was left to fertilise the plants.

At the end of the 2021 planting season we will have planted 23,300 plants since we began our mission in 2014.

Thanks to Tongariro Prison we now have some routed timber signs to show the year when groups of trees were planted. The Tongariro Turangi Community

Board funded thirteen botanical signs to help educate people about features of some of our plants. It is great to show the progression of our restoration work.



A Toutouwai (Robin) is sometimes heard over the river. In early May 2021 it visited our patch and was heard again later in that month. *Photo: Shirley Potter*



New routed signs from the Tongariro Prison in place August 2020. *Photo: Shirley Potter*



September flooding – 10 minutes later the water would have been over Williams waist. *Photo: Shirley Potter*



Installing botanical signs sponsored by Turangi Tongariro Community Board. *Photo: Shirley Potter*

Highlights

- The number of volunteers turning up to our plantings
- Miromiro (Tomtit) breeding and remaining resident
- Native plants self-seeding in the thousands
- Working with Nicky and Suzie releasing over the summer
- Finding new wacky 'things' like Dog Vomit Slime
- Securing Te Uru Rakau funding for 1 hectare per year for next 3 years as a memorial to local well respected Kaumatua Jim Maniapoto
- Seeing a school kid photograph one of the botanical signs shortly after installation
- Hearing that Dave Lumley (operations manager DOC) said at the DOC monthly meeting that my talk to the WCEET board was the highlight of his month.

Lowlights

- Not being able to water plants during the dry period (not enough hours in the day!)
- Flood in September 2020 – having to replant a few hundred trees
- Plunging my grubber into a wasp nest and paying the price!

We are grateful to everyone for helping to make the dream possible. If you haven't visited the area come and take a look, I'd love to give you a tour and show you the progression of our work since 2014.



Nicky 'retired' in March 2021 as her baby bump was getting in the way! Three week old Hendrikus Te Atiawa joined us for his first planting in May 2021. *Photo: Shirley Potter*



Dog vomit slime (*Fuligo septica*) appeared in our 2020 plantings on pine mulch. *Photo: Shirley Potter*

Inaturalist says – "This organism consists of a single cell with many nuclei. It moves like an amoeba, searching for nutrients. Amazingly, slime moulds also seem to have a kind of "external memory" despite not having a brain. By leaving behind bits of slime, these organisms can "map" which areas they've already covered in their hunt for food."

Sadly I never had a chance to see how far and fast it moves as a few days later the area had been visited by a pig and it disappeared.



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THE OPEPE TRAPPING PROJECT



NICK GREEN

**PREDATOR FREE TAUPŌ
TOURISM CONSULTANT**

The Opepe Trapping Project is a joint venture between Forest & Bird, Predator Free Taupō (PFT) and DOC.

Its aim is to reduce predator numbers across the Opepe Scenic and Historic Reserve (198ha). The Reserve is located 15km east of Taupō and is bisected by the Napier-Taupō Highway (SH5). This rare dual status Reserve covers a remnant of mature podocarp forest, mainly on the north side, and regenerating bush on the south. The Reserve is also notable for the presence of *Dactylanthus taylorii* or Pua-o-te reinga/the Flower of Hades or Wood Rose.



Figure 1: Opepe Stockade c1871. *Photo: Nick Green*

It gains its historic status from a military engagement between a Te Kooti scouting force and a poorly prepared Crown troop in June 1869. A small cemetery holds the graves of nine troopers who lost their lives there. The Opepe Stockade (pictured below) was constructed to stop further incursions and protect the workers constructing the telegraph line between Taupō and Napier.

In October 2017, 36 DOC200 traps were deployed along the two walking tracks at the reserve under the guidance of DOC personnel, 12 along the North Track and 24 along the South Track at approximately 100m spacings.



Figure 2: DOC workers and Opepe volunteers. *Photo: Nick Green*

A roster was set up for volunteers drawn from Forest & Bird and PFT to enable checking of the traps every week and rebaiting with cat and mustelid blocks every month. Trapping was successful in that significant numbers of predators were killed and unsurprisingly, higher concentrations around the carparks associated with human waste.

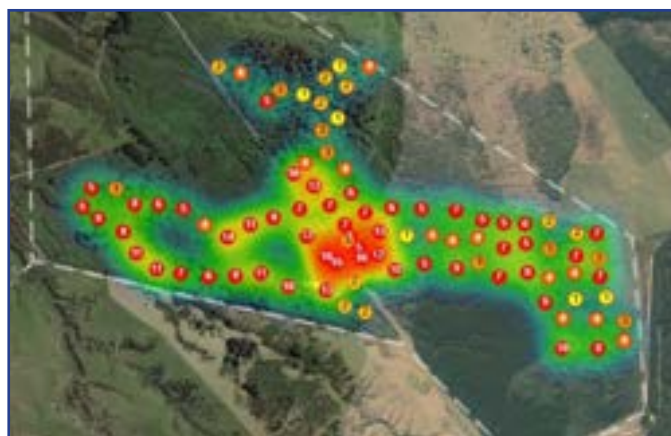


Figure 3: Heat Map of catches in DOC200 traps. *Photo: Nick Green*

It soon became apparent that trapping along single tracks would not have a significant impact on predator numbers as the trap distribution effectively allowed for infinite re-infestation. In response, 38 DOC 200 traps were deployed to block out the central portion of the Reserve on the north side at 100m grid spacings, the Graveyard Loops Line. Later a further 21 DOC 200



Figure 4: Rat caught in a Warrior trap. *Photo: Nick Green*
traps were installed at similar spacings to complete coverage north of the Highway, the Big Gully Line.

In parallel with the DOC200 trapping, ten Goodnature A12 and four Timms possum traps were introduced and moved through the Reserve. The Project was offered a number of used Warrior possum traps and 59 of these have been installed. In addition, early experimental work with a NZ Autotraps AT220 and Goodnature A24 traps produced encouraging results and there are now four AT220s and 20 A24s(Chirp heads) on site. A SA2 Kat Trap has also been used but with little result.

Many of the lessons that the volunteers have learned at Opepe have come from watching predator interaction with all the different trap types via trail camera videos. For example, one video showed a possum walking past a Timms trap to an Goodnature A24 trap and trying everything it could to get to the bait. This led directly to the use of the Goodnature Rat and Mouse lure in Warrior and Timms traps to very good effect. The corollary was watching rats sneak into Warrior traps and lick off the Goodnature possum lure with impunity (most of the time).

This led to the introduction of TRex rat traps in boxes below affected Warriors, again with some success. The first deployment of five Goodnature A24 traps with Chirp heads saw two losing their heads in the first week, one of which was never found. It transpired that this was in exactly the same location where a Goodnature A12 had been beheaded a year earlier.



Figure 5: Possum attempting to unscrew Chirp head off Goodnature A24. *Photo: Nick Green*

The replacement Chirp heads were taped in place, the trail camera installed and the culprit soon showed up. In a classic piece of learned behaviour the possum tried to twist the head off the Goodnature A24

A NZ Autotraps AT220 was attached to the same tree as the previous Goodnature A12 and over the ensuing weeks, 14 possums were killed by that single trap. It transpired that possums were not the only predator learning about traps and possible free dinners. The trail camera filmed a family of pigs that would return nightly to the AT220 and feed on the latest possum to hit the ground. Without the camera the actual number of kills would be unknown.



Figure 6: Boar selecting dinner. *Photo: Nick Green*

Trap Type	Number	Kills	Introduction	Comment	Rating
					(June 2020)
A12	10	36 Possums	March 2018		3
A24	26	251 Rats, 8 HHogs	July 2019	March 2020	43
AT220	4	34 Possums, 15 Rats	July 2019	March 2020	165
DOC200	102	1245 Rats, 347 HHogs, 51 Stoats, 61 Mice, 15 Weasels, 4 Ferrets, 2 Cats	October 2017	Started with 36	16
DOC250	1	4 HHogs, 1 Rat, 2 Mouse	Feb 2020		Poor
SA2 Kat Trap	1	2 HHogs	Jan2020		V Poor
Timms	9	100 Possums, 14 HHogs, 9 Rats	July2018	Up 23 moves	38
TRex	15	51 Rats, 2 HHogs, 1 Mouse	August 2020	Protect Warrior bait	V Good
Warrior	59	210 Possums, 4 Rats, 1 Stoat	March 2019	Free	19 (moved), 6 (fixed)
Total	227	1,990			

Figure 7: Current arsenal, kills and trap type ratings

The Opepe Project receives funding from a number of sources on a semi-regular basis. Funding applications are lodged and one question kept on arising – which traps are better than others. There is no sense in acquiring traps that do not seem to be performing in the Opepe environment. The TrapNZ database was searched, Excel spreadsheets built and a metric based on kills per day deployed per individual trap derived and compiled as a comparative tool. The results are outlined below. There are a number of caveats on these results, the most obvious being the number (N) of traps of different types. Regardless, the Project found the work useful in deciding whether to buy more Goodnature A12s or Timms traps. Another intriguing result was the remarkable consistency of the DOC200 traps with the North Line recording a rating of 16, South Line 16 and Graveyard Loops 18.

Whilst funding is reasonably easy to achieve, the Opepe Project is cognisant of its volunteer base. Most of the volunteers prefer not to check traps away from the formed paths in the gully ridden hinterland of the Project area. This has seen the move away from DOC200 traps to the automatically resetting Goodnature A24 (rats and hedgehogs) and

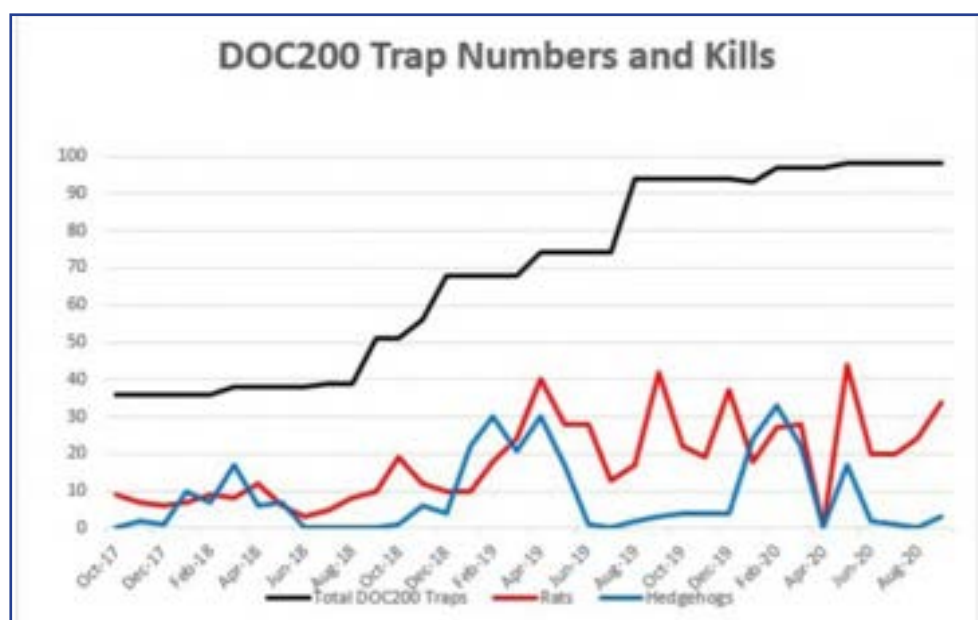


Figure 8: Number of DOC200 traps and rats/hedgehogs killed

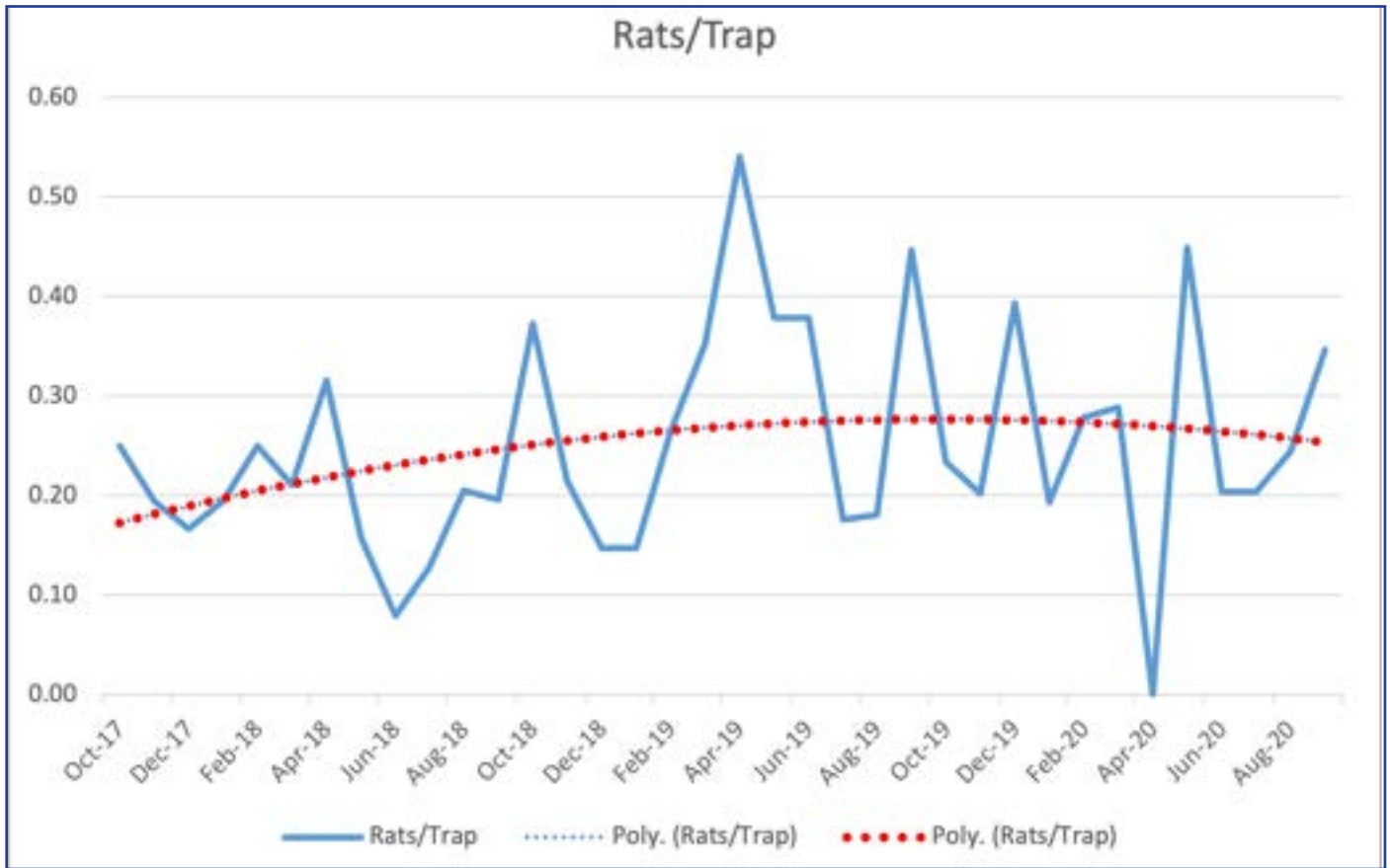


Figure 9: Polynomial trend line of rats killed per trap for the whole project.

NZ Autotrap AT220 (rats and possums) traps for the more remote areas so checking can be carried out once a month by volunteers more experienced in the bush.

Another question that arises and many other trappers will have heard it is – “How is it going?” On the face of

it trapping is a “no lose” scenario. If the kill numbers are high then this reflects success and if numbers are low then this is also success as trapping is lowering the numbers. In the business of commercial killing of predators there are a number of statistical metrics accepted by those paying the bills of the contractors carrying out the work. The most common of these

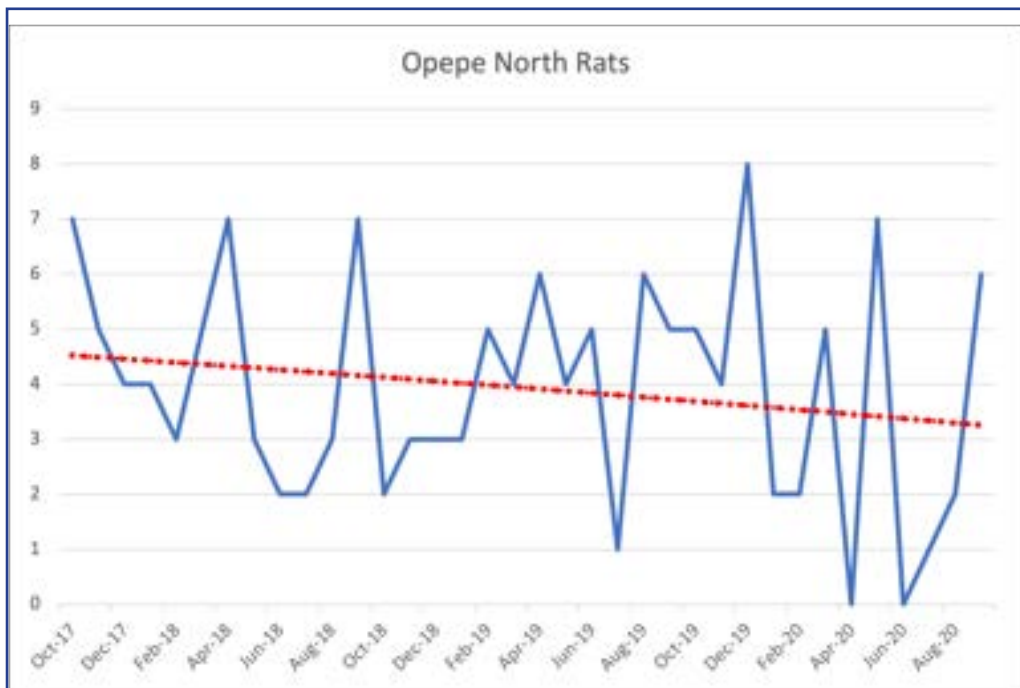


Figure 10: Polynomial trend of Rats killed/trap over time along the North Line.

metrics is the residual trap catch (RTC). The protocols around the RTC include a minimum area, which is larger than Opepe so the RTC approach is not valid for Opepe. Therefore, a trend analysis approach was attempted in order to discern any patterns over time. From a statistical aspect, only rats caught in DOC200 traps fulfilled reasonable criteria of numbers and time.

The raw data in Figure 7 requires normalizing with the number of traps deployed over time.

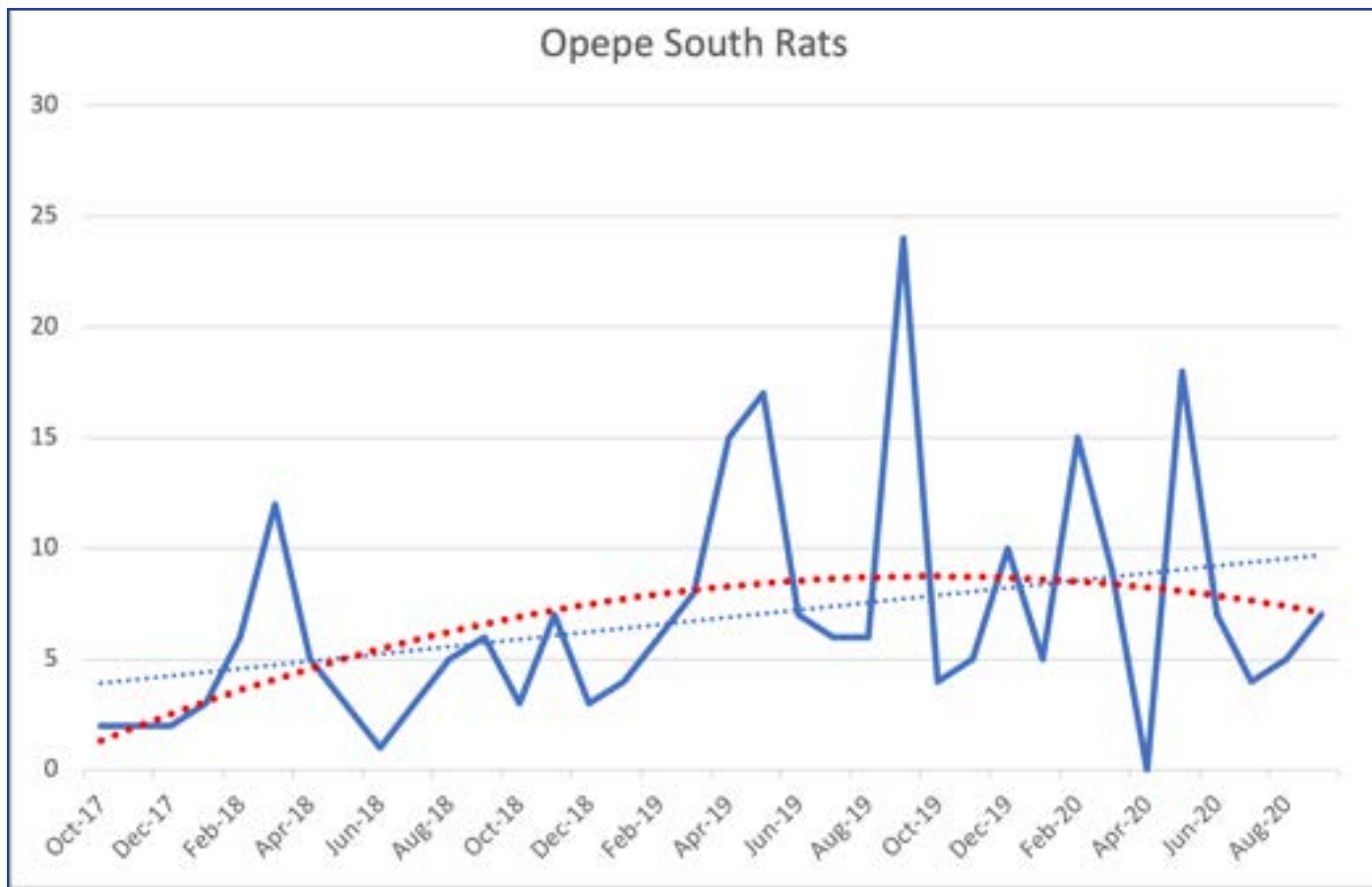


Figure 11: Polynomial (red) and linear (blue) trend lines for rats killed/trap along the South Line

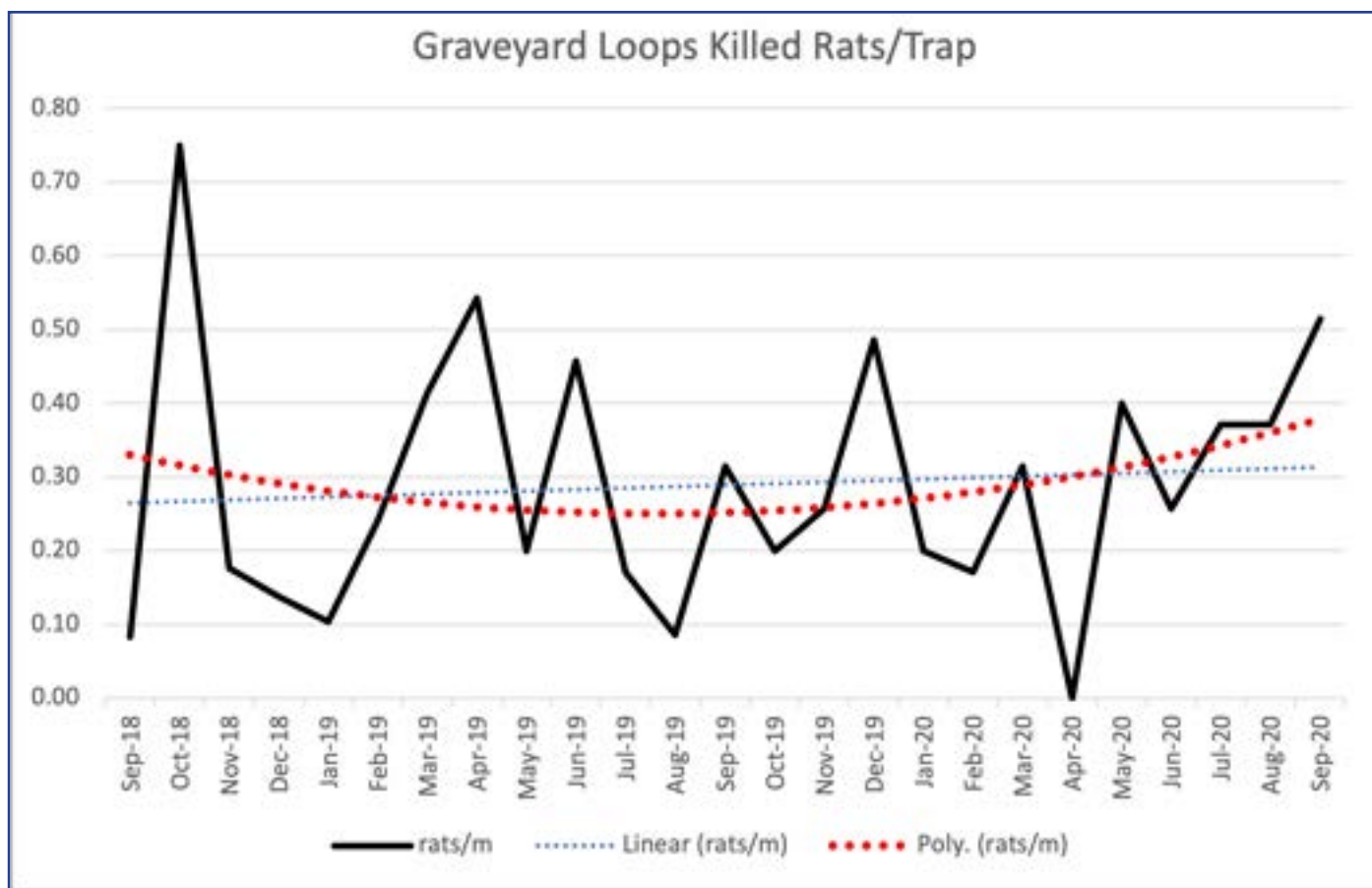


Figure 12: Polynomial (red) and linear (blue) trend lines for rats killed on the Graveyards Loops Line.

Whilst the Graveyards Loops graph appears to be showing a poor trend it needs to be borne in mind that it covers one less year than the two original lines. Overall, and in particular the North Line appears to indicate positive trends in rats killed. However, it is not clear at which point down the trend line that there is a clear and evident effect on the health of the ecosystem at Opepe. Anecdotally there has been no change in bird numbers at Opepe.

The future of the Project will revolve around addressing the following factors;

- Maintaining the volunteer base
- In-filling the south side with appropriate traps
- The focus on resetting traps may allow on-going mustelid incursion
- A strategy around trapping feral cats (always seen by trail cameras but never caught) is required
- Use of safe poisons for selected predator types



Opepe village, about 1880. An Armed Constabulary stockade, occupied from 1869 to 1885, was situated on the western escarpment. Only the ruins of one old building remain in the township area. The building with a washing line in front is the hotel.

ŌWHAOKO A



NGĀ WHENUA RĀHUI

Winter weather is often bitter in the remote rugged ranges south-east of Lake Taupō. But it has not deterred supervisor Tāne Lawless and his new team of rangatahi from getting on with their training as taiao kaimahi for some of this area. The team are learning skills to protect the exceptionally rich biodiversity of indigenous plants and wildlife on the whenua of Ōwhaoko A East and A1B Blocks Trust (Ōwhaoko A).

and weather dependent. The secluded whenua is spectacular: steep hillsides of mountain beech forest, mānuka shrublands, and red tussock on the valley floors. Waters of the Ngaruroro river and Mangamaire Stream are in pristine condition.

Tāne and his three taiao kaimahi are doing on-the-job training to protect the precious area with assistance from the kawenata that Ōwhaoko A signed last year. The covenant, safeguarding nearly 7000 hectares, is one of the largest agreed to between Māori landowners and Ngā Whenua Rāhui (NWR). It covers activities such as predator trapping, track management and protection of rare species. NWR has assisted so far with work planning, indigenous biodiversity surveying, connections with environmental specialists and the like. Kawenata funding helps to employ the trainee workers, along with financial support from Work and Income's mana in mahi programme and the trust itself.



The spectacular red tussock Ōwhaoko A valley floor. *Photo: Ngā Whenua Rāhui*

This whenua, on a high plateau between the Kaimanawa and Kaweka forests, is virtually untouched because its so difficult to reach. Winters are so harsh that even the tūpuna who foraged, fished and hunted there for hundreds of years came only for the warmer months. Helicopters are now the only way in and out, but they are expensive

Tāne and the team helicoptered into the land block only a few times this winter, striking snow on a "horrendous" visit to set their first trap line. Instead they've put the cold-weather time to good use in and around Taupō, learning some basic skills they will need in the busy warmer months in the ranges. In the Ōwhaoko A office base they have spent many hours



Tāne and the taiao kaimahi – Kieren Ross, Quentin Hunia and Simon Nicoll. *Photo: Ngā Whenua Rāhui*

online and at a whiteboard, studying topics such as trapping predators, GPS, hazard control, nutrition, pesticides and outdoor first aid. They are gaining formal qualifications through training providers like Primary Industry Training Organisation and Nelson Marlborough Institute of Technology/Department of Conservation and learning informally in many ways.

Māori understanding of how all living and non-living things are interrelated is integral to the training.



The only way in and out is by helicopter. *Photo: Ngā Whenua Rāhui*

Tāne and the taiao kaimahi – Kieran Ross, Quentin Hunia and Simon Nicoll – are all of Ngāti Tūwharetoa descent, and are Ōwhaoko A owners or closely related to owners.

“I didn’t know any of this stuff and I even learnt my whakapapa. Being out in the bush is probably the best part, it’s fresh out there, way better than in town.”

“Everyone’s learning about their family background, their pepeha, their identity,” says Tāne. “The more you learn your family tree, you learn your connection to all this land. Then our nature has a whakapapa of its own. If you learn where a miro tree is, you know the kererū will be there.” Identifying Māori names for plants and animals is part of the training and Tāne is keen to introduce the maramataka, the Māori lunar calendar, to better understand natural cycles on the whenua.



A high point view, a snippet of the pristine Ōwhaoko A whenua. *Photo: Ngā Whenua Rāhui*

During cooler months in Taupō the team have done many hīkoi on the local maunga Tauhara, to keep fit enough to handle the steep hillsides of their Ōwhaoko A block and to help with a whānau pest trapping project. Trapping will be a priority once they more regularly work on their whenua. "We're expecting to target stoats and rats, though we haven't got much data on them yet," Tāne says. "Possum and hare are up there too." Deer are stalked by hunters who helicopter in during the season, stay in cabins on the whenua, and report back the results of their hunt for pest monitoring purposes.

Building and maintaining tracks through the wild steep hillsides of the vast block is a massive task ahead, "clearing passages a bit at a time, each time we visit", says Tāne. The tracks are needed to set and monitor trap lines, as well as to monitor the presence and health of native flora and fauna. Tāne dreams of finding new breeds on the long-secluded land, perhaps birds or geckos, as well as introducing threatened creatures like takahē when pest numbers have been reduced.

Walking tracks are already established around one of the Ōwhaoko A business ventures on the whenua, Te Whare Ruruhaui. This ecotourist cabin offers off-the-grid luxury accommodation for people who helicopter into the untamed wilderness. "People come here to escape, to watch the birds and the stars and hear the amazing sounds," notes the trust's General Manager, Nina Andrews. "To experience wild perfection."

Honey production is another economic activity of Ōwhaoko A trust; monofloral, single source mānuka honey made each season by thousands of bees.

The kawenata agreement to protect the land connects all Ōwhaoko A activities to "one big, incredible circle", Nina believes. "It's fascinating that we can produce so much from a land-locked block of whenua. Our trust is very proactive - they have a vision; they explore options, and they make decisions with a view to produce the best outcomes for our landowners.

We've got a premium honey product because the land is protected with no pesticides. We've got people visiting to hunt and enjoy the wilderness. Now we've got a team of rangers (the taiao kaimahi) on permanent contracts. Our values are all about employing our people, providing a future for them, and protecting our whenua - having our rangers on board means we're fulfilling our values."

The taiao kaimahi are enthusiastic about their work. "I just always liked the bush, and this was an opportunity to learn more about it," says Kieran, who heard about the training possibility from his father. "How to look after the environment, especially getting rid of pests, learning what sort of plants we should be regenerating, the waterways, the native species of weeds and fish. It's good to have a connection where my ancestors were, looking after something that's part of us." Quentin learnt about the "opportunity to have a career while learning" from his grandfather, who is an Ōwhaoko A trustee. "I didn't know any of this stuff and I even learnt my whakapapa. Being out in the bush is probably the best part, it's fresh out there, way better than in town." Simon had moved north to Taupō seeking better opportunities and saw a good pathway working in te taiao. "I'm learning heaps," he says. "The different plants and animals, learning about my land and my ancestors. Its good having that because I can pass it onto my kids, and their kids can pass it on to our next generations. Its beautiful land, I love being out there. It helps me heal what I've been through in my life."

SNAIL MAIL



CANDACE GRAHAM

**COMMUNITY RANGER
DOC TONGARIRO**

The *Powelliphanta marchanti* - also known as Marchant's snail, is a giant carnivorous snail found only in the North Island and endemic to Aotearoa. Its shell is a yellowish brown to old-gold colour that averages around 40 mm in length. Many New Zealanders have unfortunately never seen a *Powelliphanta* snail, however collection of their shells was made illegal in 1982.

The Marchant's snail was discovered close beside the Rangitikei River and in the Otamateanui catchment of the southern Kaimanawa Ranges in the mid-



Overlooking the Rangitikei/Otamateanui Confluence – Southern Kaimanawa Ranges. *Photo: Candace Graham*

1970's. It occupies a relatively small, discrete habitat consisting of manuka and mountain beech forest litter.



Powelliphanta marchanti snail shells found during the Rangitikei monitoring trip in 2019. *Photo: Candace Graham*

Powelliphanta snail populations are in decline due to introduced predators such as rats, pigs, hedgehogs, brushtail possums and song thrush. However, possums were determined the main cause of mortality for snails here in 1998. Interestingly, the snail-eating behaviour of possums seems to be learnt, and it has been identified that possums on the true left of the Rangitikei river are predated on snails, while those on the true right are not.

In 1999, ground-based possum-control operations were initiated with the long-term goal of achieving a stable snail population greater than 12 per 100m². Possum management has been sustained annually since then, with the goal of keeping possum density below 2% residual trap catch (RTC).



DOC Staff from left to right: Stephen Robson, Tim Quinnell, Luke Poulsen, Ian McNickle, Candace Graham, Jo Mendonca, Tim Maule. Not Pictured: Brenda Lawson & Michel Dedual. *Photo: Candace Graham*

To determine whether possum control has a positive effect on snail density or not, around 39 snail monitoring plots were also established in 1999 among the treatment area. These plots are only

monitored once every five years, as the long-life span and slow growth rate of the snail mean that the benefits of possum control on the *P. marchanti* population take a long time to come to light.



'Snailers' moving through the first of 36 snail monitoring plots in 2019. The pink pegs identify where snails have been found. *Photo: Candace Graham*

In December 2019, nine DOC staff were transported into the Rangitikei/Otamateanui confluence for eight days, to conduct the fifth, five-yearly re-measure of snail numbers.

Each snail monitoring plot measures 10x10m, further divided into 5x5 m quadrants labelled A, B, C and D. For each plot, information about the weather, temperature, ground, and leaf litter conditions were recorded. Searchers then spread out along the base line of the plot and moved through it together.

When a shell is found the status of the snail (alive or dead) was recorded, and if dead whether it was intact (presumed dead from natural causes) or preyed upon. Also recorded was the diameter of the shell using Vernier callipers, and in what quadrant and plot the shell was found in.

Raking through the loose soil and leaf litter with their fingers, 'snailers' would leave no stone unturned in their hunt for a snail. If you could imagine, patting down every inch of the landscape on your hands and knees for 8 hours per day can be quite an undertaking. Despite the tough working conditions however, the team were enthusiastic throughout, and made somewhat of a competition out of the search that kept them going for the eight long days.

In the end, the results revealed a total of 129 live snails and 92 dead snails found across all 36 plots. Stephen (better known as Nobby), found the smallest live snail of 12.1mm, and the most dead snails. Tim Maule found the biggest live snail as well as the most live snails... Snailed it!

These results are a positive increase from 3.3 snails per 100m² in 2014, to 3.5 snails per 100m². The density of dead snails found had also notably decreased since the last measure in 2014, and for the first time ever, there was no evidence of possum predation. This suggested that the possum control being carried out in the Rangitikei area is having a positive effect on the snail population.

There was however an increase of shells found with bird predation, and we still remain very far from achieving the target of 12 live snails per 100m².

The Marchant's snail habitat is drying out, likely due to a combination of climate change/drought and impacts on their habitat by ungulates. The team noted high sika deer densities, and a significant lack of forest undergrowth caused by their browse. The dry and open understorey created by deer reduces the ground moisture and cover essential for snail survival, and the exploration of various deer control methods will be another necessary challenge that we have to face if we have any hope for the future of the forest and these precious taonga.



Jo Mendonca - The Snail Scale. *Photo: Candace Graham*



The largest live *P. marchanti* found in 2019 by Tim Maule

TAUPŌ FOR TOMORROW, TODAY



KRYSIA NOWAK

EDUCATOR TAUPŌ FISHERY



Sitting around a shared kai, the smiles are broad, the conversation non-stop, and planning is in full swing for the next shared offering of the Taupō Environmental Education Collaborative. But the Taupō area didn't always boast this vibrant scene.

Fifteen years ago, geology and education trained Thea De Petris recognised a gap in Taupō District education. The area was ready for something new. Something that would create a generation of critical thinkers who valued our natural resources. It would be called 'Taupō for Tomorrow'.



Founding educator Thea DePetris (standing) and past Genesis employee Bonny looking at food webs with students. *Photo: DOC*



Kids' fishing at the pond with Trout Centre Society volunteers. *Photo: DOC*

It's no easy feat to establish a new programme (though Thea has done it twice now!), and this was no exception, taking a team of enthusiastic supporters to bring it to life. The breadth of the support indicates how timely it was. Strong backing came from DOC Taupō Fishery Management Team and the Tongariro National Trout Centre Society, while significant sponsorship emerged from Genesis Energy. A unique partnership between government, a tiny non-profit, and a corporate, that has lasted 15 years.

The shared kaupapa was clear – to encourage critical thinking around balancing renewable resource use, particularly freshwater, using the



In the native freshwater fish aquarium. *Photo: DOC*



Current Taupō Trout Fishery manager Dave Conley had a stint as educator in the early days. *Photo: Sian Moffitt*



Educator Naomi with pre-school students at Tongariro National Trout Centre. *Photo: DOC*



Volunteer Shirley Potter and educators Karen (Ardy) Ardin & Krysia Nowak at a whio release into the hardening facility. *Photo: DOC*



Shared events, like this Whānau Nature Day, are a regular feature of the Taupō Environmental Education Collaborative. *Photo: DOC*

visible examples of the Taupō Trout Fishery and Tongariro Power Scheme. The beautiful environs of the Tongariro National Trout Centre and the opportunity to catch trout provided the platform for memorable education.

Over the years, the programme has evolved from just one part-time educator to 1.5 full-time roles, in response to the need and appetite for freshwater education. Local and visiting schools have been the focus, with community events, education resources and general advocacy also playing a part. But it is not just the programme evolving.

The Trout Centre has grown from a \$2 donation volunteer-run museum to now include a ground-breaking native freshwater fish aquarium, and the whio hardening facility, central to the North Island breed-for-release programme. These world-class facilities have enabled the programme to expand education opportunities and experiences. Trout remain fundamental to the programme, but with renewed focus (as in media) on our incredible native freshwater species including ika/fish, and whio/blue ducks.



Hands-on learning has been a mainstay of the programme.
Photo: DOC

From the initial foray into environmental education, Taupō for Tomorrow now occupies an enviable position, surrounded by organisations and people with shared kaupapa. Rather than operating alone, the environmental education space in Taupō now boasts a collaborative approach that sees each environmental education organisation reaching more hearts and minds. We should celebrate how far we've come, thanks, in no small part, to the vision of Thea De Petris.

This article marks both a celebration and a farewell. Fifteen years of sponsorship by Genesis has allowed the programme to grow into itself and its position in the Central North Island community. The time has come now to part ways, so on behalf of the programme we would like to thank Genesis for their commitment, enthusiasm and involvement over the years. We will continue to provide high quality freshwater education and honour the legacy of the partnership, and all those enthusiastic supporters who made it happen.

Past educator Mike Nicholson says, *"One of the great challenges and pleasures of the role was walking with a foot in three (sponsors) partners' camps, each with quite different wishes and needs but all working together to build something special."*

We couldn't put it better.



Past educator Mike Nicholson investigates macroinvertebrates with students. *Photo: DOC*



Educator Karen (Ardy) Ardin demonstrating a trap for high-school students. *Photo: DOC*

DACTYLANTHUS HAND-POLLINATION DAY



MARGI KEYS

**PROJECT TONGARIRO
MEMBER**

When the call from Karen Ardin (Ardy) went out via Kiri in early March, I was thrilled. The scheduled work day coincided with an annual MINTS (Margi's Intrepid Nature Trippers) trip in Tongariro National Park that had already been organised.

My five Auckland pals jumped for joy too, two of them being knowledgeable members of Auckland Botanical Society and aware of the endangered status of *Dactylanthus taylorii*. According to the DOC website, it is a highly unusual plant, holding a special place in New Zealand's indigenous flora as the only fully parasitic flowering plant and the southernmost

member of its mainly tropical family.

The Māori name for *dactylanthus* is 'pua o te reinga', meaning 'flower of the underworld', and alludes to the way its flowers emerge from below ground.

At the Turangi depot, we were introduced to one another. A karakia was given before our departure for the forest.

Our task was to carry in caging materials; assemble the cages; cage, label and GPS new plants; find flowers and hand-pollinate the female flowers.

It was a fabulous day in Kakaramea Forest, with an enthusiastic, engaged group.

Ardy is a gifted teacher. She kept us all engaged and trained us in identifying the hard black knobbly mounds which led us to find the flowers.

We were rewarded with hundreds of ripe blackberries on the way to the two *dactylanthus* sites, and again on the way back to the vehicles which transported us.



Back row: Erik Velthius, Rebecca O'Sullivan (DOC), Ben Scrimgeour (DOC), Jane Williams (DOC), Dennis Viehland (MINTS), Te Takinga New (Turangi-Tukua Kaumatua), Colin McNair (Genesis), Leslie Haines (MINTS), Anthea Tidswell, Shirley Potter (Project Tongariro), Margi Keys (Project Tongariro), Karen Ardin (DOC).

Front row: Neil Davies (MINTS), Chris Potter (Project Tongariro), Gavin Ardin, Karyn Bishop (Project Tongariro), Lance (Turangi-Tukua), Anthea Johnson (Forest and Bird volunteer).



The hard black knobby mounds which led us to find the flowers. *Photo: Phillip Moll*



We all had a chance to hold the male flowers and do the mahi. *Photo: Phillip Moll*



A total of 20 cages were assembled, 32 male flowers found and 7 female flowers pollinated. *Photo: Phillip Moll*

TONGARIRO ALPINE CROSSING - COVID-19

INFLUENCE ON NUMBERS



HARRY KEYS

EX DOC SCIENTIST
PROJECT TONGARIRO
MEMBER

Introduction and context

The Tongariro Alpine Crossing (TAC) is a 20 km traverse of spectacular volcanic and alpine scenery which has become very popular and commercially important, providing income for many in the local communities. However, the increasing visitor numbers have generated environmental, cultural and some social impacts, plus safety concerns. These included vegetation damage caused by too many vehicles parking/carpark spill over (Photo 1), hikers trampling vegetation beside the track and risks to inexperienced people not prepared for alpine weather. These have required numerous management decisions by the Department of Conservation and the iwi (Ngati Hikairo), such as new toilets, parking restrictions, numerous capital upgrades of the track, Kaitiaki and carpark rangers, the introduction of a bad weather

advisory (weather protocol and information system, including agreements with the Met. Service and commercial operators about safe weather conditions for operating), and an informative, multifunction signage network. Not all have been popular with some locals who feel entitled to unrestricted access, and rights over others, no matter the costs.

Since 1990 the huge growth of international tourism has seen international visitors become the most numerous people on the track with their proportion peaking in excess of 80% around 2015. The TAC has become a poster child of one-day hikes in NZ but also a whipping boy.

Since 1996 several reports have examined the history of the TAC, visitor demographics, use patterns and preparedness, the most recent of which are Bamford (2014), Keys (2016) and Dhellemmes et al (2016). There have been several articles in Tongariro magazine over the years, student reports and numerous other media article and mention (e.g. Driver 2017, Radio NZ Nine to Noon 16 November 2020). Managing the increase in visitor numbers on the TAC, in regard to environmental, social and cultural impact, has been an ongoing and growing concern in many but not all circles. Recently this has included consideration



Photo 1. Parking congestion on the Mangatepopo Rd, 11 April 2017, subsequently managed by parking restrictions prior to the 2017/18 summer season to stop impact on vegetation. *Photo: Harry Keys*

of changes or opportunities created by the COVID pandemic (e.g. Bamford and Wanikau chapters in Bennett 2020). Implementation of management decisions has made significant differences, such as limiting damage and safety concerns from overflow parking, a dramatic decrease in Search and Rescue incidents (Theo Chapman and Toby O'Hara personal communications) and human waste containment.

In the New Zealand context there has been a growing debate about the undoubted costs compared with the undoubted economic benefits of the growth in tourism (e.g. Bennett 2020). The Parliamentary Commissioner for the Environment has put out two reports in the last two years. The first in 2019, *Pristine, popular... imperilled? The environmental consequences of projected tourism growth*, featured the TAC on the front cover! The second in February 2021 *Not 100% – but four steps closer to sustainable tourism* puts forward four proposals that could make a difference to some of the problems outlined in the Commissioner's 2019 report:

1. Introduce a departure tax that reflects the environmental cost of flying internationally from New Zealand, and use the revenue to support the development of low-emissions aviation technologies and provide a source of climate finance for Pacific Island nations.
2. Make any future central government funding for tourism infrastructure conditional on environmental criteria and aligned with mana whenua and the local community's vision for tourism development.
3. Clarify and, where necessary, strengthen the tools the Department of Conservation can use to address the loss of wildness and natural quiet at some of Aotearoa's most spectacular natural attractions. This includes tightening up rules around commercial activity on conservation lands and waters.
4. Strengthen the existing standard for self-contained freedom camping, improve oversight of the certifying process and require rental car agencies to play a greater role in collecting freedom camping infringement fees and fines.

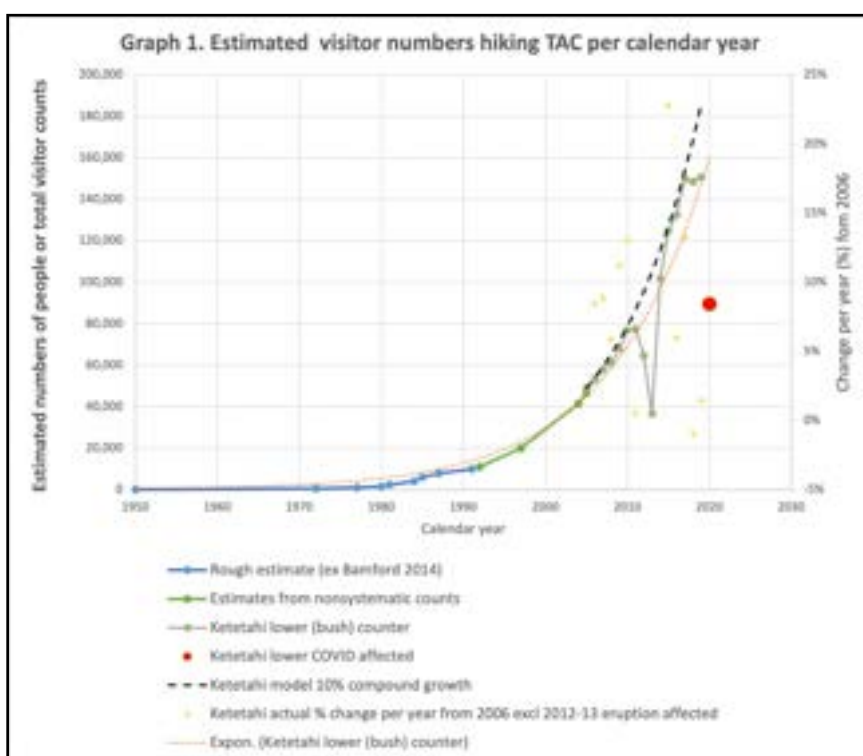
This matter is currently before government, along with a pandemic to manage including the economic shock caused by it and all the other current demands on government resources.

Whatever decisions are made not all will be popular. One has to wonder if Tongariro National Park World Heritage Area ends up being a primary beneficiary in more than just words, and if so when.

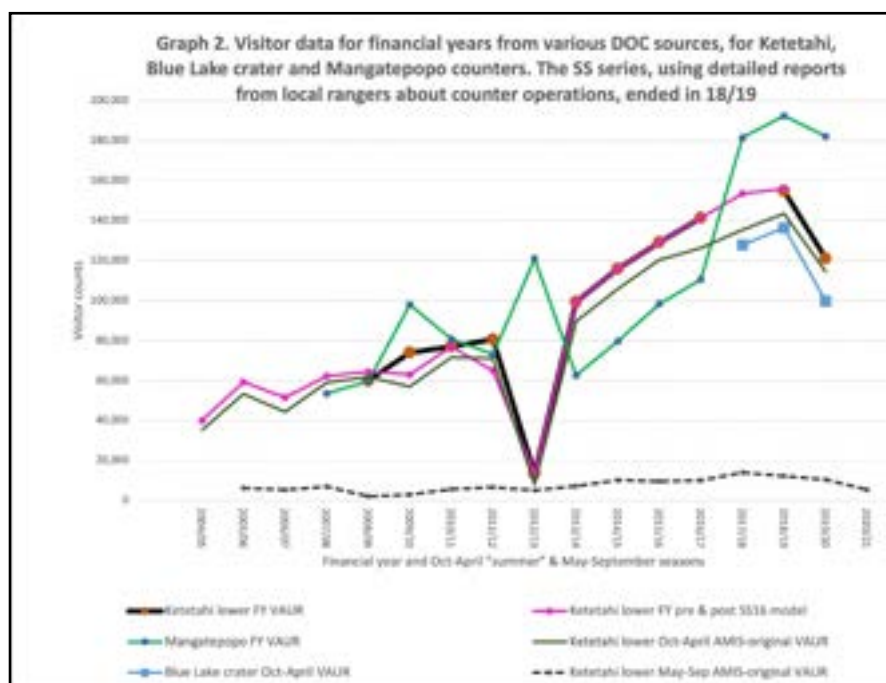
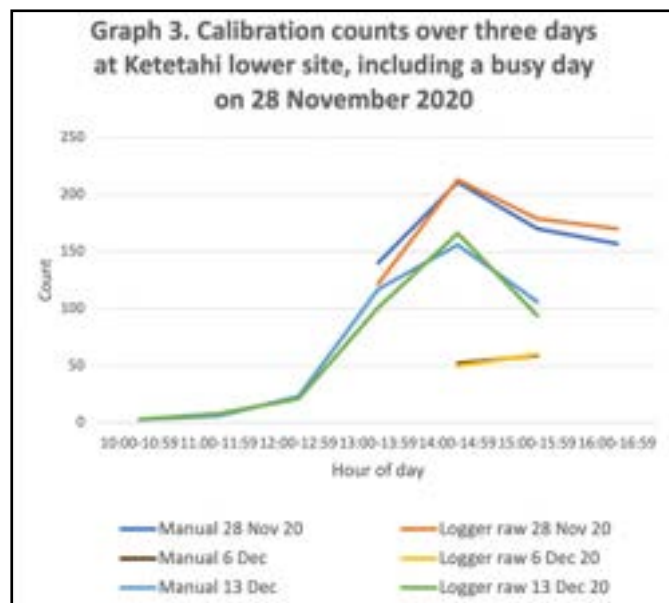
Visitor numbers before and after COVID lockdown

This article summarises a recent report to DOC about changes in visitor numbers and trends in recent years. That report used counter and technical data up to early 2021 from various databases in DOC including online from the Visitor and Recreation division <https://www.doc.govt.nz/visitor-asset-utilisation-reports> (VAUR). These are based on data recorded at automatic counters, in the TAC's case particularly at the Ketetahi lower counter (the TAC's most representative long-running visitor counter). The article provides an update from one in Tongariro #23 (December 2016), and has a focus on the effect of the COVID pandemic. Some of the variability in numbers is due to different weather between years, trends in visitor numbers over longer periods due to other influences (e.g. 2012 eruption, management changes, social trends, international visitor arrivals) and modelling to account for missing data.

Annual numbers on the Tongariro Alpine Crossing (TAC) reached a peak of 150,000 in the 2019 calendar year and 156,000 in the 2018/19 financial year before COVID. Numbers had been plateauing prior to the pandemic, and may not have increased significantly into 2020 even without the COVID-19 pandemic. Graph 1 shows the result of track closure after the



2012 Te Maari eruption episode, dramatic exponential visitor growth rates between the early 1990s and 2010, an even larger growth rate in 2014 and 2015 after the Te Maari episode, and diminishing growth rates in 2011 and since 2017. In particular, after peaking at around 23% per year in 2015, growth has been less and little growth is evident in the data after 2017. As we had warned concessionaires in June 2016 before the Sustainable Summits conference at Aoraki-Mt Cook that August, one can now speculate if this is an example of killing the goose that laid the golden egg (as has happened overseas). Has the marked plateauing in numbers got anything to do with some potential visitors starting to perceive that the TAC was becoming too crowded?



This decrease in growth occurred before the COVID pandemic reduced the number of visitors after February 2020. Given these recent trends, it seems likely that these years will represent the maximum or close to it in visitation on the TAC as a whole on calendar and financial year bases, for the foreseeable future.

The COVID pandemic has caused a reduction of up to 73% in visitation on the TAC so far. Compared to 2019 61,000 fewer people were recorded at the Ketetahi lower counter in 2020, a reduction of 41% (Graph 1). The pandemic resulted in a reduction of up to 22% in the number of visitors hiking the TAC during the main hiking season of 2019/20 compared to the previous year (Graph 2). The reduction was only about 5% at Mangatepopo where numerous short walks seem to have occurred during lockdown. The largest reduction

has been 73% in the 2020/21 hiking season to date (to the end of January or February 2021) on the Ketetahi side compared to 2018/19. This percentage reduction is similar to the percentage of international visitors hiking the TAC between 2005 and 2015/16. The winter season (1 May-30 September) which had been trending down after the 2017 winter seemed to experience a greater reduction in 2020 (Graph 2). But the percentage reduction from the winter of 2019 was "only" 49% at the Ketetahi side (i.e. less than 73%), apparently due to proportionally more kiwis deciding to hike the TAC.

There is an uncertainty of perhaps up to about 5-10% in these numbers because a visitor counter may not count the exact number of people passing it. Manual counts were made on five occasions at three counter sites in November and December 2020 to "calibrate these counters". That is an assessment of counter "accuracy" by calculating the proportion of people passing that are recorded (or not) on the counters (Graph 3). This determined that the automatic counter at the Ketetahi lower site has an average undercount of about only 1%. There is a greater uncertainty at the other counters. A very high proportion of days during July-October at the Blue Lake counter with no data recorded is probably due to freeze-thaw conditions at that high elevation site. The counts at Ketetahi lower include a small percentage of people undergoing short walks up from the Ketetahi road end. This percentage is much larger on the Mangatepopo side as many people go for short walks there.

Number of days where counts exceed specific visitor numbers

Various suggestions have been made since 2005 for what the optimum number of daily hikers on the TAC might be. Perceptions of crowding surveyed since 1996 is a common methodology for this along with visitor satisfaction. Angus and Associates (2012) built on Blaschke and Whitney's study (2007) also measuring an increase in perception of crowding as daily numbers increased: 20% of people said that crowding detracted from their experience when there were 600 counts per day (550 was a similar threshold in the earlier study) and 30% when there were 1000 counts per day. But "perception of crowding" may not be a very sensitive influence on satisfaction because it appears to have little impact on overall satisfaction with the TAC experience. Therefore Keys (2016) concluded that *'Given the complexity in measuring satisfaction and experience with the TAC, a five-fold increase in visitor numbers from 1996 to 2012 appears to have seen only a relatively small decrease in overall satisfaction.'*

Daily count data were obtained from DOC for Ketetahi lower counter for the 2018/19 summer (October-May) season, the season of maximum recorded use (Graph



Photo 2. A very quiet day on the TAC on 21 March 2021. Compare this photo with one taken in March 2016 (Tongariro #23, page 61) at the same site (the former chain site on Red Crater ridge removed on 23 November 2018).
Photo: Harry Keys

2). This is the most recent full summer season that was unaffected by COVID and is an upper benchmark of visitation. At the Ketetahi lower counter about half the days in the 2018/19 recorded 550 or more people and one-fifth recorded 1000 or more. Around 6% of the days recorded 1500 or more at this counter. In stark contrast, by February 9th 2021 the 2020/21 COVID-affected season had only 8% recording more than 550 and less than 1% (only one day) recording more than 1000. From a personal subjective viewpoint of a trumper who enjoys volcanic-alpine nature, our crossing party enjoyed a very relaxing experience on a very quiet day this season (Photo 2) and were able to really appreciate and hear the special natural values of the place.

Concluding comments

The Tongariro Alpine Crossing provides an interesting case study of a track in a national park. From beginnings as a weekend tramping track, the beautiful volcanic landscape, the convenience of public transport options from the mid 1980s, and publicity have seen it become a popular day hike with kiwis and a bucket list item for many. Since 1990 the huge growth of international tourism has seen international visitors become the most numerous people on the track with their proportion peaking in excess of 80% around 2015. The TAC has become a poster child of one-day hikes in NZ but also a whipping boy.

The TAC has supported the growth of outdoor tourism and economic benefits that tourism has brought NZ. Growth in visitor numbers has led to significant business and employment opportunities for locals, commercial profits, the number of people experiencing a beautiful active volcanic alpine area and some exposure to NZ cultures. Automatic counters along the track have been confirmed in this latest study to provide quite an accurate picture of visitor numbers and some information on use patterns, although not at Blue Lake in the colder months.

Management has struggled at times to keep up with growth and minimise the environmental impact. Perhaps the greatest struggle was after the track reopened following Te Maari eruption episode and the huge public exposure the area received at the time, together with ongoing growth in tourism. Some management decisions and implementation made were met with reluctance, bad press or local opposition. But they have resulted in less human waste in the landscape, less vegetation damage, less risk, fewer rescues and dampening of unrealistic expectations about ever-increasing expansion of facilities like carparks in the Park publicity.



Track work on the Tongariro Alpine Crossing in March 2021. *Photos: Harry Keys*

There have now been two major periods of decreased visitation on the TAC. The COVID pandemic led to the second major drop of 41% (by calendar years) compared to a greater percentage drop of 53% as a result of the Te Maari eruption episode. The 73% drop by hiking season for 2020/21 to date compared to 2018/19 is, so far, less than the drop of 83% as a result of the eruption, but may match it when the full season comparison can be made. Companies and services operating and commercially dependent on the TAC in 2012-13 had already had a dramatic loss of business experience which some would have learned from. But they also had other areas they could work from and no cessation of international visitors then.

But visitation plateaued off before COVID and the question needs to be considered: did the marked plateauing in numbers have anything to do with some potential visitors starting to perceive that the TAC was becoming too crowded? Previous reports suggested visitor numbers may have little impact on quality of the experience before about 2010 and many visitors in the latest reports said they enjoyed the hike. But visitation impact has not been examined in depth for 10 years, during which time there has been lines of people on the track and at one stage queues of at least 45 minutes at one point. This is a turnoff for many people. Reviews on Tripadvisor and similar websites may not reflect the extent of any "visitor-hesitancy" generated.

The TAC experience has been markedly changed by the reduced numbers caused by the pandemic. 2020/2021 has provided an opportunity for people to experience the full nature of the place. This has shown what it

can be like so there is now a chance to change gear to retain this opportunity. In 2012-2015 DOC and Ngati Hikairo showed they could work together to address the issues of that period. The current situation will again require a huge effort by them and other agencies, and a strong resolve to make things better for the longer term. This will take more than just words in a national tourism strategy, and perhaps a bigger role for the iwi. If this is not done a return to pre-COVID times seems inevitable. A huge resurgence similar to the post-eruption period would spell worse times ahead.

Acknowledgments

Thanks to Connie Norgate for supporting this reporting and to Toby O'Hara and Karen Williams for support and input. Jeff Dalley, Zac Taylor, Zhen Wei Wu, and Tim Bamford from DOC provided helpful assistance.

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THE FLOATING CLASSROOM



KRISTY NORTHCROFT

**THE FLOATING CLASSROOM
EDUCATION MANAGER**

The Floating Classroom is an initiative of Chris Jolly Outdoors first introduced in March 2019. The original idea was to create a floating classroom where kids can learn about the lake and the flora and fauna around it.



The floating classroom sets out on another voyage of discovery. *Photo: Kristy Northcroft*

The programme is now operating on Thursdays and Fridays during school terms and is currently delivered by Kristy Northcroft who is a registered New Zealand teacher. The education cruise is 1.5 hours, is curriculum integrated whilst celebrating the mana whenua o Ngāti Tūwharetoa. Each education cruise can be focused on specific learning intentions at a request from the school and groups can participate in a bit of downrigger fishing. The catch of the day can then be taken back to the classroom for lunch.

The education cruises were initially focused for children in years 1 to 8 (primary and intermediate) with Kristy recently teaching in primary schools in Taupō. The Floating Classroom has now extended the learning from years 1 to 13 with the addition of offering professional development to educators.

“Some of our tamariki have never been on the lake before, now they get to see how beautiful it is and the implications of what will happen if we don’t keep our lake clean.”



Natural navigators from Tauhara School. *Photo: Kristy Northcroft*

Kristy who is Ngāti Tūwharetoa has recently been supporting English Medium teachers around Taupō-nui-a-Tia to have a better understanding of our people, our place and our past.

“Lake Taupō is such a beautiful learning environment and it is a privilege to teach on our moana. It would be a dream for me to eventually step back and let the next generation in Tūwharetoa take lead with the teaching and learning,” says Kristy.

Bringing the Curriculum Alive

The Floating Classroom hosted their first school back in 2020 just before New Zealand went into nation-wide lockdown for Covid-19. Approximately 240 students aged from 5 to 13 cruised onboard the Cruise Cat to make cultural and curriculum connections. The students and staff from St Patricks School in Taupō journeyed around the shores of Taupō moana where the learning was underpinned by the Treaty of Waitangi, cultural diversity, community engagement, all while following the footsteps of our ancestors.

A year on and the programme continues to link science with the world view of Ngāti Tūwharetoa and brings the curriculum alive. "Everywhere you look there is learning.



Left: Tauhara Primary School students learning about localised curriculum and enjoying the natural beauty of Taupō's super volcano.

Right: Students from Whakamaru School observing Matahi Brightwell's Māori rock carvings. *Photos: Kristy Northcroft*

Lake Taupō is a super volcano and holds so much mana as do the surrounding maunga/mountains." The Floating Classroom has now hosted more than 1,400 students this year in term 1 and up to 400 educators from around Taupō moana.

Being the inspiration for kaitiakitanga - guardianship
The goals and aspirations for The Floating Classroom are to get children and youth learning on the lake. "We want to educate learners of all ages about the importance of protecting our waters, connecting people back to nature, being culturally responsive in an authentic way and being the inspiration for kaitiakitanga - guardianship.

The future plans for the Floating Classroom is to be more active with the Environmental Education Collaborative here in Taupō. This involves amazing nature educators from Kids Greening Taupō, Taupō for tomorrow, Department of Conservation,



Mawake Te Kohangareo experiencing downrigger fishing. *Photo: Kristy Northcroft*

Enviroschools, Taupō District Council, Project Tongariro, Predator Free Taupō, Taupō Community Gardens and Kiwi & Contact. They have also partnered with Taupō Pathways and hope to support Te Puni Kokiri Cadetships for pathways into work. "We want to educate learners of all ages about the importance of protecting our waters, connecting people back to nature, being culturally responsive in an authentic way and being the inspiration for kaitiakitanga - guardianship."



Tamariki from Mountview Rumaki Reo Taupō, experiencing being on a boat for the first time. *Photo: Kristy Northcroft*

GROWING LEADERS NOT JUST PLANTS!



**NAOMI RIEDEL
AND STEVIE
MANUNUI**

STUDENT LEADERS

Kids Greening Taupō enables us young people to participate in real life projects with opportunities to connect in a culturally responsive way to our local environment and community, increasing biodiversity, educational outcomes, and shaping the future of our home. The KGT mission is to provide all Taupō rangatahi with opportunities to learn about and take action for our native plants and animals and we can definitely say that this is being achieved! A key part of the initiative is the Student Leadership Team which provides leadership opportunities and allows student voice to contribute to Greening Taupō and the organisational side of things, this has been where we; Stevie and Naomi have grown the most and further extended our leadership abilities.

The Student Leadership Team in 2021 split into Senior and Junior groups, with a total of 52 students ranging from ages 7-18 from schools across the Taupō district. This allows us students to work alongside other rangatahi from different backgrounds with one goal in mind. 'To Green Taupō' The Junior team's focus is learning about nature and having a hands on experience where they can grow their connection to and understanding of nature. The senior team which we are both a part of teaches about leadership skills



Naomi serving fruit at our 2021 Watering Day. *Photo: Sian Moffitt*



Junior and senior leadership teams at the Ruud Kleinpaste event, 2021. *Photo: Sian Moffitt*

and how to create change in our community. The final team is the Senior Student Leadership Committee.

The oldest nine ten students make up this committee. In this committee we put all we have learned from our experiences in the SLT into practice. This involves writing submissions to council, running planting days and community events, and advocacy stalls. These different groups provide opportunities for up and coming leaders no matter what stage we are at. It also allows us older students to keep forward thinking and making change.



Naomi with Sophie Handford- leader of School Strikes 4 Climate NZ 2019. *Photo: Sian Moffitt*

The SLT meets once a month for meetings with local experts, these are exceptional and really help us to grow our leadership skills, while learning from influential people in our own community. While being a part of the SLT we have heard from multiple different local experts teaching us different things

from a range of topics. Including hearing about trapping, biodiversity, our waterways and how they produce electricity, hearing from journalists, photographers, and other young leaders, learning about tikanga, writing articles for the newspaper, and also paryaking in workshops hosted by many national experts including Ruud Kleinpaste and Sophie Handford.

Katherine, another student leader spoke to us about her experiences with one of our speakers, Ruud Kleinpaste. She said, "I am really grateful to have had the opportunity to meet the Bugman, Ruud Kleinpaste 5 times! Every Time I have had the chance to get taught by him, I have enjoyed myself and learned so much! He is well known around the world for his passion for invertebrates, the environment and environmental education which has influenced me and really made me realise what I want to do, so I can keep learning about invertebrates and the environment."

My Experiences with KGT - Naomi

One of the awesome opportunities I had while being a part of the KGT leadership team was meeting Sophie Handford. Sophie Handford was the national coordinator of School Strikes 4 Climate in 2019. It was incredible to hear from her and has opened my eyes to a possible future career in our local council. She taught us how to take risks but also gave us an insight into climate change and what is causing it. It was interactive and got our brains pumping with new innovative ideas. I even came up with a slogan 'Climate change starts and ends with you; no change too small!'

Through KGT I have had the chance to speak to the council and we will both next week be speaking to the council on a submission we wrote on behalf of KGT. We also both spoke to local businesses at an event called Business After 5, to promote KGT



Sophie Handford teaching the student leadership Team about climate change workshop 2021. *Photo: Sian Moffitt*

and to try secure funding for our up and coming Greening Taupō Day! I have even spoken on the radio promoting events such as our Greening Taupō Day. These opportunities have further benefited my public speaking skills and has allowed me and Stevie to build up a confidence when speaking to larger crowds

What I Have Been Able to Achieve through KGT - Stevie

While being a part of KGT we have had many opportunities to use and grow our public speaking skills.

As a member of the leadership group, I had the privilege to speak to the councillors at one of the Taupō District Council meetings in 2020. It was an



Student Leaders presenting to council on the proposed Pedestrian Malls. *Photo: Sian Moffitt*

excellent opportunity to inform the council about the role Kids Greening Taupō plays in the community, the important mahi the students undertake, and some of my personal experiences in the group.

Kids Greening Taupō collaborates with Greening Taupō to deliver a calendar of community planting days throughout the year. Us students play an important role in this. We are involved in the planning, promotion, helping to set up, welcoming guests at registration, going around and teaching the community to plant like a ninja, event photography, and everyone's favourite job, the cleanup. It's a really awesome opportunity for us students to join in, interact with the community, and get our hands dirty. We love being the smile that welcomes people when they arrive and the helping hand when they forget how to plant like a ninja! This gives us the chance to grow our interpersonal skills while making a change and impacting our environment and community.

MT PIHANGA - LAKE ROTOPOUNAMU FOREST RESTORATION PROJECT



KIRI TE WANO

**PROJECT TONGARIRO
COORDINATOR**

The Mt Pihanga - Lake Rotopounamu Forest Restoration project is Project Tongariro's oldest running restoration project - now in its 20th year! The crowd-sourcing programme continues to see strong support with the numbers of hectares virtually adopted up nearly 8% on last year, but still lagging behind 2018-19's peak by -21%. This could be caused by our change in how we request donations for this programme and the impact of Covid-19.

We run this forest restoration programme in partnership with DOC. In March 2021 we were invited to the first of a series of hui with Ngati Turangitukua who hold manawhenua over Mt Pihanga - Lake Rotopounamu. Our members were warmly welcomed in a powhiri and we heard from kaumatua about the cultural significance of Mt Pihanga and the Turangi township. We hope to continue our relationship and join together to look after the Lake Rotopounamu forest.

Heather control upon Mt Pihanga continued this year with a wāhine-only team being flown up to the top of Mt Pihanga. This control work has occurred over the last three years and the annual control is working well. Ngati Turangitukua, PT and DOC made up the 15 wāhine team that worked over two days to 'search and destroy' heather plants and other invasive weeds, with 15 litre knapsack sprayers on our backs!

We are finding that the bigger plants are getting contained therefore the seed source is getting smaller and more scarce. This year the plants found were smaller than last year, and less plants were found as well. Unfortunately heather isn't the only pest plant up there, with contorta pine being found as well.



Top: Joanna Mendonca giving a tool box briefing before the flight.

Middle: Sisters, Kiri & Nina selfie during the flight to the top.

Bottom: The knapsacks carefully being mixed for heather control. *Photos: Kiri Te Wano*



Shirley Potter and team mate with a contorta pine, shortly before it was dispatched. *Photo Kiri Te Wano*

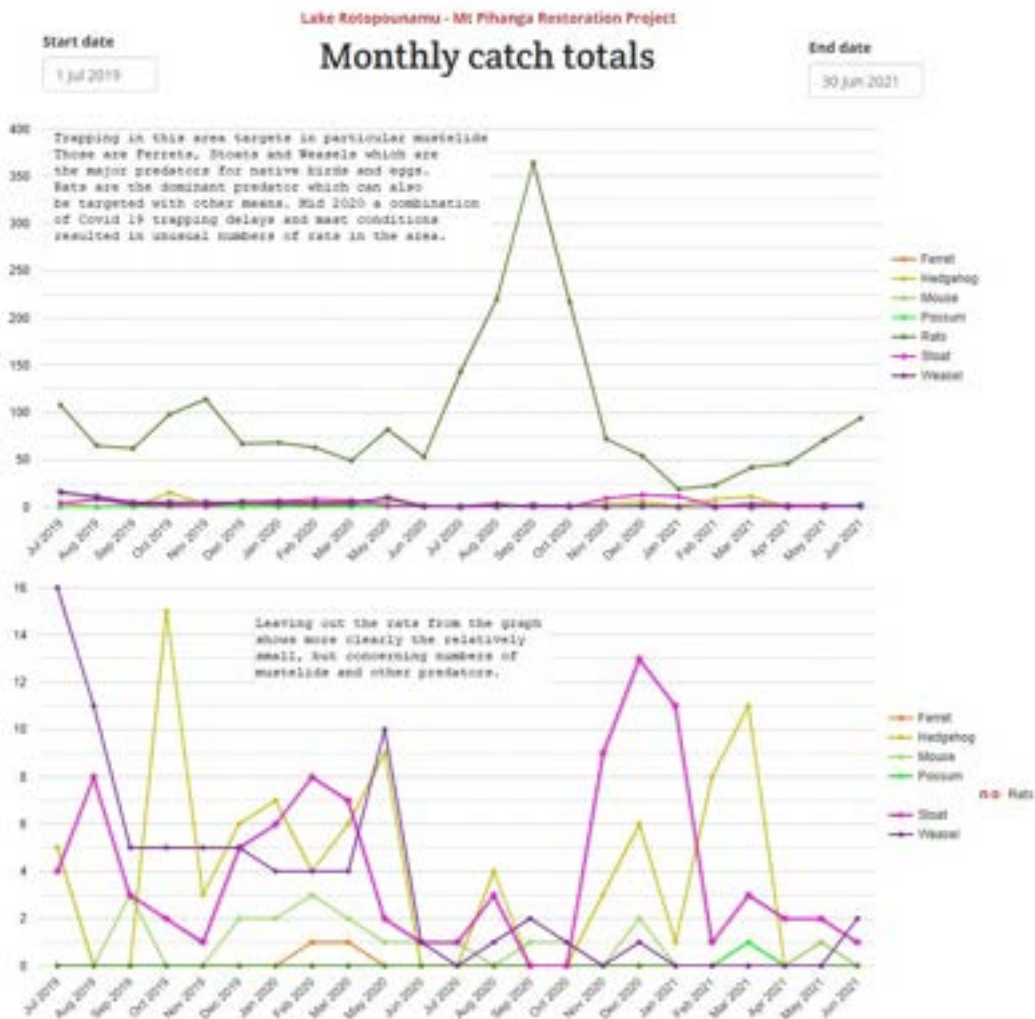
The heather is definitely being contained and we believe annual visits with the knapsacks should continue.

Trapping results at Rotopounamu have seen a



Beautiful views down to Lakes Rotoaira and Rotopounamu. *Photo Kiri Te Wano*

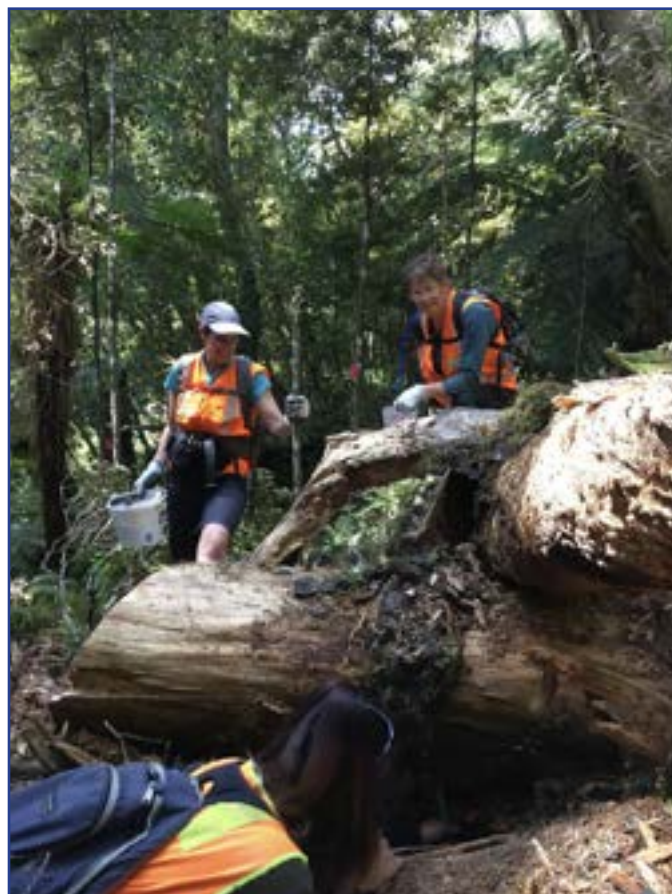
steady increase in catches since TBFree NZ finished their aerial control programme in 2019. It is very concerning at present that threats such as possum, mustelids and even encroaching deer are affecting the habitat of our resident birds and insects. Local





A triumphant Ardy with a stoat. *Photo: Shirley Potter*

volunteers and DOC staff check traps regularly, but traps alone cannot prevent pests taking over this beautiful forest.



Trappers, Helen, Sarah and Zavra look for a squashed trap under a fallen tree at Rotopounamu. *Photo: Shirley Potter*

Our wonderful trappers continue their important work at Rotopounamu. Colette Taylor, a local volunteer trapper recently put into words why she loves Rotopounamu and why she keeps returning:

“I call it my happy place, especially when in the thick of the bush doing a trapline. A peace and serenity descends whenever I am in the bush. I feel a connectedness with nature and a sense of belonging. I am always awed by the beauty of the bush; there is such variety to marvel at from the stature and mana of the giant canopy trees to the tiniest fungi. A highlight is to have meetings and conversations with birds, especially whitehead, tui, bellbirds, robins, tomtits, kaka and the occasional rifleman. I also feel privileged to be enveloped in Pihanga’s warmth and care. Trapping is my way of feeding my soul but also helping to ensure our beautiful birds for all to enjoy in the future”. I’m sure many of our trappers also feel this way!

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