

## CONTENTS

Overview from Manaaki Whenua	1
Tūhoe Tuawhenua Trust in 2014	1
Manawa Honey NZ	3
Building an understanding of science	5
Kia mau tonu ki ngā taonga tapu o ngā mātua tūpuna	
Hold fast to the treasures of the ancestors	7
A bicultural system for measuring and monitoring biodiversity in the Tuawhenua and Whirinaki forests	7
Tūhoe Tuawhenua contribute to a global biodiversity initiative	9
How long can ponga and whekī-ponga live?	11

## Overview from Manaaki Whenua

The relationship between the Tūhoe Tuawhenua Trust and Manaaki Whenua remains active in promoting research to improve management of the lands administered by the Trust for its beneficiaries. This year we have been busy working with the Trust to develop a bicultural system for measuring and monitoring biodiversity and this issue has two articles on this project, as well as an exciting report from Puke Timoti on his trip to Antarctica, the contribution Tahae Doherty and Kirituia Tumarāe-Teka made to the Global Assessment on Pollination and Pollinators for Food Production in Panama, Central America, news from the Tuawhenua Trust, and an article on the unusual lives of ponga and whekī-ponga.

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## Tūhoe Tuawhenua Trust in 2014

Contributed by: Brenda Tahi (Executive Trustee)

*Nga mihi ki a koutou nga whanau, hapu o te Tuawhenua me nga kai tautoko hoki i nga mahi o te Tuawhenua. Te mamee me te pouri hoki mo nga mate o te wa, o tatau kuia, koroua hoki kua wehe atu ki te po, kua wehe atu i te kitenga kanohi. Haere, haere, haere atu ra koutou...*

2014 heralded a review of our strategic plan to take us out to 2017 and saw us focus on two things – our honey business and mātauranga about our ecosystems and way of life in the forests of the Tuawhenua. We share here an outline of our strategic plan for 2014–17 and a summary of our work for the year in these two key areas. Other major projects and activities are reported in articles included in this edition of Te Kaahu. We also feature the recipients of the Manaaki Whenua Scholarship in 2014 and refer you to our website [www.tuawhenua.biz](http://www.tuawhenua.biz) for more information and copies of our published reports, as well as [www.manawahoney.co.nz](http://www.manawahoney.co.nz) for more information on the honey business and to order our honey!!

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Landcare Research  
Manaaki Whenua

## STRATEGIC PLAN 2014–17 AND ECONOMIC DEVELOPMENT

### Who's involved from the Tuawhenua Trust?

Jim Tahae Doherty (Chair), Ngapūtahi; Brenda Tahi (Executive Trustee), Ruatāhuna; Korotau Tamiana (Trustee), Ruatoki; Doris Rurehe (Trustee), Ruatāhuna; Tane Rua (Trustee), Ruatāhuna; Anthony Te Kurapa (Trustee), Ruatāhuna; Hekenoa Te Kurapa (Trustee), Ruatāhuna

Our kaupapa remains focused on a future that sees our people and our land vibrant but in harmony. We will continue to work in the areas of:

- Te Iwi me Te Whenua: Te Whakapakari (Development of our people and the lands of the Tuawhenua)
- Te Taiao: Kaitiakitanga me Te Whakaoranga (Protection and enhancement of our ecosystems)
- Te Mātauranga me Te Tūhonohono: Whakawhiwhinga (Contributing to knowledge development and linking of networks)

Key goals over the next 3 years relate to:

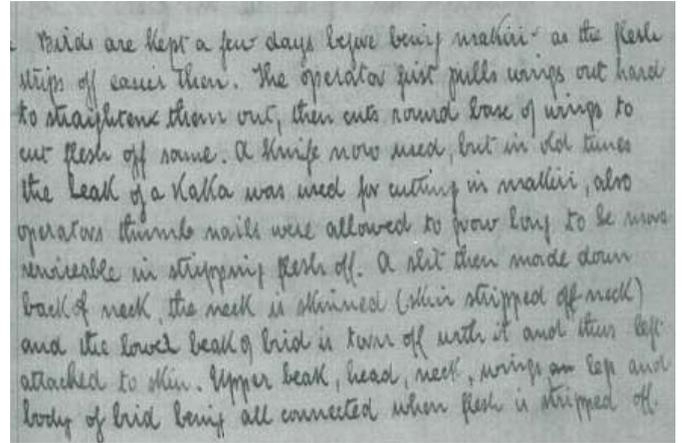
- growing the honey business and establishing strong domestic and export markets
- diversifying our commercial development into some tourism and added-value products
- creating more jobs across a range of areas and developing our people into those jobs
- making our mātauranga collection available through different media for people of the Tuawhenua
- advancing our species and site restoration programme, including control of pest plants and animals
- developing a mātauranga-based framework for managing the ecosystems of the Tuawhenua into the future

Creating real jobs in Ruatāhuna is one of our fundamental aims. The Trust continues to create jobs in Ruatāhuna and to secure job and training opportunities for the people of the Tuawhenua. Three aspirant bee-keepers – Te Uamairangi Rangihau, Waitangi Tait, and Raniera Te Kurapa – are training on-the-job with a large honey production operation. We are also now providing consistent work for 2–3 beekeepers here in Ruatāhuna, a researcher (funded by a Landcare Research project), and business support staff. We greatly appreciate all staff and supporters who work for and with us (some for little or no remuneration), and look forward to the day when we will be able to thank you in more ways than a gift of venison!

### MĀTAURANGA O TUAWHENUA PROJECT

The Mātauranga o Tuawhenua project was taken through its second phase in 2014. Literature, manuscripts, and archives, mainly from Elsdon Best, were mined for all references to species and the forest. Some key waiata and haka were also examined for references to species and the forest, using a wānanga approach. This material, including that from interviews

in the first stage of the project, has been categorised and sorted for collation and further analysis. An expo presenting this material was also held in 2014 as a first step to finding ways to present this precious material for the knowledge of and use by current and future generations.



Example of archival manuscripts from Elsdon Best with references to species of our forests – makiri manu.

### CONTROLLING PEST PLANTS

We have continued our campaign to eradicate blackberry in the Tuawhenua region and thank all supporters of our programme – locals who engage us to spray their properties, the Ruatāhuna Farm, DOC, and the Bay of Plenty Regional Council. We are looking to work on the harder areas in the future – down streams and down river.

We have worked hard with the Bay of Plenty Regional Council to identify and destroy all Old Man's Beard in our region. The programme is working but is not yet complete, as each season seems to bring up new plants. Our blitz of broom and gorse has also been advanced but still remains a challenge.



Old Man's Beard has taken hold in some parts of Ruatāhuna but we are working with the Bay of Plenty Regional Council to eradicate it before it spreads widely.



## SURVEY OF PIGS FOR TB

We are working for the Animal Health Board on another survey of wild pigs to check for the incidence of TB in our region. As yet no TB has been found through these surveys, but we remain vigilant as TB would be a disaster if it affected the animals in our region, both for our local farm, and for our local hunters and whanau who depend on the bush as a food source.

## THE MANAAKI WHENUA SCHOLARSHIP

The Manaaki Whenua Scholarship was established in 2012 in conjunction with Landcare Research to promote training and development of Tuawhenua people in the field of forest ecology. In 2014, we awarded the scholarship of \$3000 jointly to Mereru Beale (Ngati Tawhaki), Celia Edwards (Ngati Tawhaki) and Ote Tumarae (Tamakaimoana). All three recipients have just completed their first year of studying towards a degree in environmental studies at Te Whare Wananga o Awanuiarangi in Whakatāne. The Manaaki Whenua Scholarship for 2014 was presented to the recipients by Tuawhenua trustee Korotua Tamiana at Mataatua Marae, Ruatāhuna.



Ote Tumarae speaks on receipt of her award of the Manaaki Whenua Scholarship in Te Whai-ate-motu, Mataatua Marae, while trustee Korotua Tamiana looks on.

## Manawa Honey NZ

*Contributed by: Brenda Tahi*

*Who's involved?*

*Beekeepers: Hekenoa Te Kurapa and Nick Mitai*

*Markets: Brenda Tahi – [brenda@manawahoney.co.nz](mailto:brenda@manawahoney.co.nz)*

*Trees for Bees Research: Linda Newstrom-Lloyd – [NewstromL@landcareresearch.co.nz](mailto:NewstromL@landcareresearch.co.nz)*

### OPERATIONS

In 2014, we have grown our honey business through increasing our hive numbers and developing market opportunities. We increased hive numbers to over 400 at the end of last season, producing timber for some of the hive-ware required. The bees have had to work hard over the summer season to draw the comb needed for storing the honey. The honey season started really late for us here in Ruatāhuna but once it had started it went well. given all the fine weather.

We continue to monitor the flowering of the trees and plants in our forest and have found some interesting variations and patterns depending on species, location, timing and season. This season we have seen spectacular flowering of the kohia and poanana, the tawari, mānuka, putaputāwētā and kaikōmako. Last season brought us tawari honey and an active mānuka 5+ honey. This season we believe we have tawari and mānuka again, and maybe some rata!

Hekenoa Te Kurapa leads our beekeeping operation with Nick Mitai, Raymond Te Kurapa, and Toby Moon on team. We gather advice for our beekeepers from many quarters across the



Beekeeper Nick Mitai examining hives at one of the Ruatāhuna apiaries. (Photo courtesy of Peter Quinn)

country and appreciate this support hugely as it has advanced our beekeeping to real success in this season.

### HONEYS OF TE UREWERA

A dominant honey in our region comes from the tawari tree. Tawari (*Ilex brexioides*) is unique: unique to New Zealand; the only species within its genus; and only found in a few parts of the North Island. We find great groves of tawari deep within the Tuawhenua and more widely across Te Urewera. Here, tawari grows to over 10 metres high, and has been described by botanists as one of the most beautiful of New Zealand's native plants, striking for the beauty both of its flowers and its foliage. So much so that the delicate white flowers of the tawari were one of the few used by our ancestors for necklaces and garlands worn on festive occasions.



The tawari flower is usually pollinated by bats attracted at night to the white flower. Plentiful nectar is produced at the base of the flower for the bats, and it is from these pools of nectar that the honey bee, during the day, produces this superb honey. Our tawari honey is a light honey, not too sweet on the palate, and silky smooth in texture, with hints of butterscotch and sometimes liquorice.

We have also produced a great mānuka honey in 2014. Mānuka (*Leptospermum scoparium*) is unique too: native to New Zealand it produces the only honey with antibiotic properties based on non-peroxide activity (NPA). Mānuka grows as a shrub or small tree up to 6 m tall, in forest edges or areas of reverting pasture. The flowers are small and designed to be

pollinated by native bees and flies, but the honey bee also works this flower to produce this remarkable honey.

Our ancestors used mānuka for a range of medicinal purposes – the bark was boiled and the infusion drunk or applied externally to relieve pain. Infusions of the bark, capsules and seed were also applied to burns and wounds, or for treating mouth, throat and eye affliction, and to reduce fever. Mānuka was also used to treat wounds on horses and other domestic animals.

While all honeys are active, mānuka is the only honey that has antibiotic properties based on non-peroxide activity (NPA). While other honey activity will degrade, NPA is stable and lasts over time. Our mānuka honey is an amber honey, with that distinctive medicinal and earthy taste, but it is lighter on the palate than many mānuka honeys.

#### MARKETING OUR HONEY

We began our market development using our mahoe honey, which inspired our deep violet brand colours. In 2014 we added tawari and mānuka honeys in 250g and 500g sizes to our product range which is stocked in over 80 retailers located mainly in the North Island but also a few in the South Island. We focused on tourist and high-end food outlets in the domestic market and we are working now on gaining markets overseas.



Honeys of Te Urewera range by Manawa Honey NZ – tawari, mahoe and mānuka.

See our website [www.manawahoney.co.nz](http://www.manawahoney.co.nz) or FB [www.facebook.com/ManawaHoneyNZ](https://www.facebook.com/ManawaHoneyNZ) for more information on our honey business. If you would like to buy our honeys or would like to re-sell them here in New Zealand or overseas please contact us [info@manawahoney.co.nz](mailto:info@manawahoney.co.nz) or phone +64 7 3663 166.

#### TREES FOR BEES

Our CEO Brenda Tahi attended the Trees for Bees conference held at Eastwoodhill, Gisborne in 2014, and spoke there on our perspective of this kaupapa. While we appreciate that many exotic plants such as willow are good for beekeeping, Brenda urged the conference to give much greater emphasis in future tree plantings to indigenous species that are friendly to bees. We know that in our forests our hives do well with the pollens and nectars that come from the diversity of our ecosystems, and urged for research in this area to discover the best pollen sources in indigenous forests. We maintain an interest in the work of Linda Newstrom-Lloyd, the lead researcher in this area, who is an associate scientist of Landcare Research. See [www.treesforbeesnz.org](http://www.treesforbeesnz.org) for more information on Linda's research and to view Brenda's presentation to the conference.



Beekeepers in the making – Raniera Te Kurapa, Waitangi Tait and Te Umairangi Rangihau (back left, centre and back right) all from Ruatahuna with their beekeeper crew with whom they have been training in 2014-15



## Building an understanding of science

*Contributed by: Puke Timoti (Ruatāhuna)*

*Who's involved from the Tūhoe Tuawhenua Trust:*

*Puke Timoti*

*Who's involved from Manaaki Whenua: Phil Lyver*

Last November I made a 3-week trip of a lifetime to Antarctica. As part of my work with Landcare Research I was invited by scientist, Dr Phil Lyver, to take part in his study of the Adélie penguins in the southern Ross Sea. Landcare Research, together with a US team, have been intensively studying the ecology of the Adélie penguins for two decades and I was honoured to be part of the small group that contributed to gathering data this season. Antarctica is one of the last places in the world where animals can be studied in a habitat still largely unmodified by humans. The purpose of my involvement was to expose me to the range of techniques for monitoring of this species in its pristine environment. This in turn has increased my knowledge of scientific knowledge systems and the importance of monitoring biodiversity and understanding our ecosystems.

Adélie penguins are tohu or biological indicators for the Antarctic marine environment. The scientists want to understand natural variation in the population so they can comprehend the impact of climate change and human activities such commercial fishing. To do this, however, they need years of data. This season we were collecting data on the survival rates of adults, the breeding histories of known age birds, how often birds were going on hunting trips, the type of prey they were hunting, and how much prey they were bringing back to their chicks. We were also interested in how quickly the chicks were growing.

My experiences have helped me understand how scientific systems work to understand the environment and the way it functions. The knowledge gained here could help improve our role as kaitiaki and contribute to how we monitor the health and changes in our forests. While Tuawhenua forests and the Antarctic landscape are about as different as you can possibly get, it is the scientific principles behind the work that are important.

### ADJUSTING TO LIFE ON THE ICE

A 9-hour flight (3932 km) from Christchurch to the Ross Island on a South African C-130 Hercules with research technician Brian Karl brought me to Scott Base, which has been New Zealand's base since 1959. Here I took part in a 3-day training program to prepare me for all possible situations the South Pole might throw at me. The facilities at Scott Base surprised me – it is well equipped, with modern comforts and technology. Man's accomplishments on this vast expanse of ice amazed me.



Puke Timoti at Cape Bird (South colony) looking for birds that have been banded. Over time scientists and research technicians have banded thousands of Adélie penguins.



Puke Timoti traveling above the northern colony to count polar skuas.

During our training we spent one night sleeping in a tent on sea ice. Our winter here in Te Tuawhenua is like a hot summer's day on the ice. It was here I learnt the importance of maintaining the right temperature (to avoid frostbite/frostnip).

After our training we were given the opportunity to look over the historic huts located along the shores of McMurdo Sound. I admired the great efforts of the pioneers of that time (Shackleton's hut of 1908, and Scott's hut erected in 1911).

Brian and I then headed for Cape Bird, which was going to be home for me for the next 12 days. Flying by helicopter under the presence of Mt Erebus we landed at the most northern end of the Ross Island. Brian, who has been working with the Adélie penguins for 25 years, has noticed many changes.



The hut was once again comfortable and provided a nice escape from the cold. Personal hygiene was a challenge during the trip; think about pooping in a bucket and having a shower with baby wipes. Luckily the penguins didn't mind! Cape Bird hut is approximately 200 m from the northern colony; even at that distance you could hear the chiming and chatter of the 60,000 plus penguins. The smell of guano and decay at first is overwhelming, but after 12 days of handling these birds they smelt like roses. Due to the extreme cold, any smell became pleasant. Dinner at the table with a view of the Ross Sea was like watching National Geographic, watching the Adélie penguins diving and fishing, with the appearance of the odd Emperor penguin and Weddell seals, made great entertainment. We were also amused with the pod of killer whales heading out of the McMurdo Sounds. The sea itself was never the same, ice-bergs and pack ice changed every hour.

One thing that didn't change much during my stay was the constant day light. During the summer it becomes 24/7 day

light. One must get into a routine of good rest and sleep, although I can't imagine what it must be like in winter.

My experience in Antarctica forced me out of my comfort zone, challenging me. Here I met people from all over the world, and from every walk of life. At the dinner table you weren't sure if you were sitting next to an engineer, scientist or pilot – and here was this Tūhoe boy from the bush.

I now have a deeper understanding of ecosystems and the importance of maintaining, protecting, and enhancing the wealth of biodiversity.

**“WHATUNGARONGARO TE TANGATA, TOITŪTE WHENUA.”**

“People pass on, but land remains.” Sustainability and protecting Mother Earth.



Brian Karl, research technician from Manaaki Whenua, poses outside Cape Bird hut.



Puke outside New Zealand's Scott Base. The Base provides services and accommodation for the many scientific research parties and groups who visit Antarctica during the summer.



Puke marks a penguin nest, with a parent bird sitting on its eggs. The marked nests in this colony will be monitored throughout the season.



# Kia mau tonu ki ngā taonga tapu o ngā mātua tūpuna

## Hold fast to the treasures of the ancestors

*Who's involved from the Tūhoe Tuawhenua Trust:*

*Puke Timoti, Brenda Tahi, Tahae Doherty*

*Who's involved from Manaaki Whenua:*

*Phil Lyver, Chris Jones, and Sarah Richardson*

As everyone is more than aware, there have been a number of recent changes in the governance of, and responsibility for managing natural areas across New Zealand, for example, Te Urewera. So increasingly Māori communities want to re-establish and strengthen their role in defining, measuring, and forming responses to changes in biodiversity in their regions. The measurement of biodiversity is also a priority for DOC and councils who have developed national measurement and reporting systems over the last decade.

To date, less emphasis has been given to identifying and building biodiversity indicators that are relevant to Māori. Finding meaningful, but also culturally appropriate, measures and indicators to assess changes in the state of biodiversity and of the wider environment is a vital component of this process so that the community, iwi, and co-management partners can

be fully informed and take appropriate management steps.

To address this issue, researchers at Manaaki Whenua are working with the Tūhoe Tuawhenua Trust and Ngāti Whare to develop a cross-cultural system for biodiversity assessment in mixed podocarp-tawa forest (see Puke Timoti's article in this Issue). Through a process of interviews and wānanga with kaumātua and forest users we propose to identify community perspectives and aspirations for the forest environments, and also mātauranga-based indicators used by Tuawhenua to assess the state of (and changes in) their forests (Note: work with Ngāti Whare on this aspect will begin at a later date). Our intent is to understand 'how' the mātauranga indicators work and should be applied.

Kaumātua, together with our Tuawhenua-Manaaki Whenua research team, will then use both the local indicators and a simplified set of DOC's science-based indicators to compare the Tuawhenua and Whirinaki forests. We propose to use the different types of indicators to show the state of, or differences in condition between, the two forests.

## A bicultural system for measuring and monitoring biodiversity in the Tuawhenua and Whirinaki forests

*Contributed by: Puke Timoti*

*Who's involved from the Tūhoe Tuawhenua Trust:*

*Puke Timoti, Brenda Tahi, Tahae Doherty*

*Who's involved from Manaaki Whenua:*

*Phil Lyver, Chris Jones, and Sarah Richardson*

The Tūhoe Tuawhenua Trust has started a new project with Manaaki Whenua and Ngāti Whare. By working with the Tūhoe Tuawhenua Trust (Te Urewera) and Te Rūnanga o Ngāti Whare (Whirinaki Te Pua-a-Tāne Conservation Park), we will resolve how Māori organisations can identify goals and aspirations for biodiversity in their region using their own values framework. We will also develop and implement scientific and mātauranga-based indicators to assess both the state of biological heritage and progress towards ecological and livelihood outcomes on tribal owned or controlled lands in a post-settlement environment. This knowledge will help us sustain and manage our forests and rivers to maintain the biological wealth for future generations.

*Mā te whakarite ka mōhio, Mā te mōhio ka mārāma, Mā te mārāma ka mātau, Mā te mātau ka ora.*



Puke Timoti and Brian Karl measuring a large tawa tree on a sampling plot. These data will be used to calculate indicators of forest health.

*With learning comes understanding, with understanding comes knowledge, with knowledge comes wisdom, and with wisdom comes well-being.*

Ahi kaa (burning fires of occupations, continuous occupation) and the people of Te Tuawhenua have long-standing relationships with their whenua. The interaction and interdependency





Puke Timoti counting animal pellets in a circular plot



Puke Timoti with Brian Karl, Chris Morse, Ella Hayman, Neil Fitzgerald, Kev Drew, and Sarah Richardson (left to right) about to sample the forest at Whirinaki.

tangata whenua developed with indigenous biodiversity within their forests and more recently with introduced biodiversity. Understanding tikanga and the values of these concepts is an essential step toward the advancement of a bicultural approach to biodiversity management.

The collation of this mātauranga, research, and understanding could contribute to the aspirations of our people, our advancement, and development, and could also achieve biodiversity outcomes.

The final question that was put to the participants who were interviewed last year for this project was: “What is Biodiversity?” The majority felt this word had no relevance to their world view. After lengthy discussions on connections and traditional concepts, the use of the environment, the diversity of life and interrelationships, recent climate changes, and the impact of introduced exotics, it was realised that “biodiversity” was a shared perspective. Biodiversity in essence is a measure of the well-being of Te Tuawhenua. It is an expression of the life forms that exist.

*“Ko au te ngahere, ko te ngahere ko au.” (The forest and I are one)*

This project is focused on bringing forward those overarching value concepts (tikanga) and also developing cultural indicators/tohu through wananga and consultation with kaumātua (elders) and tohunga (experts) in this field to help monitor changes through time from a Tuawhenua perspective.

A cultural indicator is a tohu configured by Māori/Te Tuawhenua to gauge measure or indicate in an environment locality. It is a monitoring method that can identify and articulate whanau and hapu values and perspectives.

For the most of 2014 we interviewed/transcribed and translated over 40 of our people from selected age groups: 16–40, 40–60, and 60+ years.

There were four main themes in the interview process:

- To understand the value of biodiversity to Tuawhenua and their aspirations for their land, rivers and forest
- To understand changes in biodiversity over the years in Tuawhenua forests
- To identify indicators used by Tuawhenua and scientists to monitor biodiversity
- To use these mātauranga and science-based indicators to understand the differences in biodiversity within Tuawhenua and Whirinaki forests

This allowed us to understand the views, experiences, and aspiration held in Te Tuawhenua. It also highlighted the on-going loss of mātauranga relating to the ngahere, and also the recent lack of involvement with our environment.

Te Tuawhenua and Landcare team have been monitoring plots in both Te Tuawhenua and Whirinaki forests. Using scientific measurements we plan to understand the differences in biodiversity between both forests. This includes the measurements of trees, both indigenous and introduced species, and the presence of birds and predators. We hope to use the indicators collected during the interview process to support further development of monitoring systems.

The Tuawhenua Trust and people of Te Tuawhenua have a huge part to play in sustaining indigenous biodiversity, not only in their role as kaitiaki but also in achieving national biodiversity recognition through provision of another cultural perspective to help plan for the future. This project brings life to the mātauranga and tikanga of our tīpuna.

Mātauranga o Te Tuawhenua and the values with in our people could work alongside western science knowledge and resources to assess and measure progress and change in our ecosystems.

The wānanga and consultation with our people is on-going to help promote new systems for environmental management.



## How long can ponga and whekī-ponga live?

*Contributed by: Sarah Richardson*

*Who's involved from the Tuawhenua: Tahae Doherty*

*Who's involved from Manaaki Whenua:*

*Janet Wilmshurst, Jamie Wood, Sarah Richardson*

### WHAT DO WE KNOW ABOUT TREE FERNS?

Tree ferns occur all over New Zealand, except in the driest and coldest places, but Te Urewera is one of the best places for them – all the species can be found growing together, and often in great abundance. Tree ferns thrive in Te Urewera because all the conditions are just right for them; the moist and mild climate, the well-drained volcanic soils, and the frequent slips and tree falls are all perfect for tree ferns. While we know a bit about where to find each species, and we know they pop up like weeds after a slip or a fire, we don't know very much about how they live or how long they live for.

The lifespan of any species is a very important aspect of their biology. It determines the time period over which a species has to grow to maturity and reproduce. Lifespan varies enormously among plant species. Trees such as mataī and tōtara live for many hundreds of years, perhaps even a thousand years. Because of this long lifespan they can afford to grow slowly but must be well built to withstand the ups and downs they will experience over that long lifespan. In terms of the forests they live in, simply by being there, they slow down the rate at which the forest will change from year to year.

At the other end of the scale there are plants that only live for a single summer. These plants have to grow and make seeds very quickly, but they don't need to build a large or particularly strong plant. Scientists have sometimes referred to these two types of plants as "tortoises" and "hares" because they are both successful ways of being a plant, but they get there at very different speeds.

Where do tree ferns fit in this range – are they are hare or a tortoise? In some ways, they are a bit like a short-lived plant because they can grow very quickly and even small tree ferns can produce clouds of spores (the fern-equivalent of a seed). However, in other ways they are more like a tree because they build a thick stem that can withstand a few ups and downs. They are something of a mystery so we decided to age a few individuals to find out more.

You can age a normal tree by chopping it down and counting the growth rings in the wood. You can't do this with tree ferns because the middle of the stem is filled with pith and there aren't any growth rings. We had the idea of using a technique called radiocarbon dating to age the oldest carbon in the middle of



Tahae felling a tall ponga up above Ngapūtahi.



Inside a ponga stem. We collected and aged the hard black material in the middle. Tree ferns don't produce real wood like a tree does, but this hard black material is the nearest thing.

the stem, right at the bottom of the stem. Nobody has ever done this before so we were excited to try it out.

Tahae kindly agreed to chop down two tree ferns at Ngapūtahi – one ponga and one whekī-ponga. We picked large individuals that looked as if they'd be around for a while as we wanted to get the age of a really old one. Once Tahae had chopped them down, we collected small pieces of the hard black material in the middle and sent these away for radiocarbon dating. Both individuals were just over 300 years old, which is impressively old for a fern. It's about the same lifespan as tawhai rauriki (black or mountain beech) which is a much larger and more robustly built plant. What does it mean? It suggests that tree ferns are really more like "tortoises" than "hares" but they manage to do this without having to build a great big tree.



## Tūhoe Tuawhenua contribute to a global biodiversity initiative

*Contributed by: Phil Lyver*

*Who's involved from the Tuawhenua:*

*Tahae Doherty, Kirituia Tumarae-Teka*

*Who's involved from Manaaki Whenua: Phil Lyver*

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) was established as an independent, intergovernmental body to assess the state of the planet's biodiversity and ecosystems.

As part of the IPBES work programme an Indigenous and Local Knowledge (ILK) Task Force was established to develop approaches and procedures for engaging indigenous peoples and their knowledge within IPBES assessments. As part of this process, an ILK Dialogue Workshop was organised at the Smithsonian Tropical Research Institute, Panama City, in December 2014 to facilitate the engagement of indigenous peoples and their knowledge in the *Global Assessment on Pollination and Pollinators Associated with Food Production*.

The workshop brought together six scientists from the pollination assessment and 13 ILK holders and experts from Brazil, Guatemala, France, Indonesia, Kenya, New Zealand, Nicaragua, Panama, and Peru. Two Tūhoe Tuawhenua elders, Tahae Doherty and Kirituia Tumarae-Teka from Ngāputahui and Ruatāhuna respectively, were invited to attend the workshop and contribute their extensive knowledge and experiences relating to pollination and pollinators within the forests of Te Urewera.

A travel grant from NZ's National Commission for UNESCO supported the elders' attendance and participation in the workshop. As a result of their contributions, a Tūhoe Tuawhenua case study on pollination and pollinators in Te Urewera has been put forward for inclusion in the global assessment on pollination. But even more valuable was the cultural perspective, worldview, and indigeneity that the Tahae and Kirituia brought with them to the global dialogue process. The elders made a significant impact on the global biodiversity stage.

*Editor's note:* Phil was interviewed by TVNZ's Te Karere programme late last year about the impending trip and Tūhoe Tuawhenua's participation.



Phil Lyver, Kirituia Tumarae-Teka, John Lingoisa (from the Ogiek tribe who are traditional forest dwellers who occupy the highlands of Kenya), and Tahae Doherty. Downtown Panama City in the background.



Tahae holds a traditional South American bee hive at the Smithsonian Tropical Research Institute labs in Panama.





Indigenous and scientific participants at the Global Dialogue Workshop – Indigenous and Local Knowledge of Pollination and Pollinators associated with Food Production, at the Smithsonian Tropical Research Institute, Panama City, Panama.



Kirituia Tumarae-Teka (promoting Manawa Honey) and Tahae Doherty at Mira Flores (Panama Canal), Panama, December 2014.



Tahae Doherty, Kirituia Tumarae-Teka, and Phil Lyver feeling the heat at the local arts and crafts market in Panama.

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