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Robert Lamberts, Crop & Food Research

Kia ora tātou katoa

Mai te tīmatanga i hāngai tika tonu a Manaaki Whenua ki te mahi tahi me ngā iwi katoa puta noa i te motu. Ko ngā tuhituhi e whai ake nei he whakaatu i ētahi o ngā mahi rangahau i mahia e etahi kaimahi o Manaaki Whenua i waenganui i a tāua te Māori.

He waimarie a Manaaki Whenua ki te piri atu ki a Ngāti Whātua, ki a Ngai Tahu, ki a Ngai Tūhoe, ki a Ngāti Kahungunu, ki ngā iwi o te Tau Ihu o te Waka a Māui – koiane ngā iwi e kōrerotia ana i ngā rārangi kei raro ake nei. Engari he nui noa atu ngā iwi, me ngā hapū kua noho tahi, kua moe tahi me Manaaki Whenua ki te rangahau i ngā take pūtaiao whakahirahira mo rātou - a Ngāti Porou, a Ngāti Hine, a Tainui waka, a Te Arawa waka, a Mataatua waka, a wai rānei.

Nā, kia mohio mai anō koutou, ehara i te mea he Māori anake ngā kaimahi e mahi nei i ēnei mahi. Ko ētahi he Pākehā, he aha rānei. Koira te kaupapa i tohungia e te poari tuatahi o Manaaki Whenua, ā, heke noa mai ki nāiane. Mā te mahi pēnei ka kitea pea te kiri mā ki ngā rerekētanga o te Māori, ka tāea e rātou te whakatikatika haere i a rātou ake tikanga kia rite hoki ki to te tangata whenua.

Ko te wawata o Manaaki Whenua, kia maha ake ngā Māori e uru mai ana ki te mahi rangahau pūtaiao. Ahakoa piki atu i te rua tekau ngā Māori e mahi ana mo Manaaki Whenua takitahi noa iho ēnei – e whā rau kē te katoa. Ki te kore he Māori, ka mau tonu e te Pākehā mā rātou kē e kōrero i ngā kōrero mo tāua mo te Māori. He pēnei katoa ngā kamupene rangahau pūtaiao (CRIs), he torutoru rawa ngā Māori kei reira e mahi ana. He pērā anō ngā whare wānanga Pākehā, te nuinga no tauīwi. Engari ngā whare wānanga Māori.

Ko te tino raruraru kē, he kore mohio ta te Māori he mahi nui tēnei te mahi

rangahau i te pūtaiao, ā, ehara mā te Pākehā anake e kawē. Kua kore hoki te Pākehā e mau ki te whakaaro he tikanga anō tā te Māori, kāre e rite ki tā te Pākehā. Ko te mātauranga o te Māori he rerekē ki ngā whakatakatoranga a te ao Pākehā.

He take tino nui tēnei mea te mātauranga. He maha ngā pātai hei pātaitanga, arā, nā wai te mātauranga, mā wai e kōrero, mā wai e tiaki, ā, ki te puta mai he pūtea, me pēhea? Mo te nuinga o a mātou mahi rangahau ka whiriwhiria tēnei take i mua o te tīmatanga o te mahi, kia mohio tika tonu me pēhea te haere inā ka puta mai he pūtea. Mena nā te mātauranga o te iwi, nā rātou te pūtea, mena nā Manaaki Whenua, ā, ka maringi mai ngā herengi ki a Manaaki Whenua. Engari, mena nā rāua tahi, ka tohaina tētahi wāhi ki a Manaaki Whenua, me tētahi wāhi ki te iwi.

Kia huri atu au ki ngā kaimahi Māori o Manaaki Whenua hei whakamutunga kōrero māku. Te nuinga kāre anō kia tino pakeke. Engari kua whiwhi tohu Pākehā rātou. Ko ētahi kei te kaha rawa atu to rātou pupuri i ngā tikanga a kui mā, a koro mā; ko ētahi kāre tonu e mohio tūturu nei ki aua tikanga – engari ehara nā rātou te hē. Kia puta mai rā anō te kaimahi Māori e kaha ana ki te mahi i roto i te ao Pākehā, me te ao Māori kātahi anō ahau ka noho ngākau mārie.



Robert Lamberts (Te Whānau-a-Apanui)
Manager, Treaty Responsibilities
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Manaaki Whenua

Waka sets sail for brighter business future

Research on developing a Māori business brand is finding receptive markets in North America and Europe, and helping to clarify how Māori companies can best play to their strengths.

Waka Tohu is a four-year project aimed, quite literally, at becoming a vessel/waka to promote a Māori brand/tohu. Collaborators include Manaaki Whenua; Mana Taiao, a Māori-owned business research company; New Zealand Trade and Enterprise; the University of Waikato; Te Rūnanga o Ngāi Tahu; Wakatu Incorporation; Federation of Māori Authorities; Ministry of Tourism; and several Māori research consultants.

Waka Tohu's basic premise is to build on the scant existing research on Māori business, and to ascertain whether a "brand Māori" would have a competitive advantage, particularly for exports. The project will also investigate the degree to which Māori businesses integrate the unique ethics and traditions of Māori culture. Do they tend to work as businesses based strongly on Māori values, and if so, how do they incorporate those values in their way of doing business?

Manaaki Whenua Science Manager for Sustainable Business, Dr Richard Gordon, says that halfway into the project the early focus has been on understanding what is happening in Māori export markets. This has involved

case studies with seven successful Māori businesses, and New Zealand Trade and Enterprise-assisted surveys in North America, Europe and Asia.

"It is clear that a 'brand Māori' does hold currency in some export markets.

"We went to importers and trade fairs in Canada and the United States. Our questions related mainly to tourism, and the food and beverage industries.

"We found two levels of awareness. Many people had heard of New Zealand and of Māori, but did not have an awareness

of Māori products. However, they were responsive to new products, and new foods to come out of New Zealand's forests – for example, indigenous herbs such as pikopiko, horopito and kawakawa. We found opportunities for Māori businesses to crosslink their marketing there, creating a brand image.

"We also saw that there was little awareness of or interest in primary sector products, such as forestry products."

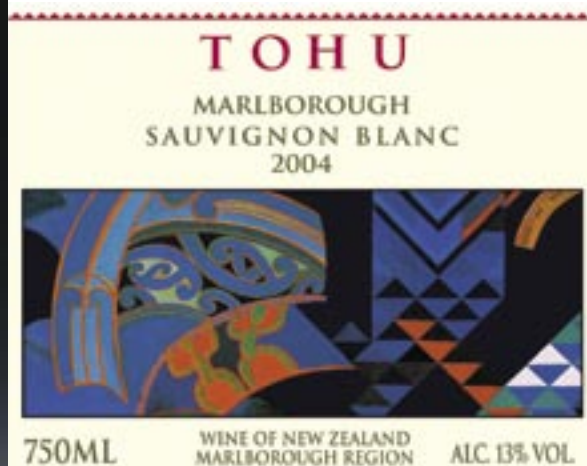
Mana Taiao director Buddy Mikaere (Ngāti Pūkenga, Ngāti Ranginui) says in some European markets there was a sound knowledge of Māori art and music, and

strong interest in Māori art and design elements.

"We found this in Greece and Italy in particular – in fact, anywhere the 28th Māori Battalion had been! We had a distinct advantage there. Also, Greece and Italy have some cultural similarities – for example, they're big on families.

"I think the key to Māori brand marketing is to find those countries where we do have a profile, otherwise we face an uphill battle.

"Our surveys in Singapore, for example, showed there was little



Wakatu Incorporation, Tohu Wines



Examples of Māori business branding for premium products. The Waka Tohu project aims to help Māori businesses identify their best markets and take advantage of their natural strengths.

interest in cultural aspects but much more in whether our produce is fresh and competitively priced. So trying to establish a niche for a Māori brand there would probably not be the best use of our energies.”

“Third-World Guilt”

Richard and Buddy say misconceptions about indigenous branding pose another potential barrier to building a Māori export brand.

“There was some consumer confusion that indigenous branding pertains to ‘Third World’ or developing economies, whose products are often purchased out of a sense of guilt,” Buddy says.

“This was especially true of countries such as the United States and Australia where there are ‘First Nation’ peoples who tend to be at an economic disadvantage.”

Richard agrees that perception is a potential barrier. “We are observing that premium, niche markets appear to hold the best future for marketing Māori products.



■ Buddy Mikaere

“We want the brand to represent enduring quality and unique and ageless design features.”

The next step is to work collectively with a pilot group of 10 Māori businesses, to create “brand Māori”.

“We want to develop innovative models of business branding service development, for trial implementation

by Māori businesses participating in the programme,” says Buddy.

“We will also be looking more closely at how Māori companies incorporate aspects of Māori culture into their businesses. Many Western companies are asking themselves similar questions, such as ‘how does this business contribute to my community?’ and are becoming increasingly focused on environmental and social impacts. The findings will be relevant to them also.”

Funding: FRST (Foundation for Research, Science and Technology)

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I Research uncovers barriers to regional tourism

A new research initiative is set to help the development of Māori tourism.

Tourism is increasingly important to New Zealand and contributes almost 10% of our GDP. International visitor numbers are rising by about 6% per year, and are forecast to reach 3 million in 2009. However, the “100% Pure New Zealand” brand relies on our “natural” environment, so tourism impacts on the environment must be carefully managed.

A four-year research project is underway to help iwi develop new, high-quality Māori tourism products and businesses, with a focus on cultural and eco-tourism. Manaaki Whenua and three Māori research providers are focusing on two

case study areas: the Bay of Plenty – Te Urewera Tairāwhiti region, where there are already a number of Māori tourism ventures, and Banks Peninsula, where four Ngāi Tahu rūnanga have been considering possible tourism initiatives. The three Māori research providers are the Tūhōe Tourism Federation, Te Urewera –Tairāwhiti Tourism Forum and Takuahi Research and Development Trust.

Manaaki Whenua researcher Dr Chrys Horn says successful Māori tourism ventures can have strong synergies with environmental and conservation goals. “If Māori can develop successful tourism

businesses on their land, this provides another avenue for rūnanga development. However, there are very few such ventures.”

Dr Horn says there is little existing research on demand for Māori tourism products, and this is one important component of the study.

“We asked both foreign and domestic tourists how they judge a product’s quality, and assessed the level of demand for Māori tourism products. Most tourists come to New Zealand to enjoy the environment, and some have more interest in engaging with local culture than others.

“Interestingly, we found regional differences between the North and South Islands. Visitors to the North Island tend to express more interest in things Māori, which they tend to think of as Māori hangi and concerts, whereas visitors to the South Island are much more interested in adventure activities and natural landscapes.

“For tourist activities outside urban centres, it may be that Māori are better able to develop their business without focusing on Māori products. However, providing some Māori ‘flavour’ might be very attractive.”

Breaking down barriers

The second strand of the research entails understanding how Māori businesses deal with the barriers they face.

Historically, urban Māori businesses have largely been successful whilst the development of rural Māori business has been more of a struggle. In the case of rural Māori tourism, this is essentially about finding ways to tempt tourists away from “the beaten track” to some of the more remote places like Te Urewera and Banks Peninsula.

Finance can often be a barrier. Banks will not lend against collectively owned land, and this frustrates many attempts by Māori to get into tourism seriously. Often, Māori have strong entrepreneurial instincts, but tourism businesses tend



Joan McSweeney, Ngāi Tahu Holdings Group.

Regular meetings are held with members of the four rūnanga on Banks Peninsula (Horomaka) to report on progress and to plan future directions. At the most recent meeting, Programme Leader, Dr Phil Hart (Manaaki Whenua) is pictured with some of the Horomaka researchers. **Back row:** Rei Simon (Wairewa), Peter Ramsden (Koukourārata), Iaeen Cranwell (Wairewa), Phil Hart. **Front row:** Tim Manawatu (Ōnuku), Ngaire Tainui (Ōnuku), Robin Wybrow (Wairewa).

to be just one of many projects they try their hand at. And partly because of this, Māori tourism businesses tend to be very small-scale and seasonal.

Also, there is a lack of appropriate tourism or business training for operators and staff of rural Māori ventures, and therefore a lack of progress in getting viable businesses off the ground.

Robin Wybrow, a director of the Takuahi Research and Development Trust, says there is a strong working relationship with Manaaki Whenua based on mutual trust, and this is the reason why Takuahi has entered into this project with much enthusiasm.

“The work truly demonstrates the value of collaborative projects.

“The preliminary research is already proving extremely helpful for us in formulating future business directions.

“It has made us rethink the question

– should we propagate a series of Ngāi Tahu businesses on Banks Peninsula, or should we build businesses that happen to be Ngāi Tahu?”

The work has raised similar issues for the fledgeling Māori tourism industry around Te Urewera, as iwi researcher Brenda Tahī explains.

“It seems to confirm the feeling that the area’s pristine beauty and ecotourism is its main attraction, rather than its Māori heritage, but that the cultural element adds value to a visitor’s stay.”

Ms Tahī says the research is also having practical benefits. “For example, it has led to the development of a visitor feedback form, in which an operator can ask clients where they’re from, why they came, and what they thought of their visit. This is providing very helpful quantitative information.

“The project has also helped make us aware and put us in touch with the wide range of agencies who assist and promote tourism businesses.”

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I Project uncovers Māori perspectives on better waste management

As part of a collaborative project on waste management, a team led by Manaaki Whenua is investigating Māori cultural and environmental views on managing waste, using a unique approach to profile the views of iwi. Researchers say the unexpectedly wide and complex range of viewpoints they are uncovering will assist efforts to find better solutions to New Zealand's waste management dilemmas.

Municipal and wood fibre wastewater treatment operations in New Zealand produce more than 500 billion litres of effluent per year. The annual production of de-watered municipal sewage (biosolids) is about 77,000 tonnes and expected to grow, while about 112,000 dry tonnes of wastewater treatment solids are produced by the pulp and paper industry.

For many years, iwi throughout the country have objected to discharging sewage and other contaminants directly into water, largely due to the negative impacts this has on mahinga kai areas (traditional food gathering areas). Many instead favour application of wastes to land, both for economic and technical reasons and the belief that Papatūānuku (Mother Earth) can mitigate the harmful effects.

To investigate these attitudes and values, a team of Manaaki Whenua, Forest Research and University of Canterbury scientists led by Dr Louis Tremblay and Dr Jamie Ataria has implemented a unique iwi-lead approach, working in partnership with Ngāi Tahu and Te Arawa.

"Iwi prefer a strong involvement in research that looks at their values.

Māori have stipulated that

they wanted one of their 'own' to do this research," says Dr Ataria. Consequently, Craig Pauling (Ngāi Tahu) was seconded to Manaaki Whenua from the Ngāi Tahu Development Corporation's Kaupapa Taiao Natural Resources Unit to carry out the Ngāi Tahu part of the research.

Since he started, Craig has been gathering historical accounts and references related to waste and waste management. He has interviewed Ngāi Tahu members to identify their preferences for future waste management scenarios.

While the focus is on Ngāi Tahu solutions and how these may be better accepted and implemented, Craig is also taking the opportunity to compile information on traditional waste management practices generally – a topic poorly documented by

early historians! He says he has uncovered a surprising range of approaches.

Avoiding mix-ups – a question of separation?

Māori attitudes to waste management are diverse, and not as "black and white" as often thought. "The prevailing principle is separation, with Māori not wanting waste streams mixed together, and most importantly, with the food chain," Craig says. "Traditionally, each pā had separate areas for processing human waste and food waste, and separate areas for food supply and preparation. People also used ash and lime to break down waste more quickly and grew scented native plants to deal with unpleasant smells."

Craig says that there is evidence to suggest that some traditional treatment

and disposal techniques involved use of water and that the belief that Māori absolutely object to discharges to waterways is not as clear-cut as many think. "Particular references state that some communities did discharge human waste to water. Certain waterways would be used for waste but



■ At Houmaitawhiti Marae near Lake Rotoiti, talking with local iwi about waste and resource issues. From left: Dr Jamie Ataria, Tutewehiwehi Kingi, Te Ariki Morehu, Guna Magesan (Ensis), Craig Pauling.



these were not food sources, or did not flow through the village or to places where food was gathered, and in some cases drains were built to channel this water away. In all cases, however, use of the land still played a role in the process.

“What is important to remember, however, is that today’s communities don’t have the same degree of knowledge or control over their food sources or what goes into each waterway, when, and by whom, especially for industrial chemicals or agricultural wastes. Further, the environment is more degraded and many culturally important sites for mahinga kai (food growing areas) are now contaminated.

“An additional challenge today is the occurrence of new chemical contaminants present in various products such as detergents, and solid wastes such as plastic that traditionally were not there. All traditional wastes were organic and broke down naturally in the environment. Further, in the past, Māori had total control over their food sources and territories. Mostly, it is land, and not water, that is seen as a cleanser and the appropriate

medium for the treatment and disposal of wastes, and Ngāi Tahu advocate land-based alternatives in the first instance.”

One of the most interesting questions to come from the research so far is the debate about whether human wastes should be reused and recycled. “Although Māori recognise the cleansing effect of the whenua (land) and the need to deal with wastes, most references state that Māori chose not to use any form of manure on their gardens. Many would still rather see biosolids applied to forests and ‘non-kai’ areas than to pasture, and for it to be applied well away from waterways.”

Forging new partnerships

The project leader, Manaaki Whenua scientist Dr Louis Tremblay, says the research is indeed helping to create partnerships. “We have approached the issue from a ‘seek first to understand’ perspective. Having more knowledge of traditional practices has enlightened our viewpoint today.

“Many old practices were well thought out, and protected human health. Therefore, it is

important to define these methods and when possible, include them in current practices.

“The research has also shattered some popular misconceptions, for example, that Māori didn’t have planned ways to deal with wastes and never discharged human wastes to water. These are oversimplifications.”

Dr Tremblay says that Quadruple Bottom Line reporting underpins this research. “There is a growing trend for research to aim to address cultural, as well as economic, environmental, and social concerns. This approach is becoming more widely embraced as communities start to come to terms with why it is important to put science and research within a cultural context.”

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Fungal knowledge from the past extends knowledge today

A review of traditional Māori knowledge of fungi has extended what we know about our native fungi – and confirmed the fear that much traditional knowledge has been lost.

About 7,000 species of fungi have been recorded in New Zealand, and it is estimated another 14,000 are yet to be found. More than 70,000 specimens are contained in the New Zealand Fungal Herbarium at Manaaki Whenua, Tamaki, Auckland.

University of Auckland student Rebekah Fuller, with funding from Manaaki Whenua, produced a masters thesis on Māori knowledge of fungi, chronicling both historical and current uses. Her work has been published as a chapter in a new book, Vol. 1 of *Fungi of New Zealand – Ngā Harore o Aotearoa* (McKenzie 2004).

The study was motivated by the need to assist in the recovery and retention of mātauranga (Māori traditional knowledge) of fungi, and by the scientific need to increase knowledge of New Zealand fungi generally.

Rebekah reviewed historical literature on fungi, and interviewed more than 50 people from Māori communities in Tūhoe, Te Roroa and Te Rarawa, plus Māori students from the University of Auckland.

Food and fungi

Rebekah says, as in many parts of the world, the main use of fungi here has

always been as a food source. “However, some were **not** considered prized meals!”. As the ethnographer Elsdon Best observed, “these poor foods were sought in times of scarcity,” and many were bitter, and were steamed and mixed with other foods to make them more palatable.

The most widely eaten was probably harore (*Armillaria* spp.), which are common wood decomposers found on fallen tawa and other trees in late autumn and early winter. Harore is still collected as a food by some Māori, such as Tūhoe. The name harore is also used in a generic sense as the most appropriate Māori name for all kinds

of fungi.

The edible hakeka (wood ear fungus, *Auricularia cornea*) was plentiful on rotten wood in lowland forests, but some Māori thought it tough and rubbery. However, the export trade in *A. cornea* to China provided a significant income for both Māori and European families in some areas in times of rural hardship.

Other fungi were eaten in their palatable younger forms, but not in their mature forms. In some communities, the outer part of young tutae whatitiri (basket fungus, *Ileodictyon cibarium*) was roasted and made a treat for the elderly or infirm. However, when the fungus matured and burst, throwing out its curious white globe-shaped framework, its stench of rotting flesh was unendurable.

Also, some pukurau (puffballs) were eaten while still young and palatable. Mature puffballs (some of which can grow as large as footballs) were reportedly used as anaesthetics, to staunch bleeding, and to treat burns.

Other recorded uses as a medicine include puku tawai (the bracket fungus *Laetiporus portentosus*), which was applied as a seal for wounds, and used in “difficult labour”. But most importantly, this fungus was used as tinder for fire carrying, as it smouldered for many hours. It was put to the same use in the world wars and 1930s depression.

Fungi also had important cultural uses. The awheto (vegetable caterpillar, *Cordyceps robertsii*) – a fascinating fungal parasite on moth larvae – was burnt, powdered and rubbed into cuts in the



■ Rebekah Fuller



■ *Armillaria novaezelandiae* or *harore*. *Armillaria* species were probably the most commonly eaten by Māori.



■ *Hakeka*, the wood ear fungus *Auricularia cornea* – a valuable export commodity.

skin as ink for ta-moko (tattooing).

However, few of these uses remain extant today.

Words, stories and science

During her research, Rebekah encountered more than 180 Māori fungal names, many of which have no known equivalent scientific name.

“For most of these, poor historical descriptions of species combined with the loss of traditional knowledge among today’s population make it impossible to assign modern scientific names. Many of the names are likely to be synonyms of the same species, and represent dialectical differences.

“Many names are morphologically descriptive, with metaphorical references to their appearance.

For example, five names have the word ‘taringa’ or ‘ear’ in them. Other names were not necessarily species specific, and further suggest that fungi were not a well-used resource. For example, tutae kehua (ghost excrement) was used to describe three species of fungi that are white, round when small, and found in soil.

“The iconic werewere-ōkako (blue entoloma, *Entoloma hochstetteri*) was linked with the blue wattle of the kōkako, and is now featured along with the kōkako on the New Zealand \$50 bank note.”

Manaaki Whenua mycologist (fungal scientist) Dr Peter Buchanan says various kinds of scientific information are embedded in the names also, as well as in waiata (songs), whakataukī (proverbs) and kōrero (stories). “The names gave clues to fungal biology and ecology including host species, fruiting season,



Ileodictyon cibarium (*tutae whatatiri*), attractive but repellent!



Pukurau can grow to the size of footballs. This is one is Calvatia gigantea.



Healing qualities: puku tawai, the bracket fungus (*Laetiporus portentosus*)

distribution, animal interactions, and morphology.

"This research has been able to link Māori names and uses of fungi to modern scientific species giving new meaning to some of the historical information, and at the same time increasing our scientific knowledge of species known and used by Māori," Dr Buchanan says.

McKenzie, E.H.C. ed. 2004: Introduction to Fungi of New Zealand. Fungi of New Zealand Vol. 1. xxxvi + 498 p.

Funding: Landcare Research



Used in ta-moko – the awheto (*Cordyceps robertsii*, the vegetable caterpillar)



The unearthly beauty of werewere-kokako, the blue entoloma (*Entoloma hochstetteri*)

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Directors committed to sustainability message

Willie Te Aho and Denise Church bring strong leadership skills to Manaaki Whenua's board. They also share a passion for engaging the community in sustainability issues.

Lawyer and businessman **Willie Te Aho** (Ngāti Kahungunu) says he hopes his tenure on the Board will help bring about a greater understanding and appreciation by Māori of the work done by Manaaki Whenua, and of science generally.

Mr Te Aho is currently Chief Executive of Indigenous Corporate Solutions (www.icsolutions.co.nz), which has developed best practice models for Māori protocol training, consultation, alternative dispute resolution, and Māori project management. He lives in Hamilton with his wife Linda and their two sons.



Ian Whitehouse

Willie Te Aho

Formerly a staff solicitor for CJ McGuire in Parnell, Mr Te Aho has also been Chief Executive for Te Rūnanga o Turanganui a Kiwa (Gisborne), a tribal organisation with 65 staff and \$5million in assets, and Manager, Partner Relations, Carter Holt Harvey Corporate, with responsibility for commercial and regulatory relationships with Māori. He spent a year as Visiting Lecturer, Māori Development, at the University of Waikato's School of Social Science, and was a strategic planner with the Te Rūnanga o Kirikiriroa (Urban Māori Authority – Hamilton).



Mr Te Aho describes kapa haka as his main social interest, hobby and passion. His company (www.kapahakainternational.com) specialises in all aspects of the art.

A passionate proponent of sustainability – of being culturally, environmentally, economically and politically strong – he regards lack of education and personal commitment as the main challenges facing New Zealand today. “Simple behaviours like recycling are still not the norm. Until real care for the environment is embedded in our psyche, the environment will always play second fiddle to economic issues.

“As the proverb says, ‘Toitu te Marae a Tāne, Toitu te Marae a Tangaroa, Toitu te Iwi.’ If the domain of Tāne (forests and life within), and the domain of Tangaroa (oceans and life within) survive and prosper, then so too will the people.”

Denise Church QSO has been on Manaaki Whenua’s board for almost four years and comes from a background in environmental management and science, and organisational leadership. After taking degrees in Zoology, Economics and Resource Management, Ms Church has led a rich and varied career. Starting as a water quality scientist with MWD, she later worked as a resource planner for the Wellington Regional Council, helping instigate Wellington’s first regional parks. In 1987 at the newly formed Ministry for the Environment, she led the Resource Management Law Reform Project,



Ian Whitehouse

■ Denise Church

involving, as she describes it, “some of the most stimulating debates on New Zealand’s future.”

After a year as a Rotary Graduate Fellow at the University of Madison, Wisconsin, Ms Church spent six years in the United Kingdom, working in central government, the oil and gas industry, and as director of Public Affairs for the Royal Society for the Protection of Birds.

In 1996 she took up the role of Chief Executive at the Ministry for the Environment, where she was involved in some critical first steps in climate change and waste management policy, and developing the biodiversity strategy.

“The first State of the Environment Report in 1997 was eye-opening for many with its clear statement that New Zealand had no

cause to be complacent about its clean and green image.

“Some of the most satisfying work for me was seeing the Ministry’s work carried out into the community. At the same time, there is still a huge amount of work needed to increase individuals’ understanding of the consequences of their resource use choices.”

Ms Church retired from the Ministry in late 2001 to devote more time to her young daughter. She is now Deputy Chair of the Wellington Zoo and WWF New Zealand, and chairs the Ethics Advisory Panel for the Environmental Risk Management Authority.

Ms Church says her involvement on the Manaaki Whenua Board continues to be a highlight and she is especially proud of the Board’s 50-Year visioning exercise, which refines Landcare Research’s mission and guiding principles.

“It is a privilege to be associated with hugely talented and committed scientists who bring such strong energy and enthusiasm to their work, in an organisation that has a clear direction and sense of what it can bring to the future.

“It is exciting to think about how Manaaki Whenua can achieve its goals in sustainability most effectively.”

I Holistic approach helps forest, birds and trees

Forests deep in the heart of the Urewera are slowly yielding their secrets, as Manaaki Whenua works with local iwi to improve the fortunes of birds and regenerating native trees.

Manaaki Whenua has a close working relationship with the Tūhoe Tuawhenua Trust, which administers Tuawhenua-owned forests surrounding Te Urewera National Park. The forests were extensively logged last century. The Trust has expressed concerns about the decline

of forest birds, particularly the native wood pigeon, the kererū. They are also worried that some podocarp tree species such as rimu, mataī, tōtara, toromiro (miro) and kahikatea are not regenerating as well as they used to and going on to become large enough to reach the forest canopy. It is

thought the two problems are related, because kererū feed on podocarps and spread their seeds.

Manaaki Whenua ecologist Dr Rob Allen and his team have begun to develop research and management guidelines



with the Tuawhenua Trust, to help restore the forest ecosystem. Researchers are liaising closely with Trust members and local iwi, and Tūhoe students from Te Whare Wānanga o Awanuiārangi are being employed in the field.

Manaaki Whenua scientist Dr Fiona Carswell has been leading a project to ascertain which tree species are and are not thriving, and why.

Dr Carswell has confirmed that there are few podocarp seedlings in the forests. Also, as Trust members suspected, there seems to be a disproportionately large number of tawa seedlings.

“However, does this mean there are too few podocarps to ensure their future in the forest canopy? This is the next question we need to answer.”

Manaaki Whenua and Tuawhenua researchers are clear that last century’s logging has removed most of the potential parent trees of podocarps. This may have given tawa an advantage in access to soil nutrients and light at the forest floor.

What is now required is knowledge of exactly where the podocarps are regenerating, and whether their growth is restricted because of poor light or nutrients.

In addressing this question researchers have surveyed seedlings in three forest



Sarah Richardson

■ Jim Doherty (Tuawhenua Trust) and Larry Burrows (Manaaki Whenua) struggle to reach around this large kahikatea to measure its diameter.

this five-year project.

Meanwhile, Manaaki Whenua ecologists Graham Nugent (Ngāti Tuwharetoa) and Dr Phil Lyver (Ngāti Toarangatira) have been researching the reasons for the decline of kererū.

“Logging may have been a factor with the removal of nesting habitat and food sources,” Dr Lyver says. “However, kererū are also under serious threat from predators such as possums, rats and stoats, which take eggs, chicks and adults.”

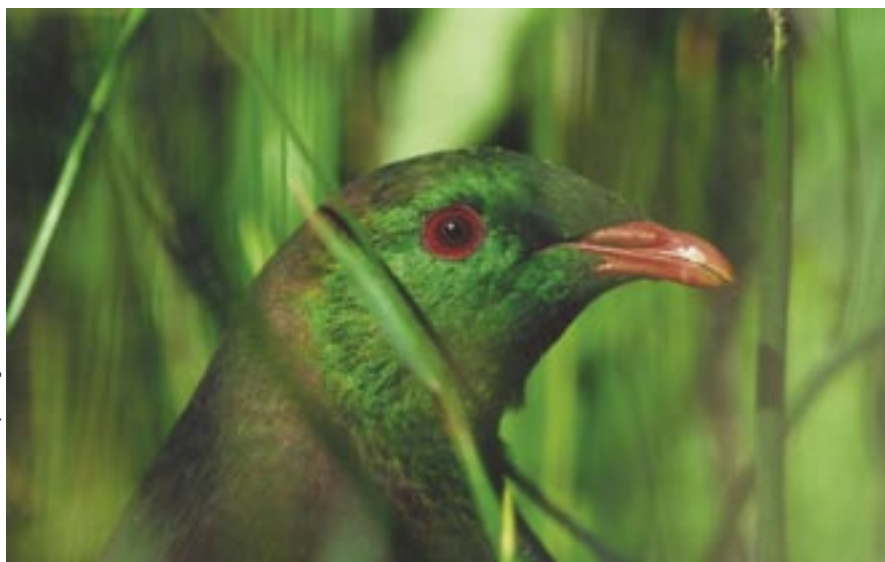
Mr Nugent says the study aims to reach a point where predation on kererū can be predicted from a simple assessment of pest numbers, rather than “the difficult and laborious job of monitoring kererū breeding success.”

The team looked at logged and unlogged areas in the forest, in remote and easily accessible locations. They used bird counts, traps, tracking tunnels, and faecal

pellet counts to find out the relative abundance of birds and pests in these areas.

“Numbers of rats and stoats varied little, but we caught almost twice as many possums in unlogged plots. Interestingly, we found higher densities of kererū in logged areas and fewer kererū in areas where more possums were found.”

The next step in the research is to deploy radio transmitters on kererū to find out where they nest and then set up data loggers and infrared video cameras near selected nests, to record whether kererū are receiving



Jamie Newman, University of Otago

■ Kererū.

blocks in an attempt to relate the presence of these seedlings to a range of factors such as altitude, available nutrients, and the presence or absence of other plant species. This is the first year of

unwelcome visitors – possums, rats and stoats.

As well as using these modern-day methods, Dr Lyver and Tuawhenua team members are interviewing kaumatua about mātauranga kererū – historical knowledge of the wood pigeon.

“Over the generations, Tūhoe have built

up a vast amount of knowledge about the forests and the birds in it.

Such mātauranga will provide a much better understanding of how kererū numbers have changed over the years, and what this means for future populations of kererū. Just how this mātauranga will be handled in the context of a FRST funded piece of

research is a vital component of the overall research programme.

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Research shows road to better understanding

A study on Māori values and concerns relating to road construction is forging a pathway toward better understanding between developers and Māori.

An estimated 90% of New Zealand’s significant Māori cultural sites have been destroyed or significantly altered over the years during road construction and associated developments.

In a four-year research project, Manaaki Whenua has joined forces with Opus International Consultants and environmental and heritage advisor from Ngāti Whātua, Bill Kapea, to reduce the “mismatch” between roading development and the way Māori value that land. The aim is to demonstrate the benefits of incorporating Mātauranga Māori (Māori knowledge) into usual roading practices, focusing initially on the Auckland Region.

The findings of this project will be presented to local authorities, developers, and Transit New Zealand.

The collaborators intend that this information will help reduce losses from delays that arise from misunderstandings, omissions and lack of

commitment to a bicultural approach in the planning and construction stages. They hope this research will also help minimise the negative impacts of roads on environmentally sensitive areas.

Manaaki Whenua resource economist Shaun Awatere (Ngāti Porou) says the main mechanism to incorporate Māori values into roading projects under the RMA is through conditions on consent or designation. “These typically cover such matters as avoiding wāhi tapu (burial grounds), procedures for dealing with human remains if uncovered during excavations, habitat protection or rehabilitation, techniques to manage stormwater, maintenance of fish passage from waterways to the sea, and restoration of areas around the roading site with native vegetation sourced from the local area.

“The key tenet of Māori resource management is ‘sustainable use’ – minimising the impact of your use on the environment.

“However, because Māori perspectives are not necessarily monetary in nature, this type of work has traditionally been less accepted by roading engineers.”

The next stage of the project is to demonstrate just how Māori cultural values come into the mix, using what is called the “contingent valuation” method.



Craig Briggs

On the right track: Shaun Awatere



This involves allocating economic values for all kinds of services that do not have an identifiable “market” value. Natural environmental processes come into this category.

“So far the research has found that Māori are usually willing to pay more to improve their environment, for example, to plant indigenous vegetation by roadsides. However, their ability to pay is another matter.”

Māori values on roading have come under the media spotlight in recent years, most notably when work on a stretch of State Highway 1 near Meremere was stopped because it might have disturbed taniwha in the Waikato River.

Mr Awatere says such coverage is unfortunate. “I would urge people to inform themselves of the complexity of Māori perspectives, and the very real environmental benefits they can offer.

“Organisations such as Environment Waikato can be very helpful in this regard. They have informative websites. Most have iwi liaison and information resources, and can provide assistance on a variety of Māori-related environmental management issues.”

Bill Kapea has long advocated the weaving together of Māori and Pākehā approaches to environmental practices, and welcomes the opportunity to do this in relation to roads.

“Roads, after all, have significant impacts on the environment and local communities.

“Our ancestors did not leave us with all this knowledge to have it sit on the shelf as a relic of the past. Our work with Manaaki Whenua and Opus promotes the usefulness of traditional knowledge and practices in a modern world.”

Funding: FRST (Foundation for Research, Science and Technology)

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Iwi make a “point” of natural weed control

Auckland is often cited as the weediest city in the world, and Manaaki Whenua has begun work with Ngāti Whātua toward the iwi’s goal of chemical-free weed control for Takaparawhau Orakei (Bastion Point).

This iconic site is plagued by many common weeds including wandering Jew (*Tradescantia fluminensis*), kikuyu grass (*Pennisetum clandestinum*) and tree weeds such as acacias.

Manaaki Whenua scientist Dr Nick Waipara (Ngāti Porou) says among the range of options the iwi would consider is the

classical biological control method of bringing insects in to attack specific weeds. They are also interested in the possibility of chemical-free sprays that are to be developed by Manaaki Whenua. These would contain spores of fungi that also attack specific weeds.

Manaaki Whenua and Ngāti Whātua researchers have visited Bastion Point to see which useful fungi and insects are already present, and which would need to be brought in. They hope to begin active weed control on site next year.



Nick Waipara

■ *Wandering Jew forms dense ground cover, smothering other plants. It poses a serious weed worry at Bastion Point.*

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