Mauri tū! Mauri ora!

Māori perspectives on exotic plants in Aotearoa

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for the Parliamentary Commissioner for the Environment

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Cover Image: Ollie Gibson, iNaturalist

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Rob McGowan currently works for the Department of Conservation (DOC) and is the Amo Aratu for Ngā Whenua Rāhui (NWR), a contestable ministerial fund established in 1991 to provide funding for the protection of indigenous ecosystems on Māori land.

Rob is one of the foremost authorities on rongoā Māori (traditional Māori medicine) and is well respected nationally for his work with and for the restoration of rongoā Māori practice in New Zealand. For more than 20 years he has been involved in teaching, researching and assisting Māori to re-engage in traditional uses of New Zealand native plants, particularly for medicine (rongoā Māori).

Rob was a regular presenter on Māori Television's *Kiwi Maara* and *Maara Kai* programmes, sharing his vast knowledge of rongoā Māori with the New Zealand public. He is author of *Rongoā Māori – a practical guide to traditional Māori Medicine* (2009).

As the founding chair of the Kaimai Mamaku Catchments Forum he was involved in ensuring the Tauranga Harbour and Waihou catchments are sustainably managed. He is currently patron of the forum.

Rob has also provided input into aspects of intellectual property issues relating to the Waitangi Tribunal's Wai 262 report and served as a rongoā Māori advisor to numerous government committees, Māori tribal authorities and rongoā Māori-related research and education initiatives.

His current work at DOC includes helping to build a bridge between Western science and mātauranga Māori (traditional Māori knowledge) in conservation management.

Rob is one of the founders of Tāne's Tree Trust, a non-profit charitable trust that was established more than 10 years ago to encourage New Zealand landowners to successfully plant and sustainably manage indigenous trees for multiple uses. He remains an active trustee.

Rob has been a long time member and past chairman of the Bay of Plenty Conservation Board. For many years he was also engaged by the University of Waikato as a Continuing Education Officer.

Rob was awarded the Loder Cup, one of New Zealand's oldest conservation awards, in 2018 for his outstanding work ensuring mātauranga Māori in conservation management. In 2020 he was awarded the Queen's Service Medal for services to Māori and conservation.

He is a former Catholic priest and fluent speaker of te reo Māori.

Preview

The Parliamentary Commissioner for the Environment has embarked on an investigation into the current management of weeds in New Zealand. As part of this investigation, the Commissioner has commissioned a concise report explaining how Māori view introduced plants, in particular those that have naturalised and have spread in the wild, and how they view the current management system.

What follows are my observations and lessons that come from experiencing the key concepts and ideas of how Māori see the world and our place in it, and how this has been reflected in the way they see exotic plants and how they should be managed.

I am not Māori. I am a typical Kiwi, born and brought up here, in a mixture of town and country, like so many New Zealanders. I have been very fortunate to have worked closely with Māori over many years, and have got to know and been taught by some very special people, and that, hopefully, is reflected in what follows.

The foundation of what I know comes from the Whanganui River and the kaumātua who took me in hand in the mid-1970s. This has been enriched by working throughout the country since then in many different capacities, but mostly in some way connected with the whenua and its people. My particular focus has been rongoā Māori, traditional Māori medicine, and that provides much of the background to this paper.

Rongoā practitioners often see the whenua somewhat differently to others because they connect to the whenua in a very intimate way. They don't just go and harvest what they need and rush off to put it to use. The foundation of traditional Māori medicine isn't rākau (plants) but wairua and mauri, the spiritual dimensions that underpin our connections to the world around us.

Healers must prepare themselves carefully, to sharpen their focus so that they can see and hear what the whenua is telling them. That's where karakia (prayer) is essential. But it is much more than that. Among other things, healers must also assess the wellness of the place before they begin to harvest, and whether it is an appropriate place to harvest from. That's when they take note of what's growing there, and its condition. Sometimes they can harvest; other times they must go elsewhere or go home.

How rongoā practitioners decide whether to harvest or not gives useful insights into how Māori see the world, including how they see exotic plants (or what most regard as weeds), their impacts, and the way they should be managed.

1. In the beginning

The Māori story of creation is often told and known to many. It has been regarded as a myth, a fairy story to be told to children. But it in fact provides a pathway into understanding how Māori see the natural world and the interplay of the different factors that make up the environment: the sun, the wind and rain, earthquakes, living beings like plants and animals, etc, and the dynamics of their relationships. The focus in this paper is the world of Tāne-mahuta, the progenitor of all the living beings that are found on the Earth.

Ngā atua

According to the traditional story, Tāne, after much effort, had finally completed his mammoth task of separating his parents, Ranginui (the Sky Father) and Papatūānuku (the Earth Mother). He stood back and took stock of what he had accomplished in a world now filled with light. He looked down and saw that his mother (Papatūānuku) was left bereft and alone, exposed to the heat of the day and the cold of the night. To cover her nakedness, he fathered the trees of the forest, the birds of the air, and all the living creatures that now cover the Earth. In other words, to address the hurt he had caused, he fashioned a kākahu (a cloak) for his mother, to protect and sustain her. This is the origin of the forests and plants that first covered Aotearoa.

This is not just a story from of old, remembered, but only passed on by storytellers. It has modern-day use. When the Hawke's Bay Regional Council looked for a name to describe the challenge of addressing the massive erosion problems in the region, Ngāti Kahungunu offered the name "Kahutia", which means putting a kākahu, cloak, back on Papatūānuku. In one word the council and Ngāti Kahungunu both encapsulated the whole challenge they face in reducing the sediment and guaranteeing the water supply the Hawke's Bay needs to sustain the region and its people, and also highlighted the means they would use to meet that challenge. They need to restore the cloak of Papatūānuku, they need to reclothe the most vulnerable landscapes in trees and plants.

Whakapapa: the Māori worldview

To Māori, Papatūānuku, the Earth Mother, is paramount. They don't regard humankind as the centre of the universe but part of the family of Tāne, and teina, junior, to the other species that make up the family. Working with the landscape is not then a way of asserting one's dominance, one's rights as the centre of the universe. Rather it is a process of negotiation, working to ensure that the balance needed to sustain the mauri is sustained.

Māori place great importance on keeping things in order, tuakana and teina (senior and junior) each have their place and maintaining that is paramount. Humans are not at the top, as Western culture often places them, but at the bottom, the junior, in fact the pōtiki, the last born. The role of the potiki role is to care for the other species, to help ensure that all are well. In turn they provide for people and give them a home. Māori have a real sense of belonging. Humankind is part of the family of Tāne, not outsiders trying to dominate and control because they are different and superior.

Mauri

The role of trees and plants is to cover the Earth to keep her well. They play a critical part in the network of life on Earth. They provide shelter and protection for all of the other creatures, but they in turn are completely dependent on them. The biggest trees that are known and admired would struggle to

survive if the subcanopy species weren't there to provide support; if the little plants on the forest floor didn't keep the soil moist and in place, and the birds didn't spread their seeds. Even more important are the many microorganisms in the soil itself. All play a part in keeping the land well and ensuring that the water that flows from it is well too. The living things all need each other to survive. Their strength is in their interconnectedness.

Looking at things in this way gives us insights into what Māori describe as the "mauri". Mauri is often translated as "life force" or "life principle". It is better translated as the "gift of life and wellness". It exists in that web of interconnections that enables life to thrive. When any of those connections are weakened or broken life begins to weaken, the mauri begins to fade and is less and less able to sustain life. The land begins to degenerate, and the water becomes less able to provide life to everything that depends on it. When Māori talk about "restoring the mauri" of a river, a lake, or a landscape, they are talking about restoring the connections that enable those places to thrive.

It is in this context that we must look at the role of exotic pest species in the landscape, and the various means used to manage them. How do they impact on the mauri, the gift of life that sustains the interconnectedness that enables the land to thrive?

When the health of the forest is compromised its mauri is weakened and its ability to heal is affected, in some cases seriously.

The invasion of exotic species, not just plants but the range of introduced animals and birds that impact on the forest, all contribute to the decline of the mauri. In many parts of the country the landscape is entirely dominated by exotic species and it is difficult to find even remnants of the vegetation that once characterised it. To many Māori this is symbolic of how they feel about themselves and their own sense of identity. They have been overwhelmed by the newcomers and can no longer find that sense of connection that is essential to their own identity.

It would be a mistake to confine the discussion on the impact of weed species to the physical effects they can have on the ecology of the landscape. There is a sense within many Māori that the effects on mauri are much more profound; the mauri of the land itself is affected, and with that the health of all living creatures that draw health and strength from it.

It is within this context that the Wai 262 claim to the Waitangi Tribunal (commonly known as the flora and fauna claim) is particularly relevant (see Box 1). The claim highlights Māori concerns at the exploitation of indigenous species by non-Māori, and particularly non-New Zealand individuals and entities. But on a deeper level the focus is on colonisation, its effect on the integrity and interconnectedness of the natural world and its ability to sustain life and wellness. The claim is about mauri.

Box 1: Wai 262 and the Treaty of Waitangi

The Wai 262 claim was registered with the Waitangi Tribunal in December of 1991. The hearings into the claim began in 1995. A second series of hearings began in 2005. The Tribunal delivered its report in 2011.

What is the Wai 262 claim about?

The claim, in brief, was that the Crown had denied Māori the full exercise of their tino rangatiratanga, or "absolute authority", over many aspects of life, but particularly those relating to natural resources, including indigenous flora and fauna.

The Wai 262 claim relates to the impact of introduced species on the environment and the taonga that it contains. Basically, it means that the impacts of exotic weed species and the way they are controlled reaches well beyond the practical issues around their impact on the environment and the issues involved in their management.

It relates to the issues of retaining taonga, and the responsibility of Māori to care for them as their tuakana (seniors in terms of whakapapa). The claim is not just about Māori rights, what the Crown promised at the signing of the Treaty, but also Māori responsibilities to act as kaitiaki.

Taonga

The term "taonga" is treated in depth in the Waitangi Tribunal Wai 262 report. The appendix to the report provides a definition: "A treasured possession, including property, resources, and abstract concepts such as language, cultural knowledge, and relationships".[1] A fuller definition is given in the introduction to the enquiry: "Taonga include tangible things such as land, waters, plants, wildlife, and cultural works; and intangible things such as language, identity, and culture, including mātauranga Māori itself."[2] Discussion within the report gives a fuller understanding, both of the term itself and its implications.[3]

However, it is important to understand "taonga" within the cultural context from which it is derived and in which it belongs. It is important not to limit or express our understanding of taonga in terms of Western property rights and the legal framework that exists around them. Taonga relies more on whakapapa, one's relationship to things considered taonga, as opposed to ownership. Māori see their relationship with taonga as a source and an expression of their own identity. When a taonga is no longer available and out of reach, for whatever reason, their own identity as a person is affected.

[1] *Ko Aotearoa Tēnei*, volume 2, page 749.

[2] Ibid, volume 1, 5.2. Key concepts, page 17.

[3] Ibid, volume 1, 2.1, page 114–115.

The understanding of taonga belongs within the context of rangatiratanga and kaitiakitanga. One cares for taonga not because they are property that belongs to you; rather they are cared for because in doing so one is caring for the world in which that taonga belongs, including oneself and one's own identity.

In summary

There is a contrast between seeing the world through anthropocentric eyes, as humankind being at the centre of the universe and preeminent, and seeing the whenua through Earth-centred eyes; the Earth as the source of life and her wellness being the first priority. That contrast leads to different perspectives both on what is considered a weed, and how weeds should be managed.

2. Whakatakoto te kaupapa: laying out the key points

Different perspectives

Calling to mind the story of Tāne clothing Papatūānuku with his trees and plants it must be said that exotic plant species are not necessarily to be considered weeds, even if they have become very numerous and even dominant for a time. They may in fact be healers of the land, taking over the role of pioneering native species, helping to cover Papatūānuku again after she has been seriously hurt, by things like fires, storms or serious floods that can strip the vegetation off the land.

This especially applies to farmland that has been abandoned because it has proved to be unsuitable, or plantation forests that have been clear-felled and not replanted. Exotic species, many regarded as weeds, may then beat native species to grow, but they may still achieve the same benefit, covering Papatūānuku after she has been left exposed. The key point is that they cover the whenua; leaving the whenua bare, the injury to Papatūānuku, is the concern.

Weeds aren't something that were introduced by the early European settlers. The term "weed" is not confined to exotic species that are native to other countries. The battle with weeds has gone on since humans looked to manage the land, for example cultivated or gardened. Whether or not a species is indigenous or exotic is irrelevant, weeds are weeds.

Weeds were a challenge for the first Māori as they began their māra (gardens) to try and grow the various food crops they had brought with them from Hawaiki. The weeds they battled were species native to the land, indigenous species, but weeds nonetheless, and like all weeds, had to be managed.

Even today, indigenous species can become weeds; even native trees can be seen as weeds in New Zealand. Trees like karo (*Pittosporum crassifolium)*, a northern species much used for shelter belts throughout the country, has invaded sensitive ecosystems in many places outside of its natural range and upset the balance that sustains them and enables them to survive. It wouldn't take much to draw up a list of other native species that have a similar effect in different places around the country. Karaka (*Corynocarpus laevigatus)* poses a problem in some places, even iconic species like pōhutukawa *(Metrosideros excelsa)* or tōtara *(Podocarpus totara)*, especially in Northland, can become weeds.

Nevertheless, Māori were the first humans to deliberately introduce new plants species into Aotearoa, bringing with them species they considered useful, for food, clothing, etc. People have continued to introduce new species ever since.

It is important to remember this. Māori have never been against importing new species into Aotearoa. They were the first to do so. It is their impact on the whenua and how they are managed that is the issue.

A weed can be any species that grows where it is not meant to. That doesn't just mean unwanted plants in cultivation land; it can be a plant that causes problems in a landscape like gorse or blackberry. But that may be where Māori understandings differ.

The Oxford English Dictionary defines a weed as: "a wild plant growing where it is not wanted and in competition with cultivated plants". It is a very anthropocentric way of looking at the world, which the dictionary defines as "regarding humankind as the central or most important element of existence".[4]

From a Māori perspective it could be said that a weed is a plant that upsets the balance that Papatūānuku needs to be well. That suggests that a weed is a plant that dominates an ecosystem to the extent that it is no longer able to function in a way that enables it to sustain the life that belongs there. A weed is a plant that disrupts that natural balance.

With that in mind it is easy to understand the unease that many, not just Māori, feel at the vast monocultures that increasingly dominate the New Zealand landscape. How many people look at the great pine forests that are so important to the economy of New Zealand, or the vineyards or orchards that dominate parts of the country, and mutter to themselves, "That can't be good for the land". That perspective is not held only by Māori; it is shared by many people. It is an instinctive, innate reaction: caring for the land is essential; all life depends on its wellness.

Use of mauri to ask whether it is a weed: the importance of connections

One might see weeds as plants that are unwanted in a cultivated landscape; others see weeds as plants that upset the balance that enables life to thrive. Of course, it is a matter of priority. For Māori, traditionally, the priority is the wellness of the whenua, not optimising productivity for the benefit of humankind.

Mauri exists in that web of connections that enables life to thrive. That is something that applies to every ecosystem, from the heights of the alpine zone where the many different species that live there work together to survive in the extremes they encounter, to the depths of the sea where life flourishes in a lightless world. Each species, be they plant or animal, needs its network of connections to other living beings to survive.

A weed is any species that interferes in a major way with the interconnectedness of an ecosystem. Alpine weeds like heather *(Calluna vulgaris)* or the various hawkweed species (*Hieracium* species) don't just displace the native species that grow there, they also displace the invertebrates that live with them and pollinate them. Tōtara sometimes comes up as a monoculture in parts of Northland, so much so that little or nothing can survive beneath it. Woolly nightshade *(Solanum mauritianum)*, also known as tobacco weed, can do the same. In both cases the subcanopy plants that care for the soil and help retain moisture are lacking, heavy rain can cause the soil to wash away and contribute to the deterioration of ecosystems further downstream. As the web of connectedness increasingly unravels the mauri fades, becoming increasingly weak.

[4] See Oxford University Press definitions at Lexico.com.

Māori tend to look at the whole ecosystem, rather than focusing on the individual species, especially those considered significant, as can be a tendency of Western science.

New Zealand ecosystems function in their own unique way. A good example is the way plants are pollinated. Aotearoa has no native honey bees, even though it has many insect pollinators. Many plants are pollinated by birds such as tūī and korimako, by the many gecko and skink species (that were once present in enormous numbers), and by the bats and moths that fly at night.

Many, like karamū *(Coprosma robusta)* and the rest of the coprosmas, the podocarps like tōtara, and rimu *(Dacrydium cupressinum)* are wind pollinated. A healthy ecosystem enables all those many species to flourish; they need each other to be able to do so. The key to its health is the web of connections that sustains it. When that web is in place and functioning the mauri is strong.

The mass planting of mānuka *(Leptospermum scoparium)* in some parts of the country provides a good example of how these webs can be broken. Mānuka produces very valuable honey but mass plantings in areas where mānuka hasn't historically been dominant may be one of the reasons why ngutu kākā (*Clianthus* species), the red kaka beak, so treasured by New Zealand gardeners, has become so rare in the wild. The ngutu kākā can only be pollinated effectively by birds like tūī and korimako that can reach into the back of the flower to drink its nectar, collecting pollen as they do so. This brushes off into other flowers nearby and pollinates them.

Honeybees can't do this; they can't reach the nectar so they drill holes in the side of the flower to rob the nectar, leaving nothing for the tūī or korimako so no pollination happens. In time the ngutu kākā dies out, leaving gaps to be filled by other species, many of which become weeds like gorse (*Ulex europaeus*), broom (*Cytisus scoparius*), honeysuckle – both Himalayan (*Leycesteria formosa*) and Japanese (*Lonicera japonica*) – and even mānuka.

Beekeepers see mānuka as a bonus, enabling them to establish viable businesses that have become an important new income stream for the New Zealand economy. Some ecologists, on the other hand, worry about the proliferation of mānuka plantations (in places where they have not been in the past), and the beehives that accompany them. Bees can displace indigenous pollinators that may have a special role in enabling some species to survive. The discussion about the ngutu kākā, highlights that. Is it possible that honeybees may help drive some native species towards extinction? The matter is under investigation; there are real concerns.

The invasion of new species into a landscape, not just plants but also insects, birds, animals and even microbes, can set off a domino effect that causes a decline of biodiversity well beyond what we are able to comprehend.

In those situations, the mauri can be said to weaken, to fade, and even to die. The wellness of the natural world of Aotearoa depends on the strength of the connections to give it the resilience it needs to cope with the extremes of weather that is the norm in a country of islands sitting in the vastness of the Pacific Ocean. The invasion of exotic species that upset that state of balance can have profound and far-reaching effects. Ultimately it can affect the ability of the whenua to continue to thrive in our challenging landscape.

What does that mean in practice?

Māori are pragmatic; they intend to survive, no matter how much the world around changes. When faced with dealing with a tricky issue involving tikanga, I have been told time and time again to use my common sense. The first question in dealing with a species is not whether the species involved is native or exotic. Rather the first concern is how it affects the whenua.

To a farmer, needing grazing land to feed their stock, gorse can be seen as a weed, an enemy. But in fact, gorse is a pioneer species that covers the land and enriches it, preparing the way for a new forest to once again clothe Papatūānuku. Hugh Wilson at Hinewai Reserve on Banks Peninsula has long championed the value of gorse in restoring a landscape.[5]

The hills that surround the entrance to Wellington provide another very good example of this. They were once covered in gorse; today they are becoming clothed with a new forest that has grown through the gorse and is playing a key role in restoring birdsong to the capital city.

It is a matter of perception. What is seen as a weed to some people may be a benefit to others. Pioneer farmers considered mānuka to be a weed that frustrated their efforts to convert forests into pasture, and even attempted to introduce a biocontrol to inhibit its growth.[6] Others saw mānuka as healing the land. "The bush is coming back" was the comment of many Māori lamenting the disappearance of the forests and fearful of the consequences.

Changing the question

How do we judge such examples? Looking from a traditional Māori perspective the measuring stick is not whether or not a plant is a native or exotic species, or whether or not it is considered a weed by people who work the land, but how it affects Papatūānuku. She is the source of life; everything depends on her. Caring for her is always the first priority: human wants, human needs, human plans always come second to that.

Therefore, the first question that must be asked in deciding whether this plant is a weed or not, is: "How does it affect Papatūānuku; does it help her or hurt her?" Many of the environmental challenges that face Aotearoa today are problems caused because that question was not considered. People have made their interests, their plans the first priority, and not considered those of Papatūānuku.

Does it hurt the Earth or help the Earth? That's the starting point in dealing with weeds, and the methods used to manage them.

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[5] *Hinewai: The Journal of a New Zealand Naturalist*. Hugh D. Wilson. Shoal Press, 2002. ISBN 1-877251-20-8. There are numerous references to the value of gorse in restoring a landscape. The book itself is an illustration of many of the ideas discussed in this paper.

[6] Mānuka blight, a combination of an introduced Australian scale insect, *Eriococcus orariensis,* and a sooty mould, *Capnodium walteri. Wardle's Native Trees of New Zealand and their story*. John Wardle. New Zealand Farm Forestry Association, 2011. ISBN 978-1-877520-06-08. Page 131.

Changing the method

Papatūānuku needs her kākahu (cloak); she needs to be kept covered.

That would suggest it does not pay to be too hasty in removing plants that are considered weeds, regardless of the impact they may have on one's needs and plans. Sometimes it may be better to leave them growing to ensure that the whenua remains covered, at least until such time as some other more appropriate species can be established to fulfil that need.

Is pasture an adequate cover for Papatūānuku? Sometimes yes, but it is always important to stop and check. When one looks at the eroding steep faces in many parts of the country that were cleared of bush to establish farming, the answer is often no; the land would have been better left in bush. The pastures can leave the whenua vulnerable to erosion. This is particularly the case as Aotearoa reviews its land use as climate change starts to bite. Are pastures the best land cover when faced with persistent droughts? Or is it better to let some areas revert to scrub, even weedy scrub?

Hawke's Bay, in fact much of the East Coast of the North Island, offers numerous examples of that. The effect that sedimentation is having on rivers and coastlines would indicate that in very many places pasture is certainly not an adequate cover. Sometimes it is better to leave the "weeds"; they may be helping to heal Papatūānuku, restoring the kākahu (cloak) she needs to be well. Gorse, blackberry *(Rubus fruticosus)*, wattle *(*various tree species belonging to the *Racosperma* or *Acacia* family*)*, even wilding pine *(*various tree species belonging to the *Pinus* family*)* in some cases may play a critical role in caring for the whenua.

Looking at the many weeds that emerge after a crop is harvested, in a maize paddock for instance, do they in fact contribute to the overall wellbeing of the whenua, rather than harm it? Those weeds may be helping to revive the microorganisms in the soil that have been suppressed by the sprays and fertilisers that have been used to optimise the crop.

It is important to seriously consider possibilities like that before rushing in to control and remove them. The first consideration is always what is best for the whenua, not for the farmer and the profits they struggle to make.

The forestry practice of spraying with herbicide before and after replanting pine to hit the weeds may ensure the new crop of trees gets away to a good start without competition from more vigorous weeds that would overwhelm them. But these sprays also remove plants that would help hold loose debris (known as "slash") left over after logging before the pines become established. The slash that was swept down the riverbeds and onto the beaches and caused so much damage on the East Coast in recent times shows the value of those "weeds".

The use of sprays to control weed regeneration also depletes the seedbank, not just of weeds but more importantly the native species that would naturally recolonise the site and prepare for the return of the bush. Repeated rotations of pine tree crops may in fact completely exhaust the seedbank and leave the whenua incapable of healing itself if, in the future, it is no longer feasible, or profitable, to replant pines.

The long-term wellness of the land needs always to be kept in mind. That is the first priority. It is always essential to ensure that the capacity of the whenua to restore itself is left intact. Each generation needs always to consider those who come after them, ngā uri whakatipu, the coming generations, to ensure they have a world fit to live in.

The advice of those who are close to the land keeps echoing through the minds of those who wish to hear: "Is this good for the land?" Too often we fail to consider that question; "We have a schedule to keep to," we say.

Such a perspective might not be the imposition that it may at first seem. Sometimes foresters will completely clear a landscape of all vegetation by blanket spraying before planting, even areas where it might not be feasible to extract the trees once they have grown to a millable size. That's where common sense should dictate what's done.

Areas that are difficult or dangerous to harvest, gullies or steep hillsides for instance, would better be left with their original vegetation. Not only would there be a seed source to help the whenua heal itself if subsequent commercial forestry was no longer feasible, but it would help reduce the erosion and sediment problems that are sometimes the result of logging. And it would considerably reduce the costs involved. It may mean that leaving substantial reserves of the original indigenous vegetation is a requirement in every development plan.

This approach also leaves long-term options in place and there are examples to demonstrate it. It can be seen in the way that some Māori incorporations have managed their forestry; they grow trees as a business, but always with the long-term health of the whenua in mind. Ngamanawa Incorporation in the Lower Kaimai Ranges near Tauranga is a good example. Almost half of the nearly 4,000 hectares administered by the incorporation has been left in indigenous forest to protect the gullies and the water that flows through them. The rest is in commercial pine forest.[7] The whakataukī (proverb) that guides them is well worth remembering: " Whatungarongaro he tangata, toitū te whenua". Man will pass on, but the land will always remain.

3. A rongoā perspective

Rongoā Māori – traditional Māori medicine – illustrates and highlights many of the concerns that Māori have regarding weed species and how they are currently managed. Because they are heavily dependent on the plants they harvest from the ngahere (forest), it is rongoā practitioners who are more acutely affected by the changes in the natural environment, particularly those caused by weeds.

The knowledge and practice of rongoā Māori is something that has developed over many hundreds of years. Even though times have changed, and most people have access to mainstream health care, rongoā is still significant to many Māori. It is culturally important, and in many cases effective and often more accessible than present day health care. For these and other reasons it is very important to keep alive the mātauranga (knowledge), practice and traditions of rongoā.

The point of concern is that a range of exotic weed species have taken advantage of the opportunity to infest the fringe of the forest throughout the country. In doing so, they have often displaced the species traditionally used by Māori as rongoā. It must be remembered that many exotic species have come from environments where there were a range of grazing animals – horses, cattle, sheep and goats, etc – so when they arrived in Aotearoa they had already evolved strategies to protect themselves. For instance, they may have thorns, toxins, or a growth rate that more than keeps up with the grazers. This gives them a big advantage over New Zealand species that have never had to deal with heavy grazing. This is a

[7] *Ngamanawa: a study of conflicts in the use of forest land*. Evelyn Stokes. University of Waikato, 1983. Pages 101 ff.

cause for concern to Māori. These species can quickly dominate many of the sites where Māori like to collect their rongoā.

Healing Papatūānuku

Totarahoe is a word in the Whanganui area that describes the warriors that stand at the entrance of a marae to protect it. It is also used to describe the edge of the forest. The totarahoe has a key role in forest health. It is, or should be, very thick and contain a rich range of species, growing closely together. They protect the species that live within, from the tallest trees to the many other species big and small that together make up the life of a healthy forest. They do this especially by keeping out the wind that can quickly dry out a forest, as well as providing a home and a food source for the birds and insects that care for the trees.

What they have in common is that they are tolerant of the harsh conditions that can occur on exposed sites: direct sun, strong winds, varying moisture levels, etc. Important species include karamū (*Coprosma robusta),* tutu, known in the north as tūpākihi (*Coriaria arborea*), makomako (*Aristotelia serrata*), koromiko (*Veronica* species) and many other species of *Veronica*, different *Hoheria* species, *Pittosporum* species, tree ferns such as mamaku or kōrau (*Cyathea medullaris*), toetoe (*Austroderia* species) and many other grasses and sedges. The list could be extended to include many more species.

Healers are taught that if they wish to learn the medicinal properties of any species, or if they are looking for a particular rongoā for an illness or injury, they must get to know the plants themselves and come to understand what their role is in healing the whenua and keeping it well. The advice given to prospective healers varies little around the country. "If you wish to know the medicinal properties of a plant you must get to know that plant and it will tell you everything you need to know". That might sound like unhelpful advice to somebody who desperately wants to learn, but in actual fact it proves to be true.

This is something that weed managers need to keep in mind when making decisions about caring for regenerating landscapes. It is helpful to remember on old English saying: "Actions speak louder than words". Plants that come up after a fire: tutu*,* koromiko, makomako*,* and others, can be quite effective in dealing with burns, sprains, broken bones, for example. Healers don't usually go to established or mature forest to find their rongoā; rather they look to those places where it is recovering, or along the edges exposed to the elements.

Whakapapa: looking deeper into wellness and healing

The species found in the fringe of the forest differ from region to region, depending on a number of factors: temperature range, rainfall, soil types, etc. In the north, where the climate is warmer, kūmarahou is prominent especially on impoverished soils, along with mānuka*,* the northern form visibly different to what grows further south.

The species mix changes as one moves further south. Tūmatakuru *(Discaria toumatou),* known almost universally as matagouri, is very prominent in the dry south, along with various *Coprosma* species such as mingimingi *(Coprosma propinqua)* and other small-leafed coprosmas that sometimes play the role that mānuka fulfils in other parts of the country.

The totarahoe hosts a wide range of species that Māori describe as having the role of healing the whenua. They heal Papatūānuku after she has been injured in some way; by fire, flood, wind, etc. They also include the majority of species used by Māori as rongoā – traditional Māori medicine.

There are many aspects to rongoā Māori; it is much more than Māori herbal medicine. Nevertheless, plant use is a significant part of it. The use of plants for medicine was founded on a deep and extensive knowledge of the natural world and the species that it contains. But there was much more involved than a detailed knowledge of plants and their uses. Māori connection to the whānau of Tāne is an essential part of how they saw themselves; it is a key to their identity. One of the reasons for the revival of rongoā Māori is that it is a way of reclaiming that identity.

The harvesting of rongoā from the ngahere was and is much more than collecting the material needed for the preparation of rongoā; it was also a time of reconnection to *te wao nui a Tāne,* the living world of the forest, and an affirmation of one's own sense of belonging and wellness. The key to the effectiveness of rongoā Māori is not only the chemistry of the plants but the mauri of each species and its connection to the mauri of those who look for its healing properties.

That is why, to many Māori, growing plants for rongoā in an orchard or garden is unacceptable. I remember a kaumātua from Tūhoe stating this very clearly to me many years ago. He told me that it was good to grow rongoā plants in gardens so that people would get to know them but that "Any plant used for rongoā was to be harvested in Rūātoki and used in Rūātoki". Coming back to the valley to be healed was an essential part of the healing. Healing comes about primarily through restoring connections, not by taking a rongoā preparation.

This can have a considerable impact on health. The loss of identity that many Māori feel can make them feel less able to positively live in a way that sustains their health. The so-called lifestyle illnesses that plague modern society can be a reflection of how people see themselves rather than the lack of access to food and medicine. Māori need to maintain their connection to the natural world, te wao nui a Tāne, to retain that sense of identity they need to be well.

Effect on mauri

The invasion of exotic species, not just plants but the range of introduced animals and birds that impact on the forest, all contribute to the decline of the mauri. In many parts of the country the landscape is entirely dominated by exotic species and it is difficult to find even remnants of the vegetation that once characterised the landscape. To many Māori that is symbolic of how they feel about themselves and their own sense of identity. They have been overwhelmed by the newcomers and can no longer find that sense of connection that is essential to claim their own identity.

It would be a mistake to confine the discussion on the impact of weed species to the physical effects they can have on the ecology of the landscape. There is a sense within many Māori that those effects are much more profound; the mauri of the land itself is affected, and with that the health of all living creatures that draw health and strength from it.

As has been discussed, of particular importance to Māori are the forest fringes; that is where many of the plants used for rongoā grow. Many weed species are opportunistic and invade those same places; they can take over the forest fringes and overpower or disenable that web of connections the ecosystem needs to sustain itself. Weeds don't just displace the plants that would normally be found there, they also displace the insects that live with them and depend on them, and the birds and other creatures that rely on them for food and nest sites. That in turn may leave the land without birds that pollinate trees like pōhutukawa (*Metrosideros excelsa*) and kōwhai (*Sophora* species) and distribute the seeds of many different trees, and so the story grows.

Changing the question: how does this affect Papatūānuku?

The use of herbicides and other chemicals (toxins)

The key concern for Māori is caring for the mauri that enables Papatūānuku to thrive. That is the first consideration in evaluating the various activities that people undertake on the whenua, in this case the management of weed species.

Herbicide use is a source of concern. As discussed above, the places where rongoā plants are found often contain many weeds, and these areas are often managed by herbicides. Is it safe to harvest rongoā from places where herbicides and other chemicals are used? Many Māori, especially traditional healers, do not think so.

There is much research on many aspects of the use of horticultural chemicals. Issues such as the long-term retention of chemicals in the soil, the effect of various chemicals on non-target species (including pollinators), the potential that some chemicals may affect the DNA of plant species (and of the species that consume them) etc, are the domain of scientists with the appropriate skills and resources to research.

Those are matters that are a concern to many Māori; they do require urgent attention. An example is pūhā (*Sonchus* species) much used by Māori as both as a vegetable and a rongoā. How safe is it to harvest pūhā from sites where a lot of chemicals are used, in orchards or maize paddocks for instance? Is that a factor in some of the cancers and other serious conditions that affect many Māori?

Many traditional healers are vehemently against collecting rongoā from any area where 1080 has been used. Regardless of the impact on the ngahere of the animal species that 1080 is used to control, many feel that the use of such measures has a long-lasting effect on the mauri of the forest and the species that belong there. That sensitivity extends to the use of other chemicals, herbicides in particular.

It is hard to generalise on Māori views on the use of chemicals, be they herbicides, insecticides, etc, or the various chemicals used in animal pest control. More than likely they reflect those of the population at large. Most are pragmatic and accept the need for chemicals, if used carefully; others are opposed, some vehemently.

However there seems to be a strong consensus that chemicals can and do affect the mauri. Many effects of chemical use can be measured and quantified. But how do you measure the effect on mauri? That involves a different dimension, one beyond the range of the tools that science uses to assess what it does.

In summary

At the present time, in much of Aotearoa, much of the landscape is now dominated by weeds.

The impact of these weeds is threefold:

- Firstly, weeds are displacing many of the plants traditionally used for rongoā. Without access to these plants it has become increasingly difficult to maintain the knowledge base involved.
- Secondly, without access to the plants Māori no longer have access to the rongoā they provide.
- Thirdly, even if rongoā plants are present, the sites where they grow may be impacted by the continuous use of herbicides, making them less suitable for harvesting and use.

In precolonial times most Māori had an in-depth understanding of the environment in which they lived; their lives depended on it. Those who showed particular proficiency were chosen and trained to hold the depth and the breadth of that mātauranga to ensure that it was passed on from generation to generation.

The situation is very different in the 21st century. Most Māori live an urban lifestyle, even those who live away from towns and cities rely mostly on what the shops in town can supply rather than depending on the local landscape for their sustenance. Most have had little opportunity to develop the intimate knowledge of the environment and its many species that is at the basis of rongoā Māori. As a consequence, those who still hold the mātauranga have difficulty in finding people to whom they can entrust their knowledge. Much of that mātauranga is in danger of being lost with their passing.

4. Taha wairua: spiritual dimension

Māori see the natural world as an interconnected whānau, bound together on many levels, both physical and non-physical, arranged in a hierarchy based on whakapapa (genealogy). They often use the term "taha wairua" to describe this perspective, often translated as the "spiritual dimension". But that is an inadequate translation. There is a difference between "wairua" and "mauri", for instance. Perhaps it is safe to say that "taha wairua" relates to the many dimensions that constitute the wholeness of the connections that sustain life.

What needs to be appreciated is that for Māori, taha wairua is a consideration in almost all aspects of Māori engagement with the natural world. It is a concept usually not considered by mainstream science. However, if scientists are serious in wanting to engage with Māori there does need to be a consistent and in-depth effort to gain an understanding of what taha wairua means. Without that it is very difficult to appreciate what Māori bring to the table in terms of addressing the many issues that confront us in this age of ecological decline. This will become even more the case as emerging Māori leaders increasingly access the mātauranga of their tupuna (ancestors). Already they bring to the table concepts and ideas that are very unfamiliar to non-Māori.

It is urgent that that knowledge gap be addressed. There is much to learn, and much to gain.

Having raised the issue of taha wairua it is best to simply conclude by saying many Māori have a sense that the effects of chemicals on the whenua, in this case the chemicals that are sometimes used to control weeds, is more profound than can readily be understood and appreciated. Caution is always needed, and alternatives to the use of sprays must constantly be sought.

Fundamental to the Māori understanding is their personal relationship with the Earth, the whenua. The Earth is not a resource to be utilised for the benefit of humankind, but a mother, Papatūānuku, the source of all life, and therefore to be treated with respect and care. Humankind is not the centre of the universe, but part of the family of life; furthermore, humankind is the pōtiki, the junior, to all other living beings.

This is fundamentally different to the approach that has driven the development of Aotearoa since the beginning of Western colonisation. Successive governments have worked to develop and maximise the resources of Aotearoa for the benefit of its people. That has been the highest priority.

The highest priority for Māori is the wellbeing of Papatūānuku. Hence the saying: "Ka ora te whenua, ka ora te tangata: when the Earth is well, people are well".

Another consideration that is constantly brought to the fore in this context, especially by kaumātua is: "ngā uri whakatipu: the coming generations". The term refers to the generations in the long distant future. For example, Wakatū Incorporation in Te Tau Ihu – the top of the South Island – has a 500-year business plan. Māori look ahead to countless generations, much beyond the lifetimes of the current generations. The whole of Aotearoa needs to plan that far ahead.

That reflects the Māori vision for the future.

5. He kupu whakamutunga: final words

Summing it all up: the Māori understanding calls for a fundamentally different order of priorities

The first priority is always to the whenua and its wellness. There can be no exceptions to this.

- *Ka ora te whenua, ka ora te tangata. When the Earth is well, people are well.*

What that means in practice has to be thought through. But what it does do is call for a fundamentally different way in which the whole landscape is managed. The focus changes from managing for profit to managing for long-term sustainability. That doesn't say that current practices are not increasingly focused on sustainability. However, too often that goal is compromised by the need to achieve shorter-term goals; the need to provide a positive return to investors, for instance. The time has come when that latitude is no longer acceptable.

For Māori, sustainability is about "mō āke tonu atu", for the foreseeable future. Papatūānuku must continue to thrive forever, if we are to survive.

There is no room for prevarication, no room for compromise, particularly given the dire state of the planet.

Some recommendations for weed management

When faced with deciding on a method to manage weeds the first question is:

- Does this method help Papatūānuku, the Earth, or hurt her?

It is not just a question of immediate effects; the long-term effects must also be taken into account. The effect of weed management on soil microorganisms and pollinators must be considered; so must the bioaccumulation of chemical residues, the increased possibility of erosion, both of soil and of nutrients, etc.

That doesn't mean that weed management is no longer possible, but it does mean that some methods that are presently considered normal would no longer be considered acceptable.

- An example is the blanket spraying of landscapes as a preparation for forestry plantings.
- Another is the continuous use of herbicides as part of annual crop cultivation.

What needs to happen is a focus on working with the land instead of despite the land. This is already happening; the growth in regenerative farming is an example of this.

- Forestry is an area that is of particular concern to Māori. Improvements can be readily made.
- Work to enhance the whenua's ability to heal itself. That requires working to ensure that the full range of biodiversity in a landscape is sustained.
- Weeds must be first seen as healers of the land, not as problems. Very often they do need to be managed and controlled, but check first to see what benefits they may bring.
- Try to use natural processes to manage the landscape. Biocontrol has a special importance.
- **Wait, watch and listen. It is important to step back and let the land itself be the chief advisor on how it should be managed, rather than relying on the "experts".**

The Māori understanding of "sustainability" needs to become part of how Aotearoa manages its whenua. Sustainability means "mō āke tonu atu" – forever.

This sort of thinking doesn't mean that the whenua shouldn't be managed for profit. But it does mean that making a profit would no longer be the first priority.

6. Post-script: some useful resources

This paper reflects traditions that are well known and still very current within present day Māori society. They have been captured and described in depth in the writings of Sir James Henare, Māori Marsden, Nganeko Minhinnick, Hohepa Kereopa, and many others over many years.

The Wai 262 report from the Waitangi Tribunal brings much of their thinking and mātauranga together; it is an invaluable resource yet to be adequately utilised.

The writings of these kaumatua are very relevant to present day challenges. They have been well received, highly respected, often quoted, but still not fully appreciated or understood. They need to be looked at, not with the eyes of somebody who already knows, confident in the knowledge they hold, but with the eyes of somebody who wants to learn.

The time has come to study them more profoundly. They contain the knowledge and wisdom of a people who belong to this land, Aotearoa. We must try to hear what they are saying, rather than look for what we find useful and can add to our own pools of knowledge.

Suggested reading:

- *The Woven Universe: Selected writings of Rev. Māori Marsden*. Edited by Te Akakaramu Charles Royal. Published by the estate of Māori Marsden. 2003. ISBN 0-473-07916-X.
- A series of books by Paul Moon based on interviews with Hohepa Kereopa and published by David Ling Publishing Limited:
  - *Tohunga: Hohepa Kereopa*. 2003. ISBN 0-908990-91-X.
  - *A Tohunga's Natural World*. 2005. ISBN 1-877378-04-6.
  - *The Tohunga Journal*. 2008. ISBN 978-1-877378-20-1.
  - *When Darkness Stays*. 2020. ISBN 978-1-927305-67-6.