

He Tangata, He Taiao, He Ōhanga
.....
a values-based biosecurity risk
assessment framework for Aotearoa

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Te ao Māori values associated with the environment

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Background

The complexity of Māori values around environmental matters is specifically known at the iwi and hapū level and over successive generations Māori have developed thorough knowledge of the environment and useful conservation practices that iwi and hapū have used to manage the environment in Aotearoa New Zealand. Therefore, each iwi has responsibilities and obligations for environmental management within its own rohe (area). The mana (authority or prestige) of tangata whenua (people of the land) is related to how well highly valued resources or objects are managed, and how successfully mauri (lifeforce) is preserved. These customs continue to outline Māori approaches to environmental management today where every river-awa, gully and maunga-mountain has its own mauri and therefore associated values around these. For Māori all living things including natural and physical resources, possess mauri. This paper provides an overview of values from a Te Ao Māori perspective followed by an outline of operational practices and frameworks relative to environmental systems.

Customary concepts and connections

Kaitiakitanga is a fundamental concept of the guardianship of a resource for future generations and is of primary significance to Māori and practised as part of tikanga Māori (customary values and practices). Kaitiakitanga can be described as place-based customary obligations and practices of Māori whose whakapapa (genealogical history) connects them to land, based on principles of reciprocity and the desire to maintain these relationships for future generations (McAllister et al., 2019). As such, kaitiakitanga embeds a vital link between Māori and Papatūānuku (the earth mother), who embodies the land itself. Although Clapcott et al. (2018) contend that kaitiakitanga is the responsibility of all people in New Zealand, Kawharu (2000) asserted that kaitiakitanga should not be defined only as guardianship, as highlighted by the Crown, local government and some Māori, but also as resource management which supports social, and environmental aspects.

In Māori tradition, Papatūānuku is the land – the earth mother who gives birth to all things including Māori (Lockhart, Houkamau, Sibley, & Osborne 2019). Māori spirituality as the root of Māori environmental regard was explored by Lockhart et al. (2019) who emphasised the relationship between Māori spirituality and the value of environmental consensus. They reviewed Māori identity and how spirituality enables environmental values and collected data for this study from a nationwide postal survey - the Māori Identity and Financial Attitudes Study (MIFAS) in 2017, with a significant response sample of N = 6812. Lockhart et al. (2019) concluded that while Te Tiriti o Waitangi forms the basis for contemporary Māori rights, particularly regarding whenua (land) – land is a vital source of life and land rights do not separate subsistence from spirituality. Harmsworth & Awatere (2013) confirmed that for Māori there is a clear correlation between healthy ecosystems and the cultural and spiritual welfare of the people. Socio-political consciousness was the strongest predictor of protecting the environment underlying Māori concern for the environment (Lockhart et al., 2019) as

Māori rights are firmly rooted in the land and through the relationship between land and the people, Māori can establish a sense of spiritual connection, self-governing and identity which allows for tino rangiratanga (self-determination) (Lockhart et al., 2019).

Approaches and practices

Lyver et al. (2019) explored how biocultural approaches in conservation better support the relationships tangata whenua have with their local environments with the objective to identify community-based indicators and metrics used by Māori to monitor forest health and community wellbeing. They observed that Māori communities recognise different indicators and monitoring approaches, and these differ to scientific monitoring systems. In this study they identified methods that the community understood and trusted and maintained that these methods of both field survey and interview-based indicators (identified by kaumatua) were likely to be the most effective approach to understanding socio-ecological health and integrity in this context. These included indicators around food procurement, land and water, perpetual occupation of the whenua, spiritual dimensions and physical and mental health. This study took steps toward developing a forest monitoring system with indicators relevant to the community. The first interviews focused on a cultural keystone species, the keruru, (*Hemiphaga novaeseelandiae*), this pigeon was plentiful historically however had declined significantly over the last century. The approach by the authors emphasised a strong interdependence of people to the environment and use of biota and an added spiritual element (Lyver et al., 2019).

Connections to ancestral lands are strongly and consistently argued as important to Māori education, health and wellbeing (Durie, 2003; Harmsworth & Awatere, 2013; Ngata, 2018). Moewaka Barnes et al. (2019) described “Te Rarawa Noho Taiao” projects in northern Aotearoa that use place-based learning approaches within the environment. The students learn and engage with the natural world to learn science knowledge within a practical context. These initiatives promote positive enhanced educational engagement, increased capabilities and participation and create stronger connections and intergenerational relationships all based in kaupapa Māori. Moewaka Barnes et al. (2019) referred to interviews with organisers and teachers of these initiatives as well as a survey of student participants to explore the educational and health promotion effects. These are widely recognised in promoting health frameworks towards the maintenance of health and wellbeing for whānau, hapū and iwi (Moewaka Barnes et al., 2019). Interview data from Māori involved in community land-based initiatives outlined competing hypotheses, changing relationships and challenges faced by communities who seek to respect the whenua and possibilities for the future. Moewaka Barnes et al. (2018) stated that ownership affects how people manage whenua, (land) make decisions and account to a legal system. Under English law financial considerations are at the forefront which is in contrast to Māori kaitiakitanga values, concerned with the interests of the land and people foremost. Morad & Jay (2000) stated that most land in Aotearoa New Zealand is subject to legislation and this includes environmental conservation and cultural and ancestral rights of Māori.

Māori concepts of land tenure and sustainable management are likely to influence the shape of future planning for Māori lands (Morad & Jay, 2000). The Resource Management Act (RMA) 1991 was endorsed 'to promote the sustainable management of natural and physical resources. Among the values expressed by the RMA, is that all persons operating under it "shall recognise and provide for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu (sacred sites) and other taonga (treasures)" (Morad & Jay, 2000). Resource managers are now required by law to consider the cultural values and interests of Māori in relation to whenua and Māori are increasingly becoming more involved. These are important for the practice of kaitiakitanga and the principles of Te Tiriti o Waitangi.

Tipa & Nelson (2008) identified a challenge for Māori when resource managers use western science techniques that emphasize physical and biological values rather than specifically responding to cultural interests. Those authors introduced a conceptualisation tool for Māori – Cultural Opportunity Mapping and Assessment – which was developed for the purpose of identifying and assessing opportunities for Māori to engage in a range of cultural experiences in different environmental and geographical locations and conditions. Their paper explains how these practices represent the preparation of resource management strategies and plans that deliver cultural outcomes. The paper examines international developments in resource management supporting the increased participation of communities, including indigenous communities, before assessing the usefulness of management techniques from other knowledge systems. As acknowledged by Berkes (2009), many of the applications of traditional ecological knowledge (indigenous knowledge; mātauranga Māori) are in the context of global environmental change.

Harmsworth & Awatere (2013) presented a framework based on Māori knowledge, values and perspectives that distinguishes cultural values from cultural services. They outlined the complex, holistic and interconnected relationships within the natural world and its resources that indigenous Māori hold, with the deep knowledge base of mātauranga Māori – formed over thousands of years and dating back to life in Polynesia and trans-Pacific migrations. They extend the definition of cultural values across a whole ecosystem services framework as Māori aspirations and wellbeing are interdependent on the natural environment and the services it provides. Māori beliefs, custom and values are derived from a mixture of cosmogony, cosmology, mythology, religion and anthropology (Mead, 2003). These traditional beliefs and knowledge still influence the thinking of Māori today and customary values resonate deeply in contemporary Māori society, forming the basis for indigenous viewpoints (Harmsworth & Awatere, 2013). Fundamental to this complex and evolutionary belief approach are the stories of origins of the universe and of Māori people; these sources have shaped the concepts and relationship Māori have with the environment today. These can be traced through genealogical networks that go back hundreds of generations -referred to as 'whakapapa' which places Māori in an environmental framework with all other living things and natural resources (Harmsworth & Awatere, 2013). Indigenous communities hold distinct philosophies that form their cultural identity and are particularly sensitive to the use and development of resources within their tribal areas (Tipa & Nelson, 2008).

In Aotearoa New Zealand Māori are closely tied to tribal lands and water. Central to the relationship of Māori to plants, animals, lands, waters are the fundamental belief that all things are linked by whakapapa (genealogy). No distinction is made between the inanimate and the animate or between abiotic and biotic as Māori believe that all entities possess mauri. Protecting the natural world, they are part of, and the mauri of a resource is the fundamental management principle for Māori authorised as kaitiaki, charged with leading and managing the way humans interact with ecosystems and the environment (Tipa & Nelson, 2008). Stewart-Harawira (2020) reviewed the impact of colonisation and development on Aotearoa New Zealand's freshwater systems and the struggle by Māori for recognition of Māori traditional knowledge, rights, and responsibilities regarding waterways, while pursuing the development of contemporary Māori models for freshwater monitoring and management. The key objectives of this study were to first provide an overview of Māori values and ethics regarding freshwater and the second, to consider the implications of Māori freshwater ethics for freshwater governance. These consequences cannot be addressed in isolation from the impact of colonisation and development on Māori relationships to water.

Wai ora and health of waterways

Freshwater in Aotearoa not only provided an essential means of sustenance and transport integral to Māori identities, interrelationships, and wellbeing. For Māori the wellbeing of awa - a word that refers to the entirety of a water course from the mountain to the sea, including all that is in and around the water (Ngata 2018) is essentially linked to the physical and spiritual health and wellbeing of the community (Harmsworth & Awatere, 2013; Moewaka Barnes et al., 2019; Stewart-Harawira, 2020). Māori values are interconnecting parts of a whole system of knowledge that is inseparable from life itself acknowledged (Durie, 2003). This was affirmed by Ngata (2018) defining that water has the quality to suffuse someone or something with mauri therefore expressing the essence of the sacredness of water. Each key water body has its own treasured species as well as nonhuman guardians, that protect the mauri or lifeforce, being the wellbeing of the waterway. Mauri is described as a binding life force which is intrinsic in all things and is oriented towards healing and sustaining life. For Māori the wellbeing of awa, and Māori understandings of the complexity of water are also shown in the unique qualities of different facets of water (Ngata, 2018). The sanctuary of mauri is at the heart of Māori environmental values and principles.

Macdonald & Hermens (2019) provided a range of case studies from around Aotearoa New Zealand about how Māori stakeholders are involved in setting up appropriate environmental standards on water quality and discharges and these stem from traditional practices and values with respect to water. They provide an outline of the different facets of water as mentioned by Ngata (2018) stating that they can be used to measure the cultural effect of drinking water supply, wastewater disposal and stormwater management activities. They concluded that Māori cultural concerns over natural resources have both spiritual and physical dimensions and both are protected by the law. Engaging with Māori can lead to unexpected and non-conventional solutions which can bring unique and traditional practices

to influence water utilities management. This paper emphasised the importance of good engagement with stakeholders and how involving stakeholders in planning infrastructure can lead to more collaborative and innovative approaches within Aotearoa New Zealand.

Stewart-Harawira (2020) reviewed the impact of colonisation and development on Aotearoa New Zealand's freshwater systems and the struggle by Māori for recognition of Māori traditional knowledge, rights and responsibilities regarding waterways and the development of contemporary Māori models for freshwater monitoring and management. For Māori, water, like all aspects of the natural world is viewed as existing within a complex system of genealogical relationships of which humans are one part (Hikuroa et al. 2018). The ability for Māori to access traditional food sources and maintain relationships to customary lands and waters was severely disrupted by colonisation and this included loss of language, culture, status, and the ability to engage in protecting and restoring waterways. This paper reviews the core beliefs, principles and values that define Māori relationships with water and the ethic of relationality that derives from and characterises this relationship. The paper also focuses on the role of mātauranga Māori and the reclaiming of Māori customary rights to lands and waters as critical to the development of policy goals aimed at the recovery of healthy waterways with the primary focus on the impact on environmental legislation and highlights culturally based freshwater assessment, monitoring and practices developed by Māori communities and the impact of Māori ethics and values on freshwater management (Stewart-Harawira, 2020).

Customary rights, policies and frameworks

Memon et al. (2003) found there was a growing recognition that knowledge of indigenous communities, built on accrued observations and experience over time, is significant for sustainable environmental management in collaboration with modern scientific knowledge. Their objective was to examine the development of Māori customary fishery policy strategy and its implementation. They alluded to the number of innovative policy initiatives being implemented in Aotearoa New Zealand (in 2003) to enable Māori to rehabilitate and manage local fisheries in agreement with customary values and practices. Māori traditional rights have been identified and are being managed at the local iwi (tribal) and hapū (sub tribal) level (Memon et al., 2003). From a historical viewpoint these were significant milestones recognising and empowering the role of Māori as Treaty partners.

Ogilvie et al. (2018) provided a case study for how mātauranga Māori and western science can engage in a fisheries technology transition through a transdisciplinary research program. The linking of different knowledge systems through a transdisciplinary approach was shown to improve the success of research and management in this case. There is a growing recognition of the significance of incorporating indigenous knowledge alongside science to develop co-management strategies for natural resources and systems than enhance resilience of these social ecological systems. While the incorporation of indigenous knowledge and technological change is a useful tool for improving current fishing

management this is also dependent on the general application of these innovations by the industry. Clapcott et al., (2018) go on to reiterate how colonisation has impacted on mātauranga Māori through the effect of disconnecting people and place and how indigenous knowledge has been diminished and marginalised in Aotearoa and internationally. Māori have been forced to work within the restraints of a western science system and subjected to inequitable power relations. This has reduced the ability of Māori to achieve their kaitiakitanga obligations in marine and freshwaters in many parts of Aotearoa. Clapcott et al. (2018) bring together the diverse experiences on how mātauranga Māori is informing current research and decision-making in aquatic environments relative to marine and freshwater kaitiakitanga. An outline is provided of different approaches, policies and frameworks including Vision Mātauranga VM science policy framework, Treaty of Waitangi claims and settlements including WAI262, Conservation Act 1987, Resource Management Act 1991 (RMA), Marine and Coastal area (Takutai Moana) Act 2011 and other significant policies including Te Awa Tupua (Whanganui River Claims Settlement) Act 2017. Clapcott et al. (2018) argue that mātauranga Māori is a method for generating knowledge and all knowledge generated is both traditional and contemporary describing the Mauri Model a tool developed to allow iwi/hapūhapū greater participation and tino rangatiratanga (self-governing) in environmental monitoring and management. By measuring indicators of cultural, environmental, economic and social wellbeing (Hikuroa et al., 2018) demonstrated the effect of major disturbances in the Tarawera River catchment over the past 100 years and their analysis helped local iwi, quantify and transfer the concept of mauri and accentuate their role as kaitiaki. Clapcott et al. (2018) concluded the validity of mātauranga Māori to contribute to aquatic management has never been queried by Māori and goes on to state that this paper has clearly illustrated the positive achievements when mātauranga Māori and Māori principles, values and approaches are at the heart of environmental decision-making in Aotearoa.

Discussion

The natural environment plays a significant role in Māori lifestyle, tikanga (protocols) and values and this is still demonstrated by individuals who cite the whenua, awa and maunga as tangata whenua (people of the land) in introductions. These customs continue to outline Māori approaches to environmental management today where whenua, awa, maunga and tangata whenua has its own mauri and therefore associated values around these.

Responding to increasing recognition of Māori cultural beliefs, values, practices and rights, the development of iwi (tribal) established frameworks, assessment tools and methods is crucial to Māori community engagement in protecting and monitoring the remediation of degraded ancestral waterways (Hikuroa et al., 2018) and lands. The resultant frameworks clearly engage Māori traditional values and cultural knowledge often in conjunction with western scientific knowledge (Stewart-Harawira, 2020). The growing interest, in the knowledge held by indigenous communities is related to the wider shift within resource management to an ecosystem-based management approach and recognises that indigenous

communities have a well-developed understanding of the local environment and their own generational impacts on their whenua (land) and the environment (Tipa & Nelson, 2008).

The whakapapa relationship that underpins this complex system of knowledge defines an ecological ethic of responsibility towards all aspects of the environment within a framework of reciprocity and relationality in which the natural order is equilibrium (Harmsworth & Awatere, 2013). Joint management frameworks for freshwater management are also key initiatives that increasingly seek to give effect to Māori traditional knowledge, values and ethics often in an environment of competing goals and stakeholders (Stewart-Harawira, 2020) and inevitably there is a degree of compromise required between Māori aspirations and values and those of other stakeholders, particularly industry. Within this power imbalance it is inevitable Māori values and aspirations can be compromised. McAllister et al. (2019) stated the challenge ahead for ecologists is to improve more extensive and successful partnerships with Māori and greater perceptions of mātauranga Māori. Natural resources supported by values like whakapapa (connection, genealogy between humans and the living world, mana and mauri provide examples of approaches to kaitiakitanga that have resulted in mutual benefit for both people and the environment sustained by ongoing partnerships and mātauranga informed management.

There have been several frameworks developed to assist in understanding cultural values and how they affect environmental decisions for Maori these values are traditionally based and derived from Maori culture. Maori values are largely based on traditional concepts, beliefs and values and form the foundation for understanding Te Ao Maori (Harmsworth, 2005) and are a significant factor of Māori development in supporting the understanding of environmental and spiritual dimensions to form the basis for goals and aspirations. While these papers are a perspective coming from Māori, there needs to be more commitment to the inclusion of Māori in environmental decisions. A thorough review of how policies have influenced Māori participation in environmental management is required to measure how successful these policies benefit mana whenua. Ultimately Māori wish to use these approaches and frameworks to increase participation and inclusion in decision-making, to achieve intergenerational aspirational goals and desired indigenous outcomes (Harmsworth & Awatere, 2013).

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Glossary of te reo Māori

Aotearoa	common Māori name for New Zealand
awa	river or stream
hapū	sub-tribe, kin group, extended family, pregnant, impregnated
iwi	Tribe, people, bones
kaitiaki	trustee, custodian
kaitiakitanga	exercise guardianship, stewardship of the environment, heritage, culture
kaumatua	elder
kaupapa Māori	Māori approach and customary practice
mana	prestige, control , authority
mātauranga Māori	Māori knowledge, traditional knowledge
maunga	mountain, sacred peak, high point, tipuna
mauri	life force, life principle, metaphysical component of all things, permeates all living things, sustains life
Papatūānuku	the earth mother
rohe	tribal area, boundary
tangata whenua	people of and from the land
tikanga	customary values and practices, protocol, values
taonga	something treasured, iconic, highly valued
waahi tapu	sacred sites
tino rangatiratanga	self-governing , self-determination
whakapapa	ancestral lineage, genealogy, links to all living things,
whenua	land, placenta, afterbirth