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### He Korero - Foreword

Tuatahi he mihi nūnui ki a koutou ngā kaitiaki o te wai - o te taiao hoki

#### Kei te mihi!

We wish to acknowledge the contributors to this report - each with their diverse backgrounds and experiences who undertake vital work to protect our freshwater bodies and taonga species for current and future generations. We wish to acknowledge Phoenix Hale for having the foresight to commission this work during a significant period of change.

We also dedicate this report to our dear tūāhine Davina Thompson (Ngāti Awa).

### Ngā mihi ki a koutou:

- 1. Davina Thompson (Previous Kaimahi for Te Arawa Lakes Trust)
- 2. Dr Jamie Ataria (Māori Business Development Consultant and Ecotoxicologist at Cawthron Institute)
- 3. Dr Joanne Clapcott (Ecologist and Team Leader at Cawthron Institute)
- 4. Matua Rereata Mākiha (Tohunga mō te Taiao me te Wai Māori)
- 5. Snow Tane (General Manager for Te Roroa Development Group)
- 6. Harina Rupapera (Biosecurity Officer for Te Arawa Lakes Trust)
- 7. William Anaru (Operations Manager for Te Arawa Lakes Trust)
- 8. Mere Tamanui (Poutaki Tāuteutetanga Te Whakapae Ururoa (Education & Community Engagement Manager, Ngāti Porou/ Te Whanau a Apanui/ Te Aitanga a Hauiti and Director of Taniwha Connections)
- 9. Shade Smith (Senior Analyst for Ngāti Kahungunu lwi Incorporated)

This report is an opportunity to peer into the inner workings of brilliant Māori minds. These Matanga, Kaitiaki and Kairangahau offer valuable insights into the intersection of cultural values and environmental stewardship, colliding, sometimes with pointy edges, that crosses over into Government and regulatory practices.

These individuals walk their talk and demonstrate their love of the whenua and wai through their daily actions. Their intentional application of various mātauranga Māori informed frameworks, that weave together traditional knowledge systems and science, has been humbling to listen to and reflect upon.

We believe the insights gathered from Kaitiaki Māori are important for DOC staff as a template to protect community relationships as well as understand how mātauranga Māori can help inform practice to safeguard freshwater ecosystems from invasive pest species.

Ko te mea nui - mahia te mahi, we must work together to get this work done.

### **Kaye-Maree Dunn**

Director Making Everything Achievable

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### Background

Te Papa Atawhai, the Department of Conservation (DOC), operates the Ngā Riha Wai-Māori Freshwater Pest Species Programme to reduce the spread of invasive freshwater species throughout Aotearoa. The national priority species of this programme include Koi Carp (Cyprinus rubrofuscus), Gambusia (Gambusia affinis), Rudd (Scardinius erythropthalmus), and Hornwort (Ceratophyllum demersum), along with several other regionally prioritised species.

Ngā Riha Wai-Māori operates under the all-of-government Te Mana o te Taiao Aotearoa Biodiversity Strategy 2020, which sets objectives to ensure the vibrancy and vitality of nature (te mauri hikahika o te taiao). This project specifically contributes to Objective 2, which emphasises the role of Treaty partners, whānau, hapū, iwi, and Māori organisations as rangatira and kaitiaki; and Objective 5, which integrates mātauranga Māori into biodiversity research and management.

Freshwater pest species management involves various agencies and stakeholders, and DOC aims to build strong, enduring relationships to protect the biodiversity, heritage, cultural, and recreational values of Aotearoa's waterscapes.

Currently, DOC recognises challenges, such as resourcing limitations and unsuitable control methods, that do not align with Te Ao Māori, hindering whānau, hapū, and iwi in exercising kaitiakitanga and manaakitanga of their takiwā.

This project aims to understand how Māori freshwater biosecurity Kaitiaki interacts with the freshwater biosecurity system, filling a gap in the Ngā Riha wai-Māori Planning approach. It will provide direction for DOC's future work to improve the national freshwater pest management toolbox in ways that align with Māori values and beliefs.

Making Everything Achievable (MEA) has partnered with DOC to facilitate this project. MEA conducted interviews with 10 Māori freshwater biosecurity Kaitiaki, Kairangahau (Researchers) and Matanga Taiao (Environmental Experts) with diverse experiences: to gather their perspectives on what constitutes a freshwater pest, the pests they manage or wish to manage, the impacts of these pests on the natural environment.

The resulting report provides implementable recommendations for DOC. This will help DOC improve the incorporation of Te Ao Māori principles in the freshwater biosecurity system and support whānau, hapū, and iwi in their kaitiakitanga roles.

### **Executive Summary**

Through case studies, this research examines strategies to enhance DOC's freshwater biosecurity initiatives by incorporating Te Ao Māori principles, ultimately empowering Māori communities to exercise kaitiakitanga and mana whakahaere over their natural environments.

Recurring themes across the case studies emphasise that effective biosecurity requires DOC to foster sustained, trust-based relationships with Māori communities. Prioritising local expertise, creating culturally responsive frameworks, and enabling practical resources for whānau-led projects is central to long-term success.

### **SPECIFIC RECOMMENDATIONS:**

- Listen to the knowledge of local peoples
- Invest in local kaitiaki
- Honor mātauranga Māori
- · Establish and continue to develop Māori-led advisory groups,
- Implement culturally appropriate training and development
- Implement bilingual resources and offer culturally safe engagement and data protection practices,
- Provide infrastructure and resourcing (i.e cleaning stations) to support biosecurity at key water access points.

The findings also suggest that by formalising policies for integrating mātauranga Māori, enhancing cultural competency among DOC staff, and supporting youth and community engagement, DOC can improve freshwater biosecurity outcomes.

Various interviewees shared their definition of pests as "non-native species responsible for disrupting local ecosystems." They shared first-hand the impact of addressing emerging threats such as catfish and invasive aquatic weeds to protect taonga species.

Others acknowledged that these pests degrade water quality, outcompete native species for diminishing resources and have a long-lasting effect on cultural values, impacting biodiversity and community wellbeing. Most lament the barriers they face, such as limited access to investment/resourcing, quality management tools, knowledge gaps, funding, and regulatory constraints.

Broader systemic challenges identified include a lack of support from central and local governments, agencies such as DOC at times still not being fully comfortable with sharing power, resources and decision making and the challenges they face getting lost in bureaucracy. Others shared their experiences of working with staff and their unwillingness, at times, to incorporate Te Ao Māori perspectives into their work plans and processes.

This report serves as a foundational resource for DOC to refine its strategies and commitments under the Ngā Riha wai-Māori programme, advancing towards shared goals of biodiversity conservation and cultural revitalisation.

### Methodology

Over a span of four months, MEA conducted a series of both online and face-to-face semi-structured interviews with Kaitiaki who had been recommended by various institutions and lwi groups. These interviews were crucial in obtaining diverse and informed perspectives on freshwater pest management, highlighting the complexities and unique challenges faced by Kaitiaki in safeguarding their takiwā and natural resources.

Our team explored the efforts of Te Arawa Lakes Trust due to the various ways they applied mātauranga Māori in their practice, and aimed to understand what their Freshwater Pest Management approach looked like, from different members inside their organisation, to provide a nuanced understanding of this work through their lens.

### **COMMON THEMES:**

### → Value of mātauranga Māori:

Incorporating mātauranga Māori, including the maramataka (Māori lunar calendar), into biosecurity practices emerged as a consistent insight. The Roopu emphasised that Māori knowledge systems offer precise and valuable insights into natural cycles, ecosystem health, and pest management practices. This knowledge, rooted in generations of lived experience, provides unique solutions that complement scientific approaches, such as the timing of pest management efforts to align with species behaviour.

### → Holistic and culturally aligned approaches:

Interviewees consistently highlighted a need for holistic, interconnected approaches to freshwater management that recognise the relationship between land, water, and people. Biosecurity was viewed as an opportunity to restore both environmental and community well-being, with a strong focus on kaitiakitanga as a core principle. This perspective emphasises the importance of frameworks that integrate environmental and cultural stewardship, reinforcing the sustainability of both ecosystems and community heritage.

### → Empowering local kaitiaki:

Participants indicated that ensuring kaitiaki has the resources and authority to lead biosecurity projects is essential to long-term conservation success. The case studies highlighted the critical role of local kaitiaki who possess deep, place-based knowledge of their whenua and wai. Effective biosecurity, they argued, must prioritise the leadership of local kaitiaki, whose connection to the environment is central to successful, culturally relevant pest management.

### → Integrating rangatahi and community engagement:

Community and youth involvement was identified as a key component for sustainable biosecurity efforts. Interviewees stressed the importance of engaging rangatahi in hands-on, culturally informed learning, which both builds local capacity and supports intergenerational knowledge transfer.

# → Challenges in recognition and resources for Indigenous knowledge:

A recurring barrier identified across the case studies was the lack of adequate support and resources for Māori-led biosecurity initiatives. Interviewees expressed that current funding models are often restrictive and insufficient for whānau-driven projects. Additionally, mātauranga Māori is frequently undervalued or sidelined, underlining a need for frameworks that authentically integrate Māori knowledge and practices in biosecurity.

### → Long-term relationships and support structures:

Interviewees highlighted the importance of building sustained, trust-based partnerships between DOC and Māori communities. Emphasising the value of long-term commitments, participants called for transparency, consistent support, and clear communication from DOC regarding resources and eligibility for Māori-led projects. This support is seen as fundamental to the effectiveness of collaborative biosecurity efforts.

### → Tauārai - Practical barriers and infrastructure needs:

Several case studies noted a lack of practical biosecurity infrastructure, such as cleaning stations at water access points, which impedes effective pest management. It was suggested that such facilities would enable communities to implement biosecurity practices more efficiently. Additionally, simplified access to resources and clearer guidance from DOC were recommended to help whānau engage more actively in pest management efforts.

### **OTHER VALUABLE INSIGHTS:**

### → Spiritual significance of wai:

In several instances, interviewees expressed a deep spiritual connection to water, framing it as not only a physical resource but a sacred entity with healing and ancestral significance. This perspective encourages DOC to approach biosecurity with respect for water as a taonga, emphasising protection as both an environmental and spiritual obligation.

### → Challenges with policy alignment and funding structures:

Some participants highlighted how institutional policies and funding structures are not always conducive to Māori-driven projects. For example, restrictions on water monitoring within certain DOC programs, such as Jobs for Nature, created limitations for communities seeking to incorporate both water monitoring and pest management.

### → Need for cultural safety in scientific collaboration:

One-off projects or studies led by outside researchers were sometimes seen as invasive or extractive, particularly when whānau lacked control over their data or findings. Establishing cultural safety guidelines in joint biosecurity research could help ensure that collaborative efforts respect and protect Māori knowledge, allowing whānau to retain ownership of their environmental insights.

→ Recognition of intergenerational knowledge transmission:

Several case studies emphasised the importance of intergenerational knowledge, noting that rangatahi involvement not only supports current biosecurity efforts but also reinforces a sustainable knowledge transmission pathway. DOC could recognise this, by supporting rangatahi-focused projects that connect youth with elder kaitiaki, bridging traditional knowledge and contemporary biosecurity practices.

→ Importance of place-based knowledge in ecosystem health monitoring:

Interviewees discussed place-specific knowledge as essential for assessing and managing water health, noting that familiar relationships with specific landscapes enable a nuanced understanding of ecosystem changes. This insight suggests the value of place-based kaitiaki as primary contributors in assessing and responding to freshwater biosecurity challenges.

→ Role of visual communication tools for accessibility:

Photos and infographics could make biosecurity data more accessible to those who may not engage with written text. Visual communication could be particularly helpful for engaging whānau in biosecurity processes and enabling a broader understanding of DOC's biosecurity initiatives.

→ Alternative timeframes for project implementation:

Traditional Māori conceptions of time, such as maramataka or events-based timing, could be beneficial in planning pest management activities. Aligning biosecurity practices with these natural cycles could optimise the timing of activities and align with Māori cultural practices, especially in relation to species behaviours and environmental patterns.

These insights provide a strong foundation for the development of recommendations that prioritise both environmental health and cultural wellbeing.

### Recommendations

→ Empower local kaitiaki in leadership and decision-making roles: Prioritise hiring local kaitiaki with deep, place-based knowledge of waterways and support their roles in biosecurity management. This includes establishing iwi and hapū advisory groups and granting kaitiaki decision-making authority with access to sustained funding and resources.

# → Continue to integrate mātauranga Māori with contemporary Science in biosecurity practices (where applicable):

Incorporate mātauranga Māori, including maramataka insights and tikanga, into conservation policies. Encourage partnerships that equally value mātauranga Māori and Western science, embedding Māori cultural protocols like karakia, into joint projects to foster reciprocal learning and mutual respect. This exemplifies how natural rhythms can guide precise and effective practices. By aligning DOC timetabling and activities with such cycles, biosecurity strategies can respect ecological patterns, such as spawning seasons or tidal shifts, to optimise outcomes.

# → Improve formal policy for mātauranga Māori integration and data practices:

Improve formal DOC policies that support the systematic inclusion of mātauranga Māori in biosecurity frameworks. Establish culturally safe datasharing protocols that empower whānau to retain control over their data and knowledge.

### → Support Māori decision-making in biosecurity:

Grant Māori communities greater authority over conservation projects, allowing whānau, hapū, and iwi to lead initiatives and apply their knowledge systems. Enabling Māori self-determination in biosecurity can strengthen shared stewardship based on mutual trust.

### → Provide clear, culturally responsive guidance and resources:

Create bilingual, culturally sensitive resources outlining DOC's roles, goals, and support in Māori-led biosecurity efforts. This includes offering training, mentorship, and proposal-writing workshops tailored to whānau and hapū, ensuring they have the tools and guidance needed to lead effectively.

### → Simplify access to funding and offer proposal support:

Establish accessible funding models designed for Māori-led projects, complemented by practical support like proposal workshops and online tools.

→ Foster community and youth engagement in biosecurity efforts:

Engage whānau and rangatahi in biosecurity through hands-on learning and storytelling programs. This intergenerational approach builds local capacity, fosters continuity in kaitiakitanga, and promotes environmental stewardship in a culturally grounded way. Offer programs and wānanga that provide youth with hands-on training in kaitiakitanga, reinforcing traditional knowledge and strengthening Māori-led biosecurity management across generations.

### → Implement practical infrastructure for biosecurity:

Collaborate with councils to install cleaning stations at water access points, ensuring boats and equipment are cleaned between waterways to prevent pest spread. Facilities should align with tikanga, addressing both cultural and practical biosecurity needs.

## → Build long-term, reciprocal relationships with Māori communities:

Foster trust-based partnerships through long-term commitments and consistent communication with Māori communities. Recognise relationship-building as an ongoing process essential to effective biosecurity and environmental stewardship.

# → Promote holistic ecosystem management and systems-based approaches:

Embrace an interconnected approach to pest management that reflects Te Ao Māori perspectives on the relationship between land, water, and forests. Holistic biosecurity strategies that incorporate pest control and habitat restoration will contribute to comprehensive ecosystem health.

### → Enhance cultural competency among DOC staff:

Strengthen DOC staff training on Māori values, perspectives, and practices, enabling meaningful engagement with Māori communities. Enhanced cultural competency will support staff ability to collaborate effectively in Māori-led biosecurity initiatives.

### → Strengthen communication and outreach channels:

Disseminate information through community centres, marae, and local hubs, using tikanga-based engagement methods. This outreach will ensure whānau and hapū are well-informed of DOC programs and resources available to them.

### → Integrated governance frameworks:

Look towards establishing Governance frameworks that integrate Kaupapa Māori values and practices in decision-making.

### → Sustainable practices and interdisciplinary approach;

Explore fostering connections with the arts, science, and identity as part of future conservation strategies.

#### → Research and data-driven decisions:

Continue to focus on research and data to validate and support indigenous knowledge integration into DOC practice.

### → Cultural protocols development:

Look to formalise tikanga Māori protocols for biosecurity operations, utilise best practice examples from current DOC/lwi relationships (i.e Ngāti Kuri and Ngāti Wai).

### → Monitoring and evaluation:

Establish mechanisms for monitoring and evaluating the effectiveness of tikanga Māori-inclusive approaches.

These recommendations aim to create an inclusive and culturally attuned framework for DOC's freshwater biosecurity strategies, enabling Māori communities to lead in the stewardship and protection of their natural environments through enhanced kaitiakitanga and mana whakahaere.

### Conclusion

The insights and recommendations gathered from the case studies illustrate that a systems-based approach, that sees land, water, and people as interconnected, is vital for sustainable freshwater pest management. This is achieved with recognition of the crucial role of incorporating Te Ao Māori principles in freshwater biosecurity, and strengthening community-led pest management efforts. Additionally, the integration of traditional practices, such as the maramataka, highlights the importance of holistic perspectives in environmental stewardship.



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NGĀTI AWA, TE ARAWA Previous Kaimahi for Te Arawa Lakes Trust

# Davina Merepeka THOMPSON

MEA acknowledges the work of Davina and her untimely passing on October 1, 2024.

E TE TŪĀHINE, MOE MAI I ROTO I TE ĀHURUTANGA O TŌ TŪPUNA.

### INTRODUCTION:

Davina Merepeka Thompson (Ngāti Awa, Te Arawa) was a passionate advocate for environmental stewardship, who served as a Kaimahi for Te Arawa Lakes Trust. Starting as a volunteer, Davina transitioned into a paid role, helping to inspire others to manage freshwater pest species around the lakes. With strong Ngāti Rangitihi roots, she brought a deep connection to her mahi.

Holding a Master's in Indigenous Studies, Davina's research focused on the maramataka and the impact it has on our taiao and our people, particularly how she uses the maramataka in her environmental work. Her expertise extended to policy where she contributed to the Environment Aotearoa 2022 Synthesis Report for the Ministry for the Environment, using Matariki as a guiding framework. Davina was dedicated to incorporating mātauranga Māori into New Zealand's environmental policies.

Brown Bullhead Catfish (Ameiurus Nebulosus) are prolific freshwater pests that prey on taonga species such as koura, molluscs and small fish. Te Arawa Lakes Trust undertake their role as Kaitiaki of their waterways and natural resources through strategic partnerships and leading various freshwater research projects, targeted netting, the delivery of Catfish Killa's, education in school programmes and the introducing sterilised catfish into their lakes to move towards total eradication of this pest in their Tribal territories.

### **DAVINA'S WISDOM:**

### The value of mātauranga Māori

In connection to her research and studies, Davina highlighted the relevance of mātauranga Māori, specifically applying insights from the maramataka in understanding natural cycles and how they influence the behaviour of catfish. Her research demonstrated that ancestral knowledge is still highly applicable today. "There was clear evidence that mātauranga Māori is inside the maramataka, our people, our ancestors, they just knew. And that was probably one of my best research findings."

### Integrating maramataka into policy and practice

Davina advocated for the inclusion of maramataka experts within government agencies to influence environmental policies. She believed maramataka should be central to understanding the natural world and aligning human activities with these cycles, which also benefits personal and environmental health. "We're not separate from the taiao... Our behaviours are aligned with the maramataka... When you look at the maramataka, then you'll realise, 'Oh, it's because it's a Tamatea phase, or it's because it's a Rakaunui phase or it might be a Tangaroa phase."

### Importance of employing local kaitiaki

Davina shared a powerful example from her son, who discovered the underwater nests of catfish, challenging DOC's earlier assumptions that they primarily inhabit and nest on land. This experience reinforced her belief that effective freshwater management hinges on employing local kaitiaki who intimately understand the whenua and wai. She emphasised that hiring

locals with a deep, lived connection to the area leads to better outcomes than relying solely on individuals with formal qualifications. "You can get someone else that might have a tohu or something in that mahi, but I think they'll be saving a lot of time and knowledge if they employed whānau that live from the land... Because no one knows the land better than the kaitiaki."

### Visual communication for Māori communities

She shared how her son used a phone to capture the underwater discovery of catfish nests, highlighting the power of visual tools in environmental work. She identified the importance of using photos, infographics, and other visual aids to make environmental reports and findings accessible, particularly for those who may struggle with written text. "If you do the infographics and the pictures... Give them a phone or an iPad so they can picture moments." This approach ensures that important information is shared in a way that resonates with whānau and supports deeper engagement.

### Recognising the value of practical knowledge

Davina challenged the stigma around formal qualifications, noting that Māori knowledge should be valued equally to Western system qualifications. Her experience in living with dyslexia demonstrates the power of innovation and courage over formal education. "For some people, (scientists) they'll see your mahi and they'll be like, 'Eh.' That's not even tika. They like to belittle us as little Māori researchers."

### A call for change in employment practices

Davina stressed that employing Māori in environmental roles should not restrict them to office jobs, instead, they should be given the opportunity to work on the land and waterways they are kaitiaki of. She shared her frustration with current practices where Māori are hired but confined to office work, which limits their ability to protect and care for the environment. "Don't bloody put us in an office... We need to be out on the land because you can't just write reports about things, you need to understand it intimately, be in relationship with the whenua and the wai.."

### Challenges with freshwater pest management

Davina reflected on the significant threat posed by pest species, such as catfish and invasive weeds, to freshwater systems. She highlighted the critical importance of cleaning, drying, and checking boats and trailers to prevent the spread of these pests. "All it needs is like a little blade of pest weed and then it'll just take over an entire lake and suffocate the lake."

### Reconsidering waterway management

Davina criticised the way urban planning in New Zealand often disregards the natural flow of water, contrasting it with places like Japan, where cities are built around waterways, respecting their natural course. "In New Zealand, it's the other way around. But in Japan, the cities are built around the natural paths of the water."

### **DAVINA RECOMMENDED:**

### Employ local kaitiaki for freshwater management

Prioritise hiring local kaitiaki with deep knowledge of the whenua and wai to ensure effective, culturally aligned pest management.

- Integrate maramataka into freshwater management practices
   Incorporate maramataka experts to align pest management actions with
- natural cycles for better timing and outcomes.

### Recognise the value of practical and Indigenous knowledge

Value mātauranga Māori equally alongside formal qualifications, empowering Māori researchers and practitioners in decision-making.

### Reform employment practices for Māori staff

Enable Māori staff to engage with the land and water in their roles, allowing them to act as kaitiaki and apply their mātauranga.

Use visual and culturally accessible communication tools

Create visual, photo-based communication tools to make biosecurity data more accessible to Māori communities.

Enhance biosecurity education on pest species

Strengthen public education on cleaning and checking boats to prevent the spread of invasive species, using culturally relevant messaging.

Reconsider urban planning to respect natural waterways

Promote infrastructure planning that respects natural water flows, ensuring future projects align with Te Ao Māori values.

### IN SUMMARY:

Davina's insights highlighted the critical role of incorporating mātauranga Māori into freshwater management systems. She advocated for employing local kaitiaki who have a deep connection to the land and water, integrating maramataka practices to better align environmental management with natural cycles, and ensuring practical Māori knowledge is valued equally alongside other Western/ formal qualifications. By using culturally relevant visual tools and reconsidering how urban planning interacts with natural waterways, DOC can enhance its collaboration with Māori communities, empowering them to exercise kaitiakitanga and manaakitanga in freshwater pest management.



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RONGOMAIWĀHINE, NGĀTI KAHUNGUNU, NGĀTI TŪWHARETOA Māori Business Development Consultant and Ecotoxicologist at Cawthron Institute

# Dr Jamie ATARIA

### **INTRODUCTION:**

Dr James Ataria is an Ecotoxicologist at the Cawthron Institute, recognised for his expertise in integrating mātauranga Māori with scientific research. With over 20 years of experience, his work focuses on addressing community-based environmental challenges, particularly in assessing the impact of contaminants on culturally significant species and freshwater ecosystems in Aotearoa.

Dr Ataria is committed to fostering mutual understanding between Māori communities and key organisations, aiming to improve resource management and biosecurity. His approach, which combines traditional Māori knowledge with contemporary science, promotes collaboration and empowers decision-making, offering innovative, practical solutions to safeguard freshwater environments and enhance biosecurity efforts.

### **DR ATARIA'S WISDOM:**

### Mātauranga Māori and contemporary solutions

Dr Ataria highlights the importance of incorporating mātauranga Māori into contemporary freshwater biosecurity solutions. He says that indigenous knowledge, particularly around rongoā Māori (traditional healing), is critical to addressing pest management issues. Ataria explains that the process of using local knowledge systems allows for unique solutions, such as a rongoābased approach. He describes how "looking through our own whakapapa and understanding the connections in the Te Ao Māori worldview" enables communities to find innovative ways to manage pest species. "You find solutions. You can find a solution if you look."

### Holistic approach to biosecurity

For Dr Ataria, pest management is not solely about eradicating pests but is also about re-engaging Māori communities with their cultural practices and environments. He believes that the process of finding solutions must include reconnecting whānau with the ngahere, their language, and their cultural protocols. "It's about them getting back to their cultural processes. It's about them getting back into the ngahere."

### Recognition of Indigenous knowledge as legitimate

DrAtariastressestheuntappedvalueofmātaurangaMāoriandtheknowledgeof mana whenua, which he believes is often overlooked due to a lack of recognition from mainstream scientific frameworks. He points out that generations of cumulative experience and lived knowledge within Māori communities are seldom credited with the same legitimacy as scientific knowledge. However, this knowledge is invaluable for freshwater biosecurity and environmental management. "There are real possibilities in the knowledge of mana whenua. You often have years and generations of cumulative experience... But people don't credit or give a level of credit to that knowledge, as legitimate, or believe that it lacks the rationale and rigour that (mainstream) science does."

### Need for greater integration between science and mātauranga Māori

Dr Ataria envisions a future where science and mātauranga Māori work together as equals. He highlights the potential for innovation when these two knowledge systems collaborate, especially in addressing issues like freshwater pest management. "The most exciting thing is where you have a marriage of science and mātauranga coming together as equals... Creating those places and spaces where that can occur."

### Indigenous leadership in global knowledge systems

Reflecting on a conversation held with a First Nations particle physicist, Dr Ataria believes that significant advancements in knowledge could come from an indigenous leader trained in both traditional knowledge and modern science. This reflects his hope for indigenous knowledge to contribute to global scientific breakthroughs. "It will be an indigenous person... Also trained in physics... htis coming together of these two knowledge systems to create new knowledge."

### Challenges in integrating Indigenous knowledge

One of the main challenges Dr Ataria identifies is the lack of trust and funding available for Māori-driven solutions. He points out the restrictive nature of current funding models, which hinder Māori communities from fairly participating in pest management efforts. He advocates for Māori to be trusted to lead these initiatives and stresses the importance of having appropriate knowledge protection systems in place. "There are still issues around Māori accessing funding...the models that Funders use to provide funding are just really restrictive and inhibitive of Māori actually participating fairly."

### Importance of building long-term relationships

He emphasises the significance of long-term, trusting relationships between agencies like the Department of Conservation and Māori communities. He critiques the tendency of agencies to engage in "short-term" partnerships, which do not foster meaningful or sustainable outcomes. "Māori aren't gonna suddenly sidle up to you just for a one-night stand. This is a 'we're getting married here and we're gonna have mokopuna.' It's long-term, right?" Relationships are key and to Māori communities they are long term and enduring.

### **DR ATARIA RECOMMENDS:**

### Empower Māori-led solutions

Allow mana whenua to lead biosecurity efforts by providing them with necessary resources and decision-making authority, recognising the value of their intergenerational knowledge.

### Acknowledge Māori knowledge systems:

Adopt a dual approach that values both mātauranga Māori and science, integrating Māori cultural protocols like tikanga, karakia, and whakapapa into biosecurity practices.

### Holistic ecosystem management

Focus on interconnected ecosystems in pest management, drawing on the Māori view of whanaungatanga between land, water, and forests.

### Build long-term relationships

Develop lasting, reciprocal partnerships with Māori communities, rooted in respect and trust beyond short-term engagements.

### Simplify Māori access to funding

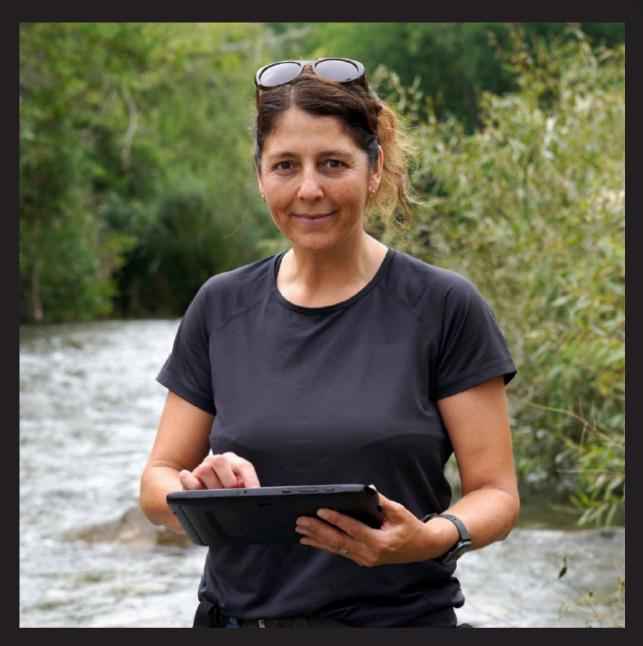
Reform funding models to be more flexible and accessible for Māori communities, allowing for greater participation in biosecurity projects.

### Integrate mātauranga Māori with science

Encourage collaborative spaces where mātauranga Māori and science work together to co-develop innovative solutions to biosecurity challenges.

### IN SUMMARY:

Dr Ataria highlights the importance of integrating mātauranga Māori with contemporary science to enhance freshwater pest management. There is a strong need to empower mana whenua, recognise Māori knowledge systems, and foster long-term, trust-based relationships between Māori communities and agencies like DOC. To move forward, DOC should consider providing greater autonomy and resources to Māori-led initiatives, reforming restrictive funding models, and creating collaborative spaces where indigenous knowledge and scientific methods work together to develop innovative solutions for biosecurity challenges.



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NGĀTI POROU Ecologist and Team Leader (Freshwater Ecosystems) at Cawthron Institute

# Dr Joanne CLAPCOTT

### INTRODUCTION:

Dr Joanne Clapcott is a freshwater ecologist and the Team Leader for Freshwater Ecosystems at Cawthron Institute, where she has focused on river health and its connections to social and cultural well-being for over 16 years. Although not currently working directly with whānau on Freshwater pests and predator eradication, her research emphasises the holistic health of freshwater ecosystems and the impact of policy changes on local communities. As a member of Ngāti Porou, Dr Clapcott collaborates with hapū like Te Aitanga a Mate on the Waiapu catchment plan and works with other iwi on projects focusing on Māori rights and interests in freshwater management. Her commitment to integrating mātauranga Māori with scientific research highlights the importance of community involvement in achieving sustainable environmental outcomes.

Dr Clapcott's journey in freshwater science began with a pivotal undergraduate course that made her realise the interconnectedness of aquatic ecosystems and human impact. She states, "I could look in the water, at the community living in the water, the bugs, and they could tell you something about how we were impacting the health of the awa." This early insight shaped her understanding of the importance of studying freshwater systems.

Growing up in Wairoa during Cyclone Bola highlighted to her the profound influence of nature on community dynamics. She reflects, "That was my first kind of light bulb moment, like the strength of nature to actually shape communities and how we interacted as people." This highlights the significance of local context and experiences in shaping her perspective.

### DR CLAPCOTT'S WISDOM:

### The interplay of mātauranga Māori and science

Dr Clapcott emphasises the importance of integrating mātauranga Māori into research and applied science practices, describing her experiences working alongside Māori communities. She mentions, "I've been steeped in this Western science way, and the other learnings are relatively fresh for me. Every time I think I know something, I learn something new." This highlights the value of cross-cultural knowledge exchange.

### Holistic approaches to freshwater management

She advocates for a more holistic understanding of freshwater ecosystems that transcends traditional scientific compartmentalisation. She states, "It's a whole new framing and way of seeing things," stressing that scientific frameworks often overlook the deeper relationships that communities have with their environments.

### Empowerment of youth and community engagement

She sees significant potential in engaging rangatahi through cultural monitoring and hands-on learning experiences. Dr Clapcott observes, "You actually see the change in the capability of the young people you're working with... They can take over," which reflects the transformative impact of involving younger generations in environmental stewardship.

### Vision for a reciprocal society

Reflecting on her vision for the future, she states, "It wouldn't be an extractive society. It would be a reciprocal society where we live with the land and the people that are here." This vision underscores the need for a paradigm shift in how society interacts with the environment.

### Challenges with institutional frameworks

Dr Clapcott expresses frustration with the existing institutional structures that tend to marginalise Indigenous perspectives. She notes, "It hasn't explicitly come out 'We're not interested in that,' but just the framing of funding always has these tack-on things," indicating that funding often fails to prioritise Indigenous knowledge and practices.

### Need for policy and institutional change

Dr Clapcott highlights the importance of establishing effective policy pathways that reflect a more integrated approach to freshwater management. She states, "It's important to think about those as a mechanism to make sure that things aren't so disparate and are more holistic and integrated." This points to a need for systemic change in how policies are designed and implemented.

### Long-term thinking and relationship-building

She emphasises the necessity of long-term relationships and a sustainable approach to resource management, stating, "Relationships take time. Things happen at different times for different people for a reason." This perspective highlights the importance of patience and understanding in fostering effective partnerships.

### Role of DOC and Resource Management

Dr Clapcott believes that the Department of Conservation should put more effort into its engagement with Māori communities in terms of decision-making processes. She says, "For me, it comes back to... The whole project should start with that conversation," emphasising the need for genuine collaboration and respect for Indigenous rights.

### DR CLAPCOTT RECOMMENDS:

### Enhanced collaboration with Māori communities

Foster partnerships between the Department of Conservation and local iwill hapu to create co-management frameworks for biosecurity efforts. Regular meetings should include Māori voices in decision-making processes and operational planning.

### Capacity building for Māori

Provide training and resources for Māori community members to enhance their skills in biosecurity management. Developing mentorship programs where experienced DOC staff support Māori representatives will help bridge knowledge gaps and empower communities.

### Incorporation of mātauranga Māori

Integrate traditional knowledge and practices into biosecurity management strategies through joint research initiatives that combine scientific and traditional ecological knowledge to address specific biosecurity challenges.

### Clear communication and information sharing

Establish transparent communication channels between DOC and Māori communities by creating bilingual resources that explain biosecurity issues, policies, and practices, ensuring accessibility for all community members.

### Integrating Te Ao Māori into biosecurity practices

Adopt cultural protocols and frameworks that recognise and respect tikanga Māori and kaitiakitanga principles in biosecurity initiatives.

### IN SUMMARY:

Dr Clapcott's insights highlight the critical importance of collaboration between the Department of Conservation and Māori communities in freshwater pest management. Key takeaways emphasise the need for comanagement frameworks, capacity building for Māori, and the incorporation of mātauranga Māori into biosecurity practices.



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TE ROROA, NGĀPUHI, NGĀTI WHĀTUA General Manager at Te Roroa Development Group

# Snow TANE

### **INTRODUCTION:**

Snow Tane, General Manager for Te Roroa Development Group, has been instrumental in various environmental projects and pest management efforts. He has played a key role in restoring 900 hectares of pine forest to native land through the Te Toa Whenua Project, addressing Kauri dieback by engaging scientific and Te Roroa experts and managing pest control, roading, and restoration projects with the Environmental Team.

Snow's team collaborates with NIWA, NRC, and MPI to prepare communities for climate change impacts on water and food access, emphasising community involvement and the integration of traditional knowledge with modern science for sustainable outcomes. Kauri Dieback is considered as a Freshwater pest in this interview because Te Roroa see their ngāhere as an interconnected living being. Kauri Dieback travels in various ways including via the waterways and their approach to pest management is driven through a wellbeing and mātauranga Māori framework.

### **SNOW'S WISDOM:**

### Proactive action at the community level

Snow explains that as an lwi they initially had to independently drive the response to Kauri dieback, using limited resources, selling equipment, and creating their own response plan. Later, when the National Pest Management Plan was being developed, their response plan significantly influenced the National approach, showing the value of shared efforts for their rākau rangatira.

Now, with support from the Ministry of Primary Industries and collaborative agency involvement, their team is well-resourced and able to continue this crucial work. The experience shows the importance of taking proactive action and ensuring that others share the responsibility and costs when appropriate.

"That was a critical kaupapa for us because there was no substantive work in the country dealing with Kauri dieback. We had to develop our own tools and lead operational activity to manage the issue ourselves. This has been something that we've worked out as we couldn't wait around for support. We needed to get on and do the mahi on the ground. If agencies wanted to come along for the journey, ka pai. If they don't, we'll bill them later. If there's any part of it that is taking on some of their responsibility, we'll make sure that they can share in some of the costs."

### Jobs for Nature team and succession planning

Established in 2020, the team has grown over six years, focusing significantly on the social aspects of climate change and community resilience. Snow highlighted, "We've kept them (the team) going for six years and the team has expanded. We have a huge focus on climate change, but more so as part and parcel of our climate change planning we're focusing more on the social aspects of climate change." Additionally, he stressed the importance of starting succession planning early to ensure a seamless transition of responsibilities.

### Mātauranga in decision-making

Snow emphasises the importance of traditional knowledge in decision-making: "There's a korero tuku iho pertaining to our whakapapa and the actions of our tūpuna. And that's the sort of thing we have to remember."

He illustrated this with a specific example of a consultant's work: "One of the old kuia gets up and says, 'Now you can't put the town water system there. That's where our mullet come to spawn.' All the work the consultant did, went out the door."

# Balancing scientific recommendations with traditional knowledge to respect cultural practices

Snow highlights the importance and cost effectiveness of early engagement with holders of traditional knowledge in decision-making. This includes reconsidering plans based on cultural insights, as illustrated by a live example of ignoring their advice and guidance relating to mullet spawning grounds.

### Challenges with DOC

Snow highlighted challenges within DOC, particularly at the middle management level: "Our biggest battles with DOC are in that middle management area, between regional and national." He cited specific issues regarding the placement of their hives on DOC Public Conservation Land (PCL), which was initially prohibited but later approved following further discussions.

### Lack of existing frameworks

Reflecting on their work with the Te Toa Whenua Project, he emphasised the need for self-reliance and swift, independent action. With the community's needs at the forefront, they often had to build from the ground up, especially in the absence of readily available information or resources.

### Necessity to start succession

Snow highlights the importance of early planning to facilitate seamless transitions, particularly for the Jobs for Nature project, addressing a significant organisational challenge. This proactive approach ensures that future generations are equipped to continue the work initiated by their predecessors and are prepared to tackle the challenges posed by climate change, even after they retire.

### Implementing practical measures of resilience

Snow questioned the practical implications of resilience, indicating a need for clear, actionable steps: "That word resilience-I'm not a keen user of it-but I think to me, the biggest challenge is to show how we make things resilient."

### **SNOW RECOMMENDS:**

### Proactive action

Emphasise self-reliance and immediate action to address challenges, such as Kauri dieback management, without waiting for external support.

### Building resilience

Upgrade water infrastructure and provide water tanks to households in vulnerable communities to enhance water resilience.

### Succession Planning

Involve the rangatahi in ongoing projects to ensure a seamless leadership transition when current leaders retire.

### Collaborative Solutions

Establish direct communication with stakeholders to address conflicts and encourage transparency in publicising environmental impacts.

### Utilising mātauranga Māori

Integrate traditional ecological knowledge into environmental planning and decision-making processes, ensuring cultural protocols are respected.

### Kaitiakitanga

Foster community guardianship of natural resources, promoting responsibility in managing biosecurity challenges.

### Whanaungatanga

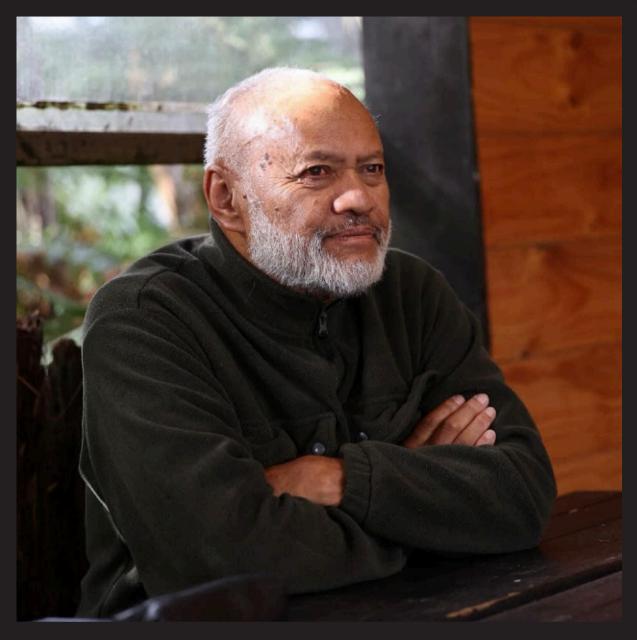
Strengthen relationships within the community and with partners to encourage collaboration and shared resource management.

### — Tikanga Māori

Incorporate customary practices in decision-making to ensure cultural values are respected in biosecurity efforts.

### IN SUMMARY:

Snow has been a driving force in environmental projects and pest management, such as the Te Toa Whenua Project and combating Kauri dieback. His work emphasises the importance of self-reliance, proactive actions, and integrating traditional knowledge with modern science. The key challenges he explained include the need for immediate action, early succession planning, and balancing traditional practices with scientific recommendations. Collaborations with NIWA, NRC, and MPI are crucial for building climate resilience.



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NGĀPUHI, TE ARAWA, RANGITĀNE

# Matua Rereata MĀKIHA

### INTRODUCTION:

Matua Rereata Mākiha is a maramataka expert and esteemed Māori astronomer, known for his knowledge of ancestral teachings and environmental stewardship within Te Ao Māori. Born in Hokianga, he has studied Social Sciences and Māori Business, bringing a deep understanding of Māori traditions to his work. Rereata has been pivotal in revitalising the maramataka and advocates for its application in environmental management, aligning natural cycles with sustainable practices. With extensive experience as a cultural advisor and a former broadcaster, he continues to lead efforts to integrate Māori knowledge in communities and environmental projects across Aotearoa.

### **MATUA RERATA'S WISDOM:**

### Integrating mātauranga Māori in biosecurity

Rereata emphasises the importance of utilising mātauranga Māori for freshwater biosecurity, where knowledge of ancestral practices and the maramataka provide precise insights into species behaviour and ecosystem health. He describes traditional ways of managing pests that avoid eradication, instead directing pests toward certain areas to protect essential food sources. This aligns with a Māori perspective that views all species, including pests, as having a purpose in the ecosystem. "Everything has a purpose in the taiao."

### Applying maramataka in freshwater pest management

Rereata shares the value of using and understanding the maramataka for freshwater pest management, explaining how it provides accurate timing for environmental actions based on natural cycles. He highlights that the maramataka allows for accurate predictions of species' behaviours and environmental events, "I can tell you when that inanga is going to run, the day, date, time, year out," illustrating the high level of specificity mātauranga Māori offers, often surpassing scientific estimates.

### Protecting wai and taonga species

The significance of wai and its interconnectedness with taonga species like tuna is central to Rereata's view. He highlights that proper management requires understanding the whakapapa of water sources and respecting the ancestral knowledge that preserves their health. He explains that the loss of traditional practices, such as placing tuna in reporepo to maintain their numbers, threatens not only species survival but cultural heritage as well.

### Empowering rangatahi in kaitiakitanga

Observing the enthusiasm of rangatahi at various wānanga, Rereata feels hopeful about the future of Māori environmental stewardship. He notes that the younger generation is actively learning and practising traditional knowledge and biosecurity methods, showing resilience and commitment to preserving the Māori worldview in environmental management. "We're in good hands... I've got a lot of hope for the future, especially around the way that our rangatahi are picking up. And not just picking the knowledge up, learning it, but actually putting it into practice too. It's pretty awesome."

### Cultural protocols and respect for taiao

Rereata focuses on the importance of tikanga in protecting taiao. He shares how Māori traditional rules, such as taking only karati (small snapper) to allow spawning fish to reproduce and using every last bit of it, were essential for sustainability. He advocates for retaining tikanga to foster environmental balance, which contrasts with current regulations that prioritise commercial interests. "When the snapper was spawning, you wouldn't touch the ones that were spawning ever. And so we had this practice of getting the karati and there was a tikanga around the karati, that you didn't waste anything. You use the scales, the bones, and everything."

### Harnessing lunar and tidal rhythms for optimal practices

Rereata shares profound insights into the alignment of natural Taiao cycles with cultural and practical processes, emphasising their significance for Māori approaches to environmental and community activities. He pointed out that Tangaroa Kiokio, 10 days after the full moon, is the most active and productive time to engage in specific tasks. He stresses that success requires a deep understanding of and alignment with the tides. "You need to work with the tides. Those tides are always the same—tai timu, tai whanake, tai pari."

Tangaroa Kiokio and the tides offer a natural, repeatable framework that could inform the development of assessment criteria and practical processes. By embedding this knowledge into programme design, initiatives can be both culturally grounded and practically impactful.

### TAUĀRAI-BARRIERS:

### Limited respect for Māori knowledge systems

Rereata points out that mainstream biosecurity and conservation efforts often disregard Māori knowledge, treating it as secondary to scientific approaches. He observes that while mātauranga Māori offers exact insights, "science needs to stay on that side," as its worldview is incompatible with the depth and specificity of Māori knowledge. This tension limits the integration of Māori perspectives into current biosecurity practices.

### Barriers to independent knowledge systems

He advocates for mātauranga Māori to remain within Māori-led institutions, noting that universities and other external systems lack the appropriate context to uphold and teach Māori knowledge authentically. He stresses that traditional knowledge should "stand alone in our own whare wānanga" to maintain cultural integrity, as external institutions often dilute or misinterpret it.

### Degradation of ecosystems due to human impact

Human activities have caused significant harm to ecosystems, impacting species that were once abundant. Rereata highlights the example of dwindling tuna populations, which he attributes to environmental degradation and the draining of wetlands. This loss of habitat presents a major barrier to restoring traditional practices and conserving taonga species, exacerbating the challenges of effective pest and ecosystem management. "The biggest pest in the taiao is the humans. And how they destroy".

### Resistance to Māori self-determination in biosecurity

The lack of agency in decision-making remains a challenge, with Rereata suggesting that some government bodies are resistant to Māori-led solutions and prefer to maintain control. He expresses concern that Māori communities are often viewed with scepticism, leading to restricted access to resources and opportunities to apply mātauranga Māori independently.

### Matua Rereata recommends

Integrate mātauranga Māori with biosecurity practices
Enable mātauranga Māori to guide biosecurity efforts by incorporating maramataka insights, tikanga and traditional knowledge into conservation policies. Rereata Mākiha emphasises the importance of aligning activities with Tangaroa Kiokio, 10 days after the full moon, as a key time for action.

Integrating this level of detail into biosecurity strategies ensures precise, seasonally informed management that respects ecological cycles. Such practices could include protecting spawning seasons for fish or leveraging the tides to direct pests to designated areas rather than complete eradication.

### Empower rangatahi in environmental stewardship

Support youth involvement in biosecurity initiatives through wananga that reinforce traditional practices and knowledge. Initiatives that offer rangatahi hands-on training in kaitiakitanga will help foster intergenerational knowledge transfer and build resilience in Māori-led biosecurity management.

### Respect and preserve Māori knowledge autonomy

Establish and support Māori-led learning institutions, like whare wānanga, dedicated to teaching mātauranga Māori independently from mainstream educational frameworks. This will ensure that Māori knowledge systems are upheld authentically and empower Māori communities to lead in environmental stewardship without compromising cultural values.

### Prioritise place-based ecosystem restoration

Restore and protect traditional habitats such as repo repo (swamps) that are essential for taonga species like tuna. Developing local projects to rehabilitate these areas will help conserve biodiversity, provide a space for pest control aligned with Māori practices, and allow Māori communities to exercise kaitiakitanga in their own ways.

### Increase cultural competency within DOC

Train DOC staff in Te Ao Māori and mātauranga Māori principles, fostering a mutual understanding that values Māori approaches as complementary to scientific perspectives. This will allow for more collaborative and respectful partnerships, reducing the institutional scepticism that hinders effective joint biosecurity management.

# Support Māori decision-making authority in environmental management

Strengthen Māori self-determination in biosecurity by creating policies that allow whānau, hapū, and iwi to lead conservation projects. Granting Māori communities greater decision-making authority can help protect culturally significant areas and species and encourage shared stewardship with DOC based on mutual trust and respect.

### IN SUMMARY:

Rereata's insights focus on the significance of integrating mātauranga Māori, particularly maramataka, into freshwater pest management. His reflections reveal that fostering genuine partnerships with Māori communities requires DOC to support Māori-led knowledge systems and empower kaitiaki in their roles. Moving forward, DOC could deepen collaboration by recognising and resourcing maramataka-informed pest management practices, facilitating independent Māori learning spaces, and prioritising culturally respectful approaches in all freshwater biosecurity efforts.

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© Te Rawhitiroa Bosch

NGĀTI RANGITIHI, TE ARAWA Biosecurity Officer for Te Arawa lwi Lakes

# Harina RUPAPERA

#### INTRODUCTION:

Harina Rupapera is a dedicated educator and biosecurity officer, deeply involved in climate change and environmental restoration. Growing up, she did not initially have a strong connection to her Ngāti Rangitihi Taiao, or fully understand her role as a kaitiaki. Growing up in the Marae is very different to being immersed in the environment.

The many wānanga with Tohunga Hori Parata, and harvesting Paraoa (Sperm whales) and Tohorā (Humpback whales) has "expanded my consciousness to our esoteric realms, and the ancient thinking rhythms of our Tūpuna" A high calibre range of maramataka experts, (acknowledging Davina Thompson who passed away this year), Jade Kameta, Rereata Makiha and Piripi Lambert have helped to shape her core understandings of her own identity and whakapapa responsibilities. For Harina, kaitiakitanga begins with understanding her place in the world, grounded in her own whakapapa. Her kuia, Rangitihi Kahira, and the legacy of her tūpuna, including Apumoana and Tūhourangi, have guided her journey toward embracing her role as a guardian of her own Maunga Tarawera, Tarawera roto and Te Awa o te Atua, all the way to Te Moana o Toitehuatahi in Matata, where her Whare Tīpuna Rangiaohia and Wharekai Rākauheketara have nurtured and prepared her to be an innovator and change seeker.

With a Master's in Applied Indigenous Knowledge, Harina focuses on cultural whale harvesting and Indigenous well-being principles as a base for everything she does. She is also a recipient of the NZ National Science Challenge scholarship and is currently pursuing a PhD in Kūmara sovereignty and security. As well as her role as a biosecurity officer for Te Arawa Lakes Trust and the Bay of Plenty Regional Council, she coordinates taiohi and a Ngāti Rangiwewehi and Te Arawa Lakes Trust partnership hapū-led Koaro restoration project, emphasising the integration of mātauranga Māori in freshwater management. Her work is driven by a deep understanding of her whakapapa and a strong commitment to protecting the natural world for future generations.

#### **HARINA'S WISDOM:**

# Importance of empowering local kaitiaki

Harina's experience with Te Arawa Lakes Trust highlights the significance of providing opportunities for local kaitiaki to grow and contribute to environmental management. She noted how the Trust nurtured her passion and capabilities by supporting her aspirations, which enabled her to explore her role as a kaitiaki. This empowerment is crucial for rangatahi as well, as they need similar opportunities to be effective guardians of the environment. "Te Arawa Lakes Trust has enhanced my ability by giving me the opportunity to support and nurture my aspirations."

# Connection between taiao and whakapapa

She emphasised that the foundation of freshwater biosecurity lies in recognising the deep connection between tangata whenua and their taiao. For her, taonga species and natural environments are integral to the identity

and well-being of hapū and iwi. Freshwater pest management should be viewed from this holistic perspective, where the health of the environment directly impacts the people's identity and their ability to uphold their kaitiaki responsibilities. "If you focus deeper than a person and you go to the taiao as a taonga species, that's really where we get all of our ways of knowing."

# The role of whakapapa in kaitiakitanga

She believed that the concept of kaitiakitanga is deeply rooted in whakapapa. For her, being a guardian is not simply a title or role but an inherent responsibility passed down through generations. This understanding forms the basis of her environmental work, where her actions as a kaitiaki are driven by her connection to her tūpuna and the land they protected. "Kaitiakitanga starts there. Kaitiakibeing a guardian is actually being just born into this world knowing that's my job, that's my responsibility."

# Intergenerational kaitiakitanga

Harina's motivation for environmental protection is grounded in ensuring the future of her tamariki and mokopuna. She views kaitiakitanga as a responsibility to future generations, ensuring that they have the same connection to their natural environment as she does. This perspective highlights the need for sustainable practices that allow future Māori generations to continue engaging with their whenua and wai "It's not for us... We want to make sure that the future is ready for our kids, but also that our natural environments are still here for our mokopuna."

# The role of mātauranga Māori

Harina's perspective on freshwater pest management and biosecurity is strongly rooted in mātauranga Māori. She believes that reconnecting with traditional practices and understanding the taiao through whakapapa and tikanga are key to effective environmental restoration. She advocates for an approach where policy and governance not only allow but actively support Māori to lead in freshwater management using their ancestral knowledge. "If they enable the tangata whenua by allowing us to practice our traditions in the way we know how without their interaction or interruption, that would actually be positive."

# TAUĀRAI - BARRIERS:

# Challenges with Institutional Structures and Policy

Harina is critical of the current governance and policy structures around freshwater biosecurity, particularly in relation to the Crown's role. While acknowledging that there are individuals within the DOC who are doing great work, she expresses frustration with how policies often diminish the role of tangata whenua in environmental management. Harina calls for policy changes that genuinely enable Māori to practice their traditional knowledge and kaitiakitanga without interference. "Unless we can get up to that level of the true governing, policies and enacting of those policies, things aren't going to change that much because they still hold the power and authority, but we have the mana."

# Caring for the Taiao

Harina highlights the importance of genuinely caring for the environment rather than just being empathetic. For her, true kaitiakitanga is about prioritising the needs of the environment over personal interests. She says that without this deep level of care, people are unlikely to take meaningful action to protect the natural world. "For people to be empathetic is one thing, but for them to care is another... If people don't care, they're not going to do anything."

#### **HARINA RECOMMENDS:**

# Foster genuine environmental care

Develop initiatives that instil a deep sense of responsibility and care for the environment, moving beyond surface-level empathy.

#### Empower local kaitiaki

Provide financial, institutional, and capacity-building support for kaitiaki, especially rangatahi, to engage in freshwater biosecurity and environmental stewardship.

#### Reconnect whānau with the land

Facilitate programs that help whānau reconnect with their ancestral lands and waterways, empowering them to fulfil their kaitiaki responsibilities.

# Reform governance and policy

Advocate for policy changes that empower tangata whenua to lead biosecurity efforts, with minimal external interference, respecting mātauranga Māori.

#### Adopt taiao-centred frameworks

Prioritise the protection of taonga species and ecosystems, recognising the environment as integral to Māori cultural identity and well-being. Encourage biosecurity practices that involve listening to and interpreting environmental signals through mātauranga Māori.

# Support intergenerational kaitiakitanga

Focus on the long-term sustainability of ecosystems to ensure future generations can connect with and protect their natural environments.

# IN SUMMARY:

Harina stressed the importance of empowering local kaitiaki, especially rangatahi, to lead freshwater biosecurity efforts. Her insights focus on the need for taiao-centred frameworks that honour Te Ao Māori and intergenerational kaitiakitanga. To strengthen collaboration with Māori communities, the Department of Conservation could provide more resources to support local kaitiaki, adopt policies that give tangata whenua greater authority, and ensure environmental care is grounded in mātauranga Māori.



© William Anaru

TE ARAWA, TE WHĀNAU-Ā-APANUI, NGĀTI TŪWHARETOA Operations Manager for Biosecurity/Taiao Restoration for Te Arawa Lakes Trust

# William ANARU

#### INTRODUCTION:

William Anaru was born in Hamilton and grew up in the Rotorua Lakes region. He currently works as the Operations Manager for Biosecurity and Taiao Restoration at Te Arawa Lakes Trust. In 2018, he led the community catfish initiative, Te Arawa Catfish Killas, which he founded to address the invasive catfish problem in the lakes. Under his leadership, this dedicated team of iwi members and volunteers has successfully mobilized 1,500 individuals, resulting in the removal of over 180,000 catfish from local waters.

William holds a degree in Marine Biology and Ecology from Victoria University and has gained valuable experience through various roles in Te Puni Kōkiri (TPK), the Department of Conservation, and the Ministry for Primary Industries (MPI). His efforts in wetland restoration around Te Arawa have been significant, earning the Te Arawa Catfish Killers recognition, including the prestigious Aotearoa Biosecurity Supreme Award. They are currently collaborating on biocontrol research projects with the Bay of Plenty Regional Council and NIWA.

William and his team in looking for different approaches to Freshwater Pest Management bought together Te Roopu Raranga ki Rotorua - experts in weaving and to develop "uwhi" harakeke mats designed as cost effective alternatives to hessian mats (an approach other Councils were deploying to rid their lakes of invasive weeds) and a way to help support kōura population growth. The initiative helped to foster local employment as well as a method of benchmarking and measuring the impact of this intervention on the mauri and oranga of their lakes. Utilising matauranga māori approaches to Freshwater pest management although novel at the time, has been proven to work and needs to be appropriately resourced and expanded upon.

#### WILLIAM'S WISDOM:

# Engaging youth and incorporating mātauranga Māori

William emphasises the importance of educating children about biosecurity and conservation through community initiatives. He started by teaching kids about the impact of catfish on native species and established a science fair that included mātauranga Māori. "It's the only one in the country that incorporates mātauranga Māori into it."

# Building sustainable community-driven efforts

His vision includes creating sustainable biosecurity programs that provide jobs for local whānau and strengthen community resilience. "The first thing that comes to mind off the bat is better funding and resources going to our whānau," he emphasises, highlighting the need for increased support to empower Māori communities in conservation.

# Holistic perspective on all species

Williams's approach is rooted in respect for all living creatures, even those considered pests, acknowledging them as part of a broader system. "Well, you know, they are living beings; they're a child of papa... But at the same time, we have to remember our own taonga," balancing the need to protect native species while recognising the framing of pests which could be deemed taonga species to other communities.

# TAUĀRAI - BARRIERS:

# Imbalance in Government support

Biosecurity issues that affect native ecosystems often don't get as much attention or funding as those that impact agriculture. This makes it challenging for communities like Te Arawa to secure the support they need to protect their lakes and waterways. Wiremu had to proactively find funders, including gatecrashing one hui to find those willing to partner with them and be part of their vision for transformation

# Building sustainable community-driven efforts

While temporary jobs were created during events such as Covid, finding ongoing funding to create stable, long-term work opportunities for local whānau remains a challenge. This makes it tough to build a lasting, community-led workforce for biosecurity. Designing their own local approach to biosecurity, hiring locals, designing their own process to protect their waterways requires a significant investment of time and capital. Without support it is more difficult to achieve total eradication.

# Holistic perspective on all species

It can be difficult to balance cultural respect for all living things with the need to control invasive species. This approach may not always align with more traditional pest control methods, making it harder to get buy-in from some stakeholders.

# Disparity in funding for biosecurity efforts

The amount of money available for managing pests in Te Arawa is much lower than in other regions, making it hard to sustain long-term efforts. While there was some progress in securing more funds, it wasn't enough to fully meet the community's needs.

# Local leadership and tailored policies

Government decision-making is often centralised, which can make it difficult to get policies that reflect the specific needs of each iwi or community. Encouraging authorities to adopt more flexible and localised approaches can take time and effort.

#### **WILLIAM RECOMMENDS:**

# Expand education programmes integrating mātauranga Māori

Develop initiatives that educate children and communities about biosecurity, incorporating Māori knowledge and values, such as the Mātauranga Māori Design and Science Fair.

# Promote iwi-led biosecurity management

Supportiwi, hapū, and whānau leadership in local biosecurity and environmental policies, emphasising community-specific approaches.

# Increase and balance funding for biosecurity efforts

Advocate for equitable funding to ensure regions like Te Arawa receive appropriate resources for sustainable biosecurity management.

# Establish proactive government partnerships

Collaborate with MPI and other agencies to prioritise native biosecurity threats and ensure equal attention to these as agricultural issues.

# Develop holistic pest management strategies

Create strategies that balance respect for all species with the protection of native taonga, focusing on humane and ecosystem-based approaches.

# Invest in community-driven employment opportunities

Expand job creation linked to biosecurity and restoration projects, providing sustainable employment and training for local communities.

# IN SUMMARY:

Te Arawa Lakes work with their collective approach to leadership and local research, demonstrates the critical role of community-driven efforts, especially those that engage youth and integrate mātauranga Māori, in freshwater biosecurity. Addressing disparities in funding, fostering whānau and iwi leadership, and recognising the importance of tailored local approaches are essential to effective freshwater pest management.



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NGĀTIPATUWHARE, TERAWHEORO, TE AITANGA-A-HAUITI, NGĀRIKI KAIPUTAHI, TE AITANGA A MAHAKI, NGĀTI POROU Poutaki Tāuteutetanga - Te Whakapae Ururoa Director of Taniwha Connections

# Mere TAMANUI

#### INTRODUCTION:

Mere Tamanui is the Director of Taniwha Connections, an environmental service dedicated to connecting whānau with wai Māori and the whenua. Mere also leads Uawa Factory Road Native Nursery, supplying native plants for local environmental projects. With a background in Māori environmental advancement, Mere's work is deeply rooted in mātauranga Māori and kaitiakitanga.

Water holds deep spiritual significance for Mere and her whānau. Growing up, she was guided by her grandparents' teachings through their Ringatū faith, which emphasised the spiritual cleansing of both whānau and land. This connection to water has been a calling for Mere since childhood. Her passion for water protection intensified when her whānau faced the threat of hydraulic fracking on their whenua, revisiting the historical trauma linked to their whakapapa and the imprisonment of their ancestors.

Mere's journey into freshwater protection also stems from her study of Air Marine and Freshwater Studies, where she developed a love for tuna. Her learning continued at Te Wānanga o Aotearoa, where she gained her Bachelor's in Taiao under the mentorship of Tina Ngata, who influenced her application of mātauranga Māori alongside contemporary scientific methods to monitor and protect wai.

For Mere, healing the whānau and the whenua are intertwined, and she works tirelessly to reconnect her people with water as a source of healing and resilience. She collaborates with iwi and hapū on freshwater monitoring initiatives, integrating cultural knowledge to enhance waterway health and ensure the preservation of tuna and other taonga species for future generations.

# **MERE'S WISDOM:**

# Spiritual connection to freshwater and healing

Mere shares that freshwater holds deep spiritual significance for her whānau, linking it to whakapapa, healing, and environmental stewardship. She explains, "To heal our whānau is to heal our whenua, and water brings a lot of that for us." Her family's traditional practices and her grandparents' teachings have guided her approach to freshwater biosecurity and pest management. Water is not only a resource but also a medium of healing and a reminder of ancestral trauma and connection.

# Reconnecting whānau with whenua and waterways

One of the key challenges Mere identifies is the disconnection between whānau and their natural environment, particularly in terms of freshwater management. She emphasises the need for meaningful engagement based on Māori values, such as Marae Tikanga Taiao, to empower hapū and whānau in their environmental stewardship. "It's about reconnecting them with their taiao," she explains, adding that this connection fosters kaitiakitanga and a sense of ownership over environmental outcomes.

# Integrating mātauranga Māori and contemporary Science

Mere advocates for balancing mātauranga Māori with modern science, ensuring indigenous knowledge systems are not overshadowed by contemporary approaches. "There's some awesome stuff that modern technology can do to complement our mātauranga," she acknowledges but highlights the importance of creating spaces where whānau lead and share their own knowledge.

# Practical solutions for freshwater pest management

Mere proposes several practical solutions to enhance biosecurity efforts, including the establishment of cleaning stations at jetties to prevent the spread of pests between waterways. She highlights the importance of raising awareness, particularly among tamariki, about sustainable practices in freshwater ecosystems. "To create awareness is prevention, and prevention is key to health."

# Support for whānau-led projects

Mere stresses the need for DOC to provide clearer guidance and better support for whānau projects. She suggests that DOC could do more to help whānau navigate the complexities of freshwater management, especially in securing resources and understanding their roles. "Even having an advocate for whānau projects... is huge if there are resources that whānau can tap into."

# **TAUĀRAI - BARRIERS:**

# Lack of empowerment and ownership in knowledge sharing

Mere notes that mātauranga Māori is often sidelined in favour of contemporary scientific approaches, creating a barrier for Māori-led pest management practices. She cautions against non-Māori leading or extracting knowledge without Māori oversight, saying, "You need to empower people to share their stories, not go and share their story for them." She also fears that external groups might come in and document Māori knowledge without giving whānau the tools to manage the data themselves.

# Disconnection from whenua and waterways

Mere highlights a significant challenge in reconnecting whānau with their natural environment. She points out that this has created barriers to practising kaitiakitanga effectively, as whānau are often disconnected from the spaces where ancestral knowledge of environmental stewardship is typically passed down. "Water has memory. Reconnecting with whenua, whakapapa or land story can evoke historic trauma, it is paramount to create safe spaces of engagement in pursuit of mauri ora of wai for all."

# Closer working relationships between DOC and Project managers are beneficial

Mere describes frustrations with a lack of clarity in DOC's guidance and support for whānau-led projects. She explains that projects like Jobs for Nature provided limited initial guidance, which impacted the efficacy of their environmental efforts. "If DOC can make it clear to people what they can do... That would have been more successful."

# Resource accessibility and proposal writing challenges

Securing funding and resources is a significant barrier for many whānauled initiatives. Mere points out that many whānau lack experience in writing proposals to access funding. She suggests DOC could assist by providing resources or offering proposal support, which would help whānau tap into available funding streams: "Most whānau don't know how to put a proposal together to get stuff going."

# Limited awareness and communication channels

Mere explains that information about DOC programs and resources often fails to reach whānau. She suggests that DOC could improve its communication strategies by sharing information through community centres, marae, and local hubs. "If we don't know they're there... How are you promoting that to whānau?"

# Need for infrastructure to prevent pest spread

Mere sees a practical barrier in the lack of infrastructure for biosecurity at local jetties, which could help prevent the spread of pests across waterways. She advocates for cleaning stations, stating, "There's a hose tap from council down at every jetty so people are washing their boats off when coming off the water." This infrastructure would enable whānau and recreational users to follow biosecurity practices more effectively.

#### **MERE RECOMMENDS:**

#### Reconnect whānau to wai and whenua

Facilitate community workshops at marae to foster shared responsibility for waterways through storytelling, karakia, and practices that strengthen kaitiakitanga.

# Empower knowledge ownership

Create whānau-led data systems for biosecurity monitoring, ensuring mātauranga Māori remains with Māori through culturally safe data-sharing protocols.

# Clarify guidance and support for whānau projects

Develop resource kits with clear guidelines, training, and tikanga-based mentoring to assist whānau engaging in DOC biosecurity efforts.

# Support funding and proposal writing

Provide workshops and guidance to help whānau prepare and submit funding proposals for biosecurity and environmental projects.

# Expand communication channels

Disseminate DOC information via community centres, marae, and hui, using tikanga-based introductions like karakia to foster understanding and engagement.

# Install biosecurity cleaning stations

Collaborate with councils to install cleaning stations at water access points, ensuring alignment with tikanga, including seasonal respect for species.

# Blend mātauranga Māori and contemporary Science

Encourage collaborative research by engaging kaitiaki in biosecurity projects with culturally safe data-sharing methods and storytelling protocols.

# Raise awareness through community education

Run biosecurity awareness programs at marae and schools, utilising hands-on learning and social media to reach tamariki and whānau.

# Establish collaborative and equitable governance

Form iwi and hapū advisory groups within DOC projects to ensure decisions reflect Māori perspectives and reinforce whanaungatanga.

# IN SUMMARY:

Mere emphasises the importance of reconnecting whānau with their ancestral knowledge and wai (water) as a foundation for effective freshwater pest management. She advocates for biosecurity practices that align with Te Ao Māori values, recognising the care of waterways as both a cultural responsibility and a spiritual practice. The key challenges include limited Māori-centred support within DOC initiatives, insufficient communication about whānau-led project eligibility, and the need for whānau to retain autonomy over data collected in their kaitiakitanga efforts.

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TE RARAWA Senior Environmental Analyst for Ngāti Kahungunu lwi Incorporated

# Shade SMITH

#### INTRODUCTION:

Shade Smith is a Senior Environmental Analyst in the Taiao Unit at Ngāti Kahungunu lwi Incorporated, where he has worked since 2019.

With over 15 years of expertise in environmental and marine science, Shade has led initiatives in selective breeding for Greenshell mussels and Pacific oysters and has coordinated collaborative research with Māori organisations, private sector entities, and government agencies. His work encompasses open ocean aquaculture, environmental impact assessments, and freshwater and marine research.

At Ngāti Kahungunu, Shade plays a vital role in fisheries research, policy, strategy development and occasionally provides expert evidence in RMA and environmental court cases. His specialised work on freshwater pests includes managing the eradication program for Lagarosiphon major, an invasive aquatic weed, in Lake Waikaremoana. Driven by a passion for empowering Indigenous communities, Shade is dedicated to advancing Māori leadership in environmental resource management.

# **SHADE'S WISDOM:**

# Restore degraded environments

Shade emphasises making estuaries less hospitable to invasive species as a way to restore them. "It's about making as much of the estuary as inhospitable to those juveniles as possible." He notes that areas like Hawke's Bay are highly degraded and need significant change, which may face resistance from those accustomed to the current state.

# Economic vs. environmental priorities

He highlights how Hawke's Bay has focused too much on production, often sacrificing the environment. "We were super good at maximising production at the expense of the environment." He calls for more action and less discussion, "It's a lot of talking, not much doing."

#### Importance of kaitiakitanga

For Shade, the connection to the estuary is through kai, which embodies the practice of kaitiakitanga (guardianship). He believes that true restoration means ensuring people can safely gather food from the water without concerns about contamination—what he calls "anxiety-free mahinga kai." He says, "We build our connection through our relationship and love of kai. We want to be able to set our mullet nets and not be worried that when we smoke the mullet, contaminants will infect our kai".

# Long-term commitment is key

Reflecting on past projects like the attempt to remove Lagarosiphon from a lake, Shade highlights that pest management requires sustained efforts over time. "It takes a long time to eradicate it fully. You've got to keep going back." He warns that giving up on these efforts means starting over. "So I guess the moral of the story is don't give up. If you do, then you're sending yourself right back to the start."

# Collaborative solutions

Shade stresses that restoration efforts can only succeed when everyone is on the same page, with proper funding and clear roles. "You've got to have everyone on the same page. You've got to have the funding, skills and expertise in place." He believes there are alternative ways to balance economic impacts while restoring ecosystems, suggesting a shift in perspective towards valuing long-term sustainability.

# TAUĀRAI - BARRIERS:

# Resistance to change

Communities in highly degraded areas like Hawke's Bay often see their current state as normal, which makes it difficult to gain support for restoration efforts. People may question the need for action, feeling that since the environment is already damaged, further efforts would be a waste of resources.

# Challenges in changing mindsets

Local communities may question the value of restoration efforts due to the already degraded condition of their waterways. "I think the issue in Hawke's Bay in general is that people are used to the current state, which is a very highly degraded state... There might be some pushback." He contrasts this with regions like Te Arawa, where water quality is better, making it easier to push for changes.

# Critique of government involvement

Shade believes agencies like DOC need to do more than just monitoring; they should be directly involved in physical restoration work and include mana whenua as partners. "DOC are merely doing annual delineation survey... Rather than actively being involved in physical removal." He points out that frequent changes in government priorities can undermine long-term efforts. "If they've developed a plan with Mana Whenua... And then another team comes in up top and says, 'No, we're turning a different direction'... What a waste, really?"

# Need for a long-term commitment

Effective pest management and ecosystem restoration require sustained effort and repeated actions over many years. However, projects often lack the necessary follow-up and persistence, leading to setbacks and allowing invasive species to regain a foothold in the environment.

# **SHADE RECOMMENDS:**

# Engage communities in restoration efforts

Develop outreach programs to educate and involve local communities in the importance and benefits of restoration, addressing resistance to change through awareness.

# Strengthen collaboration among stakeholders

Create forums or working groups where government, industry, mana whenua, and community members can align on shared goals and strategies for restoration.

# Balance goals

Identify/ and promote alternative economic activities that align with ecological restoration, ensuring stakeholders see the long-term benefits of a healthy environment.

# Ensure consistent government support

Advocate for stable funding and long-term commitment from government agencies, ensuring that restoration projects are not disrupted by changes in leadership or priorities.

# Commit to long-term pest management

Develop multi-year plans for pest control with dedicated resources, ensuring sustained efforts to fully eradicate invasive species and restore ecosystems.

# IN SUMMARY:

Shade's insights reveal the challenges of restoring degraded environments like Hawke's Bay. He points out the need for significant change to make estuaries inhospitable to invasive species, even if they face resistance. By prioritising ecological health alongside economic interests, Shade calls for action over discussion and highlights kaitiakitanga through safe food gathering or "anxiety-free mahinga kai."

He stresses the importance of long-term commitment in pest management, cautioning that abandoning efforts only resets progress.

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# **FINAL REFLECTIONS:**

These interviews help to highlight the tireless efforts and genuine love these taiao advocates have for our waterways. The need to honor relationship, to be open to learning different approaches and the need to support and resource local kaitiaki is critical to protecting and conserving our waterways for future generations. All of the individuals interviewed have called for an overhaul of the current approach and to find ways to build upon the positive relationships DOC have developed with mana whenua/tangata whenua. Keep doing what works and discard what doesn't.

Thank you once again to our matanga (experts) for sharing their knowledge and expertise to benefit Aotearoa as a whole.

