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# Disease Narratives and Artistic Alternatives

**Sophie Jerram**
sophie.jerram@auckland.ac.nz
Creative Arts and Industries,
Waipapa Taumata Rau|University of Auckland
Aotearoa|New Zealand
**Gradon Diprose**
Manaaki Whenua|Landcare Research
Aotearoa|New Zealand
**Nick Waipara**
Plant and Food Research
Aotearoa|New Zealand
**Mark Harvey**
Creative Arts and Industries,
Waipapa Taumata Rau|University of Auckland
Aotearoa|New Zealand
**Molly Mullen**
Education and Social Work,
Waipapa Taumata Rau|University of Auckland
Aotearoa|New Zealand
**Ariane Craig-Smith**
The Kauri Project
Aotearoa|New Zealand
**Chris McBride**
The Kauri Project
Aotearoa|New Zealand

ABSTRACT. The dominant colonial scientific narrative of managing disease is one of risk, response, and control. This narrative, while shifting, continues to frame the priorities and delivery of how biosecurity is implemented in Aotearoa|New Zealand and elsewhere. In this article, we explore the narrative position of four artistic works commissioned in response to the pathogens *Phytophthora agathidicida* (kauri dieback) and *Austropuccinia psidii* (myrtle rust). While much is still unknown about these pathogens, they threaten the unique species of the indigenous forest(s) of Aotearoa|New Zealand. The commissioning research team Toi Taiao Whakatairanga sought to 'widen public awareness' about the two pathogens. In response, nine commissioned artists developed an alternative narrative to the conventional science-based approach to both the framing of disease and biosecurity efforts focused on eradication. We use collaborative narrative analysis with four of the nine

projects to describe the practices that have produced the alternative framings in the artworks. We draw on the notion of the 'contact zone' to explore how these narratives as art provide a 'truth buffer' free from expectations for 'facts' that, in process, open possibilities for different kinds of knowledges and action. We suggest that the artists' work tends to explore the wider systemic context of biosecurity rather than the pathogen-specific perspective. We postulate that alternative narratives might alter the approach to governance, management, and care relations for te taiao (the natural environment).

Keywords: art; narrative; forest; disease; biosecurity; te taiao

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## Toi Taiao Whakatairanga

Toi Taiao Whakatairanga is a cross-disciplinary research project, bringing together arts, science and mātauranga Māori (Māori knowledge) to raise awareness of threats to the health of te taiao (the natural environment), supported by the New Zealand Bio Heritage national science fund. Artists: Fiona Apanui-Kupenga (Ngati Porou), Graeme Atkins (Ngati Porou, Rongomaiwahine), Dan Nathan (Te Roroa), Charlotte Graham (Hauraki, Waikato, Ngati Mahuta, Ngai Tai, Ngati Tamaoho), Tyrone Ohia (Ngāti Pūkenga, Ngāi te Rangi), Aroha Novak (Ngai Te Rangi, Tūhoe, Ngati Kahungunu), Tanya Ruka (Ngāti Pakau Te Uriroroi, Te Parawhau, Te Mahurehure Ngāpuhi Waitaha-Hokianga). Team of researchers and collaborators: Mark Harvey, Molly Mullen, Sophie Jerram, Nick Waipara, Chris McBride and Ariane Craig-Smith.

## Introduction

Globally, biosecurity, or managing unwanted pests and diseases, is a growing concern as the climate warms (IPPC Secretariat, 2021). Historically, most colonial, state-led biosecurity practices have aimed to prevent the introduction of, contain, and (where possible) eradicate harmful or invasive organisms to maintain the value of and reduce the risks to productive landscapes, industries, and livelihoods (Maclean et al., 2018). Barker & Francis (2021) note biosecurity is both a system of practices and a contested idea, enacted through a range of values that involve different people, organisations and institutions. Reflecting this point, recent policy on biosecurity is increasingly framed as a shared responsibility between state agencies, industries, and communities (Maclean et al., 2018). In Aotearoa|New Zealand, this 'shared responsibility' is also influenced by an increasing shift mostly towards co-governance partnerships between the Crown and Indigenous Māori. Other recent shifts within biosecurity practice have also raised concerns about

nonhuman biodiversity, with Indigenous scholars and social scientists, in particular, advocating for greater consideration of the values that inform biosecurity decisions (Lambert et al., 2018; Maclean et al., 2018).

In this article, we explore how artistic practices enable 'other' ways of being, knowing and responding to new diseases and the complex emotions and uncertainties associated with socio-ecological change. Like all words and practices, 'art' has discursive histories which are characterised by specific bodies of knowledge. Here, we draw on Hawkins (2011, p. 465), who understands art as an 'ensemble of practices, performances, experiences and artefacts rather than as a singular 'object." This understanding incorporates a range of practices, from objects, performances and installations to workshops and hui (meetings), and aims to provide space for Māori artists and their communities to engage with these ecological issues.

We use the curation of artworks and their associated narratives to generate possibilities – akin to what feminist philosopher Donna Haraway calls her 'bag lady storytelling' strategy. She likens this strategy to the practice of 'putting unexpected partners and irreducible details into a frayed, porous carrier bag' (Haraway, 2004). The bag, as it were, is, in this case, the Toi Taiao Whakatairanga project. This project offers, through the commissioning of artists, an opportunity for 'other ways of being, knowing and responding to new diseases much as the idea of a 'contact zone' (cf. Haraway, 2019; Jerram, 2020; Pratt 1991). Pratt (1991) framed a 'contact zone' as a space in which different knowledges and cultures can meet and sometimes clash, often in contexts of uneven power relations. More recent work has extended the concept to explore how contact zones can enable different knowledges to work alongside one another without any claiming 'truth' over the other (Haraway, 2019). This work has shown how contact zones can enable people to meet and share perspectives that do not necessarily need to be 'wrong' or 'right,' which are especially helpful in contexts characterised by uncertainty. In other words, contact zones can help to hold multiple truths at once. The bag of narratives is a useful visual metaphor for this contact zone. In what follows, we explore how art practices and interventions create spaces for engagement with different understandings of the relationships between people and te taiao, the environment.

The art projects we explore in this article relate to two recent plant and tree diseases that have emerged in Aotearoa|New Zealand: *Phytophthora agathidicida* (kauri dieback) and *Austropuccinia psidii* (myrtle rust). *Phytophthora agathidicida* is a primary plant pathogen that causes kauri dieback disease on New Zealand kauri (*Agathis australis*). Symptoms can include root rot, associated rot in a collar around the base of the tree, followed by extensive canopy defoliation and eventual tree death (Bradshaw et al., 2020). *Austropuccinia psidii*, or myrtle rust, is an invasive airborne rust fungus, originating from South America, with the potential to infect hosts from the myrtle plant family (*Myrtaceae*), which contains almost 6000 plant species distributed across tropical and warm-temperate regions of the

world. The current global epidemic of myrtle rust has led to the infection of hundreds of myrtle species.

In what follows, we first outline how Aotearoa New Zealand research undertaken to understand the threats to myrtle and kauri, including for this project, has been funded through a reductive focus on pathogens, which does not attend to the broader health of the forest. We then describe the discursive methodology employed to derive narratives (narrative methodology). We then analyse the narratives that emerge from four art projects. We conclude with considerations for future forest research collaboration, care of the forest and shared responsibility approaches.

**Methodology**

Our methodological approach towards this specific article brought together standard social science methods (semi-structured interviews) with 'art as method' practices.[1] These methods involved the authors experiencing and reflecting, participating in and reflecting on workshops where the art was presented and discussed, and semi-structured interviews between the authors and five creators across four projects. We analysed the data using an inductive interpretative approach to identify three key themes across the four art projects:

- Building and maintaining relationships between people (whanaungatanga) and te taiao (the environment)
- Collaboration across art, science and wider communities
- Taking action amidst uncertainty.

We then used the framing of a contact zone to illustrate how art practices can enable the expression of different knowledges and approaches to these three themes. In what follows, we briefly describe each art project and then identify and discuss how the project reflects the three themes. Throughout, we integrate quotes and reflections from the artists and ourselves. We then provide some concluding reflections on how art practices can open space for wider understandings of what 'shared responsibility' could look like for biosecurity in the future. These discussions are presented below in corresponding sections with the art projects by Fiona Apanui-Kupenga and Graeme Atkins, Tanya Ruka, Aroha Novak and Dan Nathan.

**'Reductionism' of Health and Disease**

As plant pathologist Nick Waipara (personal communications, November 29, 2022) notes, plant health is a frequently used but ill-defined term. However, there is extensive literature on general health definitions and health criteria in human medicine. Concepts of plant health are positioned in several philosophical controversies. Waipara (2002) notes, in particular, (i) the role of values in defining plant health in negative and positive definitions and (ii) reductionist versus holistic

perspectives. The ways in which these perspectives relate to mainstream and alternative approaches to plant protection research specifically lead to a narrow science undertaken by a limited range of expertise (bucket plant pathologists), funded to provide the total of knowledge of kauri dieback. Research focused on taxonomic enquiry into the 'mysterious pathogen' (see Weir et al., 2015; Beever et al., 2009) and the enquiry around the causal agent of the disease and its 'infamous' indestructible oospore (see Bellgard et al., 2010). 'After a decade (2008–2018) in Aotearoa|New Zealand, this reductionist research approach had provided community, biosecurity agencies, industry and tangata whenua with a very narrow understanding and low awareness of kauri dieback and its management' (Waipara, 2022).

While the narrow focus and funding of plant pathology and disease has provided a nomenclature for the kauri pathogen, it has not provided more holistic knowledge of forest health or the wider kauri ecosystem. The research has also not recognised the intergenerational mātauranga of a unique taonga for Māori. This would need cross-disciplinary research inclusive of wide expertise, specifically tangata whenua (Indigenous people, in this case, Māori) knowledge and holders of mātauranga (Māori knowledge). The limitations of 10 years wedded to a plant pathology disease research reductionism were publicly (Harvey, 2019) and politically criticised and rejected in 2019 (Lambert et al., 2018; Select Committee Parliamentary Report on Kauri Dieback in 2019). Around this same time, the incursion of myrtle rust in New Zealand presented a new disease threat to plant health, for which it was advocated that a similar reductionist research approach to this new plant pathogen that failed kauri (e.g., Black & Dickie 2016) should not be repeated (heard in meetings such as the 2018 Interagency working group on myrtle rust [see Biosecurity New Zealand, 2018]). As part of the inclusive, holistic research response to these two diseases, Toi Taiao Whakatairanga emerged as a cross-disciplinary research project that sought to bring arts, science, and mātauranga Māori together to raise awareness of threats to the health of te taiao (the environment), within Mobilising for Action (a division of the Bio Heritage Science Challenge of Aotearoa New Zealand). The nine projects, funded through The Biological Heritage National Science Challenge, were attempting to do something 'different' in biosecurity and biodiversity science by funding a series of collaborative projects that amplify the voices and perspectives of Indigenous Māori artists.

## The Projects

### 1
### Artist/maker: Fiona Apanui-Kupenga and Graeme Atkins
### Project name: *Mate Tipu, Mate Rākau* (Dead Seedlings, Dead Trees)

Fiona Apanui-Kupenga's nine-minute documentary *Mate Tipu, Mate Rākau* (Dead Seedlings, Dead Trees) follows (former) Department of Conservation Ranger

Graeme Atkins as he shows the devastation caused by myrtle rust in a forest composed of significant populations of ramarama (*Lophomyrtus bullata*). Through drone footage, close-ups, interviews, and maps, the film shows the devastating impact myrtle rust has had on ramarama in a few short years. The film both expresses and elicits a sense of grief and loss through both the imagery and music but does not identify any specific actions for how to manage the disease. The documentary opens with a foreboding voice-over prediction, 'Myrtle rust is here forever.'

***Relationships with te taiao***

The film essentially seeks to cultivate more awareness of and care for ramarama forests by people (viewers). In reflecting on this relationship, Fiona noted that it was through the actual filming and conversations with Graeme that helped her understand the importance of the ramarama in particular. Fiona noted that prior to starting the project, she had doubts about the point of the film. She wondered:

> Why do we need to care about ramarama? [... T]hen (I was) realising well that's one of our main … sources of kai for birds during the winter. And now we don't have that. So, you know the impact of that … but, actually, when that drone shot goes up, and you see the bird's eye view and just the hole around the canopy. I think that strikes home too.

While the film is edited in such a way as to elicit an emotional response from viewers, it invites the viewer to join Fiona's personal journey in understanding the impacts of myrtle rust on this plant. In the process, the film also extends an invitation to care about the impacts of myrtle rust – even if that care is expressed primarily through a sense of grief or loss.

***Collaboration across art, science and wider communities***

Central to the impact of the film is the collaboration between Graeme, as the expert with place-based knowledge of the impacts of myrtle rust, and Fiona, who frames Graeme's knowledge for the viewer to understand. Fiona notes that underpinning their collaboration and the film was an explicit purpose: '[d]riving [an] emotional response was a conscious strategy.' She goes on to note that the collaboration was effective in raising awareness of the impacts and 'getting attention.' This awareness-raising related to both ramarama itself and to work to monitor and understand the impacts of myrtle rust on the tree. For instance, while ramarama is known by kaitiaki (the customary custodians, guardians and caregivers), its public profile is relatively low. Ramarama is a smallish native understory shrub, and it does not have the mana or profile of larger, more well-known canopy trees, and, as a consequence, is often overlooked – both by the general public and publicly funded scientific research. Fiona describes how the film raised awareness about ramarama and that following it, 'Graeme was invited to apply for funds toward a

myrtle rust surveillance and monitoring programme in the Raukumara region' (the location of the film).

***Taking action amidst uncertainty***

The actions prioritised through conventional biosecurity narratives tend to focus on active monitoring and surveillance, incursion response protocols and new science experiments to understand risk and management options. In reflecting on the film, Fiona and Graeme talked about how the process of filming provided them with a way to acknowledge the tragedy of the loss of ramarama and its associated flow-on effects. Graeme, in particular, noted how creating a space for grief is not often done through conventional 'scientific' conversations and practices. Reflecting on the importance of this, Graeme humorously described how once the film was released, he was contacted by envious scientists in Australia who'd been wanting to make something similar. 'And … they got really emotional about it … you know when academics get all emotional over something, you know you're onto a winner.' In this way, the film created a 'space' for both scientists and others to help mark and process the impacts of myrtle rust. Fiona and Graham hope to collaborate on further film projects focusing on restoration attempts, as this first film leaves the viewer with little hope for the ramarama forest. Graeme is also planning on undertaking some experiments to try and better understand host susceptibility to myrtle rust:

> So come spring, summer next year, we take these cuttings to these valleys where myrtle rust is rampant and almost purposefully inoculate them with myrtle rust. So, some may succumb, and some mightn't, and, so, it will be a fast way for us to find out which species you know we need to focus on. And so I'm looking forward to that because, at present, the official stance is to just let myrtle rust take its course.... You know, if there's a way we can find out and speed things up, you know, focus our efforts on those species that need a hand and what that hand might be is like collecting seeds.

**2**
**Artist: Tanya Ruka**
**Project name: *Kaimanaki o te Ngahere***

Tanya is in the process of developing a virtual reality game that educates participants about myrtle rust and allows them to 'picture' themselves amongst the trees. Tanya describes how in the virtual ngahere (forest), players find

> 'food, water, air, [and] medicine,' if they commit to protecting the forest's Mauri (life force) by identifying myrtle rust. The 'weaponry' of the game is knowledge which players can use to gather resources before myrtle rust destroys the life-giving trees. Players will also learn how to

> engage respectfully with nature, including how to 'ask permission before we take from the forest.'

Tanya developed the idea for the game after reading comments from a short 'pulse' survey question about kauri dieback and myrtle rust conducted by Te Papa Tongarewa Museum of New Zealand. She was surprised that the responses to Te Papa's questions showed concern about kauri dieback, but there was little awareness or concern about myrtle rust. She describes how her game was created out of a desire to help people interact with the ngahere and see their personal relationship with the bush as a family connection. Tanya is working to incorporate Māori knowledge into the game through collaboration with her whanau (family), drawing on her children's expertise in games and her mother's matauranga.

***Relationships with te taiao***

As the game developed, Tanya's mother, a leader and founder of Grandmothers of Waitaha, spontaneously gifted an accompanying karakia (prayer). Tanya described how the karakia came about:

> We were up at the community Rongoā forest, and mum sort of comes bounding out of the trees – she'd been down picking some of the manuka, and she said I've got it, we've got a karakia that's been gifted to us.... You can record it, and we'll speak it, and we'll teach everybody how to speak this karakia to myrtle rust and thank her as being a visitor and a guest.

The karakia invites myrtle rust as a manuhiri (guest) to return to the warmth of Papatūānuku (Earth). The karakia understands myrtle rust as giving us a warning and that we need to act to protect the forest. But, firstly, we need to thank her 'for the gift of teaching us.' Tanya notes that the karakia helps reframe myrtle rust and diseases more generally:

> I look at the pathogens as warning signs. I feel appreciative (of the warning). Unfolding of mauri and life force of the land. The connection to the lifeforce is the most important thing – it can give you strength or peace – helping people connect in to the lifeforce.

Tanya has incorporated the karakia into a concept trailer for the game that shows close-up shots of plants, overlaid with audio of her mother singing the karakia. For Tanya, the gift of the karakia has been important:

> What I've been learning along my practice is to recognise the gifts you're given by the natural world … just learning to recognise when you've been gifted something, something that says thank you. Those were great moments for me.

Though myrtle rust is threatening the ngahere, Tanya's work reframes myrtle rust as a manuhiri (visitor) who is a respected warning sign that is part of te taiao, rather than as an invasive 'enemy.' Tanya notes that the 'visitor is just doing what it's doing.' This reframing provides a less militarised way to understand a biosecurity incursion and engages communities with a different framework for thinking about pathogens as visitors.

***Collaboration across art, science and wider communities***

Involving whanau and the wider community has been crucial to Tanya's project. While she initially spoke with scientists who study myrtle rust, her focus now is on trialling the game with her children, other whānau, and the wider iwi as well. She is taking a multi-generational approach to help young people see the forest as 'part of us' and develop empathy for the trees. In describing her approach to art more broadly, she notes the importance of whānau and wairua:

> When I first went to art school, I realised that in order to make work that I could connect to, I would need to include my teachers as well being the grandmothers, 'cause there's only a certain number of things that you can learn from books and from you know the internet, but the thing that really interested me was the wairuatanga…. By following that, through the art practice, I was able to learn more from our grandmothers and … include that connection, otherwise, I'm not making what I want to be making.

Reflecting the collaborative nature of the project, the karakia has since been gifted to and adopted by the Biological Heritage National Science Challenges' 'Mobilising for Action' workstream website and supplied on request to the Aotearoa New Zealand Plant Producers Incorporated for broader distribution. In this way, Tanya's project has enabled the reframing of myrtle rust through karakia beyond her whānau and potential game players and provided others with a cultural protocol that helps reframe myrtle rust and people's relationships with it.

***Taking action amidst uncertainty***

Through the game development process, scientists who study myrtle rust suggested that her whānau and wider community could help by gathering wild seeds for banking. So, working with whānau and others, they began collecting and banking seeds from their local ngahere. Alongside the development of this game, Tanya has been working on planting a community forest in Brooklyn, Wellington. She attaches QR codes to the trees with rongoā (medicinal) recipes from her great-grandmother to educate the community about the gift of health that comes from the ngahere. Tanya's project and wider work illustrate how art practices can help make holistic connections through place-based actions that connect matauranga with what Western understandings might consider to be more 'spiritual' actions (like karakia).

**3**
**Artists: Aroha Novak**
**Project name: *What Shall We Do About Myrtle?***

Aroha Novak collaborated with her 14-year-old daughter to draft a four-chapter graphic novel about myrtle rust for young people. The graphic novel depicts myrtle rust as a horror comic villain (named Myrtle) who 'drains the lifeblood' out of unsuspecting victims using 'parasitic spores.' Myrtle was once a perfect, popular high school girl, but an accident in science class throws her into a coma. She becomes a villain after a corporation revives her with an experimental bacterial treatment that gives her 'an accelerated amount of fungus power.' She kills off native myrtles, leaving empty swaths of land for the corporation to farm with monocultures. In response, a group of kaitiaki and 'good scientists' track down Myrtle, steam seal her in plastic and burn her along with other dangerous biowaste. To gather background information for the text, Novak met with ecologists from the University of Otago and drew artistic inspiration from existing horror comics. She also collected reference images of science labs on a visit to her old high school and took pictures of large myrtles in the Catlins region, including in a petrified forest.

***Relationships with te taiao***
Aroha's work personifies myrtle rust as both frightening and misunderstood. Thematically, the narrative describes a fall from grace for the main character, Myrtle. Myrtle takes the form of a young girl who wreaks havoc, but her transformation into a bioweapon is not her fault, to begin with. When she experiences a traumatic event, and her beauty is damaged – vanity lost – her ego is taken advantage of by the evil corporation. She only becomes the 'enemy' after calculated intervention by the corporation, which use her to enable harmful agricultural processes. The arrival of the pathogen in Aotearoa|New Zealand is not the fault of myrtle rust itself, though it is still a threat to be contained. Here, the extractive nature of the corporation – the 'taking without giving back' once again hints at wider issues than the disease of myrtle rust itself. We could read the story of Myrtle's traumatic event as something akin to climate change (driven by over-consumption and energy addiction) – a process fuelled by greed and extractive capitalism that many of us are complicit in, while also attempting to move beyond. The narrative suggests that the reader should not let the plant disease distract from the threat of profit-motivated companies with unsustainable business practices.

In reflecting on the project, Aroha described how she particularly wanted to work with young people/rangatahi. She notes that, 'we're leaving so much for this generation to deal with. And working through stories is a way to navigate the future.' Similarly to Tanya's work with her whanau, collaboration was a core part of the artistic process as Aroha enlisted the help of her 14-year-old daughter as an advisor in the creative process. For Aroha, this collaboration was important as it

enabled young people to help shape the narratives and strategies that will impact the world they inherit.

***Collaboration across art, science and wider communities***
Like both Fiona and Tanya's approach, Aroha engaged with scientists to help inform the project and provide important background information. The narrative that emerges also reflects on the role of science more broadly – even though it was a science experiment and experimental drug treatment that caused Myrtle's supervillain transformation, 'good' scientists work together with kaitiaki to contain and remove Myrtle Rust. The narrative suggests that science and knowledge can be used in different ways and for different purposes, highlighting how collaboration between scientists and kaitiaki is essential to containing the threat of myrtle rust.

***Taking action amidst uncertainty***
Aroha's narrative describes management actions that have been encouraged as part of the 'official' biosecurity response to contain and limit the spread of myrtle rust; the containment (often in plastic bags) and burning or disposing of infected plant material to landfill. It is notable that this action, which involves plastic bags and burning (or landfilling), is imperfect in that it creates other (potentially lesser) environmental harms, including potential plastic pollution. The narrative emphasises that people's actions in response to complex threats like myrtle rust may not be perfect but are culturally situated and can reveal the tensions underlying people's relationships with nature. The narrative juxtaposes these containment and eradication actions against wider underlying drivers of environmental destruction, including industrial agriculture and monocultures driven by greed and capitalist production. These practices form the background context in which the villain, Myrtle Rust, emerges.

**4**
**Artist: Daniel (Dan) Nathan**
**Project name: *Te Tukumate* (The Pathogen)**

Nathan shot and edited a 4-minute loopable video work. The video, to be projected at a large scale on the wall of an art gallery, is horizontal with vertical stripes of overlapping video that cycle between blurring into each other and becoming more distinct. The left half shows the trunk of a tree with a kauri dieback wound overlaid with half of a whakairo (Māori carving) of a face, which symbolises ancestors. The right half shows people walking on a sidewalk outside of a convenience store. A microscope image of the infecting fungus and footage of cars driving through fog intermittently appears in the middle of the frame. The images are set to the sounds of birds and subtle, ominous music. The work is anticipated to be displayed alongside other artists' work about environmental issues. The kauri dieback imagery is so subtle that it may not be identifiable to general audiences, so context

clues from other artworks can guide the viewers toward the meaning. The piece provides an 'unsettling' backdrop for reflection without being didactic.
Dan Nathan became involved in the project after sharing a film about kauri and the making of a waka in 2019. Though he had been aware of kauri dieback for a while, it took working on this project to solidify his thoughts. The filming process required adapting to COVID-19 constraints and working with partners to get footage from the lab.

Meanings of the piece can be derived from the juxtaposition of contrasting images, which allows the viewer to make associations. In its lack of clear messaging, the piece prompts the viewer to self-reflect. According to the artist, the work will resonate more with people who already think about the environment. The lesions from kauri dieback cover little area in the art piece, while the streetscape takes up a lot of space. Nathan says this is a metaphor for the way we fail to notice environmental threats in the busy-ness of urban life. He says that he wanted to keep the reference to the pathogen subtle because most people would not recognise the disease if they saw it in real life, so his work shows peoples' ignorance or lack of close observation. The timeframes are also slow because people are disconnected from nature, and time moves differently in the grand scheme of te taiao.

***Relationships with te taiao***

The work touches on human's relationship with capitalism and overconsumption. The overlays of microscope images and cars have a cloudy quality that implies that our ability to perceive threats to nature is clouded by urbanity. Dan says that he wants the viewer to step back and examine how our assumptions and 'commodified capitalist society' are factors in environmental issues. There are echoes of this portrayal of capitalism with Aroha Novak's greedy characterisation of Myrtle Rust. Narratively, Nathan chooses to take a wide scope to the issue of the unwell forest and considers ancestral knowledge in contrast with modern civilisation and what he calls 'slavish devotion' to contemporary life of driving, working and consuming. 'The organisms (of kauri dieback and myrtle rust) are more real than the truths of debt and consumption,' he proposes (D. Nathan, interview, August 18, 2022).

***Collaboration across art, science and wider communities***

Nathan's work is also infused with values of te ao Māori (the Māori world). He says that it will take systems change and a sense of responsibility 'to our environment…our ancestors…and our descendants' to make progress, since myrtle rust and kauri dieback won't be the last ecological challenges that we, and our ngahere (forests), face. The work draws on his hapu's understanding that their ancestor portrayed by the whakaaro (carved image) was literally born from nature and his family's worldview that humans are a part of nature. This is shown in the carving blending into the tree in the video. His adversity of whakapapa – comes from who he is and sadness – looking for answers about the disconnection to land. Darkness of forest – but also the boldness of enquiry as an artist in the lab. As a

non-microbiologist, Dan asked questions of lab scientists about how we describe a pathogen, including descriptions of morphology. His lenses and cameras were tools, allowing him to join in with his journey working with scientists. He captured his own imagination as he filmed. He feels he emboldened others by working with scientists.

***Taking action amidst uncertainty***

Dan's proposed action is that we must re-establish a relationship with nature and look closer. However, his piece feels distant – does it, in fact, reflect a form of nature deficit disorder? Art, in this instance, becomes a space to process fear and embrace connection in videos or, like Tanya Ruka's game online, to tie together the theme of emotion as action or a force of change. Dan's project can be seen to remind us that no matter how much we think we may know in our contemporary daily lives about our surrounding environment, we often perceive it through cognitive dissonance, through not seeing 'the whole' sense of the ecology we are a part of.

**Reflection**

Having artists involved as researchers in science investigations has shifted the focus of forest health. Artists have come through the Bio Heritage science challenge, one that is about raising awareness of pathogens. Mobilising for Action, under which Toi Taiao Whakatairanga is held, represents a shift toward wider systemic thinking in social science – away from the reductionist pathogen approach of plant pathology. In the words of author Dr Nick Waipara, artists have become interwoven into the whole kaupapa – they've brought matauranga into this – as much as kaitiaki – their knowledges. 'They became researchers and knowledge holders. We (as scientists) have also had to rethink how they explained the pathogen and the disease. This was helped by seeing it through other people's eyes' (Waipara, 2022). Aroha Novak, for example, suggested that, in interviewing scientists such as Principal Scientist Rob Beresford, she hathe s liberty to enquire from many directions, which she describes as an 'all access pass' to scientific knowledge.

In sharing art projects through scientific forums such as the Kauri Ora/Kaurilands conference – primarily science community spaces – the Toi Taiao Whakatairanga team has broadened the network of people involved in the research and has shown gaps in the management and communication. The team has helped review the science communications and led to improvements in the advice. This has led us to matauranga and ecological thinking – influenced by Graeme Atkins and others.

'Artists are reflecting a move against reductionism and are bringing a complexity – no easy solution,' says Waipara (2022). The art projects here provide a range of ways to represent the threat and loss posed by these diseases, while also reframing the very nature of the relationships and narratives around them. Some of

the projects also foster action – from collective responses such as creating poems and prints, to online spaces, to karakia, and the planting/restoration of ngahere.

Whereas Dan Nathan's work might suggest that humans are a scourge on the forest, highlighting a kind of classic disconnect between people and nature, Tanya Ruka's project offers a curious and hopeful reframing of the relationship with the pathogen and offers potential for new ways of thinking and provides a practice through karakia. Aroha Novak's humorous take, holding a comical mirror to the 'enemy' pathogen, adds a nuanced element– by asking the readers to reflect on the origins of her supervillain. The justice of the disease is never black and white, she suggests. Perhaps, her work proposes, it's not myrtle rust itself we should be worried about, but larger forces. We all respond to the environmental crisis in different ways. Fiona and Graeme's *Mate Tipu Mate Rakau* allows us to grieve and make space for processing and experiencing loss. By simply providing viewers with exposure to the threat to the ramarama species, we are shown why we should care as we learn about interspecies connection and kinship.

***Collaboration***

As a community forms around the projects, a social practice is created for seed banking and medicinal notice about trees. Community building and local actions for trees in place become about more than just myrtle rust. The discourse for building new and different relationships with trees becomes more visible through discussion and the project website, and eventually exhibition (planned for late 2023). The art projects create space for a wider range of people to participate and share their knowledge about te taiao and myrtle rust than conventional science approaches, naturally gathering people around specific places in some of the works. Bringing young people into projects is part of its multi-generational approach grounded in developing relationships – whanaungatanga. 'All access' passes to asking dumb questions are very different to usual science framing. Science also often skips over the background introduction; art can help with the starting point that is more accessible and inclusive. These art projects tend to foreground relationships over 'facts.'

***Taking action***

Seed banking, and 'flow effects' into other projects (rongoa forest), engagement with different types of audiences (young people, PPI), a wider range of actions (karakia), experimental management stuff (inoculating young plants and seeing), the whole project creates space to make different knowledges and approaches visible. The 'truth' of each individual project is relatively coherent, but the wider project allows them all to co-exist and connect (e.g., the artists talking to each other). Some people struggle with art because there isn't one story – what does it all mean? The lack of coherency is sometimes critiqued, but also can be a useful thing when there is uncertainty.

Collectively, the pieces explore different views of myrtle rust, without having a unified perspective on the response to disease. This carrier bag of responses situates the artworks in a contact zone – whereby disease can be positioned both as a scourge on a species but also a humorous character, a signifier of wider imbalance and also a visitor that needs respect. None of these positions suggestion one action to take but offer multiple pathways. Artists also reflected notions of contact zone through their interviews. Tanya Ruka spoke of the multiple voices needed to communicate: 'with the different artists making different works, it's a good way to see all those variations of the sides…. It's needed because there are people in the world who relate to different things in different ways.'

From the conclusions reached in the 2019 parliamentary review of the kauri response (Select Committee, 2019; see also Black & Dickie, 2016), it is clear that Aotearoa New Zealand must not continue with a single pursuit of state-led science shared responsibility for responses to forest health but must connect with Māori knowledge sovereignty and modes of being. Knowledge holders who cross boundaries and are comfortable with sharing matauranga, such as Graeme Atkins have become a natural partner to artists – and, for the Toi Taiao Whakatairanga project, he is a trusted ally. This artistic commissioning has provided a way to imagine shared truths and allow for the many different artists to come with multiple approaches and media.

**Conclusion: Art as Provocation**

What does the art process offer to science? Within this curating process, the artists are not looking for truth in one sense but are allowing things to sit alongside each other in the 'grab bag' of Haraway's bag theory. Within the bag or *contact zone* framing – these themes become more apparent, suggesting that the alternative narratives of these projects presented in humorous and speculative ways offer a 'truth buffer' – a joyful play on what is 'right' and known. Art practices have become an alternative reality that stops us seizing on one epistemology and offers room for many views.

Methodologically, art can be shown to be a useful tool for enquiry through an 'all-access pass,' perhaps liberating naivety. These projects have revealed that the perceived threat to the biosecurity border develops a certain kind of response – to controlling the pathogen. What other kinds of responses in biosecurity communities could come out of the narrative that the pathogens need to be welcomed and contained as visitors, for example? This challenge potentially offers an opportunity, in a further research paper, for exploration of this question by engaging with scientific advisors to national biosecurity.

Gradon Diprose, https://orcid.org/0000-0001-5394-9410
Mark Harvey, https://orcid.org/0000-0002-5383-7512
Sophie Jerram, https://orcid.org/0000-0003-4768-9805
Chris McBride, https://orcid.org/0000-0001-5784-9767

Molly Mullen, https://orcid.org/0000-0001-6567-3116
Nick Waipara, https://orcid.org/0000-0002-8193-8302

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Note

1. See the other article in this edition of *Knowledge Cultures* for our methodology in Toi Taiao Whakatairanga as a whole, titled 'Toi Taiao Whakatairanga: Tukanga: Processes of Navigating the Interface Between Art Curation/Research, Forest Ecologies and Māori Perspectives.'

## References

Barker, K., & Frances, A. (2021). Introduction: Spatial tensions and divides in grappling with 'invasive life.' In K. Barker & R. Frances (Eds.), *Routledge handbook of biosecurity and invasive species*. Routledge. https://doi.org/10.1007/s10530-021-02695-1

Beever, R. E., Waipara, N. W., Ramsfield, T. D., Dick, M. A., & Horner, I. J. (2009). Kauri (*Agathis australis*) under threat from *Phytophthora*? In *Phytophthoras in forests and natural ecosystems* (pp. 74–85), Proceedings of the Fourth Meeting of IUFRO Working Party, Albany, CA. https://www.landcareresearch.co.nz/uploads/public/researchpubs/Beever_etal_PTA_Torino_2008_poster.pdf

Bellgard, S. E., Beever, R. E., & Padres, E. (2010). *Comparative efficacy of hygiene treatments used for disinfestations of* Phytophthora taxon Agathis (PTA) *inoculum contained in soil*. Phytophthoras in Forests and Natural Ecosystems, the Fifth Meeting of the International Union of Forest Research Organisations (IUFRO) Working Party, Rotorua, Aotearoa|New Zealand.

Biosecurity New Zealand. (2018, September 28). *Myrtle rust 2018 governance meeting minutes*. https://www.mpi.govt.nz/dmsdocument/31071-minutes-from-myrtle-rust-governance-meeting-september-2018

Black, A., & Dickie, I. (2016). *Independent review of the state of kauri dieback knowledge*. Kauri protection. https://www.kauriprotection.co.nz/research/research-database/independent-review-of-the-state-of-kauri-dieback-knowledge/

Bradshaw, R. E., Bellgard, S. E., Black, A., Burns, B. R., Gerth, M. L., McDougal, R. L., Scott, P. M., Waipara, N.W ., Weir, B. S., Williams, N. M., Winkworth, R. C., Ashcroft, T., Bradley, E. L., Dijkwel, P. P., Guo, Y., Lacey, R. F., Mesarich, C. H., Panda, P., & Horner, I.J. (2020), *Phytophthora agathidicida*: Research progress, cultural perspectives and knowledge gaps in the control and management of kauri dieback in New Zealand. *Plant Pathology*, *69*, 3–16. https://doi.org/10.1111/ppa.13104

*Briefing on kauri dieback*. (2019, June 28). Select committee final report. https://selectcommittees.parliament.nz/v/6/b22ba744-72f8-4259-b537-9bebb00daa1a

Haraway, D. (2004). Otherworldly conversations: Terran topics, local terms. In D. Haraway, *The Haraway reader* (pp. 125–150). Routledge.

Hawkins, H. (2011). Dialogues and doings: Sketching the relationships between geography and art. *Geography Compass, 5*, 464–478. https://doi.org/10.1111/j.1749-8198.2011.00429.x

IPPC Secretariat. (2021). *Scientific review of the impact of climate change on plant pests: A global challenge to prevent and mitigate plant pest risks in agriculture, forestry and ecosystems*. FAO on behalf of the IPPC Secretariat. https://doi.org/10.4060/cb4769en

Jerram, S. (2020, November 25). *Commoning and contact zones in the kauri forest*. New Zealand Geographical Society Conference, Wellington, Aotearoa|New Zealand. https://toitaiaowhakatairanga.nz/articles/commoning-and-contact-zones-in-the-kauri-forest

Lambert, S., Waipara, N., Black, A., Mark-Shadbolt, M., & Wood, W. (2018). Indigenous biosecurity: Māori responses to kauri dieback and myrtle rust in Aotearoa New Zealand. In J. Urquhart, M. Marzano, & C. Potter (Eds.), *The human dimensions of forest and tree health* (pp. 109–137). Palgrave Macmillan. https://doi.org/10.1007/978-3-319-76956-1_5

Maclean, K., Farbotko, C., Mankad, A., Robinson, C., Curnock, M., Collins, K, & McAllister, R. (2018). Building social resilience to biological invasions: A case study of Panama tropical race 4 in the Australian banana industry. *Geoforum*, *97*, 95–105. https://doi.org/10.1016/j.geoforum.2018.10.018

Pratt, M. L. (1991). Arts of the contact zone. *Profession*, 33–40. https://www.jstor.org/stable/25595469

Weir, B. S., Paderes, E. P., Anand, N., Uchida, J. Y., Pennycook, S. R., Bellgard, S. E., & Beever, R. E. (2015). A taxonomic revision of *Phytophthora* Clade 5, including two new species, *Phytophthora agathidicida* and *P[hytophthora] cocois*. *Phytotaxa*, *205*(1), 21–38. https://doi.org/10.11646/phytotaxa.205.1.2