

# Towards a more-than-human political ecology of coastal protection: Coast Care practices in Aotearoa New Zealand

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## Abstract

Coastal protection measures are intended to stabilize the boundaries of land and sea—and of private property. But structural engineering solutions, such as seawalls, have negative side-effects in terms of environmental and climate justice: they cause erosion of adjacent areas, they limit public access, and they can lead to the loss of sandy beaches. So-called “soft” coastal protection approaches promise more sustainable and just alternatives. The article explores the role of the more-than-human in such practices. Arguing that the popular framing of coastal protection as “working with nature” is a strategic naturalization, the paper aims to develop a more-than-human take on the political ecology of coastal protection. The empirical basis is built from ethnographic material on volunteer dune restoration by Coast Care groups in Aotearoa New Zealand. The analysis shows that the “multispecies agencies” (Locke, 2013) at work in various practices associated with Coast Care include communities of plants and animals, human care work and artefacts, as well as abiotic elements such as sand, wind, water and concrete. The article argues that to foster political and practical engagements for more sustainable coastal naturecultures, these entanglements should be made explicit and accountable. A more-than-human political ecology approach to understand the promises of soft coastal protection therefore combines three analytic sensibilities. Firstly, it looks at the ontological politics and categorization practices that define and enact specific versions of coastal nature. Secondly, it focuses on the politics of care in multispecies worlds, including the abiotic. And thirdly, it takes into account the “ordinary politics” of contested coastal space, decision-making and planning.

## Keywords

Aotearoa New Zealand, coastal protection, ethnography, more-than-human political ecology, sociomaterial practices

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## Introduction: More-than-human coastal space

How to protect people and infrastructure against the widespread effects of erosion and flooding—today and in a climate-changed future—is an important issue faced by coastal communities worldwide. Katherine Sammler (2017) has noted that the so-called coastline is not a line but a fractal universe (cf. Stratford et al., 2011). Coastal space is defined by its proximity to the sea—it is limited in extent, fragile, and potentially on the move. As an ensemble of sociomaterial practices, coastal protection does not simply secure coastal space. It coproduces the material, symbolic, and spatial dimensions of land and sea. Decisions about present and future coastal protection strategies touch upon important issues of environmental and climate justice: What should be protected, why, by whom, and applying which methods? Which temporal and spatial scales need to be taken into account for coastal protection to be(come) sustainable, and just (Agyeman, 2014; Cooper and McKenna, 2008a)? David Pellow (2016a: 223–224) has further called for critical environmental justice approaches that “attend to the ways that both the human and the more-than-human world are impacted by and respond to environmental injustice.” In regard to coastal protection strategies, abiotic elements such as wind, sand, or concrete are not only background conditions. They are deeply entangled with human practices of coastal protection, and the living and dying of plant and animal species. Seawater even defies simple categorizations as living or (dead) matter. As a naturalcultural hybrid, it is a substance and a medium in which microbial life and microplastics entangle (Helmreich, 2011) and arguably form a new sphere of life (De Wolff, 2017). All of these more-than-human elements, living and non-living, affect, and are affected by coastal protection practices.

Damian White and Chris Wilbert have encouraged us to “develop political ecologies that more explicitly recognize how our social-ecological worlds are actively made through diverse productions, circulations, and entanglements of people with other diverse non-humans, ecosystems, material and immaterial devices, and artifacts” (White and Wilbert, 2009: 10–11). Political ecology, having set out to explore the relation between natural and social factors, has its own tradition of reproducing the distinction between the spheres of nature and society (Braun, 2004: 162). A more-than-human approach to political ecology, first suggested by Sarah Whatmore (2013), brings the very categorization practices that enact the divide between nature and society/culture into the core of the analysis (Braun, 2015). Consequently, the concept of a singular “capital-N nature” is replaced by an ontology of multiplicity, or multiple natures. Steve Hinchliffe (2007: 191) has argued that if nature is understood as the outcome of multiple (human and more-than-human) practices, “[h]ow to engage in the making of better natures is a fraught empirical and political question” that is “both ontological and political, and requires detailed engagement in the multiple practices of nature making.”

In regard to making nature at the coast, Cormac Walsh (2018) has demonstrated that within both coastal protection and nature conservation, culturally embedded “metageographies” are at work which define the boundaries of separate spaces for nature and culture. Where the practice of diking has a long tradition, as is the case in the European North Sea region, coastal protection works embody an ongoing struggle to stabilize coastal space and to enforce clear and enduring boundaries between nature and society. Other approaches and traditions are less concerned with an absolute separation of land and sea. For the Pacific context, the cultural anthropologist Epeli Hau’ofa has coined the term “sea of islands,” which provides an alternative image of an ocean of connections between seafaring indigenous communities (Hau’ofa et al., 1993). Today however, Pacific island communities are disproportionately under threat from rising sea levels (Klepp and

Herbeck, 2016). Coastal engineering is the common answer to coastal erosion and flooding in Oceania as much as in Northern Europe and the US, albeit in a less systematic way and with limited state funding.

Yet over the last two decades, a remarkable trend can be observed in coastal management worldwide: an emerging interest in the use of “softer and less obtrusive coastal [protection] structures” (Sorensen, 2006: 5). The US Army Corps of Engineers—the federal US agency responsible for coastal protection—even observes an outright “shift from hard to soft alternatives” in its Coastal Engineering Manual, an internationally recognized reference publication (US Army Corps of Engineers, 2008: V-3-91). The UNFCCC (2006: 13) defines these alternatives as “soft structures” which include “dune or wetland restoration or creation” and beach nourishment. The reasons listed for this paradigm shift in the making are manifold. They range from the experienced failure of traditional approaches, to rising costs expected under the conditions of climate change, to aesthetic considerations and concerns with environmental injustices (Cooper and Pilkey, 2012). The California Coastal Commission, for example, is developing an environmental justice policy which problematizes the loss of publicly accessible beaches due to the combined effects of rising sea level and seawalls built to protect private property (California Coastal Commission, n.d.: 2).

Within the circles of coastal management practitioners, but also in the public discourse, these concerns often translate into the belief that for a more sustainable future, coastal protection should be reoriented towards approaches that are *working with nature*—and not against it (Cooper and McKenna, 2008b; Defra, 2005; Eurosion, 2004; Inman, 2010). While the traditional “engineering paradigm” (interview with Jim Dahm, December 2010) conceptually builds upon a fundamental conflict between human and non-human nature, the increasing popularity of “soft approaches” signals potential changes in the framing of (coastal) naturecultures (cf. Haraway, 2008). In this paper, I will situate this globalized emergence of soft coastal protection in the Aotearoa New Zealand<sup>1</sup> context, where a growing community of practice (Wenger, 1998) explores alternative coastal protection approaches. Drawing on long-term ethnographic research,<sup>2</sup> I will focus on the most important soft protection practice in Aotearoa New Zealand: dune restoration projects carried out by publicly funded volunteer Coast Care and Beachcare groups.

The Coast Care constituency typically represents actors who want to contribute to the transition to a more sustainable coastal future. In their everyday care practice, Coast Care volunteers encounter massive economic interests in coastal space. Rising real estate values and coastal sprawl fuel their concerns over the fortification of the coastline. As the discussion will show, the “sociotechnical imaginary” (Jasanoff, 2015; Gesing, 2016) of coastal protection that works with nature builds upon a strategic naturalization of coastal nature, regardless of the multiple, more-than-human practices involved in restoring and reconstructing coastal space. From a more-than-human political ecology perspective, this categorizing of certain practices and outcomes as “natural” can be read as a form of “ontological politics” (Mol, 2002). This finding is of vital importance for just and sustainable more-than-human coastal futures, because the “working with nature” imaginary is not only popular within the community of restoration practice. Rather, this imaginary potentially frames very diverse objectives. The World Association for Waterborne Transport Infrastructure, for example, has issued its own position paper on “Working with Nature” (PIANC, 2011). Similar to the Dutch “Building with Nature” strategy (Deltares, 2013; Ecoshape, 2012), it argues that nature can be enhanced in the scope of infrastructural development. Departing from a logic of compensation for environmental damage caused, construction projects are discussed as “a unique opportunity to induce positive change” (Deltares, 2013)—of nature enhanced, and not compromised, by human intervention. The

assumption that “man-made projects are an inherent part of the environment” (Deltares, 2013) resonates with coproductive understandings of social nature (Castree and Braun, 2001) or naturecultures (Haraway, 2008).

This example illustrates the situatedness of an ontological politics of the natural. The extent to which actual practices are contributing to more sustainable coastal naturecultures remains a question for empirical analysis. A feasible way to explore such promises is to look more closely at the material practices of care. Care can be framed as an everyday, situated form of “slow activism” (Liboiron et al., 2018). In the words of Maria Puig de la Bellacasa (2011: 90), care is an “ethically and politically charged practice.” The politics of care takes the “reproduction, maintenance and repair of ecological life” seriously as an essential practice for “creating livable and lively worlds” (Puig de la Bellacasa, 2015: 708). Therefore, a focus on naturalcultural care practices might help to address David Pellow’s urgent question, “how can we work together *with* nonhuman natures as our allies and partners to promote and secure environmental justice and sustainability for all?” (Pellow, 2016b: 386, original emphasis). This better “relationship of human beings to the broader nonhuman world” (Pellow, 2016a: 233) envisaged by Pellow explicitly includes abiotic and infrastructural elements and objects. Consequently, it is suggested here that a more-than-human focus on the political ecology of dune restoration also includes the sand, storms and water which, together with the assemblage of plants and human and more-than-human animals, build and rebuild dune fields. Based on a non-dualistic ontology of coastal nature(s), this more-than-human approach departs from the understanding of clearly separable natural and social dimensions that underlies Integrated Coastal Zone Management and Marine Spatial Planning approaches. It looks at the entanglements of human and more-than-human actors as they work together, with and against each other, rather than reproducing the separation of human and more-than-human, biotic and abiotic elements.

A more-than-human political ecology of coastal protection then brings together three analytic sensibilities. Firstly, it zooms in on the ontological politics of coastal nature, and asks what is brought into existence as a part of nature, and which actors, objects, and timescales are included in the practices observed. Secondly, it focuses on the politics of care in multispecies worlds which also include the abiotic. And thirdly, it continues to scrutinize what I will call the “ordinary politics” of coastal space, namely its commodification and economization, questions of public and private responsibility, access, and contested processes of decision-making and coastal planning. Taken together, a more-than-human political ecology is oriented towards the question, what could be(come) environmentally just coastal protection? How can coastal protection that aims to *work with nature* build just and sustainable coastal futures that provide for the more-than-human as well?

## **Aotearoa New Zealand: Caring for the coast**

Aotearoa New Zealand is a nation in the South Pacific consisting of two major and several smaller islands. Its beaches are “naturalcultural contact zones” (Haraway, 2008: 6f.) that have co-shaped Aotearoa New Zealand’s history in material and symbolic ways. Enabling access to the country’s often rugged hinterland terrain, they served both as landing sites for the canoes of the first Polynesian settlers arriving approximately 1000 years ago, and as transport routes during European colonization in the 19th century (Hickford, 2012). In the 20th century, the coast became important as a site of leisure and freedom from urban constraints (Hayward, 2008; Peart, 2009). Simple, often self-constructed huts—the

proverbial kiwi beach “baches”—characterized imaginations of the coastal landscape from the 1950s onwards (Grigor, 2008; Kearns and Collins, 2006). The beach “bach” myth is still well-represented in popular culture. The Auckland Maritime Museum, for example, exhibits a typical 1950s bach. Out on the beaches, however, most baches were replaced by more permanent holiday homes in the last decades of the 20th century.

Overall, Aotearoa New Zealand has experienced an investment and development friendly political climate since the early 1980s. With growing prosperity, the number of beach houses referred to as “second homes”—and real estate prices—have increased considerably (Freeman and Cheyne, 2008). The majority of the country’s 4.5 million inhabitants lives near the coast (Statistics New Zealand, 2006: 4). Nevertheless, the (imagined or actual) encounter with pristine nature remains a core topos of national identity (Clark, 2004) for a population that understands itself as possessing a “‘birthright’ to enjoy undeveloped coastal places” (Kearns and Collins, 2012: 943). This paradox between the sprawling infrastructures providing for a maritime lifestyle on the one hand, and the desire to retreat to an unspoiled coastal environment on the other is reflected in ever growing concerns about coastal development and the loss of natural beaches (Collins and Kearns, 2010; Morton et al., 1973; Peart, 2009). About a quarter of Aotearoa New Zealand’s coasts experience periodic or chronic erosion (De Lange, 2012), and many residential areas have been built very close to the shoreline (Blackett et al., 2010). Their fate has become the subject of a growing number of local conflicts over the use of hard measures that protect private properties to the detriment of beaches, especially where such protection structures impede public access (Gesing, 2017).

This is an important environmental justice concern in a context where coastal communities bear the effects of hard protection works that safeguard prime real estate for a few inhabitants who are often absent for most of the year, while limiting access to the beach for the wider community. Traditional, “hard” protection structures are intended to fix the boundaries between land and sea, and nature and culture. Their actual effects, however, are often messy and make natural and social forces interact. For example, coastal fortification can influence sediment availability and transport, and thereby induce increased erosion elsewhere. Furthermore, while seawalls are very effective in protecting infrastructure on land, sandy beaches in front of such structures often continue to erode. In Aotearoa New Zealand, this so-called “coastal squeeze” (Dean and Dalrymple, 2004) effect of engineered structures, as well as their negative impact on the aesthetic experience of the coastal landscape, raises particular concerns (Jacobson, 2005). National coastal policy signals the will to transition to more sustainable approaches, and requires territorial authorities to promote alternatives to hard protection structures, including the use of so-called “natural defenses” (Department of Conservation (DOC), 2010: 24). Typically, the use of “natural defenses” involves the restoration of coastal sand dune vegetation undertaken by Coast Care and Beachcare groups and, to a much smaller extent, the (re)construction of frontal dunes.

In Aotearoa New Zealand, dune restoration takes place in the context of large-scale environmental change caused by various interrelated, human and more-than-human practices: deforestation, wind erosion, damage by vehicles, livestock grazing and pedestrians, coastal development, and the effects of newly introduced plant and animal species such as rabbits (Dahm et al., 2005; McGlone, 1989; Star, 2009). As a result, coastal sand dunes in their current state often do not function as envisaged in their intended use as “natural defenses”—erosion protection—for coastal settlements. Coast Care was first developed in the Bay of Plenty (BOP) region in the 1990s as “part of the new paradigm of coastal management, which focuses on working with natural processes, not



against them” (Jenks, n.d.). Coast Care BOP and several similar programs now active in other regions receive funding from territorial agencies and the federal DOC. They provide resources for local groups, including plants, fertilizer, tools, and other materials such as fences or information boards. Brochures, reports, and educational material about objectives, practices, and more-than-human actors such as common plants and pests are issued by Coast Care programs, DOC and the Coastal Restoration Trust of New Zealand (formerly: Dune Restoration Trust of New Zealand (DRTNZ)).

Environmental care groups are in general a popular concept in Aotearoa New Zealand. They rely on a widespread hands-on volunteer work ethic, and are logistically supported by a small number of professional coordinators. From the outset, using dune restoration as a means of erosion control was one of Coast Care’s central objectives. It remains the main motivation for many volunteers. Over time, however, biodiversity conservation has gained increasing recognition as a goal in its own right. This development is reflected by an increasing number of Coast Care projects restoring backdune environments (interview with Coast Care coordinator, June, 2011; DRTNZ, 2013). With Coast Care, local residents, holidaymakers, schoolchildren and girl scouts, members of local Māori communities, company groups, international “voluntourists” (Callanan and Thomas, 2005) and people sentenced to community service participate to varying degrees and with different motives in the task of restoring Aotearoa New Zealand’s sand dunes (Gesing, 2016: 177–203) (removed for the purposes of review). Their shared practices, which are transforming and maintaining the dunes, also translate into a shared understanding of the appropriate state of coastal nature. In the Coast Care imaginary, this appropriate state of Aotearoa New Zealand coastal nature is characterized by sand dunes with typical “native” vegetation, first of all *Spinifex* and *Pīngao*.<sup>3</sup>

## **A natural defense against erosion: Reconstructing native nature**

Once, societies for “acclimatization” systematically introduced new species to Aotearoa New Zealand (Star, 2009). Today, the protection and conservation of biodiversity is Aotearoa New Zealand’s top conservation priority. The classificatory practices defining nonhuman species as either native or introduced are themselves ontological (Comaroff and Comaroff, 2001; Helmreich, 2009; Subramaniam, 2014; Warren, 2007). Because these classifications are partly structured by reference to human action, Stefan Helmreich (2009: 151) argues that “[n]ature and culture are the organizing rubrics in this metataxonomy.” Species are referred to as alien, introduced or invasive depending on whether they have arrived with intentional or unintentional human help, and whether they are categorized as harmful from today’s perspective by specific groups of actors (Helmreich, 2009: 150). That the native plant is a historically contingent, naturalcultural category is particularly evident in relation to so-called “canoe species,” which travelled to the Pacific islands alongside early Polynesian settlers. Their classification as either native or introduced depends on whether the arrival of Captain Cook in the Pacific is understood as an epochal change to the natural state of the islands, or as an acceleration of a process that began with Polynesian settlement (Helmreich, 2009: 160). Ecological restoration projects are subject to such varying definitions of the assumed “natural” baseline (cf. Lorimer, 2012).

In Aotearoa New Zealand, the programmatic Coast Care literature argues that dunes covered with native dune plants are also better suited for coastal protection purposes than those with introduced species, which are less effective in “repairing storm-damaged frontal dunes” (Dahm et al., 2005: 9). This observation also applies to Marram grass (*Ammophila arenaria*), which was introduced from Northern Europe for the purpose of

dune stabilization in the past. Marram clad dunes tend to form a different shape than those covered with *Spinifex* and *Pīngao*:

[Marram plants] create really steep and narrow dunes, whereas *Spinifex* creates a really wide dune. So the wider, the better. Marram is better than nothing, but... it doesn't allow that accretion to go forward. And it also is so vigorous, that it sort of outcompetes the *Spinifex*. So you end up with these Marram dunes that are just so enormous. They're not bad, it's better than no dune, but it just doesn't allow natural dunes. (Interview with Waikato Beachcare coordinator, July 2011)

This definition of “natural” and thus proper dunes combines aesthetics and function: these dunes look better and function better for the intended purpose of protecting coastal property, because they are larger and shallower, and have less impact on the sea views of beachfront properties. On the other hand, this also means that buildings remain visible to the public walking along the beach (see Figure 1). The example shows that the functionality of dunes is also a situated category: what and whose purpose they serve matters.

Yet, the functionality of native dune plant vegetation is not only discussed in relation to the physical stabilization of coastal sand dunes, but also in other material and symbolic registers. In the case of *Pīngao*, its traditional usage by Māori as a weaving material is widely referenced in Coast Care brochures (Bay of Plenty Regional Council, 2013), even though contemporary weavers rarely use *Pīngao* anymore. Due to its relatively short and irregular blades, *Pīngao* is not very suitable for beginners, who work almost exclusively with *Harakeke*, the New Zealand flax (*Phormium tenax*) (fieldnotes, Te Teko Weaving School, 5 August 2011). Furthermore, its decline makes *Pīngao* sometimes difficult for weavers to find. Nevertheless, *Pīngao* has retained an important symbolic function as a symbol for re-weaving naturalcultural connections (interview with Ngāti Makino Coast Care volunteer, July 2011). *Pīngao* is endemic; it only occurs in Aotearoa New Zealand. Its brightly yellow blades have a very distinct presence in the dunes. A Māori origin story introduces *Pīngao* as



**Figure 1.** *Pīngao* covered dunes, Papamoa beach, picture by author, 28 June 2011.

the embodiment of the eyebrows of the forest god Tane, marking the boundary between his sphere of influence and the ocean, symbolized by Tangaroa:

[Tane] and Tangaroa, the god of the sea, were always fighting until one day Tane decided he had had enough. He plucked out his eyebrows and gave them to Tangaroa as a sign of peace. But Tangaroa wasn't ready to forgive Tane and he threw the eyebrows onto the shore and there they grow today as Pīngao, which is the boundary between the forest and the sea. (McFadyen, 2008: 6)

This narrative is also used in educational material provided by the DRTNZ (2011c). Its popularity shows that planting native dune plants involves much more than just the functional restoration of sand dunes to form a “natural defense” against the sea. The discourse about appropriate dunes as well as the material and symbolic role of Pīngao show that Coast Care is also a practice of (re-)establishing a coastal nature and landscape typical of Aotearoa New Zealand, which Pīngao embodies in a characteristic way. In the same vein, Greg Jenks (2007), founder of Coast Care in the Bay of Plenty region, is enthusiastic about the “incredible functional and aesthetic superiority of New Zealand's native dune plants.” He claims that

not all sand-dwelling plants are created equal, with native dune plants again, for the first time in over 100 years, demonstrating their clear superiority in all regards... The differences in dune function and aesthetic appeal of native versus introduced plants are very pronounced and unequivocally in favour of the perfectly adapted indigenous species. (Jenks, 2007: 293)

Jenks' argument for the functional and aesthetic superiority of indigenous plants is based on their perfect adaptation to their habitats. However, while the plants are praised for their very unique adaptation to their original environment, including to the dynamics of erosion and accretion, there is also a discourse of endangerment at work. Dune restoration experts point out the existential threat to native dune vegetation posed by introduced plants, which are described as more competitive and adept with a tendency to “out-compete” native plants. Consequently, the latter need to be supported by restoration work, especially pest control, argues Bergin (2011).

When the focus is laid too narrowly on native plants as individual entities, there seems to be an evident contradiction in the discourse—describing native plants both as perfectly adapted and as threatened and in need of assistance. This picture changes if the plants are understood as parts of a larger naturalcultural assemblage. Under post-colonial conditions, such as human development of the coast and the dispersal of newly arrived species, the human and more-than-human composition of coastal environments has thoroughly changed. New plants and animals are gathering here, and human practices have altered. Not least, people increasingly expect the dunes to “function” as elements of natural coastal protection, safeguarding permanently built-up areas close to the beach from the effects of recurring erosion events. The once perfectly adapted plants are now at a disadvantage. While other authors have pointed to similarities between the classification of humans as not belonging and racializing discourses about introduced and invasive species (Subramaniam, 2014), Mastnak et al. (2014: 363) argue that in postcolonial settler societies, it is more useful to think of introduced plants as remnants of a “multispecies colonial endeavor.” They describe invasive species as a vital legacy of colonization.

Dune restoration tries to reconcile this situation by providing an enabling environment for the plants in the wider dune system. This dune system however includes not only more-than-human life, but necessarily also human artefacts and care work, as will be



illustrated below. In effect, native nature is not simply restored, it is (re)constructed. In contrast to other projects which explicitly seek to develop biodiversity conservation practices without recurring to a capital-N nature or pre-defined baseline conditions, such as rewilding or other “wild experiments” with novel ecosystems (see Lorimer and Driessen, 2014), Coast Care works with a clear intention to reinstall native dune plants as the stronghold of coastal dunes, and as a vital prerequisite for enrolling these dunes into the protection of the coast as “natural defenses.” Lien and Davison (2010) understand restoration in settler societies as an increasingly moral practice aimed at amending sins of the past. Always operating from a contingent present, it expresses and rearranges specific understandings of preferred and meaningful naturalcultural conditions. Coast Care practices, however, not only intend to reverse historical changes, but also link up to pressing concerns of the present. In light of increasing public concern over the rapid development of remote coastlines, Coast Care volunteers declare that they want to “protect what is left.”

### **Cultivating native nature**

The Spinifex and Pīngao seedlings planted by Coast care volunteers are naturalcultural objects. The form in which they grow and enter the dune environment is a result of experimental practices of plant cultivation that only work out if human experience and knowledge, infrastructures and abiotic objects, and the plants collaborate successfully. Prior to the establishment of the first New Zealand Coast Care programs, Spinifex and Pīngao had not been cultivated or reproduced with human assistance in a closed environment. No practical experience or theoretical knowledge about the production of these plants was available when a group of restoration professionals interested in native dune species began investigating the issue in the mid-1990s. Naturally Native, a nursery specializing in native plant production, eventually developed a method for the reproduction of Spinifex. A sales manager from Naturally Native attended a meeting of the initial group, but soon realized that the meeting “wasn’t really for selling plants. It was... about finding out how to grow them” (interview with Mark Dean, August 2011). Indeed, conventional breeding practices were not applicable to Spinifex reproduction. The common technique of pricking—transplanting seedlings into new containers—did not work properly: plants had to be grown at the spot where their seeds had first germinated. Today, deep tree seedling containers are used for this purpose.

During the 1970s, Naturally Native founder Mark Dean had produced kiwi plants for the rapidly developing kiwifruit industry, but expected that “one day the Bay of Plenty would be full of kiwifruit and no one would need any more plants” (interview with Mark Dean, August 2011). When he first started native plant production around 1980, this area of activity only catered to a few botany enthusiasts:

[I]n those days... the attitude of farmers was, “I’ve spent 40 years chopping the native plants off my farm, why should I plant them?” ... People thought of native plants as just being bush; they didn’t think of them as being able to be used in gardens. (Interview with Mark Dean, August 2011)

Interest in native plants, however, steeply rose over the next decades—“suddenly, they have come very hot in landscaping” (interview with landscape architect, August 2011; see also Spellerberg and Frey, 2008). This development, which is not limited to Aotearoa New Zealand, echoes Mastnak et al.’s (2014: 363) call for a conscious act of “native plant advocacy as part of a broad process of botanical decolonization,” which could serve as “a

strategic location for ethical action in the Anthropocene” (Mastnak et al., 2014: 363). In this context, dune restoration and other practices that aim to re-establish or maintain indigenous biodiversity could be understood as more-than-human approaches to postcolonial (environmental) justice.

While shifting to the production of native dune plants, Naturally Native acquired an additional nursery facility located at the Bay of Plenty coast. The climatic conditions there were more suitable for the cultivation of dune plants, and further experiments refined the growing practices. Today, hundreds of thousands of specimens of *Spinifex*, *Pīngao* and many other native dune species are produced by Naturally Native each year.<sup>4</sup> The plants are sold almost exclusively to Coast Care and Beachcare programs on advance order. Operating on the basis of a concept named “ecosourcing,” Coast Care groups use plants grown from “local” seeds. These are collected on site and sent to the nursery to propagate. In the greenhouse, the seedlings are arranged and labelled according to the Coast Care territory in which the seeds were sourced. In the following year, the seedlings are redistributed to the planting sites. The localness of the plants is thereby produced in practice—defined by the area in which a Coast Care group is active, and the spatial arrangement in the nursery’s greenhouse. This Coast Care practice is designed to preserve local differences between plant populations, which is particularly prominent between specimens from the more sheltered East Coast locations and the rougher West Coast. The latter are more robust and can be visually distinguished (see Figure 2).

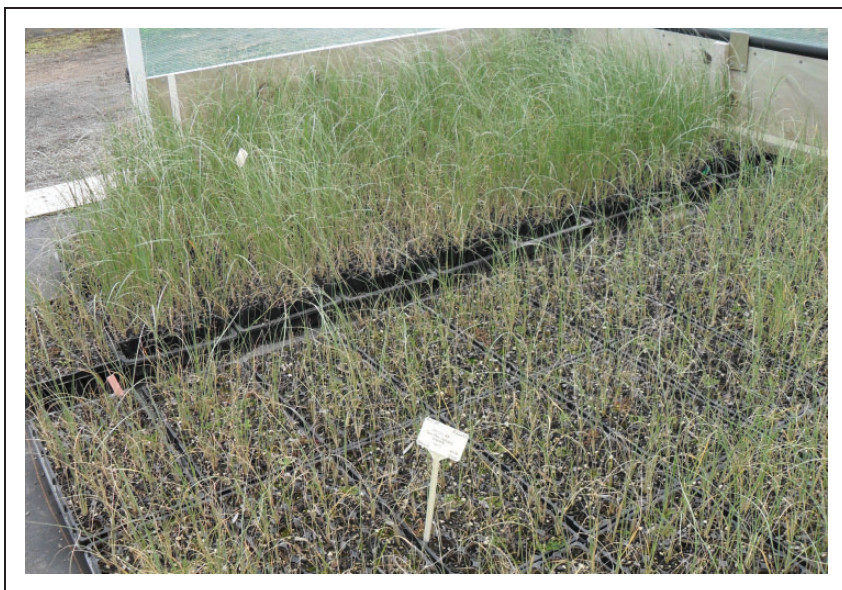
While the nursery owner respects this desire for local plants, he comments that from a “horticultural point of view,” a different logic would be applied, which would mean “finding the biggest, fastest growing *Spinifex* that we can lay our hands on and planting that all over the place so that we get much better sand holding ability” (interview Mark Dean, August 2011). In the event of storm-cut erosion, Coast Care orders new plants to help restore the dunes. Mark is convinced that people will always

want to put some more [plants] in there to make sure that they’re going to get the *Spinifex* and *Pīngao* growing out to trap the sand. ... That’s why I think the whole thing of Coast Care is about, is building the buffer to be eaten away and then helping it build again later. [We produce] sacrificial plants! (Interview with Mark Dean, August 2011)

## Maintaining nature: Caring and killing practices

Planting these “sacrificial plants” is Coast Care’s most well-known and popular task. *Spinifex* and *Pīngao* are both saltwater tolerant and develop stolons, sometimes several meters long, which collect grains of sand and enable the primary dunes to grow. Therefore, sand dunes re-form more quickly after storm erosion events when they have *Spinifex* and/or *Pīngao* cover (Dahm et al., 2005: 9). To accelerate plant (and dune) growth further, the volunteers always add a handful of slow release fertilizer granules—if the fertilizer runs out, the planting will not be continued on that day (interview with Coast Care contractor, August 2011). Deep planting holes are meant to protect the small plants from minor sand movements. If very young or unexperienced volunteers fail to dig deep enough, the coordinators return after the “working bee” and replant every single plant, so that the sacrifice is not claimed too quickly by the sea.

Planting, however, represents only a fraction of the actual Coast Care work. Recurring routines of pest and weed control involve a commitment to open-ended care for certain plants. “Care is a selective mode of attention: it circumscribes and cherishes some things, lives, or phenomena as its objects. In the process, it excludes others,” as Aryn Martin et al.



**Figure 2.** Spinifex seedlings with labels from different areas. Picture by author, 17 March 2010.

(2015: 3) observe in their discussion on the politics of care. Weeding is an unpopular, yet ubiquitous task, which takes up about 80% of volunteer time (interview with Coast Care coordinator, June 2011). Coast Care projects usually begin with removing the existing cover of introduced vegetation. Ornamental plants such as the South African ice plant (*Carpobrotus edulis*) and Agapanthus (*Agapanthus praecox*) spread from neighboring gardens or from illegal waste disposal in the dunes. Coast Carers call them “garden escapees.” The resilient Kikuyu grass (*Pennisetum clandestinum*), which was once introduced to enable pastoral farming on deforested hillsides, forms impenetrable carpets in the dunes; their rhizome-like root balls are difficult to distinguish from Spinifex.

Controlling certain animal species and their movements is another recurring part of Coast Care practice. “The rabbits absolutely love” Pīngao, as a Coast Care volunteer explains (interview with Pukehina Beach Coast Care volunteer, July 2011). In the absence of predators, the rodents have reproduced very quickly (Peden, 2008) since their introduction and release for hunting purposes in the 1830s. Rabbit control is an essential part of Coast Care. To this end, Pindone baits are laid out in the dunes each year, a practice which has been controversial in some areas because of concerns that dogs and other companion animals may be harmed as well. In rural areas, some dune areas are protected with rabbit-proof fences (see Figure 3), and rabbits are shot in nocturnal operations by hunters wearing night vision devices. Bans on cars and motorcycles on the beaches and dunes, in contrast, are more easily enforced in suburban areas. While the rabbit-proof fences are impenetrable for the rodents, the wooden bollards and ropes used to protect the dunes against human passers-through form a symbolic barrier at first, which over time manifests itself as a well-defined pathway (see Figure 4). Compared to the various practices of excluding unwanted actors—plants, animals and humans—planting is “almost more of a participation feel-good aspect” (interview with Coast Care coordinator, June 2011).



**Figure 3.** Planting and laying out baits alongside rabbit-proof fence in rural Te Tumu Kaituna, picture by the author, 11 September 2011.



**Figure 4.** Keeping humans on track at popular Waihi Beach, picture by author, 17 June 2011.

The constant human care work involved shows that coastal restoration does not simply transform nature into a state in which it can maintain itself. A long-term volunteer complains about the lack of recognition from others for her continuous effort, and calls for understanding of the fact that all this work needs to be repeated—including, sometimes,



the planting itself. She relates these characteristics of coastal care work to the repetition involved in carrying out everyday chores, when she argues that

...it's just like a lot of things; you've just got to keep nibbling away at it and doing what you can. Some people say to us... that we're just wasting our time, that the sea will take it, that the public will trample on it or that the plants will die because of climate change... But I just say to them, well, at home we mow our lawns every time they grow; we don't just say it's a waste of time because they'll grow again. I mean you paint your house when the paint starts flaking off it... You don't just say, "Well, it's going to need painting again in ten years if I paint it now, so I won't bother." It's like... washing your hair, it's going to get dirty again, but you know, to me it's just stupid to say it's a waste of time because it will need doing again later, or more weeds will come, or more rubbish. Because that's life, isn't it? (Interview with Waihi Beach Coast Care volunteer, August 2011)

This reflects Puig de la Bellacasa's point that as a relational practice, care becomes better over time and in repetition, as it "requires attention and fine-tuning to the temporal rhythms of an 'other' and to the specific relations that are being woven together" (Puig de la Bellacasa, 2015: 705f.). This need for continuous, long-term care work is also the reason why the dunes are often in an ecologically better condition in more densely populated areas, despite the negative effects of increasing development and beach use (interview with Coast Care coordinator, June 2011). The quickly progressing suburbanization in parts of the country makes some practices of humans and their companions—e.g. cattle grazing and driving on the beach—disappear, while others, such as volunteering, become more common.

The Bay of Plenty Coast Care coordinator distinguishes between two different objectives guiding the future relationship between human and more-than-human actors. The characteristics of Coast Care sites in this region vary considerably: a small fenced-off area at a surf club in a little residential town, a forestry site on a harbor island, a wide strip of undeveloped Māori-owned coastal land outside a growing port city, the busy main beach of a seaside resort. In areas of intensive human use, restored dunes in the "best possible condition" should serve as the material representation of appropriate coastal nature, featuring *Spinifex*, *Pīngao* and the iconic *Pohutukawa* trees, allowing beach goers to get "the right mental picture of... what a sandy beach environment is" (interview with Coast Care coordinator, June 2011). The possibilities in the here and now are to be demonstrated; the "Gold Standard Beach" creates a place where coastal nature is how, and what, it ought to be (cf. Jasanoff, 2004). In larger areas, the goal is to restore a larger community of native plants *and* animals:

[W]here you've got a natural dune system that goes further back, that's kind of where you can demonstrate, at an ecological level, [how to] get a functioning community back again... That should be not just plants, but animals as well... The rabbit-proof fence is removing one of those animal threats to trying and rebuild the animal community as well as the plants. And then you could maybe overlay... hedgehog and stoat, [and] cat control. And try and allow the animals, especially the lizard population [to return]. I think the lizard population gets hammered by cats, all along our beaches. And it would be nice to think that... a few places, that would be like... absolutely full of lizards, and, the way it would have been. (Interview with Coast Care coordinator, June 2011)

This dune system reaching further back can be understood both spatially and temporally. The Coast Care coordinator suspects that the widespread loss of native animal species once present in the dunes has interrupted the processes of seed dispersal and pollination and accelerated the decline in native flora. The natural distribution mechanisms have therefore



been replaced by the new constellations described above, in which human activity has become essential for the reproduction and distribution of dune plants. The coordinator's vision of a "functioning community" focuses on the return of lizards and the revitalization of plant–animal relations. At the same time, human-centered practices (hedgehog, stoat and cat control) and artefacts (the rabbit-proof fence) remain essential for reconstructing the dune environment in "the way it would have been"—envisioned as a world without humans.

## Naturalizing coastal erosion

This understanding of vital dune communities is complemented by a systemic perspective of the interaction of abiotic elements—sand, water and wind—in the formation of beaches. The Coast Care "philosophy" (interview with coastal planner, Bay of Plenty Regional Council, October 2011) is based upon framing the beach as a dynamic system, characterized by continuous change combined with an underlying stability. Coast Care material disseminates the understanding that erosion and deposition are "natural processes" at work "on every beach in the world" (Field Notes, DRTNZ Annual Conference, 2011). Diagrams are used for presentations at public workshops and conferences by core members of the community of practice, to demonstrate how sand is washed off the beach during storm erosion events, deposited on the seabed and slowly transported back onto the shore by wave activity (DRTNZ, 2011b). In coastal science terms, the beach is in a state of dynamic equilibrium (Dean, 2005). Spatially, it extends beyond the dry zone and includes areas usually covered by water. In other words, the visible part of the beach is only a tiny fraction of the larger beach system which is mostly under water. The Coast Care volunteers' common sense understanding of the beach becomes replaced by the concept of a beach system, which despite constant change retains its stability on a larger spatial and temporal scale. Coastal restoration experts argue that insufficient knowledge about these natural events and their sometimes sudden occurrence are the reason why hard protection structures are still widely used:

Storm cut erosion is probably the most widespread and impressive natural process operating on the sandy beaches of the New Zealand coastline. In just a few hours, it can radically reshape beaches, lowering beach levels and seriously eroding dunes. The result is towering vertical cliffs of sand where a gently sloping vegetated dune previously existed and the equivalent of hundreds of truck loads of sand having disappeared from sight. This can evoke strong emotions and even fear. It commonly leads to demands to "do something" and for the erosion to be "controlled". The concern is that if it is not "stopped" the erosion will just keep coming. This misunderstanding commonly leads to the placement of rock and other seawalls. (DRTNZ, 2011b: 1)

Erosion can happen in a very short timeframe, while dune recovery takes time. Dune plants cannot prevent erosion, but they have a significant effect on the timescales of erosion and accretion. As described above, the runners of *Spinifex* and *Pīngao* plants trap sediment that is redistributed by wind and waves and thereby support and speed up the "recovery" of the dune (DRTNZ, 2011a). The foredune plants are not framed as a component of the beach system in the closer sense. But due to their role in quickly rebuilding dune fronts, they are indispensable for dunes used as "natural defenses"—for coastal protection. If necessary, the dune recovery process is further accelerated by Coast Care volunteers who plant additional plants and/or replace those "sacrificial plants" that have been washed out completely. Without plant cover, the time between two erosion events might not suffice for the dune to return to its previous shape: "This can result in the next storm picking up where the last

one left off, giving rise to more serious dune erosion than would have occurred with some more natural dune recovery between the two events” (Dahm et al., 2005: 9). In the process of “natural dune recovery,” foredune plants allow for dunes to serve as “natural defenses” for beach-front properties, because they help to retain the sand in shape and place. The Dunes Trust concludes that

[i]f you have all three factors in place at your beach—sufficient dune width, cover of native sand binders, [and] an understanding that storm cut and recovery is natural—you can sit back and enjoy the natural spectacle of storm cut and recovery! (DRTNZ, 2011b: 4)

In effect, for coastal protection purposes, both a sufficient amount of shifting sediment and a suitable vital dune community (native plants at least, possibly supported by native fauna) are necessary. These two more-than-human “factors” need to be complemented by appropriate human knowledge practices. From the human point of view, erosion and accretion can work out as cyclical processes within acceptable temporal and spatial scales only as far as people have allocated enough space for the sediment to shift, have provided and cared for the appropriate dune vegetation and show the proper understanding and attitude towards storm events.

Discussing coastal erosion as a purely natural process can be seen as an attempt to shift its normative valuation. Distinguishing the natural process of erosion from the human reaction underlines the argument that society’s response should be better adapted to the logic of coastal nature—in a way that works with nature, and not against it. A similar point is made by coastal scientists Cooper and McKenna, who argue that “[c]oastal erosion *problems* arise from the presence of human infrastructure in areas threatened by erosion; identifying erosion as a problem is therefore a human value judgement” (Cooper and McKenna, 2008a: 296, original emphasis). Similarly, the Coast Care coordinator hopes that Coast Care volunteers and coastal residents in general will gradually come to understand that “erosion and recovery is a great natural process and example of nature. And erosion is not necessarily a bad thing” (interview with Coast Care coordinator, June 2011). According to this framing, there is only one universal, natural process of erosion—and many “human-made” problems resulting from it. The erosion and deposition of sediment are clearly distinguished from the social, political and cultural context in which erosion is “problematized” (Rabinow, 2002).

But erosion problems are complex precisely because there is no clear divide between cause and effect, natural event and societal problem. Coastal erosion is coproduced and coproductive. Its causes and effects defy clear classification as either natural or social. Rising sea levels and increasingly frequent extreme weather events, ongoing coastal development, the increasing material and immaterial value of coastal space both for human settlements and more-than-human nature, and not least the unwanted side effects of coastal protection structures themselves all need to be factored in. However, on the side of the actors involved in Coast Care and similar practices, the distinction made between the nature and culture of coastal erosion does not necessarily signal a lack of understanding of the complexity of coastal erosion problems. It can also indicate a “strategic naturalizing” (cf. Thompson, 2001) that is a reminder of the “processes of naturalization, de-naturalization, and re-naturalization” (Franklin, 2003: 68) which cultural anthropologists have observed in the field of assisted reproduction.<sup>5</sup> This take on Coast Care as an ensemble of naturalization practices is not diminished by the fact that, compared to technoscientific reproduction technologies, Coast Carers apply rather “low tech” practices and objects. Such a distinction would only obscure how “diverse peoples have always been enmeshed and entangled in complex social, ecological, and technological networks” (White and Wilbert, 2009: 9).

Drawing clear boundaries between the assumed physical nature and human perception of erosion is an attempt to disentangle this socionatural mess. More readily than the complex and historical relationship of humans with native flora and fauna, the interaction of the abiotic elements of the “beach system”—water, sand and wind—may be perceived as a stable natural process. Dune restoration as a “working with nature” approach then enables plants to supplement and better support this natural, but primarily abiotic, system. While human assistance is acknowledged here, the political nature of the practice is downplayed by the appeal to seemingly universal solutions and strategies of “working with nature.” By referring to coastal erosion as an exclusively natural process, these actors claim the legitimizing power of universal nature for coastal restoration practices and suggest solutions to erosion problems that are seemingly independent of political or cultural preferences. Seen in this light, the distinction made between the nature and culture of the coast is rather a reaction to the intermeshing of natural or social factors evident in erosion problems.

### **Conclusion: Towards a more-than-human understanding of the ontological and “ordinary” politics of caring for the coast**

Through the lens of a more-than-human political ecology, Coast Care emerges as an ensemble of naturalcultural practices. Human, plant and animal practices, multispecies agencies (Locke, 2013) and logics (Beisel, 2015) enfold in the encounter with the elements of sand, wind, and water. The permanent care and maintenance work that Coast Care volunteers contribute with the assistance of various artifacts—tools, fertilizer, fences, poisoned baits, traps, et cetera—coproduces a specific assemblage of animals and plants as native nature. The category of the native plant, ubiquitously referred to in the field, is far from self-evident or simply natural. Its properties such as local specificity and ability to adapt to the environment are not static. These are relational achievements that are destabilized by changes in the composition of human and more-than-human actors and coastal practices. The actual form that native nature takes is a matter of nature and culture. It includes symbolic and functional aspects, e.g. the usefulness of coastal sand dunes with native plant cover as “natural defenses” against the sea, and the importance of “ecosourcing” practices that (re)produce local plants according to the boundaries of Coast Care territories.

Just as plant–animal relations and abiotic elements play central roles in dune restoration practice, everyday human care work is an essential part of this picture. From the perspective of the Coast Carers and their professional supporters, however, it makes good sense to approach soft coastal protection rather as a matter of (assisting) nature than as a politics of care (Puig de la Bellacasa, 2011). Soft coastal protection is thereby depoliticized, but in the hope to establish an ensemble of alternative practices. The popular framing of “working with nature” shows a general concern for the more-than-human actors and forces at work, such as the dune community of plants and animals, and the beach system shaped by erosion and accretion of sediment. However, the power of this widespread “sociotechnical imaginary” (Jasanoff, 2015; Gesing, 2016) lies, ironically, in it (re)producing a divide between the nature and the culture of the coast, regardless of the complex ensemble of sociomaterial practices—human and more-than human—that produce and maintain these coastal environments. This strategic naturalization of coastal nature is a form of ontological politics (Mol, 2002).

Coast Care practices enact a specific understanding of what nature *is*: a specific Aotearoa New Zealand coastal nature, which consists of sand dunes clad with native and endemic

plants, cared for by engaged volunteers. The result of their efforts is a characteristic, *natural* dunescape—withstanding the naturalcultural practices involved in (re)constructing it. Reference to this naturalized coastal nature reconciliates different expectations for a coast that is both natural and accommodates human desires to be close to the sea. The dune as a “natural defense” brings together a lively more-than-human community with the extended spatiotemporalities of the beach as a system in dynamic equilibrium. This allows the coast to be a space for nature, and a space for (soft) coastal protection at the same time. The “working with nature” imaginary gives additional weight to this community of practice’s political goal to combat the extensive use of hard protection measures. But once “working with nature” is understood as ontological politics itself, it becomes evident that there are risks associated with its denial of the inherent multiplicity of coastal natures. It is therefore important to note that any coastal protection practice, including “soft” and “working with nature” approaches, produces and preserves specific socionatural and spatiotemporal arrangements, and not a singular, universal coastal nature as such. A first step in this direction is to make this gathering of actors, practices, and objects involved in coastal naturecultures explicit and visible.

This could be the genuine contribution of a more-than-human political ecology lens that combines a focus on the ontological politics of nature and the practices of care in a more-than-human world with attention to what might be called the “ordinary politics” of the coast, such as planning decisions about whether hard protection structures should be placed on public beaches and under which circumstances. Understanding erosion problems as specific, localized entanglements pluralizes erosion(s) and departs from a universal concept of erosion which is natural through and through, while the answers to it are framed as social, and hence changeable. Erosion is a product of various entanglements and connections of material and social nature(s), living and non-living entities. Coastal protection practices have evident and material environmental justice effects, ranging from beach accessibility for the wider public to the question of whether beaches continue to exist at all, or whether they are lost due to the side-effects of hard protection built to protect private property. Furthermore, it is important to ask who this public is, or what it becomes, in coastal settlements undergoing substantial structural changes, where baches are replaced by second homes and property values increase. These developments cause problems for long-term property owners who struggle to keep up with rising rate payments. They also have the potential to lead to renewed requests for coastal protection structures in the near future.

For an understanding of what becomes an erosion problem—for whom and under what conditions—and thus also for which solutions are realistic and politically intended, it is necessary to examine these naturalcultural entanglements in empirical detail. This is a prerequisite for taking full political responsibility for the choice of human practices, including the ensemble of human and more-than-human actors they embrace and allow to flourish, to move around and together form the coast, materially and symbolically. An important part of this is acknowledging that while timeless nature is a myth, more-than-human temporalities do matter. Sustainable and just coastal protection that takes account of the more-than-human therefore needs to extend beyond limited human timescales.

Further empirical analysis of practices framed by the “working with nature” imaginary or other emerging concepts like soft engineering or green infrastructure will be useful to figure out what is actually done by whom and how, what the outcomes are, who profits, and who or what is left out of such projects of naturemaking (Hinchliffe, 2007: 186). To achieve this, the political character of coastal care work needs be focused on and made visible, in a way that includes the agency of more-than-human nature. In order to politicize caring practices, the ontological politics of coastal nature—putting it into practice, and thereby defining the

relation of nature and society—need to be flanked with attention to the politics of care, and the questions of who contributes the work and which other actors besides the human are acknowledged and cared for. Martin et al. (2015: 3) have pointed to the power asymmetries within caring practice, which require us to ask, “Who has the power to care? Who has the power to define what counts as care and how it should be administered?” (Martin et al., 2015: 3). As has been argued, dune restoration is a deeply political practice in itself, which includes and excludes actors and defines certain forms of coastal natureculture as desirable.

A possible way to tease out the political in the practice of care is to look at it as something that is itself multiple (Martin et al., 2015). Understood as a generative practice, care is not limited to maintaining what is there. Rather, “we must take care of things in order to remain responsible for their becomings” (Puig de la Bellacasa, 2011). Puig de la Bellacasa describes these relations built from multispecies caring as “material, ethical and affective ecologies” (Puig de la Bellacasa, 2015). At the same time, it remains important to ask what part humans can play in this multispecies world. Pellow (2016a: 233) has made it clear that to reach what he calls “ecological sustainability” in a multispecies world, it is humans who first of all need to accept their “responsibility for practicing transformative socioecological political work.” This includes a deliberation about the human “power of care” (Martin et al., 2015), as well as attention to ordinary coastal politics, such as decisions about coastal planning and development projects, and the weighing of public and private interests in coastal space, now and in the future.

## Highlights

- Ethnographic fieldwork in Aotearoa New Zealand shows that dune restoration is an ensemble of human and more-than-human sociomaterial practices.
- The popular framing of soft coastal protection as “working with nature” is a strategic naturalization that can serve different political ends.
- In its search for sustainable and just coastal protection practices, a more-than-human political ecology of coastal protection needs to include living and abiotic elements.
- More-than-human political ecology of coastal protection critically analyzes the ontological politics that categorize coastal nature and culture, the politics of care in multispecies worlds, and the “ordinary politics” of contested coastal space.

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## Notes

1. The composite term used in this article refers to the country in both official languages—English and Te Reo Māori.
2. The empirical material has been collected during long-term, multi-local ethnographic fieldwork I conducted in the years 2010–2011 and 2015 in several locations on the North Island of Aotearoa New Zealand.
3. “Native” is the common umbrella term used for indigenous species in Aotearoa New Zealand, see discussion below. The dune grass *Spinifex sericeus* is native to the North Island of Aotearoa New Zealand, the northern half of the South Island as well as Australia and the Pacific Islands. The golden sand sedge *Desmoschoenus spiralis*, mostly known under the Māori name Pingao, is endemic, and found only throughout Aotearoa New Zealand (Wassilieff, 2012).
4. Backdune plants such as *Muehlenbeckia complexa*, *Euphorbia glauca* and *Coprosma acerosa* have gained importance in recent years, as dune restoration projects increasingly move from the foredune to backdune areas.
5. Charis Thompson (Thompson, 2001, 2005) refers to “strategic naturalizing” in her analysis of a complex “ontological choreography” carried out in order to make the Euro–American principle of biological kinship fit with the possibilities of new reproductive technologies. By highlighting some connections, downplaying others, these practices eventually produce parenthood as socially and naturally grounded.

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