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Critical Relationality: Queer, Indigenous, and Multispecies Belonging Beyond Settler Sex & Nature

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PILI'OHĀ/KINSHIP: (RE)IMAGINING PERCEPTIONS OF NATURE AND MORE-THAN-HUMAN RELATIONALITY

KIMBERLEY GREESON

Abstract: *This essay draws from a larger ethnographic study looking at the complex contextuality of biodiversity conservation in Hawaii. This article uses vignettes to communicate its focus. These vignettes are autoethnographic by nature, but are pushed further through the use of diffractive methodology (Barad) to include social-media visuals, multispecies encounters, and Native Hawaiian (kanaka maoli) perspectives. Through my ontological and methodological approach, I seek to challenge normative discourses on human exceptionalism, nature-culture dichotomies, and the manner in which industrialized societies place hierarchies on species and matter, as well as how these conversations might impact conservation. In this article, and through these vignettes, I explore what it means to be native and how my own positionality situates studying the social and cultural milieu of conservation issues in Hawaii.*

Résumé: *Cette dissertation s'inspire d'une plus large étude ethnographique sur la contextualité complexe de la préservation de la biodiversité à Hawaii. Le sujet central de cet article est "la vignette" (la vignette est un bref récit). Ces "vignettes" sont auto ethnographiques mais approfondies par nature par l'utilisation de la méthodologie diffractive incluant les illustrations de médias sociaux, les échanges entre divers espèces et les perspectives des autochtones hawaïens (Kanaka maoli). Au travers de mon approche méthodologique et ontologique, je cherche à éprouver le discours normatif sur l'anthropocentrisme, les dichotomies écologie-culture et la manière dont les sociétés industrialisées hiérarchisent les espèces et la matière, de même que ces conversations peuvent avoir un impact sur la conservation.. Dans cet article, et à travers ces vignettes, j'explore ce que signifie être autochtone et comment ma propre positionnalité, en tant que féministe décoloniale, situe l'étude du milieu social et culturel des questions de conservation à Hawaii.*

This article draws from my doctoral research, in which I explored the biopolitical and cultural contexts of pollinators and conservation in Hawaii. The purpose of this multispecies ethnography was to situate more-than-human mattering within theoretical and Indigenous frameworks. I used a multispecies ethnography to eschew traditional anthropocentric ethnographic methods. Yet with little published on exactly how to include the liveliness of the nonhuman while also attending to contemporary theory and ethics, the research methods emerged during the research process. Here I present an ethnographic account of my experiences in the field to illustrate my research process, and to explore the ways diffractive methodology can be used to illuminate multispecies assemblages in a more ethical, thoughtful, and performative manner. These multispecies assemblages shift the focus from human to centering more-than-human communities and relationships. In these ethnographic vignettes, I also explore the contexts that conservation in Hawai'i situate, as well as attempt to bring Hawaiian voices to the table. The aim of this article is to examine my experiences as a multiracial settler who was born and raised in Hawai'i in relation to conservation and culture in Hawai'i, to explore the possibility of diffractive methodologies, and to challenge normative discourse on kinship towards a multispecies interpretation.

In this article, I use narratives of my own autoethnography and of my participants to illustrate and weave the personal and descriptive; through first-person accounts with images (visual data), I (re)story the more-than-human voice, presence, and agency. I have also included the Hawaiian language throughout this manuscript, and although I do not speak 'ōlelo Hawai'i (Hawaiian language), Hawaiian words are often used (as a form of Hawaiian Creole English), sprinkled in English verbiage by Hawaiians and non-Hawaiian residents ("locals" like myself) familiar with Hawaiian culture. I include Hawaiian words that are commonly used by local people in Hawai'i, defined in parenthesis in an effort to engage you, the reader. I use these terms to both honour Indigenous people and to give authenticity and texture to my writing (autoethnography and overall thick description). These words are not designated in italics, as APA or MLA would have me do, as Hawaiian is not a foreign language in Hawai'i and to acknowledge the postcolonial (decolonial) perspective of my positionality. Finally, I make an effort

to include Indigenous scholars, thinkers, or elders in my research and writing. I am trained in a Western manner of science and research, but through this research seek ways to decolonize social inquiry by including Indigenous voices and the more-than-human world.

When I began this field research, I became aware that I was in search of Hawai'i's elusive and endemic bees, rare birds, and unknown (or perhaps just forgotten) *Lepidoptera* moths and butterflies. I felt the need to go out to find these animals and talk to people who studied them. I ached to take as many photos as I could to post on my social-media feed. I am not sure what creates a human desire to track down things that are rare or difficult to find and then to share with others. As I got into the field, settler pollinators were everywhere: yellow, black, and orange butterflies, the seemingly ubiquitous honeybee, and tiny, introduced, nectar-feeding birds. These were not pollinator species endemic to Hawai'i, but rather introduced by human settlers changing pollinator ecologies. As I learned more about these tiny and interesting native pollinators, I also discovered they were the hardest to capture on film and the most obscure.

TERMINOLOGY AND CONTEXT FOR HAWAII'S CONSERVATION

An examination of conservation biology and categorical terms is necessary. For many conservation biologists, species fall under several categories: those that are endemic or native to an area, those that are introduced, and those that are introduced and invasive. An invasive species is any organism that is believed to negatively alter ecosystems. From a conservation standpoint, invasive species pose the most imminent threat to Hawai'i's ecosystems. In Hawai'i, the plants brought by the original Hawaiian settlers were known as *canoe plants* (to be differentiated from endemic native species). Several scholars have explored the philosophical and political problems of such rigid and often arbitrary and political taxonomic classification of species (see Helmreich; Head; Head, Atchison, and Phillips).

In the course of human introduction (Polynesian and colonial) to the Hawaiian Islands, the natural and ecological realm shifted. As new species were introduced to the islands, endemic species were displaced

and went extinct. These extinctions accelerated after European colonization (see Culliney). Hawai'i is unique in that much of the species loss happened at a fast rate (and continues today). In a short amount of time, estimated to be about two hundred years, Hawai'i's ecosystem drastically changed. The colonial history of Hawai'i and its consequences happened so quickly that in many cases humans do not know what has already been lost since Hawaiian oral histories and written documentation of many species is still incomplete. Moreover, most if not all species decline and extinctions occurred through anthropogenic causes. The people who knew the Hawaiian words used for species have since passed, and the species' Hawaiian names along with them—highlighting the loss of oral context.

It is widely accepted that the primary cause of species declines and extinctions in many places, such as Hawai'i, is the threat from invasive species. A species is considered invasive if it is non-native and causes the native species populations to dwindle. Invasive species outcompete (sunlight, food resources) or directly harm native species (eating their eggs, causing "alien diseases"). The native, endemic species have not evolved defenses to cope with or withstand the threats from the introduced species, making them extremely susceptible to harm. Conservation biologists deem this effect especially pronounced on islands. For example, most birds in Hawai'i have not developed an immune response to avian malaria. When avian malaria was introduced into Hawai'i (through both introduced mosquitos and birds), native Hawaiian birds' populations plummeted, resulting in many species going extinct. In response, wildlife and natural resource officials removed the invasive species. Humans "manage" nature in order to preserve multispecies intra-actions and entanglements and to ultimately prevent species from extinction. People manipulate populations, genetics, and space by building fences, eradicating invasive species, and replanting plants and relocating animals.

In contrast, my research questions refocused on native or endemic pollinators and the unique circumstances that define *conservation* in Hawai'i. Furthermore, I approached this project with the tenet that biological and endangered species conservation cannot be viewed in a vacuum, isolated from human socioecological influences. It also became apparent that the culture of pollinators and biological conserva-

tion is unique to Hawai'i, and models used elsewhere in the world usually cannot be applied there. Moreover, I quickly saw that while I followed (or rather searched for) pollinators, other vibrant things came to the foreground and begged attention: the trees, the forest, the watershed, and the inorganic fences and rocks. Uncovering the embedded materiality became particularly apparent when discussing pollinators and pollinator—plant relationships, and the forest or watershed they are a part of, as well as the human cultural/political contexts.

METHODOLOGICAL FRAMEWORK: TOWARDS A DIFFRACTIVE METHODOLOGY

Diffraction (as opposed to reflection) of self should be analyzed and written into multispecies ethnography, for self is the apparatus of observation and interpretation of a multispecies world through descriptive and creative ethnographic methods (such as multimedia). Norman Denzin discussed autoethnography as life experiences and performances of a person. With this definition in mind, I pose this question: How central does the self become or not become? Traditionally, reflexivity and autoethnography go hand-in-hand. According to Tony Adams, Stacey Holman, and Caroline Ellis, reflexivity in autoethnography “uses deep and careful self-reflection—typically referred to as ‘reflexivity’—to name and interrogate the intersections between self and society, the particular and the general, the personal and the political” (2). Using diffraction, I move beyond reflexivity to acknowledge there is no separation between “self and society” (2), for example, but rather each are co-created. However, from a diffractive onto-epistemological approach, this inclusion of the self is not simply about the self. It is embodying the self to make meaning by engaging with the multispecies and multimaterial matter. The self is not an “independent, self-contained” being but shaped “through and by their entangled intra-acting” (Barad ix) with the world.

For the purposes of this research, I use diffracted autoethnography in the form of vignettes in three-fold ways. First, I use it to illuminate the more-than-human world surrounding myself and participants in an attempt to “give” voice to the more than human and to describe our intra-actions (becoming pollinator). Second, I use diffracted au-

toethnography to give texture to the sights, sounds, smells, and feels of my data events, or engagements with the more-than-human, pollinator assemblage (as part of the material-discursive). The reader is typically not privy to my audio or video recordings, and my use of vignettes attempts to convey the substance of the encounters. Finally, these diffracted vignettes contextualize the researcher within the research assemblage and become an exploration of my multispecies expeditions.

My stories are not simply a reflection of what I saw in the field nor are they a sequential, chronological retelling of events. The work of William Cronon, Thom van Dooren and Deborah Bird Rose describe stories as the “ability to engage with happenings with the world as sequential and meaningful events” (3). Stories are rendered to describe, present, re-story, and to analyze the material-discursive unfolding of my experiences with place, through which place and self are enmeshed. Each vignette, carefully crafted with accompanying photographs, is an entangled performativity of pollinator, forest, and conservation infrastructure to describe the biopolitical particulars. Through these diffractive stories or vignettes, I show the intra-actions of the pollinator assemblage, describing the reconfiguring and temporalities of my data event by including the past, present, and future, all the while bringing the more-than-human into the forefront. This is important since my data collection still relied on some traditional qualitative methods and tools, such as interviews and words.

Woven in these stories are photos because taking photos has become a natural extension of my observation and interaction with the world around me, partly because it is a hobby of mine, but also because smartphones have made photography so accessible. I took copious amounts of photos while walking to see native pollinators and to follow their human comrades.

Sarah Pink writes extensively on the use of visual ethnographic methods to describe placemaking: “visual ethnography involves an approach that engages with audio-visual media and methods throughout its processes of research, analysis, and representation. It is inevitably collaborative and to varying extents participatory” (2). Jamie Lorimer also approaches this form of visual methods, describing the use of “moving imagery methodology for witnessing and evoking hu-

man–nonhuman interactions” (238). These interactions are also portrayed through the camera lens, humans taking photos and videos of their more-than-human companions.

Photos are one way I use visual ethnographic methodologies to capture, illustrate, and with personal narrative, to (re)story the more-than-human voice, presence, materiality, interactions, and movements. This methodology allows for the “voiceless” and the more-than-human to be present in the study. While this traditional paper and pen publication cannot include audio, I added many images, as screenshots of the photography posted to my Instagram feed. Can seeing these photographs filtered multiple times—through lenses, editing software, filters, and scrolled and viewed on a tiny smartphone—be considered a diffractive rendering of forest materiality?



Fig. 1. Screenshot of an introduced Hawkmoth at night from the author’s Instagram. Greeson, Kimberley. multispecies_wanderings. “The hawk moth’s wings beat fast.” Instagram, 26, September 2018, <www.instagram.com/multispecies_wanderings/>.

These photo-editing apps or software create and curate an aesthetic or emotion. How can photography be used in a diffractive analysis? Natasha Myers attempts to reckon with the ability of photographs to be diffractive portrayals by hacking into the camera “to disrupt the conventional ecologist’s desire to capture clean, clear, legible data. . .to keep our moving bodies in the frame, allowing us to register the moods and energies of the land relationally” (12). She opens the aperture to cap-

ture movement and to “document the energetics of an encounter, the push and pull between bodies, human, more-than-human, and machine” (12). For me, slowing down the shutter speed allows a settler hawkmoth’s becoming and liveliness to be captured. Perhaps the resulting blur to show the insect’s movement is one approach to Myers’ kinesthetic imagery (Fig. 1), while simultaneously allowing the minute denizens of the night to be seen.

My photos were primarily in focus, contrary to Myers’ approach, to share the details of these small, marginalized species with a wide audience. Unlike Myers, my intent was not to portray diffraction within one photo but instead in the narratives as a whole, with each photo representing its own single diffracted piece of data. I did attempt to make my photos a bit more filtered and effectual via social media, where they are interacted with and “alive” long after. This continual unfolding in a non-space such as social media is dynamic, enacted, and agential. From an educator lens, my photographs and Instagram posts also served to bring the more-than-human into focus and connect with a wider, non-academic audience.

I use the diffracted vignettes to create and build cartographies, new insights, and highlight differences. In an interview, Barad claims, “diffractive readings bring inventive provocations; they are good to think with. They are respectful, detailed, ethical engagements” (Dolphijn and van der Tuin 48). For example, in my diffracted vignette “*Acacia koa*” I detail the sights, sounds, plants, and animals that I heard and saw to illustrate the voice without organs in my intra-actions (Mazzei 732). Within these narratives, I inlay pieces of other historical, cultural, and personal stories such as mo’olelo, stories of capitalism and the ongoing interspecies entanglement of the forest. All of these threads or lines of data become a mangling or assembling fluctuating in space and time, in and out of the field. My experiences were performative and unfolding as I walked, observed, and photographed—embodied experiences that not only discussed multispecies entanglements, but also the diffracted vignettes were entanglements themselves.

I use the notion of story or narrative to write vignettes but also push them further through the use of diffraction (or diffracted autoethnography). First, I ask, what is meant by diffraction? Drawing from phys-

ical phenomenon and physics theory, Karen Barad uses diffractions as a metaphor to describe philosophy, methodology, and analysis. Diffraction is the reading of insights from multiple sources and positions, marking the differences and the affectual pathways these differences have on the world. Barad writes, “diffraction attends to the relational nature of difference; it does not figure difference as either a matter of essence or as inconsequential” (72). Moreover, diffraction, as it is theorized in quantum mechanics, illustrates interference, entanglements, and ways of knowing or understanding phenomena.

VIGNETTE ONE

Acacia koa: A diffracted vignette

The Kaloko trails in the Honuaua Forest Reserve are relatively close to my home on west Hawai‘i Island. The reserve is a well-known cloud forest oasis 2,600 feet above the sleepy coastal town of Kailua-Kona, where locals and tourists alike can readily gain access to see native plants and birds. As I learned during my fieldwork, having such easy access to native forests is not very common today in Hawai‘i. Most native forests have been replanted and protected at remote, high-elevation plots where development and the public typically cannot reach. On Maui for example, organizations have been focusing on creating native habitat for native birds in the East Maui watershed. This area is so remote and hard to access that helicopters bring in people and equipment to carefully fence and routinely monitor the area to keep destructive ungulates out.

Fortunately, on Hawai‘i Island I did not need a helicopter to see native forests, and where there are native flowers there are native pollinators. I frequent the Honuaua Forest Reserve to see native birds and conduct some walking autoethnography. The trailheads (as there are multiple entrances to the trail system) are obscure and poorly marked. There is no official trailhead signage, parking lot, or even clear directions on how to get there. On my first few trips, I parked on three different streets, entered the forest at different points, and walked different sections of the trail system. Each time I did not have a clear idea of where I was going and whether the trail I was on would loop back around,

and I sometimes felt a bit like Alice in Tulgey Wood, the forest and its creatures curiously pushing and pulling me in every which way.



Fig. 2. Screenshot of Hāpu'u fern from the author's Instagram. Greenson, Kimberley. multispecies_wanderings. "Ginger and hāpu'u fern understory." Instagram, 13, June 2016, <www.instagram.com/multispecies_wanderings/>.

Along most of these trails, there are an interesting mix of native and non-native plants. The two main tree species of native forests, 'ōhi'a lehua (*Metrosideros polymorpha*) and koa (*Acacia koa*), have been replanted in the last ten years, and in some areas the hapu'u fern (Hawaiian tree fern; *Cibotium glaucum*) tower overhead or have toppled over only to succumb to a carpet of lime-green moss, tiny 'ōhi'a seedlings, and in one place, a feral honeybee hive. The giant fronds and palm-sized fiddleheads of the hapu'u relax under the forest canopy and weepily bounce from raindrops (Figs. 2 and 3).



Fig. 3. Screenshot of a hāpu'u fern fiddlehead from the author's Instagram. Greeson, Kimberley. multispecies_wanderings. "Nature's perfect spirals and fractals." Instagram, 1, July 2018, <www.instagram.com/multispecies_wanderings/>.

The higher-elevation areas of the trail system buttress a fence where the other side is open pasture (Fig. 4). This pasture area, located mauka (towards the mountain, or upslope), is private property and an unorthodox meeting of non-native grasses, cows, and scattered 'ōhi'a trees whose limbs were permanently stretched horizontally from the howling wind. Even here, the hands of capitalism and human nature seep heavily into native forest. Cattle and trees have each been commodified for hundreds of years in Hawai'i. In 1794, Captain George Vancouver introduced cattle to King Kamehameha the Great. These individual cows were never domesticated and roamed freely, sometimes hunted until King Kamehameha the Great put a kapu (rules banning their slaughter) on them for ten years. Cattle have been incredibly destructive to the sensitive native vegetation such as koa, trampling tender seedlings. Even today, herds of feral cows (called Hawaiian wild cattle or pipi ahui), descendants from these original cattle settlers, roam the island's forests (Strazer xii).



Fig. 4. Screenshot of a red 'ōhi'a lehua blossom next to a fence from the author's Instagram. Greenson, Kimberley. multispecies_wanderings. "A fence separates native forest from pastureland." Instagram, 17, June 2016, <www.instagram.com/multispecies_wanderings/>.

Trees, sandalwood, and koa in particular, are prominent in Hawai'i's colonial history. Sandalwood changed the Hawaiian people forever, moving them away from the self-sufficient agriculture of the ahupua'a—ancient land divisions that extended from the top of mountains down to the ocean—towards monetary rewards collecting and trading sandalwood to Europeans in the late 1700s. In more recent years, koa hardwood is highly valued for its deep and striking appearance. People use the wood of the koa tree for the interior finishing of homes, furniture, cabinets, and other products. Hawai'i's koa industry was estimated to net \$28.7 million in 1991, and in 2004 its price per square foot ranges from \$4.50 to \$65 (United States Department of Agriculture Forest Service Pacific Southwest Research Station 89). Koa was also the most important plant for early Hawaiians, prized for making voyaging canoes and surfboards as well as for medicinal use. The ancient Hawaiian protocol for harvesting koa to make cultural items required an intimate multispecies entanglement.

When a kahuna or canoe builder, for example, entered the forest to search for the perfect koa tree, he would carefully watch the ‘elepaio (Monarch flycatcher, *Chasiempis species*). Searching for food, these tiny birds would hop from tree trunk to tree trunk, pecking for insects. The wood from the trees the ‘elepaio stopped and pecked at in search of insects was considered poor and perhaps rotten. However, if the ‘elepaio landed but did not stay to peck for insects, the trunk was determined to be solid, right for building a canoe.

Underfoot, the trail is covered with the flat, sickle-shaped leaves of the adult koa (Fig. 5). The koa stand that I am looking for has been replanted in the last decade and it was smaller than I had envisioned. I continue to walk along the trail, lined with several of these beautiful trees, for a good while before realizing this was the replanted stand to which people (via word-of-mouth on social media, i.e., Facebook) referred. It is as if the restoration efforts were haphazard and forgotten. I wondered where were the fences. Where were the other understory plants apart from the hapu’u fern? Why has the kahili ginger not been eradicated? These were easy questions to ask in spite of such difficult and complex realities. Of course, I knew the answers.



Fig. 5. Screenshot of trail from author's Instagram. Greeson, Kimberley. multispecies_wanderings. "Walking the forest trail." Instagram, 15, June 2016, <www.instagram.com/multispecies_wanderings/>.

Conservation of biodiversity has been notoriously underfunded and generally not a high priority unless the species of interest is of economic value. Yet both native and non-native plants and animals are the species that became the pollinator story. The forest reserve on the makai side (towards the sea) of the fence is largely dominated by 'ōhi'a lehua, hapu'u, and the newly planted koa trees are covered with bright orange-coloured lichen. I noted in an Instagram field journal post (Fig. 6):

Crustose lichen covers the bark of the koa (*Acacia koa*) trees. There's something about the bright rusty orange and the deep greens of the #kalokocloudforest that stand their ground as the clouds move in. Bright colors shine through as the white mist slowly creeps down through the trees, as if the mountain #Hualālai herself was exhaling. The koa tree isn't just a tree but a community of living beings. A #symbiotic relationship near the ground and high up the canopy. (Greeson 93)



Fig. 6. Screenshot of lichen on a koa tree from the author's Instagram. Greeson, Kimberley. multispecies_wanderings. "Crustose lichen cover bark." *Instagram*, 17, June 2016, <www.instagram.com/multispecies_wanderings/>.

The koa trees are covered with what appears to be several crustose lichens, most notably a rust-coloured one. These lichens form an inseparable crust on the surface of the tree, and are entanglements themselves, a composite organism comprised of algae or cyanobacteria living among fungi. The literal entanglement of tree, algae, and fungi define their agency. It is these ancient and evolutionary precise entanglements that make the native forest such an important piece of the pollinator story and thus of the conservation story. Intra-actors in multi-species communities or ensembles, such as those of the mesic forests, give life and animacy to one another. Even just one koa tree, for example, houses innumerable intra-actions that are continuously in flux and influenced by my presence and observation.

As I continue along, searching high and low for pollinators, I am becoming increasingly frustrated and defeated. The birds above were too far to see, hanging out at the tree tops 60-70 feet above me. They moved fast and were difficult to see through my binoculars, let alone capture on camera. I have not yet mastered identifying their calls by memory. The koa trees did not seem to be in bloom. I make a mental note to check when the flower blooms and hope I have not missed it.

I walk further along the trail, down towards the lower elevation where the native plants are more spread out and are fewer, sporadic almost as if they were struggling to find their footing and getting lost in the crowd of greens and yellows. The invasive kahili ginger (*Hedychium gardnerianum*) has become the dominant plant species. The air is heavy with their intoxicating fragrance. There is no breathing room. These gingers form thick mats at the rhizome or root level. They choke out anything that tries to grow. They jump at any open ground, such as that of mud and soil ripped clear and rutted by the searching tusks and noses of invasive feral boars (*Sus scrofa*).² I see that a recent boar visitor has upturned fresh soil. Water is now pooled there waiting for disease-harboring mosquitos to lay their eggs. I am already itchy from the mosquito (*Aedes* sp.) bites, as small red welts—a physical sign of my body's immune response flooding histamines, immune cells, and fluid to the area—have accumulated on my legs. Mosquitos, the hated and demonized tiny insects that humans have long waged war upon, distract and annoy me. I think that I should have brought mosquito

repellent, and slap the mosquitos off my legs and point my camera up a tall koa trunk—an unglamorous reality of fieldwork not depicted in composed and picturesque posts on social media.

The koa tree is a central figure in the pollinator story, as well as one of the dominant tree species in native Hawaiian forest ecosystems and local culture. Unlike forests in the continental United States, where there are dozens of key tree species in an old-growth forest, Hawai'i's native forests are dominated by only two trees, koa and 'ōhi'a. There are hundreds of biotic species whose liveliness depends on these two tree species. Koa alone provides food for over 100 insect species (United States Department of Agriculture Forest Service Pacific Southwest Research Station 26). Not only is there an interspecies community above ground (pollinators, lichen, koa moth caterpillars) but also below the ground a symbiosis between the tree's root systems and the nitrogen-fixing bacteria that help the tree grow. Insects primarily pollinate koa trees, but several bird species visit their flowers when they are in bloom from December through June. Native birds and insects are not the only pollinators that play a crucial role in pollinating koa. Introduced species are prominent as well, and in some cases filling a niche.

With an array of native and non-native species interacting within the Hawaiian community, the pollination of native plants by non-native pollinators, for example, has become what are known as novel communities. Due to the rapid decline in Hawai'i's native species, many of the pollinators (most notably the Hawaiian honeycreepers) have gone extinct. In some instances, the pollination mutualism was so specific that the plant companion followed suit and went extinct as well, but this is extremely rare. More often, other non-native pollinators have moved into their place, filling an ecological niche allowing endemic plant species to persist (Aslan et al. 478). The problem is that no complete inventory exists of what was in Hawaiian forests, in terms of species richness and population levels, prior to colonization and the introduction of invasive species. Since species are going extinct at such fast rates it is impossible to know if these novel pollinator interactions are beneficial. Are native pollinators visiting and benefiting from non-native plants? Even if humans do not know what was there before colonization, the current reality is that native and non-native species are interacting in novel ways. For Kirksey, "Accepting that ecological com-

munities are dynamic, ever-changing systems—with parts that can be taken away or added—opens up ethical and practical dilemmas” (218) of how to approach conservation, dilemmas that I unfold researching Hawai‘i’s pollinators.

In testament to these novel ecosystems, I most often witness European honeybees and monarch butterflies (*Danaus plexippus*) pollinators during my research. These introduced species, such as the monarch butterfly and the honeybee, are still part of the pollinator assemblage, as they have created unique ecologies by pollinating and feeding on both native and non-native plants, especially in more urban areas. The reality is that many of these species are here to stay and actively shape the world.

During the spring and summer months, honeybees cover every inch of the flowering avocado and macadamia nut trees, to the point that the trees are humming and buzzing loudly. Honeybees are important agricultural pollinators for Hawai‘i’s economy. Culturally, the monarch butterfly is symbolic of Hawai‘i’s last monarch, Queen Lili‘uokalani (1838-1917), who famously wore a diamond-adorned butterfly brooch, a common statement piece of the late 1800s. However, it is unclear whether this brooch represented the native Kamehameha butterfly or the introduced monarch butterfly. Most acknowledge it was the latter, as the Queen’s favorite flower was the lavender crown flower (*Calotropis gigantea*; Puakalaunu), which is the host plant for the monarch butterfly. The crown flower is in the milkweed family, making it a suitable host plant for caterpillars. Commonly used to make Hawaiian leis, crown flowers are also a culturally relevant species.

Instead of restoring things to precisely how they used to be, biologists focus on what is most relevant and appropriate for present circumstances. Whether it be tended wild, progressive agroforestry practices, or pollinator gardens, how do these chance, human-centered spaces become havens for nonhuman species? More importantly, can these disturbed landscapes allow more sensitive species to persist? In other words, who is thriving in these areas? In some cases, forest birds flourish in dense native forests, avoiding the margins where native forest meet urban, agricultural area (Steinberg 54). These margins can be forest edges, corridors, and fragmented habitats, which often character-

ize landscapes. In Hawai'i, habitat fragmentation is addressed through efforts to connect small-scale forest farms while restoring the ancient Hawaiian land-use principles of the ahupua'a. The ahupua'a encourages people to grow food for humans sustainably and with the wider, entangled nature of the watershed (Corntassel 96). Thus, looking at emergent ecologies acknowledges these entanglements and helps humans to reconsider the reality and reciprocity of human-dominated landscapes in the Anthropocene.

VIGNETTE TWO

Mount Hualālai: A diffracted vignette

My house sits on the western slope of Mount Hualālai, Hawai'i's third active volcano, which has not erupted since 1801 (The Hu'ehu'e flow). I have watched both the sun and the moon rise from beyond the mountaintop through clear skies. In the mornings, the summit is beautiful as it shines, evoking various states of emotions with hues of golds, pinks, and purples (Fig. 7). Watching the sunrise is my favorite time of day, when the colours change as a symphony of animal sounds welcome the morning: 'io (Hawaiian hawk), feral roosters, parrots, saffron finches, and our family's ducks. As the day progresses, clouds and vog (volcanic air pollution) cover the summit, and darker clouds indicating rain showers come in almost every afternoon. To me, sunrise is the best time to see this magnificent and often forgotten mountain. Mount Hualālai, which stands at 8,271 ft. (2,521 m), is not one of the better-known volcanoes in Hawai'i, such as Maunakea and Maunaloa. Even in Hawaiian culture, Hualālai does not show up much in history and mo'olelo. Yet it is captivating nonetheless. It is also a mountain, whose summit cannot be accessed legally. No public trails lead up to the summit, because most of the land is privately owned. So, I was thrilled when I was invited to go up the mountain.

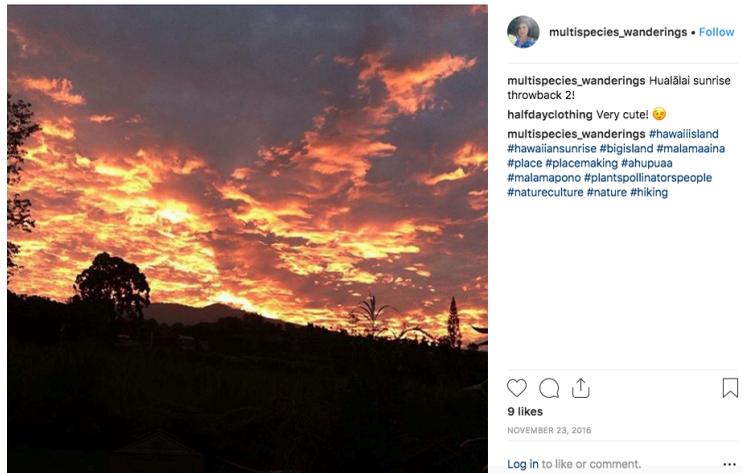


Fig. 7. Screenshot of Hualālai from the author's Instagram. Greeson, Kimberley. multispecies_wanderings. "Hualālai sunrise." Instagram, 23, November 2016, <www.instagram.com/multispecies_wanderings/>.

Keolani's nonprofit organization works to bring Native Hawaiian families back to the mountain, fosters oral history, and imparts traditional Hawaiian protocol by teaching about the indigenous plants that grow on the mountain. Native Hawaiian protocol for entering significant places includes using the traditional ways, typically in the form of oli (or chant), to request permission when entering sacred spaces such as the summit of Hualālai. Keolani stops her truck at a large gate off the main road. I can see now why she needs a 4x4 vehicle to access her family's property, as the road beyond the gate is nothing more than grated lava rocks. As we gather outside the truck, I soak in the views, sounds, and feeling of the air. The morning skies are sunny, bright blue behind creamy white clouds, promising of clear skies at the summit, though one never knows as high-elevation weather can change so suddenly. The mountains of Hawai'i Island are geologically young, with smooth slopes, round summits, and rolling foothills, a stark contrast to the steep waterfall etched ridges of the Waianae Range on Oahu where I grew up. We are approximately 4,875 feet above sea level. Straight roads and several steep pitches allow one to drive to this elevation from

the coast in just about 11-12 miles, and this quick ascent in elevation gives me a sense of how grand and majestic Hualālai is. Hualālai, or perhaps Madame Pele or Tūtū Pele (as she is often respectfully called), quietly sits, guarding over Kailua-Kona. At this elevation the habitat changes from tropical moist forest to tropical grassland and shrubland, meaning the wet fern understory gives way to grasses and small shrubs but the area is still dominated by 'ōhi'a forest (and historically more koa was likely found here as well) (Fig. 8).

Keolani begins by telling me:

When we come, whenever we are going into another place, especially a wahi kūpuna [ancestral sacred place] wahi pana, a sacred place you always want to say in your mind or out loud where you are from, who you are, and what your purpose is. It's kinda a way of asking permission [the birds are chirping in the background] and as Hawaiians you always know where you are, so right now we are in the Ahupua'a Kaloko and we are going to cross over into [the Ahupua'a] Ka'ūpūlehu where we'll stay. And the types of land divisions that Hawaiians had was ocean to mauka or even sky, the different winds and you get wao kahakai, wao kanaka where people dwell then as you get higher you get into wao la'au where the forest is and wao akua [realm of the gods], if you will. Before we go up I'll do a little oli for us and then we can head in. (Keawe)

Keolani takes a pause and a deep breath, as if she is collecting her thoughts and setting her intention. She faces the gate where we would pass over from the Ahupua'a Kaloko to the Ahupua'a Ka'ūpūlehu and continue up to her family's cabin and property. Keolani has a soft voice, but the melodic oli is clear and purposeful. The oli gives me chills. It is beautiful, harmonic, poetic.



Fig. 8. Screenshot of an 'ohia forest from the author's Instagram. Greeson, Kimberley. <multispecies_wanderings>. "The drive up Kaloko." *Instagram*, 8, July 2016, <www.instagram.com/multispecies_wanderings/>.

To protect the forests, Keolani sprays the truck tires and each of our shoes with a fungicide, so as not to spread the fungus that causes Rapid 'Ohia Death (ROD). I saw spray bottles for ROD once at a trailhead half empty under an informational sign on ROD. Afterward, we jump back into her big pickup truck. The road ahead is bumpy, so Keolani navigates her truck slowly and carefully through the lava. Higher up, the blue skies turn into a thick, white cloud. The mist hangs on the top of the mountain obstructing what would have been panoramic views of Maunaloa and the Kona-Kohala Coast. When we stop to check out an unnamed crater I can only see about 100 feet ahead of me. My legs feel weak standing so close to the crater's edge, and the mist makes me feel as if I am in a room with cloud walls enclosing us, just like when I was on the misty summit of Mount Ka'ala on an earlier expedition with entomologists for National Moth Day (see Greeson for a detailed account). It is still beautiful on Hualalai, and the mist forces us to be present in this moment and this place.

As Keolani drives along the uneven road, she talks to me about her organization, the purpose, history, genealogy, and challenges. She stops

a few times along the way to her property to show me various plants and sites, which she also shows and teaches to the keiki she works with. We finally arrive at her property high on the mountain. The air is cool, and I am glad I brought a jacket with me. A green one-room cabin sits on the road flanked by fencing. She takes me on a hike makai of the cabin where the majority of their property lies. As we walk through an orchard of apples, plums, and pears—fruit not commonly seen growing in Hawai‘i’s climate—she yanks clumps of the invasive fireweed (*Senecio madagascariensis*) and tells me about the native ‘ōhelo ‘ai (*Vaccinium reticulatum*), pukiawe (*Styphelia tameiameia*), ‘āli‘i (*Dodonaea viscosa*), and invasive banana poka (*Passiflora mollissima*), a relative to passionfruit or lilikoi that we pass along the way. Many of the native plants we see, such as ‘ōhelo ‘ai, pukiawe, and ‘āli‘i, are important nectar sources for Hawaiian yellow-faced bees, and I wonder if they are up here entangled with these very plants when they are in flower. Heading back upslope towards the cabin, she points out an ‘i‘iwi (*Drepanis coccinea*), the first I have seen up-close, dancing in the māmane (*Sophora chrysophylla*) trees. It has a conspicuous crimson body, long curved bill, and signature call, “ee-vee,” squeaky like a rusted hinge, which makes identifying it easy. As quickly as I see it and am able to snap a photo, the ‘i‘iwi flies off (Fig. 9). I want to linger longer to see if it comes back.



Fig. 9. A screenshot of an elusive ‘i‘iwi from the author’s Instagram. Greeson, Kimberley. multispecies_wanderings. “Spied an ‘i‘iwi up Hualālai.” *Instagram*, 22, November 2016, <www.instagram.com/multispecies_wanderings/>.

Being in the high mountain environment is powerful. To be able to touch plants, pick seed pods, pull weeds, breathe the cool mountain air, and hear native birds singing can shift and mold a person's understanding of place. This more-than-human entangled materiality helps to co-create place. Using the mountain, Keolani uses place-based experiential learning to teach the community about the plants, their cultural uses, and how to collect and propagate seeds. In turn, Hawaiians are reconnected with their culture, place, wao akua (place of the gods) and deities represented by native plants there (Mali et al. 2).

Throughout this journey, I followed the pollinators through their pollination story from bud to seeds. When I visited Hualālai it was in the fall and most flowering plants had already bloomed and set seed. The nights were getting cool and the forest seemed quiet. Seeds had dropped from the trees onto the forest floor. These tiny seedlings either flourish or perish. As I have learned, sometimes all it takes is for humans to simply clear invasive plants out to give native plants a chance and they will flourish, giving new hope for conservation. Other times, it is about reimagining what native ecologies look like by considering the possibility of introduced species to fill niches—emergent ecologies, or an ecology that focuses on shifting and novel players.

MULTISPECIES ENTANGLEMENTS AS PILI'OHA/KINSHIP

The story of pollinators and pollinator conservation in Hawai'i is one that has various actors and motives, as illustrated in the vignettes above. Through these vignettes, I portray a story of intra-species and nature-cultural entanglements, one that is acutely different from conservation elsewhere in the world. As I walked these trails, my identity was shaped and formed through my intra-actions with these forest creatures, and consequently had a role in forming this research. Here, the line between nature/society and object/subject is continuously negotiated. I dissect these human entanglements of more-than-human worlds and bring together conversations of native plant and animal conservation with philosophy, culture, and politics, and attempt to illustrate the complexity of Hawai'i's conservation, bio-culture, and contextuality of nativeness (Helmreich). Understanding these entanglements involves interspecies mutualism, ecology and be-

yond ecology, and uncovering the biological, political, and cultural fragments of these communities.

My narratives *Acacia koa*, and *Hualālai* discuss nature-cultural nuances and emergent ecologies that arise in response to the Anthropocene in order to understand human entanglements with the more-than-human world. It was through these stories that I became entangled with the multispecies particulars and the encounters with pollinator and forest kin. This kinship, or pili'oha, as it is called in Hawaiian (Duarte), are biologically and socially dynamic, influenced by intra-actions and events. For Hawaiians, kinship is not only characterized by human relationships, but also by the inherent connectedness between Hawaiians and the more-than-human world, as Kanaka maoli scholar Manulani Meyer argues. She writes that in a Hawaiian epistemology, all things have life or agency and traditional knowledge comes from the 'āina (land); it is place-based (Meyer 39-40). This knowledge-land reciprocity informs the Hawaiian principle of mālama 'āina (to take care of the land) and is characterized by kuleana (responsibility). The resurgence of the traditional value of mālama 'āina (also referred to as aloha 'āina) has been actualized in contemporary politics over genetic engineering, education, and environmental sustainability movements (see Chinn; Feinstein; Guggini; and Gupta).

These multispecies entanglements and kinship reflect what Dennis Martinez calls kincentricity, the Indigenous perspective that human and nature are kin and have familial/ancestral ties (see Martinez; Salmón). For Martinez traditional knowledge is about relationships: “How to be a human and live in harmony with all our relations—a relationship that includes reciprocal obligations between humans and the natural world. . . .It is relationship centered. It is process-centered” (Martinez). Within this kincentric perspective, the relationships between humans and ecological entities also entail a familial responsibility. Echoing this sentiment, Pauline Chinn explains that a Hawaiian worldview understands “humans are part of a world in which plants, animals, and natural features are alive with ancestral and spiritual significance. . . a familial relationship.” (1250)

Non-Indigenous scholars, such as Donna Haraway (*Staying with the Trouble* 103), Eben Kirksey (31-34), and Maria Puig de la Bellacasa

(160), have also challenged normative categories of kinship and nature by arguing that these multispecies entanglements engage conversations on ethics, kinship, reciprocity, and care. Eben Kirksey writes of these ensembles, “I suggest that we understand such multispecies as ensembles of selves—associations composed of conscious agents who are entangled with each other through relations of reciprocity and accountability, who regard each other with empathy and desire” (34). These interspecies kinships, as visualized in my vignettes, are dynamic and shaped by biological, social, cultural forces that disrupt notions of relationality.

Eben Kirksey, Brandon Costelloe-Kuehn, and Dorion Sagan reflect on the ethical ramifications of these multispecies kinships: “negotiating power in multispecies assemblages requires great empathy, reflexivity, and tact” (209). Multispecies ethnographers navigate these power disparities and what it looks like to care for beings in this multispecies world (Kirksey 148; van Dooren 6). In my vignette *Hualālai*, I explore how place, contextualized by settler (mine) and Indigenous (Keolani) interpretations, serves as a reminder that humans have kinship with the more-than-human.

Acknowledging Indigenous standpoints in relation to these contemporary frameworks, Natasha Myers writes on decolonizing the ecological sensorium “to become better allies to Indigenous resurgence projects, settlers could start by forgetting everything we thought we knew about nonhuman lives and worlds” (7). For this study, it means forgetting what we think we know about native and nonnative species, and how we perceive place, land, and its inhabitants as not merely “resources” in need of “management.” It also means reconsidering what kinship looks like beyond the binary, humancentric ontology.

CONCLUSION

Over the course of collecting data, I attempted to follow pollinators throughout three of the Hawaiian Islands. This journey was storied, with each event and experience adding and weaving layers of meaning and context, and unfolding what conservation meant in Hawai‘i and in what ways it could be re-envisioned. I walked through mountainous forests and coastal habitats to see polli-

nators in action. I began this journey in the early summer with flowers blooming. These aligned with the flowering times of the plant companions, tiny black bees, micromoths, and rare nectar feeders. My field season closed during fall, when the flowers had withered and turned to seed pods.

In congruence with this special issue on critical relationality, this article attempts to bring the recent interest in multispecies studies (and ethnography) and Indigenous standpoints into deeper dialogue. Further, through my ontological and methodological approach, this manuscript challenges normative discourses on human exceptionalism, nature-culture dichotomies, and the manner in which industrialized societies place species and matter in hierarchy rather than lateral relation. In these vignettes, I attended to the sticky spaces where these multispecies and biocultural meetings might occur in conservation.

Through a specifically decolonizing perspective (Gerrard, Rudolf, and Sriprakash 6; Bonelli and Vicherat Mattar 61; Tuck and Yang 7), I was interested in examining multispecies, posthumanist, and Indigenous concepts of nonduality, more-than-human entanglements, and how these beliefs can help us to counter perspectives on conservation, as well as science, policy, culture, and ultimately education. This occurred by intra-acting with the human and more-than-human that make up pollinator assemblages and the broader native forests of Hawai'i, and in the continual analysis that emerged from a postcolonial Hawai'i.

In conclusion, I present two points of friction of which researchers must be mindful. First, that researchers grapple with "representing," interpreting, and caring for the more-than-human world, the very point of multispecies ethnography, without romanticizing or overly anthropomorphizing more-than-human species, matter, or place (Candea 252-253; Puig de Bellacasa 219). A second point of friction is ensuring that researchers do not perpetuate colonialism (e.g., neocolonialism, colonial thought, and epistemology, etc.) by ignoring Indigenous standpoints and cosmologies with regard to land and multispecies studies (Bonelli and Vicherat Mattar 61; TallBear 187).

While not directly in response to conservation, Donna Haraway argues that humans ought to:[reconfigure] the actors in the construction of the ethnospecific categories of nature *and* culture. The actors are not

all “us.” If the world exists for us as “nature,” this designates a kind of relationship, an achievement among many actors, not all of them human, not all of them organic, not all of them technological. In its scientific embodiments as well as in other forms, that nature is made, but not entirely by humans; it is the co-construction among human and nonhumans (*The Haraway Reader* 66).

As Haraway argues, multispecies and other novel methodologies, such as the diffracted vignettes of my journey, posit knowledge that is not bound to dominant discourses and perceptions. This epistemology allows me to ask novel questions and seek answers, as well as to explore how traditional/Indigenous perception of entanglements can inform a wider sense of multispecies kinship as it situates in a postcolonial context. Here I offer two examples in which this creative and nontraditional analysis addresses these issues and adds to the growing conversation on more-than-human studies by including non-normative more-than-human relativity.

WORKS CITED

- Adams, Tony E., Jones, Stacey H, and Ellis, Carolyn. *Autoethnography*. Oxford University Press, 2014.
- Aslan, Clare E., et al. “Imperfect Replacement of Native Species by Non-Native Species as Pollinators of Endemic Hawaiian Plants.” *Conservation Biology*, vol. 28, no. 2, 2014, pp. 478-488.
- Barad, Karen. M. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke University, 2007.
- Bonelli, Cristóbal and Vicherat Mattar, Daniela. “Towards a Sociology of Equivocal Connections.” *Sociology*, vol. 51, no. 1, 2017, pp. 60-75.
- Candea, Matei. “I Fell in Love with Carlos the Meerkat: Engagement and Detachment in Human–Animal Relations.” *American Ethnologist*, vol. 37, no. 2, 2010, pp. 241-258.
- Chinn, Pauline W.U. “Decolonizing Methodologies and Indigenous Knowledge: The Role of Culture, Place and Personal Experience in Professional Development.” *Journal of Research in Science Teaching*, vol. 44, no. 9, 2007, pp. 1247-1268.
- Corntassel, Jeff. “Re-envisioning Resurgence: Indigenous Pathways to Decolonization and Sustainable Self-determination.” *Decolonization: Indigeneity, Education & Society*, vol. 1, no. 1, 2012, pp. 86-101.

- Duarte, Mahina. Personal message. 21 September 2018.
- Denzin, Norman. K. *Interpretive autoethnography*. Sage, 2014.
- Feinstein, Benjamin Charles. "Altering Perceptions through Indigenous Studies: The Effects of Immersion in Hawaiian Traditional Ecological Knowledge (TEK) on Non-Native and Part-Native Students." *The Canadian Journal of Native Studies*, vol. XXV, no. 2, 2005, pp. 477-490.
- Gerrard, Jessica, Rudolph, Sophie, and Sriprakash, Arathi. "The Politics of Post-Qualitative Inquiry: History and Power." *Qualitative Inquiry*, vol. 23, no. 5, 2016, pp. 384-394.
- Greeson, Kimberley. *Of Pollinators and Forests: A Multispecies Ethnography of the Biopolitical Culture of Pollinators in Hawai'i*. 2017. Prescott College, PhD dissertation.
- Clare Gupta. "Return to Freedom: Anti-GMO Aloha 'Āina Activism on Molokai as an Expression of Place-based Food Sovereignty." *Globalizations*, vol. 12, no. 4, 2015, 529-544.
- Gugganig, Mascha. "The Ethics of Patenting and Genetically Engineering the Relative Hāloa." *Ethnos*, vol. 82, no. 1, 2017, pp. 44-67.
- Haraway, Donna J. *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, Duke University, 2016.
- Haraway, Donna. J. *The Haraway Reader*. New York, Routledge, 2004.
- Head, Lindsey. "Decentring 1788: Beyond Biotic Nativeness." *Geographical Research*, vol. 50, no. 2, 2012, pp. 166-178.
- Head, Lindsey M., Atchison, Jennifer M. and Phillips, Catherine. "The Distinctive Capacities of Plants: Re-thinking Difference via Invasive Species." *Transactions of the Institute of British Geographers*, vol. 40, no. 3, 2015, 399-413.
- Helmreich, Stephen. "How Scientists Think; About 'Natives,' For Example. A Problem of Taxonomy Among Biologists of Alien Species in Hawai'i." *Journal of the Royal Anthropological Institute*, vol. 11, no. 1, 2005, pp. 107-128.
- Keawe, Keolani. Personal Interview. 22, November 2016.
- Kirksey, Eben. *Emergent Ecologies*. Duke University Press, 2015.
- Kirksey, Eben, Costelloe-Kuehn, Brandon, and Sagan, Dorion. "Life in the Age of Biotechnology." *The Multispecies Salon*, edited by Eben Kirksey, Duke University, 2014, pp. 185-213.
- Kirksey, Eben, and Helmreich, Stephen. "The Emergence of Multispecies Ethnography." *Cultural Anthropology*, vol. 25, no. 4, 2010, pp. 545-576.

- Linderholm, Anna, et al. "A Novel *MC1R* Allele for Black Coat Colour Reveals the Polynesian Ancestry and Hybridization Patterns of Hawaiian Feral Pigs." *Royal Society Open Science*, vol. 3, no. 9, 2016, pp. 1-7.
- Lorimer, Jamie. "Moving Image Methodologies for More-than-Human Geographies." *Cultural Geographies*, vol. 17, no. 2, 2010, pp. 237-258.
- Maly, Kepā, Pang, Benton K., Burrows, Charles P. M. "Pigs in Hawai'i, from Traditional to Modern." from: <http://www.eastmauiwatershed.org/wp-content/uploads/2013/01/Puaa-cultural-fact-sheet-04.03.pdf>.
- Martinez, Dennis. "The Value of Indigenous Ways of Knowing to Western Science and Environmental Sustainability." *The Journal of Sustainability Education*, 2010. <www.susted.com/wordpress/content/the-value-of-indigenous-ways-of-knowing-to-western-science-and-environmental-sustainability_2010_05/>. Accessed 19 February 2019.
- Mazzei, Lisa A. "A Voice Without Organs: Interviewing in Posthumanist Research." *International Journal of Qualitative Studies in Education*, vol. 26, no. 6, 2013, p. 732-740.
- Meyer, Manulani A. "Native Hawaiian Epistemology: Exploring Hawaiian Views of Knowledge." *Cultural Survival Quarterly*, vol. 22, no. 1, 1998, 38-40.
- Myers, Natasha. "Ungrid-able Ecologies: Decolonizing the Ecological Sensorium in a 10,000 year-old NaturalCultural Happening." *Catalyst: Feminism, Theory, Technoscience*, vol. 3, no. 2, 2017, p. 1-24.
- Pink, Sarah. *Doing Visual Ethnography: Images, Media, and Representation in Research*. Sage, 2007.
- Puig de la Bellacasa, Maria. "Ethical Doings in Naturecultures." *Ethics, Place and Environment*, vol. 13, no. 2, 2010, p. 151-169.
- Salmón, Enrique. "Kincentric Ecology: Indigenous Perceptions of the Human-Nature Relationship." *Ecological Applications*, vol. 10, no. 5, 2000, pp. 1327-1332.
- Strazer, Marie D. "Ranching in Hawaii." *Ranching in Hawaii: A Guide to Historical Resources*, edited by Linda K. Menton, The Humanities Program of the State Foundation on Culture and Arts, 1988.
- Steinberg, Michael K. "Highland Forest Habitat Preference by Endemic Hawaiian Honeycreepers: A Preliminary Assessment." *Yearbook of the Association of Pacific Coast Geographers*, vol. 71 no. 1, 2009, pp. 54-66.
- TallBear, Kim. "Beyond Life/Not-Life Binary: A Feminist-Indigenous Reading of Cryopreservation, Interspecies thinking, and the New Materialisms."

Cryopolitics: Frozen Life in a Melting World, edited by Joanna Radin and Emma Kowal, The MIT Press, 2017, p. 179-202.

United States Department of Agriculture Forest Service Pacific Southwest Research Station. *Koa (Acacia koa) ecology and silviculture*. General Technical Report PSW-GTR- 211 March 2009.

van Dooren, Thom. *Flightways: Loss and Life at the Edge of Extinction*. Columbia University Press, 2014.

van Dooren, Thom and Rose, Deborah Bird. "Storied-Places in a Multispecies City." *Humanimalia: A Journal of Human/Animal Interface Studies*, 2012, vol. 3, no. 2.

Tuck, E., & Yang, K. W. "Decolonization is Not a Metaphor." *Decolonization: Indigeneity, Education & Society*, vol. 1, no. 1, 2012, pp. 1-40.

NOTES

1. See Augé, Marc. *Non-Spaces: Introduction to an Anthropology of Supermodernity*, Verso, 1995.↵
2. The modern feral boar is largely considered an invasive species and genetically made up of both the smaller, domestic Polynesian boar (introduced by Polynesians and important culturally) and the larger, Eurasian Boar (introduced after European contact in 1776 and thought to be far more destructive than the Polynesian boar. While genetically hybrids, the feral boars of today are genetically largely Eurasian boars. Other introduced species (protein sources for the boars) allowed pigs to thrive in forests where their Polynesian counterparts had not normally entered. (Linderholm, et al.; Maly, et. al.)↵