



The Beaver Diaspora

A Thought Experiment

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Abstract For decades the role of invasive species has been central to discussions of anthropogenic loss and change. Conceptual debates over whether “native” and “invasive” species are useful to our understanding of dynamic processes of world making have significantly challenged traditional approaches to conservation biology and conservation practices. Yet decommissioning the “invasive species paradigm” requires us to grapple with new ethical and political frameworks for stewarding the Earth in a time of loss. In response, this essay offers a thought experiment. Instead of referring to invasive species, I reframe the migration and settlement of nonhuman beings as diasporas. Doing so illuminates the political complexities of loss and change in Chilean Tierra del Fuego, where I have been conducting fieldwork for the past five years. Integrating approaches from political ecology, multispecies ethnography, and postcolonial theory, this essay focuses on the introduction in 1947 of Canadian beavers into the Fuegian archipelago (now considered the region’s most significant environmental problem). The introduction of plant and animal life is bound up in the apparatus of settler colonialism, as what Alfred Crosby so famously called “ecological imperialism.” Yet, as I explore in this essay, ecological imperialism is not just the remaking of landscapes to look like Europe but also a process of remaking nonhuman life through the constitution of new multispecies assemblages. Finally, this reframing allows me to destabilize the species concept as a stagnant and apolitical category of difference.

Keywords multispecies ethnography, invasive species, political ecology, Tierra del Fuego, environmental ethics

Invasive Species: Emergence and Loss

Loss seems to saturate the Anthropocene, becoming the affective register of our time. Mass extinctions, melting glaciers, disappearing coastlines, vulnerable communities—these are just a few expressions of loss. Multiple lines of evidence document losses associated with the widespread and unprecedented impacts of industrial and capitalist economies on the Earth’s atmospheric, biological, and geologic processes. Even the Earth’s stratigraphy tells the story of how the “increased use of metals and minerals, fossil fuels, and agricultural fertilizers” has produced emergent assemblages of life that are

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contingent on the displacement and loss of others.¹ For decades, the role of invasive species has been central to discussions of anthropogenic loss and change.² Research in the biosciences shows a strong correlation between animal extinctions and invasive species, with projected changes in climate accelerating rates of species extinctions.³ “Biotic exchange” is now considered one of the top five causes of biodiversity loss in the world, particularly in freshwater ecosystems.⁴ Conservation biology is the field of study most concerned with invasive species, with the emergence of theories about loss and change of biological and genetic diversity foundational to the development of the discipline.⁵ At the same time, even within conservation communities, what I am calling the “invasive species paradigm” is being challenged on conceptual, political, and ethical grounds.⁶ As I discuss below, conceptual debates over whether “native” and “invasive” species are useful to our understanding of complex, dynamic processes of world making have significantly challenged traditional approaches to conservation biology and conservation practices. Yet decommissioning the troublesome invasive species paradigm leaves considerable uncertainties about how to steward the Earth in a time of loss.

In response, this essay offers a thought experiment. Integrating insights from political ecology, multispecies ethnography, and postcolonial theory, it focuses on the introduction in 1947 of Canadian beavers into the Fuegian archipelago of South America (now considered the region’s most significant environmental problem). But instead of referring to invasive species, I reframe the migration and settlement of nonhuman beings as diasporas. Doing so helps me explore the ethical and political complexities of loss and change in Chilean Tierra del Fuego, where I have been conducting fieldwork for the past five years.⁷ As I will describe in more detail, beavers introduced into the Fuegian archipelago have spread and settled in the majority of freshwater rivers and streams in the region, causing dramatic changes to the sub-Antarctic forests. For environmentalists, these animals feel out of place, threatening, and symptomatic of devastating loss; their proliferation has led to wide-ranging deforestation, alterations of native waterways and watersheds, and shifts in nutrient and chemical cycles (fig. 1). The changes have been so profound that ecologists have compared the beavers’ impacts to the largest landscape-scale change “since the retreat of the last ice age.”⁸ In the Fuegian

1. Waters et al., “Anthropocene Is Functionally and Stratigraphically Distinct,” 139.

2. Vitousek et al., “Biological Invasions as Global Environmental Change.”

3. Clavero and García-Berthou, “Invasive Species Are a Leading Cause of Animal Extinctions”; Thomas et al., “Extinction Risk from Climate Change.”

4. Sala et al., “Global Biodiversity Scenarios for the Year 2100.”

5. Meine, Soulé, and Noss, “Mission-Driven Discipline.”

6. For a discussion of these debates, see Davis et al., “Don’t Judge Species on Their Origins”; and Simberloff, “Non-natives,” in response. See also Chew and Hamilton, “Rise and Fall of Biotic Nateness”; and Chew, “Ecologists, Environmentalists, Experts,” 740.

7. Research for this project stems from an ongoing collaboration—called *Ensayos*—with artists, environmental scientists, and philosophers (*Ensayos*, ensayosterradelfuego.net).

8. Anderson et al., “Introduced North American Beavers *Castor canadensis*.”



Figure 1. Silvery timber litters the landscape after a beaver dam has flooded the forest in Karukinka Nature Reserve, Isla Grande, Chile. Photo by author

Archipelago, as in many other places in the world, scientific and political concerns over invasive species, particularly beavers, dominate the ways the landscape's wilderness identity and related practices of care are produced and contested.

Eradicating life considered invasive is a top priority for land managers around the world. For example, US federal agencies and programs spent more than \$2.2 billion on invasive species management activities in 2012.⁹ This funding level rivaled the entire budget for the US National Park Service that same year, a comparison that offers some insight into federal commitment to the issue.¹⁰ While I do not know how much has been spent on invasive species programs in Tierra del Fuego, beaver eradication is a central priority for communities most concerned with the environment in the region (academic and government environmental scientists, environmental agency staff, and environmental nongovernmental organizations [NGOs]). In these communities, conversations about beavers quickly become debates about the practicalities of killing: different kinds of traps, possible economic incentives, biological controls, and the like.¹¹

9. NISC, "Invasive Species Interagency Crosscut Budget."

10. US DOI, "Budget Justification and Performance Information."

11. Ethnographic fieldwork for this project included interviews and informal discussions with staff and scientists at government research institutes, private and government-owned protected areas, and environmental nongovernmental organizations in Tierra del Fuego and Punta Arenas, Chile.

Following is a thought experiment in which I recast beavers in Tierra del Fuego as an animal diaspora. Doing so helps me explore the ethics and politics of emergent life as relational and contingent rather than biologically stable and apolitical. Isabelle Stengers's work inspired this thought experiment. As a philosopher, Stengers has been interested in the challenge of bringing nonhumans into political theory as entities deserving concern. She uses the term *speculative* to signal an experimental reframing that *enables the conditions for an ontological reorientation in our practices of environmental concern*. For Stengers, life forms are always in the process of becoming, which means the future is one of possibility. The goal of the thought experiment is not to speculate about possible alternative futures but to reveal the tensions that are a part of becoming within the confines of the world's predetermined categories (what she calls "probabilities").¹² Thought experiments are the nudge that helps us ask "what if?" In the process, we can, to quote Stengers, produce "narratives that populate our worlds and imaginations in different ways."¹³

There are some superficial resonances between diaspora and invasive-species literatures. Both, for example, investigate processes of population dispersal from a point of origin considered home, though diaspora scholars have considerably problematized ideas of return and fixed origin.¹⁴ Both literatures grapple with the difficulties of defining what constitutes shared identity within dispersed populations, including the relative importance and plasticity of biological characteristics, or at least biological determinism, in these definitions. That said, the central concern of the invasive-species paradigm is to keep nature stable and protected from human influence; this is also how the paradigm's adherents justify eradicating life considered out of place and unruly. In light of this preoccupation, anthropologists and other scholars have been interested in how concerns about species "invasions" and nature's stability are sometimes marked by racist discourses and xenophobia,¹⁵ and they have detailed the enormous boundary work involved in keeping nature and culture separate.¹⁶ While the invasive species

12. Stengers, *Cosmopolitics I*, 12.

13. Stengers, "Wondering about Materialism," 378.

14. See Brubaker, "'Diaspora' Diaspora," and Brah, *Cartographies of Diaspora*, for overviews of the literature. See Clifford, "Diasporas," and Butler, "Defining Diaspora," for discussions of mobility, return, and home.

15. See Subramaniam, "Aliens Have Landed!"; Larson, "War of the Roses"; Comaroff and Comaroff, "Naturing the Nation"; Raffles, "Mother Nature's Melting Pot"; Robbins and Moore, "Ecological Anxiety Disorder"; Hartigan, "Mexican Genomics and the Roots of Racial Thinking"; and Fortwangler, "Untangling Introduced and Invasive Animals."

16. See Sodikoff, *Anthropology of Extinction*, which offers excellent examples of the relationship between species extinctions and introductions; See Lien and Law, "Emergent Aliens," and Hartigan, *Aesop's Anthropology*, for ethnographies that examine nature/culture boundaries. More broadly, contemporary approaches to multispecies ethnography explore the multiple ontological configurations of humans and other beings. For review of this literature, see Kirksey and Helmreich, "Emergence of Multispecies Ethnography"; Ogden, Hall, and Tanita, "Animals, Plants, People, and Things"; and Van Dooren, Kirksey, and Münster, "Multispecies Studies." Susanna Lidström and colleagues argue that "invasive narratives" efface socioecological complexity in ways that may ultimately exacerbate environmental problems, while Schlaepfer, Sax, and Olden, "Potential Conservation Value of Non-native Species," has demonstrated the conservation benefits of nonnative species.

paradigm is saturated with the politics of racial othering, there is little attention to the politics of historically constituted becoming (except the legal and managerial challenges of managing beings considered out of place).

In contrast to the invasive species paradigm, diaspora scholars understand identity, subjectivity, and experience as emergent, as Stuart Hall so eloquently describes, within the “continuous ‘play’ of history, culture and power.”¹⁷ Following Hall’s refusal to understand diasporic identity as being “eternally fixed in some essentialised past,” contemporary diasporic scholarship troubles and resists the biologism of origin associated with scientific racism.¹⁸ As genealogies of the diaspora concept have explored in detail, moving beyond the “homeland orientation” has enabled scholars of diasporas to understand diasporic identity and subjectivity as always political and relational.¹⁹ For many, diaspora is mobility violently constituted by modernity’s spatial-racial ordering.²⁰ In other words, given its resistance to apolitical biologisms, the diaspora framework allows me to consider how other beings become subjects through exile and modes of mobility associated with coloniality and empire.

I recognize that the term *diaspora* applied to nonhuman beings produces an uncomfortable tension—one I share. Discourses of animality have been used to discursively “dehumanize” people associated with diasporic histories and, by extension, to justify colonization, genocide, sexual subjugation, and structural violence.²¹ Applying the concept of diaspora to nonhuman life also reminds us how difficult it is to dislodge the “human” as the locus for evaluating all other forms of life.²² For example, comparing the mobility of animal populations with human populations raises all kinds of questions about nonhuman agency, consciousness, and the cognitive and emotional capacity of nonhumans in ways that mirror utilitarian debates over animal rights and welfare.²³ The unease we feel when extending the concept of diaspora to other beings points to the tensions inherent to an ethics of living and dying where the human is not central.

Despite these concerns, my hope is that this unease creates a space of hesitation, allowing us to consider the ways in which we value nonhuman life. Moreover, engaging the diaspora scholarship has fundamentally broadened and transformed my thinking

17. Hall, “Cultural Identity and Diaspora,” 236. See also Brah, *Cartographies of Diaspora*.

18. Hintzen and Rahier, “Introduction.” See Hall, “Cultural Identity and Diaspora,” 236.

19. For an overview of diaspora scholarship, see Brubaker, “‘Diaspora’ Diaspora”; for work on the politics of diasporic subjectivity, see Gilroy, *There Ain’t No Black in the Union Jack*; Gilroy, “Cultural Studies and Ethnic Absolutism”; and Brown, *Dropping Anchor, Setting Sail*.

20. Rahier, “Blackness”; Venn, “Identity, Diasporas, and Subjective Change.”

21. See Mbembe, *On the Postcolony*, for discussion.

22. Jones, “(Un)ethical Geographies of Human–Non-human Relations”; Plumwood, “Being Prey”; Whatmore, *Hybrid Geographies*; Steiner, “Descartes, Christianity, and Contemporary Speciesism”; Weil, “Report on the Animal Turn.”

23. Singer, *Animal Liberation*; Regan, *Case for Animal Rights*; Bailey, “On the Backs of Animals”; Castriano, *Animal Subjects*; Coetzee, *Lives of Animals*; Jones, “(Un)ethical Geographies of Human–Non-human Relations”; Whatmore, *Hybrid Geographies*; C. Wolfe, *Animal Rites*.

about the mobility of nonhuman life in two key areas. First, like human diasporas, the dispersal of plant and animal life is shaped by historically constituted ways of ordering the world, what Arturo Escobar has termed “imperial globality,” associated with coloniality and global capitalism.²⁴ What get labelled as invasive species, for the most part, are animal and plant populations whose mobility is predicated on their incorporation into economic projects that have global configurations. Animal and plant life critical to agriculture, as I show later in this essay, are generally not considered “invasive” until they escape designated areas allotted to them. Second, diasporas produce new assemblages of life and new forms of subjectivity.²⁵ Subjectivity is constituted within assemblages of people, plants, animals, and other entities. To illustrate this last point, I offer the vignettes below. Here we see how beavers become differently positioned subjects depending on whether they are in the forests or the pampas of Tierra del Fuego. In doing so, we see the ways in which animal life is bound up in the apparatus of settler colonialism in the Fuegian archipelago.

The Beaver Diaspora: A Story of Imperial Globality

European colonial settlement in North America was sustained by a ready supply of animal skins, particularly the North American beaver.²⁶ Like a Deleuzian war machine fueled by beaver pelts, competing French, English, and Dutch trading companies staked claims to beaver territories along interior waterways such as the Hudson and St. Lawrence rivers. Imagine a network of rapidly expanding traplines, spurred westward by the serial collapse of beaver populations. As Eric R. Wolf shows, this territorial assemblage, centered on an economy of skin, led to the dramatic reorganization of the social, spiritual, and political life of indigenous communities in the Americas. Yet his work also reminds us of the role of animal life in the production of empire. In this case, the beaver fur trade became the logic and means for world making at the frontier in the early stages of the settler colonial project.

In 1946, decades after the near extinction of beaver communities in North America, the Argentine government imported twenty Canadian beaver pairs to Tierra del Fuego in the hope of establishing a fur trade. Today, stocking Tierra del Fuego with Canadian beavers seems like an unlikely economic development proposition. But at the time, Tierra del Fuego’s limited infrastructure and connection to Buenos Aires posed significant challenges to the Perón administration’s dreams of a united, economically independent nation. From the standpoint of Buenos Aires, Tierra del Fuego was worlds away, a periphery particularly suited to the logic of frontier world making. This was

24. Escobar, *Territories of Difference*.

25. Rather than mere collections of beings and things, assemblages are dynamic collectives whose properties exceed their constitutive elements, as Gilles Deleuze and Félix Guattari (*Thousand Plateaus*) wonderfully illustrate; see Ogden, *SwampLife*, for discussion of territorial assemblages. See Castricano, *Animal Subjects*, for discussion of nonhuman subjectivity.

26. Wolf, *Europe and the People without History*.



Figure 2. Map of Tierra del Fuego, modified from NordNordWest/Wikipedia. See original map at https://en.wikipedia.org/wiki/Tierra_del_Fuego#/media/File:Tierra_del_Fuego_location_map.svg

also a time when US and Canadian wildlife agencies were restocking lakes with beavers throughout North America, suggesting there was an apparatus in place for handling the logistics of capturing, transporting, and introducing beaver into new territories.

Traveling to Tierra del Fuego is difficult, and its geographic remoteness is part of the region's specific wilderness identity. Even on Isla Grande, the archipelago's most accessible and largest island, the difficulties of travel, particularly on the Chilean side of the island, contribute to a feeling of being far removed from the rest of the world. Tourists who venture this far south often do so, as the poet Paul Magee found, "just to say I've been there."²⁷ We know something of the beavers' long journey to the southern hemisphere. First, Thomas Lamb, a Canadian bush pilot, helped trap the beavers from lakes in northern Manitoba, Canada. Next, Lamb accompanied the animals to New York City by rail, then by air to Miami, where they boarded a clipper ship bound for southern Argentina.²⁸ En route, or so the story goes, the beavers chewed through the wooden door of a refrigerated cargo hold at the Miami airport, causing all kinds of beaver trouble before they were eventually rounded up and shipped southward.

I conducted the majority of the ethnographic research on the Chilean side of Isla Grande within the Fuegian archipelago (fig. 2). Isla Grande is an island divided—both politically and ecologically, though the divisions do not neatly align. In an edited volume on the political economy of "divided islands," Peter van Aert analyzes the ways

27. Magee, *From Here to Tierra del Fuego*, 19.

28. Pietrek and Fasola, "Origin and History of the Beaver Introduction in South America."

Chilean and Argentine national politics artificially split the island, without regard to any “logical natural division.”²⁹ As van Aert demonstrates, conflicts over Patagonia’s geopolitical boundaries arose soon after independence from Spain in 1810, and tensions over these boundaries continue to this day. While the Chilean side of the island is about 8,000 km² larger than the Argentinian side, it is much less populated and developed. This difference between the sides of the island is due, in part, to Argentine policies promoting manufacturing and voluntary migration from the continent. Though both sides of the island engage in oil/gas extraction, ranching, forestry, tourism, fisheries, and peat harvesting, the economic impact of these activities is uneven.

In contrast to the island’s political boundaries, Isla Grande’s ecological zones divide the island horizontally: the Patagonian steppe, locally called the “pampas,” is found on the northern part of the island, and the mountainous sub-Antarctic forests border the southern coasts. Ranching and oil/gas extraction take place within the pampas, with the protected areas and timber operations concentrated in the southern forests. The sub-Antarctic forests, which formed shortly after the retreat of the ice sheets ten thousand years ago, are considered one of the last remaining “wilderness areas” in the world, due to this low population density and extensive, intact vegetation cover.³⁰ As I describe in greater detail below, beavers have settled in both the pampas and the forests of Isla Grande, forming different multispecies assemblages.

As a frontier development strategy, Argentina’s plan to establish a fur trade was not successful, sharing the fate of similar efforts around the world: limited economic success coupled with unwelcome environmental consequences.³¹ In this case, the post-war years saw devaluation of beaver pelts, and there was little local hunting or trapping culture anyway. With no predators to impede their progress, the animals quickly began to occupy the region’s many lakes, rivers, and streams. Quite soon after their release, the animals crossed from Argentina into Chile, even swimming the frigid Straits of Magellan to occupy the Chilean mainland. Beavers have settled in about 98 percent of the rivers and streams on Isla Grande and on the majority of other islands in the archipelago. A decade ago, ecologists estimated a beaver population of sixty thousand on the Chilean side of the archipelago, a density much higher than in their North American habitats.³²

The Forest Beaver Assemblage

The beaver diaspora’s early history maps the ways nonhuman life becomes enlisted into national state-making projects (as pelts, in this case) as well as the unexpected

29. van Aert, “Tierra del Fuego,” 198.

30. Rabassa et al., “Quaternary of Tierra del Fuego”; Mittermeier et al., “Wilderness and Biodiversity Conservation.”

31. Examples include the introduction of Arctic foxes on the Aleutian Islands (West and Rudd, “Biological Control”); mink, muskrat, and rabbits in Europe (Manchester and Bullock, “Impacts of Non-native Species”); and nutria in the United States (Ashbrook, “Nutrias Grow in United States”).

32. Silva and Saaavedra, “Knowing for Controlling,” 127.

territorial circuits these projects produce. When the “Argentine” beavers crossed into the forests of Chilean Tierra del Fuego, they became incorporated into a forest assemblage with a different configuration of constituents and articulations of global connection. To simplify, the key constituents of the Chilean “forest beaver assemblage” have been lenga trees, US forestry companies, and forest protection activists with their own global networks.

The temperate rain forests of Tierra del Fuego are dominated by lenga trees (*Nothofagus pumilio*), which make up about 85 percent of forest cover. Lenga have adapted to the region’s strong sub-Antarctic winds, which can blow at around ninety miles per hour. The trees grow very close together, their canopy forming an arborescent tangle. Within these entanglements, lush miniature forests of liverwort, moss, and lichen thrive. Some lichens seem to live forever. Quite possibly the very lichen in the forests today were there when Charles Darwin arrived over a century ago. However, they are being swept away as beavers reengineer the landscape.

Ecologists use the term *ecosystem engineer* to describe the ways beavers transform landscapes by building dams in rivers and streams. These dammed rivers flood the surrounding areas to form ponds, and here beavers build their island dens where they are safe from predators. Lenga are less adapted to flooding, and there is enormous uncertainty about the rate of forest regeneration. These losses and the associated uncertainties about the forest’s future are of grave concern to environmentalists and scientists. Guillermo Martínez-Pasture, a forest scientist for the Argentine Centro Austral de Investigaciones Científicas, told me that beavers have caused the loss of about half the riverine forests in Tierra del Fuego, and the center’s studies suggest regeneration may take a hundred years in the flooded areas.

For many environmental organizations and land managers, eradicating beavers in the Fuegian forest is the top management priority. Yet before these forest constituents were worried about the impacts of beavers in the forest, they were radicalized in response to more traditional modes of deforestation. Understanding this forest history is important, as the forest beaver assemblage is an instantiation of prior configurations of extractive capitalism and related environmental politics. In other words, these legacies govern the worlds beavers make and their relationships with other forest constituents (“being beaver,” we might say) in ways that are distinct from other beaver assemblages.

Since the military coup of 1973, the Chilean state has promoted and subsidized the forestry sector, particularly favoring large corporations and plantation forestry, in order to boost exports.³³ Following government subsidies and support, the forestry sector has expanded greatly, and forestry companies are now the biggest landowners in southern Chile.³⁴ On Isla Grande, the epicenter of the beaver diaspora, a series of companies

33. Armesto, Smith-Ramírez, and Rozzi, “Conservation Strategies for Biodiversity”; Armesto et al., “Old-Growth Temperate Rainforests of South America”; Nahuelhual et al., “Land-Cover Change to Forest Plantations.”

34. Meza, “Mapuche Struggles for Land.”



Figure 3. Logs left behind after Trillium went bankrupt. Photo by author

have sought to transform the forests into timber products, a history I have described in detail elsewhere.³⁵ In the most famous instance, the Trillium Corporation, out of Bellingham, Washington, purchased four hundred thousand hectares of Isla Grande's forests in 1993. After weathering intense opposition to logging and other development operations in the United States, Trillium came to Tierra del Fuego with a plan, called "Rio Condor," to sustainably harvest the forests.³⁶ In the early 1990s, when the Trillium project was proposed, the Chilean environmental movement was relatively weak after decades of dictatorship during which civil society and NGOs were repressed.³⁷ Because of this political context and history, environmentalists' successful defeat of Trillium became one of the most pivotal events in Chilean environmental politics. This significant event continues to shape Isla Grande's forest assemblage in several complex ways.

US forest activists, all veterans of the antilogging wars of the Pacific Northwest, collaborated with Chile's emergent environmental community to teach strategies of territorial inscription—or marking the presence of life in ways that make specific kinds of claims. These included protests, making signs, and particular ways of strategically positioning the issue, such as using litigation and the media. Toward the end of the fight against Trillium, in 2001, Julia "Butterfly" Hill, a well-known US forest activist, invited

35. Ogden and Holmes, "Involucramientos globales del bosque."

36. Ginn, *Investing in Nature*.

37. Carruthers, "Environmental Politics in Chile."

Chilean environmentalists to meet with antilogging activists in Bellingham. Later, some of these activists came to Isla Grande to see the forests for themselves. In the end, Chilean environmental activists were able to use the media to bring attention to the project's environmental impacts and ultimately to use the Chilean courts to slow the project's implementation and drain the project's financial resources.³⁸ Eventually Trillium went bankrupt and the project was abandoned (fig. 3).

Rather than freeing the forests from their global entanglements, this victory simply transformed the configuration of the forest's global assemblage. In the process of debt liquidation, the Goldman, Sachs, & Co. (Goldman) investment firm acquired Trillium's Chilean assets at a fraction of the debt's face value.³⁹ Goldman then transferred the property to the New York-based Wildlife Conservation Society (WCS) for protection. Goldman's gift to WCS initiated an ongoing alliance between the environmental NGO and the investment bank, with Goldman stipulating that the property remain a private protected area. The company also provided funding for conservation strategies and served in an advisory capacity.⁴⁰ The WCS wanted these forests, which they named Karukinka after the Indigenous Selk'nam word for "land," to serve as a new model of conservation, a financially self-sustaining private protected area, with carbon markets as the principle source of revenue. Throughout the world, land managers desperately hope that carbon markets will provide funding for the continued stewardship of lands in their care. While there is uncertainty about the impacts of introduced herbivores, such as beavers, on the dynamics of forest carbon sequestration, the most profound effects seem to occur when herbivory disrupts the recovery of tree species, as in the flooded forests of Tierra del Fuego.⁴¹ In this way, beavers threaten neoliberal approaches to forest conservation in Chile advocated by the WCS and other international environmental organizations.

Yet Chilean environmentalists' care and commitments to the forest do not neatly align with those of their global counterparts. Chilean environmental activists I interviewed became radicalized first as human rights and peace activists during the Pinochet dictatorship. In their telling, they became radicalized around ideas of life and justice rather than nature without people. As one activist explained, she fled to Tierra del Fuego (about as far south as you can go) after things got "too hot" in Santiago. Her experiences under the dictatorship made her see logging in Tierra del Fuego as not just a threat to wilderness or nature but a threat to life itself. For Chilean environmentalists, as another activist and Buddhist nun told me, the forests are not forest "ecosystems"—as they are in the US environmental activist rhetoric—or nature divorced from humanity. Instead, the forests of Tierra del Fuego are a landscape of "life" and a landscape

38. Ibid.

39. Ginn, *Investing in Nature*, 60.

40. Saavedra et al., "Private Conservation," 359.

41. Peltzer et al., "Effects of Biological Invasions on Forest Carbon Sequestration."

marked by multiple cycles of multispecies violence. This violence is intrinsic to territorial strategies associated with settler colonialism, including the eradication of Selk'nam people from the park that now bears their name or development schemes that lead to deforestation (whether by loggers or by beavers).

For the most part, an association with humans is what defines nonhuman life as alien or exotic, and this association with humans is by and large the trigger for patterns of mobility and settlement that are considered invasive. These multispecies entanglements are configured through global economic projects, though the mechanisms of mobility vary—from the accidental transport of aquatic life in the ballast water of ships to the release of unwanted reptiles and other pets into the new environments. Today, Tierra del Fuego's forest assemblage is dominated by conservation logics, which have their own complex global configurations. Within this conservation logic, the forest has been and continues to be under threat by multiple agents of change, including beavers. The politics governing Isla Grande's forest assemblage reflect different philosophical commitments to forest care, with one extending concerns about human rights to the forest and the other reflecting a corporate conservation strategy. While seemingly oppositional, these logics reflect the usual ideological bricolage of global conservation today. Uniting these contradictory logics is the sense that beavers are a threat to the life of the forest.

The Pampas Beaver Assemblage

All kinds of recent animal introductions are remaking Tierra del Fuego: first missionaries brought European rabbits over from the Falklands, then grey foxes were introduced to deal with the rabbit "outbreak." Later still, the Brazilian myxoma virus was introduced, which successfully killed 97 percent of the region's thirty million rabbits.⁴² In recent years, other animals have settled on the islands, including mink, muskrat, and wild pigs.⁴³ While the specifics of these animal diasporas differ, in general they are all processes of multispecies mobility entangled in the dynamics of settler colonialism in Patagonia.

Yet of all these animal diasporas, *sheep have been the most significant*. Though Tierra del Fuego may as well be a metonym for isolated wilderness, for the most part it is a working, agrarian landscape. Vast sheep farms occupy the northern part of Isla Grande as they do the rest of southern Patagonia. Sheep arrived in southern Patagonia in 1877, brought up from the British sheep farms in the Falklands. Anglo and Central European settlers soon followed. Since then, the island of Isla Grande has been dominated by sheep, with an average of two to three million sheep roaming the pampas over the past century. The introduction of sheep ranching to southern Patagonia disrupted the fairly amicable relations that seemed to have existed between early settlers in Punta

42. Jaksic and Yáñez, "Rabbit and Fox Introductions in Tierra del Fuego"; Davis and DeMello, *Stories Rabbits Tell*.

43. Silva and Saavedra, "Knowing for Controlling."

Arenas, the penal colony capital of southern Patagonia, and the local indigenous communities.⁴⁴ The subsequent decades brought continued usurpation of indigenous land for ranching and vicious cycles of escalating violence, along with introduced diseases and missionization, eventually leading to the near extermination of all of the indigenous communities in the Magellan region.⁴⁵ It is quite clear that the Patagonian sheep complex was part of the apparatus of territoriality that transformed the pampas into a “neo-Europe.”⁴⁶ Patrick Wolfe reminds us that territorial invasions associated with settler colonialism are “a structure, not an event,” though with Crosby’s *Ecological Imperialism* in mind, we see how territorial invasions are ongoing multispecies processes.⁴⁷

Reminders of the area’s colonial history can be found throughout the pampas. Tourists pour over dog-eared copies of Lucas Bridges’s *Uttermost Part of the Earth* (2007), a fascinating account of colonial settlement and missionary work in Tierra del Fuego, as well as Bruce Chatwin’s *In Patagonia* (2003), a travelogue of colonial nostalgia. For the few tourists who drive the interior roads of Isla Grande, scattered historic markers interpret the grand era of the estancias, the local term for large Patagonian ranches. At the turn of the last century, two large companies managed the majority of lands within Chilean Isla Grande for sheep ranching.⁴⁸ Fifty years of agrarian reform succeeded in subdividing these initial grand estancias into about five hundred smaller ranches, an uneven process Peter Klepeis and Paul Laris argue led to land degradation.⁴⁹ Over the past century, changes in market prices for wool and the impacts of agrarian reform have shaped estancia life; though, in practice, the nineteenth-century Patagonian aesthetics and practices of production continue to govern the pampas as a territorial assemblage.

Sheep are the central organizing principle of life on the pampas. Estancia people think sheep, listen to sheep, and care deeply about sheep. The island’s grasslands are fenced and organized into vast grazing pastures and corrals to benefit sheep production (fig. 4). The year, too, is organized by the reproductive cycles of sheep and the production of wool: there are times for lambs, for shearing, for culling, and for artificial insemination. Horses and dogs are entangled in this sheep world. Australian kelpies and border collies, or the Patagonian variants, seem to have sheep knowledge inscribed into their DNA, though this horse-dog-human collaboration requires years of training and becoming together in the work of sheep. People and dogs eat sheep at almost every meal. Estancia owners are committed to sheep life as both a business and, for many, an

44. Martinić Beroš, “Meeting of Two Cultures.”

45. Chapman, *European Encounters with the Yamana People of Cape Horn*.

46. In *Ecological Imperialism*, A. W. Crosby uses the term “neo-Europes” to describe the social and ecological transformation of New Zealand, Australia, most of North America, and the pampas of South America associated with European settlement, 2.

47. P. Wolfe, “Settler Colonialism and the Elimination of the Native.”

48. Butland, *Human Geography of Southern Chile*; Martinić Beroš, “Meeting of Two Cultures.”

49. Klepeis and Laris, “Hobby Ranching.”



Figure 4. Sheep being moved to a summer pasture after sheering, Isla Grande, Chile. Photo by author

identity linked to a particular colonial heritage. Owners worry about the cost of production, technologies of breeding, and the price of wool and are increasingly interested in new approaches to rangeland management. Like beavers, sheep are entangled in complicated global assemblages of animals, humans, infrastructure, technology, and related discursive logics. Sheep stock is imported from New Zealand, the Falkland's, and South Africa. Their wool is shipped for grading in New Zealand, then sold through multinational corporations, and often shipped to China, where the wool is made into sweaters and other commodities.

Environmentalists worry about the impacts of sheep grazing on the grasslands as well as the ways fencing has harmed the free ranging of the guanaco, an undomesticated relative of the llama. Yet estancia life is so profoundly a part of the myth of Patagonia that the conservation community tends to focus its attention on the region's southern forests. Here, as in other parts of the world, commodified animals and plants are rarely categorized as "exotic," "nonnative," or "invasive" even as they significantly transform local ecologies. In Patagonia, they use the term *baguales* to describe domesticated animals such as dogs or horses that have "gone wild," which is ontologically distinct from the racialized and xenophobic invasive-species category. As Banu Subramaniam has described in relation to plants, "As long as exotic/alien plants know their rightful place as workers, laborers, and providers, and controlled commodities . . . their presence is tolerated."⁵⁰

50. Subramaniam, "Aliens Have Landed!," 35.



Figure 5. Beaver pond on Estancia Marel, Isla Grande, Chile. Photo by author

Estancia workers (called *ovejeros*) and shepherds (called *puesteros*) worry about lambs freezing to death or lambs being killed by predators, but mainly they are attentive to working conditions. Estancia life in Tierra del Fuego is isolated and difficult. Most of the estancia workers in Chilean Tierra del Fuego come from Chiloe, reflecting a multi-generational tradition of labor migration from this southeastern coastal island. Workers tend to spend a decade or more on Tierra del Fuego estancias, rarely returning to Chiloe to see families, living in bunkhouses with a handful of other men. Shepherds, who accompany sheep out to far pastures, live even more solitary lives, spending months at a time at remote outposts with only their dogs and a horse for companionship.

On the estancias, beaver can be a nuisance, though their presence is not a significant object of concern. In interviews, if I pressed the issue, estancia owners and workers mentioned the cost and labor of replacing wooden fence posts, one of the more significant costs on the estancias. Today, the fencing crews dip the fence posts in tar to discourage the animals from incorporating the posts into their dams and lodges. On some estancias, beaver ponds have flooded out roadways, creating other problems, though these are all dirt roads, so driving around is not too difficult. If estancia people mention beavers at all, it is with wonder at the appearance of these ponds—which offer a better supply of fresh water for sheep in this arid landscape (fig.5). Within the pampas assemblage, beavers are not objects of concern. Instead, they are a part of the productive life of the estancias.

Much to the surprise of the biologists who study beavers, beavers on Isla Grande have adapted to the steppe ecology of the pampas where sheep roam. These “pampas” beavers behave in ways that differ significantly from the behavior of the forest beavers. Pampas beavers eat different foods, and they use different vegetation to create their dams. Some dams are made almost entirely of shrubby material and piles of grass, unlike the traditional architectural practices of the forest beavers. The pampas, because it is a sheep landscape, is littered with the fur, bones, and dried excrement of sheep. So it is not surprising that beavers make use of sheep bones in their dam construction as well. On the pampas, beavers are enmeshed in an assemblage of animal diasporas. Imported sheep drink from beaver ponds; beavers incorporate the afterlife of sheep into their dams; sheep alter the vegetation of the steppe, which has in turn altered the construction and eating habits of beavers; estancia workers migrate to the region, where they live off sheep and love their dogs; estancia owners come and go, balancing their time at their ranches with other commitments; imported sperm inseminate local ewes; expensive wool travels the globe. Unlike those in the forests, beavers in the pampas assemblage are not objects of concern (maybe just a nuisance). Here, sheep, dogs, shepherds, and now beavers make and remake each other.

Conclusion: Species Wonder

The introduction of plant and animal life is bound up in the apparatus of settler colonialism, what Crosby so famously called “ecological imperialism.”⁵¹ Yet as I have explored in this essay, ecological imperialism is not just the remaking of landscapes to look like Europe but also a process of remaking nonhuman life through the constitution of new multispecies assemblages. Pampas beavers seem both the same as and different from the forest beavers. Several generations ago, we believed these beavers shared a point of origin. In a recent revelation, biologists discovered archival evidence that suggests Tierra del Fuego’s “Canadian” beavers might not have been Canadian after all.⁵² Apparently, those Manitoba lakes had been restocked decades before with beavers imported from New York. As with all diasporas, the question of origin and belonging is troubled by the ways the past and the present remake each other yet still become inscribed in flesh as history and politics.

What this speculative experiment has aimed to show is that the biological species is a limited lens for understanding the ways sameness and difference shape trajectories of loss and change in the world. As Anna Lowenhaupt Tsing has recently shown in her ethnography of matsutake worlds, “For living things, species identities are a place to begin, but they are not enough: ways of being are emergent effects of encounters.”⁵³ Certainly, the species seems a low bar for understanding the magic of becoming in forest

51. Crosby, *Ecological Imperialism*.

52. Pietrek and Fasola, “Origin and History.”

53. Tsing, *Mushroom*, 23.



Figure 6. A still from *The Dreamworlds of Beaver* (2017), a film by Christy Gast, Laura Ogden, and Camila Marambio

and pampas. Instead, life springs from the situated practices of beings entangled in historically constituted assemblages. Sheep people, tree lovers, forest beavers, and so on. Rather than focusing on some great North American beaver invasion, perhaps we should be considering, with wonder, how plants, animals, and people become through their relations with other beings and things.

We witnessed a little beaver wonder in Tierra del Fuego. In January of 2013, our research collective went on a beaver sightseeing expedition with a tour group out of Ushuaia, an Argentine tourist town on the Beagle Channel. Lots of visitors come through Ushuaia on their way to Antarctica, so the streets are filled with expensive gear stores, cafes, and adventure travel tour operators. Our “beaver safari,” as we jokingly called the expensive trip, included transport to Valle Hermoso, a property about eighteen miles outside Ushuaia, where a guide led us and a handful of international tourists through mucky peat bogs to a steep riverbank. Here, we stood together in a frigid row, watching and photographing beavers swimming in the dark river below. Our guide, Andrés, felt that environmental concerns about beaver-related forest loss were unnecessarily sensational. Instead, as dusk approached, he offered us hot tea and told sincere stories about the beaver families living along the river. We stood listening, as evening softened the stark landscape of dead and dying trees that seemed to go on forever.

Below the river’s surface, a beaver’s den looks like a waterlogged nest of rough timber and jutting tree limbs. My collaborator, Christy Gast, dove into an icy pond in Tierra del Fuego to film the dark passages of a beaver’s den (fig. 6). There is nothing orderly about this submerged architecture of kinship, as her images show. In many ways, the invasive species paradigm’s simplified version of the world is the opposite of a

beaver den. These processes of simplification make decisions about killing too easy, when issues of life and death should never be simple. For many conservationists, killability is justified when animals or plants *do not belong* and subsequently cause loss and change to ecosystems.⁵⁴ Within this paradigm, belonging is constituted through evolutionary history and related biologisms of origin. The biological species is a concept that articulates biology with history and fixes identity in place and time.⁵⁵

In Tierra del Fuego, beavers, sheep, ranchers, and so many others are entangled in global assemblages configured by ongoing processes of ecological imperialism. These origin stories are complicated and contradictory and require an approach to environmental care that does not cede ethics to biology. My purpose in this essay is to provide an alternative framework for thinking about the mobility of animal and plant life in our time of environmental change, not to make recommendations about beavers in Tierra del Fuego. That said, I began this project thinking that most invasive-species management approaches were as arrogant as economic development schemes in which live animals are shipped across the globe for the fur trade. Both projects require enormous efforts at simplification and a related “command and control” approach to nonhuman life.⁵⁶ In all honesty, when I began this project I could not imagine how species eradication or removal programs could be justified. I continue to have enormous concerns about forms of suffering associated with these programs.

Still, after spending time in Tierra del Fuego, I learned that my own absolutes enabled grief over forest loss and little else. Grief is a beginning, but sometimes it is not enough. Being curious about other assemblages of life, what I am calling wonder, has allowed me to understand that beavers in the forest and beavers on the pampas are not the same. Moreover, the worlds they are helping to produce have very different consequences for fellow beings and environments, including the people who care for them. Holding grief and wonder close is a way of “staying with the trouble,” using Donna Haraway’s phrase, or acknowledging that living and dying in a time of loss and change requires much harder commitments than simple managerial fixes or absolution through critique.⁵⁷ Our research collaborative has produced films, installations, and performances that seek to inspire wonder at the magic of beaver worlds while simultaneously

54. Understanding why certain species are considered objects (and therefore “killable”) rather than subjects (and less killable) has been central to posthumanist philosophy and associated scholarship. Fudge, *Animal*; Haraway, *When Species Meet*; C. Wolfe, *What Is Posthumanism?*; Lopez and Gillespie, *Economies of Death*.

55. There are several approaches to understanding and naming species difference in biology (the “species problem,” as it is called), including attention to morphology and phylogenetics; see Mayden, “Hierarchy of Species Concepts,” for discussion. In conservation biology, the field most concerned with invasive species, ideas from evolutionary biology—particularly the concept of the “biological species”—dominate. In general, biological species are a way of understanding divergence over evolutionary time scales that result in populations who are able to successfully produce offspring.

56. Holling and Meffe, “Command and Control,” refers to this as “command and control” forms of natural resource management.

57. Haraway, *Staying with the Trouble*.

being attentive to the cascading losses their presence in the Fuegian forests have caused (see fig. 5, as example).⁵⁸ In doing so, we are not proposing inaction, just making clear how difficult care and action should be. This includes the removal of beavers from the Fuegian forests, which most of us now support.

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58. See examples at [Ensayos, ensayostierradelfuego.net](http://Ensayos.ensayostierradelfuego.net).

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