Closing the Rift Between Agriculture and Conservation: Explorations of Food Sovereignty on an Island in the Salish Sea

by

Erika Bland
B.A.(Hons), University of British Columbia, 2010

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

MASTER OF ARTS

in the School of Environmental Studies

Supervisory Committee

Closing the Rift Between Agriculture and Conservation: Explorations of Food Sovereignty on an Island in the Salish Sea

by

Erika Bland
B.A.(Hons), University of British Columbia, 2010

MASTER OF ARTS

in the School of Environmental Studies

Supervisory Committee

Dr. Jessica Dempsey (School of Environmental Studies)
Supervisor

Dr. Cameron Owens (Department of Geography)
Outside Member

Abstract

Human food provisioning is inextricably linked to the conservation of ecosystems and biodiversity. But a broad human-nature dualism in western colonial capitalist political economy has created a 'metabolic rift' between humans and our ecological sources of sustenance. Agriculture and conservation are parsed from one another under this political economic regime—braided streams are seen as separate channels. Focusing on Denman (a.k.a. Inner) Island, which is home to a community of active agriculturalists and conservationists, I explore how relations of power and knowledge maintain the rift between conservation and agriculture, ultimately obscuring the braided streams. Semi-structured interviews with Inner Islanders, and archival analysis including reviews of maps and policy texts, revealed wetlands as places where conservation and agriculture values overlap; they are sites to observe divergent understandings and representations about wetlands, as well as the metabolic rift in action. Case studies of wetlands on Inner Island demonstrate both the power and the limitations of state knowledge-making techniques in the context of different, contested, or overlapping authority claims over agro-ecological space. Diverse community values surround agro-ecological sites like wetlands, but the way these spaces are defined, mapped, classified, and historicized by the state tends to bifurcate conservation from agriculture, fixing them as *either* conservation *or* agricultural spaces in the policy that surrounds them. Contestations over the production of political economic knowledges are at the heart of these divergences—and the rift—between conservation and agriculture on Inner Island. Drawing especially on the work of Scott (1998) and Blomley (2016; 2005; 2003; 1993), I argue that metises—the practical knowledges of local people—and their intersections with the institution of property, are integral to state legibility of, and consequently power in, wetlands. Furthermore, the settler colonial context which underlies the classification of wetland space affords agriculture primacy over conservation, and perpetuates the rift between the two. Drawing from and contributing to the literature on food sovereignty, I suggest that efforts to close the rift between agriculture and conservation will involve alternative processes of knowledge-making as well as challenging the settler colonial historical baseline used today in state land classifications and governance.

Table of Contents

List of Tables

List of Figures

Acknowledgments

I am privileged to live on Inner Island, and I am grateful and indebted to the First Peoples whose territory, culture and histories make up the foundations of this place I call home. To the diverse and thoughtful people who participated in research interviews, and many others who provided a sounding board for complex ideas or cheered me on over the long haul, I cannot thank you enough. To my mentors from Denman Conservancy Association, thank you for your careful guidance, incisive insights, and endless patience.

Huge thanks to my dear family and friends for feeding me, walking my dog, and knowing when to stop asking if I was done yet. Thanks to my Mum, who always finds the most encouraging words, and my Dad, who spent countless hours helping me work through these ideas, always able to grasp even the most muddled ones and reflect them back to me.

I am very grateful for financial support from the Social Sciences and Humanities Research Council of Canada and the Department of Environmental Studies at University of Victoria. This thesis is the outcome of relentless support from my supervisory committee, Dr. Jessica Dempsey and Dr. Cameron Owens; thank you for believing in my work even in times when I lost the plot. Thank you, Dr. Reuben Rose-Redwood, for your very thorough external review and copy editing of this thesis. To the faculty, staff and my fellow students in the Department of Environmental Studies, I appreciated your direction and insightful feedback as I set and followed the course of this research. Any errors, oversights or omissions in what follows are mine alone.

Dedication

This work is dedicated to the memory of my dear friend, Jason MacDonald, whose short life was a lesson in mending rifts and braiding streams.

Chapter 1: Introduction

> Politics happens at the interface of different values, different people coming into each other's presence and having to work out their shared vision of the world.
>
> ~ William Cronon (2013)

> You can't save the people apart from the land, or the land apart from the people. To save either, you must save both.
>
> ~ Wendell Berry (1995b)

Agriculture & Conservation: Braided Streams

Human food provisioning systems—the diverse ways people feed themselves—are inextricably linked to ecological health, biodiversity, community knowledge, and politics.[1] The question of how to balance human socio-economic activities (like food provisioning) with the maintenance of biodiversity and ecosystem functioning of landscapes is central to scholarship in many disciplines and social movements, for instance in political ecology (Paulson et al. 2003); agroecology and agrarian studies (Méndez et al 2015; Pimbert et al. 2014; Altieri and Holt-Gimenez 2013, Chappel and LaValle 2009; Pretty 2008; Dobbs and Pretty 2004; Vos 2000); planning (Shackelford et al 2015); law (Cameron 2016); ecological economics (Rey Benayas and Bullock 2012; Balmford 2011; Ostrom 2011); and food sovereignty (Lin et al. 2011; Perfecto et al. 2009). Fostering 'agro-biodiversity' is increasingly encouraged in scientific and economic literatures (Ponisio et al. 2015; Balmford 2012; Green et al. 2005) as well as in cultural explorations of the Cascadia bioregion and the Salish Sea, where this research is situated (Mackinnon 2014, Robin 2014) and further afield (Berry 2009; Jackson 2008). International conventions are beginning to address ecological conservation and

[1] In this thesis, the term 'food provisioning' encompasses food production systems such as agriculture, but it also goes beyond that to include other non-agricultural means of obtaining food such as hunting, fishing, and wild crafting. This thesis focuses mainly on agriculture, but much of the discussion that applies to agriculture also applies more broadly to other kinds of food provisioning.

agriculture in tandem, recognizing their interdependent, braided streams (FAO 2015; de Souza Dias 2013; De Schutter 2010). Put simply, "eating is an ecological act" (Pollan, 2006: 11). Ecologists argue that the way human food systems are managed "will significantly affect the progression of the biodiversity crisis and thus impose some of the most significant challenges to addressing it" (Chappell and LaValle 2009:10).

Acknowledging the braided streams of conservation and agriculture involves acknowledging political and historical entanglements amongst humans as well as between humans and other-than-human actors in socio-ecosystems. The landscapes and politics of agriculture and conservation are deeply interconnected. Practically speaking, because of the crucial role of ecological connectivity in maintaining biodiversity, Perfecto et al. (2009) argue that conservation efforts must focus on a *matrix* of landscapes: agricultural lands as well as spaces set aside for conservation. Likewise, management and preservation of agricultural land must be harmonized with wider biodiversity conservation efforts. Many agricultural landscapes are important 'agro-ecological' spaces: mosaics of cultivated, natural and semi-natural land used by diverse species. In Canada, for instance, many farmers use 'Beneficial Management Practices' to protect land and water resources, and agriculture increasingly involves conserving riparian/wetland areas and wildlife habitat (Agriculture and Agri-Food Canada 2013; Suess et al. 2012). Such practices are based upon the principle that all conservation efforts should include consideration of social, economic and political concerns of populations who inhabit—and provision food within—the landscape matrix (Perfecto et al. 2009).

However, some forms of agriculture, like monoculture agriculture, are major drivers of ecological degradation. The capacity of Canadian agricultural land to support wildlife has declined in the past two decades due to loss of natural and semi-natural land cover with agricultural intensification (Federal, Provincial and Territorial Governments of Canada, 2010). The separation between agricultural and conservation sectors of political economy has intensified with an international post-WWII 'food regime': much of the world's agriculture is now dominated by scientific, mechanized, and fossil fuel based production for markets outside the communities where food is produced (Tilzey 2017; Holt-Gimenez 2015; Holt-Gimenez and Shattuck 2011; McMichael 2013).

On Denman Island, commercial monoculture farming operations began alongside settler occupation in the 1870s. Timber, apples, root vegetables, dairy products, beef and shellfish were products produced for export in significant quantity (Isbister 1976; AEL Agroecological Consulting 2011; FSF1 pers. comm.). The most significant examples of large-scale commercial food production remaining today are shellfish aquaculture, and to a lesser extent the rearing of beef cattle. On Denman Island, while the scale of most farming is not considered industrial (AEL Agroecological Consulting 2011), monoculture agriculture does significantly impact the landscapes and ecological communities where it takes place, such as on the foreshore (ADIMS 2018). And a growing number of commercial agriculture operations—even diversified ones—rely on outside inputs like soil amendments and animal feed, linking islanders to geographies of industrial agricultural production elsewhere.

Such divergences between agriculture and ecological conservation stem from a broader human-nature dualism in western colonial and capitalist political economy: a "metabolic rift" between humans and our ecological sources of sustenance (Foster et al. 2010; Wittman 2009; McMichael 2007). It is on these divergences—this rift—that my research focuses. In response to this historic dualism, Wendell Berry posits that "the question we must deal with is not whether the domestic and the wild are separate or can be separated; it is how, in the human economy, their indissoluble and necessary connection can be properly maintained" (2009: 69). Closing the rift between people and nature that has emerged under colonial capitalism means seeing agriculture and conservation as braided streams, not separate channels. To do this, Berry argues, we must confront capitalist and state impingements on the ability of communities to determine what the food system looks like, and this involves confronting the ways that the state and political economic institutions produce knowledge about that food system and about its broader ecological contexts.

To this end, a movement has emerged globally which aims to empower agrarian communities to reclaim control over the food system. This movement for food sovereignty, as I discuss below, implies radical processes of agrarian reform and equitable redistribution of rights of access and use over resources, including land, water, forests, seeds, and the means of production (Pimbert 2010). At the heart of this

movement are local, place-based and historicized knowledges informing political action: people recognize inherent connections between their food and the ecological processes that sustain life, and struggle for the empowerment needed to make decisions about those processes (Pimbert 2006). This thesis adds to a growing body of food sovereignty scholarship focused on Canadian landscapes (Wittman et al. 2014) by exploring the conditions and relations of power and knowledge that contribute to this rift within specific agro-ecological landscapes.

Research Questions

Focusing on Denman (Inner) Island,[2] a community of active agriculturalists and conservationists, I explored differing views of and values surrounding agriculture and conservation among residents. Wetlands emerged as sites of tension between conservation and agriculture, as I discuss in the Research Context section below. I centered my research on these sites, and their embedded relations of power and knowledge.

Overall, I ask, how is the rift between agriculture and conservation maintained in wetland spaces on Denman (Inner) Island? In particular, how do power and knowledge relationships contribute to this dualism? How do state institutions and the broader political economy obscure the braiding of the streams?

Conceptual Framework: A Metabolic Rift Between Conservation and Agriculture

Political-ecological scholarship focuses on the power and knowledge relations through which socio-environmental processes emerge. Recognizing that "knowledge is always an exercise of power and power always a function of knowledge" (Foucault 1980: 69), scholars in this discipline demonstrate how conflicts over food and resources, as well as environmental processes, are often influenced through power-knowledge relations. By this I mean that the ability to define the nature of an environmental problem, or perhaps categorize a landscape and its use, are always political acts, mired in uneven power

[2] For more information about the different names used for the research site, see below, Research Context.

relations (Rose-Redwood 2016; Harris 2010; Thom 2009; Buckingham and Kulcur 2009; Tobias 2009; Youatt 2008; Roth 2007; Rocheleau 2005).

By focusing on factors that shape relations of power in socio-ecosystems, political ecologists challenge dominant understandings of the roots of environmental degradation (Paulson et al. 2003), such as poverty (see Masron and Subramaniam 2018), overpopulation (see Ehrlich 1968) or commonly used and managed land (see Hardin 1968). In exploring place-based, historically-sedimented socio-ecological systems, relations and entanglements (Berkes et al. 2003), scholars draw attention to structural forces and logics that are often occluded or obscured in technical ("apolitical") approaches to solving environmental problems, shedding light on their historical, material and political-economic foundations. Important questions in political ecology include: How do we come to know nature, and what differences do the forms and content of environmental knowledge make in the material world in which they are enacted? Through what sorts of social arrangements and forms of governance do people 'manage' nature, and to what effect? How is political-economic power constituted through environments and ecologies themselves? My research on Inner Island is shaped by this conceptual framework, which provides a lens through which I analyze the overlapping spaces of environmental management in the landscapes of conservation and agriculture. By focusing on the political economic institutions that contribute to knowledge-making surrounding these landscapes, we can gain insights into the reasons behind certain management decisions.

Capitalism and the Metabolic Rift

Scholars including Plumwood (2002; 1993), Mies (1986) and Moore (2018; 2003) suggest that contemporary political economies rest upon persistent dualisms between humans and nature, which harms people and ecosystems (see also Castree and Braun 2001; Ingold 2006). Moore, for instance, argues that with the rise of capitalism, a "dialectical antagonism" emerged "between capitalism's drive to accumulate endlessly and the demands of ecological sustainability" (Moore 2003: 323; see also Moore 2000). Speaking of agricultural production, Berry (2005; 1985) argues that there is a fundamental opposition between the demands of the capitalist political-economy and the

well-being of local socio-ecological communities. With capitalism, food production systems have become "dissociated" (Worthy 2013) from their ecological bases. Nally (2012:37) argues that the advent of "corporate management of food" is deeply connected to "biopolitical strategies for managing life" as they are carried out by political economic powers such as the state. Historically, this kind of "geo-managerialism" is comprised of "processes through which capitalists and state-machineries map, identify, quantify and otherwise make natures legible to capital" (Moore 2018: 237; Scott 1998). In this system, the condition of soil, air, water and wildlife habitats in many agricultural lands has become degraded (Cassman and Wood 2005), and the tendency toward monocultures and industrial agriculture has been deleterious to biodiversity in many agroecosystems (Foster et al. 2010; Wittman 2009; Berry 1977).

Agriculture under the capitalist model has disturbed natural cyclical patterns and instigated linear throughput systems of production and consumption. McMichael (2007: 177) argues that this "reinforces an abstract representation of agriculture as an input-output process" rather than something embedded in local biological processes that replenish the soil and conserve biodiversity. Marxist theorists have drawn from his understanding of this process as a metabolic 'rift' which Marx described as the reduced possibility of metabolism—biotic recycling—of nutrients and fertility through the soil and water as food is transported across great distances from the socio-ecological communities where they originate (Foster et al. 2010; Wittman 2009; McMichael 2007; Moore 2000; Berry 1977). The metaphor of the metabolic rift provides scholars with a framework for understanding how material processes of capitalist political economy underpin a persistent disconnect between humans and our ecological sources of sustenance, especially in modern industrial-agricultural production (Foster et al 2010; Wittman 2009; McMichael 2007). Wittman (2009: 821) contends that agriculture is an integral part of the "metabolic ruptures" between society and nature. She argues such 'ruptures' have instigated environmental degradation and resulted in significant change to socio-ecological relations in rural places (Wittman 2009; see also McMichael 2007; Berry 1977).

Since capitalism as "a way of organizing nature" (Moore 2015: 2) has emerged, capitalist "production ensured that simplification rather than variation was the preferred

ecological norm, and that short-run profit-maximizing strategies were favoured over long-run ecological sustainability" (Moore 2003: 357-8). On agricultural lands, "as artificial, off farm inputs come to matter more and more, so the former intrinsic qualities of the land matter less" (Colin, qtd. in McMichael 2007: 177). Foster et al. (2010) describe capitalism as a system of "rifts and shifts": when the disrupted metabolic process under capitalist production is confronted with environmental degradation, the system tends to move it elsewhere. As the metabolic rift widens, rural-urban cycling of nutrients and water has been progressively disrupted over five centuries of capitalist development, and more and more "spatial fixes" are required (Moore 2003: 358; see also Dempsey 2014; Foster et al 2010; Harvey 2001).

A side effect of this—perhaps a Polanyian 'double movement' (Polanyi 1944)—is the wilderness preservation movement that has emerged and grown since the nineteenth century across North America. Motivated in part by a bourgeois desire to preserve 'untrammeled' spaces for their human enjoyment (Cronon 1996; Deneven 1995), vast tracts of land are set aside for conservation, and by extension kept separate from "terra economica"—the lands meant for agricultural or other kinds of "improvement" (Goldstein 2013: 361). This binary is consistent with the situation where my research was carried out, Inner Island, where lands formally acquired for conservation by land trusts generally do not include management objectives geared toward agricultural use. There are some exceptions, however, which I discuss in Chapter 3.

For eco-Marxists, the metabolic rift and its spatial fixes are features of capitalism that produce nature in specific ways, as I outlined above. Here, nature lives on one side of a binary concept, the other side being human activity. This binary has shaped the governance and management of many landscapes on Inner Island today, as I will show. But it is not the whole story. Another question, as Goldstein reminds us, is "beyond or outside the forces of capital, how else can nature be produced?" (2013: 373). In other words, if the dualism between humans and nature is at the heart of *capitalist* productions of nature, is it also present in *state* productions of (knowledge about) nature?

State Logic and the Metabolic Rift

The work of Scott (1998) illustrates how simplifications of modern statecraft produce and reinforce dissociations between humans and nature, because of the way the state represents the lands and communities it manages. He points to high-modern state rationalities as a key source of the rift. Such rationalities, Scott argues, are facilitated through the institutional technique of simplifying complex information (as, for instance, happens through mapping), rendering places 'legible' and more easily governable (Scott 1998).

Scott illuminates how the process of state legibility erases the innate complexities of the subjects of management. In the material forms this legibility takes—manageable, mapped jurisdictions based on property boundaries—differentiated political-ecological spaces become "empty vessel[s] for governmental power" (Ford, qtd. in Pasternak 2014: 154). Complex ecological systems, like forests, are reduced "through a fiscal lens into a single number" like the revenue yield of an annual timber harvest from a given area (Scott 1998: 12). Diverse socio-ecological assemblages within the place are obscured. Quota systems operating in dairy and aquaculture industries on Inner Island are one example. Small, localized vocations become industrial monoculture operations due to minimum harvest requirements embedded in licenses.[3] On Inner Island, a small scale dairy industry once thrived (Kirk 2002; Isbister 1976; R16 pers. comm.) but is now nonexistent. Most shellfish aquaculture licenses, leases and tenures are no longer held by small, locally-run businesses.

Scott acknowledges the similarities between the logics of state bureaucracies and the drivers of capital accumulation. The problem, for him, is what goes missing in this simplified landscape: "all those trees, bushes, and plants holding little or no potential for state revenue... The forest as a habitat disappears and is replaced by the forest as an economic resource to be managed efficiently and profitably" (Scott 1998: 12-13). Here,

[3] Currently, a shellfish licensee or a dairy operator is required to produce a certain quota of product, or risk their license to operate being revoked (FSF1 pers. comm.). There may be other values on your land, but these are not visible to a state agency whose main goal is to see a farmer fulfil their quota. The result is that people grow a few commercially viable species of shellfish, or cram more cattle into their fields, altering spaces that otherwise might contain much more diverse assemblages of species (FSF1 pers. comm.; CB2 pers. comm.).

he argues, state and capitalist logics coincide, as they are both "resolutely fixed on the bottom line" (ibid.). The state transforms diverse, complex agrarian landscapes into "a uniform grid of homogeneous land," each parcel with a legal owner and taxpayer allowing property and ownership assessment on the basis of scientifically quantifiable terms such as acreage, soil class, crops or yields (Scott 1998: 36). Modern state logic may also render land and its inhabitants calculable in terms of "ecosystem services" (see Lele et al. 2013) or health outcomes, for instance the amount of irrigation water provided by a wetland, or the quality of water as affected by agricultural practices.

Local Knowledges and the Metabolic Rift

The metabolic rift, and capitalist and state knowledges that (re)produce it, change the relationships of people to each other and to the land. Jackson writes about a decrease in the "ratio of eyes to acres" with industrial agriculture (2008: 1376). This results in decreased immediate visibility of agricultural land by local people and translates into a broader "dissociation" (Worthy 2013) with ecosystems overall. In this context, a widespread forgetting has happened in terms of agricultural knowledge; people have forgotten that "eating is an ecological act, and a political act," too (Pollan 2006: 12). Modern agriculture has become increasingly mechanized, and focused on commodity exports serving global markets. Farms are larger but owned by fewer farmers, and connections are lost between people and the lands and hands that feed them (Robin 2014). Mackinnon (2014: 87) discusses how, more broadly, this "collective forgetting" has occurred in North American societies surrounding the historical diversity and abundance of species. Modern industrial agro-ecological landscapes are places where this is visible.

Decreased biological diversity, argue Jackson and Berry, is a corollary of the decrease in the ratio of eyes to acres in agroecological landscapes (Jackson 2008; Berry 2005). On Inner Island, in foreshore areas where not long ago local families worked shellfish leases, fewer and more distant tenure holders now almost exclusively cultivate a few species of non-native oysters and clams. According to local shellfish farmers, ecologists, and other residents, overall biodiversity, especially in oyster and clam species, has decreased alongside the growth of industrial shellfish aquaculture operations (FSF1 pers. comm.;

CB2 pers. comm.; BC Ministry of Sustainable Resource Management 2002).[4] Many places once inhabited and farmed by pioneer families are now either occupied by non-farming residents, or managed by land trusts or state agencies. In numerous once-farmed wetlands that have gone fallow, Reed Canary Grass and other invasive species are dominating native ecological communities (Schooler et al. 2009).

Scott (1998) makes the case that a 'missing link' in the project of land management as it has been undertaken by the state and political-economic institutions can be found in the Greek concept of 'metis'. Metises are the place-specific, practical, non-homogenous knowledges of local people. Scott argues that they contrast with—but also influence—the scientific, technical logic that has come to dominate high modernist discourse and statecraft (Scott 1998). For Scott, the diminishment of these contextual knowledges (and their replacement by standardized formulas legible from the center) is "virtually inscribed in the activities of both the state and large-scale bureaucratic capitalism" (1998: 335). Yet Scott further argues that state planning is always underwritten by the 'unplanned' aspects of socio-ecological systems, and contends that it is "perilous" to ignore this (1998: 348). Scott makes the case that the state "systematically denigrates" (Scott 1998: 332) metises in its projects of simplification and boundary-making. However, what I will argue in what follows, through cases of wetland mapping on Inner Island, is that these metises may actually help to *enable* the state to maintain authority in the spaces it claims to govern. Social movements and practical knowledges of local people—for instance, as they negotiate tensions between conservation and agriculture—influence and complicate the dualistic notions on which the metabolic rift rests, and resist the reductionist representations that sustain it.

Food Sovereignty and the Metabolic Rift

Food sovereignty scholarship (and activism) points to how metises are crucial for understanding (and resisting) reductionist managerialist impacts of states and capitalism

[4] Due to global demand, Manila clams and Pacific Oysters, both introduced in the early 1900s, have become the dominant species for market harvest of shellfish, largely replacing previously diverse native species (BC Ministry of Sustainable Resource Management 2002). While it is wetlands, not the foreshore, that is the main focus sites for this thesis, I come back to the foreshore in the concluding chapter, highlighting Indigenous mariculture practices as a pre-colonial example of a higher ratio of eyes to acres.

on agro-ecosystems (Pimbert et al. 2014; Altieri and Holt-Gimenez 2013). Simply defined, food sovereignty means "the right of local people to control their own food systems, including their own markets, resources, food cultures and production models" (Lin et al. 2011: 2; see also Wittman et al. 2010). This implies centering local knowledges to bring about agrarian reform and equitable redistribution of rights over access to and use of land, water, forests, seeds, and other means of production (Via Campesina 2018).

From a food sovereignty perspective, "food is a modality by which capitalism is lived, and made tangible in everyday practice" (Wittman 2009: 821), and states play a key part in this by determining how lands are rendered available for capital, as I discussed above. Holt-Gimenez and Shattuck emphasize the need to supersede market logic in our theorizing of food regimes. They suggest we should engage with the state both as "complicit in imperialism, but also a potential challenger to it" (2011: 329-330). Advocates of food sovereignty, therefore, work to address power imbalances surrounding modern food regimes by reorienting food provisioning from a primarily centralized state and capital-driven enterprise toward more decentralized, socially just and ecologically sustainable models, often drawing on the wisdom of Indigenous and land-based peoples. At the heart of this effort is incorporating local, place-based knowledge and values in wider political processes that determine material outcomes in spaces of food production and provisioning (Pimbert et al 2014).

Wittman (2009: 821) places social and ecological life as central points of departure for analyzing food systems through a food sovereignty lens. Local agricultural places in this framework can be conceived relationally, as nodal points of interconnection (Massey 1994) through which multiple historical, spatial, and social processes intersect and articulate with one another. Wittman (2009: 821-822) theorizes that agro-ecological transformations and movements for food sovereignty are ways to "challenge the underlying law of motion of the metabolic rift" and bring nature and people back in to agriculture and the food system (Wittman 2009: 821). For her, "reworking the metabolic rift" requires new forms of "agrarian citizenship" in which people actively participate in determinant political processes surrounding land they use and rely on. This will require a

higher ratio of eyes to acres, and mobilizing local knowledge in decision-making about land and agro-ecosystems (Wittman 2009; Pimbert 2006).

Food sovereignty, in this way, is about much more than changing how food is grown. While sustainable agro-ecosystems "depend on the conservation of biodiversity at both the farm and the landscape level" (Lin et al 2011: 4), underlying food sovereignty is the need to re-embed food systems in the socio-ecological and political contexts that give rise to them. Perfecto et al. (2009) similarly argue that the interconnected social, ecological and political dynamics of agriculture and ecological conservation cannot be parsed from one another. From this perspective, we can begin to destabilize the colonial and capitalist foundations of current globalized "food regimes" (Holt-Gimenez and Shattuck 2011; Fairbairn 2010) which bifurcate the one from the other, and refocus on the "relational geographies" of agroecology (Springer 2011: 527).

Food sovereignty scholarship explores how political economic institutions intersect with local, place-based knowledges to shape the political-ecological relationships and connections between food, communities, and the land and its metabolic processes (Wittman 2009). The current thesis explores this process in relation to overlapping political and ecological discourses of agriculture and conservation in contested wetland sites on Inner Island. I am interested in how state and local co-productions of knowledge about Inner Island wetlands contribute to the rift between conservation and agriculture. A corollary objective of this research is adding to a growing body of work focused on the relevance of food sovereignty discourse and practice in the settler colonial and Indigenous contexts (and their overlapping geographies) in BC (see Wittman and Desmarais 2014).

Research Context - Inner Island, Denman Island, Taystayic

This thesis research took place on Denman Island, in the north Salish Sea. The Salish Sea is an extensive, international network of coastal waterways that includes three major bodies of water: Strait of Georgia, which extends from the southern tip of Vancouver Island north to Desolation Sound; the Strait of Juan de Fuca; and, Puget Sound. It also includes adjoining waterways surrounding the San Juan Islands. The Island is located in the traditional unceded homelands of several First Nations, including the Pentlatch and

Island K'omoks, Qualicum, and Tla'amin Nations. It is between Baynes Sound and Lambert Channel, about 30 kilometres south of the cities of Courtenay and Comox, in the estuaries of the Puntledge (i.e. 'Pentlatch') and Big Qualicum Rivers.

Settler-Colonial Context

Taystayic is the Indigenous name for Denman Island, according to the K'omoks and Qualicum First Nations (Everson 2003), which means "Inner Island" in the Pentlatch language.[5] In this thesis, I choose to use the name Inner Island, except in cases where the colonial name—Denman—is used in research texts (for instance, a legal document or a quote). I do not here use the Pentlatch name, since there is no local consensus about the spelling or pronunciation of the word, and because I lack sufficient knowledge of the language to use it respectfully. Following Rose-Redwood (2016: 194), the use of 'Inner Island' here is meant to unsettle the "normalization of the colonial imaginary" as "embodied in the mundane spaces of everyday life," such as place names.

European imperialism in the Salish Sea massively disrupted the indigenous societies that existed here for millennia prior to the arrival of European settlers (Stewart 2017; Recalma-Clutesi 2003). Many indigenous people were killed through the introduction of disease and displaced by the European appropriation of indigenous lands. Widespread oppression and loss of traditional ecological knowledge, practices, and languages have followed in the wake of a regime of appropriation and settlement of Indigenous lands (Recalma-Clutesi 2003, Stewart 2017; Everson 2003; Williams 2006). Recognizing this history, a growing decolonization movement led by Indigenous peoples aims to re-center and re-empower Indigenous cultures, politics, and economies in this region.[6] Yet, the ongoing legacy of colonialism lives on through the violence of territoriality (Thom 2014; Wolfe 2006). I acknowledge that this colonial legacy affords me substantial privilege, both as a researcher and an inhabitant of this place. My work aims to confront the roots of

---

[5] The last Pentlatch speaker, Chief Joe NimNim, died in 1940 (Everson 2003), but the nearby K'omoks and Qualicum First Nations today include descendants of the Pentlatch People, and members of K'omoks First Nation acknowledge it as the correct name (Rempel 2018). The use of this name is increasing, though with multiple different spellings and pronunciations. Neighbouring Hornby Island is known as the Outer Island.

[6] Such as, for instance, in scholarship and education (see Holmes, Hunt and Piedalue 2014; Hunt 2013; Aquash 2013); in re-naming of places like the Salish Sea (see Tucker and Rose-Redwood 2015); or in the removal or renaming of monuments celebrating Canada's colonial legacy (Woo 2018; University of Victoria 2017).

this privilege. In this settler-colonial context, Indigenous communities remain deeply connected to Inner Island through the lands, waters, histories and cultural practices that at the heart of this research, but as I will show, these ties are all too often sidelined or made invisible by state decision-making processes.

The Islands Trust is currently the local government and land use planning authority (under colonial law) for Inner Island. The Trust is a federation of local governments serving islands in the north Salish Sea—13 major islands and more than 450 smaller islands, covering about 5,200 square kilometres of land and water as far north as Comox (Islands Trust 2018). In Chapter 2, I provide more detail about the colonial governance structure surrounding Inner Island and in the Salish Sea. Local First Nations remain politically and economically connected to Inner Island through negotiations over rights to traditional lands and resources. For instance, the K'omoks First Nation is in Stage 5 of its Treaty negotiation process with the BC government, and identifies Inner Island as an integral part of the Nation's territory (K'omoks First Nation 2018).

Inner Island is presently a mainly rural community with a year-round population of approximately 1,160 people (Census Profile 2016), slightly increasing in the summer months. It has long been an important place for food provisioning. The Qualicum First Nation nicknamed it the 'supermarket' for its abundant shellfish, berries, fish, stinging nettle, cedar and cedar bark, and other important plants used for medicine, food or tools (Recalma-Clutesi 2003). Today, in the settler colonial context, it remains an island of agriculture and food provisioning primarily for settlers as well as a place highly valued for ecological conservation.

An Island of Agriculture

The Denman Island Farm Plan (AEL Agroecological Consultants 2011) describes the agricultural characteristics of the island, and reports 99 individuals who produce food or agricultural goods. Most farming is small scale, mixed production. Many people raise livestock, poultry and fowl on a small scale for personal consumption or sale. At least two farmers raise larger numbers of beef cattle for commercial markets, and there are a number of farmers who raise pigs and sell the meat. There are at least three commercial nurseries on the island (AEL Agroecological Consultants 2011; Denman Island Growers

and Producers Alliance 2018) and at least eight commercial fruit and vegetable producers on the island (Denman Island Growers and Producers Alliance 2018). Forty-six percent of the land area of Inner Island is in the BC Agricultural Land Reserve (AEL Agroecological Consultants 2011). Over 90% of the west shoreline is occupied by active commercial shellfish aquaculture leases or tenures (ADIMS 2018). Many people practice agriculture non-commercially as avid gardeners. Some residents gather or hunt wild foodstuffs for their own consumption or for sale as well as cultivate fish or harvest wild shellfish, fish and seaweed (interviews, various, pers. comm.).

In addition to the many farms, farm stands, roadside egg sales coolers, and a bustling artisan farmers market, there are a growing number of value-added commercial food-related businesses on the island.[7] The Growers and Producers Alliance is a membership based non-profit society formed to support local control of the food system. Their motto is 'Denman Feeding Denman' (Denman Island Growers and Producers Alliance 2018).

An Island of Conservation

After its establishment in the 1970s, the 'preserve and protect' mandate of Islands Trust set it apart from more pro-development governance institutions (M'Gonigle, 1989). The land area of Inner Island is about 51.7 square kilometres, about 26% of which is now formally protected for ecological conservation through several legal mechanisms, which align with Islands Trust policy and local bylaws as well as the Official Community Plan.[8] A great deal more land is informally protected through ongoing stewardship activities of community members.[9]

Denman Conservancy Association (DCA)—a mostly volunteer organization established in 1991 and supported by over 240 members—works toward its 'protected

---

[7] Including a chocolate factory, a bakery, a vegan butchery, a general store, an ice cream stand, one seasonal and two year-round cafes, a tea shop, a burger shack/produce stand, a cider house and a winery.

[8] These include management as Provincial Parks, acquisition for Nature Reserves by Islands Trust Conservancy, or Denman Conservancy Association (DCA) conservation areas, and Conservation Covenants registered on the title of private and provincially-managed lands.

[9] For example, stewardship 'pledges' were made by the landholders of 114 properties totaling 1158 acres of land in 1997-99, as part of a DCA outreach project. 82 of these properties contained wetlands (DCA 2018c).

areas network' vision[10] through land acquisitions, public education, ecological research, and promoting a strong stewardship ethic in the community. The Association for Denman Island Marine Stewards (ADIMS), established over 20 years ago, works toward marine environmental protection. ADIMS advocates for ecosystem-based management in Baynes Sound, which is designated as an Ecologically and Biologically Significant Area. Together with another island-based committee, the Marine Guardians, they organize beach cleanups and serve as local watchdogs over the large shellfish aquaculture and herring industries.

An Island of Tensions

Within the context of these shared geographies, tensions exist between conservation and agriculture on Inner Island. On one hand, there is great support and advocacy for local food production, and on the other are ongoing efforts of conservationists to protect ecosystems. Tensions between the two were revealed through interviews with residents, and through my own participation in island life—including both agriculture and conservation—over the five years of this research.

These tensions are not ameliorated by the local land use and governance system. Rather, they seem to be further provoked by state institutions who conceptualize wetlands through dualistic policies and based on settler colonial history, as I discuss in chapters 2 and 3. According to Stinchcombe (1999), the unique governance and land use planning of Islands Trust is a key factor in the strong ecological imperative on the islands despite increasing development pressures across the region. But, as I will show, land use decisions, even when made at the Island level, are constrained by local knowledges and interests, and by the state and political economy. In many cases—and spaces—how conservation values and goals can formally integrate with agricultural activities on Inner Island is an outstanding question.

[10] This vision for a 'protected areas network' on the island (Silva Ecosystem Consultants 1998) arose in the late 1990s in response to extensive logging of about a third of the island (DCA 2018b; C2 and CB2 pers. comm.).

Wetlands as Critical 'Sites' in this Research

The methodological commitments of political ecology rest on the conviction that there are vital elements of nature-society relations that cannot be understood from a social or spatial distance, but must be garnered via open-ended, qualitative methods focusing on "critical moments" (Khan 2013), and specific places or 'sites' that can tell us about wider processes (Magnussen and Shaw 2002). As wetlands, in particular, emerged as places of tension between conservation and agricultural interests, I chose to center this thesis on wetlands to examine how power and knowledge relations embedded in these places perpetuate (or collapse) divisions between agriculture and conservation. Magnussen (2002) emphasizes how a focus on sites allows researchers a broader purview than would be possible through the sole study of 'texts' commonly employed in discourse analysis in political theory. Sites can provide windows into little, everyday, perhaps 'out of the way' places where the world is made and remade through the enactment of place-based politics (Magnussen & Shaw 2002). McCarthy and Prudham, likewise, posit that "only specific case studies can unpack the complex interplay between neoliberal projects, environmental politics, and environmental change" (2004:612).

The decision to focus this thesis on wetlands emerged mainly from interview data analysis. Wetlands were repeatedly mentioned and named, and respondents gestured toward them on the maps, as places with important and overlapping food/agriculture and conservation values. Combined with current matters arising in local policy discourse and debates, and the prominence of water and wetlands in my initial dotmocracy survey (described in Research Methods and Table 1), wetlands emerged as a key theme. Particularly through my interviews with residents, certain wetland sites emerged as places with high tension between conservation and agricultural interests. So, I focus my research on wetland sites as entry points into broader political analysis. Brody counsels that a researcher must "maintain a sense of universal concern without losing a feeling for a particular place" (1981: xiv). Keeping this in mind, to understand how these situated knowledges shape wetland political-ecologies on Inner Island, it was also necessary to jump between scales, from this local 'site' to its surrounding political apparatuses.

While this thesis takes wetlands as the primary focal point, I also learned about foreshore sites that mirror key issues discussed. The foreshore could be a point of departure for future research about political-ecological tensions between conservation and agriculture, and also provides another example of a landscape in which there are complex, overlapping agroecological values. I return to this point in the concluding chapter.

Research Methods

Overview

In this thesis, I employed a mix of methods to investigate my research questions. I reviewed academic literatures and popular discourses focused on the interplay between conservation and agriculture, including policy documents, maps, videos, correspondence, and the progress of social and political movements. I focused largely on Inner Island, but also engaged many texts relevant at broader scales.

Primary qualitative data for this research included:

1. An extensive literature review of primary and secondary documents - analysis of Inner Island, including regional maps and reports related to conservation and farming (including aquaculture), qualitative, quantitative and visual 'texts' such as historical accounts, minutes from meetings of local organizations, and local and regional policy documents.
2. In-depth interviews (1-2 hours each): I interviewed a total of 47 people, all except two of whom produce some of their own food, to varying degrees. I conducted face-to-face, semi-structured, audio-recorded interviews with a total of 44 participants from Inner Island (16 interviews with individuals and 11 couple interviews and two group interviews, with 4 and 2 people, respectively). I spoke with one person in person and two people by phone who do not live on Inner

Island. The stories shared with me represent unique 'local spatial knowledges' of this community.[11]

3. Direct observation of, and participation in, farming and conservation activities on Inner Island and the Salish Sea region over five years. This allowed me to engage directly with people who actively negotiate the way land is managed and governed, both for conservation and for agriculture.

Identifying Research Participants and Themes

As a participant in various community organizations, including the Growers and Producers' Alliance, the Farmer's Market, the D.I. Transition Society and Seed Savers, the Denman Conservancy Association and the local birders group, I was aware of the vibrant farming and conservation communities on the island before starting research. I solicited participants through public outreach (public presentations and farmers market table, and an ad in our local newsletter), with island residents (full or part time, or seasonal).

I set up a table at the local farmers' market for 4 weeks prior to my interview period to explain my project to the community, and during this time asked as many people as possible to participate in a 'dotmocracy' exercise to help inform the thematic focus of my research and to identify a sense of the wider community values surrounding the overlapping spaces of food and conservation (145 responses were generated from this visual survey). Since investigating the connections between food provisioning and conservation is a huge topic, I asked people to 'vote' for the themes that they thought were most important in this investigation, by placing three dots on a poster showing 15 general themes (table 1). These themes were chosen based on my preliminary research and literature review, and informed by my own knowledge of Inner Island agriculture and conservation. Acknowledging that a different researcher would have created a different list, and working with a massive overarching topic with many possible areas of focus, this

[11] Local spatial knowledge (LSK) is "innate and sustained knowledge about the land, identifies issues of immediate significance, and encodes the information about the environment in a language a region's inhabitants understand" (Ashley et al 2004; see also Duerden and Kuhn 1996).

exercise was a way to 'start somewhere' in a way that felt rooted in community concerns. At the same time, I think it gave the community a sense of my intention to include community views within my research from the outset.

I also made presentations about my research to the Local Trust Committee (Islands Trust), the Growers and Producers Alliance, Denman Conservancy Association, and at Seedy Saturday (our annual public community seed-exchange), and reached out personally to members of island organizations related to food or conservation to let them know about my project, including the K'omoks, Qualicum and Tla'amin First Nations.

Table 1. Dotmocracy Results

Rank (high to low)	Theme	Number of Dots (total 145)	Percent of total
1	Water, watersheds, and water management/conservation	26	17.9
2	Soil building & land / pasture management	22	15.2
3	Pollinators	16	11.0
4	Education / training; local (ecological) knowledge	13	9.0
5	Food rescue & waste reduction	11	7.6
6	Bioregional economies & local / regional provisioning	10	6.8
7	Seed saving & food security / food sovereignty	10	6.8
8	Energy	8	5.5
9	Marine food & life	8	5.5
10	Polycultures & companion planting	7	4.8
11	Access to land	5	3.5
12	Animal husbandry	3	2.0
13	Wild crafting & medicines	2	1.4
14	Preserving farmland	2	1.4
15	Forestry / agro forestry / food forestry	2	1.4

Interviewees

Through the above channels, I found no shortage of interview participants from Inner Island. Many people were keen to share their knowledge with me. After finding initial respondents from Inner Island, through snowball sampling I identified an additional three participants from off island who had specific knowledge of a particular issue raised in interviews, and they agreed to participate in the study (see criteria below). I created a list of standard questions. Since most of the standard questions were geared specifically toward Inner Island geographies, a set of alternative questions (based on similar themes, but without the specific references) was developed for off-island interview participants. Two phone interviews with individual respondents from off-island were conducted for which audio-recording was not possible. Hand-written notes were taken throughout interviews. At the discretion of the participant, interviews were held either at participants' homes or in a rented office at the Old School community building. Most lasted between one and two hours.

Since some interviews included more than one person at a time, and due to the small, tight-knit island population, it was not possible to ensure total anonymity of responses. This was especially true when reference was made to particular concepts, geographies or other community members. For this reason, though some participants agreed to be named in the research, I decided to carry out the research in such a way as to protect the confidentiality of individual responses, not associating specific names or identity descriptors with any quotes or citations in interviews or in my final writing. Interview citations throughout the thesis use number and letter codes in order to provide some context for individual responses while protecting confidentiality. For example, the citation "FC1 pers. comm." refers to Farmer/Conservationist No. 1, whose identity is recorded in a separate spreadsheet that is kept confidential.

In an attempt to bound my study within a cohort that I could reasonably engage in the time allotted for interviews, I set out the following criteria for participation, recognizing that the focus of this research may also be of interest to others in the community:

1.A) Involved in Agriculture, Growing or Provisioning Food: The participant self-identifies as someone who produces or provisions food on Inner Island. This could

include conventional and organic farmers, market gardeners, nursery owners, subsistence gardeners, wild food foragers, hunters, aquaculture participants, food manufacturers, gleaners, etc.

OR

1.B) Active in Conservation Activities: The participant self-identifies as someone who participates in the activities of a group, organization or initiative on Inner Island with a specific focus on ecological conservation. It was notable that nearly all interview participants who self-identified in this way also self-identified with the above criterion.

AND

2) Have a Direct Connection to Inner Island: The person is a resident of the Island, or has a connection to local policy, conservation, agricultural or other community endeavours.

Interview participants signed consent forms that were approved by the Tri-Council Ethics Board of the University of Victoria. All participants had the opportunity to withdraw specific contributions and/or withdraw completely from the study at any time.

My overall aim for interviews was to better understand the relationships between food provisioning/agriculture and conservation on Inner Island by asking those working on and for the land. Interestingly, all but two of my 47 interview respondents reported being active in growing or provisioning their own food in some way, albeit to varying degrees. In addition to being active in agriculture and gardening, or different kinds of food provisioning such as hunting, wild-crafting or gleaning, many of the participants also identified as conservationists, activists, educators, couples, mothers and fathers, elders, etc. Participants ranged in age from about twenty-five to over ninety years of age. Though not a criterion for participation, all but three of the participants were holders of property title on the Island, or had long-term access to land, at the time of interviews. I did not ask people about their identity (i.e. questions relating to race, occupation, family group, or occupation), except to ask whether they self-identified as a farmer or conservationist. Interviews with people active in both conservation and food provisioning allowed me to put conservation and agriculture into conversation with one another in order to better understand their overlapping and conflicting terrain, and the ways that people navigate it.

The vast knowledge of respondents was astounding. Interviews were conducted in a semi-structured format, and most proceeded as casual conversations that first focused on values people have related to food provisioning. Respondents identified different foods they acquire from the island and I invited them to indicate where those come from on a map. Then, the conversations moved into a discussion of the places and activities that respondents identify as important for ecological conservation, again with the option to place these on the map. Finally, this usually led into further discussion about whether and how the values and spaces people identified overlap. This could mean physically overlapping—i.e. they share geographical space visible on the maps—or in another way, such as through practices, like water conservation or avoidance of pesticides.

The reference maps were an important part of my methodological approach. The principal map of the island included topographic lines, and basic features such as water bodies and roads. It did not include cadastral information (property boundaries), nor administrative data such as zoning or land use designations. I also brought a selection of maps for reference to specific things like the Agricultural Land Reserve or island watersheds. Respondents were invited, if they wished, to record information on any of the maps when responding to the questions, though most did not. The main objective was not to record specific geographical information, but rather to provide a visual guide and reference point for questions related to the island's geographies and political ecologies.

The maps proved useful as a visual focus for many participants, and many respondents provided positive feedback about using them. They also helped to confirm the general locations of specific wetlands as important sites, and this enabled more in-depth research following the interviews. When respondents used the maps, I did my best to take notes about how they did this for reference when interpreting transcribed audio.

The benefit of this type of process is that map-based interviews consider and incorporate qualitative information that would be left out of solely spatial representations, and for representing spatial information that may be missed in a traditional semi-structured interview process (Tobias 2009). Since this 'map biography' method emphasizes the process as much as the end product (Tobias 2009), it can also feed into other community building or knowledge sharing processes. Community cartographers argue that such processes can help build Community Information Systems, which

document traditional and community knowledge (Corbett et al 2006:17) and can be used to support social change (Cochrane and Corbett 2018). I hope that this research, which involved gathering a great deal of invaluable local knowledge, might contribute to such a project on Inner Island. It would be possible, and I think very interesting, to produce a composite mapping of the collective knowledge garnered from these interview transcriptions. While this was beyond the scope of this thesis, it could be a worthwhile future community-engaged mapping project.

Analysis of Interview Data: Transcription and Coding

All audio recorded interview data was transcribed by the researcher using word processing software, and handwritten notes recorded in transcribed files. Transcribed interview data was analyzed following completion of most of the interviews. Audio files were reviewed and additional notes made, allowing for additional clarity in interpreting data, including tone of voice, hesitations, and other oral cues. Each transcript was reviewed extensively while searching for and coding for emergent and pertinent themes and important details. These themes were mostly recorded on paper and later transcribed into transcripts and spreadsheets. Reviewing interview data revealed a thematic template through which the data could be further analyzed and brought into conversation with the conceptual frameworks used for this research.

Sensitivity of Language and Terminology

Selecting the most appropriate words for coding when interpreting much of the field study data was regularly a challenge, both in the interview process, as well as in the writing up. I did my best to choose language that was informed by principles of respect and dignity for those I describe in my written and oral language. In my interviews, I invited questions from participants about anything that was unclear. When I felt unclear about a response, I strived to ask for clarification in the moment. I intended to take an approach in all my communication that was supportive of a respectful and safe process of sharing, and made a point of using nonviolent language including sensitivity about the semiotics of diverse lifeways and worldviews.

I acknowledge that expressions of western colonial law and policy are ill-equipped to satisfactorily address or encompass the widespread impacts of colonialism, and the languages used therein may often perpetuate colonialist understandings. My research takes place on unceded territories of several First Nations, amidst contestation over colonial language and terminology related to land, ownership of property, and specific places (see Tucker and Rose-Redwood 2015). Therefore, I choose wherever possible to refer to land 'holders' instead of 'landowners' and to acknowledge indigenous place names that emerged through this research. For example, as I have already mentioned, I chose to use the name 'Inner Island' in writing up my research out of respect for ongoing indigenous relationships to the research place.

Positionality and Role of the Researcher

Like many political ecologists, I seek not just to explain social and environmental processes, but to construct an alternative understanding of them that could incite change because, after all, "the point is not just to understand the world; the point is to change it" (Moore 2015: 8, paraphrasing Marx). As a performative practice, academic research is activism; it participates in "bringing new realities into being" (Law and Urry 2004:396). Therefore, we need to reflect on the concepts we use and how these might help or inhibit worlds from being made. By setting out to understand how divides between agriculture and conservation are maintained on Inner Island, I hope to offer some concrete strategies that can attenuate the 'rift' there.

My positionality has shifted through the course of my thesis research, but all along I have participated in farming and conservation on Inner Island. I recognize that my research takes place in an active, dynamic, diverse community—about which I care deeply. I came to the island seeking agricultural opportunities and have begun growing my own food on a small scale and helping friends on their farms. When I conducted most of my interviews, I was not formally affiliated with any organization. Now I am the Land Manager for Denman Conservancy Association and a board member of the Growers and Producers Alliance. I have also served a term on the local government's Advisory Planning Commission, a community group tasked with reviewing and providing feedback on Islands Trust development proposals. These experiences and involvement in the life of

this community have led me to ponder issues of access, political boundaries and my own direct experience of negotiations over 'rights to the land.' Ongoing processes of reflection are an important part of this: Where do I pick mushrooms? Where do I collect seaweed? Where (and how) do I grow vegetables (on whose land, with what nutrients and what water)? What impact does this have on others, including other-than-human participants in the foodshed?

Active research involves "being explicit about the worlds we want our research to contribute to and reflecting on how concepts we use might help or inhibit this agenda" (Cameron and Hicks 2014: 53). My agenda in this research is partly to help bring into being a world in which communities have more tools for understanding the political, legal, and state influences on their lives and the agroecosystems in which we live and by which we are sustained. I reflect on what dynamics are currently affecting these influences, while imagining new concepts for reworking them (such as foodshed mapping discussed in the concluding chapter). Holt-Gimenez argues that "to advance sustainable alternatives we need to dismantle the social injustices holding them back" (2015 np). This will include dismantling certain power structures and knowledge systems that 'fix' power vested in colonial and capitalist ontologies and histories. For me, success in this research means opening up new conversations with those who share my home in the Salish Sea about how we might begin or continue to dismantle the social injustices holding us back from repairing the rifts that the state and capital create in the socio-ecosystems in which we are participants.

Limitations

I did my best to ensure wide solicitation of diverse participants for interviews but recognize that recruiting participants from the farmers' market and through community organizations may have limited the overall representativeness of the study group. For instance, this approach did not lead to interviews with First Nations people. I requested interviews with representatives of K'omoks First Nation by email on two occasions, and phoned Qualicum and Tla'amin First Nation band offices, however I was not successful in arranging interviews. I acknowledge that the lack of a personal connection to these communities and limited capacity to respond to such requests were likely factors. The

lack of Indigenous perspectives and knowledge of the ongoing story of food provisioning in the Salish Sea is a shortcoming of this research.

There were some limitations surrounding the maps used in interviews. The main map was a topographical map that presented Inner Island through a particular Cartesian lens. Though unintended, in one sense, this could be seen as an implicit form of top-down influence of the responses. Though the map exercise was helpful in some ways for participants, in that they were able to visually anchor their responses to questions with a geographical focus, presenting a particular representation of the island may still have influenced participants' responses in particular ways. I tried to balance this by also including other kinds of mapped renderings such as those of Inner Island that were included in the Islands in the Salish Sea Atlas (Harrington and Stevenson 2005). Map-based processes will always be challenged by the fact that any mapped representation and the way it is interpreted is a product of the particular biases of both map user and cartographer (Tobias 2009). Similar map-interview processes in the future could perhaps involve the co-production of a map by participants as part of the interview process to help ensure representations used to anchor 'places' of importance are in alignment with the participants' own values and epistemologies.

There was some sensitivity around some of the place-based questions, which limited participant responses and constrained the overall usefulness of some data. For instance, some respondents were protective of local knowledge about their food, for instance about harvest areas, water sources, practices used, or particular contested sites where there has been conflict over land use. In some cases, I was still able to learn about the general themes of such issues by encouraging discussion without reference to any specific places or people. Despite the constraints on the data resulting from sometimes guarded responses, this limitation proved to be an instructive theme in its own right—the fact that people are protective of some forms of their local knowledge is an important part of the story that emerged throughout this research, as I discuss in the following chapters.

Though I recognize—along with many research participants—the importance of the foreshore as a site of contestation between conservation and agriculture, I could not include an in-depth analysis of this site as part of this thesis. Only a few of my respondents had a direct role in shellfish aquaculture activities (for commercial or

personal-use harvesting), and I was not able to interview anyone from the BC Shellfish Growers Association or any of the several First Nations with an interest in the foreshore. Future research about the foreshore as a site of tension between conservation and agriculture would be worthwhile. Some of the foreshore cases I learned about in many ways mirror similar issues discussed in the context of wetland sites, which I return to in the conclusion.

Looking Ahead: Thesis Structure

Following this introductory chapter, I explore the tensions between agriculture and conservation by focusing on empirical findings surrounding Inner Island wetlands (chapters 2 and 3).

In chapter 2, I investigate Inner Island wetlands, narrating findings about their important and overlapping conservation and agricultural values, as gleaned from interviews with residents, and highlighting tensions between the two. Here we see wetlands as complex components of the landscape 'matrix'. I contextualize the local values about wetlands within the multi-scalar and inter-jurisdictional political economic apparatus that surrounds them. I provide case studies of two wetlands, to illustrate how the tensions between conservation and agriculture are defined and made legible—visible—within the surrounding policy apparatus. I consider what is—or is not—'officially' a wetland on Inner Island, and who has power to decide this. I discuss how the processes through which wetlands are made visible engender material outcomes by informing how they can be governed and managed. Mainly drawing on the work of Scott (1998) and Blomley (2016; 2005; 2003; 1993), I argue that metis—the knowledge and values of local people—and its intersections with the institution of property, are integral to state legibility of, and consequently power over, wetlands.

In chapter 3, I explore the historical elements of the process of making wetlands legible to the state. I ask, how are tensions around the classification of wetlands heightened when the history of wetland use involves agriculture? I discuss the historical dualism between humans and nature that persists in current conservation philosophy and practice in this part of the world. Case studies show how settler agricultural history is the basis for

defining permitted land uses within three wetlands. This settler colonial historical baseline exempts these spaces from environmental protection policies despite their widely-recognized conservation values. I argue that this prioritization of agriculture has the effect of maintaining the dualism—the rift—between conservation and agriculture, and this is misguided because such political valorization of agricultural over conservation values neglects to recognize the complex nature of—and knowledges surrounding—wetlands. It also normalizes the settler colonial historical timeframe as "the" baseline from which such categories are derived.

In the concluding chapter, I look beyond this research by gesturing to ways communities might re-braid the streams of conservation and agriculture and close the rift between them. I highlight strategies emerging from food sovereignty and critical geography scholarship and activism that could provide opportunities for empowering local communities to carry out ecological governance that better meets their unique needs and values. In the context of powerful political economic institutional knowledge-making about socio-ecosystems, these efforts point to a "politics of possibility" (Springer 2016 np; see also Gibson-Graham 2006) that reaches beyond the reductionist and dualistic political economic logics of capitalism and settler colonialism.

Chapter 2: What Wetland? State Knowledge-Making and Wetland Visibility

Introduction

Wetlands, because they support diverse species assemblages and ecological functions, are highly valued for conservation (LePage 2011; MacKenzie and Moran 2004).[12] Throughout this thesis research, the ecological importance of wetlands was identified generally by nearly all interview respondents, and specific wetlands were identified as important for conservation in two thirds of the interviews. Wetlands are also highly valuable for agriculture. In the majority of interviews with farmers, wetlands were cited specifically for their agricultural use values such as provision of accessible freshwater for irrigation, or their potential to be altered (e.g. drained) to create flat, humus-rich fields.[13] Agriculture is a leading cause of wetland degradation, globally (LePage 2011); ecological conservation values are often diminished with the agricultural use of wetlands. Because of the values placed on wetlands for both conservation and agriculture, a tension—a rift—exists between conservation and agricultural interests, which persists despite some shared values and overlapping geographies.

What maintains this rift? Specifically, how are tensions between agricultural and conservation values perpetuated through knowledge-making processes (of the local community and the state) related to wetlands on Inner Island?[14] To investigate these questions, I studied the discourses surrounding wetland sites, drawing from interviews with local residents, farmers and conservationists, and putting these interview results in conversation with state policy and planning apparatuses.

In Section 1, I offer a tour of Inner Island wetlands, narrating findings about their important and overlapping conservation and agricultural values, as gleaned from

[12] Hereafter in this chapter 'conservation' means the conservation of ecosystems and biodiversity.

[13] In this chapter, I focus on agriculture, recognizing that other forms of food provisioning such as hunting or gathering of wild foods are also important and take place within and beyond Inner Island (wetland) landscapes.

[14] I use the term knowledge-making to describe the way that communities and institutions, including the state, create, use, classify and organize information. This includes policies such as those laid out in Section 2.

interviews with residents and various policy and land use planning documents and maps related to Inner Island wetlands. This section highlights tensions between conservation and agricultural values in wetlands, and sets the stage for understanding wetlands as complex components of the landscape 'matrix'. In Section 2, I contextualize the local values about wetlands within the multi-scalar and multi-jurisdictional political economic apparatus that surrounds them. In Section 3, I provide case studies to illustrate how the tensions between conservation and agriculture are related to how they are defined and made legible within the surrounding policy apparatus. I consider what is—or is not—'officially' a wetland on Inner Island, and who has power to decide this. In Section 4, I discuss how the processes through which wetlands are made visible engender material outcomes by informing how they can be governed and managed. Drawing on the work of Scott (1998) and Blomley (2018; 2003), I argue that metis—the knowledge and values of local people—as well as the intersections of local knowledge with the institution of property, are integral to state legibility of, and consequently power in, wetlands.

Section 1 - A Tour of Inner Island Wetlands

Inner Island (a.k.a. Denman Island) is distinctive as an island in the Salish Sea with a large number of wetland and freshwater ecosystems in proportion to its total area. The three-dimensional schematic contour map of Inner Island (Figure 1) was created by a local biologist to show the topography that enables these precious wetlands to form. Approximately 6% (306 hectares) of Inner Island is comprised of surface water wetlands and freshwater ponds or lakes (Islands Trust 2011).

Recognizing this unique geography, Inner Island residents have long acted as stewards of the island's rich and extensive sources of freshwater and widely acknowledge its importance in my interviews. As one person stated, "Denman is so lucky in the amount of freshwater that we have," since wetlands are known to be "hugely vital to the health of the planet" (FC1 pers. comm.). Islanders recognized that a "starting point for ecological conservation is to protect surface water drainage… and all of that is influenced by what happens in the wetlands and uplands" (FC3 pers. comm.). For many, wetlands are "the most important" ecosystems to conserve (CB1, FC1 pers. comm.). In the following

section, I outline the important values wetlands hold for Inner Island people, as gleaned from interviews and from my ongoing participatory research in this community over five years.

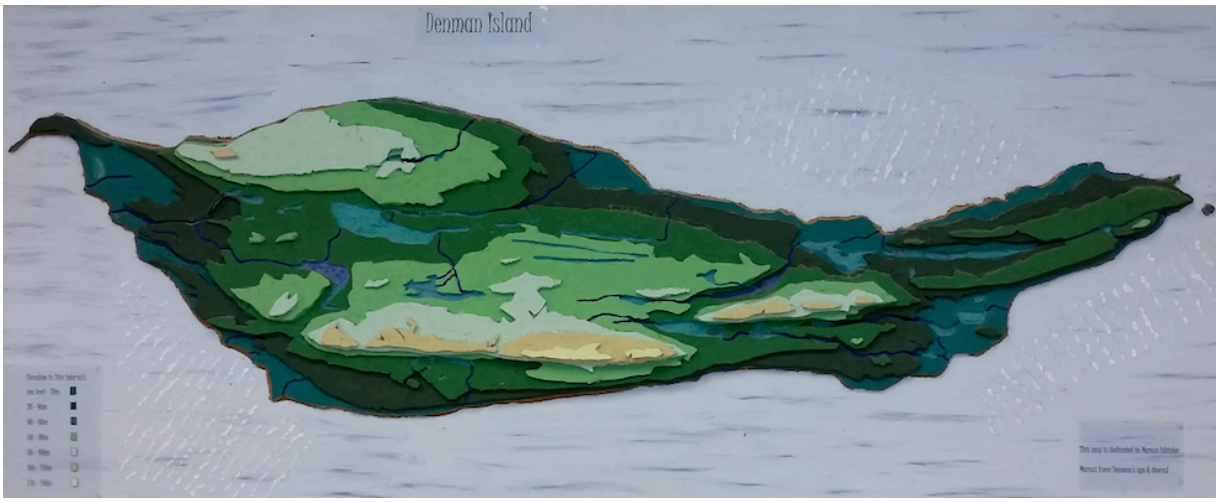

Figure 1. Denman Island: 3D Elevation Map[15]

Agriculture and Conservation Meet in Inner Island Wetlands: Interview Results

In this section, I highlight themes from interviews to demonstrate the ways wetlands are important to Inner Island people. Some of these themes also intersect with other academic research focused on wetlands, as I discuss.

Since the arrival of European settlers on Inner Island, wetlands have been altered for agriculture through ditching and draining. As early as the 1870s, settlers began occupying and clearing land for timber, and using wetlands to cultivate root crops and fodder for dairy cattle (Isbister 1976; Kirk 2002). The historical importance of draining and using wetlands for cultivation was mentioned repeatedly in interviews. One respondent pointed out some of the most important historical farming areas on a map: "The settlers tended to drain wetlands… Morrison Marsh used to be potatoes, and the Madigan [Marsh] is the same, and these wetlands down here [pointing to the South Lacon Marshes]" (C1 pers.

[15] Produced by islander and biologist Jenny Balke, for the *Islands in the Salish Sea* mapping project and Atlas (Harrington and Stevenson 2005). The map is 3 metres long. The top-left corner of the figure points approximately north.

comm.). Draining wetlands for agriculture still happens today, and it is controversial amongst islanders.

Islanders do not all agree about whether draining wetlands should take place, whether or not it is legal. Farmers with land that is seasonally flooded explained to me their need to drain wetlands to make their land viable for agriculture: "I drain my land. But I don't necessarily lower the water table, so I have a degree of sub-irrigation" (CF1 pers. comm.). Others feel "draining wetlands to get agricultural land is a very bad idea" (C2 pers. comm.). The reason is that, "those wetlands may give you a short burst of productivity for a while, but they're not good for agriculture long term" due to their underlying ecological composition (C2 pers. comm.). Many wetlands are peat-based and highly acidic, requiring the addition of nutrients and soil amendments to maintain long-term productivity for commercial agricultural crops. Drainage of peatlands also results in peat oxidation, which causes subsidence and switches peatland systems from carbon sinks to carbon sources (Verhoeven and Setter, 2010: 161).

Using wetlands for irrigation is an important value named by six farmer respondents, who emphasized how crucial local wetlands are for their businesses and livelihoods. A few of these respondents expressed concern about this practice of irrigating from wetlands. Inner Island has long been known for its large number of orchards, and it has many farms (some commercial and many hobby and subsistence operations). Even though it is a widespread practice to irrigate from them, farmers and other residents shared concerns about increasing scarcity of water in wetlands used for irrigation. One farmer commented that their wetland, used for irrigation since the 1970s, "has never gone dry, … but it's lower than I've ever seen" (F3 pers. comm.). Three interview respondents raised concern about wetland loss over time because of the substantial irrigation required by specific types of agriculture (orchards and vineyards). But farmers with such operations also expressed concern for preservation of wetlands and their biodiversity—after all, as one farmer acknowledged, their livelihood depends on them (F10 pers. comm.).

An active conservationist respondent saw irrigating from wetlands as a compromise between conservation and agriculture. In the words of this respondent, we should avoid wetland drainage, but "use them for conservation and storing water, some of which we

can use for irrigating the lands around them" (C2 pers. comm.). While currently only 3% of Inner Island's crops are irrigated (CV ALUI, 2013), and more water licenses are for domestic use than for irrigation (Islands Trust, Community Profile 2011), long summer droughts have become increasingly common on the island (various pers. comm.; Weaver 2010). Increasing irrigation needs could heighten tensions between conservation and agricultural uses of wetlands in the future.

The multi-purpose value of creating or increasing wetlands to increase water supply and enhance biodiversity and wildlife habitat was mentioned numerous times by Inner Island residents, including farmers. Though conservation value was not generally stated as the main motive for wetland creation on farms, farmers acknowledged that, "if you can create open ponds… then you will create inexpensive water storage that also enhances biodiversity" (FC6 pers. comm.). Another resident gardener explained, "there was a small pond here, we had it backhoed much bigger, so we could use water that collects in the wintertime for gardening and our greenhouse, and not only that, it's good habitat for the critters" (R10 pers. comm.). A conservationist respondent told me about a wetland adjacent to a nature reserve area, where "because the downstream neighbour maintains the water… it's much wetter now than it was 10 years ago" (C2 pers. comm.) In this case, they explained,

> [the farmers] want the water so they can have it to irrigate, and it has changed the ecology in the area. Not for the worse, you know, we like to see more water there… People who are controlling the flow to retain water for their purposes are often aiding conservation (C2 pers. comm.).

As one farmer acknowledged, "even if we're not explicitly *doing* conservation, it's still conservation" (F11 pers. comm.), and two other farmer respondents expressed the same sentiment (F10, F8). Verhoeven and Setter (2010) have called for more research to be done jointly by agronomists and ecologists to improve wetland agriculture systems and increase awareness among local communities and policy-makers of the importance of wetlands for multiple values on and off the farm. But the creation and use of wetlands for human benefit requires overcoming political challenges, a point I return to in Section 3 of this chapter.

Beyond human interactions with wetlands, discussions—and tensions—surrounding wetlands also centered on other-than-human actors. For instance, beavers are particularly influential in wetland structure, function and change on the island. Beaver activity regularly and significantly impacts agricultural lands, farmers and conservationists told me. Depending on where it occurs, this flooding can be at odds with farming activity, and some beaver dams—and the beavers who make them—are removed to allow drainage for cultivation. Conservationist respondents expressed concern about this, since beaver are crucial for maintaining precious water on the island (Pope nd). Yet farmers face the nuisance of dealing with the impacts of flooding if beaver are present. The law in BC is itself conflicted about beaver, which is considered a 'conflict' species.[16] Beaver are protected under the Wildlife Act, but their dams and structures may be removed from impacted lands by obtaining several permits under provincial and federal legislation.[17]

The presence of birds and waterfowl is also a source of tension—and compromise—between agriculture and conservation. Inner Island is important for overwintering populations of migratory birds including trumpeter swans, Canada geese, widgeon and other birds who feed on farm fields and nest in wetlands from October to April (BC Ministry of Agriculture 2014). Some waterfowl, too, are considered conflict species in BC, with measures in place to mitigate conflict between them and farmers. At least one farmer consciously strikes a balance between agriculture and conservation of bird habitat in their agricultural fields: when flooded, "our lower fields… have high wildlife values in the winter and during the various migrations, [and] in the summer it all goes dry and we take hay off it" (FC2 pers. comm.) A farmer from the nearby Comox Valley explained to me how he grows specific crops that swans and geese will go for, which "keeps them on one area of grass rather than all over the place" (FC8 pers. comm.) This technique is working for him and for the birds: "There are days I've counted two or three hundred swans out there" (ibid.).

---

[16] 'Conflict species' is a term used by the BC Government to describe species that commonly come to harm due to interactions with humans. WildSafeBC is a program designed "to reduce human-wildlife conflict through education, innovation and cooperation" (British Columbia 2018, np).

[17] Under the Wildlife Act, a person commits an offence if the person disturbs, molests or destroys a beaver house, den or dam without a permit, but a person can legally remove a dam to provide irrigation or drainage under lawful authority for the protection of property. Under all other circumstances, a person must have a permit to remove beaver dams, dens or houses (Wildlife Act np).

Fostering wildlife corridors and habitat on agricultural spaces can be beneficial for farmers. Some reasons named in interviews were: fostering pollinators, maintaining mycological health, and adding additional sources of sustenance if wild animals are hunted. Wildlife compensation programs help subsidize the cost of planting bird-friendly crops in the Comox Valley (Farmwest 2007), though I did not learn of any farmers on Inner Island who make use of such formal programs. None of the farmers I spoke with reported damage from bird foraging as a major issue for their farming operations. However, both farmer and conservationist interviewees expressed concern about the loss of bird habitat that results from draining wetlands for cultivation. I discuss this further in Section 4. Wetland mitigation programs could be useful on the island where there is a desire to maintain, restore or enhance agriculture-impacted bird habitat. (Or, is it bird-impacted agricultural habitat? The way things are named can really matter, as I discuss further in Section 3.)

Domesticated livestock on properties that include or border on wetland areas can interfere with wetland biodiversity (Clark 2003), structure and function, and nutrient regimes (Reeves and Champion 2004). Respondents cited insufficient fencing and unclear or unenforced land use designations as factors contributing to livestock disturbance of wetlands on Inner Island. One biologist respondent lamented how the meat they purchase from a local farmer could be negatively impacting aquatic animal and fish populations where the animals graze—a ditched wetland area that was previously an incubation area for a one of the two salmon bearing streams on the island. This respondent connected this agricultural use to a decrease in the overall Coho population in that stream: “There are still Coho there, but historically there were a lot more” (CB2 pers. comm.). The comment reflects a wider theme that emerged in interviews: the need to balance the impacts and needs of agriculture with protecting and conserving wetlands for other-than-human populations.

Overall, interviews with islanders revealed that they greatly value wetlands, but there was a divergence of opinions about if they should be used, and how. What does appropriate use look like for a wetland? As one conservationist and farmer stated, “we need to be really careful about altering wetlands,” because changes to their ecology, once made, are “impossible to correct” (FC3 pers. comm.). Yet other conservationist

respondents raised the question: if we've already changed them, what are we trying to conserve? As I discuss in Chapter 3, this points to questions about what historical baseline should guide our actions today. How far back in history should we look to determine what is an appropriate condition to 'correct' a wetland *to*? There is no unanimous answer amongst islanders, and no clear lines between agriculture and conservation interests in the discourse surrounding wetlands.

This research revealed that even when tensions arise, local people do not see wetlands through a binary perspective that separates agriculture from conservation—nor humans from nature. Rather, they are deeply interconnected. Overall, I found that while some respondents were concerned that agricultural use of wetlands can threaten their ecological values, people also acknowledged that agriculture can be beneficial for biodiversity conservation in wetlands, and that wetlands are important for sustaining agricultural productivity.

In many cases, agriculture and conservation are happening concurrently in wetlands. But this concurrent use is not recognized in official land use policies, which tend to bifurcate the two. How does the local, provincial and federal policy structure, thus, influence the tension between them? Whether or not a wetland on Inner Island can be legally used for farming, and in what ways, is based on how the land is classified and mapped, which is a complex issue. I touch on this in the following section, where I provide an overview of the political processes that shape outcomes for wetlands on Inner Island. I then turn to case studies to examine the intersection of this policy apparatus with property rights, and local knowledges.

Section 2 - Inner Island Wetlands: A Policy Overview

The amalgam of local values about Inner Island wetlands laid out in the previous section exists within the context of multi-scalar governance and political economy. I do not have sufficient knowledge or permission to address First Nations jurisdiction as it applies to wetlands. For this reason, the majority of what follows focuses on Canadian state jurisdiction at the local, regional, provincial and federal levels, though I acknowledge here that important nuances are missing which a better understanding of

First Nations governance in this context would allow. Here, I provide an overview of elements of state policy and land use planning as applicable to wetlands on Inner Island. I also highlight some classification and information management systems that are important for both the state, along with communities, in governing wetland space.

This section provides context for the empirical chapters that follow. While it may cause a reader's eyes to gloss over, it is important to lay out the labyrinth-like governing bodies, policies, laws and data sources that all intersect with wetlands on Inner Island. A summary table for quick reference to policies specifically related to wetland case studies is included in Table 2, following this section.

Local and Regional Policy and Land Use Planning[18]

Islands Trust (IT) is currently the local government responsible for creating bylaws and designating land use zoning based on provincial and federal legislation on Inner Island. Though this is a regional organization, active throughout the Salish Sea, policies are specific to each Island. Elected Trustees serve four year terms, acting as liaisons between the local community and the regional Islands Trust Council, Planning Staff and other governance agencies, including First Nations, as mandated by the IT Project Charter, and guided by the Denman Island Land Use Bylaw and the Official Community Plan. The Comox Valley Regional District (CVRD) is the regional land use planning agency of the Comox Valley, and while Inner Island has its own land use planning authority (through Islands Trust), it is part of the Comox Valley Electoral District, and often included in planning and mapping processes carried out by CVRD.[19]

The Denman Island Land Use Bylaw (LUB) is the Island's principal regulatory document relating to land use, and defines permitted land uses and zoning areas for the island. It is a continually changing document, with amendments made and formalized under official purview of the Denman Island Local Trust Committee (LTC), comprised of elected Local Trustees, other IT Council members, and planning and administrative staff.

[18] In this thesis, 'local' policy means those policies governing Denman Island and its immediate surrounding waters. Regional refers to areas expanding outward from Denman Island into the Salish Sea, Vancouver Island, and the Mainland Coast of BC.

[19] For instance, the CVRD iMap, and online public GIS application, or the Denman Island Parks & Greenways Master Plan.

LTC meetings, open to the public, take place once a month. The Official Community Plan (OCP) is a community-specific document created by Islands Trust personnel, with community consultation. It describes Inner Island's character and geography, and sets out Guiding Principles and Objectives for local governance, and to direct the creation of bylaws. The last revision of the OCP happened in 2011. In addition, the K'omoks, Tla'amin, and Qualicum Nations, and various community groups have interests in land use issues on Inner Island, including in wetlands. Many large wetlands are located on privately held lands.

Development Permit Areas (DPAs) are defined in the Denman Island Land Use Bylaw. These areas are officially mapped, and set out allowable land uses within areas deemed to be culturally or ecologically sensitive. DPAs carry specific requirements and restrictions for development activities above and beyond the general Land Use Bylaw zoning designations. The DPA most relevant to this thesis is DPA #4: Streams, Lakes and Wetlands. Under provincial regulations, certain activities associated with agricultural land use (such as installation of fencing) otherwise be prohibited within these areas are exempt from DPA requirements. Since 2017, this DPA also includes applicable areas for the federal Riparian Areas Regulation (see below).

The Denman Island Agriculture Strategy (a.k.a. the "Farm Plan") was created in 2011 through a process involving a steering committee of community members, elected Trustees, local planners and agricultural professionals (AEL Agroecological Consulting 2011). In 2017, the Islands Trust began a Farm Plan Implementation Project to begin carrying out its recommendations. So far, this has proved to be a contested process, involving considerable debate about related bylaw changes and other issues. The plan does not address agricultural use of wetlands except those classified as Seasonally Flooded Agricultural Fields (see Other Terms).

Provincial Policy

Islands Trust and the Islands Trust Conservancy were established under the Islands Trust Act (BC), the purpose of which is to protect the unique values of the islands in the

Salish Sea. Islands Trust is regulated under the Local Government Act (BC).[20] The BC Land Title Act (Section 219) enables the registration of a Conservation Covenant on the title of privately held lands in BC. This instrument allows landholders to protect ecological values on their land 'in perpetuity'—in other words, beyond the time period in which they hold title to the land. This is because the covenant terms are enforceable against all successors in title to the land. Generally, the terms of conservation covenants are jointly determined by the landholder electing to register the covenant (the covenantor) and the covenant holder (the covenantee). These terms are usually determined on the basis of an (ecological) Baseline Report produced by a Registered Professional Biologist and included as a schedule to the covenant. This Baseline provides a reference for measuring changes to the covenant area over time.

The BC Ministry of Agriculture (MOA) is responsible for the production, marketing, processing and merchandising of agricultural products and food. Protecting soil, water, air and biodiversity for the agricultural sector is part of the mandate of this ministry, and is enacted through the provision of tools and information to support farmers and growers to ensure sustainable use of these values. MOA is also responsible for implementing the Farm Practices Protection Act (a.k.a. 'Right to Farm Act') (FPPA). The FPPA protects farmers conducting normal farm practices from nuisance complaints (e.g. noise, odour) that may arise as a result of their operations, so long as they are acting in accordance with land use regulations and other provincial legislation. The FPPA is applicable on ALR land as well as any land on which farm use is permitted (i.e. local Agriculturally zoned land). The Agricultural Land Commission (ALC) is an independent agency of the provincial government with authority under the Agricultural Land Commission Act. The ALC is an administrative tribunal dedicated to preserving agricultural land and encouraging farming in BC and regulating non-farm land use and subdivision. To achieve this, ALC is responsible for designating lands in the Agricultural Land Reserve (ALR), which includes Crown and privately held lands, and First Nations lands unless otherwise

[20] The Islands Trust Conservancy (ITC, formerly Islands Trust Fund) is a charity land trust that acquires and manages land for conservation within the Islands Trust Area. Though a separate entity from the Islands Trust, ITC has a close relationship with and is guided by the mandate of the Islands Trust. ITC benefits from access to certain IT resources such as Trust Area Geographic Information Systems (GIS) staff and mapping data. ITC is governed under the BC Ministry of Municipal Affairs and Housing.

restricted within a Treaty agreement. Forty-six percent of land on Inner Island is in the ALR (Islands Trust 2011).

The BC Ministry of Environment and Climate Change Strategy *(*BC MOE) is responsible for the effective protection, management, and conservation of BC's water, land, air and living resources, including Riparian Areas. MOE has authority over certain aspects of land management and environmental policies and agencies applicable on Denman Island, such as BC Parks. The Ministry of Forests, Lands and Natural Resource Operations and Rural Development (FLNRO) is responsible for the stewardship of Provincial Crown land and natural resources, and protection of BC's archaeological and heritage resources. Crown land means land, or land covered by water, that is 'owned'—or perhaps a more appropriate word is 'held'—by the provincial government.[21] Among many other things, this agency is the primary agency responsible for overseeing operations of the Land Titles, Surveys and Crown Grants, and for natural resources permitting. FLNRO is also responsible for the Water Sustainability Act and the Wildlife Act in BC.

The Riparian Areas Regulation is provincial legislation in BC that comes into force jointly under the BC Fish Protection Act and the BC Water Act to protect fish and fish habitat in riparian areas. While a provincial policy, it is mandated by the federal government under the Canadian Fisheries Act. Regulation through the RAR happens through the provincial Ministry of Environment, which enforces RAR requirements through mapping of applicable areas conducted by local and regional governments. At the local scale, local and regional governments are responsible for ensuring requirements under this law are met in their jurisdictions. This is done using a professional reliance model. What does this look like? First, important riparian areas must be identified at the local level. On Inner Island, this is based on existing wetland and stream mapping done under the terrestrial and sensitive ecosystem mapping projects, and additional groundtruthing (Willmott and Lange 2014). Additions were made in 2014 to the island's ecological and Development Permit Areas mapping to add RAR-applicable streams. Prior to any development activity in RAR areas, proposed commercial, residential or industrial

[21] Land ownership in BC is highly contested, due to outstanding rights and title claims over traditional territories of various First Nations, as well as ongoing Treaty negotiations.

activities must now be assessed by a Qualified Environmental Professional (QEP) hired by the proponent. The QEP uses a standardized methodology to determine a site-specific setback area, called a Streamside Protection and Enhancement Area (SPEA) up to 30 metres from a fish-bearing waterway. The QEP then determines measures that must be taken to protect fish within the setback area. Some agricultural activities are exempt from the RAR process. Farm Practices as defined in the Farm Practices Protection (Right to Farm) Act are not subject to the RAR, but activities on lands within the Agricultural Land Reserve (ALR), or locally zoned for agriculture, are not summarily exempt from the RAR. For instance, fences would usually be exempt, but agricultural structures like farm stands or processing facilities may still require setbacks (RAR Guidebook 2016: 9-10).

Federal Policy

The Fisheries Act mandates the protection of fish and fish habitat in Canada. Under this law in BC, local governments are responsible for implementing the provincial Riparian Areas Regulation discussed in Section D. The Canadian Wildlife Service (CWS) has a mandate to regulate some conflict species of wildlife such as beaver and waterfowl issues crop damage and scare permits for waterfowl, under the Canadian Wildlife Act. The Species at Risk Act (SARA) establishes the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as an independent body of experts responsible for assessing and identifying species at risk. SARA requires that the best available knowledge be used to define recovery objectives, and makes provisions for a public registry for purposes of the Act.

Other Terms, Policy Instruments and Information Management Systems

Terrestrial Ecosystem Mapping (TEM) is a standard approach to stratifying the BC landscape into map units according to ecological features using a combination of manual air photo interpretation and ground sampling. It is the basis for much ecological mapping and conservation management in the province. Biogeoclimatic Ecosystem Classification (BEC) is a hierarchical classification scheme that includes separate zonal (climatic) and site classifications for landscapes across the province. Meidinger and Pojar (1991)

describe the system in detail. Biogeoclimatic units represent geographic areas under the influence of the same regional climate. The biogeoclimatic subzone is the basic unit. Subzones are then grouped into zones and divided into variants and phases, reflecting similarities and differences in regional climate. Most of Inner Island is in the Coastal Douglas-fir Biogeoclimatic Zone and some areas also have characteristics of the Coastal Western Hemlock Zone. The BC Sensitive Ecosystems Inventor*y* (SEI) is an ecological mapping database carried out from 1993 to 1997 using TEM methods. Jointly funded by federal, provincial and regional agencies including the Canadian Wildlife Service and the BC Habitat Conservation Trust Foundation, it mapped remaining fragments of rare and fragile terrestrial ecosystems in the province, including wetlands, throughout the eastern coastal lowland of Vancouver Island and the Gulf Islands in British Columbia. The SEI described the importance of the mapped ecosystems and the impacts affecting them; the Conservation Manual for this region (Volume 2) provides management guidelines for each of its nine SEI-classified ecosystems. It also describes conservation tools available to local and regional governments, landowners and other citizens, and offers models for the use of SEI data in Official Community Plans and for creating Development Permit Areas (McPhee et al 2000). Additional mapping done for the Riparian Areas Regulation, for instance, used data from the SEI to identify fish-bearing watercourses (Willmott and Lange 2014). Mapping and species inventories done as part of the SEI have also led to federal level protection under the federal Species at Risk Act.

Seasonally Flooded Agricultural Fields (SFAFs) are an official class of land under the BC Sensitive Ecosystems Inventory. These are lands that have been modified for agricultural use but have important wildlife habitat value during specific times of the year. They are often former wetlands, and in many cases, are located adjacent to surviving wetlands such as marshes, swamps, and wet meadows. For example, in southwest BC these fields provide an important area for migration stops and over wintering grounds for birds and waterfowl along the Pacific Flyway. Conservation and food provisioning values overlap in SFAFs, and with the loss of natural wetland ecosystems, these ecosystems are increasingly important for providing surrogate wetland habitat for wildlife (Ministry of Environment 2015). The Denman Island LUB lists six properties recognized as containing SFAFs, and are exempt from requiring a

Development Permit for agricultural activities as long as they remain in the ALR (Denman Island Land Use Bylaw 2008:38).[22] I discuss this classification in relation to the case studies in Chapter 3 of this thesis.

Table 2. Summary of State Policies Applicable in Inner Island Wetlands

Policy / Regulation / Classification	Acronym	Function	Authority / Force	Jurisdiction	Agencies	Applicable on Denman (Inner) Island
Islands Trust Policy Statement	-	Defines overarching projects and policies for Islands Trust Area; Mandates creation of OCP and LUB for each Island	Islands Trust Act; Local Government Act	Islands Trust Area (North Salish Sea)	Islands Trust; Denman Island Local Trust Committee	Projects of the Local Trust Committee; Creation of OCP and LUB
Denman Island Official Community Plan	OCP	Defines community land use planning goals and objectives; Defines island zoning	Islands Trust Act; Local Government Act	Denman Island	Islands Trust; Denman Island Local Trust Committee	Development of local Bylaws and land use activities
Denman Island Land Use Bylaw	LUB	Local Bylaws; Development Permit Areas (i.e. DPA#4- Streams, Lakes and Wetlands); Riparian Areas	Islands Trust Act; Local Government Act	Denman Island	Islands Trust; Denman Island Local Trust Committee	Local Bylaws; Development Permit Areas (i.e. DPA#4- Streams, Lakes and Wetlands); Riparian Areas
Riparian Areas Regulation	RAR	Protect Fish-bearing riparian areas through Streamside Protection and Enhancement Areas	Fisheries Act (Canada); Fish Protection Act (BC), Water Act (BC)	Canada; British Columbia	Ministry of Environment and Climate Change Strategy; Islands Trust; Denman Island Local Trust Committee	Mapped Riparian Areas within Development Permit Area #4; Qualified Environmental Professional required for site assessment of development proposals
Local agricultural-related bylaws, various	-	Farm Status Assessment means exemption from environmental protections under DPAs and RAR	Farm Practices Protection (Right to Farm) Act	British Columbia	Ministry of Agriculture	Zoned and/or assessed agricultural lands; ALR lands;

[22] Activities normally requiring such a permit include: a) Subdivision of land; b) Construction of, addition to or alteration of a building or other structure; c) Alteration of land; d) Development as that term is defined in the Riparian Areas Regulation, BC Fish Protection Act; and e) Installation of any structures within a stream or within the natural boundary of a lake (DI LUB 2008: 38).

Conservation Covenant	-	Protect environmental or other values through voluntary registration of Covenant and Statutory Right of Way on property title; Runs with title	Land Title Act Section 219; Land Title and Survey Authority	British Columbia	Ministry of Forests, Lands and Natural Resource Operations and Rural Development; Land Trusts: Denman Conservancy Association; Islands Trust Conservancy; Agricultural Land Commission	Defined covenant areas with completed Biological/Ecological Baseline Reports; ALC approval needed for Covenants on ALR lands
Agricultural Land Reserve	ALR	Establishes the Agricultural Land Reserve for the protection of farmland in the province - 46% of Denman Island is in ALR	Agricultural Land Reserve Act	British Columbia	Ministry of Agriculture; Agricultural Land Commission	Agricultural Land Reserve Lands ("Crown", First Nations, and privately held)
Species at Risk Registry	SARA	Identify and assess Species at Risk; Maintains public registry on at risk species	Species at Risk Act	Canada	Committee on Status of Endangered Wildlife in Canada	Many of Inner Island's wetlands are home to SARA listed species
Conflict Wildlife Species - regulations and removal/scare permits	-	Regulation and permits for removal or mitigation of damage by conflict species such as beaver and waterfowl	Wildlife Act	Canada	Canadian Wildlife Service	beaver and waterfowl may be managed on agricultural lands
Terrestrial Ecosystem Mapping	TEM	standard approach to stratifying the BC landscape into map units according to ecological features using a combination of manual air photo interpretation and ground sampling	-	British Columbia	DataBC	Used as basis for ecological and conservation management in the province
Sensitive Ecosystems Inventory	SEI	Mapped remaining fragments of rare and fragile terrestrial ecosystems in the province of BC using Terrestrial Ecosystem Mapping (TEM) methodology	-	British Columbia	Canadian Wildlife Service; Habitat Conservation Trust Foundation	Defines Seasonally Flooded Agricultural Fields and was used to define Riparian Areas for RAR
Biogeoclimatic Ecosystem Classification	BEC	Units represent geographic areas under the influence of the same regional climate; Modified to create Wetland and Riparian Ecosystem Classification (WREC) System	-	British Columbia	Ministry of Forests; Forestry Service	Denman Island is in Coastal Douglas-fir Moist Maritime Zone and parts in Coastal Western Hemlock Zone

Section 3 - To Map, or Not to Map, a Wetland: Making Wetlands Visible

In this section, I focus on how wetlands become formally mapped and classified. These classifications are sites of debate and tension, connected to the broader apparatus of state power (as outlined above). I emphasize that decision-making about wetlands is mediated by how knowledge is produced and mobilized at the intersection of local people and state bureaucracies.

Numerous mappings of wetland space created over the past three decades by Inner Island people represent the significant biocultural knowledge of this diverse community (see Figure 2): ecologists, government officials and contractors, artists, farmers, environmental advocates, those interested in development as well as the conservation of land. In the course of my research, I studied many maps of Inner Island that included information about wetlands, some produced by local people. As always, different maps emphasize different things. I often drew on numerous maps during interviews with residents as anchors for conversation. These maps were invaluable for learning about the changing nature of the island's spatial politics.

The Role of Mapping in State Policymaking

Maps are indispensable tools for relaying complex information, and they are an increasingly key component of ecological restoration, land acquisition, resource management, planning, and legal and economic decisions surrounding individual and collective ownership on Inner Island and elsewhere. In policymaking, "maps have the unique capacity not only to guide us through the world but also to shape it" (Rosenblatt nd:3). Spatial representations are important lenses through which we understand and build knowledge about complex places, and power is enacted through such knowledge. Scott argues that maps add "documentary intelligence to state power" (1998: 39). They provide "the basis for the synoptic view of the state" (ibid.). Maps helps the state govern complex places from a distance using them to deploy generalized management strategies such as taxation and regulation.

Because maps are only partial, reduced representations of the world, the values of the mapmaker often determine what is left off and what is put on the map, as well as how this information is represented in a "hierarchy of importance" (Rosenblatt nd:3). When something is left off the map, particularly in planning, it can be "written out of existence" (ibid.). The result can be misinformed or inappropriate decisions that set development objectives of some political economic institutions at odds with the needs of local people (Roth 2007). A cadastral map, for example, "is very much like a still photograph of the current in a river. It represents the parcels of land as they were arranged and owned at the moment the survey was conducted. But the current is always moving, and in periods of major social upheaval and growth, a cadastral survey may freeze a scene of great turbulence" (Scott 1998: 46).

As a result of this representational power, the fixed nature of maps (despite their always shifting political undercurrents) can be used to uphold the interests of those who make them. Maps on Inner Island have been crucial for the creation and implementation of state policy surrounding wetlands, as I discuss in what follows. In mapping processes, it is crucial to acknowledge dynamic negotiations of power that allow or disallow, enable or limit the production of knowledge by some and not by others (Thom 2009; Tobias 2009; Roth 2007; Rocheleau 2005, 1995; Brody 1981), and the implications of this for socio-ecological communities. In any use of mapping, practitioners and communities alike need to understand "the spatial organization of local resource use and management as produced through social relations and contingent on changing social, political, economic and environmental processes" (Roth 2007: 58).

Charting the extensive wetlands of Inner Island has been an ongoing, politicized process. Roth (2007: 57) cautions that "mapping routinely fails... to recognize the complex spatiality of local resource use and management… and proceeds to map two-dimensional zones of fixed resource use and rights" when the reality is more dynamic and complex (see also Thom 2009). In the words of one interview respondent: "It's confusing—all of these water bodies are part of that… this one flows this way, this one that way, down here. This map (pointing) doesn't even connect them all... all of this watershed stuff takes some working out" (FC3 pers. comm.). The question of what is a wetland on Inner Island—how it is mapped, the management actions that ensue from it,

and the resulting outcomes for wetlands—is subject to debate and change, depending on who is involved in doing the mapping, as I discuss below.

Figure 2. Description of Existing Mappings of Inner Island Wetlands

An Ecosystem Based Assessment of Denman island a.k.a. The "Silva Study" (Silva Ecosystem Consultants, 1998) – An Ecosystem-based forestry study of Denman Island commissioned by the Denman Forestry Initiative. Numerous detailed maps of the island were made as part of this study, leading up to and during a period of intense logging in the late 1990s. The report includes a Streams, Lakes and Wetlands Map that was of particular interest to me in this thesis for comparison with official state mappings.

*Denman Island Land Stewards Project (*Denman Conservancy Association, 1996) – This was a comprehensive inventory of ecosystems on privately held lands in which a resident biologist visited more than 70 private properties to survey for ecological values. Maps of each property were drawn, and landowners made a pledge to protect those values into the future.

The Islands in the Salish Sea Atlas (Harrington and Stevenson 2005) – this was a regional community mapping project in which islanders were invited to produce representational maps of their home islands. Denman islanders contributed 17 submissions to the project.

Denman Conservancy Association Maps, various (1991-ongoing) – DCA in its nearly three decades of working to conserve land and biodiversity on Denman has produced numerous maps of island geography and ecology.

Northlands Mapping (2000) – As part of development and land acquisition negotiations following logging in the Northern part of Denman Island, a developer contracted with professionals to undertake extensive mapping and survey work in the area known as North Denman Lands (Nielsen, pers. comm.).

Islands Trust has a comprehensive GIS database for determining and keeping track of land use policy. As of mapping undertaken in 2011 by the Islands Trust as part of revisions to the Official Community Plan, there were 30 officially recognized and mapped wetlands on the island, covering an area of approximately 115 hectares (Islands Trust 2011).

There is ongoing debate about which wetlands and riparian areas on Inner Island should be included in official maps used for land use planning and regulation. Some

islanders strongly believe "all wetlands on Denman should be mapped" because, as one respondent explained, "then they have some sort of protected status. If they're not [mapped] they don't, so an owner can buy a property that has a wetland on it and fill it in" (FC1 pers. comm.).

But this regulatory control over how wetland spaces are used and managed means some property owners are wary of state wetland mapping. One conservationist-farmer speaking about neighbours who have an interest in using the wetland on their property for agriculture, told me how "people are quiet about their water" since there are legal implications of that knowledge being made official (FC3 pers. comm.). Another respondent, also a conservationist-farmer, confirmed this same sentiment speaking of a different wetland, one on her farm (FC2 pers. comm.). Roth (2007: 53) cautions that "mapping techniques that fix and simplify fluid and complex associations can inadvertently prescribe changes to how residents manage their land," and this may be to the chagrin of some people in the community who may or may not have had a say in the map's production.

Groundtruthing

The state gains significant power to regulate property through the creation of maps. But it is also a challenge to ensure the accuracy of maps that mark off classifications and regulated areas. This challenge, combined with the institution of private property, can complicate the state's ability to govern. While the state needs to be able to 'see' in order to govern and manage the places under its jurisdiction (Scott 1998), the 'visibility' of land—i.e. how the state interprets and regulates it—is influenced by nuanced property relations and ongoing political contestations.

On Denman Island, Islands Trust staff create official Trust maps, including those showing Development Permit Areas and Riparian Areas Regulation applicable areas, using a Geographic Information System (GIS). Technicians view and analyze orthographic photographs of the islands and manually classify land by drawing polygons around blocks of vegetation (ITC1 pers. comm.). The results of this initial analysis and classification data are then compared with other existing data such as Terrestrial Ecosystem Mapping (TEM) data. Maps are verified by a process called groundtruthing,

which has surveyors walk a portion of the lands in question to corroborate accuracy of GIS analysis of the orthographic map data on the ground (Willmott and Lange 2014).

The capacity to carry out groundtruthing, however, is limited, since it is a resource-intensive process, requiring substantial professional fieldwork and subsequent translation of GPS data and survey findings back onto official maps by technicians. This involved process makes it practically impossible for Island Trust mapping staff to verify the accuracy of all maps (Willmott and Lange 2014; ITC1 pers. comm.). When mapping for the Riparian Areas Regulation, mapping contractors acknowledged that "while all efforts were made to establish a complete representation of the stream network in each of the [4] target watersheds using background research, coupled with field assessments and discussions with land owners [*sic.*] during the fieldwork, it is possible that additional streams occur that are applicable to the RAR. For example, determining the stream network was challenging in some cases, based on lack of access permission" (ibid: 39). Willmott and Lange (2014) emphasize that there is a clear gap between the state imperative to map watercourses and the capacity of local planning and government agencies to do so.

This brings me to the two case studies. Through these cases, I explore how some Denman wetlands, through official knowledge-making processes, have become "legible" or visible to the state (Scott 1998), a visibility that enables some land uses and prevents others. In what follows, we can trace how the state goes about spatially regulating property on Denman Island and attempts to manage wetlands. The process of mapping wetlands is an important part of the process of official land use designations that apply to them. But these cases also show how local knowledge plays a role in the processes that enable this regulation.

Case Study 1: Getting it right, on the ground: The case of mapping 'The Brook'

A Denman Island couple I interviewed shared an experience about an error in riparian and wetland mapping on their farm. A stream crosses their property that connects by overland flow to a significant wetland upstream of their property boundary, and to a

smaller pond within it. They caringly called it ‘The Brook’; this water is integral to the freshwater system that feeds their farm, and their extensive orchard and nut plantings.

At the time of our interview, The Brook was not shown on the Islands’ Trust Development Permit #4 Map (Streams, Lakes and Wetlands). Instead, it was shown as draining from their pond only, and not from the wetland upstream, which connects to other private lands (Figure 3). This couple noticed this error when Islands Trust circulated maps for community feedback about updating the DPAs to include areas that would be subject to the newly instated federal Riparian Areas Regulation (RAR). To me, they expressed two concerns about this error in the official mapping.

First, while currently not RAR applicable, in the event that The Brook (which drains to the ocean nearby) is ever verified to be fish-bearing, the missing connection to the upstream wetland would negate its protection under the RAR because it would not be shown as connected via overland flow to the ocean. The map would only show the private land pond as a tributary to this stream. Since that privately held pond and the upstream wetland are on ALR land, their protection for conservation of fish habitat as provided for in the RAR would not apply, but local setbacks and regulations that go above and beyond the RAR *could* apply, if the mapping showed them to be connected (F6, F7 pers. comm.).

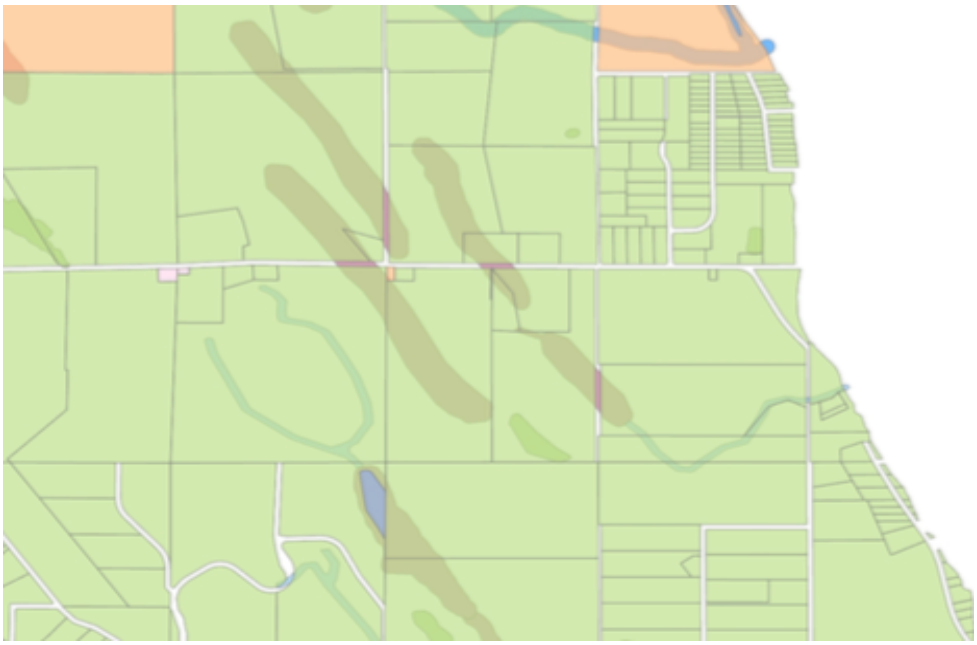

Figure 3. Islands Trust Mapping of ‘The Brook’ 2014

'The Brook' is the stream marked in blue coming from the right-hand side of the image, only shown as connecting to the wetland on the subject property. Connections to upland wetlands (to left) are not shown.

Second, with the map as it was, if there was ever an issue detected in The Brook on their property—say, contamination, or alteration of flow—without the connection to the upstream wetland shown on the map, it would appear to the regulators that the origin of the issue could only be from their land. Any upstream contributor to the issue would go unnoticed, and unregulated (F6, F7 pers. comm.).

Overall, the way this upstream wetland and its distributary watercourse was officially mapped could influence future outcomes for the whole watershed, including the upstream wetland, The Brook, and the pond on this family's farm. In this case, where the state demonstrated only limited capacity or willingness to complete groundtruthing, local people stepped in to fill the gap. In the case of 'The Brook', the mapping error clearly resulted from a lack of groundtruthing. Noticing the error, and anticipating potential problems that could arise as a result, the landholders requested to Islands Trust that the mapping be changed, which would require an official site visit by local state officials and environmental professionals. The response took time, but after much persisting a groundtruthing visit was carried out. In attendance were the couple, Islands Trust planning staff, a local agrologist, a member of the Local Trust Committee, and a Registered Professional Biologist (F7 pers. comm.). This visit allowed Islands Trust to verify that the 'missing' stream did in fact exist and was clearly connected to the existing mapped upland wetland.

The addition of the previously unmapped riparian areas went through a formal review and bylaw amendment process, and the new mapping confirms the overland streamflow connection to the larger wetland (Figures 4 and 5). Roth (2007) argues that maps created by the state and used to regulate the communities they represent can diminish local control over space. What spaces become visible to the state is contingent on the coalescence of different values and objectives, including those of the state, landholders, and local people, as I discuss further in Section 4.[23]

[23] Of course, we can imagine situations in which the state may want some spaces to be made more visible for regulation, for instance to justify intervention to carry out conservation or cultural objectives supported by

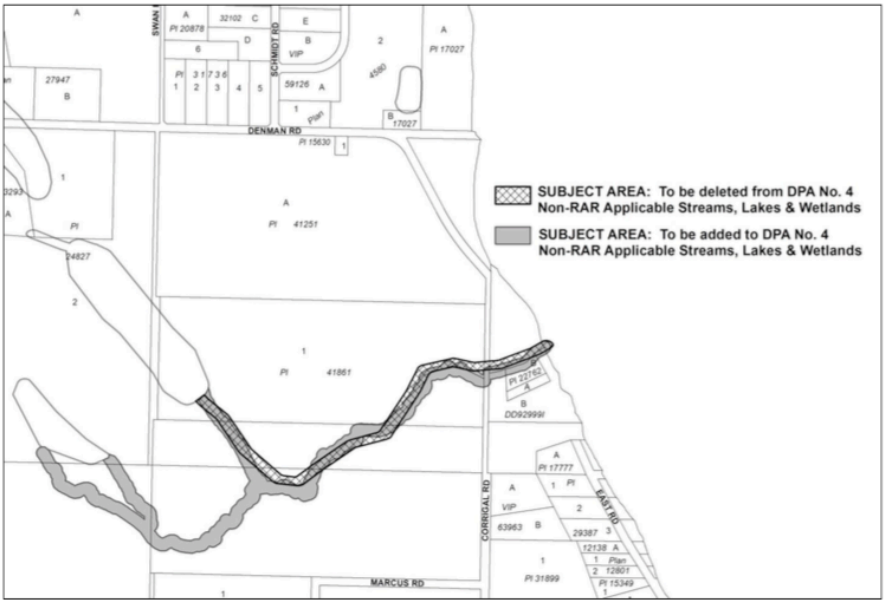

Figure 4. Proposed Changes, Bylaw 222, 2016.
New mapping extends 'The Brook' to connect by two overland streams with the upstream wetland in the adjacent property.

Figure 5. Islands Trust Mapping of 'The Brook' July 2018. Showing connection to upstream wetland.[24]

---

the broader public but resisted by a local landholder. Or, by contrast, the state may wish to remain (perhaps willfully) blind to avoid the obligation to enforce its own regulations, for fiscal or political reasons. While beyond the scope of this thesis, future research could explore such motivations in relation to broader questions of food sovereignty and environmental management decision-making.

[24] There may also be an overland stream connecting the small, newly connected wetland with the larger wetland up and to the left, but verifying this officially would require permission to access to the private land, and resources for an additional groundtruthing effort.

In brief, what this case demonstrates is how local people were able to increase their control over the wetlands in question by resisting the state's 'blindness' (i.e. the lack of mapping). This local resistance ensured that a particular kind of map would be created, one which reflected practical, local knowledge about conservation values. The landholders were concerned that the mapping inaccuracies would have implications for The Brook and the wetlands connected to it. They know that their own access to water for agriculture into the future depends on the protection of upstream water in the watershed: "We want that wetland to be mapped, and protected," one of them explained (F6 pers. comm.). The previous inaccuracy of the map in this case could have had legal implications for them. Not only their own, but also others' land uses in the watershed could have impacted the stream, potentially making this couple liable for damages, even if they actually originated from one of the adjacent properties. But, with their efforts to rally support based on what they and others knew was correct 'on the ground,' the mapping was changed.

The above case speaks to the importance of the groundtruthing process; yet there are significant administrative challenges to overcome in such a case. The change in mapping that resulted from this process would not have occurred without local knowledge in various forms: direct pressure from the landholders; a sympathetic Island Trustee who had specific knowledge of the circumstances and was willing to vouch for the issue's importance to the Islands Trust;[25] and a local biologist willing to work "very cheaply" to carry out the survey (CB3 pers. comm.). That biologist acted in accordance with their own knowledge—and belief—that the protection of this stream and wetland through mapping was important. One way to gain sovereignty over agroecological space, it would seem, is to ensure the involvement of diverse local knowledge inputs in state knowledge-making processes like mapping.

[25] This willingness was important, since the decision to allocate resources for making something like this happen is shepherded through the regulatory process by recommendation from the Local Trust Committee.

Case Study 2: Covert Mapping on Private Property: 'The Orchard Wetland'

Another respondent described an instance of local knowledge being mobilized to influence state visibility of and regulation over wetland space, but with a different outcome for the property holder. In this case, the respondent was a landholder who enlarged a naturally-occurring wetland area in their backyard to create a larger pond. The respondent explained:

> There's a little pond, marshy area here. A little creek runs through our property… a seasonal creek, it normally dries up in July. But there was, right down there… sedges, probably an acre and a half. So, unbeknownst to me, you weren't supposed to dig a hole in the ground without getting permission from the Islands Trust. But it wasn't a wetland it was just a sort of a grassy meadow, but sedges, and in the winter, you'd go 'squash, squash, squash,' and then the creek would run through and out, and in the summer, it would dry up and you could walk around (FC6 pers. comm.).

The landholder practices agriculture, though not for commercial purposes, so the land does not have farm status.[26] The land is zoned as Rural Residential, not as Agricultural under local zoning, nor as part of the Agricultural Land Reserve. Therefore, exemptions for development setbacks around wetlands that are granted for farm uses would not apply on this property. But there is a large orchard and garden on the land, and the creation of a new, larger pond would aid this landholder's agricultural capacity. So, the landholder explored options, and made a decision:

> I talked to [someone] who said you can dig this out, and of course, ideally, you know, he knows that you can't dig a pond without permission, but it's even debatable whether I needed it or not, because it was a very seasonal situation. So anyway, we dug this pond, and now there's open water (FC6 pers. comm.).

What the landholder did not anticipate was that this would result in a change in the legal designation of that privately held land. The 'marshy area' on the land was

[26] Farm status is designated through BC Assessment. If a property owner generates a certain income from farm products, they can claim farm status and benefit from a reduction in property taxes.

previously not shown on the Islands Trust mapping. But someone with knowledge of the new development thought it should be mapped—and regulated—as a wetland under the local Development Permit Areas policy. This would have implications for this landholder's land use options. The respondent explained their frustration about this covert mapping of the wetland:

> Somebody came—nobody ever knocked on my door, no-one ever contacted us—and surveyed that [new pond]. And it's now on the Islands Trust map, as a wetland, and now I cannot take any trees down within 60 feet of that little pond (FC6 pers. comm.).

What most concerned this respondent was that, because of the newly protected status of the pond, the orchard may now be at risk of being shaded out over time, since removing naturally occurring trees within the wetland setback is now prohibited. The landholder was attempting to create more water on the land, partly to enhance wetland biodiversity and partly to support agriculture. Instead, the respondent explained, the ecological values of that wet meadow may now be compromised because of the mapping: birds and pollinators needing open habitat would lose their niche as the landscape changes—from a mostly open-canopy wet meadow, to a forested swamp (FC6 pers. comm.).

This is a complex political-ecological situation. Here we learn that even if a wetland is created for agricultural use, depending on the way the land is zoned and whether or not the agriculture is happening for commercial sale or subsistence, the new wetland area may actually become subject to protection under local Development Permit Areas regulation.[27]

This case demonstrates a tension between agriculture and conservation, a tension that is mediated by local knowledge, and also by the institution of private property. In this case, the fact that the land was mapped brought it under formal protection. This happened because a local person acted on their own beliefs about wetlands, in spite of the landholder's assumed private property rights. That person held personal knowledge about this area that allowed them to learn about the alteration taking place, and specific and technical knowledge to provide an assessment on the ground. As such, they could inform

[27] The provincial definition for agriculture under the Farm Practices Protection Act requires a farmer to be farming for business.

the local government that this was (now) a wetland with ecological values that should be formally protected.

The way land is classified results in an either-or situation here in terms of how this land can be managed: *either* wetland conservation (as is now the case since the orchard wetland has been mapped), *or* agricultural use (as was the case before the orchard wetland was mapped). This policy scenario puts conservation at odds with agriculture, because the policies surrounding wetlands pose certain restrictions on wetlands that are mapped. In this way, the formal oversight that now applies to this orchard wetland maintains a dualism between conservation and agriculture. Its classification as a wetland obscures the visibility of the agricultural values of the land. The result is less overall flexibility about how land can be managed for both conservation and agricultural values *at the same time.*

Such reductionist state governance impacts the potential for (wetland) conservation, because it remains subject to "compartmentalization" of knowledges in that conservation process (LePage 2011: 3). Dualistic policies and classifications maintain a rift between conservation and agriculture that is out of step with the way that many Inner Islanders value wetlands as both agricultural and conservation spaces, rather than necessarily one or the other.

Section 4 - Seeing Wetlands Like a State

The above case studies demonstrate how state productions of knowledge (i.e. mapping and classifications of wetlands) cement policies that perpetuate a dualistic conception of wetland space, either for agriculture or for conservation. In what follows, I discuss how this dualism is related to the way the institution of property organizes land and aims to create a regime of exclusion—inside and outside the property boundaries. I follow this by arguing that practical local knowledges—metises—play an integral role in projects of state boundary-making and legibility, despite being sometimes sidelined or denigrated by the state.

Boundary-Making and Legibility in Wetlands

Scott (1998: 9) argues that "certain forms of [state] knowledge and control require a narrowing of vision" in order to render geographies and people legible and thus governable. This is achieved partly through the technique of jurisdiction achieved through different classifications of land (Ford, cited in Pasternak 2014: 154). As we see in Inner Island wetlands, when land is classified and mapped, it comes under regulation through the policies that apply in that jurisdiction. Pasternak argues that management through this technique of jurisdiction has the effect of obscuring diversity: differentiated political-ecological spaces become "empty vessel[s] for governmental power" (2014: 154). Pasternak further argues that the aim of such "obfuscation" is "gapless maps of contiguous abstract space" that work to make certain elements of a place or community visible—and thus governable—while diminishing other elements (2014: 154).

This understanding of jurisdiction speaks to how Scott understands the 'legibility' project of state knowledge-making, and its basis on rationalized western scientific thought. Scott cautions against the 'constriction of vision' in state and scientific knowledge-making—the process of creating a "normalized acre" through which management and science can be conducted. He argues that this means that components of socio-ecosystems, beyond those that hold potential for (state/corporate) benefit, are often overlooked or diminished (Scott 1998: 290). "Insofar as its institutional power has permitted," Scott argues, agricultural and other agencies of the state "have tended to simplify their environments in ways that make them more amenable to their system of knowledge" (1998: 291).

Furthermore, the way land is classified by the state is deeply affected by the institution of property and the rights and relations that surround its 'ownership'. Prudham (2011) suggests that the concept and institution of property is at the centre of material and semiotic relations between humans and the other-than-human world. Property rights in land "work to regulate the relations among people by distributing powers for the purpose of controlling resources" (Singer 2000, qtd in Blomley 2003: 121). Massey argues that the drawing of boundaries is integral to creating "identities of place" (1994: 152), and Blomley builds on this to theorize that the concept of property and its boundary-drawing

"engenders the creation of binary states of inside/outside" upon which the concept itself rests (2016: 3).

Property as an institution and legal tool is widely understood as a binary regime of inclusion and exclusion: the existence of property necessarily involves the existence of "non-property" or that which is outside, or excluded from, the property in question (Blomley 2016), such as un-mapped areas of land or water. The effect of this dualistic regime of exclusion is favourable to the state because it allows for "informational efficiency" (Blomley 2016: 3). In other words, the institution of property makes governance easier, because it allows states to define, broadly, what is or is not permitted within—or outside—a certain *class* of property; for this, complex information about *each* property is not needed.

Practically speaking, property designations, and their formalization through (cadastral) mapping, provide a simplified picture of how space—coarsely defined—should be managed and governed. Property (and the access to space it may limit or grant) thus has an important role to play in—though may not always determine—what becomes mapped or not. By extension, it also affects what becomes subject to regulation in the simplified, binary forms of the wider policy apparatus (i.e. land as either agricultural or conservation). For Scott, property is an outcome of the state impetus to make spaces legible in order to govern them by "attaching every parcel of taxable property to an individual or an institution responsible for paying the tax on it" (1998: 33). Property's boundaries (and legal responsibilities) are made visible—or kept invisible—through state knowledge making as represented by the "abstract sketchiness" of maps or land use classifications. But, "what lies inside the parcel is left blank—unspecified—since it is not germane to the map plotting itself" (Scott 1998:44).

Diminishing Complexities in Mapped Inner Island Wetlands

We can see evidence of the dualistic simplification of the state—and the policy implications that result—in the cases of mapping and classification of wetlands on Inner Island discussed in this chapter. The Inner Island community's nuanced understanding of, and diverse values associated with, wetlands are diminished by the way the policies

around wetlands which separate agriculture and conservation from one another; one *or* the other is visible in this policy structure, not both.

If wetlands are mapped as wetlands, this makes the conservation values in that space visible, while diminishing agricultural values, *and vice versa*. Mapping dictates outcomes on the ground in those wetland spaces, because of what is permitted or not within mapped, regulated spaces of the state.

As the above cases demonstrate, the way lands are simplified through mapping and classification has political and ecological implications for those lands, since this process makes invisible the "many things about a parcel of land [that] are far more important than its surface area and the location of its boundaries" (Scott 1998: 44.). The "low precision" exclusion regime on which property rests (Blomley 2016: 3) means that the things represented by lines around property on paper do not necessarily reflect the reality on the ground (see also Scott 1998). In this way, we can see how property and state policy are modes by which dualistic notions of human/more than human find material expression in the rift between agriculture and conservation.

Conclusions

Both of the cases in this chapter involve tensions surrounding the overlapping political-ecological values of conservation and agricultural use in wetlands. Agriculture and conservation are at odds in the policy apparatus surrounding wetlands, which relies on wetlands to be classified and mapped in a dualistic way. Property rights play a part in this by mediating access to 'privately held' wetlands, and how those rights are always held up against other rights and values. In the above cases, we saw how local people held specific values—for instance, about conservation or agricultural use in wetlands—which were translated into the way the state forms policy.

The classifications that are used by the state to make complex things more legible, Scott argues, are mainly applied from the centre, from 'above' local spheres of influence. These classifications rely on expert knowledges that are often operating distantly—in a central office far removed—from the daily actions of local communities in the spaces being classified (Scott 1998). He contrasts this with "non-state" localized and practical

knowledges—what he calls metises—that grow "from the logic of local practice" (Scott 1998: 25). The problem with state simplifications, as Scott has argued, is the state tendency to "bracket" or overwrite the complexities of local knowledge and space (Scott 1998: 47). In the cases above, we see the bracketing of complexity in wetland space. When wetlands are made visible—mapped and classified—through a binary lens, agriculturalists and conservationists alike face challenges in protecting their overlapping values.

Complicating Dualistic Governance: The Role of Local Knowledge

The processes behind wetland classification and mapping—the projects of state knowledge-making (and property boundary-making) are enabled, but also complicated, by the complex, practical knowledges—metises—of local people. Scott makes the case that the state "systematically denigrates" (Scott 1998: 332) metises in its projects of simplification and boundary-making. However, what I have found through the cases of wetland mapping on Inner Island is that these metises may actually help to *enable* the state to maintain authority in the spaces it claims to govern. The cases here show how state mapping relies on metises for a certain level of visibility which aids the state in 'seeing' and governing wetlands.

Looking to Blomley, we learn that "a right to property in land is necessarily relational" and always held against other rights and relations of knowledge (2003: 121). In the case of 'The Brook', the stream crossed property boundaries, prompting landholders to request that the state groundtruth maps and ensure accurate regulatory oversight within their property, but with implications for other properties, as well. In 'The Orchard' case, rights associated with property boundaries were overlooked when a local person mobilized their own knowledge and values to enable the state to map—and see—a wetland within the property.[28] Here we see, as Blomley (2005) argues, that people can and do cross property boundary lines, and draw new ones in the process. In both cases, local knowledge was

[28] The respondent told me that this outside party, because of their knowledge of the ecology of the area, was able to provide a mapped rendering of the property, including the newly enlarged wetland, to the Islands Trust (IT). This prompted IT staff to follow up in order to groundtruth the mapping, and at this point the owner complied with their inspection, and the wetland was officially mapped.

deployed in relation to—granted by, or in spite of—property boundaries. In either case, the result was an enhanced ability of the state to see—and thus apply its binary classifications onto—these wetlands.

What the above cases demonstrate is that local knowledge—metis—has an important role to play in shaping the way the state sees, even within private property relations. Depending on how local knowledges are mobilized, I argue, local knowledge informs the state's ability to see the spaces and properties that it governs.

Blomley argues that the lines of property are blurred through active and ongoing contestations over space and how it is used, managed and governed (Blomley 2017; see also Bruun et al. 2017; Pasternak 2014; Blomley 2005). Local knowledges, mobilized in processes of state knowledge-making, may be constrained by these lines, but can also challenge them. Local people and their knowledge can be used to advance state power; they can sway the state classification towards either agriculture or conservation, by using property as a vector for advancing their own values (to have their own property mapped), or by resisting the assumption of rights vested in another's property (to have another's property mapped). But the local knowledge itself remains a common denominator in either case. In these cases, property rights were also 'held against' local knowledge.

An important question follows from the cases in this chapter: How should we evaluate the effects of state knowledge-making (i.e. legibility) of wetlands? In what instances might Inner Islanders support "seeing wetlands like a state" and in what instances might they resist or oppose this? Who decides, and on what terms? I return to this conundrum—whose or which knowledges should the basis for these decisions—throughout what follows. In Chapter 3, I continue to look at the political-ecologies of Inner Island wetlands, from a different angle: I examine *historical* uses of wetlands as a factor in how they are mapped, classified and regulated, and how they influence the ongoing rift between conservation and agriculture.

Chapter 3: Conservation Values 'Notwithstanding'? Agricultural Primacy in Inner Island Wetlands

Introduction

In the previous chapter, I showed how wetlands are made 'legible' for management through classification and mapping, perpetuating a dualism between conservation and agriculture. The legibility of wetlands is influenced by local, knowledge—metises (Scott 1998)—and the institution of property. But what role does the history of these landscapes play in wetland classification and management? And how does history influence the conservation/agriculture binary?

In this chapter, I explore the historical elements of the process of making wetlands legible to the state. I ask, how are tensions around the classification of wetlands heightened when the history of wetland use involves agriculture?

To situate my research in the academic debates, in Section 1 I discuss the historical dualism between humans and nature that persists in current conservation philosophy and practice in this part of the world, drawing on William Cronon and others to investigate the 'production of nature' as it relates to Inner Island. Following this, Section 2 outlines three case studies to show how settler colonial history is the basis on which the state officially defines permitted land uses in wetlands that have high conservation value in the community. In Section 3, I explore how the rift between agriculture and conservation on Inner Island is related to the *historical* dualism between humans and nature. This dualism is entrenched in state and capitalist productions of nature, particularly in concepts of 'wilderness' and 'terra economica' and enclosures and dispossession of land. I suggest that such dualisms persist today, in part due to the use of a settler colonial historical baseline for classification and mapping of wetland spaces on Inner Island. Settler history is used to define some wetlands as agricultural, and this results in a primacy of agricultural interests over conservation.

Section 1 - Where Does 'Wilderness' End and 'Improvement' Begin?

Philosophical rumblings in the conservation sector lament the tendency of the traditional Euro-American conservation approach to conserve and protect landscapes that embody tropes of "pristine" nature, wilderness allegedly untouched by humans (Cronon 1995). This philosophy rests on a dualism between humans and nature: humans over here, nature over there, which has come under scrutiny of historical materialists as a key element in the destructive underpinnings of capitalist political economy (see Chapter 1, Mies 1986; Plumwood 2002; 1993; Moore 2018; 2015; 2003; Foster et al. 2010; Berry 2009; 1995a).

According to Smith (2010), capital brings the whole world into its commoditizing purview. This view of "*terra economica*" is a form of produced nature: nature that is as yet undisturbed, but holds the potential to be made a commodity, bought and sold (Goldstein 2013: 372). As Goldstein explains, the new production of nature alongside capitalism is seen as "a lifeless, mechanical, interchangeable whole: extensive, universal, and operating according to its own timeless laws" (2013: 359; see also Smith 2010, Olwig 1984; Merchant 1982). Like the state, the outcomes for such produced natures are "determined both by what capital does and does not see" (Goldstein 2013: 359). How certain spaces (and bodies) are seen as either viable for capitalist use or as 'waste' has been central to capitalist societies (ibid: 373). A "non-human world conceived of as a store of available natural resources," for Goldstein, is one enabling condition of capital; "a realm of material and social wealth that is both necessary, and necessarily de-valued" (ibid.). This logic applied to terra economica means potential commodities are seen and given a price. But, as with state logic, much else falls outside of this field of vision (Scott 1998) whose fate is determined by not being priced. What falls outside of capital and state logics, too, is a kind of produced nature.

Exploring Productions of Nature on Inner Island

As the previous chapter showed, the classification and mapping of wetlands—productions of nature and space—on Inner Island has led to decisions about how they

may be used, managed and governed. I showed how the process of state legibility has a tendency to use binary understandings (agricultural or non-agricultural) to place legal designations over spaces that are, in reality, much more complex. The flip side that we see here is the authorization of some activities—privileged over others—in those spaces. This chapter shows how history, and its relationship to the production of knowledge about natures, plays a role in this authorization and privileging by creating the spatial representations—and temporal boundaries—of appropriate and ideal uses for wetlands.

Local First Nations including the K'omoks, Qualicum and Tla'amin Bands have a stated interest in Inner Island, as it is within their traditional homelands. Negotiations surrounding the public acquisition for conservation of the Lindsay Dickson Nature Reserve property described in the third case study below involved these First Nations. However, historic uses of First Nations on the land are not officially documented, nor considered in current management of the land (Denman Conservancy Association 2002). This oversight is important, as I discuss further below. The way the wetlands in the following case studies are managed is based on a history that begins with European settlement. Aboriginal title to this land is overwritten by colonial property law that is based on a dualism between agricultural and non-agricultural spaces (see, for example, John Locke's 'Of Property' (1689), which makes a case that European agricultural land use is the ideal and most appropriate land use, rendering all other land uses "uncivilized," lacking in private property rights, and thus akin to terra nullius—empty land). This dualism, it would seem, hinges on how far back into history the state can 'see' in the process of its knowledge-making, and so begs the question: what has fallen out of this field of vision?

William Cronon posits that a dualism between humans and nature that is at the heart of the concept of wilderness creates a conception of conservation as "a crude conflict between the 'human' and the 'nonhuman'—or... between those who value the nonhuman and those who do not" (Cronon 1995: 85). Cronon, following the historical genealogy of the rise of the concept of 'wilderness,' argues that wilderness as beyond—outside—the human experience is a cultural production. Deneven, too, contests the idea that a 'pristine' wilderness was encountered with European contact in the Americas in 1492; on

the contrary, the landscapes of the Americas in 1492 were vastly 'peopled' places (Deneven 2001; 1992).

Cronon is concerned that the environmental movement focuses on the preservation of spaces that appear unpeopled (as they were "before the fall"), instead of focusing on how to live better on this planet everywhere. In his words:

> For many Americans wilderness stands as the last remaining place where civilization, that all too human disease, has not yet fully infected the earth. It is an island in the polluted sea of urban industrial modernity, the one place we can turn for escape from our own too-muchness… the best antidote to our human selves, a refuge we must somehow recover if we hope to save the planet (Cronon 1996: 69).

While as a concept wilderness "has served as an important vehicle for articulating deep moral values regarding our obligations and responsibilities to the nonhuman world" (Cronon 1995: 87), the problem is it encourages us to "ignore crucial differences *among* humans" including different cultural and historical origins of the concept itself (Cronon 1995: 85; also see Deneven 1992). The dualistic way of using the concept of wilderness leads to a tendency "to privilege some parts of nature at the expense of others" (Cronon 1995: 86). The perpetuation of this binary of an authentic nature and a corrupting culture, for Cronon, leaves us with questions about "what an ethical, sustainable, honourable human place in nature might actually look like" (1996: 81). Through a dualistic positioning of wilderness as outside culture, he argues, "we give ourselves permission to evade responsibility for the lives we actually lead" (Cronon 1996: 81).

I take Cronon's prompt to explore a related set of questions. Rather than examining the vision within the conservation movement of idealized conserved nature on its own, I want to better understand the state's ideal vision of land use, especially as it relates to agriculture *and* conservation. Does the state have an idealized historical baseline from which its actors make decisions particularly related to classification as mostly agriculture or conservation? What historical baseline underlies environmental management decisions today? Whose knowledge counts in making those decisions?

Section 2 - Turnips or Trumpeters?

Case Study 3: Whose Voice Matters in Mapping Madigan Marsh?

The Madigan Marsh was the first area of Inner Island to be settled by Europeans as early as the late 1850s (Denman Conservancy Association 2002; Denman Island Local Trust Committee 2011). It is a large (155 acre) wetland complex, and despite that it is nearly all on privately held land, it has long been a special place for many people on the island, repeatedly mentioned in interviews, called "spectacular" (CB2 pers. comm.) and evocative of "a spiritual experience" (FC3 pers. comm.).

The Madigan represents an ongoing tension between conservation and human land use on Inner Island, because of its agricultural use, historically to the present day. The Madigan is a wetland area that has historically flipped back and forth between land uses since its initial European settlement in the 1850s. At different times throughout the period of colonial settler occupation, it has been a wetland and also an active field drained for agricultural use. Potatoes and other root crops like turnips were grown there, as in other wetlands, and exported to nearby mines in what is now Cumberland, or to markets in Vancouver (Isbister 2002; FC4 pers. comm.). Today parts of the Marsh are flooded, and other parts are hayfields where horses graze.

Conservationists I interviewed were uneasy about agricultural use of the Madigan. One respondent explained how "we still have a tendency to convert wetlands to farms, grow potatoes on them… But where there's still a question of taking wetlands like the Madigan and making farms out of them, I don't know. It would certainly be an area of conflict" (CB1 pers. comm.). Much of the tension surrounding the Madigan has to do with the way it has been defined and mapped by different actors over time, and the legal implications of this for its ongoing use.

An independent study commissioned by the Denman Forestry Initiative in the late 1990s, *The SILVA Study* (Silva Ecosystem Consultants 1998), describes the Madigan as a natural wetland, assigning it a riparian buffer on its accompanying maps showing Ecological Sensitivity and a Proposed Protected Areas Network. Denman Conservancy Association also included the Madigan in its Island Legacy Project (Denman

Conservancy Association 2001), which mobilized local resources to protect properties with unique conservation values. Interview respondents at times referred to the Madigan both as a wetland and as a farm (FC3, CB1, FC4, FC1, C2, CB2, CB3, FC6, FSF2, R3, FC2 pers. comm.).

Yet since the Madigan has had agricultural use, on and off, since European settlement, its status to the state is fixed as agricultural. It is classified as a Seasonally Flooded Agricultural Field (SFAF) in the Provincial-Federal Terrestrial Ecosystems Mapping and Sensitive Ecosystems Inventory Mapping. This is reflected in the Islands Trust Land Use Bylaw (LUB, see section 2, this chapter). The Madigan Marsh is also in the Agricultural Land Reserve. These designations mean that environmental protections of the local Development Permit Area #4 (DPA#4) and the Riparian Areas Regulation (RAR) do not apply there. In addition, the LUB also notes, for land in the Agricultural Land Reserve, "the area occupied by buildings and structures used for biodiversity conservation, passive recreation, heritage, or wildlife and scenery viewing purposes may not exceed 100 m^2 for each parcel without approval from the Agricultural Land Commission" (ALC) (Denman Island Land Use Bylaw 2008: 32). The ALC has the final say about conservation land uses within the ALR, and within the Madigan.

Though enshrined in these policies, the regulation of SFAFs on Inner Island is contested amongst the local population. Mapping the Madigan as a Seasonally Flooded Agricultural Field—not a wetland—has implications for ongoing protection of its conservation values, and pits conservationists, at times, against landholders. The previous owner explained that she "fought" (F12 pers. comm.) to have this area left off the local Islands Trust DPA#4 mapping in 2011, because of the implications that inclusion would have for her farm. Who she fought *against* were conservationists who were adamant that this map should include the Madigan, due to its ecological significance, which biologist and conservationist respondents believe extends back before the time it was first settled and farmed (CB2, CB3, CB1, C6 pers. comm.). Attendees at a public hearing on the matter (October 2011) were concerned that excluding the Madigan from DPA#4 mapping would set a precedent for future removal of wetlands on the same terms (Denman Island Local Trust Committee 2011). Interview respondents expressed that the SFAF designation could open up the possibility for farming on other wetlands with already

existing and mapped conservation values (CB3 pers. comm.). Should an owner of such a property wish to use the agricultural history as evidence that the land should be farmed, they could do so. Conservationists also expressed concern about this in my research interviews (CB3, C2 pers. comm.).

In 2014, following this earlier debate over which areas would be included in the Development Permit Area #4, a local Land Use Bylaw Amendment (No 213) was proposed which would allow an exemption for any properties that could be designated as SFAFs based on historical use for agriculture and therefore be exempt from environmental protection regulations: Development Permit Area #4 and the Riparian Areas Regulation (Denman Island Land Use Bylaw 2014). This change, as one concerned respondent described, would "oblige [the Local Trust Committee] to allow agriculture on historic wetlands" on the island. As the proposed Bylaw amendment states,

> Agricultural activities within a seasonally flooded agricultural field that is in the Agricultural Land Reserve as long as it can be determined by site inspection and/or by current orthophoto interpretation that it has been previously modified for agriculture. If it is not possible to make the determination by these means, other historical evidence that agricultural activities have occurred in the subject area within the last 50 years from the date of the application may be acceptable (Denman Island Land Use Bylaw 2014).

The bylaw was passed, and six properties (including the Madigan) now recognized as containing SFAFs are exempt from requiring a Development Permit for agricultural activities as long as they remain in the Agricultural Land Reserve (Denman Island Land Use Bylaw 2014). Other properties could also be exempt in future, provided that they can prove agricultural history as per the above provisions within the Bylaw. But despite what the law now dictates, whether or not farming should be permitted the Madigan remains an important question for some of my interview respondents.

Case Study 4: The South Lacon Marshes or The South Lacon Fields?

The South Lacon Marshes is a complex of four connected wetlands encompassing approximately 12 hectares. It hosts diverse migratory birds and waterfowl but is also a

site where root vegetables were cultivated by European and Japanese settlers for sale primarily to the market created by the mining industry in Cumberland from the mid 1800s until the mid 1900s (Village of Cumberland 2018; Isbister 1976). The land has since that time fluctuated from shallow open water to drained agricultural field, and in the early 1900s a series of human-made ditches and wooden dam/weir structures was used to control the water levels so that in winter the field would flood, and in summer it could be drained and planted (C2, FC6 pers. comm.; Isbister 1976).

Farming of turnips and potatoes by settler owners continued intermittently on this property until the 1980s, when ownership changed and beaver dammed the weir and reverted it to a wetland/shallow lake in the absence of agricultural cultivation. One respondent described how this place was "a fantastic wintering area for [trumpeter] swans and all kinds of other waterfowl. We used to count swans there all the time" (FC6 pers. comm.).

Years later, in the late 1990s, the property was logged. At the time of this logging, a community member acting as an environmental whistleblower accused the owner of logging too close to the edge of the wetlands, and threatened legal action based on logging within the legal setback of a mapped wetland. A respondent who was directly involved told me that in the face of this accusation, the landholder, knowing the agricultural history of the property, removed the beaver dam on the basis that "this is not a wetland, this is a field" (R4 pers. comm.).

One of my respondents told me how, "the tragedy" of this story "is that the riparian protection initiative was the trigger to destroy a perfectly good wintering wetland for waterfowl" (FC6 pers. comm.) because the owner had to prove the agricultural history of the land in order to avoid the legal action:

> Had there not been the threat to the landowner saying we're going to take you to court because you took the trees away from the edge of the water… the water would still be there, and the swans would still be floating there. This was the best area... because it was shallow, and there was underwater grazing for the swans all the way through. It's amazing. You know it's sort of one of these things where protectionism goes off the rails (FC6 pers. comm.).

Because of the evidence of historic agricultural use, there was at the time—and remains—no legal recourse to further contest the drainage of this wetland complex. The owner was able to justify logging the property despite the recognized conservation value, because the agricultural designation allows primacy of farming (logging included) over conservation. What is striking is that socio-ecological history prior to that settler-colonial agriculture *is not visible* within this conception of the legal status of the land. That is, the relevant historical baseline prioritized by the state is not related to prior (Indigenous) uses of the land (by human or other-than-human inhabitants), but rather to the moment of colonial settlement, a point I return to later in the chapter.

This is an ongoing issue with the South Lacon Marshes. In early 2018, a concerned community member contacted Denman Conservancy Association reporting that the same wetlands were again being drained, this time by the current landholder:

> Yesterday I noticed that the big pond at the end of Lacon was draining out quickly. Someone had just removed a small beaver dam that had kept the water in the pond. This seems like the worst possible time to drain a large pond! Currently, the pond is full of nesting ducks, nesting geese, mating frogs, newts and at the edges there are communities of alligator lizards. I just wanted to check with someone to see if there are any protections in place for nesting birds, blooming lilies, reproducing frogs and newts etc. (Denman Conservancy Association 2018a).

As one conservationist explained, "this is a huge issue for a small gulf island where most of the major original wetlands are in the ALR because as they were drained and farmed for hay or pasture before the upland farm lands were cleared of trees" (CB3 pers. comm.). These wetlands are "significant and critical surface water" and important for supplying groundwater to human wells, as well "supporting a myriad of native biodiversity elements, from aquatic to all the surrounding terrestrial users" (ibid.). But, in the instance that historical use is identified, formally, the draining of the wetland is perfectly legal according to local and provincial laws. In short, as one respondent put it, in the case of these wetlands, "we have no leg to stand on when it comes to what private owners do if no laws or by-laws are being broken" (ibid.).

What are known as the Madigan and the South Lacon Marshes to some in the community, have come to be known as Seasonally Flooded Agricultural Fields to others.

Currently the latter is the more powerful legal classification via state prioritization, and wins out in the duel that the policies set up. The turnips take legal precedence over the trumpeters. In the following case, I turn to another example of colonial agricultural history dictating current conservation potential in wetland space, but this time in a property held by a public conservation land trust.

Case Study 5: The Lindsay Dickson Nature (and Agriculture?) Reserve

The Lindsay Dickson Nature Reserve (LDNR) is 134 acres of mature riparian forest and wetland draining one of two freshwater lakes on Inner Island. The first occupation of LDNR following colonial settlement in the Salish Sea was by a settler family who farmed parts of the land but kept much of the standing timber on the lot (Denman Conservancy Association 2002).

The Islands Trust land use zoning under the Official Community Plan (OCP) is Public Conservation. The northeast half of the property is in the provincial Agricultural Land Reserve (ALR). The water zone seaward of the property is classified W4 (Marine Protection) to a boundary ~400 meters offshore. Beyond, the zone classification is W1 (Marine Conservation) (Denman Conservancy Association 2002). Over ten years of extensive legal, technical and administrative work by Denman Conservancy Association (DCA), community conservation advocates, and the provincial government, along with over $200,000 raised by community members, went into the acquisition of this land.[29] The land was subsequently transferred to Islands Trust Conservancy (ITC), and a conservation covenant held by DCA is registered on the property title.[30]

Wetland areas within the property are not found on Islands Trust mapping, with the exception of a small area of Seasonally Flooded Field at the boundary with the old

---

[29] The land was acquired by the province of BC, using fundraised money, from the previous landholders.

[30] "The objective of the Islands Trust is to preserve and protect the Trust area and its unique amenities and environment for the benefit of the Trust area and of British Columbia generally, in co-operation with municipalities, regional districts, improvement districts, other persons and organizations and the government of British Columbia. The Islands Trust Conservancy (ITC), formerly Islands Trust Fund, assists in implementing this objective by establishing nature reserves and nature sanctuaries and by working with interested landowners to protect special features and values on their lands through voluntary conservation initiatives" (Denman Conservancy Association 2002).

homestead property. Perhaps the wetlands that exist there are not large or connected enough to merit an Islands Trust mapping process. The baseline, management plan and covenant for this Nature Reserve, which involved extensive ecological assessments done by local people, show that wetlands are an important element of its ecology. In addition to the now mature Coastal Douglas-fir moist-maritime forest and old growth trees, the ITC management plan for the property highlights the importance of water as a major influencing factor in the ecology of the Reserve: a creek flows through and along its north side, including a large 'Central Wetland' area. Water seepage and catchment areas are evident in the small pocket wetlands throughout all but the dry rocky upland. The old homestead adjacent to the Nature Reserve contains wet meadows and part of the large creek that drains the land to the East shoreline of the island (Denman Conservancy Association 2002).

The DCA conservation covenant is an important element of the protection of this land for conservation. A covenant requires that a detailed baseline ecological assessment of the property must be done, and a detailed proposal must be written that includes current and historical uses of the land. The baseline study becomes an official record of the ecological state of the land at the time it is carried out. Once a covenant is established, it requires regular monitoring to ensure the features protected by the covenant (as identified in the baseline) are maintained as mandated and agreed upon by the landholder and the covenant holder (FC3, C2, CB3 pers. comm.; Denman Conservancy Association 2018d).

In BC, if land falls within the Agricultural Land Reserve (ALR), a landowner must also be granted permission from the Agricultural Land Commission (ALC) in order for a covenant to be placed on the land (FC3, C2, FC2, IT2 pers. comm.). In this way, the covenant is subordinated to its ALR designation. Despite its conservation value, its partial designation in the ALR means the covenant had to include a 'notwithstanding clause' which effectively nulls its terms with respect to agricultural use on the ALR portion of the property—over half of the land (Denman Conservancy Association 2002). Conservation values notwithstanding, the ALC requires that the ALR portion could be used for agriculture anytime in the future should the owner so choose. The covenant is intended to give protection 'in perpetuity', but the conservation values of this land are still ultimately at risk (FC3, CB3 pers. comm.).

For now, the land is protected for conservation and the risk of it being altered is low. But the owner could change, and previously defined mandates for conservation lands could come under pressure in the face of a growing demand for agricultural land as populations in this region grow. For me this raises questions about the long-term security and effectiveness of legal mechanisms—like covenants—for protecting ecological values of wetlands. It also raises the same questions about how effective the current legal protection mechanism—the Agricultural Land Reserve—is for agriculture. As it stands, when historical agricultural interests exist within spaces designated for conservation, they may at any time legally overrule conservation values.

The policy structure that ultimately has authority over this land is aiming to protect the value of long-term food security, an important goal. But this protection is based on (agricultural) land use that originated with settler colonialism, the history of which makes this highly important ecosystem—which is no longer seen as 'pristine' wilderness—vulnerable to future development intervention. This land is held under private land title, even though the land trust currently protects it for conservation for public benefit. Because of the notwithstanding clause, the underlying ecological integrity and conservation values of that land (which are also intimately tied to its agricultural potential) could be made 'invisible' to the state with a few strokes of a pen, at the whim of a future landholder.

The irony of the dualistic legal scenario in which this land sits is that both agricultural and conservation values are now *nominally* protected, but because of this, they are also both potentially compromised. This hearkens back to a point made in agroecological and food sovereignty literatures, as I discussed in Chapter 1: land conserved for any purpose is not effectively conserved unless it is done within the context of a healthy 'landscape matrix' that acknowledges the interdependence of conservation and use (Perfecto, Vandermeer and Wright 2009).

Section 3 - History *Matters* in Wetlands

The above cases demonstrate how land classifications based on historical agricultural use can render wetlands vulnerable to development, even when they are long recognized to have broadly significant conservation value and importance.

In addition to altering the structure and function of ecosystems themselves, the practice of early European settlers using wetlands for agriculture still conditions the policy surrounding wetlands through their formal classification as agricultural spaces. Agricultural designation emphasizes the value of wetlands (historically but not necessarily currently) for farming, thus complicating their conservation by reducing protection from alteration or development. Even if a wetland has been mapped and identified as an important water body for ecological reasons such as biodiversity, migratory bird habitat, or fish presence, as in the above cases, it can legally still be altered for farm uses. This is because agricultural activities (as defined by the Farm Practices Protection Act) and lands within the Agricultural Land Reserve (ALR) are exempt from environmental regulation processes.[31] In all of the cases above, wetland conservation values are visible and widely emphasized and acknowledged in local discourse and knowledge, but invisible in the policy apparatus. Agriculture maintains primacy over these conservation values based on a historical baseline that recognizes the history of land use in these wetlands as extending back *only* to the beginning of colonial settlement, a mere 150 years.

This leaves me wondering, are there cases in which power vested in such institutions can be effectively challenged in the name of conservation, when the baselines are set according to these particular knowledges and histories? What enables settler colonial

[31] In contrast to DPAs, agricultural activities are not exempt from RAR requirements, but they are subject to reduced setbacks. Farm Practices as defined in the Farm Practices Protection (Right to Farm) Act are not subject to the RAR. However, while the RAR does not apply to most farming activities, it does apply to residential, commercial and industrial activities on lands that may otherwise be used, designated, or zoned for agriculture. For instance, construction of non- farm-related buildings (e.g. a farm house or farm stand) or development of a golf course on Agricultural Land Reserve land is generally regulated by local government bylaws and subject to the RAR. Lands that are within the Agricultural Land Reserve (ALR) and/or zoned for agriculture are not summarily exempt from the RAR. Guidance for locating agricultural structures can be found in the Ministry of Agriculture's Agricultural Building Setbacks from Watercourses in Farming Areas factsheet" (British Columbia 2016: 9-10).

history to take precedence over the history that predates it, for instance, Indigenous land uses? How can local communities mobilize, and foment in governance, land use and other values that look back beyond the settler colonial context in which we find ourselves at present? Whose knowledges, and what historical baselines, *should* determine appropriate use in wetland and other agro-ecological spaces? Colonial laws in BC set up an unreasonable binary that presents a conundrum for the management of these agro-ecological spaces.[32] Which is more important: Turnips, *or* Trumpeters?[33] People in the community realize that the question is wrong. The answer is *both.* But the law, as it stands, cannot see the Trumpeters for the Turnips.

On Inner Island, as elsewhere, wetlands were long ago logged and farmed to serve colonial capitalist growth and settlement, disrupting existing human and nonhuman livelihoods in the process. Before that, First Nations were using those lands (Recalma-Cluetsi 2003; Stewart 2017), though this history is less visible to (or is ignored by) the current ruling state. This ongoing pattern of development has caused the loss of wetland habitats all over this region and beyond, aided by the institution of private property and state claims to authority, and the historical baselines and knowledges that grant them power. The LDNR is now protected, but it could be farmed again if ownership changes.

This case shows how a binary is maintained between conservation and agriculture based on the policy that surrounds wetland space. This hearkens back to the earlier discussion of the tradition of 'pristine nature' as a basis for prioritizing and justifying the conservation of land. If these are set as binary concepts, where do 'wilderness' or 'human use' (i.e. agriculture) begin and end in the Lindsay Dickson, or in the Madigan, or the South Lacon Marshes? Who gets to decide? Cronon argues that the land preservation movement tends to valourize a nostalgic pristine nature, eliding longer histories of use, including by Indigenous Peoples (see also Deneven 2001; 1992). My research shows the state valourizing not conservation, but agricultural, settler history. In doing so, it similarly 'eliminates' Indigenous histories of land use (see Wolfe 2006), holding up the colonial

[32] By colonial laws, here, I mean specifically the Agricultural Land Reserve Act, the Land Title Act, and the Local Government Act, all of which play a role in determining the outcomes for agricultural wetlands, as I have explained in the above case studies.

[33] By 'Trumpeters,' I mean Trumpeter swans, not players of musical instruments.

agricultural land use as the most idealized, and legally enforceable, which has implications for socioecological communities. (Such an idealization resonates all the way back to Locke's influential 1690 essay, On Property). Braun (1997: 7) has contested the idea of a "historical distance between a colonial past and a postcolonial present" in BC. In the context of ongoing colonialism, he contends that the authority to speak for nature has been built on "critical absences" from the foundational narratives of natural resource management and conservation in BC. In the emergence of 'nature' as a separate entity from 'culture', Braun argues, the marginalization of Indigenous presence in BC has simultaneously occurred, fomented by the centralization of colonial power (ibid: 7.).

M'Gonigle and Dempsey (2003) point to the ways in which the conservation sector in particular pays insufficient attention to the (historical) political economic aspects of the landscapes that conservation efforts aim to protect. For them, "the traditional protectionist approach fails to counter the powerful centralizing forces that make protected areas necessary in the first place" (2003: 112). To this, I suggest that the settler colonial historical baseline on which land use policies are based is just such a 'centralizing force'. In other words, the settler agricultural reference point used to determine policies for land use serves to reproduce the prioritization of colonial historical knowledges and "bury" Indigenous knowledges and 'invisibilize' the Peoples themselves (Braun 1997).

In sum, the use of this colonial historical baseline *matters*. In addition to reifying settler land use, this valourization of agricultural land use has material consequences for long-term ecological conservation, and, by extension, also agricultural potential. It perpetuates problematic dualisms between humans and nature that have on-the-ground effects in agroecological spaces like the wetlands, as we see in the cases above: a rapidly draining marsh full of ducklings, for instance.

In the face of ecological disruptions instigated by the powerful 'centers' of colonialist and capitalist political economy—like the state bureaucracies that claim authority to determine land use—M'Gonigle and Dempsey emphasize the need for new forms of territorial control and legitimacy. They point to "emerging spatial alternatives to the state as a primary reference point for political legitimacy and action" (2003: 115), arguing this must include community and 'extra-state' civil activism, and new institutions of tenure in

which local populations have more control of land and common property resources (ibid.). Presently, despite local appeals to formally recognize the conservation values of some previously farmed wetlands and manage them accordingly (i.e. preserve their ecological values as well as their agricultural potential), outcomes in these spaces are influenced by a legal primacy of agriculture that limits the effectiveness of conservation initiatives. Agricultural interests must be served *first*.

Conclusions

When wetlands are brought under formal oversight, when they are mapped or classified in certain ways—or as Scott would say, simplified and made legible to the state—they become subjects of law and governance. And by extension, I argue, they become subjects of the *histories* under which this governance is authorized. On Inner Island, the history of settlers farming in wetlands plays a part in the way that the state is empowered to classify wetlands and decide on their future: currently agricultural use *or* protection for ecological value are the two most common options. But what is needed to mend the metabolic rift is an option that emphasizes both: wildness in agricultural spaces; food values in wild spaces. A braided stream.

To go back to the literature on food sovereignty/agroecology, current BC policies do not acknowledge that conservation is actually an underlying value of agriculture. This dualistic approach to wetland management and conservation negates local people's understanding that wetlands exist in a liminal space that includes overlapping conservation and agricultural values. In Wendell Berry's words, "to save either, we must save both" (Berry 1995b: 56). The two are always connected: sustainable farming needs wild spaces and biodiversity (Perfecto et al. 2009), and, at the same time, "conservationists eat" (Berry 2009:11). The Inner Islanders in the cases above are claiming some control over the governance and management of agroecological space by speaking out about important conservation values of wetlands, and against state actions that compromise these. This can be seen as an attempt to secure food sovereignty, at the heart of which is reconnecting to and protecting the ecological roots of food production, and recognizing that diverse knowledges and practices surround food provisioning and

the landscapes in which it is embedded. These diverse knowledges hold alternatives to ecologically ignorant food regimes prevalent today.

Assigning agricultural values primacy over other (for instance conservation) land use values maintains a dualism—a rift—between the two. I argue that this is misguided not just because in favouring agricultural over conservation values these policies neglect to recognize the complex nature of and knowledges surrounding wetlands, but also because this view excludes interests and values outside the settler colonial historical timeframe.

The use of a settler colonial historical baseline in this instance is a mode through which colonial histories are valourized and given primacy over Indigenous ones. Wolfe (2006: 387) argues that a racist "logic of elimination" surrounds settler colonialism as a global, historical movement to secure territory that continues today (see also Braun 1997). This is manifest geographically and politically in the widespread "dissolution of native societies" and the construction of "a new colonial society on the expropriated land base" (Wolfe 2006: 388). This settler colonial baseline perpetuates the hierarchy of agriculture over conservation, as I have discussed in this chapter. But beyond this, it is a striking example of the way colonialism continues today in the land base of Inner Island—unceded Indigenous territory—by invisibilizing pre-colonial Indigenous histories of land use and governance.

This thesis contends that governments need to give significant attention to the discrepancies as they establish future policies for land use. Currently in BC, a concurrent review of the Agricultural Land Reserve (ALR) and Agricultural Land Commission (ALC) is underway. There is a twofold opportunity here. First, the ALR could be revitalized to include increased protection of land for agro-*ecological* values as opposed to mainly conventional agriculture. Second, the ALC could be expanded to include greater input from First Nations in this region and province. Part of this will require taking a longer (and decentering the Eurocentric) view of the histories on which the policies are based. First Peoples have a long history of land use and stewardship surrounding food provisioning. For instance, Clam Gardens are sites where Indigenous mariculture has taken place throughout coastal territories from the Salish Sea northward for perhaps two thousand years or more (Harper 2014; Williams 2006). For agricultural policies to be made more inclusive of agroecological and traditional ecological

knowledges, people who hold these knowledges must be supported in mobilizing for change. In the context of such powerful political economic institutional knowledge-making about socio-ecosystems, perspectives that look beyond simplified, dualistic and colonial ways of understanding space are needed. Building from these empirical chapters and their conclusions, in the final chapter I discuss possibilities for closing the rift between agriculture and conservation through alternative approaches to decision-making about agroecological spaces.

Chapter 4: Conclusion

The Human-Nature Dualism and the Metabolic Rift

This thesis interrogates the human-nature dualism in western colonial and capitalist political economy and epistemology. I do so through an exploration of human food provisioning and conservation on Inner Island. Critical geography, eco-Marxist, food sovereignty and agroecology scholars highlight how this dualism has been the basis for a 'metabolic rift' between humans and our ecological sources of sustenance (Foster et al. 2010; Wittman 2009; McMichael 2007). I understand the basis for this rift as reductionist, institutional knowledges that simplify the complexity of socioecological entanglements in order to make them more legible and governable for both state and capital (Scott 1998; see also Blomley 2017, 2016, 2003; Pasternak 2014).

Critical geographers and other scholars have shed light on how productions of knowledge about nature in the context of colonialism and capitalism play a practical part in the dualism by framing land as "terra economica" (Goldstein 2013)—land in need of improvement—and as pristine "wilderness" to be spared from development (Cronon 1996, 1995; Deneven 1992). In this context, agriculture and conservation are separated from one another—politically and ecologically—even though the management of agricultural landscapes is deeply entwined with wider socio-ecological and political processes (Perfecto et al. 2010; Jackson 2008; Berry 2013, 2009, 1995a, 1995b). Braided streams become separate channels, and we learn from agroecology scholarship how this is harmful to socio-ecosystems (Altieri and Holt-Gimenez 2013; Wittman 2009).

From the above conceptual framework, the main questions for this research emerged: How is the dualism—the rift between agriculture and conservation—maintained? What conditions, and power and knowledge relations, contribute to it? Particularly, how do institutions and the broader political economy obscure the braided streams?

Findings: Knowledge, History and Power in Inner Island Wetlands

Focusing on Inner (Denman) Island, a rural community of active agriculturalists and conservationists in the North Salish Sea, I learned through interviews with Islanders that wetlands are critical sites where conservation and agricultural values overlap. I therefore centered my research on wetlands to explore the research questions, interrogating the rift between agriculture and conservation in wetland sites.

In Chapter 2, I took readers on a tour of the wetlands of Inner Island, and overviewed the policy apparatus that surrounds them. Overall, interviews with islanders revealed that they greatly value wetlands. But there was a divergence of opinions about whether they should be used, and how. I found that, even where tensions arise, many local people do not see wetlands through a binary perspective that separates agriculture from conservation (nor humans from nature). Rather, they see them as deeply interconnected. Case studies revealed that the rift between conservation and agriculture in wetlands is maintained through state productions of knowledge and the institution of property, which are both enabled and challenged by local knowledges—metises (Scott 1998).

In the first case in Chapter 2, concerned landholders exercised their rights in property to ensure something was mapped, but this required collaboration with local people with specialized knowledge to enable the 'groundtruthing' and accurate mapping of the wetland on their property; the landholders were able to influence how the land would be mapped. Here the state relied on local knowledge—that of the landholders themselves to increase the visibility of a stream connected to another upstream wetland, thereby ensuring its protection under the conservation-focused Riparian Areas Regulation. In the second case, the landholder assumed that private property (and control of access to that property) would impede state visibility of the land, and so avoided the state process for Development Permit Areas associated with altering a wetland. But a local with practical local knowledge of that property ignored the assumed property rights, and made the land visible to the state through covert mapping of the newly enlarged wetland area. This resulted in a change to official state mapping to include this previously unmapped wetland. This means the landholder now cannot legally remove trees there. State visibility in this case relied on local knowledge to work *around* private property rights. In

both cases, local knowledge was the impetus for and enabled state visibility of wetland spaces.

While I found that Islanders do not tend to view wetlands in a dualistic way—that is, they recognize the overlapping conservation and agricultural values—the policy apparatus and political institution of property seems to bring about dualistic ways of governing these spaces, even when local people are involved in determining the terms of that governance. Overall, the process of making wetlands 'visible' for state regulation—through classification and mapping of land—tends to bifurcate conservation from agriculture, fixing them as *either* conservation *or* agricultural spaces in the policy apparatus that surrounds them, and this translates into a perpetuated rift between the two.

How metises, or local knowledges, are enacted in relation to property and the state classifications affects the political ecological outcomes in wetland spaces on Inner Island. Through their assumed property rights, landholders assume some power to determine *access* to the spaces of property. This access can in turn determine the degree to which the lands are visible to those 'outside' their property boundaries, including agents of the state. In other words, the places where property rights are applied can be made more or less visible to the state based on the interests and knowledge of the property holder, but also others 'outside' of the property boundaries who hold local, practical knowledge of that space. Both can influence the way that land is mapped and regulated. A property holder may influence how land is officially mapped by instigating state groundtruthing, as we saw in the first case about the Brook. Or, the practical knowledge of someone acting from *outside* the limits of property can also contest and rework existing state and local knowledges, as we saw in the orchard wetland case. In both cases, local people instigated new representations of wetland properties in a hope that future management might reflect their own values. The outcome is a change to what laws and policies might apply in those spaces—regardless of the assumed rights of property ownership.

Overall, the cases of Inner Island wetlands in Chapter 2 reveal connections between local knowledge, practices and values, and the wider political processes that shape outcomes in wetlands, which tend to bifurcate agriculture and conservation. In large part, it is the political-economic structures—the policy apparatuses and the institution of property—which sanction the continued use of wetlands for agriculture and that create

ongoing tensions between conservation and agricultural interests. On Inner Island, despite the acknowledgement by local people that conservation and agricultural values are related, the actions taken in the production of state knowledge surrounding wetlands remains aligned with the broader dualism between humans and nature that maintains the metabolic rift. Local knowledges are influential in changing how wetlands are mapped and classified, but the outcome of the changes still ends up conforming to the dualistic way of "seeing wetlands like a state" on Inner Island.

In Chapter 3, I further explored how mapping and local knowledges inform wetland governance, specifically focusing on the *historical* elements of the process of making wetlands legible to the state. I asked, how are tensions around the classification of wetlands heightened when the history of wetland use involves agriculture? What role does the historical use of these landscapes play in current classification and management? In the first two cases, what are known as wetlands to some people in the community, have come to be known as Seasonally Flooded Agricultural Fields to others. Currently, the latter classification is assigned to land based on using the visible historical use for agriculture as proof of its agricultural values. Held up against the opposing designation, 'wetland', the Seasonally Flooded Agricultural Field is the more powerful legal classification. It wins in the duel that the policies set up between conservation and agriculture in these privately held lands. Agricultural values are thus protected in those spaces, to the chagrin of local conservationists who assert that the ecological values (wetland functions and bird or other wildlife habitat) should be more important. In the third case, a wetland area nominally protected within a nature reserve property (held by a conservation land trust) is mapped within the Agricultural Land Reserve based on its historical use for agriculture. This means that the conservation covenant used to protect the land must include a 'notwithstanding clause' which essentially nulls the conservation protection over the ALR portion of the property. The conservation potential in this wetland space remains threatened by possible agricultural use, based on its historical use, despite that an entire community has worked to protect it formally for conservation.

Through interviews and case studies, I found that the current policy apparatus is conceptually rooted in the settler colonial context and timeframe. Drawing on Cronon (1996), Wolfe (2006), and Braun (1997), I discuss the settler colonial context for the state

and the institution of property and the relationship of this context to a historical dualism between humans and nature, in land use management and in the conservation sector. Classifying wetlands based on histories of settler agriculture, as is done in these cases, means agricultural values are prioritized over conservation values. This maintains the rift between them, and also normalizes settler colonial historical knowledge as the basis for wetland governance. I argue that this way of seeing—and governing—wetlands forecloses Indigenous and other political-ecological knowledges, ontologies, and authorities outside this colonial context.

Overall, the previous chapters have shown how imagined dualisms between humans and nature persist today through reductionist political economic and state productions of knowledge, and their use of a settler colonial historical baseline, in classification and mapping of wetlands on Inner Island. In this process, complex socio-ecological entanglements, and pre-colonial epistemologies, become obscured or erased from the political economic apparatus that determines their governance.

Speaking Back to the Literature

Blomley argues that "spatially defined environments… can serve to reflect and reinforce legal relations of power" (2005: 283). From this perspective, "spatial markers of property,"—which in the case of Inner Island could mean a map or a particular land designation in wetlands or the foreshore—"play an important role in shaping a particular sensibility toward spatial use, access, rights and privileges" (ibid.). In particular, I found that *historical* knowledges—the historical baseline—upon which these spatial markers are built, is a critical factor in the power they have to define political-ecological outcomes. But Scott reminds us that "we must keep in mind not only the capacity of state simplifications to transform the world but also the capacity of the society to modify, subvert, block, and even overturn the categorism posed upon it" (1998: 49). Political contestations over property render these governed spaces less fixed than they may appear (Blomley 2017; Thom 2009). What my research demonstrates is that the knowledges that go into defining these spaces are a critical part of the power relations and the way this can influence what happens on the ground. Local people, we have seen, can use their

practical knowledges to influence how the state or other political-economic institutions 'see' the spaces they occupy. Ultimately, environmental management cannot be separated from the political economic context within which it takes place, and the power relations at play there (Perreault et al. 2015). The law and policy apparatuses involved in the governance of wetlands have the tendency to parse complex, interconnected things into manageable units. As Colburn argues, working to protect the integrity of landscapes requires confronting our political system's "fragmenting and commodifying tendencies and improving the mechanisms to bridge its divides" (2007: 253; see also Thom 2009).

DuPuis and Goodman (2005) stress a need for interdisciplinary research that looks at agro-food studies in relation to issues of place-making and spatial politics. Ultimately, whether or not something has a positive impact on something else is always a political question involving negotiations of the power and knowledge relations, and these relations are upheld by bundles of property rights, different representations (i.e. mappings and classifications) of space, and contested perceptions about law and what constitutes 'appropriate use'. As Berry teaches us, "You can't save the people apart from the land, or the land apart from the people. To save either, you must save both" (1995b: 42). As the case studies in this thesis have shown, the binary logic that separates the two is deeply rooted. But there are opportunities through the performances of this metis—local knowledge—to foment an agroecological ethic that focuses on 'saving both.'

Those making policies and land use decisions surrounding wetlands could keep in mind the "landscape matrix" concept (Perfecto et al. 2009), recognizing that the ecological values of (wetland) space do not stop at the boundary of a farm. By allowing for flexibility in farmland protection policies in order to uphold and protect diverse conservation values in wetlands (sometimes above some agricultural rights), the quality of farming will be better off, long term, too.

Opportunities for Future Research: The Foreshore as a Critical Site?

Following the braided streams of conservation and agriculture from wetlands to the foreshore opens up new possibilities for further exploring the themes discussed in this thesis. Through interviews and my research of sites and texts on Inner Island, the

foreshore was another site that emerged—alongside wetlands—as a place where persistent tensions exist between conservation and agriculture. These tensions were most apparent in ongoing conflicts between the shellfish aquaculture industry and local residents and conservationists. While I could not address this within the scope of this research, it presents an opportunity for future study. Research could build on existing research of scholars focused on shellfish aquaculture in this region (see D'Anna and Murray 2015; Mamoser 2011; Emmett 2002), exploring the foreshore site within the context of the metabolic rift and the imagined dualism between humans and nature. The political apparatus that surrounds the foreshore, like wetlands, is geographically and politically complex. Tensions are playing out in the context of K'omoks First Nation treaty negotiations that involve Inner Island and other Islands in the Salish Sea (K'omoks First Nation 2018; Luckham 2018), and at the heart of these negotiations are questions about jurisdiction. As Pasternak argues, the specifics of places and jurisdictions "are masked when a plurality of legal systems are mapped as a single sovereign space" (2014: 148), as is the case in both wetlands and the foreshore of Inner Island. In such territories, reduced to representations on a map, "a surplus of meaning spills out" (ibid.: 149).

Another promising edge of new research could also be to add to the growing body of work focused on the relevance of food sovereignty discourse and practice in the settler colonial context in BC (see Wittman and Desmarais 2014). Specifically, research could focus on how Indigenous people and communities are working toward the goal of revitalizing food sovereignty and ecological conservation in their territories. Indigenous and non-Indigenous scholars and activists could interrogate how current colonial laws and policies might be serving or hindering their progress. Future work could seek to better understand the ways that Indigenous laws may align with food sovereignty perspectives more broadly.

Looking Ahead: Research Implications

If a colonial historical baseline influences decisions about the use and management of agricultural and conservation landscapes, as this thesis demonstrates, another question follows: What factors influence the selection of historical baselines for our political-legal

and economic systems? How are priorities for land use determined, or revised, based on these chosen baselines? These questions will be relevant going forward for the places explored through the case studies in this thesis, and extending into other places like the foreshore. Because parts of the Lindsay Dickson Nature Reserve were farmed a century ago, should that activity compromise the forest and wetlands there today, part of a rare and highly threatened ecological community in the region? Because the South Lacon Marshes have been cultivated in the past, should farming still be permitted there, at the cost of globally significant bird habitat? Because industrial aquaculture now occupies much of the foreshore of Inner Island, should conservation or agroecological values that existed there long before now be overshadowed?

A key outcome of this research would be to push for the state to re-think some of its categorizations and the way that historical land uses influence contemporary management options. For example, in public consultations around the current 'revitalization' of the ALR and the Agricultural Land Commission (ALC) that administers it, participants generally supported additional uses of the ALR provided those uses were connected to agricultural production (R.A. Malatest & Associates Ltd. 2018). As changes are made to these policies, communities could become engaged in the process and contribute their practical knowledge about the way ALR lands should be treated—and regulated—going forward. For instance, lands included in the ALR may also have important conservation values. Perhaps changes to the mapping could reflect that by including sensitive ecosystem layers and assigning further environmental regulations to those areas (similar to local Development Permit Areas). Or communities could push for existing local legislation to carry more weight against the upstream provincial laws, so while protecting agricultural lands against future development, we can also protect their ecological values, such as biodiversity. Some ALR lands may have high agricultural value but also high conservation value, and regulations under the ALR could be made more flexible to allow for the protection of these values in cases where communities collectively choose. Such changes could be an important step, as would building more plural knowledge production systems by involving a wider range of participants.

We learn from the cases here presented that "the resources for inventing natures and cultures are unevenly distributed" (Escobar 1999: 1; see also Wolfe 2006). So, the

question remains: which—or whose—knowledges and histories will be called on to shape ongoing formulations of (agro)ecological knowledge, and governance, in the Salish Sea? Who will get to decide what happens in wetlands? What the findings of this thesis point to is that neither the land itself, nor its differentiated representations by local communities, is permanently fixed. Maps, and the spaces (i.e. property) they represent, can change subject to the different knowledges that inform representations of them, and the political-economic relations surrounding them (Thom 2009; Roth 2007; Rocheleau 2005; 1995; Brody 1981). The mapping of land—as inside one land classification and outside another—is crucial for asserting legal jurisdiction, and enables techniques of statecraft that render places and communities uniformly governable (Scott 1998). But it is only part of the picture. Looking to Blomley, we learn that the boundaries of property are effects "of a complex web of interactions and relations… produced through a particular set of relations to things, ideas, and practices" (2016: 13; see also Thom 2009). In the Coast Salish context, for instance, Thom contends that boundaries are "physically located discourses of kin, sharing and travel" (2009: 181). What we designate as a certain type of property, in other words, is "performed into being through the arrangement of fences, the pronouncements of judges, the classifications of titling systems, the beliefs and practices of ordinary people, the growing of trees, and so on" (Blomley 2016: 13; see also Glass and Rose Redwood 2014). This opens up possibilities for changing the 'knowledge performances' of local people so that their pluralist understandings of agroecological space are translated into the policy apparatus.

Bibliography

Agriculture and Agri-Food Canada. (2013). Environmental Sustainability of Canadian Agriculture, *Environmental Indicator Report Series 3*: 235. Retrieved from http://publications.gc.ca/site/eng/368998/publication.html

AEL Agroecological Consulting. (2011). *Denman Island Agriculture Strategy*. Victoria, BC.

Altieri, M., & Holt-Gimenez, E. (2013). Agroecology, Food Sovereignty, and the New Green Revolution. *Agroecology and Sustainable Food Systems, 37*(1), 90–102.

Ashley, H., Kenton, N. and A. Milligan. (2004). Editorial. *Participatory Learning and Action 54*, 8. International Institute for Environment and Development.

Association for Denman Island Marine Stewards. 2018. About Our Work. Retrieved from https://adimsblog.wordpress.com/

Augustine, S., & Dearden, P. (2014). Changing Paradigms in Marine and Coastal Conservation: A Case Study of Clam Gardens in the Southern Gulf Islands, Canada. *The Canadian Geographer 58*(3), 1–10.

Aquash, Mark. 2013. First Nations in Canada: Decolonization and Self-Determination. [Indigenous Education] *InEducation 19*(2), 120-137.

Balmford, A., Green, R., & Phalan, B. (2012). What conservationists need to know about farming. *Proceedings of the Royal Society B*(279), 2714–2724.

BC Ministry of Agriculture, Strengthening Farming Program. (2014). *Growing Knowledge: Comox Valley Regional District Land Use Inventory Report.* Ref 800.510-19.2014. Abbotsford, BC.

BC Ministry of Sustainable Resource Management, Coast & Marine Planning Branch. (2002). *The Baynes Sound Coastal Plan for Shellfish Aquaculture.* Nanaimo, BC.

BC Ministry of Environment, Lands and Parks; BC Ministry of Forests. (1998). *Field Manual for Describing Terrestrial Ecosystems* (Land Management Handbook 25). Victoria, BC.

BC Ministry of Environment 2018. Conflict Species. Retrieved from https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/human-wildlife-conflict/staying-safe-around-wildlife/other-common-conflict-species

Berkes, F., Colding, J., & Folke, C. (2003). *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change.* Cambridge, U.K.: Cambridge University Press.

Berry, W. (2013). Local Economies to Save the Land and People, An Address. Presented at the Kentuckians for the Commonwealth, Annual Membership Meeting. Retrieved from https://www.kftc.org/blog/wendell-berry-local-economies-save-land-and-people

Berry, W. (2009). Conservationist and Agrarian. In *Bringing It to the Table: On Farming and Food*. Berkeley, CA: Counterpoint, 67–79.

Berry, W. (1995a). *Another Turn of the Crank.* Washington: Counterpoint.

Berry, W. (1995b). Farming and the Global Economy. In *Another Turn of the Crank*. Washington: Counterpoint, 37–52.

Berry, W. (1995). Private Property and the Common Wealth. In *Another Turn of the Crank*. Washington: Counterpoint, 53-74.

Berry, W. (1977). The Body and the Earth. In *The Unsettling of America: Culture and Agriculture*. Washington: Counterpoint, 42-63.

Blomley, N. (2017). Foreword: How Property Matters. In Bruun, M.H., Cockburn, P.J., Risager, B.D., and M. Thorup (Eds.). *Contested Property Claims: What disagreement tells us about ownership, 1st Edition*. London and New York: Routledge. Retrieved from https://www.routledge.com/Contested-Property-Claims-What-Disagreement-Tells-Us-About-Ownership/Hojer-Bruun-Cockburn-Skaerlund-Risager-Thorup/p/book/9781138550896

Blomley, N. (2016). The Boundaries of Property: Complexity, Relationality, and Spatiality. *Law & Society Review, 50*(1), 224–255.

Blomley, N. (2005). Flowers in the Bathtub: Boundary Crossings at the Public-Private Divide. *Geoforum 36*, 281–296.

Blomley, N. (2003). Law, Property and the Geography of Violence: The Frontier, the Survey, and the Grid. *Annals of the Association of American Geographers, 93*(1), 121–141.

Blomley, N. K. (1994). *Law, Space and the Geographies of Power.* New York: Guilford Press.

Blum-Evitts, S. (2009). Designing a Foodshed Assessment Model: Guidance for Local and Regional Planners in Understanding Local Farm Capacity in Comparison to Local Food Needs (Thesis, Masters of Regional Planning). University of Massachusetts, Amherst.

Braun, B.W. (1997). Buried Epistemologies: The Politics of Nature in (Post)colonial British Columbia. *Annals of the Association of American Geographers 87*(1), 3-31.

Brody, H. (1981). *Maps and Dreams: Indians and the British Columbia Frontier*. Vancouver and Toronto: Douglas & MacIntyre.

British Columbia. (2016). *Riparian Areas Regulation Guidebook for Local Governments, Version 3.* Ministry of Forests, Lands and Natural Resource Operations. Retrieved from https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/fish/riparian-areas-regulation/local-government-resources

British Columbia. (2018a). Environmental Protection & Sustainability, Plants, Animals & Ecosystems, Wildlife, Human-Wildlife Conflict, Staying Safe Around Wildlife. Retrieved from https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/human-wildlife-conflict/staying-safe-around-wildlife/other-common-conflict-species, and https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/human-wildlife-conflict/staying-safe-around-wildlife

Bruun, M.H., Cockburn, P.J., Risager, B.D., and M. Thorup. (2017). *Contested Property Claims: What Disagreement Tells Us About Ownership, 1st Edition*. London and New York: Routledge.

Buckingham, Susan and Kulcur, Rakibe. (2009). Gendered Geographies of Environmental Injustice. *Antipode 41*(4), 659-683.

Cameron, S. D. (Ed.). (2016). *Warrior Lawyers: From Manila to Manhattan: Attorneys for the Earth.* Halifax: Paper Tiger Enterprises Ltd.

Cameron, J., & Hicks, J. (2014). Performative Research for a Climate Politics of Hope: Rethinking Geographic Scale, "Impact" Scale, and Markets. *Antipode, 46*(1), 53–71. https://doi.org/10.1111/anti.12035

Campbell, L. M., Gray, N. J., Hazen, E. L., & Shackeroff, J. M. (2009). Beyond Baselines: Rethinking Priorities for Ocean Conservation. *Ecology and Society, 14*(1). Retrieved from http://www. ecologyandsociety.org/vol14/iss1/art14/

Cash, D. W., Adger, W. N., Berkes, F., Garden, P., Lebel, L., Olsson, P., Young, O. (2006). Scale and Cross-Scale Dynamics: Governance and Information in a Multilevel *World. Ecology and Society, 11*(2), 8.

Cassman, K.G. and Wood, S. (2005). Cultivated Systems. *Millennium Ecosystem Assessment: Global Ecosystem Assessment Report on Conditions and Trends,* 741-789. Washington DC: Island Press Retrieved from http://www.maweb.org/en/products.global.aspx.

Castree, N., & Braun, B. (2001). *Social Nature: Theory, Practice and Politics*. Malden, MA: Blackwell.

Chappell, M. J., & LaValle, L. A. (2011). Food Security and Biodiversity: Can We Have Both? An Agroecological Analysis. *Agriculture and Human Values 28*, 3–26.

Clapp, R. A., & Mortenson, C. (2011). Adversarial Science: Conflict Resolution and Scientific Review in British Columbia's Central Coast. *Society and Natural Resources 24,* 902–916.

Clark, S. and Teachout, W. (2012). *Slow Democracy: Rediscovering Community, Bringing Decision Making Back Home*. London: Chelsea Green.

Clark, D.L. (2003). Effects of Livestock Grazing on Aquatic Macroinvertebrates in Southern Interior Wetlands of British Columbia, Canada. (Thesis., M.Sc.) Thompson Rivers University.

Cochrane, L. and Corbett, J. (2018) Participatory Mapping. J. Servaes (Ed.). *Handbook of Communication for Development and Social Change*. Philadelphia: Springer.

Colburn, J. 2007. Bioregional Conservation May Mean Taking Habitat. *Environmental Law 37*(2), 249-300.

Collard, RC., Dempsey, J. and J. Sundberg. (2014). A Manifesto for Abundant Futures. *Annals of the Association of American Geographers 105*(2), 322-330.

Corbett, J., Rambaldi, G., Kyem, P., Weiner, D., Olson, R., Muchemi, J., McCall, M., and P. Chambers (2006). Using Community Information Systems to Express Knowledge Embedded in the Landscape. *Participatory Learning and Action 54*, 13-20.

Cronon, W. (1995). The Trouble With Wilderness, Or, Getting Back to the Wrong Nature. In W. Cronon (Ed.), *Uncommon Ground: Rethinking the Human Place in Nature*, 69–90. New York: W. W. Norton & Co.

Cronon, W. (1996). The Trouble With Wilderness: Or, Getting Back to the Wrong Nature. *Environmental History 1*(1), 7–28.

Cronon, William. (2013). Saving Wild Places in the Anthropocene, Interview by Ira Flatow, National Public Radio. September 27, 2013 Retrieved from https://www.npr.org/2013/09/27/226837805/saving-wild-places-in-the-anthropocene accessed June 24, 2014.

D'Anna, L. M., & Murray, G. D. (2015). Perceptions of Shellfish Aquaculture in British Columbia and Implications for Well-Being in Marine Social-Ecological Systems. *Ecology and Society 20*(1), 57.

De Schutter, O. (2010). Report Submitted by the Special Rapporteur on the Right to Food, Olivier De Schutter (No. A/HRC/16/49). United Nations General Assembly, Human Rights Council.

de Souza Dias, B. F. (2013). Bridging Agriculture and Conservation Initiative. Press Release, United Nations Convention on Biodiversity. December 2013.

Deneven, W. 2001. *Cultivated Landscapes of Native Amazonia*. New York: Oxford University Press.

Deneven, W. 1992. The Pristine Myth: The Landscape of the Americas in 1492. *Annals of the Association of American Geographers 82*(3), 369-385.

Denman Conservancy Association. (2018a). Quickly Draining Pond at the End of Lacon. Email to Land Manager. May 3.

Denman Conservancy Association. (2018b). Denman Conservancy Association v 4064 Investments Ltd.: A Case History. Retrieved from https://www.denman-conservancy.org/?s=4064

Denman Conservancy Association. (2018c). DCA History. Retrieved from https://www.denman-conservancy.org/our-work/stewardship/denman-stewardship-project-1997-1999/

Denman Conservancy Association. (2018d). Covenants. Retrieved from https://www.denman-conservancy.org/our-work/covenants/

Denman Conservancy Association. (2002). *Management Plan for Lindsay Dickson Nature Reserve.* Denman Island, BC: Islands Trust Fund. Retrieved from www.islandstrustconservancy.ca/media/10355/itfmgmtplanldickson.pdf

Denman Conservancy Association. (2001). Our Vision. Our Reality. *Denman Conservancy Association Newsletter*, October 2001. Retrieved from https://www.denman-conservancy.org/2001/12/07/newsletter-archive-2001/

Denman Island Land Use Bylaw. (2014). Amendment 2, Bylaw No. 213. Islands Trust.

Denman Island Land Use Bylaw. (2008). No 186. Islands Trust. Retrieved from http://www.islandstrust.bc.ca/islands/local-trust-areas/denman/bylaws/

Denman Island Local Trust Committee. (2011). Public Hearing Record Regarding Proposed Bylaw No. 202, Oct. 24, 2011. Islands Trust. Retrieved from http://www.islandstrust.bc.ca/meeting-documents.aspx

Denman Island Growers and Producers Alliance. (2018). Board of Directors Meetings and Personal Communications, Various.

Desmarais, A. A., Wittman, H., and Wiebe, N. (2011). *Food sovereignty in Canada: Building Just and Sustainable Food Systems.* Halifax: Fernwood Publishing.

Desmarais, A. A., & Wittman, H. (2014). Farmers, Foodies and First Nations: Getting to Food Sovereignty in Canada. *The Journal of Peasant Studies*, 1–21.

Dobbs, T. L., & Pretty, J. N. (2004). Agri-Environmental Stewardship Schemes and "Multifunctionality." *Review of Agricultural Economics 26*(2), 220–237.

Duerden, F., & Kuhn, R. G. (1996). Applications of GIS by First Nations and Government in Northern Canada. *Catrographica 33*(2).

DuPuis, E. M., & Goodman, D. (2005). Should We Go "Gome" To Eat?: Toward a Reflexive Politics of Localism. *Journal of Rural Studies 21*(3), 359–371.

Ehrlich, Paul R. (1968). *The Population Bomb*. New York: Ballantine Books.

Emmett, B. (2002). Activities and Potential Environmental Effects Association with Shellfish Aquaculture in Baynes Sound, A Discussion Document. Archipelago Marine Research, for Ministry of Sustainable Resource Management, Coast and Marine Planning Office. Victoria, BC.

Everson, A. (2003). Where We Live: An Inquiry into the Aboriginal History of Denman Island. Denman Island Community Education Society. Retrieved from https://vimeo.com/8855203

Escobar, A. (1999). After Nature: Steps to an Antiessentialist Political Ecology. *Current Anthropology 40*(1), 1–30.

FAO, Food and Agriculture Organization. (2015). Coping with Climate Change - The Roles of Genetic Resources for Food and Agriculture. Rome.

Fairbairn, M. (2010). Framing Resistance: International Food Regimes and the Roots of Food Sovereignty. In H. Wittman, A. A. Desmarais, & N. Wiebe (Eds.) *Food Sovereignty: Reconnecting food, nature and community*, 15–32. Halifax: Fernwood Publishing.

Farm Practices Protection (Right to Farm) Act, Pub. L. No. 131 RSBC (1996).

Farmwest (2007). Comox Valley Farmers Outfoxing Fowl. Retrieved from http://www.farmwest.com/comox-valley-farmers-outfoxing-fowl-2007

Feagan, R. (2007). The Place of Food: Mapping out the "Local" in Local Food Systems. *Progress in Human Geography 31*(1), 23–42.

Federal, Provincial and Territorial Governments of Canada. (2010). *Canadian Biodiversity: Ecosystem Status and Trends 2010*. Ottawa, ON: Canadian Councils of Resource Ministers.

Foster, J. B., Clark, B., & York, R. (2010). *The Ecological Rift: Capitalism's War on the Earth*. New York: New York University Press.

Foucault, Michel. (1980). Questions on Geography. Translated by Colin Gordon in Gordon, C. (Ed.) *Power/Knowledge: Selected Interviews and other Writings, 1972-1977*, 63-77. New York: Pantheon.

Gibson-Graham, J.K. (2006). *A Post-Capitalist Politics*. Minneapolis: University of Minnesota Press.

Glass, M. and Rose-Redwood, R., eds. (2014). *Performativity, Politics, and the Production of Social Space*. New York: Routledge.

Goldstein, J. (2013). Terra Economica: Waste and the Production of Enclosed Nature. *Antipode 45*(2), 357–375.

Green, R. E., Cornell, S. J., Scharlemann, J. P. W., & Balmford, A. (2005). Farming and the Fate of Wild Nature. *Science 307*, 550–555.

Haraway, D. (1988). Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies 14*(3), 575–599.

Harper, J. (2014). Clam Gardens. Presentation to Hakai Beach Institute, Calvert Island, BC, August 13.

Harrington, S., & Stevenson, J. (Eds.). (2005). *Islands in the Salish Sea: A Community Atlas*. Nanoose Bay: Touchwood Editions.

Harris, E. M. (2010). Eat Local? Constructions of Place in Alternative Food Politics. *Geography Compass 4*(4), 355–396.

Harvey, D. (2001). Globalization and the Spatial Fix. *Geographische revue 2*, 23-30.

Homes, C., Hunt, S., and A. Piedalue. (2014). Violence, Colonialism and Space: Towards a Decolonizing Dialogue. *ACME: An International E-Journal for Critical Geographies 14*(2), 539-570.

Holt-Giménez, E. (2015). Food Movements, Climate Resilience, Social Change. Video Recording, Presentation at TEDxBerkeley, Berkeley, CA. Retrieved from https://www.youtube.com/watch?v=fX9dV9zCN-A

Holt-Giménez, E., & Shattuck, A. (2011). Food Crises, Food Regimes and Food Movements: Rumblings of Reform or Tides of Transformation? *The Journal of Peasant Studies 38*(1), 109–144.

Hunt, S. (2013). Ontologies of Indigeneity: The Politics of Embodying a Concept. *Cultural Geographies 0*(0), 1-6.

Ingold, T. (2006). Rethinking the Animate, Re-Animating Thought. *Ethnos 71*(1), 9–20.

Isbister, W.A. (1976). *My Ain Folk: Denman Island 1875-1975*. Denman Island: E.W. Bickle Ltd.

Islands Trust. (2018). The Islands Trust Area. Retrieved from http://www.islandstrust.bc.ca/islands/

Islands Trust. (2011). Denman Island Community Profile Report. Retrieved from www.islandstrust.bc.ca/media/343036/01derptcommunityprofilefeb2011.pdf

Jackson, W. (2008). The Necessity and Possibility of an Agriculture Where Nature is the Measure. *Conservation Biology 22*(6), 1376–1377.

Jankowski, P. (2009). Towards Participatory Geographic Information Systems for Community-Based Environmental Decision Making. *Journal of Environmental Management 90*, 1966–1971.

K'omoks First Nation. (2018). Treaty Overview. Retrieved from https://www.komoks.ca/treaty-overview

Khan, M. T. (2013). Theoretical Frameworks in Political Ecology and Participatory Nature/Forest Conservation: The Necessity for a Heterodox Approach and the "Critical Moment." *Journal of Political Ecology 20*, 460–472.

Kingsolver, B. (2007). *Animal, Vegetable, Miracle: A Year of Food Life*. New York: Harper Collins.

Kirk, J.P. (2002). *My Ain Folk Revisited: Denman Island 1875-2000*. Courtenay: ABC Printing.

Kloppenberg, J. J., Hendrickson, J., & Stevenson, G. W. (1996). *Coming Into the Foodshed. Agriculture and Human Values 13*(3), 33–42.

Law, J. & Urry, J. (2004). Enacting the social. *Economy and Society 33*(3), 390-410.

Lele, S., Springate-Baginski, O., Lakerveld, R., Deb, D., & Dash, P. (2013). Ecosystem Services: Origins, Contributions, Pitfalls, and Alternatives. *Conservation and Society 11*(4), 342–358.

LePage, B. A. (2011). *Wetlands: Integrating Multidisciplinary Concepts*. Philadelphia: Springer.

Lepofsky, D., & Lertzman, K. (2008). Documenting Ancient Plant Management in the Northwest of North America. *Botany 86*, 129–145.

Lin, B. B., Chappell, M. J., Vandermeer, J., Smith, G., Quintero, E., Berzner-Kerr, R., Perfecto, I. (2011). Effects of Industrial Agriculture on Climate Change and the Mitigation Potential of Small-Scale Agro-Ecological Farms. CAB Reviews. *Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources 6*(20), 1-18.

Locke, John, 1632-1704. Of Property. The Second Treatise of Civil Government and A Letter Concerning Toleration. Oxford: B. Blackwell, 1948.

Luckham, P. (2018). Request for Ecosystem-Based Study of the Potential Impacts of the Integrated Geoduck Management Framework 2017 on the Health of the Salish Sea. To the Honourable Dominic LeBlanc, Member of Parliament Minister of Fisheries and Oceans Canada. Retrieved via personal email, January 2.

Lydon, M. F. (2002). (Re)Presenting the Living Landscape: Exploring Community Mapping as a Tool for Transformative Learning and Planning. (Thesis, Master of Arts, Interdisciplinary). University of Victoria, Department of Environmental Studies, Victoria, BC.

M'Gonigle, M. (1989). Sustainability and Local Government: The Case of the British Columbia Islands Trust. *Canadian Public Administration 32*(4): 524-544.

M'Gonigle, M. and Dempsey, J. (2003). Ecological Innovation in an Age of Bureaucratic Closure: The Case of the Global Forest. *Studies in Political Economy 70*(1), 97-124.

Maffi, L. (2007). 'Biocultural Diversity and Sustainability' in Pretty, J., Ball, A., Benton, T., Guivant, J., Lee, D.R., Orr, D., Pfeffer, M., and Ward, H. (Eds.) *The SAGE Handbook of Environment and Society.* London: SAGE, 267-278.

Magnussen, W. (2002). The Puzzle of the Political. In W. Magnussen & K. Shaw (Eds.), *A Political Space: Reading the Global Through Clayoquot Sound*. Minneapolis: University of Minnesota Press.

Magnussen, W., & Shaw, K. (Eds.). (2002). *A Political Space: Reading the Global Through Clayoquot Sound*. Minneapolis: University of Minnesota Press.

Mamoser, M. P. (2011). Towards Ecosystem-Based Management of Shellfish Aquaculture in British Columbia, Canada: An Industry Perspective (Thesis, Master of Arts). University of Victoria, Department of Geography.

MacKenzie, W.H., and Moran J.R., (2004). *Wetlands of British Columbia: A Guide to Identification, Land Management Handbook 54*. British Columbia Ministry of Forests Research Branch.

MacKinnon, J. B. (2014). *The Once and Future World: Nature As It Was, As It Is, As It Could Be*. Penguin Random House, Vintage Canada.

Masron, T.A. and Subramaniam, Y. (2018). Does Poverty Cause Environmental Degradation? Evidence from Developing Countries. *Journal of Poverty*, 1-21. DOI: 10.1080/10875549.2018.1500969

Massey, D. (1994). *A Global Sense of Place. In Space, Place and Gender*. Minneapolis: University of Minnesota Press.

McCarthy, J., & Prudham, S. (2004). Neoliberal Nature and the Nature of Neoliberalism. *Geoforum 35,* 275–283.

McMichael, P. (2013). *Food Regimes and Agrarian Questions*. Halifax: Fernwood Publishing.

McMichael, P. (2007). Feeding the World: Agriculture, Development and Ecology. *Sociologist Register 43*, 170-194.

McPhee, M., P. Ward, J. Kirkby, L. Wolfe, N. Page, K. Dunster, N. K. Dawe and I. Nykwist. 2000. Sensitive Ecosystems Inventory: East Vancouver Island and Gulf Islands, 1993 - 1997. Volume 2: Conservation Manual. *Technical Report Series No. 345.* Canadian Wildlife Service. Pacific and Yukon Region, British Columbia.

Meidinger, D. and Pojar, J. (1991). *Ecosystems of British Columbia*. Research Branch B.C. Ministry of Forests, Victoria, BC.

Mendes, W. (2008). Implementing Social and Environmental Policies in Cities: The Case of Food Policy in Vancouver, Canada. *International Journal of Urban and Regional Research*, 942–967. https://doi.org/10.1111/j.1468-2427.2008.00814.x

Méndez, V. E., Bacon, C. M., Cohen, R., & Gliessman, S.R. (Eds.). (2015). *Agroecology: A Transdisciplinary, Participatory and Action-oriented Approach*. Boca Raton: CRC Press.

Merchant, C. (1982). *The Death of Nature: Women, ecology, and the scientific revolution*. New York: Harper and Row.

Mies, M. (1986). *Patriarchy and Accumulation on a World Scale: Women in the International Division of Labour*. London: Zed Books.

Mitsch, W. J., & Gosselink, J. G. (2000). The Value of Wetlands: Importance of Scale and Landscape Setting. *Ecological Economics 35,* 25–33.

Ministry of Environment of British Columbia [MOE]. (2015). Seasonally Flooded Agricultural Fields. Sensitive Ecosystems Inventory. Retrieved from, http://www.env.gov.bc.ca/sei/van_gulf/flooded.html

Moore, J.W. (2000). Environmental Crises and the Metabolic Rift in World-Historical Perspective. *Organization & Environment 13*:2, 123–57.

Moore, J.W. (2003). 'The Modern World System' as Environmental History? Ecology and the Rise of Capitalism. *Theory and Society 32*(3), 307-377.

Moore, J.W. (2015). *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. London, New York: Verso.

Moore, J.W. (2018). The Capitalocene Part II: Accumulation by Appropriation and the Centrality of Unpaid Work/Energy. *The Journal of Peasant Studies 45*(2), 237-279. DOI: 10.1080/03066150.2016.1272587

Nally, D. (2011). The Biopolitics of Food Provisioning. *Transactions of the Institute of British Geographers 36*, 37–53.

Nielsen. H. (2016). Explanation of Mapping Process for North Denman Lands. Personal Communication.

Olwig, K. (1984). *Nature's Ideological Landscape*. London: G Allen & Unwin

Ostrom, E. (2011). The Challenges of Achieving Conservation and Development. *The Annual Proceedings of the Wealth and Well-Being of Nations, 4*, np.

Paulson, S., Gezon, L. L., & Watts, M. (2003). Locating the Political in Political Ecology: An Introduction. *Human Organization 62*(3), 205–217.

Pasternak, S. (2014). Jurisdiction and Settler Colonialism: Where do laws meet? *Canadian Journal of Law and Society 29*(2), 145-161. doi:10.1017/cls.2014.5

Perfecto, I., Vandermeer, J., & Wright, A. (2009). *Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty, 1st Edition*. London and Sterling, VA: Routledge.

Perreault, T., Bridge, G. and McCarthy, J. (Eds.) (2015). *Routledge Handbook of Political Ecology, 1st edition*. London: Routledge.

Pimbert, M. (2006). *Transforming Knowledge and Ways of Knowing for Food Sovereignty*. London: International Institute for Environment and Development.

Pimbert, M. (2010). *Towards Food Sovereignty: Reclaiming Autonomous Food Systems*. London and Munich: CAFS, IIED and RCC.

Plumwood, V. (2002). *Environmental Culture: the Ecological Crisis of Reason*. London: Routledge.

Plumwood, V. (1993). *Feminism and the Mastery of Nature*. London/New York: Routledge

Polanyi, K. (1944). *The Great Transformation: The Political and Economic Origins of Our Time*. Boston: Beacon Press.

Pollan, M. (2006). *The Omnivore's Dilemma: A Natural History of Four Meals*. New York: Penguin Books.

Ponisio, L. C., M'Gonigle, L. K., Mace, K. C., Palomino, J., de Valpine, P., & Kremen, C. (2015). Diversification Practices Reduce Organic to Conventional Yield Gap. *Proceedings of the Royal Society B* (282), 1–7.

Pope, L. (nd). Beavers on Denman. Denman Island Residents Association Parks Committee. Retrieved from http://denmanresidents.com/parks/

Pretty, J. (2008). Agricultural Sustainability: Concepts, Principles and Evidence. *Philosophical Transactions of the Royal Society B* (363), 447–465.

Pretty, J.N. (1995). Feeding the World the Old Way. *The Globe and Mail*, July 12, D4.

Prudham, S. (2015). Property as Commodification. In *The Routledge Handbook of Political Ecology*. London: Routledge.

R.A. Malatest and Associates Ltd. (2018). Revitalizing the Agricultural Land Reserve and the Agricultural Land Commission: What We Heard Report, Public Engagement February 05, 2018 – April 30, 2018. Prepared for B.C. Minister of Agriculture's Advisory Committee for Revitalizing the Agricultural Land Reserve and the Agricultural Land Commission. Victoria, BC.

Reason, P., & Bradbury, H. (Eds.). (2001). *Handbook of Action Research: Participative Inquiry and Practice*. London: SAGE.

Recalma-Cluetsi, K. (2003). Where We Live: An Inquiry into the Aboriginal History of Denman Island. Denman Island Community Education Society. Retrieved from https://vimeo.com/8855203

Reeves, P.N. and Champion, P.D. (2004). *Effects of Livestock Grazing on Wetlands: Literature Review*. Environment Waikato, Technical Report 2004/16.

Reid, G. (2003). Where We Live: An Inquiry into the Aboriginal History of Denman Island. Denman Island Community Education Society. Retrieved from https://vimeo.com/8855203

Rempel, Nicole. (2018). Speech. Islands Trust Fireside Gathering with K'omoks First Nation, public event, Denman Island, October 14.

Rey Benayas, J. M., & Bullock, J. M. (2012). Restoration of Biodiversity and Ecosystem Services on Agricultural Land. *Ecosystems 15*, 883–899. https://doi.org/10.1007/s10021-012-9552-0

Robin, V. (2014). *Blessing the Hands that Feed Us: What Eating Closer to Home Can Teach Us About Food, Community and Our Place on Earth*. New York: Viking.

Rocheleau, D. (1995). Maps, Numbers, Text and Context: Mixing Methods in Feminist Political Ecology. *Professional Geographer 47*(4), 458–466.

Rocheleau, D. (2005). Maps as Power Tools: Locating "Communities" in Space or Situating People(s) and Ecologies in place? In P. Brosius, A. Tsing, & C. Zerner (Eds.), *Communities and Conservation: Histories and Politics of Community-Based Natural Resource Management*. Lanham: Altamira Press.

Rocheleau, D.E. (2008). Political Ecology in the Key of Policy: Chains of Explanation to Webs of Relation. *Geoforum 39*, 716–727.

Rose-Redwood, R. (2016). Reclaim, Rename, Reoccupy: Decolonizing Place and the Reclaiming of PKOLS. *ACME: An International E-Journal for Critical Geographies 15*(1), 187–206.

Roth, R. (2007). Two-Dimensional Maps in Multi-Dimensional Worlds: A Case of Community-Based Mapping in Northern Thailand. *Geoforum 38*, 49–59.

Rosenblatt, S. (nd). *Mapping Food Matters: A resource on place-based food mapping.* Food Secure Canada. Retrieved from https://foodsecurecanada.org/sites/foodsecurecanada.org/.../Mapping_food_matters.pdf

Scott, J.C. (1998). *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.

Schooler, S.S., McEnvoy, P.B., Hammond, P. and E.M. Coombs. (2009). Negative Per-Capita Effects of Two Invasive Plants, Lythrum salicaria and Phalaris arundinacea, on the Moth Diversity of Wetland Communities. *Bulletin of Entomological Research 99*, 229-243.

Shackelford, G. E., Steward, P. R., German, R. N., Sait, S. M., & Benton, T. G. (2015). Conservation Planning in Agricultural Landscapes: Hotspots of Conflict Between Agriculture and Nature. *Diversity and Distributions 21*, 357–367.

Sharp, J. P. (2009). *Geographies of Postcolonialism: Spaces of Power and Representation*. London: SAGE.

Shaw, K. (2008). *Indigeneity and Political Theory: Sovereignty and the Limits of the Political*. London and New York: Routledge.

Silva Ecosystem Consultants. (1998). An Ecosystem Based Assessment of Denman Island. Prepared for Denman Forestry Initiative.

Smith N. (2010). *Uneven Development: Nature, Capital, and the Production of Space*. New York: Verso.

Spivak, G.C. (1988). Can the Subaltern Speak? In Nelson, C. & Grossberg, L. (Eds.) *Marxism and the Interpretation of Culture*, 271–313. Urbana: University of Illinois Press.

Springer, S. (2011). Public Space as Emancipation. *Antipode 43*(2), 525-562.

Springer, S. (2016). *The Anarchist Roots of Geography: Toward Spatial Emancipation*. Minneapolis: University of Minnesota Press.

Statistics Canada. (2016). Census Profile, Denman Island Trust Area. British Columbia.

Stewart, H. M. (2017). *Views of the Salish Sea: One Hundred and Fifty Years of Change Around the Strait of Georgia*. Madeira Park, BC: Harbour Publishing.

Stinchcombe, K. (1999). Limping Towards Sustainability: Growth Management, Ecological Governance, and British Columbia's Islands Trust (The Assessment and Planning Project BC No. BC Case Report No. 1). Department of Environment and Resource Studies: University of Waterloo.

Suess, A., Trenholm, R., & Haider, W. (2012). Socio-Economic and Environmental Assessment of Beneficial Management Practices. BC Ministry of Agriculture. Retrieved from https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/agricultural-land-and-environment/environmental-farm-planning/agri_bmp_report_final.pdf

Sundberg, J. (2013). Decolonizing Posthumanist Geographies. *Cultural Geographies 21*(1), 33–47.

Tobias, T.N. (2009). *Living Proof: The Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys*. Ecotrust and Union of BC Indian Chiefs.

Thom, B. (2014). Reframing Indigenous Territories: Private Property, Human Rights, and Overlapping Claims. *American Indian Culture and Research Journal 38*:4, 3-28.

Thom, B. (2009). The Paradox of Boundaries in Coast Salish Territories. *Cultural Geographies 16*: 179-205.

Tilzey, M. (2017). Reintegrating Economy, Society, and Environment for Cooperative Futures: Polanyi, Marx, and Food Sovereignty. *Journal of Rural Studies 53*, 317–334.

Tilzey, M. (2018). *Political Ecology, Food Regimes, and Food Sovereignty: Crisis, Resistance, Resilience*. UK: Palgrave Macmillan. DOI: 10.1007/978-3-319-64556-8

Tucker, B. and Rose-Redwood, R. (2015). Decolonizing the Map? Toponymic Politics and the Rescaling of the Salish Sea. *The Canadian Geographer 59*(2), 194–206.

Turner, N. J., Deur, D., & Lepofsky, D. 2013. Plant Management Systems of British Columbia's First Peoples. *BC Studies 179*(Autumn), 107–133.

University of Victoria. (2017). Trutch Name to be Removed from Residence. *UVic News*. June 2. Retrieved from https://www.uvic.ca/news/topics/2017+trutch-residence-renaming+ring

Village of Cumberland. (2018). History of Cumberland. Retrieved from https://cumberland.ca/history/

Vos, T. (2000). Visions of the middle landscape: Organic Farming and the Politics of Nature. *Agriculture and Human Values 17*, 245-256.

Weaver, S. (2010). First Encounters: 1970s Back-to-the-Land Cape Breton, NS and Denman, Hornby and Lasqueti Islands, BC. *Oral History Forum d'histoire orale 30*. Special Issue "Talking Green: Oral History and Environmental History"

Wildlife Act, Pub. L. No. 488 RSBC. (1996).

Williams, J. (2006). *Clam Gardens: Aboriginal Mariculture on Canada's West Coast*. Transmontanus.

Willmott, T. and Lange, J. (2014). Denman Island Riparian Area Regulation Stream Identification - Chicadee Lake, Valens Brook, Beadnell (Little George) Creek and

Graham Lake Watersheds. Madrone Environmental Services Report to Islands Trust Planner Milne.

Wittman, H. (2010). Reconnecting Agriculture and the Environment: Food sovereignty and the Agrarian Basis of Ecological Citizenship. In Wittman, H., Desmarais, A. A., & Wiebe, N. (Eds.). *Food Sovereignty: Reconnecting Food, Nature and Community*. Halifax: Fernwood Publishing, 91-105.

Wittman, H., Desmarais, A. A., and Wiebe, N. (Eds.). (2010). *Food Sovereignty: Reconnecting food, nature and community*. Halifax: Fernwood Publishing.

Wittman, H. (2009). Reworking the Metabolic Rift: La Vía Campesina, Agrarian Citizenship, and Food Sovereignty. *The Journal of Peasant Studies 36(*4), 805–826. https://doi.org/10.1080/03066150903353991

Wolfe, P. (2006). Settler Colonialism and the Elimination of the Native. *Journal of Genocide Research 8*(4), 387–409.

Woo, A. (2018). Victoria to Remove Statue of Sir John A. Macdonald. *The Globe and Mail, British Columbia*. August 8. Retrieved from https://www.theglobeandmail.com/canada/british-columbia/article-victoria-to-remove-statue-of-sir-john-a-macdonald/

Worthy, K. (2013). *Invisible Nature: Healing the Destructive Divide Between People and the Environment*. Amherst, NY: Prometheus Books.

Youatt, R. (2008). Counting Species: Biopower and the Global Biodiversity Census. *Environmental Values 17*, 393–417. https://doi.org/10.3197/096327108X343149