



# Neoliberalizing coastal space and subjects: On shellfish aquaculture projections, interventions and outcomes in British Columbia, Canada



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## A B S T R A C T

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This article interrogates shellfish aquaculture expansion efforts and outcomes in British Columbia (BC), Canada. While the clearest objectives of the Provincial Government's 1998 Shellfish Development Initiative were to privatize new ocean tenures and increase the wholesale value of the BC shellfish aquaculture sector, the analysis identifies and explores a range of government-led and government-funded interventions that emerged to discipline coastal space and subjects accordingly. These include: classifying productive space and projecting economic potential; identifying beneficiaries and enrolling Indigenous First Nations entrepreneurs; and, generating supportive knowledge, practice and public relations. I argue that these efforts work to produce 'new shellfish growing regions' imagined to be homogeneously ideal for shellfish aquaculture. They also reinforce the notion that coastal residents, especially First Nations, must adopt very specific outlooks and practices before the sector's full economic potential can be met. Theorizing these processes in terms of neoliberalization provides important perspective at a time when aquaculture is being widely promoted for its potential as an approach to economic modernization and sustainability in coastal communities in BC and beyond.

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## 1. Introduction

In many countries with marine coastline, intensive aquaculture is receiving attention for its rural economic development potential (Young and Matthews, 2010; Belton and Little, 2011). In the Canadian province of British Columbia (BC), a 1997 report entitled *The Economic Potential of the British Columbia Aquaculture Industry* (i.e., Coopers and Lybrand, 1997) projected that by doubling the area of ocean space available for shellfish aquaculture, the annual wholesale value of the sector would grow from twelve to one hundred million dollars in ten years. In 1998, the BC Provincial Government initiated its Shellfish Development Initiative (SDI), the most publicized objectives of which were to increase the total area under private tenure for shellfish aquaculture from 2300 to 4230 ha and achieve a \$100 million wholesale sector in one decade (BC Ministry of Agriculture and Lands, 2010). Simultaneously, government representatives and sector advocates began to speak and write of shellfish aquaculture as an efficient and uncomplicated fix to declining fish stocks and unemployment in coastal communities. Discourse commonly inferred that improved productivity and employment opportunity would help to ease local concerns regarding changes in access to ocean space, and suggested that

Indigenous First Nations communities in particular stood to benefit by participating in shellfish aquaculture.

The SDI's spatial and economic objectives have not been realized. Between 1998 and 2010, the area of ocean space under tenure in the province grew to 3728 ha (BC Ministry of Environment, 2012). The \$100 million target also remains distant – the wholesale value of the sector in 2010 was \$32.5 million. Finally, although new tenure-holders and businesses have emerged, much of the sector's production and employment remains within the Strait of Georgia region (map and further detail ahead). Nonetheless, expansion and intensified shellfish production appear to endure as government priorities, often reinforced by familiar statements regarding economic potential (e.g., Bellaart, 2009). To recognize and begin to learn from the gap between projected potential and actual outcomes in the BC case, this article explores efforts that have been advanced in support of the shellfish aquaculture expansion mandate (i.e., to site and regulate new private tenures for shellfish farming).

By exploring government-led and -funded efforts, the article demonstrates that the idea of shellfish aquaculture as a model approach to coastal economic development in BC emerged and persisted through programming and discourse strongly grounded in neoliberal logic(s). Specifically, three areas of effort are detailed: classifying productive space and projecting economic potential (section four); identifying beneficiaries and enrolling First Nations

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entrepreneurs (section five); and, generating supportive knowledge, practice and public relations (section six). I suggest that together these work to discipline coastal spaces and subjects so that *new growing regions* understood to be ecologically and socio-culturally amenable with shellfish aquaculture might emerge. This analysis broadens our understanding of neoliberalization and its contradictions in ocean space, as well as raises some of the realities and challenges of adopting industrial aquaculture as a rural economic development strategy. Most broadly, its findings support the proposition that “[I]ike any form of development, aquaculture creates winners and losers” (Young and Matthews, 2010, 196) and remind that the policy decision to pursue this economic activity must be informed by a meaningful understanding of social and ecological unevenness.

The analysis is informed by literature that theorizes nature-society relations under neoliberal capitalism (for contextual overview see: Zimmerer, 2010). Within this scholarship, privatization receives attention as a foundational process through which narrowed economic relations are structurally (re)produced (Heynen et al. 2007; Mansfield, 2008). Because it allows scholars to document how rights change, and whose interests are most reflected in the process, tracing how enclosure and privatization regulate and change access to space has been analytically prominent (*ibid*). However, as Mansfield (2007) reminded, states not only regulate and enforce property rights, they are often very active in broader efforts to re-imagine spaces and subjects in ways that encourage “both owners and non-owners to [want to] become market subjects” (396). From this perspective, the production of new spatial imaginaries and the normalization of specific ‘productive’ practices warrant attention as disciplinary processes through which neoliberal capitalism advances (Valdivia, 2005; Li, 2007; Bakker, 2010).

## 2. Neoliberalizing ocean space and subjects

Privatization occurs when access and use rights are limited to select individual(s) or firm(s); enclosure is the political-regulatory progression through which these conditions are enabled and maintained (Mansfield, 2008). Both are *social processes*, and they have received attention as such from researchers who interrogate the logics and politics of resource development under neoliberal capitalism (Heynen et al. 2007; Mansfield, 2008). While regulating and legitimizing property is central to all forms of capitalism, neoliberal logic understands privatization as central to both individual well-being and societal improvement (Harvey, 1999). Summarized another way, a neoliberal perspective advocates enclosure and privatization as fundamental to remaking “ecosystems, livelihoods, and identities” (Mansfield, 2007, 393) into more efficient assemblages for the production, accumulation and ‘trickle down’ of wealth.

Because neoliberalism is “significantly constituted by changing social relations with biophysical nature” (McCarthy and Prudham, 2004, 275), tracing the processes through which neoliberalization proceeds is of great interest to nature-society scholars. The structural ‘accumulation by dispossession’ pattern discussed by Harvey (2003) is substantial in its presence and material effect; privatizing for a few invariably alters socio-economic relations and opportunities for many more. Yet, as Mansfield (2007, 397) observed:

[p]rivatization does not simply mark an institutional shift, but instead entails a more fundamental restructuring of political-economic and nature-society relations, including people’s senses of themselves as subjects.

Thus, neoliberalization must also be understood in terms of how discourse, social programs, and even public planning and

development interventions, articulate culture and/or identity, and in turn, influence individual and collective behaviour (Dean, 2007). For example, engaging Michel Foucault’s concept of governmentality (2010), Tania Li (2007) has shown how development programming in Indonesia has long employed ‘community’ as an idealized scale for property intervention and as a discursive construct, both in ways that ultimately discipline “the actions of subjects who retain the capacity to act otherwise” (17).

Because they contain innumerable mobile and unallocated resources and are directly accessed for food and income by millions worldwide (FAO, 2012), the relationship between oceans and neoliberal capitalism is an important, yet sometimes overlooked, topic of research (Steinberg, 2008). State, private and non-governmental interests have demonstrated growing interest in enclosing and/or privatizing ocean space for (eco)tourism, aquaculture, energy production and biological resource extraction (Conway et al. 2010; Erwin et al. 2010; Campbell and Meletis, 2011). Because they would regulate reduced access to ocean space and marine resources and (theoretically) persist in response to ‘market forces’, claims circulate that these activities present promising sustainable development opportunities for coastal communities (Duarte et al. 2009; Erwin et al. 2010). In the case of aquaculture, assertions that demand for specific seafood commodities will soon outstrip the current capacity of capture fisheries and aquaculture circulate with growing frequency in media (e.g., *The Economist*, 2003; *Time Magazine*, 2011) and some academic sources (e.g., Diana, 2009). Here, aquaculture expansion is framed in terms of its potential to feed and employ people in coastal rural communities while reducing pressure on wild-growing fish stocks.

Becky Mansfield’s body of work provides important perspective amidst sweeping claims about the potential of private ocean property. Tracing the scientific, economic, and political lineages of US North Pacific fisheries management policy, Mansfield (2001, 2004a, b) has highlighted how political-economic objectives guided fisheries regulation and allocation when the US extended its United Nations sanctioned Exclusive Economic Zone to two hundred miles in the late 1970s. Rather than sustainably manage fisheries, she found that these regimes were explicitly constituted to “Americanize” (2004b, 567) fisheries and to maximize economic returns through a reduced fishing fleet. Management (enclosure), quota (property), and export were understood as prerequisites to achieving a given fishery’s maximum sustained yield. When stocks declined and/or when anticipated socioeconomic benefits did not transpire, bureaucratic meddling, open access, ‘weak’ rights, and fisher inefficiency and greed became go-to explanations (Mansfield, 2004a, b; 2006).

Mansfield and others suggest at least two key contradictions between neoliberal logic and the initiation and regulation of private marine property regimes. First, and significant in the context of privatizing ocean space for aquaculture tenures, even if benefits accrue for some, existing property relations must be modified (Young, 2001; Olson, 2010). Second, it becomes more likely that marine resources and services once enjoyed or exchanged locally will be commmodified (Mansfield, 2003). Both of these outcomes indicate Harvey’s (2003) ‘accumulation by dispossession’ pattern, and remind of the narrowed options for resource use and benefit that privatization implies, particularly for local resource users. From this perspective, Mansfield’s (2008, 24) assertion of marine property as “a social decision about how to allocate resources” resonates clearly, and the value in researching processes through which new ocean spaces and subjectivities emerge clarifies further.

Building on Mansfield’s (2003) essay on the social construct of ‘quality’ in surimi (fish paste) production, Bush and Duijf (2011) explored how sustainability distinctions made by large food retailers in the United Kingdom work to regulate pangasius (catfish-

like species) aquaculture practices in Vietnam through the threat of reduced market access. They demonstrated the influence that high volume food retailers exert within value chains and find that, for these actors, the “operationalisation of sustainability as a *food quality* shows much promise to regulate fisheries and aquaculture” (194, *italics mine*). In another case, Olson (2010) observed the changing subjectivities of fishermen who participate in new scallop seeding practices in New England. Although fishermen were initially distrustful of enclosure and new market orientations, many eventually took zoning and the spatial representation of their ‘local knowledge’ as an opportunity to assert territorial rights and promote themselves in the marketplace as ocean stewards (Olson, 2010). These examples remind that, alongside the privatization of ocean space and marine resources, neoliberalization proceeds through a narrowing of the practices, relations and subjectivities understood to be appropriate, productive, or sustainable. While not supporting an analytical turn away from enclosure and privatization, this does suggest productive potential in engaging processes that emerge to support privatization or specific objectives for oceans development and conservation.

Next, I return to BC and the shellfish aquaculture sector to finish contextualizing the background and approach to this research case. I trace the emergence of the SDI’s expansionary mandate and further scope the article’s motivation and methods relative to perspectives regarding aquaculture expansion and the relationship between First Nations’ territorial rights and economic development in BC. Then, core findings will be built through sections four to six. I close the article with a discussion of what the case illustrates about the BC case, the neoliberalization of ocean space and subjects, and finally, about aquaculture as a coastal economic development strategy more broadly.

### 3. Research context

Shown in Fig. 1, the sheltered Strait of Georgia is considered to be the heart of the BC shellfish aquaculture sector (Carswell et al. 2006). It is in this region that a handful of coastal residents began collecting juvenile oysters for cultivation during the mid-1900s, where shellfish tenures were first placed and regulated by the Provincial Government, and currently, where well over half of the sector’s annual harvest originates (BCSGA, 2011, 2).<sup>1</sup> Employment distribution follows production trends: 215 out of the 320 person-years employment directly attributable to the sector in 2003 were located on southern Vancouver Island (Ministry of Agriculture and Lands, 2009).<sup>2</sup>

Today, Pacific oysters (*Crassostrea gigas*) and Manila clams (*Venerupis philippinarum*) are the most voluminously produced species by the sector (Clayton et al. 1990).<sup>3</sup> Farmers first began to grow Pacific oysters, a species evolved to live in the intertidal, in high densities on anchored long-lines and floating rafts within nearshore or deep-water tenures in the 1970s. The British Columbia Shellfish Growers’ Association (BCSGA) suggests that this was

<sup>1</sup> At least thirty-five percent of farmed oysters fifty percent of farmed clams come from Baynes Sound alone (Carswell et al. 2006, 409).

<sup>2</sup> A more recent estimate is unavailable. The relatively stationary wholesale value of the sector since 2003 suggests that employment numbers and distribution remain similar.

<sup>3</sup> Both species are ecologically exotic, introduced from Japan in roughly 1910 and 1930 respectively (Ketchen et al. 1983). Since introduction, these shellfish have spread to different coastal regions, colonizing in places with agreeable biophysical conditions, and sometimes, outcompeting other native shellfish species (Gillespie, 2007). As they are sedentary, adult farmed shellfish do not ‘escape’. However, when in the reproductive phase, males and females do release their gametes into the water for fertilization, and juveniles can settle and colonize off-farm.

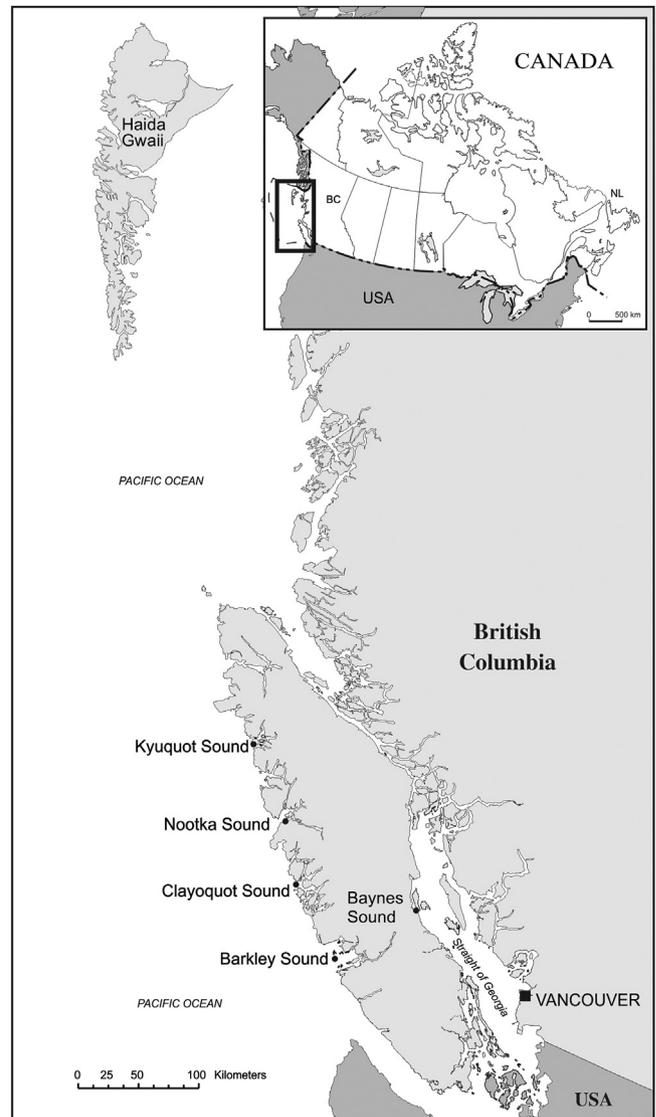


Figure 1. Regional view of Vancouver Island, central coast and Haida Gwaii.

beneficial because more oysters could be grown and because “beaches with suitable substrate material where oysters have been grown are now being converted to clam culture” (BCSGA, 2007; online). Here, human labour and/or machinery are used to “modify, construct or groom” intertidal space to better suit the preference of Manila clams for pebbles and gravel (Coopers and Lybrand, 1997; exhibit 7).

As more farmers employed intensive farming practices to culture oysters and clams, the sector demonstrated productivity increases in the early 1990s: between 1993 and 1995 clam and shucked oyster harvests grew by 45 and 28 per cent respectively (Coopers and Lybrand, 1997). However, because higher production volumes generally enable lower sale prices, concerns circulated that sector growth would be restricted by “small scale of production” and the “ability of the industry to supply [price competitive] export markets” (Coopers and Lybrand, 1997, 8). Howlett and Rayner (2004) confirm that harvest volumes in the Strait of Georgia region were constrained by a burgeoning residential population, less-than-ideal water quality, public resistance to an expanded sector, and unresolved First Nations territorial claims. They also suggest that this set of conditions led the Provincial and Federal

Governments to fund the Coopers and Lybrand study, and ultimately, to seek to double the area under tenure for shellfish aquaculture and expand into regions outside of the Strait of Georgia (including: the West Coast of Vancouver Island (WCVI), the central and north coast mainland, and Haida Gwaii, e.g., see [Blythe et al., 2000](#); [Kingzett et al. 2002](#)).

In addition to providing important background, this recent history of the BC shellfish sector illustrates some prominent reasons why, from a neoliberal perspective, aquaculture is often seen to embody an ideal rural and coastal economic development strategy: it focuses on the high-volume production of globally in-demand export commodities; grants firms strengthened rights to ocean space in return for tenure fees; and, is often situated in rural coastal communities hit by decline in traditional resource sectors ([Young and Matthews, 2010](#)). However, localized social and environmental conditions mean that standard production practices and engaging in price competition are not activities that necessarily transfer neatly or similarly into new regions, and that the potential for negative localized impacts stand to stir local controversy. As [Young and Matthews \(2010, 47\)](#) note of the Canadian context specifically, while aquaculture may manifest in response to national and international economic patterns and demands, it is ultimately “subject to the particular local issues and tensions of rural coastal Canada.” One significant tension in BC stems from the reality that the lands and waters that now constitute the Province were never formally ceded from Indigenous First Nations to colonial newcomers ([Harris, 2008](#); [Young and Matthews, 2010](#)).

Although often referred to as ‘the land question’, the general absence of treaties between settlers and First Nations in BC also produces legal and political-economic uncertainty regarding ocean space. [Harris \(2008\)](#) argues that although BC’s earliest settlers worked to maintain some Native access to ocean space and marine resources, First Nations’ sovereign access quickly eroded once BC became a Canadian province in 1871. Catalysed by Federal interest in developing the west coast fisheries economy, and legitimized through discursive re-castings of ocean space as un-peopled and under-used, marine dispossession advanced through enclosure, privatization and the reallocation of marine resources ([Harris, 2008](#)). Today, fisheries decline, commercial license consolidation and a lack of legal clarity regarding rights to ocean space mean that uncertainty and the potential for conflict looms over many fisheries management decisions, marine tenure placements and aquaculture businesses operations ([Schreiber, 2006](#); [Young and Matthews, 2010](#)).

The contemporary BC treaty-making process, which brings government and individual First Nations together to negotiate comprehensive land agreements that specify self-governance, cash transfers and the allocations of resource licenses and tenures, is therefore an important structural and political backdrop to shellfish aquaculture expansion. Perspectives on the implications of treaty making, and of associated resource tenure allocations, for First Nations sovereignty and development are divided (see [Joyce and Satterfield, 2010](#) re. shellfish). While some see them as prerequisite to the modernization of First Nations economies, others criticize that they relinquish the collective rights of First Nations to broader swaths of territory and impose neoliberal expectations and visions of citizenship and development (see [Woolford, 2005](#) for extended discussion of this division). As will be discussed through the analysis to come, First Nations participation in shellfish aquaculture was prioritized shortly after the emergence of the SDI, and through treaty negotiations, many First Nations signed agreements that designated specific shellfish tenure sites under the *BC Land Act* for immediate or future development.

### 3.1. Research motivation and methods

Promoting privatization and projecting economic potential have clearly been central in how shellfish aquaculture expansion has been pursued in BC. Yet, by 2010, expansionary outcomes (i.e., 1428 ha of new tenures, \$32.5 million wholesale value) remained short of the SDI’s 1998 spatial and economic objectives by 26% and 76% respectively. In this context, harvest and employment figures seem to suggest that economic growth has come through intensified production on longstanding tenures as much as from new tenures placed on other regions. Emerging research also reminds that altered ocean property regimes and new farming practices have been differentially experienced by coastal rural communities, particularly by First Nations communities located adjacent to intertidal and nearshore spaces identified as viable for shellfish aquaculture ([Joyce and Canessa, 2009](#); [Pinkerton and Silver, 2011](#)). Here we see that, like other economic development activities, the potential for economic growth through shellfish aquaculture expansion is susceptible to social and environmental unevenness: histories and conditions in certain places may be more amenable to shellfish culture than others, while those who value and use ocean space and shellfish resources (e.g., for subsistence harvesting or the common pool commercial clam fishery) may have different objectives and/or be opposed to the potential for displacement.

This study is thus motivated by an interest in recognizing and beginning to learn from the gap between projected and actual outcomes in BC shellfish aquaculture expansion.<sup>4</sup> To do so, the research pieces together the logics and approaches of government-led and/or sector-advocated efforts that support the economic and expansionary objectives of the SDI. Data was collected from 2006 to late 2012 and includes policy documents, press releases, reports, business plans and testimony to Federal and Provincial fact-finding committees. All of this data was publically available (i.e., from library records, government agencies, internet and news stories) and was identified through searching websites, news sources and reference lists of other relevant studies and consultant reports. Because these sources are readily available, with many meant specifically for consumption by potential sector entrants and/or the general public, they offer rich insight into how projections have been calculated and into how expansion has been presented and advocated. During analysis I paid particular attention to categorizing efforts according to the neoliberal logics that underlie them and the work that they appear positioned to do. Core findings follow in the next three sections.

### 4. Classifying productive space and projecting economic potential

In 1988, 1990, the BC Ministry of Agriculture, Food and Fisheries (MAFF) hosted workshops to discuss the merits of clam farming, particularly its potential to contribute to sector growth ([Broadley et al. 1988](#); [Clayton et al. 1990](#)). Formal presentations were made by individuals with experience in BC and Washington State. Attendees included shellfish farmers, coastal residents, bureaucrats and politicians from relevant Federal and Provincial agencies, and representatives from seafood processors and shellfish hatcheries. In a reflective foreword to the proceedings of the 1990 workshop,

<sup>4</sup> As part of a larger project focused on First Nations participation in shellfish aquaculture on the WCVI I have completed three multi-month stays in a community of the Nuu-chah-nulth First Nations between 2005 and 2007. While this article does not report specific findings from the Nuu-chah-nulth community where I have worked (see: [Silver, 2010](#)), this research experience informs my knowledge of the SDI and of how supportive interventions and discourse have constructed the WCVI and coastal First Nations as ideal for shellfish aquaculture.

then Director of the Aquaculture and Commercial Fisheries Branch of MAFF wrote:

response from the participating parties at the workshop showed that an industry is emerging, and that future progress will largely depend on the development and application of sound farming practices, supported with progressive policies for foreshore use (Anderson in Clayton et al., 1990, i).

Although uncertainties regarding the profitability of clam farming in different regions were raised in the proceedings, many presenters advocated for expansion beyond the Strait of Georgia, sometimes suggesting that placing tenures and developing shellfish farms would constitute a more productive use of ocean space.

In the early 1990s, the MAFF funded a series of shellfish aquaculture capability studies that compiled one-time measurements of salinity, temperature, tidal exposure, intertidal slope and tidal depth from different coastal regions outside of the Strait of Georgia (e.g., Cross et al. 1995; Cross and Kingzett, 1992, 1993; Kingzett et al. 1995a, b; Axy's Environmental Consulting, 1997; Aquamatrix Research Ltd. 1993, 1997; Blyth et al. 2000). The resulting reports, including a subset that covered sounds on the WCVI, located possible sites on maps and ranked their potential through an index of biophysical parameters. This allowed the classification of yet undeveloped sites as *good*, *medium*, *poor*, or *not advisable* for Pacific oysters, Manila clams, and in some cases, scallops. Moreover, in that they located and ranked specific spaces, these reports must also be considered as a significant step in constructing the idea of new growing regions imagined to have high potential for shellfish aquaculture. Fig. 2, found in a Shellfish Culture Capability Appraisal for Clayoquot Sound, provides one illustrative example of how the site classification exercise was presented in reports (usually authored by consultants for the Provincial Government). Readers, presumably government officials

and possible sector entrants, are presented empty ocean space with lines identifying sites that had been assessed for their potential (a corresponding table in the document rates the sites for oyster, clam and scallop production).

However, at the time that this image and others like it were released, the actual long-term productivity, logistical feasibility, and therefore, business viability of many of the identified tenure sites actually remained relatively untested. An initial report on the extensive (rather than intensive) sampling methodology employed in the funded studies noted:

[a]lthough the parameters employed in an extensive survey will provide a gross spatial delimitation of areas considered capable of sustaining shellfish culture, they will not necessarily identify specific sites within these relatively large areas where shellfish culture facilities might ideally be located (Cross, 1993, 8).

Indeed, a 2003 backgrounder newsletter on shellfish aquaculture warned that prospective farmers would be “well advised to implement an intensive sampling program at the site to provide a more thorough evaluation” of its potential (Kingzett Professional Services, 2003, 8).

The 1022 ha of intertidal space and 6545 ha of nearshore and deep-water ocean space inventoried on the WCVI were also taken as a starting point for the projection made in Coopers and Lybrand (1997). Of these 7567 ha, the authors of the study presumed that 2284 would be successfully tenured over the ensuing ten years. To calculate the potential volume of shellfish possible from an expanded sector, it was also assumed production trends on new tenures would be similar to the Strait of Georgia: three-year grow-outs for submersed oysters and that clam production rates that would continue towards those achieved by the top five per cent of producers in 1995. From these details, an estimated volume was reached and multiplied by anticipated shellfish prices. This calculation suggested that in 2007, clam and oyster production would yield \$46 million and \$53 million respectively (Coopers and

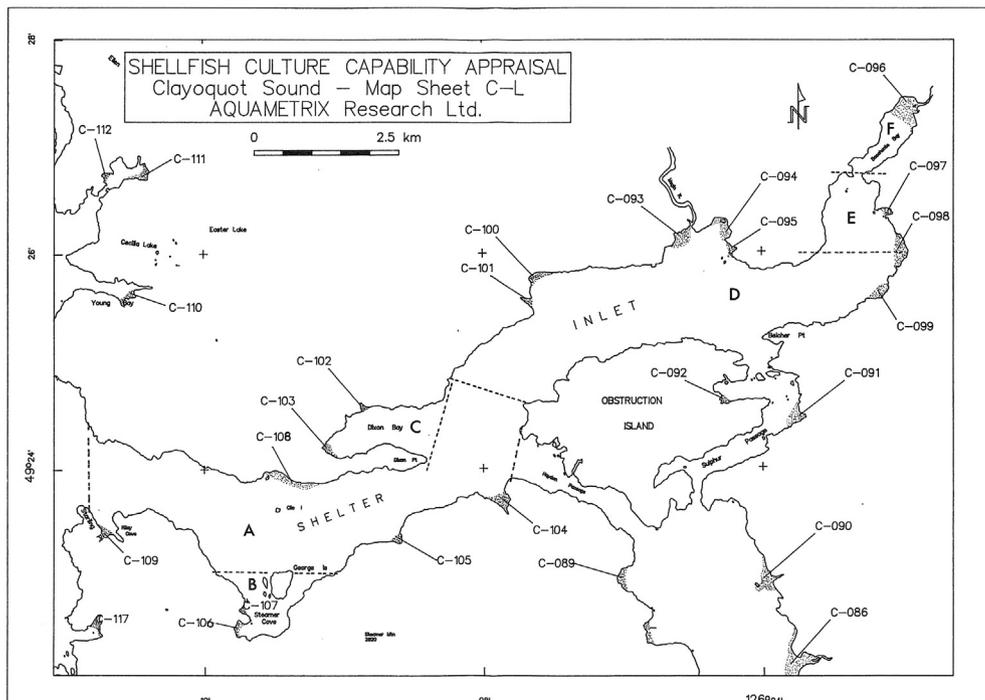


Figure 2. Image provided to readers of a 1993 “Shellfish Culture Capability Appraisal for Clayoquot Sound, Vancouver Island” (Aquamatrix Research Ltd. 1993, p. 39).

Lybrand, 1997, 23–24). The report implies that another \$1 million would result from emerging species such as scallops and mussels.

Subsequently, the rationale for tenure expansion in BC became virtually inseparable from the \$100 million projection. For example, in testimony to the Senate Standing Committee on Fisheries, a former Executive Director of the BCSGA stated:

[i]t is an industry with great potential. In 1997, Coopers and Lybrand were contracted to do a study of the economic potential of our industry for Industry Canada ... That study found that the B.C. shellfish farming industry has the potential to become a \$100 million industry over the next 10 years (Salmon, 2000).

In another instance, a former President of the BCSGA argued that the spatial objectives of the SDI were modest:

the industry has a footprint of about 2000 ha to produce approximately \$12 million of farmed shellfish ... [I]t is a very small part of the 27,000 km of coastline in British Columbia (Bowman, 2000).

The allure of the projection is easy to appreciate. However, even as it became unclear whether the \$100 million figure would be reached within the SDI's ten year timeline, an imaginary of coastal regions constituted by space ideal for shellfish aquaculture persisted. While some studies acknowledged that expansion and economic growth would actually depend on coastal entrepreneurs successfully adopting specific farming practices and continuously producing marketable product (e.g., Doyle 2002; Kingzett Professional Services, 2003), logistical and productivity differentials within and across regions have not received adequate attention. One notable exception is a 2004 report that concluded: "[a] major deficiency of BC finfish and shellfish aquaculture sectors is the lack of a current, credible analysis of economic costs and benefits, particularly to coastal communities and First Nations" (GS Gislason and Associates Ltd. 2004, 137).

## 5. Identifying beneficiaries and enrolling First Nations entrepreneurs

Recognizing the longstanding cultural significance and nutritional and economic contributions of shellfish in many BC First Nations communities (e.g., see Pinkerton and John, 2008), government agents and sector advocates began to advance the idea that these coastal peoples were uniquely positioned to benefit from shellfish aquaculture. In 2002, for example, a Federal Department of Indian and Northern Affairs report entitled *Cultivating Opportunity: A Management Strategy to Expand First Nations' Participation in BC's Shellfish Aquaculture Industry*, identified First Nations as "specific target groups to benefit from the (shellfish development) initiative" (Doyle, 2002, 6, brackets mine). Doyle argued that special efforts to encourage First Nations participation made smart social policy sense because "(s)hellfish development offers so many compatibilities and advantages for Aboriginal communities" (7). The identified synergies include: traditional use of shellfish; potential for local employment; compatibility with Aboriginal lifestyles and environmental values; opportunity for the reinvestment of returns; and, potential for future vertical integration (Doyle, 2002, 7–10).

It is, however, interesting to note that the earliest records assessed during this research do not suggest that the objective of First Nations participation has always been so central. For example, the proceedings of the 1988 and 1990 government-hosted clam workshops list only one presentation by a member

of a Washington State Tribe, and just a handful of BC First Nations attendees. References by non-First Nations presenters to the subsistence and commercial significance of wild-growing shellfish to First Nations were made, but usually in terms of the restrictions they implied for siting new tenures in the future. It seems that encouraging First Nations participation ascended as a priority after the SDI had been initiated. In 2003, a new shellfish unit in the Provincial Crown Corporation 'Land and Water British Columbia Incorporated' (LWBC) described its approach to tenure regulation and allocation:

[o]pportunities are being opened along the coast through consultation processes that identify acceptable areas, a development rate, and appropriate criteria for tenure approval. The government is at the same time assisting First Nations to identify the best sites for their own shellfish farms, and to develop business plans. This new approach is achieving two goals: expansion of the industry in manner compatible with important First Nations values and community interests; and the establishment of businesses owned and operated by First Nations near their own communities (from advertisement placed in Kingzett Professional Services, 2003, 10.)

Many First Nations with shellfish tenures today obtained them through Memoranda of Understanding (MoU) reached with the Provincial government, often in conjunction with on-going land-claims negotiations. Like most shellfish tenure agreements, they enclose specific spaces within a First Nations' traditional territory and designate them for development into an aquaculture business; they also generally require the First Nation to pay annual lease fees and to work to maintain a particular level of productivity on those sites. In these agreements, we see how aquaculture expansion works through privatizing ocean space *and* disciplining entrepreneurial coastal subjects.

It is difficult to discern precisely how many hectares have been tenured by First Nations individuals or communities for shellfish production at this point. However, Doyle (2002) suggested that over twenty First Nations were in various stages of tenure negotiation, while Salmon (2006, 5) estimated that "of the 104 new tenures issued since 1998, most have gone to First Nations". Moreover, it is unclear how small shellfish businesses in regions outside of the Strait of Georgia will fare over the coming years and decades; for example, 72% ( $n = 56$ ) of individuals involved in the sector interviewed by Joyce and Satterfield (2010) stated that "aquaculture production did not currently have significant economic advantages over wild fisheries for small-scale producers in coastal communities" (p. 114). Emerging studies on First Nations' experiences to date suggests that several with business operations, particularly those in more remote regions of the province, have struggled to consistently produce marketable product (Joyce and Satterfield, 2010; Pinkerton and Silver, 2011).

However, discourse has consistently suggested shellfish farming to be amenable with a 'traditional' First Nations past *and* a (presumed) entrepreneurial future. Comments made on two separate occasions by a former Executive Director of the BCSGA provide a sense of the logic and language commonly employed (also see: Doyle, 2002; Salmon and Kingzett, 2002; Hiemstra, 2004; Salmon, 2006). In 1996 testimony to the Federal Senate Standing Committee on Natural Resources she stated:

[s]hellfish farming presents a unique opportunity for First Nations to develop sustainable businesses in rural coastal communities. Some of the most productive beaches suitable for culture on the coast are fronting native reserve lands. Therefore, the involvement of First Nations in shellfish aquaculture is a

natural one ... First Nations already have many of the skills required for shellfish culture.

Just prior to the initiation of the SDI, the rationale here is based principally on local environmental conditions and assumed socio-economic attributes. However, in dialogue with a senator during testimony to the Standing Committee on Fisheries four years later, the case was made in a slightly different way:

**Senator Perrault:** Members of the committee have been told by an official of DFO that the First Nations have very mixed feelings about aquaculture. Some First Nations are participating in the expansion of shellfish farming, which was mentioned very briefly during the presentation. Are First Nations generally more supportive of shellfish aquaculture than of salmon aquaculture?

**Salmon:** Yes. I think that they view shellfish farming as closer to the kind of activities in which they have traditionally been involved. There is increased interest from bands in getting involved in aquaculture.

**Senator Perrault:** They are good fisher people, are they not?

**Salmon:** Yes. I think that if there is a problem, it is that the mind-set needs to be shifted from fishing to farming. While they are interested, there is a learning curve in understanding what farming is, what it involves and how to go about it. Certainly, they are good fishermen and they do have an interest in the whole area of shellfish production. There is a mind-shift required (Salmon, 2000).

In this exchange, amenability is still inferred (again, based on inferences regarding traditional practice), but mixed experiences by entrant First Nations are suggested as evidence that greater attention must be paid to encouraging and facilitating a ‘mind shift’ from fishing to farming. As we will see next, transferring business management skills and training in specific shellfish farming practices to new sector entrants, as well as improving broader public perceptions of shellfish aquaculture, are activities that have been formally institutionalized through the creation of a specialized shellfish unit within Vancouver Island University.

## 6. Generating supportive knowledge, practice and public relations

Assisted by at least \$19.24 million in funding from various Provincial and Federal Government Agencies, a shellfish research and teaching unit of Vancouver Island University (VIU) called the Centre for Shellfish Research (CSR) now exists.<sup>5</sup> Initial planning and construction began in 2001, and in 2004, the CSR opened with the stated objective to: “examine the science, technology and government policies needed to support and sustain B.C.’s diversifying shellfish aquaculture industry” (Malaspina University-College, 2004).<sup>6</sup> Today, the centre trains VIU students enrolled in certificate, undergraduate and graduate programs, and houses research in shellfish health and husbandry, socio-economics, and ecological interactions.

The development of focused First Nations curricula has also been an important area of work for the CSR. In 2002, MAFF funded a three year project to develop programming specifically for First Nations communities, and in 2004, the First Nations Shellfish Aquaculture

Training Program was initiated (Hiemstra, 2004). Courses in this program included: beach management; husbandry; and business management. To extend its reach to more remote communities, a program delivery partnership between the CSR, the Northwest Community College, and North Island College was initiated (CSR, 2005). Programming and advertising continues to evolve, perhaps in ways that also reflect challenges experienced by some First Nations. For example, recent promotional information stated:

[w]e know you’re excited about getting into shellfish aquaculture – and the CSR wants to encourage and support your efforts. However, we’ve learned the hard way that planning is critical to the success of any start-up operation. Starting and operating a successful shellfish aquaculture business takes time, money and commitment – much more is involved beyond obtaining a tenure and training a few individuals (CSR, 2012a).

In ways similar to Salmon’s latter statement to the Standing Committee on Fisheries suggesting a First Nations learning curve about what farming is (and is not), this statement implies that a profitable shellfish business requires knowledge and practices different from past shellfish harvests and/or management activities.

In 2011, construction of a field research station on the shores of Baynes Sound was completed. The station’s website described its role as follows:

field stations have played a transformative role in the “green revolution” of modern agriculture because they bring together industry, academic researchers and government ... [W]e at the Vancouver Island University Centre for Shellfish Research are attempting to duplicate this successful model – but for shellfish farming (CSR, 2012b).

Another report suggested that by hosting culinary programs and public events, the field station would help to “enhance public support for shellfish aquaculture” and contribute to “the integration of shellfish aquaculture into the fabric of coastal society” (Tillapaugh, 2007, 3). Through research, training and public outreach, the CSR appears poised to prioritize and mobilize technical knowledge and to facilitate greater public support for the sector. The teaching, research and public engagement mandate of the Centre for Shellfish Research can be read as another example of how government support outside of the explicit spatial and economic mandate of the SDI works to discipline entrepreneurial subjects (as in Li, 2007).

## 7. Discussion

By detailing government-led and -funded efforts made in support of the widely publicized spatial and economic objectives of the 1998 BC Shellfish Development Initiative, this article sheds light on the recent history of the shellfish aquaculture sector, illustrates complexity in quantifying capitalist possibility across ocean space and coastal regions, and provides a more nuanced understanding of the dynamics of aquaculture as a coastal economic development strategy. While attending to enclosure and privatization (indeed, a large thrust to date of scholarship on the relationship between oceans and neoliberal capitalism), the analysis also sought to explore how narrowed objectives, spatial imaginaries and individual subjectivities were prioritized and reproduced through discourse and government activity. This work corroborates with Phillip Steinberg (2008) who suggests that attending to oceans as dynamic spaces caught up in structural and discursive capitalist transformation can be revealing of “the cultural and political environment within which certain interventions are deemed desirable” (2008, 2088).

<sup>5</sup> The \$19.24 million figure is compiled from Tillapaugh (2007) and funding press releases collected by the author.

<sup>6</sup> Before a change in designation in September 2008, Vancouver Island University was known as Malaspina University-College. It is located in Nanaimo, a city on southeastern Vancouver Island.

Specifically, section three demonstrates how a particular history of relations amongst farmers, introduced shellfish species, growing techniques and state property regulators allowed for productivity increases on existing shellfish tenures in the Strait of Georgia during the early 1990s. In the context of decline in other resource sectors and growing international seafood demand, interest in and hopes for aquaculture as an economic development strategy in BC grew (Young and Matthews, 2010). Sections four through six explore government-led and government-funded efforts undertaken in support of the SDI's objective to double the area of ocean space under tenure for shellfish aquaculture and encourage similar practices and production rates in 'new shellfish growing regions'. Two central findings warrant reflection here: that the highly publicized spatial-economic mandate of the SDI (i.e., to achieve a \$100 million sector through tenure expansion) has been supported by a variety of government funding, research and programming; and, that the projection, funding, research and programming work together to discipline coastal spaces and subjects according to neoliberal logics.

First, government support has done a great deal to create the possibility for shellfish aquaculture expansion in BC. With roots in funded workshops, exploratory studies, databases, maps, and finally, Coopers and Lybrand (1997), the SDI popularized the potential for a \$100 million shellfish aquaculture sector and advanced the idea that expanding tenures and particular production practices outside of the Strait of Georgia was necessary to achieve it. Prioritizing First Nations participation facilitated the placement of marine tenures in remote coastal areas, often within or adjacent to significant traditional territory. These findings present an interesting counter-balance to criticisms from sector advocates and some shellfish farmers who suggest that "a lack of government support and vision for the industry" holds it back (Salmon, 2006; also see: Salmon and Kingzett, 2002). While this genre of claim undoubtedly reflects the experiences and frustrations of at least some sector participants with regulations and bureaucratic oversight, postulating government as *the* barrier to realizing the full economic benefits of shellfish aquaculture in BC un-reflexively accepts the validity of the \$100 million projection as well as the idea that coastal communities ought to support and/or participate in shellfish aquaculture. More realistically, and as suggested by the fact that the overall increase in wholesale value has lagged behind the overall increase in ocean space under tenure for shellfish aquaculture (i.e., 26% increase vs. 76% increase respectively), the acceptability and viability of shellfish aquaculture tenures and farming practices in a particular place actually rests on a range of relationships, preferences, and socio-cultural and ecological conditions that may or may not preclude the adoption of standard industry practices.

Second, arguments for aquaculture expansion are clearly grounded in neoliberal logics and assumptions about ocean space and coastal communities, and in turn, these have informed approaches taken in effort to realize the spatial and economic objectives set out by the SDI. Based on the findings of one-time assessments on the WCVI, the Coopers and Lybrand projection implied that farming practices employed in the Strait of Georgia would be readily adopted elsewhere and that production on new tenures would quickly grow. The \$100 million figure was then employed to support inferences that the employment and income benefits of privatizing ocean space would help to ease local concerns regarding changes in access. Assertions of the opportunity that shellfish aquaculture offers coastal First Nations specifically frame economic development largely in entrepreneurial terms. Rather than taken as an opportunity to consider alternative activities or shellfish cultivation models, challenges faced by small-scale producers in remote communities are used as evidence to suggest

the need for further focused aquaculture education programming, capacity building and infrastructural support.

Given BC's conflicted colonial history, and the legal and political uncertainty that surrounds decisions regarding ocean space today, the identification and pursuit of First Nations as key beneficiaries of sector expansion is particularly significant. When designated through MoU negotiations, new aquaculture tenures stand to be institutionalized in treaties meant to 'reconcile' settler and First Nations interests in that space once and for all. However, once legally enshrined, tenures impose new development pressures and economic imperatives, relationships and identity politics to be navigated by First Nations persons and communities (also see: Pinkerton and Silver, 2011). This perspective raises questions about the potential for tenures to be reverted back to common space if First Nations tenure holders chose to exit from the sector exist (Joyce and Satterfield, 2010), and therefore, about the limits that marine privatization place on Indigenous sovereignty in ocean space.

## 8. Conclusion

Through exploring the case of expansionary efforts in BC, this article provides important perspective at a time when aquaculture is being widely invoked for its potential to bring about economic development in coastal and rural places (Belton and Little, 2011; Time Magazine, 2011). In the simplest sense, farming the ocean may present new employment opportunities, increase overall seafood production, and perhaps, shift market demand away from certain capture fisheries in certain places. However, the long-term acceptability and viability of a single aquaculture operation or an entire sector also necessitates that specific relationships and processes hold over space and through time: permitted species must grow well under localized conditions; farmers must employ new techniques, and in turn, will be more likely incentivized to achieve economies of scale; citizens must accept reduced access to tracts of ocean space; and, new supportive institutions must be funded and built.

As the findings have shown, efforts to achieve and maintain these conditions must be focused and coordinated, and thus, very specific types of property regulations, development interventions and individual subjectivities stand to be idealized. It is important to recognize that some actors and communities are better positioned, by virtue of local environmental, economic and political conditions, to operate economically profitable aquaculture businesses (Young and Matthews, 2010). Others still may recognize and take issue with the changes that aquaculture development implies. Therefore, rather than an uncomplicated or apolitical fix to social and environmental problems, it seems more appropriate that politicians, non-governmental organizations and the public assess aquaculture for the conditions that material success hinges upon, recognizing in particular the advantage created for individuals and communities already poised to align with new property arrangements, funding opportunities and discourses that re-define what ideal and productive human–ocean relationships should look like. Had this been the case in BC, initial projections might have been more modest, and in turn, government intervention more prepared to address coastal regions and communities as the environmentally and socio-culturally heterogeneous entities that they are.

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