Understanding the compounding impacts of Marine Protected Areas on commercial harvesters in British Columbia, Canada.

Abstract

Commercial fish harvesters are facing cumulative pressures impacting multiple aspects of fisheries in British Columbia (BC), Canada. Alongside shifting policy and licencing landscapes, harvesters contend with the economic, social, and cultural impacts of Marine Protected Areas (MPA). In this article we analyse the often-overlooked lived experiences of small-to-medium scale commercial harvesters whose wellbeing is affected by established MPAs. Reported challenges include mental health and safety concerns, infrastructure and supporting industry degradation, knowledge loss, and changing social dynamics.

The impacts of MPAs are only set to be compounded. As Canada responds to international commitments to conserve 30 percent of the ocean within its jurisdiction, it is creating regional MPA networks to increase potential conservation outcomes. One of these, situated off the coast of BC, is the multi-government Northern Shelf Bioregion (NSB) MPA network. This article provides insight into how harvesters entered discussions of the network. Among other concerns, respondents felt that their participation in the process, and the spatial data that they themselves collected and provided, have been used against them to inform the designation of closure areas. Additionally, interviewees contended that conversation management is not the only motivating factor behind the creation of MPAs. The Federal and Provincial government's lack of transparency about its motivations, had further eroded their trust in the process. Looking ahead, this article summarises the social, economic and cultural effects that harvesters reported as priority areas for consideration and monitoring by the network.

Keywords
Marine Protected Areas, Commercial fishing, Canada, Wellbeing, Access

1. Introduction

Commercial fish harvesters are facing multiple and cumulative pressures that impact social, economic and environmental aspects of fisheries (Harper et al., 2023). These challenges include adjusting for climate change and adapting to changing fisheries management policies. At the same time, in response to globally declining marine biodiversity, states are increasingly conferring protected status upon areas of the ocean. This acceleration follows many states signing onto the Kunming-Montreal Global Biodiversity Framework (GBF) and committing to conserving 30% of Earth's land and oceans by 2030 (CBD 2022). Marine Protected Areas (MPAs) are among a suite of area-based management tools that states' position as a way of achieving these commitments. Alongside being proposed as a means of realising long-term conservation goals, MPAs also have human wellbeing and social considerations integrated into their design (Francolini et al., 2023; Watson et al., 2021).

Within MPAs, human activities are restricted and regulated to varying degrees. This includes the restriction of activities such as oil and gas extraction, shipping, and commercial harvesting. Globally, commercial harvesting activities often predate and overlap with MPAs (Bennett et al., 2021; Rees et al., 2021) and some MPAs have contributed to the displacement of harvesters through a loss of access to previous fishing grounds (Oracion et al., 2005). Harvesters' access to fisheries may be subject to protection measures that range from prohibiting fishing entirely (in the case of no-take MPAs), to allowing only specific fishing activities to continue (Arkema et al., 2024). These protection levels are based on the rationale that the restrictions imposed will safeguard marine biodiversity (Kriegl et al., 2021). This is particularly the case with no-take MPAs (Manson et al., 2021). However, not all MPAs result in the same ecological benefits (Devillers et al., 2020; Jones & Long, 2021; Kriegl et al., 2021). Additionally, despite the integration of wellbeing considerations, the social and cultural implications of MPAs vary. While researchers have recorded benefits to local communities when MPAs are designed through a participatory process (Álvarez-Fernández et al., 2020), MPAs have also impacted the livelihoods and wellbeing of harvesters and undermined and perpetuated environmental injustices (Parsons et al., 2021; Peer et al., 2022).

The importance and complexity of harvesters' wellbeing and equity is widely recognised and extends beyond quantifiable economic impacts such as landings and revenue (Campbell et al., 2021; Fudge et al., 2023; Micha & Kelling, 2025). Wellbeing can be understood as “a way of being with others that arises when people and ecosystems are healthy, and when individuals, families, and communities equitably practice their chosen ways of life and enjoy a self-defined quality of life now and for future generations” (Donkersloot et al., 2020; 3). Scholarship has increasingly highlighted the importance of recognising the socio-economic, cultural and governance implications, *alongside* ecological impacts, of MPAs (Bennett et al., 2018; Gómez et al., 2006; Hogg et al., 2017). Ignoring these dynamics, including access concerns, can also significantly impact the extent to which communities perceive the outcomes of MPAs (Bennett et al., 2020).

Within a holistic understanding of harvesters’ diverse perspectives on MPAs, it is also important to discern the varying levels of legitimacy they attribute to MPA processes and management. For example, support for MPAs in Oregon has been shown to increase if harvesters are involved in, and kept informed of, the process and regulations (Manson *et al.* 2021). MPAs have also exacerbated commercial harvesters' pre-existing concerns about how conservation management practices have been developed and established (see Mangi et al., 2011) and how fisheries management institutions have diluted their autonomy over their practices (Parlee and Foley 2022). For example, the often unpredictable and shifting policy landscapes has been shown to affect the wellbeing of harvesters who work within “interventionist management approach[es]” (Pinkerton & Davis, 2015; see Pollnac et al., 2019). Studies have also demonstrated that the neoliberalisation of fisheries and use of

governance technologies have contributed to an increase of harvesters' distrust and feelings of being over-surveyed (Boucquey, 2020; Bresnihan, 2019; Choi, 2019; Jenkins 2021).

British Columbia fisheries

In this collaborative article we analyse the lived experience, through in-depth semi-structured interviews, of small to medium scale harvesters in British Columbia (BC), Canada, who have been affected by established MPAs and RCAs. Canada is an example of where MPAs have led to the displacement of commercial harvesters. This has created challenges in balancing the interests of harvesters and marine protections and shaped how harvesters have engaged with subsequent MPA processes. Commercial harvesters in BC not only provide sustainable seafood, contributing to domestic food security, but are integral to the socio-economic wellbeing of coastal communities. Harvesters in BC (like harvesters in other contexts such as California (Ordoñez-Gauger et al., 2018)) have raised concerns about how MPAs and associated regulations have, and will continue to, affect their - and their communities' - viability and multiple dimensions of their wellbeing (see Yates et al., 2019). While Canada's Fisheries Act was updated in 2019 to incorporate "social, economic and cultural factors in the management [and decision making] of fisheries" (Government of Canada 2019), these considerations are left to the discretion of the Minister of Fisheries. As a result, the relationships between the economic, social and cultural aspects of harvesters' wellbeing is often overlooked (Bennett et al., 2021).

To people in BC, the ocean has always been essential for a multitude of reasons including enabling the sharing, "consumption, trade or sale" of seafood (Bennett et al., 2018; 187; Manson, 2019) as well as supporting cultural practices and promoting relational wellbeing (George & Wiebe, 2020; A. J. Reid et al., 2022). Concurrently, the ocean has also been a site of settler-colonial dispossession and violence, and fishing activities have supported colonial expansion (Todd 2018). Prior to their enclosure, areas designated as MPAs were relied upon for the above purposes including by Indigenous and non-Indigenous commercial harvesters. In addition, Indigenous Peoples may have also exercised their right to fish for food, social and ceremonial (FSC) purposes in these areas (Ban & Frid, 2018; M. Reid et al., 2022).

Access and licencing rights

Harvesters' livelihoods and coastal communities' wellbeing depend upon the availability of fisheries *and* their access to them (Bennett et al., 2021; Silver & Stoll, 2019). Access to BC's marine environment for commercial harvesters varies depending on a combination of rights and capacities, including licensing and allocation rights as well as the designation of MPAs (Bennett et al., 2018). Alongside this, both the BC provincial and the Federal governments are pursuing reconciliation policies as part of an ongoing process that attempts to respond to the historical and

continued dispossession and marginalisation of, and harm towards, Indigenous Peoples. Following the publication of the Truth and Reconciliation Commission's report in 2015, MPAs have increasingly been accompanied by narratives of government principles of reconciliation (Akins and Bissonnette 2020). Similarly, Fisheries and Oceans Canada (DFO), the Canadian fisheries management agency, has signed Fisheries Reconciliation Agreements with some First Nations in BC to enhance access to, and Indigenous governance of, fisheries (Brown 2021; see Harper et al., 2023).

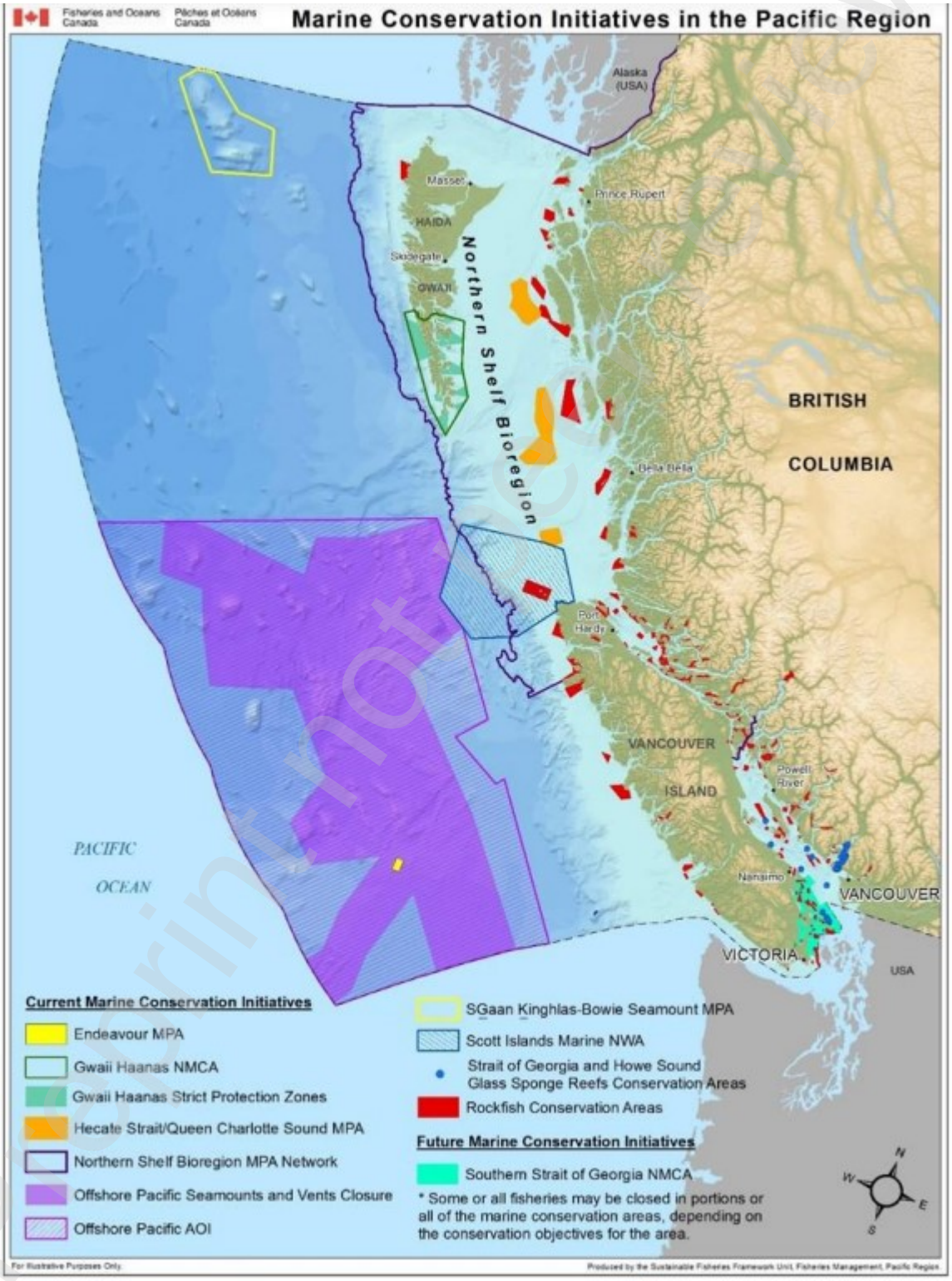
As of 2023 there were 4,057 individual annual commercial licence holders in the Pacific region of Canada (30% of the commercial harvesting sector are First Nations (Malatest 2024)). The licence holders were issued 5,512 species-specific licences (DFO 2024). These licences (and permits) allocate harvest rights to harvesters and limit the number of harvesters for each fishery (Silver and Stoll 2019). However, since the 1960s, BC's commercial fisheries sector has seen its fleet shrink, while facing an increasingly complex "licensing landscape". This shift has seen licences being limited for abalone, groundfish trawl, halibut, herring, salmon and shrimp, while concomitantly, newer fisheries have been developed including geoduck, sablefish and sea urchin (Silver and Stoll 2019; 1001). The number of licence holders in BC peaked in 1990 and since then, year-on-year decreases in the number of licence holders have been associated with harvesters retiring or leaving commercial fishing. The number of registered commercial fishing vessels has decreased by 33% from 2004 (Fisheries and Oceans Canada 2024). This exodus has in part been in response to the effects of corporate capture by a small group of industrialised fishing entities (Silver & Stoll, 2022). Research has indicated that industrial interests have condensed and controlled licences across several fisheries, creating challenges for owner-operators who are priced out of obtaining or leasing licences and quotas (Silver and Stoll 2019; see also Ecotrust and T. Buck Suzuki 2015; Mansfield 2007). There has also been a marked decrease in the number of registered commercial fishing vessels (a 33% decrease since 2004 and 14 % since 2014). Smaller vessels (under 45ft), represent 82% of the total fleet as of 2023 (Fisheries and Oceans Canada 2024), demonstrating the need to understand the experiences of smaller scale harvesters in BC (Gibson & Sumaila, 2017; 122).

BC MPA Landscape

The number of MPAs in Canada has increased in line with global trends, with more areas proposed to come under area-based conservation measures. At the time this research was conducted (2024), 6 MPAs have been designated off the coast of BC - (SG̲áan K̲ínghlas-Bowie Seamount Marine Protected Area, Hecate Strait Glass Sponge Reefs, Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site, Scott Islands marine National Wildlife Area, Endeavour Hydrothermal Vents and the Offshore Pacific Seamounts and Vents Closure) (established between 2003 and 2023, see Figure 1). Additionally, the Strait of Georgia and Howe Sound glass sponge reef conservation areas, Offshore Pacific

area of interest and 164 Rockfish Conservation Areas (RCAs) have been established. RCAs differ from MPAs in that they do not have protected-area designation, but they are akin to MPAs, and hence included in this study, because they are long-term spatial closures that restrict access to several fishing gear types to facilitate the recovery of rockfish (Fisheries and Oceans Canada 2006).

Figure 1. Map of MPAs/RCAs in BC at the time of interviewing (2023)



(Fisheries and Oceans Canada 2023)

Table 1. Commercial fishing restrictions in BC (2023)

Marine Conservation Initiative	**Associated commercial fishing closures and restrictions (relevant in 2023)**
SGa̲an K̲ínghlas-Bowie Seamount Marine Protected Area	At the time of MPA designation, the Northern Seamount Sablefish trap fishery was the only commercial fishery that DFO permitted within the MPA. However, since 2018 the MPA has been closed to all commercial fishing activities (Fisheries and Oceans Canada 2019a).
Hecate Strait Glass Sponge Reefs	Core Protection Zones are closed to all commercial, recreational, and Aboriginal fishing. The Vertical Adaptive Management Zones and Adaptive Management Zones are closed to all commercial bottom contact fishing, as well as for midwater trawl (Government of Canada 2017).
Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site	Commercial fishing prohibited (Government of Canada 2025).
Scott Islands marine National Wildlife Area	Commercial fishing is permitted in the Scott Islands marine NWA so long as it is carried out in accordance with the Fisheries Act and the Coastal Fisheries Protection Act and their regulations (Government of Canada 2018).
Endeavour Hydrothermal Vents	Bottom trawl fishing prohibited (Government of Canada 2023).
Offshore Pacific Seamounts and Vents Closure and Offshore Pacific area of interest	Bottom-contact commercial and recreational fishing activities prohibited (Fisheries and Oceans Canada 2019b).
Strait of Georgia and Howe Sound glass sponge reef conservation areas	No commercial, recreational or Indigenous Food, Social and Ceremonial bottom-contact fishing activities are allowed within defined areas. The use of downrigger gear in recreational salmon trolling is also prohibited (except Defence Islands) due to the potential risk of damage to shallow reefs (Fisheries and Oceans Canada 2023a).
Rockfish Conservation Areas	Commercial harvesters may not fish for:

	Salmon by troll, groundfish by means of bottom trawl, hook and line, mid-water trawl, or trap, tuna by hook and line, shrimp by trawl (Fisheries and Oceans Canada 2023b).

Fisheries and Oceans Canada (DFO) is federally mandated to ensure both the sustainable management of fisheries as resources, and the prosperity of the communities and harvesters who rely on Canada's fisheries (Bennett et al., 2021; 2). BC's MPAs and RCAs were established through federal level - and in some instances, Indigenous governments - designations and invoke various forms of protection from fishing and industry over the areas they span (Wilson, 2021). These designations have increasingly included safeguarding marine biodiversity alongside areas of economic and cultural significance for coastal First Nations.

Alongside existing MPAs, regional MPA networks—which bring together a collection of MPAs with the aim of achieving connected and increased conservation outcomes (Watson et al., 2021)—are being established. These include the Northern Shelf Bioregion MPA (NSB MPA) network off the coast of BC. The NSB MPA network has been co-designed and co-governed by the Federal government (DFO), the Provincial government, and 15 signatory First Nations. However, representatives of BC's commercial fisheries sector have raised concerns about the impacts of the network, and associated access changes, on harvesters and the future of the sector. Research has demonstrated that recognition of the wellbeing of marine environment dependent communities must be considered at all stages of the MPA process, from conception through to management (see Bennett et al., 2020).Throughout this article, we therefore highlight how harvesters' insights not only provide an understanding of their experiences with already established MPAs, but some background to how harvesters entered discussions of the NSB MPA network. However, as previous studies have demonstrated, harvesters' attitudes toward MPAs indicate that these effects, and harvesters' perceptions of them, may change over time (Charles & Wilson, 2008; Mangi et al., 2011; 458; Pita et al. 2011). In recognising that there are immediate and long-term impacts, we also look to understand what social, economic and cultural effects harvesters believe should be monitored as the NSB MPA is established (see Pita et al., 2020).

2. Methodology

This research was developed in collaboration with the TBuck Suzuki Foundation, the United Fishermen & Allied Workers' Union (UFAWU-Unifor) and researchers at the University of Victoria (UVic). In 2023, XX and XX attended the BC Fisheries for Communities gathering in Victoria, BC. XX hosted a workshop on MPAs and wellbeing. Following this workshop, a collaboration between TBuck and UFAWU-

Unifor was established. Each stage of this research, from conception to dissemination, has been collaborative. The collaborators participated in a virtual workshop to identify research interests, suitable methods and time frames for this work. During this workshop a list of potential research questions were established. Themes identified included access, socio-economic impacts, governance, and infrastructure. This study was approved by UVic's Ethics office (RAIS Application # 21-0534).

The interviews focused on questions based on the effects of previous spatial closures on harvesters. These questions aimed to understand their perspectives and knowledge of MPAs and to inform future monitoring of the impacts of MPAs on the sector (Baker et al., 2023). We collaboratively developed our interview questions (*see supplementary materials*) based on four themes: 1) General introductory questions; 2) General context questions on the MPAs interviewees have been affected by 3) Impacts of these MPAs and 3) questions on tracking the impacts of MPAs on commercial harvesters. Given the NSB MPA network's status as a proposal when we conducted interviews, and the ongoing nature of the discussions around best practices for impact monitoring, interviewees were asked to propose their own preferred impact indicators along with how these could be monitored. They were also asked which impact indicators, if any, were overlooked by current monitoring processes.

The sampling frame comprised commercial harvesters based in BC. Between October 2023 and January 2024, XX and collaborators from T. Buck interviewed ten harvesters from BC. Interviews lasted for an hour, on average. Partners helped to identify interviewees as harvesters' had a trusted relationship with these organisations and/or individuals which had been established over a long period of time (Emmel et al., 2007). All interviewees were harvesters; however, interviewees often had more than one affiliation. For example, as well as being active in fisheries, three individuals had official positions within their respective fisheries associations. These include individuals involved in the Pacific Prawn Fishermen's Association, the Pacific Halibut Management Association of BC, and the Underwater Harvesters Association. These individuals spoke on behalf of their association's membership as well as reflecting on their own individual experiences. Four of the interviewees had been directly involved with MPA discussions and negotiations.

In an attempt to also include perspectives from a more diverse range of participants, XX also undertook participant observation (Johnson, 2006) at the BC Young Harvesters Network (BCYFN) Annual Gathering in Nanaimo, in January 2024. Participant observation enables a deeper, but also narrower, inquiry into harvesters' social movements and work groups (see De Vos and Van Tatenhove 2011;Seim, 2024). The gathering was aimed at new harvesters, those interested in exploring fishing as a career as well as industry members of all ages and experience (BC Young Fishermen's Network 2023). Observations at this event captured the

perspectives of, and arguments from, young harvesters who may not be as representative in partners' sampling strategies. XX recorded conversations and discussions, using field notes. However, these notes will not be as accurate as a transcript from a recorded interview and are acknowledged in the text as observations (Swain & King, 2022 see also Guillemin & Gillam, 2004).

XX transcribed and coded the interviews and participant observations using NVivo. We analysed MPA-specific questions through the lens of a human wellbeing framework (Kaplan-Hallam & Bennett, 2018) and drew our codes from the domains of the framework. The domains of human wellbeing are Economic, Social, Health, Cultural, Governance and Environment. While we recognise that there are heterogenous understandings and experiences of wellbeing (Fischer et al., 2022 see Carothers *et al*. 2021), we used this framework as a tool to analyse some of the wellbeing effects that interviewees shared. This paper also includes narratives to ensure that the individuals who shared their experience are represented in their own words and to provide insights into important details of events and relationships (Anderson & Kirkpatrick, 2016; 632).

3. Results

Interviewees fished a variety of fisheries and all but one fished multiple fisheries. The fisheries represented by participants were dogfish, halibut, rockfish, sablefish, salmon, scallop, shrimp and tuna. All interviewees were owner-operators. We recognise that there are multiple definitions of small-scale harvesters, including harvesters that do not use vessels, or that use vessels under 49ft in length, as well as family or individually owned and operated outfits (as opposed to corporate owned) (Johnson, 2006). Vessels used by interviewees ranged from 32–54ft in size, with the majority between 40–50ft, participants were therefore all small to medium scale harvesters.

All interviewees had been impacted by MPAs, among which Gwaii Haanas and Hecate Strait Glass Sponge Reefs were the most frequently referred to. Participants also variously mentioned that SG̲áan K̲ínghlas-Bowie Seamount and the Scott Islands MPAs as well as Gwa̲xdlala/Nala̲xdlala (Lull/Hoeya) marine refuge and RCAs had previously been important fishing grounds prior to their closure.

3.1 Impacts of MPAs on wellbeing

Harvesters were first asked about the impacts of previous MPAs on their wellbeing. The most prevalent domains of human wellbeing that harvesters referred to were economic, social and governance and these domains were interrelated.

Table 1: The impacts of established MPAs on harvesters' wellbeing.

Wellbeing Domain	Key themes	Illustrative quotes
Economic	Livelihoods Economic security Employment Access Canada's economic landscape Fines and penalties	*"We've got mortgages to pay. I've got three kids to feed…it's tougher to make a living…It affects us and it affects the coastal communities, the small towns that we live in because, if I've got less money to spend, then I'm not going to go to other businesses in town."*
Social	Infrastructure Ability to adapt Knowledge Crowding Equity Divisions	*"You are already having concentration issues now and it's gonna get so much worse when we have even less area to fish in. You already have tensions now between fishers. It can be quite aggressive up there... Now imagine what it's gonna be like when you literally have your house on the line, your annual income on the line, your ability to even make the season work, because we already have hyper concentration."*
		"The more protection areas we have, the more concentrated the fleet is. So now, instead of say 4 or 5, or half a dozen, boats fishing at Pocket [in Gwaii Haanas] trolling salmon…it just consolidates everything a little bit more."
Health	Mental health Food security Connection to the ocean Physical safety	*"I think mental health over the past 5 years has been in a state of complete degradation, stress, terror. It's a stressful and horrible place to be in right now because of this… it's got to be terrible for some of these guys that are borrowing the money for their licenses through banks and then on their house mortgage…we're watching fishers our age get out. We've never seen it like this, nobody I've talked to has ever seen this amount of exit-ing that is not retirees."*

Cultural	Identity Succession Intergenerational knowledge Family histories	*"It's a connection to the environment and the ocean and also a connection to the past. I guess I feel like there's part of my great grandparents and grandfather there with me all the time when I'm out fishing, and my grandpa, he passed away kind of young, and I always feel a connection to my family when I'm on the water."*
		"It gets in your blood… [My daughter]'s taking over the boat with her husband and her three boys. I always say that she had salt water in her blood."
Environmental	Gear concentration Climate change targets Scale	*I'm just doubling the amount of fuel that I gotta burn [due to closures]…each individual prawn or fish is going to have a higher carbon footprint associated and it's going to have a higher price tag."*
		"We're bringing our food in from places with really poor environmental practices. So you're going to trade high quality, environmentally sound, sustainable fish from our own nation, our labor, our own people, for what?"
Governance	Equity Transparency Consultation Participation Use of fisheries data Access Reconciliation Monitoring	***"**I honestly believe that a lot of these things are put forward with people with really good intentions, without really delving into the whole picture of the consequences of that. They're so focused on the environmental gain and the environmental protection that they're literally blinded to any kind of outfall, and it's the harvestermen that are trying to scream about it. But it's almost like the Government's gone too far down the path."*
		"We've been locked out and it's frustrating because we know our fisheries. That's our job and we know how everything works there and it just makes sense to communicate with us."
		"I think the Federal and Provincial government thought, well, we're doing this ocean's marine protected area. Let's do reconciliation at the same time…I'm not against reconciliation but the way they are doing it here…[me] and a few other individuals, we shouldn't take the brunt for

		the whole country, right? We shouldn't have to take the hit when it should be the country that takes the hit."
		"Pocket Inlet [in Gwaii Haanas], I believe that's one of the first ones that closed for 100% of access. When they put that one in, they used my data and where I put my net, that's where they made the boundary... The First Nations had no problems, they wanted a different boundary, but the government refused to listen on it. So that one had a huge effect for me."

3.1.1 Economic impacts

All harvesters felt that restrictions preventing their access to harvesting areas impacted their economic wellbeing, due to the commensurate erosion of their profits, and ultimately of their family income. Interviewees shared that, because of the cumulative effects of multiple MPA associated closures, fewer areas were open for fishing. Harvesters reported that their displacement from these fisheries had several economic implications. They had to travel further distances to fish, therefore incurring increased fuel and time costs, and reducing the number of opportunities to harvest. As one interviewee explained, *"I have to go to other places to catch fish. I spend more time, more fuel, more money on bait. Everything is less efficient."* Interviewees explained that the increased cost has, in turn, caused them to truncate their fishing seasons.

The economic impacts of MPAs are further compounded by other factors such as weather. As another harvester explained

> *"if the trip is predominantly fresh fish, not frozen, you've got seven days to fish…so if you get a bad weather day you're going to lose a day and a half, and you have two of those in your seven day trip, now you've lost three of your seven days…and then, to add the complexity there are areas that you can't go* [due to MPAs]*."*

This sentiment was echoed by another interviewee who raised concerns about the indirect impacts of increased travel time, due to closures, on the freshness and therefore price of the seafood landed. However, as a fisheries association spokesperson explained, these impacts will be felt unevenly depending on harvesters' vessel sizes and would be experienced strongly *"especially in the 40 to 55 ft range."* They explained that *"there's a huge fleet of guys in that size range…the big boats, we can go fish anywhere…but the little guys are local fishing out of Port Hardy, some of the smaller areas. A lot of these MPAs are affecting these little guys and they have no voice."*

The majority of interviewees highlighted that the impacts on harvesters' economic wellbeing were compounded in the context of Canada's economic landscape. For

example, when considered alongside rising inflation, the economic impact of MPAs is felt by the whole community: Despite raising the importance of recognising the wider economic context that harvesters are operating in, participants still considered that MPAs alone had substantive effects on their economic wellbeing. One harvester summarised this as follows:

> *"MPAs are devastating to the commercial fisheries. In my opinion, there's no comparison to other fishing issues affecting us as the implication of MPA's. This is the big one…job loss, coastal communities affected. The domino effect on other businesses within our communities… We've seen high prices in fuel and every time you look at your boat, there's a four-digit number to fix it, right? It's not three digits anymore, it's four digits. COVID was a tough one, absolutely not going to deny that, but this marine protected area is here for good."*

Five Interviewees explained that, as a result of these economic impacts, they were discouraging young people from entering the industry. One interviewee shared that:

> *"you're also seeing parents sell out their boats and licenses and have kids wanting to, and willing to fish, but not able to afford it. And again, like what kid is then gonna be able with current interest rates and everything; to find financing…they might go through all of that and then go bankrupt anyway because there's no fishing access."*

Harvesters' concerns about how MPAs impact younger generations extended beyond those intending to join the industry permanently. As one harvester explained, the potential economic impacts of MPAs on seasonal employees were often overlooked by DFO and ocean management monitoring processes: *"I've had many deckhands, younger deckhands, come fishing with me and it's paid their schooling, their university, and they've got good jobs in whatever fields and careers they've gone into."*

Finally, two interviewees raised the financial implications that can be borne by harvesters if they accidentally enter MPAs. They explained that if this happens, or even if a harvester's line drifts into an MPA because of tides or currents, then they incur fines:

> *" if you're not aware of an MPA or one that's being implemented, and you don't have it mapped out properly on your computer, and you go and accidentally set your gear in these things you've got a minimum $70,000 fine now…It's remarkable to me that more guys haven't got fined with their existing ones. And then with the ones that are coming, it's gonna be crazy."*

This concern was shared by harvesters during participant observation at the BCYFN gathering, who were uncertain about how the boundaries of an MPA—and the fines for breaching them—are established. One participant shared their experience of being *"fined $30,000 for 'drifting' but [we] won eventually. If the line drifts due to the*

tide, then there is no control." They explained that it is often years before harvesters receive (often unexpected) fines. They also raised that, if harvesters choose to dispute these fines, then they can incur considerable legal costs particularly due to the complexity entailed in "proving" that they were not fishing in an MPA. Participants therefore highlighted that they needed clearer definitions as to when harvesters were considered to be 'fishing' and therefore liable to be fined: *"when repairing nets, or when nets are in the water, or when there are fish in the nets?"*.

3.1.2 Social impacts

Alongside economic impacts, harvesters reported that MPAs had impacted social dynamics both on the water and within their communities. Interviewees shared that fishing benefited them socially, enabling them to meet people and form connections. For each interviewee, their identity as a harvester was a source of pride and, they explained, fishing deepened their connections with their communities. One harvester elaborated, *"It's about your own income and supporting your family, but it's much bigger than that. It's about feeding many more people than just yourself."* Interviewees noted that MPAs have also hindered their ability to pass on their knowledge of the coast, and then compelled them to commit time, energy and resources into learning new areas along the coast.

<u>Crowding</u>

Interviewees shared their perspective that the presence of MPAs has led to an increase in crowding and conflict on the water. For others, the crowding outside of MPAs has increased their reliance on family and community members:

> *"how am I gonna know that when I move, if there's somebody there already to even put my gear down? So I have to have somebody to go and spot for me to see if there's even room for me and put my gear. So I'm paying for somebody to do that… I'm lucky enough that I have quite a few relatives in fishing, and they've told me where there has been prawns in the past."*

Additionally, one participant shared that their fishery was *indirectly* impacted by MPAs: while they had never fished in any of the areas now closed as MPAs, the closures had significantly increased the number of prawn harvesters they observed in the areas they fished *outside* of those MPAs.

Seven interviewees contended that access to MPAs was uneven across user groups, including between commercial harvesters and recreational harvesters, and between Indigenous and non-Indigenous harvesters. They explained that this has impacted social wellbeing. Displacement has led harvesters to raise concerns about relations between fishing lodges that cater to recreational harvesters (as opposed to "*the solo guy taking kids out going fishing"*) and commercial harvesters. According to one harvester, the scale of fishing stemming from the proliferation of lodges in BC was causing conflict:

> *"I've seen them come in with their fish into Masset [Haida Gwaii] and it is astounding the volume of fish that comes in...and this is only one fishing camp. This is a huge amount of fish, this is more than I am going to catch in a season."*

Additionally, social dynamics between Indigenous and non-Indigenous harvesters were highlighted with three harvesters sharing that they felt that Indigenous harvesters' access to MPAs was *"creating divisions on the water."* Concerns about the displacement of harvesters leading to concentration and increased competition were echoed during participant observation at the BCYFN. One young harvester spoke about the potential unevenness between access for commercial and recreational harvesters, sharing their thoughts with the room that *"if they [MPAs] don't close for sports fishing then there is an incredible bias. This is getting scary."*

Infrastructure

Interviewees discussed how the denial of access to areas they previously fished, on account of the establishment of MPAs, forced them to land in different ports. They highlighted the ramifications this has had on infrastructure across the coast, particularly as coastal communities have been built around fishing and related support services. Harvesters reported experiencing closures of shore-side support facilities and how they have found it increasingly difficult to access services such as ice provision, fish processing, and vessel building, repair and maintenance. These concerns were raised particularly by interviewees landing in Port Hardy, Prince Rupert and Massett on Haida Gwaii. Harvesters also raised specific concerns that First Nations in the north of BC have been encouraged to invest in infrastructure, but are not now seeing sufficient use from harvesters, who are being prevented from travelling there due to MPAs. The fear that MPAs could lead to a collapse of fishing infrastructure was also observed at BCYFN, before a fishing association suggested that the BC provincial government needs to fund a full socio-economic review to understand these potential interrelated impacts.

3.1.3 Health impacts

Interviewees explained that the crowding resulting from MPAs has not only impeded their economic and social wellbeing but also inhibited harvesters' health and safety. The majority shared that they had either undertaken, or witnessed, increased risks as a result of displacement. As one interviewee explained:

> *"you're forcing fishermen to fish in suboptimal locations… one of the big pushes for why people put quotas in was because of all the maritime industry incidents, people fishing in poor weather because they felt they needed to…You're gonna go right back into dangerous situations."*

The interviewee further explained that older harvesters, who already have to undertake physically demanding work, are being forced by closure-linked displacement to stay out for longer and to take more risks. This has raised safety concerns, including that harvesters increasingly work in inclement weather conditions due to these pressures.

With closures of facilities along the coast, harvesters have reduced access to safety gear and other necessities. Interviewees felt that this has been exacerbated by MPAs. Respondents also spoke to novel challenges in accessing hygiene facilities—particularly showers—along the BC coast. Alongside reporting physical health impacts, interviewees shared that MPAs had degraded their mental wellbeing. Harvesters explained that they had strong connections to the ocean and derived happiness from being on the water. They reflected on how access to fishing was integral to their identity and mental wellbeing. Continuing, they expanded on how MPA-linked impacts on economic wellbeing were having corollary effects on harvesters' mental health:

> *"There's no mental health resources and stuff that comes with other high risk jobs… you're gonna have drug and alcohol issues. You're gonna have people making really sketchy decisions, having more marine incidents. You're gonna have major mental health issues, there's gonna even be a potential more strain on our healthcare system, just because of all these poor fishers who are in a bad way."*

This sentiment was echoed by three interviewees who raised concerns around increasing stress levels, alcoholism and drug use, as well as rising suicide rates among harvesters. Other participants at the BCYFN were observed raising concerns about increased mental health impacts due to the uncertainty around closures and the future of fishing as a livelihood.

Finally, harvesters also felt that decreased landings would impact the food security of not only their communities but of BC. This was shared by participants at the BCYFN who called for a broader understanding of the health impacts of MPAs with one harvester asking *"are they [the Federal and Provincial governments] thinking about food security? What is being lost?"*

3.1.4 Cultural

All interviewees related that fishing was more than a job to them. The majority of interviewees had been involved in fishing from an early age and reported that the practice allowed them to connect with oceanic family histories. *"This way of life that I think my family's been part of for over 100 years, I think for me, it's very much an all-encompassing lifestyle. Fishing becomes a core part of your identity"*

Interviewees shared the multi-generational importance of fishing, which they believed connected them with past and future generations. One harvester elaborated, explaining that *"it's an inheritance of a lifestyle as well and an inheritance of continuing it and paying homage to your past and making sure that that lifestyle continues."* Despite themselves having intergenerational experiences of fishing, interviewees were concerned that their children would not want to follow in their footsteps due to MPA-associated closures, among other area management decisions. The interviewee continued, *"my concern for now and in the future is that I'm nervous my kids won't maybe have the opportunity to fish due to these MPA implications, right? It would be nice to pass it [fishing] on, from generation to generation."*

During participant observation at the BCYFN, the harvesters present called for unity among owner-operators to ensure that the industry had a future. One harvester addressed younger attendees, explaining that *"we are here supporting new entrants. We are united…We are united against it [MPAs], fishing for our livelihoods. It's great having you in this room, we need to be more united, louder, so that we can have a future."*

3.1.5 Governance

Finally, most interviewees explained that they already experienced high levels of monitoring, surveillance and management, which led them to question why MPAs were needed in Canada when harvesters already comply with existing conservation-related regulations. Interviewees raised concerns about the MPA governance processes and the negative outcomes that past management measures and licensing changes had inflicted upon them. As one harvester shared, licences used to be good for the whole of the coast but then they were split into areas that are now affected by MPA related closures. They continued to explain that it is *"getting harder to make decisions on what licences to buy, including in what fisheries, when there isn't clear information about management changes."*

While some harvesters explained that they had initially supported MPAs—and even in some cases contributed to foundational discussions or provided information and data in support of their establishment—they later withdrew their support because they felt that their views had been sidelined in the subsequent process. Because the data participating harvesters provided was used to inform area closures, interviewees expressed their sentiment that their own data, information, and experiences were being used against them: *"a lot of these areas are decided by the heat map of our fishing data."* Another harvester echoed this concern: *"one of the things that was a big problem is that most of their information has been derived from fishing data. So, they're looking to see where we fished and how much fish is coming out of that area, and then they want to protect that…they use our science against us."* One harvester explained, *"there's no consultation. There's no co-development or anything. They've got their check box that they check off, and then they just throw it out the window and say, 'Oh, yeah, we went through. We did our meetings.'"*

Additionally, interviewees felt that, even though their data had been (mis)used, the polygons that delineate the MPAs, simplify the ocean. They shared that current area

management strategies and associated closures do not take into account the verticality of the ocean and how different fisheries and activities occur at different levels (e.g. bottom contact). Furthermore, the fixed nature of MPA boundaries ignores that climate change could lead to a shift in marine species and habitats.

3.1.6 Environmental

Interviewees reported that the potential environmental impacts of MPA-linked overcrowding was not being considered. One harvester unpacked this, explaining that,

> *"they're so focused on what excluding activity is going to do for an area that they're not looking at what the increased fishing pressure is from the displacement. So instead of fishing pressure spread out throughout the coast, you're gonna have a heck of a lot of fishing pressure and you're gonna have dead zones, and the loss of biodiversity, and the loss of biomass in those areas. Is the MPA offsetting that substantially enough? Or are you really just causing bigger problems?"*

This concern about gear concentration creating "dead zones" outside of MPAs was shared by other harvesters. Several harvesters also mentioned that the increased travel time and fuel use incurred by closures sits at odds with BC and Canada's sustainability aims and increases the carbon footprint of the sector.

3.2. Perceived wellbeing impacts of the proposed Northern Shelf Bioregion MPA network

Harvesters were then asked about their perceptions of the potential impacts of the proposed NSB MPA network on their wellbeing. In looking ahead and considering their perceptions about the NSB MPA network, harvesters articulated their sentiment that the themes discussed above will be exacerbated by more closures. All interviewees recognised the multitude of pressures on the sector and shared the common belief that the MPA network was the prelude of the overstretched sector's demise. Harvesters shared their concerns that the network would further foreclose their access to fisheries in BC, and commensurately reduce their income, owing primarily to lower revenues derived from smaller catches. Even if this were not the case, they noted, their profits would be eroded by higher fuel costs they incurred to access new fishing areas.

The pattern of interviewees' responses demonstrated a generally held concern that the NSB MPA, once established, would inhibit community and social connection, and that the multiple stressors facing the industry would ultimately curtail the opportunity for future generations to fish. Harvesters shared that even within their own generation, they had witnessed peers exiting the industry long before their anticipated retirement owing to fears related to the NSB MPA network. They felt that these factors could exacerbate and accelerate the already observed increasing age demographic of the industry. This concern was echoed by six young harvesters at

the 2024 BCYFN. One individual asked, *"as a young fisherman, what is the point of staying? I don't have the financial levy to foot these catch losses. This is super concerning."* Another shared that they were relatively new to fishing and had only recently heard about MPAs. They asked the other event attendees, *"what does my future look like? Would you be scared for me and would you tell me to look elsewhere?"* In addition to the themes discussed above, interviewees felt that the network will discourage investment into commercial operations and discourage gear innovation. This was echoed at the BCYFN.

Table 2: The perceived impacts of the proposed NSB MPA network on harvesters' wellbeing.

Key Themes	**Illustrative quotes**
Cumulative pressures	*"It's not just MPAs. It's all of it put together that is making it continually harder and harder and more economically challenging to be able to fish. I think without the MPA it was stressful enough, and then add in this and it's just, 'What are we gonna do? How do we adjust? How do we stay ahead of this?'"*
	"There's all sorts of problems compounding… there's always some nail in the coffin, but I think it's like all the nails in the coffin going in at once if they go through with it [the network]. It's gonna be very hard for any commercial fishing enterprise that's small scale like us.… it's basically just cutting us in half. It's like that last big anvil drop."
	"The key thing about this MPA is there's been areas already there that are affecting us but it's literally a pin drop compared to what's coming and I think that's the terrifying thing."
Economic wellbeing	"*If fishing dies, we're gonna have assets like boats and licenses that we bought for a lot of money that are gonna be worth nothing. We're gonna have money tied up in assets and people are gonna lose their houses... When we make investments, it's a 30 year investment, a lifelong one…if all of a sudden they change the way that they're managing it drastically like this, we can't change fast enough. You know it's gonna kill us."*
	"*Lots of harvesters are from small little communities, remote communities, and there aren't many opportunities for them but fishing. And if you take that away from those communities, it's gonna have a big impact on all of the multi-generational fishers. This is all they've ever done. And what are they going to do to*

	support their families?... These are also fishers in these small communities that are bringing income into those communities…The whole town might be in a real dire strait."
Governance	*"The fishing group [the halibut association] is so jaded. We're apathetic. You're entering a phase of apathy where they can do whatever they want because we just feel so completely helpless and powerless in this situation."*
	"What does DFO consider a successful MPA?...We don't know the parameters of all of this."
	Discussing circa. 2019 experience of the NSB MPA network discussions: *"The marine planning team met with all the commercial fishermen and they would say, "we're going to talk about prawns today." So you come down and they say, "well, what areas can you give up" and "what are the areas you can't"?They had all these maps up. It was great. I mean, it was tough because you're showing your spots to your fellow fisherman, but we went through it and spent a day or two there and then the next day, "okay, we're going to do ground fish", "the next day we are going to do salmon, next day, we're going to do tuna and urchin," right? They had all these overlaying maps, and they put it together after about four months of doing that. It was hard work for these individuals…so the marine planning team, we avoided an economic collapse so to speak. We did what the partners wanted, we gave up a lot of area but saved a lot of areas that the partners wanted ... .then COVID kicked in…then the partners finally came back and they gave us a new addition of what they wanted. I think they looked at ours and said that they wanted more…I think they just looked at ours and thought "thanks for sharing all the information this is what we want."* They continued: *"It turned into a reconciliation thing…it totally changed what the goal was with this. We thought "well, we're dealing with marine protected areas." But now we're dealing with reconciliation. So that really changed things, and we noticed the tone from oceans [DFO] changed. They didn't want to deal with us as a commercial industry. They weren't telling us anything anymore. Originally there were plans of "there might be a no-take zone here" for example "let fishing happen here." There were different levels of protection. And now we're not hearing a word of what's going on and that's a big issue."*

	“The process has changed. It’s no longer about 275 ecological targets, it’s more about reconciliation. We are not opposed to this, but we need to be at the table.”

Governance as key

Similarly to their experiences with established MPAs, interviewees were concerned that, following their provision of data about the areas they fished, those areas were designated for closure. They contended that these areas were closed therefore not because they were the most important to protect, but because the data they provided was the only data available to DFO. As such, interviewees concluded that their own data was used against them. They acknowledged that they were involved in consultation processes for the NSB MPA network, but thereafter, they contended, their concerns were ultimately ignored. They felt that consultation with commercial harvesters was a bureaucratic exercise that had no practical benefits for those who contributed to it. Interviewees also expressed their discomfort with the fact that, because they attended preliminary meetings, their names were used in reports without their consent, implying their support where this was not forthcoming. Interviewees shared that, due to the NSB network consultation process and subsequent communications, they had lost trust in government departments and felt ignored by and ostracised from the process. As one interviewee explained, “*we feel so powerless because we're not part of this process. And the process that we are being fed doesn't make sense.”* This sentiment was echoed at the BCYFN where industry representatives spoke to the history of the process and how they were initially very involved and provided input but felt they were subsequently ignored.

The perceived motivation behind the NSB MPA’s establishment set it apart, in the opinions of the interviewees, from previous closures. Several harvesters shared that they felt that the ocean, and indeed harvesters, were being used by the government as part of a strategy to address reconciliation commitments. Notably, interviewees highlighted that they were not against reconciliation but that the process has been unclear to non-Indigenous harvesters. One harvester argued that if reconciliation causes harm to non-Indigenous harvesters’ ways of life, then the Canadian government should compensate them. Interviewees called for transparency and explained that if MPAs are being implemented as part of the government’s commitments to reconciliation then the financial cost should not be borne by individual harvesters but all Canadians. They shared that they had previously contributed to management plans, which had entailed investing in cameras for traps and undertaking mapping for areas, including those which now fall under the SG̲áan K̲ínghlas-Bowie Seamount MPA which was collaboratively developed by the Council of the Haida Nation and DFO (CHN 2019). When the SG̲áan K̲ínghlas-Bowie Seamount MPA was established accompanied by reconciliation discourse, they explained that they felt that non-Indigenous harvesters’ inputs were ignored and that the relationships established through collaboration had been undone.

At the time the interviews were conducted, the NSB MPA had not finalized any closures or restrictions resulting from the network's establishment. This also exacerbated stress levels and the mental health challenges raised above: "*The amount that's coming, and the fact that we don't actually even know* " Several interviewees also raised concerns that the network was exacerbating negative sentiments towards the fishing sector: *"The MPA is, it feels like, they're painting commercial fishermen as bad people and that's why we need these MPAs...I'm just small scale and we're a little fishing family and we like to get catch to local people…it's a whole mindset that it's really them bringing in this MPA and their propaganda. It really pitted people against us."*

Interviewees also shared that they were suspicious of the reasoning behind the MPA network being established on the BC coast, and the scale of the ocean space it encompassed, compared to the east coast of Canada. Interviewees felt that the network was also an indicator that Canada was trying to appeal to international organisations, in line with the UN's push for global oceanic protection. As a result, interviewees explained that they felt that the primary motivation behind the network's establishment was political as opposed to ecological, and that BC was seen as a *"low hanging fruit"* where a higher percentage of marine space could be enclosed to avoid contention with east coast fisheries.

3.3 Monitoring the effects of MPAs on wellbeing

Throughout the interviews, and during participant observation at the BCYFN event, harvesters repeatedly raised concerns about how the NSB MPA network will be managed and monitored. As mentioned above, respondents already considered that they were overmanaged and over surveyed on account of existing fisheries monitoring practices. This includes the requirement for onboard cameras and hydraulic monitoring. Harvesters accommodate and pay for these monitoring efforts via their fees (see Table 3). Additionally, harvesters identified a certain futility in adding additional management solutions; they contended that, because the ocean was already heavily managed in BC, MPAs did not have as obvious a utility as they might, for example, outside Canada where existing fisheries management may not be underpinned by conservation led methodologies.

Table 3. Harvesters' perspectives on monitoring processes

Themes	**Illustrative quotes**
Involvement of harvesters	*"If you want buy-in and you want this to work as a functional entity, you need to have the people who are on the waters dealing with everyday to be part of the solution, not dictating to them."*

Reliance on harvesters (including financial)	*“One thing that's been raised a few times by the fishing industry is that currently a lot of monitoring and management of fisheries is funded by fishers. If you reduce the amount of people fishing because it's just not reliable. Right? You're gonna reduce the money that is going into managing and monitoring. We already have fisheries that are not being opened because of lack of money for monitoring. We already have DFO saying we don't have enough information and not do it. If we already have that with the current model, what is it going to be like when you put a bunch of guys out of business because it's no longer viable or it's too concentrated, or you just can't pull enough fish out of the water to make it worthwhile? Then, are we gonna have this cyclic down spiral? Well, we can't open it, so we don't have monitoring, but we can't fund the monitoring because there are enough fishers."*
High levels of current monitoring	*“We're monitored 100% at all times. We have a lot of restrictions in place already… I don't think there's really a place here for MPAs.”*

Harvesters interviewed first questioned how and when DFO would consider an MPA to be successful, asking what measures and parameters are used. Recognising that proponents of MPAs and MPA networks typically rely on the argument that their establishment will bring positive externalities for the surrounding area, harvesters advocated for more robust monitoring and sharing of such spillover effects and of the timeframes over which they occur. Interviewees highlighted that among the impact indicators, the displacement of harvesters should be monitored over the long-term. While they recognised some of the challenges associated with capturing this information accurately, and that this indicator would rely at least in part on anecdotal information, they explained that tracking this was vital to understand the processes and effects of displacement. They explained that this would also assist efforts to demonstrate the environmental impact of MPAs elsewhere.

Several interviewees explained that they felt that the Canadian government was overly focused on the environmental aspects of MPAs, and that it was essential that they also monitored the impacts MPAs had on social and cultural wellbeing. Interviewees considered that the economic impacts of MPAs could be more accurately captured by simply asking harvesters about their costs and revenues. Respondents felt that it was important to ask harvesters about their mental wellbeing. They also highlighted that monitoring efforts should encompass the effects on coastal infrastructure and shore-support for harvesters. All interviewees were concerned with the future, and agreed that, to understand how harvesters and

harvesters perceived their own future in the industry, it is important that monitoring processes ask harvesters about their outlook.

Table 4. Proposed wellbeing monitoring questions

Wellbeing domain	Suggested question
Economic	• Are you going to continue to invest in fishing? • What is fishing costing? • Is it costing you more money to go fishing? • Are you making money? • Has your profit changed? • Has the length of your season changed and if so, why is this the case?
Social	• How are you being displaced into an area of high concentration? • Has your catch decreased because of this concentration? • Have you noticed a change in the types of shore support available?
Health	• How has your mental health been impacted? • Do you have access to the shore support you need?
Cultural	• Are you changing your plans for your children? If so, how?
Environmental	• Are there more fish in areas outside of the MPA since it was established?
Cross-cutting	• What's your outlook? • How do you perceive your future in the fishing industry?

In suggesting these questions, participants highlighted the importance of speaking to harvesters as responses would be anecdotal. They also asked those involved with the NSB MPA network, *"why don't you just meet us on the water?"* Participants also suggested that long term meaningful engagement and analysis is needed. In terms of timeframes, they suggested asking these questions every five years as fishing fluctuates. However, there may potentially be a "survivorship bias" which will skew representation away from those who have already exited the industry.

4. Discussion and conclusion

It is well established in the literature that the wellbeing of communities who depend upon the marine environment is an essential consideration in MPA processes

(Bennett et al., 2020). Harvesters interviewed for this study indicated that previous MPAs have impacted their economic, social, health and cultural wellbeing. Factors impacting their wellbeing included the degradation of infrastructure and supporting businesses in coastal communities, the outflow of individuals from the industry, the loss of knowledge, and the disconnection from culture. Closures have also caused harvesters to condense their effort into shorter time frames, thus reducing the length of the fishing season, eroding their profits, and hindering their ability to remain in the industry. These concerns reflect those observed in similar studies of commercial harvesters in Canada and the United States (Bennett et al., 2021; Brueckner-Irwin et al., 2019; Cook et al., 2024; Harper et al. 2024). Additionally, all interviewees highlighted the impacts of closures on harvesters' mental health, as well as the safety concerns arising as they are increasingly made to travel in inclement weather. As previous studies have cautioned, mental health remains under-considered relative to other wellbeing impacts of MPAs (Ban et al., 2019).

Consistent with other contexts, the majority of harvesters interviewed felt that any potential long-term benefits of previous and proposed MPAs are negated by the associated immediate loss of access rights to those same areas (Bennett et al., 2018; Brueckner-Irwin et al., 2019). MPA-related impacts on harvesters' wellbeing are experienced cumulatively—due to the combined impact of multiple MPA closures and the compounding effect of multiple socio-economic impacts. Harvesters interviewed for this study also highlighted the importance of considering issues in the wider sectoral landscape in BC, such as the corporate capture and consolidation of fisheries licences, and foreign and investor control thereof. As previous research has highlighted, this has rendered owner-operators and new entrants unable to own licences or to participate in BC's fisheries (del Valle et al. 2024; Silver & Stoll, 2022, 2019). While multiple studies have demonstrated that harvesters continue to adapt to multiple pressures (Harper et al. 2023), participants in this study felt that MPAs impeded their ability to adapt. If these impacts remain unaddressed, harvesters may be forced to leave the sector, and young people may be less willing to enter the sector.

4.1 Hidden impacts on wellbeing

Interviewees were centrally concerned with how MPAs can and will negatively impact harvesters' economic wellbeing. Research has highlighted how top-down approaches overlook some social and economic consequences of MPAs (Bennett et al., 2020; Lopes et al., 2025). This encompasses well recognised effects upon individuals and communities, as well as impacts that may be hidden to policy makers and remain unmonitored (Daw et al., 2015). Given that the majority of interviewees were owner-operators and small- or medium-scale fishing families relying on seasonal work, they highlighted how MPA closures had degraded their economic wellbeing, for example by restricting their ability to finance their education. Social wellbeing also suffered from hidden impacts: harvesters explained that MPAs had caused crowding and competition in open fishing grounds, which in turn forced them

to send family members, or otherwise pay someone, to scout potential fishing grounds.

4.2 Governance

To understand how harvesters are entering discussions around MPA networks in BC, it is essential to account for how they perceive previous MPA closures. Consistent with the results of previous research on small- and medium-scale fishing families, harvesters reported that their contributions are not valued in conversations about the establishment and monitoring of ocean management tools such as MPAs (Dias et al., 2020; Reis-Filho et al., 2023). Interviewees perceived that, during their participation in the NSB MPA network and with previous MPA processes alike, the spatial data they themselves provided has been used against them, as it has informed the designation of closure areas. This has been similarly observed in New England where harvesters' contributions were used to inform fishing restrictions (Kilchenmann et al., 2024) and to counter fishing interests (Drakopulos, 2022; Ebel et al., 2018). Ambiguity over the extent of closures in the NSB MPA network has created additional tensions between harvesters and management processes (Beaty et al., 2024). Taken together, these effects catalyse the declining levels of trust in fisheries management that have been observed in BC and create a sensation of disempowerment among harvesters (del Valle et al. 2024; Kilchenmann et al. 2024).

4.3 Reconciliation

In Canada, the ocean has been a site of settler-colonial dispossession and violence, and fishing activities have supported colonial expansion (Todd 2018). As a result, the state is pursuing reconciliation policies, including through signing Fisheries Reconciliation Agreements with Nations across BC (Brown 2021). Non-Indigenous harvesters interviewed for this study were supportive of the government's reconciliation efforts. However, they called for transparency on the drivers behind MPAs and the forthcoming NSB MPA network, which they contended were not solely related to conservation management. Rather, interviewees relayed their sentiment that the government was utilising MPAs to further Canada’s commitments to reconciliation. While interviewees were clear that they supported reconciliation, they emphasised that it was the absence of clarity and transparency that further eroded their trust in management processes and policies.

Interviewees argued that, if MPAs are contributing to government reconciliation commitments, then the financial costs stemming from this should not be borne by individual harvesters alone. Previous research has highlighted that trade-offs are necessary in order to equitably support Indigenous self-determination (Bodwitch et al., 2024; Evans et al. 2023), and while interviewees did not disagree with this, they argued that compensation should be negotiated between the government and commercial harvesters. This is consistent with previous research findings that compensation can be leveraged to avoid or overcome resistance to reconciliation

policies (Bodwick et al. 2024). However, previous studies have focused on non-fishery sectors, arguing that resistance from those currently benefiting from settler-state structures deter governments from considering initiatives that would support and uphold Indigenous rights (Elmendorf et al. 2021).

Harvesters explained that it is important to consider context when discussing trade-offs and compensation to avoid vilifying the sector. Harvesters in BC face multiple pressures (Harper et al., 2023) and must navigate increasing corporate capture of the industry (Silver and Stoll 2019). Interviewees were concerned that MPA closure-induced overcrowding has exacerbated divisions between Indigenous and non-Indigenous harvesters, thereby impacting social wellbeing. In other contexts, contention over access to fisheries has created social divisions (Boucquey, 2020; Warrior et al., 2022). For instance, in Atlantic Canada contention over fisheries access has resulted in violence against Indigenous harvesters (Bodwick et al. 2024). While we are not suggesting that this would occur in BC, it demonstrates the potential implications of exacerbating and ignoring these divisions. It also highlights how recognising the unique characteristics of, and challenges faced by, the totality of the commercial harvesting sector is essential. As Warrior and colleagues argue, there may also be a need to address underlying assumptions about the realities of these policies for Indigenous harvesters and increase understanding on how these "rights are [or will be] exercised" within each Nations' context (Warrior et al. 2022; 1314).

Despite the Canadian state's mobilisation of reconciliation rhetoric, the government (and DFO) continue to define fishery regimes and delimit Indigenous commercial fishing rights (Morgan et al.2025). The state continues to position itself as the de-facto landlord of Indigenous fisheries rights through legislations and policies which are underwritten by Canadian common law. These uneven power dynamics were evident in the Maa-nulth Treaty, which set out the agreements of five Nuu-chah-nulth Nations (Ehattesaht, Mowachaht/ Muchalaht, Hesquiaht, Ahousaht, and Tla-o-qui-aht) with regards to their rights and self-governance (Morgan et al. 2025). However, the state did not recognise the right to Indigenous commercial fisheries potential in the Treaty. As Morgan and colleagues argue this absence of recognition is "an example of the fundamental incompatibility with DFO's perception and culture in regards to Indigenous rights and responsibilities" (2025:10). This incompatibility and the continuation of colonial legal structures, among many previously discussed limitations, challenges the suitability and appropriateness of DFO as a vehicle for fisheries reconciliation (see Nasady 2002; Rich and Haines 2017; Todd, 2014).

4.4 Monitoring

Interviewees felt that they were already well-monitored and surveyed. Their sentiment is in line with previous research findings, including that current approaches to fisheries and ocean management observation are perceived as increasingly bureaucratic and ignorant to how harvesters and their practices are embedded in

communities (Boucquey 2020; Drakopulos 2022). Harvesters were concerned about how marine conservation technologies such as onboard observation have social implications in their creation of uneven power dynamics. The cost of this monitoring equipment is also borne by individual harvesters, impacting their economic wellbeing. This cost can lead to uneven socio-economic impacts, with research on the west coast of the US demonstrating that these financial burdens disproportionately fall upon "smaller fishing vessels and operations, and vulnerable crew" (Drakopulos 2022; 124). As previous research has demonstrated, the privatisation of observation and monitoring has raised concerns about the politics behind both how data is collected, and what stories this data can tell. This in turn has implications on shaping management decisions and fisheries science (Drakopulos, 2022). As discussed above, this can lead to harvester's feeling that their data has been used against them.

Despite these concerns, interviewees wished to be involved with monitoring aspects going forward because they wanted to ensure that governance partners recognised the multiple and cumulative impacts of MPAs and MPA networks. In support of what has been found in other contexts, harvesters feel that DFO and government officials continue to place more emphasis on ecological monitoring, as opposed to socio-economic and cultural monitoring, of protected areas (Barnett, 2018). Interviewees proposed their own preferred monitoring questions that they believed could capture some of these dynamics (Table 4). In doing so, they highlighted that those involved with monitoring processes should also put their *"boots on the dock"* and speak directly with harvesters. This could help governance partners to (re)build trust and establish long-term relations with harvesters, as well as to better-understand the often-overlooked, multifaceted impacts of MPAs (Vis et al., 2024).

4.5 Limitations

This project drew on interviews with a small sample of harvesters, none of whom identified as Indigenous. Interviewees were identified by partnered organisations, and interviewees themselves also suggested other individuals that we could speak to. We are cognisant that partners have the power to grant or conversely to withhold access to a research population. This can limit not only sample size, but also the range of characteristics represented by the sample of interviewees (Lamprianou 2022). These partners—organisations and individuals alike—can also be 'gatekeepers' with considerable influence over what is to be considered as 'knowledge' and who are believed to hold this 'knowledge' (Crowhurst & kennedy-macfoy, 2013), potentially limiting the diversity of perspectives. In an attempt to avoid this, the potential to be interviewed was offered at a broadly scoped event where attendees were not selected or screened by partners. Partners were also asked to identify harvesters who participated in a variety of fisheries across the BC coast. These individuals had also fished for a long period of time, including prior to the majority of MPA related closures. We also interviewed three representatives of fisheries associations, and while doing so can give an insight into the drivers of

industry views (Jones, 2008), it can also homogenise the reported perspectives of harvesters involved in a particular fishery. As such, the results of this study should not be considered of all harvesters but are illustrative of how many harvesters have reported feeling.

Bibliography

Akins,P. & Bissonnette, M. (2020). Co-governance of Marine Protected Areas in British Columbia: a reference report for First Nations, MPA Co-governance Workshop Organizing Team. https://coastalfirstnations.ca/wp-content/uploads/2020/10/Akins-and-Bissonnette-2020-Co-governance-of-Marine-Protected-Areas-in-BC.pdf.

Álvarez-Fernández, I., Freire, J., & Sánchez-Carnero, N. (2020). Low-quality management of Marine Protected Areas in the North-East Atlantic. *Marine Policy*, *117*, 103922. https://doi.org/https://doi.org/10.1016/j.marpol.2020.103922

Anderson, C., & Kirkpatrick, S. (2016). Narrative interviewing. *Int J Clin Pharm*, *38*(3), 631-634. https://doi.org/10.1007/s11096-015-0222-0

Arkema, K. K., Field, L., Nelson, L. K., Ban, N. C., Gunn, C., & Lester, S. E. (2024). Advancing the design and management of marine protected areas by quantifying the benefits of coastal ecosystems for communities. *One Earth*, *7*(6), 989-1006. https://doi.org/10.1016/j.oneear.2024.04.019

Baker, D. M., Bennett, N., Gruby, R. L., Mangubhai, S., Rotjan, R. D., Sterling, E., Sullivan-Wiley, K., Gill, D., Johnson, D., Singh, G. G., White, S. C., Gray, N. J., Imirizaldu, M., & Ban, N. C. (2023). Improving human well-being outcomes in marine protected areas through futures thinking. *One Earth*, *6*(10), 1286-1290. https://doi.org/10.1016/j.oneear.2023.09.008

Ban, N. C., & Frid, A. (2018). Indigenous peoples' rights and marine protected areas. *Marine Policy*, *87*, 180-185. https://doi.org/https://doi.org/10.1016/j.marpol.2017.10.020

Ban, N. C., Gurney, G. G., Marshall, N. A., Whitney, C. K., Mills, M., Gelcich, S., Bennett, N. J., Meehan, M. C., Butler, C., Ban, S., Tran, T. C., Cox, M. E., & Breslow, S. J. (2019). Well-being outcomes of marine protected areas. *Nature Sustainability*, *2*(6), 524-532. https://doi.org/10.1038/s41893-019-0306-2

Barnett, A. J. (2018). Recommendations for full-spectrum sustainability in Canadian lobster integrated management plans based on a socioeconomic analysis of Barrington, Nova Scotia. *Ecology and Society*, *23*(1), Article 36. https://doi.org/10.5751/ES-09981-230136

BC's Young Fishermen's Network. (2023). BC Young Fishermens Gathering 2023. https://www.bcyoungfishermen.ca/annual_gathering

Beaty, F., Brown, K. H. T., Braun, J., Diggon, S., Hartley, E., Heidt, A., Maddin, H., Maloney, A., Martone, R., McDougall, C., Reid, M., Robb, C., Rubidge, E., Short, C., & Worsley, K. (2024). From design to implementation: Lessons from planning the first marine protected area network in Canada. *Marine Policy*, *170*, 106360. https://doi.org/https://doi.org/10.1016/j.marpol.2024.106360

Bennett, N. J., Ban, N. C., Schuhbauer, A., Splichalova, D.-V., Eadie, M., Vandeborne, K., McIsaac, J., Angel, E., Charleson, J., Gavenus, E. R., Harper, S., Satterfield, T., Sutcliffe, T., & Sumaila, R. (2021). Access rights, capacities and benefits in small-scale fisheries: Insights from the Pacific Coast of Canada. *Marine Policy*, *130*, 104581. https://doi.org/https://doi.org/10.1016/j.marpol.2021.104581

Bennett, N. J., Calò, A., Di Franco, A., Niccolini, F., Marzo, D., Domina, I., Dimitriadis, C., Sobrado, F., Santoni, M.-C., Charbonnel, E., Trujillo, M., Garcia-Charton, J., Seddiki, L., Cappanera, V., Grbin, J., Kastelic, L., Milazzo, M., & Guidetti, P. (2020). Social equity and marine protected areas: Perceptions of small-scale fishermen in the Mediterranean Sea. *Biological Conservation*, *244*, 108531. https://doi.org/https://doi.org/10.1016/j.biocon.2020.108531

Bennett, N. J., Kaplan-Hallam, M., Augustine, G., Ban, N., Belhabib, D., Brueckner-Irwin, I., Charles, A., Couture, J., Eger, S., Fanning, L., Foley, P., Goodfellow, A. M., Greba, L., Gregr, E., Hall, D., Harper, S., Maloney, B., McIsaac, J., Ou, W.,…Bailey, M. (2018). Coastal and Indigenous community access to marine resources and the ocean: A policy imperative for Canada. *Marine Policy*, *87*, 186-193. https://doi.org/https://doi.org/10.1016/j.marpol.2017.10.023

Bodwitch, H., Hamelin, K. M., Paul, K., Reid, J., & Bailey, M. (2024). Indigenous self-determination in fisheries governance: implications from New Zealand and Atlantic Canada [Original Research]. *Frontiers in Marine Science*, *Volume 11 - 2024*. https://doi.org/10.3389/fmars.2024.1297975

Boucquey, N. (2020). The nature of fisheries governance: narratives of environment, politics, and power and their implications for changing seascapes. *Journal of Political Ecology*, *27*(1). https://doi.org/10.2458/v26i1.23248

Bresnihan, P. (2019). Revisiting neoliberalism in the oceans: Governmentality and the biopolitics of 'improvement' in the Irish and European fisheries. *Environment and Planning A: Economy and Space*, *51*(1), 156-177. https://doi.org/10.1177/0308518x18803110

Brown, B. (2021). Coastal First Nations sign Fisheries Resources Reconciliation Agreement with Canada. Coastal First Nations Great Bear Initiative, Vancouver, British Columbia, Canada. https://coastalfirstnations.ca/coastal-first-nations-sign-fisheries-resourcesreconciliation-agreement-with-canada/

Brueckner-Irwin, I., Armitage, D., & Courtenay, S. (2019). Applying a social-ecological well-being approach to enhance opportunities for marine protected area governance. *Ecology and Society*, *24*(3). https://www.jstor.org/stable/26796974

Campbell, L. M., Fairbanks, L., Murray, G., Stoll, J. S., D'Anna, L., & Bingham, J. (2021). From Blue Economy to Blue Communities: reorienting aquaculture expansion for community wellbeing. *Marine Policy*, *124*, 104361. https://doi.org/https://doi.org/10.1016/j.marpol.2020.104361

Carothers, C., J. Black, S. J. Langdon, R. Donkersloot, D. Ringer, J. Coleman, E. R. Gavenus, W. Justin, M. Williams, F. Christiansen, C. Stevens, B. Woods, S. Clark, P. M. Clay, L. Mack, J. Raymond-Yakoubian, A. Akall'eq Sanders, B. L. Stevens, and A. Whiting. 2021. Indigenous peoples and salmon stewardship: a critical relationship. Ecology and Society 26(1):16. https://doi.org/10.5751/ES-11972-260116

Convention on Biodiversity. (2022). 2030 Targets (with Guidance Notes). https://www.cbd.int/gbf/targets

Charles, A., & Wilson, L. (2008). Human dimensions of Marine Protected Areas. *ICES Journal of Marine Science*, *66*(1), 6-15. https://doi.org/10.1093/icesjms/fsn182

Choi, T. (2019). Ready to Secure: A Sea Control Perspective on Canadian Fisheries Enforcement. In I. Bowers & S. L. C. Koh (Eds.), *Grey and White Hulls: An International Analysis of the Navy-Coastguard Nexus* (pp. 223-244). Springer Singapore. https://doi.org/10.1007/978-981-13-9242-9_12

Cook, S., Richmond, L., Chang, J., Sayce, K., Bonkoski, J., Chen, C., Enevoldsen, J., Fisher, R., Chin, D., & Kia, M. (2024). Marine protected areas and fishing community well-being: An example from statewide socioeconomic monitoring of the California MPA network. *Ocean & Coastal Management*, *254*, 107199. https://doi.org/https://doi.org/10.1016/j.ocecoaman.2024.107199

Crowhurst, I., & kennedy-macfoy, M. (2013). Troubling gatekeepers: methodological considerations for social research. *International Journal of Social Research Methodology*, *16*(6), 457-462. https://doi.org/10.1080/13645579.2013.823281

Daw, T. M., Coulthard, S., Cheung, W. W. L., Brown, K., Abunge, C., Galafassi, D., Peterson, G. D., McClanahan, T. R., Omukoto, J. O., & Munyi, L. (2015). Evaluating taboo trade-offs in ecosystems services and human well-being. *Proceedings of the National Academy of Sciences*, *112*(22), 6949-6954. https://doi.org/doi:10.1073/pnas.1414900112

Devillers, R., Pressey, R. L., Ward, T. J., Grech, A., Kittinger, J. N., Edgar, G. J., & Watson, R. A. (2020). Residual marine protected areas five years on: Are we still favouring ease of establishment over need for protection? *Aquatic Conservation: Marine and Freshwater Ecosystems*, *30*(9), 1758-1764. https://doi.org/https://doi.org/10.1002/aqc.3374

De Vos, B., & van Tatenhove, J. (2011), 'Trust Relationships between Fishers and Government; New Challenges for the Co-Management Arrangements in the Dutch flatfish industry', in: Marine Policy, 35(2), pp. 218-225

del Valle, E., Neal,B., Martínez-Candelas,I., Dann,P., Webb,D. & McClenachan.L. (2024). Fishing in turbulent waters: resilience, risk, and trust in British Columbia's declining commercial salmon fishery. *FACETS*. **9**: 1-17. https://doi.org/10.1139/facets-2023-0204

Dias, A. C. E., Cinti, A., Parma, A. M., & Seixas, C. S. (2020). Participatory monitoring of small-scale coastal fisheries in South America: use of fishers' knowledge and factors affecting participation. *Reviews in Fish Biology and Fisheries*, *30*(2), 313-333. https://doi.org/10.1007/s11160-020-09602-2

Donkersloot, R., Black, J. C., Carothers, C., Ringer, D., Justin, W., Clay, P. M., Poe, M. R., Gavenus, E. R., Voinot-Baron, W., Stevens, C., Williams, M., Raymond-Yakoubian, J., Christiansen, F., Breslow, S. J., Langdon, S. J., Coleman, J. M., & Clark, S. J. (2020). Assessing the sustainability and equity of Alaska salmon fisheries through a well-being framework. *Ecology and Society*, *25*(2), 18. https://doi.org/10.5751/ES-11549-250218

Drakopulos, L. (2022). Privatizing the fisheries observer industry: Neoliberal science and policy in the U.S. West Coast fisheries. *Geoforum*, *131*, 116-125. https://doi.org/https://doi.org/10.1016/j.geoforum.2022.03.004

Ebel, S. A., Beitl, C. M., Runnebaum, J., Alden, R., & Johnson, T. R. (2018). The power of participation: Challenges and opportunities for facilitating trust in cooperative fisheries research in the Maine lobster fishery. *Marine Policy*, *90*, 47-54. https://doi.org/https://doi.org/10.1016/j.marpol.2018.01.007

Ecotrust & T. Buck Suzuki. (2015). *Caught up in Catch Shares*. https://ecotrust.ca/latest/research/caught-up-in-catch-shares-2015/

Elmendorf C. S., Biber E., Monkkonen P., & O'Neill M. (2021). "I Would, If Only I Could": How California Cities can use State Law to overcome Neighborhood Resistance to New Housing. *Willamette. L. Rev.* 57 3, 221–252.

Emmel, N., Hughes, K., Greenhalgh, J., & Sales, A. (2007). Accessing Socially Excluded People — Trust and the Gatekeeper in the Researcher-Participant Relationship. *Sociological Research Online*, *12*(2), 43-55. https://doi.org/10.5153/sro.1512

Evans L. S., Buchan P. M., Fortnam M., Honig M., & Heaps L. (2023). Putting coastal communities at the center of a sustainable blue economy: A review of risks, opportunities, and strategies. *Front. Polit. Sci.* 4, 1032204. doi: 10.3389/fpos.2022.1032204

Fischer, M., Maxwell, K., Nuunoq, Pedersen, H., Greeno, D., Jingwas, N., Graham Blair, J., Hugu, S., Mustonen, T., Murtomäki, E., & Mustonen, K. (2022). Empowering her guardians to nurture our Ocean's future. *Reviews in Fish Biology and Fisheries*, *32*(1), 271-296. https://doi.org/10.1007/s11160-021-09679-3

Fisheries and Oceans Canada. (2006). Rockfish Conservation Areas. Protecting British Columbia's Rockfish. https://publications.gc.ca/collections/collection_2015/mpo-dfo/Fs144-1-2006-eng.pdf

Fisheries and Oceans Canada. (2019a). SG̱áan K̲ínghlas-Bowie Seamount Gin siigee tl'a damaan kinggangs gin k'aalaagangs Marine Protected Area Management Plan 2019. https://www.dfo-mpo.gc.ca/oceans/publications/sk-b-managementplan-plangestion/index-eng.html#4-3-1

Fisheries and Oceans Canada. (2019b). Offshore Pacific Seamounts and Vents Closure. https://www.dfo-mpo.gc.ca/oceans/oecm-amcepz/refuges/offshore-hauturiere-eng.html

Fisheries and Oceans Canada. (2023a). Strait of Georgia and Howe Sound Glass Sponge Reef Conservation Initiative. https://www.dfo-mpo.gc.ca/oceans/ceccsr-cerceef/closures-fermetures-eng.html
Fisheries and Oceans Canada. (2023b). Fishing regulations in Rockfish Conservation Areas. https://www.pac.dfo-mpo.gc.ca/fm-gp/sustain-soutien/rca-acs/rca-regs-acs-eng.html
Fisheries and Oceans Canada. (2024). Pacific Region Licence. https://www.dfo-mpo.gc.ca/stats/commercial/licences-permis/licences-permis-pac-eng.htm
Francolini, E. M., Mann-Lang, J. B., McKinley, E., Mann, B. Q., & Abrahams, M. I. (2023). Stakeholder perspectives on socio-economic challenges and recommendations for better management of the Aliwal Shoal Marine Protected Area in South Africa. *Marine Policy*, *148*, 105470. https://doi.org/https://doi.org/10.1016/j.marpol.2022.105470
Fudge, M., Ogier, E., & Alexander, K. A. (2023). Marine and coastal places: Wellbeing in a blue economy. *Environmental Science & Policy*, *144*, 64-73. https://doi.org/https://doi.org/10.1016/j.envsci.2023.03.002
George, R. Y., & Wiebe, S. M. (2020). Fluid Decolonial Futures: Water as a Life, Ocean Citizenship and Seascape Relationality. *New Political Science*, *42*(4), 498-520. https://doi.org/10.1080/07393148.2020.1842706
Gibson, D., & Sumaila, U. R. (2017). Determining the degree of 'small-scaleness' using fisheries in British Columbia as an example. *Marine Policy*, *86*, 121-126. https://doi.org/https://doi.org/10.1016/j.marpol.2017.09.015
Gómez, S., Lloret Dr, J., Demestre, M., & Riera, V. (2006). The Decline of the Artisanal Fisheries in Mediterranean Coastal Areas: The Case of Cap de Creus (Cape Creus). *Coastal Management*, *34*(2), 217-232. https://doi.org/10.1080/08920750500531389
Government of Canada. (2017). Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas Regulations (SOR/2017-15) https://laws-lois.justice.gc.ca/eng/regulations/SOR-2017-15/index.html
Government of Canada. (2018). Scott Islands Protected Marine Area Regulations SOR/2018-119 https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-119/page-1.html
Government of Canada. (2019). An Act to amend the Fisheries Act and other Acts in consequence S.C. 2019, c. 14 https://laws-lois.justice.gc.ca/eng/annualstatutes/2019_14/page-1.html
Government of Canada. (2023). Canada Gazette, Part I, Volume 157, Number 7: Tang.ɣwan — ḥačxʷiqak — Tsigis Marine Protected Area Regulations. https://gazette.gc.ca/rp-pr/p1/2023/2023-02-18/html/reg5-eng.html
Government of Canada. (2025). Maps, tide tables & charts. Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site https://parks.canada.ca/pn-np/bc/gwaiihaanas/visit/cartes-maps
Guillemin, M., & Gillam, L. (2004). Ethics, Reflexivity, and “Ethically Important Moments” in Research. *Qualitative Inquiry*, *10*(2), 261-280. https://doi.org/10.1177/1077800403262360
Harper, S. J., Burt, J. M., Nelson, L. K., Runnebaum, J. M., Cullen, A., Levin, P. S., Hunter, K. L., McIsaac, J., & Ban, N. C. (2023). Commercial fisher perceptions illuminate a need for social justice considerations in navigating climate change impacts on fisheries systems. *Ecology and Society*, *28*(2), Article 21. https://doi.org/10.5751/ES-14142-280221
Hogg, K., Noguera-Méndez, P., Semitiel-García, M., Gray, T., & Young, S. (2017). Controversies over stakeholder participation in marine protected area (MPA) management: A case study of the Cabo de Palos-Islas Hormigas MPA. *Ocean & Coastal Management*, *144*, 120-128. https://doi.org/https://doi.org/10.1016/j.ocecoaman.2017.05.002
Jenkins, L. D. (2021). *Power, politics, and culture of marine conservation technology in fisheries*. Conserv. Biol., 36 (2022), 10.1111/cobi.13855

Johnson, D. S. (2006). Category, narrative, and value in the governance of small-scale fisheries. *Marine Policy*, *30*(6), 747-756. https://doi.org/https://doi.org/10.1016/j.marpol.2006.01.002
Jones, P. J. S. (2008). Fishing industry and related perspectives on the issues raised by no-take marine protected area proposals. *Marine Policy*, *32*(4), 749-758. https://doi.org/https://doi.org/10.1016/j.marpol.2007.12.009
Jones, P. J. S., & Long, S. D. (2021). Analysis and discussion of 28 recent marine protected area governance (MPAG) case studies: Challenges of decentralisation in the shadow of hierarchy. *Marine Policy*, *127*, 104362. https://doi.org/https://doi.org/10.1016/j.marpol.2020.104362
Kaplan-Hallam, M., & Bennett, N. J. (2018). Adaptive social impact management for conservation and environmental management. *Conserv Biol*, *32*(2), 304-314. https://doi.org/10.1111/cobi.12985
Kilchenmann, J., McCosker, C. M., Cammen, K. M., & Stoll, J. S. (2024). Endeavoring to engage in cooperative fisheries research in a contentious socio-political climate. *ICES Journal of Marine Science*, *81*(10), 1931-1940. https://doi.org/10.1093/icesjms/fsae165
Kriegl, M., Elías Ilosvay, X. E., von Dorrien, C., & Oesterwind, D. (2021). Marine Protected Areas: At the Crossroads of Nature Conservation and Fisheries Management [Review]. *Frontiers in Marine Science*, *Volume 8 - 2021*. https://doi.org/10.3389/fmars.2021.676264
Lopes, P. F. M., Constantinescu, Ş., Silvano, R. A. M., Tatui, F., Teampău, P., & Vaidianu, N. (2025). Unintended and overlooked consequences of exclusionary marine conservation. *ICES Journal of Marine Science*, *82*(1). https://doi.org/10.1093/icesjms/fsae190
Maltest. (2024). BC commericail fishing sector labour market study. Final LMI Report April 2024. https://www.workbc.ca/sites/default/files/2024-06/BC%20Commercial%20Fishing%20Sector%20Labour%20Market%20Study%20%E2%80%93%20BC%20Commercial%20Fishing%20Caucus%20%E2%80%93%20April%202024.pdf
Mangi, S. C., Rodwell, L. D., & Hattam, C. (2011). Assessing the Impacts of Establishing MPAs on Fishermen and Fish Merchants: The Case of Lyme Bay, UK. *AMBIO*, *40*(5), 457-468. https://doi.org/10.1007/s13280-011-0154-4
Mansfield, B. (2007), Property, Markets, and Dispossession: The Western Alaska Community Development Quota as Neoliberalism, Social Justice, Both, and Neither. Antipode, 39: 479-499. https://doi.org/10.1111/j.1467-8330.2007.00536.x
Manson, J. (2019). WORKMANSHIP AND RELATIONSHIPS: Indigenous Food Trading and Sharing Practices on Vancouver Island. *BC studies*(200), 215-306.
Manson, P., Nielsen-Pincus, M., Granek, E. F., & Swearingen, T. C. (2021). Public perceptions of ocean health and marine protection: Drivers of support for Oregon's marine reserves. *Ocean & Coastal Management*, *201*, 105480. https://doi.org/https://doi.org/10.1016/j.ocecoaman.2020.105480
Micha, E., & Kelling, I. (2025). Understanding fishers' wellbeing through participatory processes in fisheries management. *npj Ocean Sustainability*, *4*(1), 10. https://doi.org/10.1038/s44183-025-00107-8
Morgan, O. S., Huu-ay-aht First Nations, & Castleden, H. (2025). 'A bureaucracy within a bureaucracy': The Department of Fisheries and Oceans and relationships under the Maa-nulth Treaty. *Environment and Planning C: Politics and Space*, *0*(0), 23996544251334524. https://doi.org/10.1177/23996544251334524
Nadasdy P. (2002). Reevaluating the co-management success story. Arctic, 56(4): 367–380.
Oracion, E. G., Miller, M. L., & Christie, P. (2005). Marine protected areas for whom? Fisheries, tourism, and solidarity in a Philippine community. *Ocean & Coastal Management*, *48*(3), 393-410. https://doi.org/https://doi.org/10.1016/j.ocecoaman.2005.04.013

Ordoñez-Gauger, L., Richmond, L., Hackett, S., & Chen, C. (2018). It's a trust thing: Assessing fishermen's perceptions of the California North Coast marine protected area network. *Ocean & Coastal Management*, *158*, 144-153. https://doi.org/https://doi.org/10.1016/j.ocecoaman.2018.03.034

Parlee, C. & Foley, P. (2022). Neo-liberal or not? Creeping enclosures and openings in the making of fisheries governance. *Maritime Studies* **21**, 281–295. https://doi.org/10.1007/s40152-021-00255-w

Parsons, M., Taylor, L., & Crease, R. (2021). Indigenous Environmental Justice within Marine Ecosystems: A Systematic Review of the Literature on Indigenous Peoples' Involvement in Marine Governance and Management. *Sustainability*, *13*(8), 4217. https://www.mdpi.com/2071-1050/13/8/4217

Peer, N., Muhl, E.-K., Janna, J., Brown, M., Zukulu, S., & Mbatha, P. (2022). Community and Marine Conservation in South Africa: Are We Still Missing the Mark? [Review]. *Frontiers in Marine Science*, *Volume 9 - 2022*. https://doi.org/10.3389/fmars.2022.884442

Pinkerton, E., & Davis, R. (2015). Neoliberalism and the politics of enclosure in North American small-scale fisheries. *Marine Policy*, *61*, 303-312. https://doi.org/https://doi.org/10.1016/j.marpol.2015.03.025

Pita, C., Pierce, G. J., Theodossiou, I., & Macpherson, K. (2011). An overview of commercial fishers' attitudes towards marine protected areas. *Hydrobiologia*, *670*(1), 289-306. https://doi.org/10.1007/s10750-011-0665-9

Pita, C., Horta e Costa, B., Franco, G., Coelho, R., Sousa, I., Gonçalves, E. J., Gonçalves, J. M. S., & Erzini, K. (2020). Fisher's perceptions about a marine protected area over time. *Aquaculture and Fisheries*, *5*(5), 273-281. https://doi.org/https://doi.org/10.1016/j.aaf.2020.01.005

Pollnac, R. B., Carothers, C., Seara, T., & Poggie, J. J. (2019). Evaluating impacts of marine governance on human communities: Testing aspects of a human impact assessment model. *Environmental Impact Assessment Review*, *77*, 174-181. https://doi.org/https://doi.org/10.1016/j.eiar.2019.02.001

Rees, S. E., Ashley, M., Evans, L., Mangi, S., Sheehan, E. V., Mullier, T., Rees, A., & Attrill, M. J. (2021). An evaluation of the social and economic impact of a Marine Protected Area on commercial fisheries. *Fisheries Research*, *235*, 105819. https://doi.org/https://doi.org/10.1016/j.fishres.2020.105819

Reid, A. J., Young, N., Hinch, S. G., & Cooke, S. J. (2022). Learning from Indigenous knowledge holders on the state and future of wild Pacific salmon. *FACETS*, *7*, 718-740. https://doi.org/10.1139/facets-2021-0089

Reid, M., Collins, M. L., Hall, S. R. J., Mason, E., McGee, G., & Frid, A. (2022). Protecting our coast for everyone's future: Indigenous and scientific knowledge support marine spatial protections proposed by Central Coast First Nations in Pacific Canada. *People and Nature*, *4*(5), 1052-1070. https://doi.org/https://doi.org/10.1002/pan3.10380

Reis-Filho, J. A., Ramos-Filho, F., Castello, L., & Giarrizzo, T. (2023). -I fish, therefore I monitor: Participatory monitoring to assess inland small-scale fisheries. *Environmental Management*, *72*(3), 540-557. https://doi.org/10.1007/s00267-023-01819-8

Rich, J, & Haines, D. (2017). *Commercial Fisheries: Should Commercial Fishing RIghts Be Included in Modern Treaties -- Pros, Cons and Alternatives*. Vancouver, BC: Ratcliffe & Company LLP.

Seim, J. (2024). Participant Observation, Observant Participation, and Hybrid Ethnography. *Sociological Methods & Research*, *53*(1), 121-152. https://doi.org/10.1177/0049124120986209

Silver, J. J., & Stoll, J. S. (2019). How do commercial fishing licences relate to access? *Fish and Fisheries*, *20*(5), 993-1004. https://doi.org/https://doi.org/10.1111/faf.12393

Silver, J. J., & Stoll, J. S. (2022). A framework for investigating commercial license and quota holdings in an era of fisheries consolidation, concentration and financialization.

Marine Policy, *143*, 105179. https://doi.org/https://doi.org/10.1016/j.marpol.2022.105179
Swain, J., & King, B. (2022). Using Informal Conversations in Qualitative Research. *International Journal of Qualitative Methods*, *21*, 16094069221085056. https://doi.org/10.1177/16094069221085056
Todd, Z. (2014). Fish pluralities: Human-animal relations and sites of engagement in Paulatuuq, Arctic Canada. *Études/Inuit/Studies*, *38*(1-2), 217-238. https://doi.org/https://doi.org/10.7202/1028861ar
Todd, Z. (2018). Refracting the state through human-fish relations: Fishing, indigenous legal orders and colonialism in north/Western Canada. *Decolonization: Indigeneity, Education & Society*, **7**(1), 60–75.
Vis, C., Abbott, K., Guujaaw, N., Harpur, C., Lee, L., Shepherd, P., Tate, D. P., Turgeon, S., & Beynon, B. (2024). Building collaborative monitoring programs to manage for ecological sustainability in multi-use marine protected areas: Parks Canada's national marine conservation areas. *Marine Policy*, *167*, 106249. https://doi.org/https://doi.org/10.1016/j.marpol.2024.106249
Warrior, M., Fanning, L., & Metaxas, A. (2022). Indigenous peoples and marine protected area governance: A Mi'kmaq and Atlantic Canada case study. *FACETS*, *7*, 1298-1327. https://doi.org/10.1139/facets-2021-0128
Watson, M. S., Jackson, A.-M., Lloyd-Smith, G., & Hepburn, C. D. (2021). Comparing the Marine Protected Area Network Planning Process in British Columbia, Canada and New Zealand – Planning for cooperative partnerships with Indigenous communities. *Marine Policy*, *125*, 104386. https://doi.org/https://doi.org/10.1016/j.marpol.2020.104386
Wilson, D. (2021). European colonisation, law, and Indigenous marine dispossession: historical perspectives on the construction and entrenchment of unequal marine governance. *Maritime Studies*, *20*(4), 387-407. https://doi.org/10.1007/s40152-021-00233-2
Yates, K. L., Clarke, B., & Thurstan, R. H. (2019). Purpose vs performance: What does marine protected area success look like? *Environmental Science & Policy*, *92*, 76-86. https://doi.org/https://doi.org/10.1016/j.envsci.2018.11.012

Acknowledgements: The authors of this paper would like to acknowledge the roles of Jim McIssac and Caitie Frenkel in the early stages of this research including supporting the interview process.