Coastal and Indigenous community access to marine resources and the ocean: A policy imperative for Canada¹

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Highlights:

- Access to marine resources and areas of the ocean is important for the well-being and sustainability of coastal communities.
- In Canada, access is a growing issue for many coastal and Indigenous communities due to intensifying ocean activities.

¹ This is a post-print of the following article, please cite as follows: 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., Pinkerton, E., Porter, D., Sparrow, R., Stephenson, R., Stocks, A., Sumaila, U.R., Sutcliffe, T. & Bailey, M. (2018). Coastal and Indigenous community access to marine resources and the ocean: A policy imperative for Canada. *Marine Policy*, 87, 186–193. [10.1016/j.marpol.2017.10.023](https://doi.org/10.1016/j.marpol.2017.10.023).

- We examine access issues, factors that support or undermine access, research needs, and recommended actions.
- Coastal and Indigenous community access needs priority consideration in all decision-making related to fisheries and the ocean in Canada and globally.
- Taking action now could reverse the current trend and ensure that coastal and Indigenous communities will thrive in the future.

Abstract: Access, defined as the ability to use and benefit from available marine resources or areas of the ocean or coast, is important for the well-being and sustainability of coastal communities. In Canada, access to marine resources and ocean spaces is a significant issue for many coastal and Indigenous communities due to intensifying activity and competition in the marine environment. The general trend of loss of access has implications for these communities, and for Canadian society. In this review and policy perspective, we argue that access for coastal and Indigenous communities should be a priority consideration in all policies and decision-making processes related to fisheries and the ocean in Canada. This paper reviews how access affects the well-being of coastal communities, factors that support or undermine access, and research priorities to inform policy. Recommended actions include: ensuring access is transparently considered in all ocean-related decisions; supporting research to fill knowledge gaps on access to enable effective responses; making data accessible and including communities in decision-making that grants or restricts access to adjacent marine resources and spaces; ensuring updated laws, policies and planning processes explicitly incorporate access considerations; and, identifying and prioritizing actions to maintain and increase access. Taking action now could reverse the current trend and ensure that coastal and Indigenous communities thrive in the future. This is not just a Canadian issue. Globally, the ability of coastal and Indigenous communities to access and benefit from the marine environment should be at the forefront in all deliberations related to the oceans.

Keywords: resource access; spatial access; coastal communities; Indigenous communities; marine conservation; marine spatial planning; fisheries; blue economy; ocean governance; Canada

1. The access imperative

Secure access to the ocean and its resources is central for the well-being of coastal communities [1]. However, barriers to this access are a substantial and growing challenge for many coastal and Indigenous communities around the world [2–6], including in Canada [7–15]. In this review and policy perspective, we argue that access for coastal and Indigenous communities should be a priority consideration in all policies and decision-making processes related to fisheries and the ocean in Canada. To that end, this paper provides a brief introduction to coastal and ocean access issues, identifies areas where further research is needed to inform policy, and makes recommendations that will help place coastal and Indigenous community access at the forefront in deliberations and policies related to Canada's oceans.

2. Defining access

Access, broadly speaking, is the ability to use and benefit from a resource or an area [after 16]. Access is influenced by rights – which, in this context, can be defined as a socially and/or legally acknowledged and supported claim to property [16] – but the terms are not synonymous. As explained below, access is not solely a matter of rights. There are two broad categories of access: 1) resource access and 2) spatial access. Resource access signifies the ability to benefit from the harvest or use of

living (e.g., fish, seafood, plants, mammals) and non-living (e.g., rocks, sand, minerals, tides, currents, wind) marine resources. This can be differentiated from availability, which refers to the physical presence of marine resources such as fish or other seafood. Spatial access refers to the ability to enter and use geographic areas of the ocean and coast for a variety of activities and purposes – for example, to harvest or manage resources, for development activities (e.g., aquaculture, energy development, mining, oil and gas) and for non-consumptive activities (e.g., for recreation, for transportation or shipping, to visit cultural areas). States can grant access to marine resources and spaces to different stakeholders and groups, including those who are near to or distant from a resource or area [17]. For example, the rights and privilege to use areas of the ocean for fishing, energy development, or mining can be granted by governments to local development corporations, national corporations or foreign interests. Benefits of that access then flow to various individuals, communities or groups, ranging from local fishers to distant corporations. Similarly, the economic and nutritional benefits of fisheries can flow to local communities or to owners of fishing licenses in distant regional centers or, given global seafood supply chains, even to other countries [18,19]. The economic and employment benefits of other activities that require spatial access, such as sites for aquaculture, energy or mining, might also flow to local development corporations, distant corporations, or be shared between developers and local communities through impact benefit agreements. To encompass this range, access in a marine context can be broadly defined as “the ability to use and benefit from available marine resources or areas of the ocean or coast”.

3. The importance of access for coastal community well-being

For those who live adjacent to the marine environment and who rely on it, access to both marine resources and areas of the ocean and coast is a particularly important issue. Indeed, the holistic well-being of Canada’s coastal and Indigenous communities - which includes economic, social, cultural, health, and political considerations - depends on multiple dimensions of access and benefits [20–22]. For instance, the distribution of fishing and seafood harvesting allocations and licenses by the government significantly influences how much economic benefit (e.g., employment, income, economic impacts) stays in coastal and Indigenous communities [23–26]. Of course, economic accounting does not take into account the full value of fisheries for coastal communities, which includes food security and sovereignty, cultural connections, social networks, educational and spiritual benefits, means of transportation, lifestyle benefits, and intergenerational connections [27]. For Indigenous communities in Canada, access to ocean and coastal territories is essential for cultural continuity – including traditional management and harvesting practices, inter-generational transfer of knowledge, and consumption, trade or sale of local and culturally significant species used for food, social and ceremonial (FSC) purposes [28–32]. Access is also important for the political empowerment of those who have claims of adjacency or historical use of the marine environment and resources [7,12,33]. Secure long-term access and retention of benefits is not just about the well-being of coastal communities; it is ultimately a matter of their continuity and survival. For example, declines in fishing economies can result from reduced access and in turn cause increasing unemployment and deteriorating social conditions in coastal communities [21,34,35]. This can lead to a number of mental, social and physical health issues, as well as outmigration to regional centers [21,35].

Why is the continuity of coastal and Indigenous communities important? The vibrancy and continuity of these communities is important for reasons related to identity, autonomy, sovereignty, culture, healthy rural-urban dynamics, and environmental sustainability [see, e.g., 36]. As a country with one of the longest coastlines in the world, Canada has long been identified as a maritime nation – with thriving coastal fishing communities recognized as an integral part of our heritage [37]. Coastal communities were also the driver of and rationale for Canada’s support in the development of UNCLOS [38] and related claims to sovereignty over the oceans, particularly in the Arctic [39,40]. Indigenous coastal peoples’ cultural connections to the oceans preceded settler and nation-state claims to coastal

space and harvests by millennia [30]. Maintaining the ability to visit important areas and harvest resources, as well as autonomy in decision-making and management processes affecting these areas, is central to Indigenous identity and integral to the ongoing Reconciliation process [41]. These rights are also protected under Section 35 of the Constitution Act of 1982 [42] and have been upheld by subsequent court decisions (e.g., *R vs Sparrow* and *R vs Marshall*).

There are also important connections between socio-economic conditions in rural communities and urban contexts – as outmigration can lead to increased unemployment in regional urban centers [21]; thriving rural economies are not a drain on social resources and contribute to wealth creation in regional urban centers; and rural food-producing communities can contribute to healthy food systems [43]. Finally, the sustainability of the coastal environment may also depend on continual community access. When local communities are connected to, rely on, and have rights to participate in the management of coastal areas and the environment, they are more likely to support sustainable management practices [1]. Continuity of access and practice is essential to maintaining local monitoring, stewardship capacity, local and traditional knowledge about stock dynamics, weather and tide patterns, as well as intergenerational transfer of safe and effective fishing practices [1,44]. On the Pacific Coast, for example, the presence of thriving rural coastal communities will enable ongoing local stewardship efforts such as the Coastal Stewardship Network and Guardian Watchmen Programs [45], the local capacity to actively monitor environmental conditions and enforce rules [46], and first responder capabilities in the case of oil spills or other disasters [47,48]. Young people, particularly those from Indigenous communities, will often move to urban centers for education and/or employment, but later return to their communities in order to maintain and strengthen their cultural identities through learning family histories and specific cultural practices [30]. Moreover, maintaining access for coastal and Indigenous communities is essential because it is difficult, if not impossible, to reverse the processes of social change that begin with loss of access. However, access cannot be unlimited, as marine resources and spaces are finite, and trade-offs need to be managed between groups and users to reduce conflict and to ensure the sustainable use of resources [49].

Figure 1 – Factors that influence access to and benefits from available marine resources and areas of the ocean and coast. Access to marine resources and space is influenced by a) capacity, b) geographic location, c) rights, d) competing uses, e) environmental and climate change, and f) governance and management.

4. Determinants of access

There are a number of factors that influence access to available resources and spaces, including: a) capacity, b) geographic location, c) rights, d) competing uses, e) environmental and climate change, and f) governance and management [16,50] (see Figure 1). The capacity to harvest or derive benefits from marine resources often depends largely on the availability of technical capital (i.e., boats, mooring infrastructure, processing facilities, transportation, technology, communication infrastructure), financial capital (i.e., access to credit for boats, licenses & gas) and human capital (i.e., skills, knowledge) [35,51]. The presence of and ability to access markets is another factor that influences the ability to harvest, process and transport resources, thus ensuring financial benefit for fishers, harvesters and processors in coastal communities. Coastal and Indigenous communities can be located very close to or distant from resources or areas that are available, allocated, or important for various reasons. Population density and competing uses (e.g., shipping, development activities, national security) of space influence the level of competition over available resources and whether people can enter and use different areas of the oceans and coast. Changing environmental and climatic conditions can also lead to declines in access through decreasing sea ice coverage required for fishing and hunting in the Arctic [51], changing weather conditions and increasing storms [52], and geographical shifts in the distribution and abundance (i.e., availability) of resources [53,54]. More broadly, declines in resource abundance can be a rationale for management actions – such as reductions in resource allocations or the creation of marine protected areas - which will directly impact access but also effect availability. These determinants of access have unfolded quite differently across the three coasts of Canada – for a variety of historical, geographic (e.g., political, institutional, demographic) and environmental reasons [37]. This makes generalizing about access issues in Canada somewhat challenging.

Governance and management deserve particular attention as determinants of and key intervention points for improving access. Under Part V of the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the Canadian state has the authority and sovereign right to provide or limit access to resources and areas within the Exclusive Economic Zone (EEZ), with some shared responsibilities over marine and coastal planning processes in inshore waters [55] and in cases like oil and gas (e.g., the Atlantic Accord [56,57]). Like many other countries, Canada uses both input and output access controls to limit harvesting of marine resources as part of efforts to sustainably manage fisheries and other marine harvesting activities. Systems of licensing and allocations define the who, what, how much, and where of living marine resource harvests. These systems often apply different conditions of use to the owners – for example, whether it is transferable and to whom. However, there is significant and growing concern that fisheries allocations and licensing in Canada are increasingly centralized and consolidated, and that benefits are not flowing to local small-scale fishers or coastal communities [9,10,58].

This general trend does have exceptions. In Atlantic Canada, for example, the Policy for Preserving the Independence of the Inshore Fleet in Canada's Atlantic Fisheries (PIIFCAF) have helped to maintain an owner-operator fleet and guard against corporate consolidation in important Atlantic fisheries [59] and the New Access Framework seeks to prioritize adjacent coastal fishing communities and fishers in determining access [60]. Another important exception is the increase in access for Indigenous communities in Atlantic Canada following the *R vs Marshall* decision in which the Supreme Court of Canada ruled that members of the Mi'kmaq and Maliseet Nations had a treaty right to catch and sell fish to earn a moderate livelihood. Similarly, in the *Ahousaht et al* decision, the Aboriginal rights of five Nuu-chah-nulth Nations to "fish and sell" all species in their territories on the west coast of Vancouver Island were confirmed by the Supreme Court of Canada in 2014. Protracted negotiations have yet to produce increased access, but the legal framework for Nuu-chah-nulth and other Indigenous Nations has been established. Additionally, efforts aimed at increasing Indigenous input into decisions

affecting resource access and allocation have been growing [61,62]. This is evidenced both through formal agreements such as the 1993 Nunavut Land Claims Agreement [63] and the Terms of Reference for a Mi'kmaq-Nova Scotia-Canada Consultation Process [64,65] and mechanisms such as those relating to the status of threatened and endangered species that are culturally significant to Indigenous peoples [66].

On all three coasts of Canada, the ability of communities to access areas of the coast and ocean is constantly being redefined as a result of increasing development activities (i.e., aquaculture siting, shipping, energy development, exploration, oil and gas, mining), marine conservation actions (in particular, marine protected areas), and through marine spatial planning (MSP) processes. This constant reallocation of marine resources and spaces can, despite the laudable pursuit of environmental or socio-economic objectives, have a variety of potential positive or negative impacts on coastal and Indigenous community access. Yet when decision-making related to these ongoing development and conservation processes do not give explicit consideration to access, this can lead to adverse outcomes for the coastal and Indigenous communities that rely on the marine environment for livelihoods and subsistence. For this reason, many international agreements and guidelines (to which Canada is a party) explicitly recognize the importance of access – this includes the Voluntary Guidelines for Securing Small-Scale Fisheries in the Context of Food Security and Poverty Eradication [67], the Voluntary Guidelines on the Responsible Governance of Tenure [68], the United Nations Declaration on the Rights of Indigenous Peoples [69] and the Sustainable Development Goals [70,71]. Government policies or management actions may also support or undermine other determinants of access – for example, policies or actions can influence (positively or negatively) local fishing capacity, access to markets, and/or processing and transportation infrastructure. In Canada, the number of regulatory hurdles and the financial costs associated with purchasing licenses or quotas can also make it increasingly difficult for the next generation of fishers and harvesters to enter the industry [10,24].

5. Past research and future directions

Past research on marine resource access in Canada has focused on several major themes, including privatization and quotas, fleet rationalization and neoliberalism, and the impacts of the cod collapse on coastal communities in Atlantic Canada [9,13,72–75]. Declines in abundance of marine species necessitated changes to fisheries management [37,68–70]. In the 1980s and 1990s, a rationalization paradigm dominated economic analysis, suggesting that profitability from the fishery could be improved by prioritizing and rewarding efficiency (rent generation) over other fishery objectives, and that to combat declining stocks, privatization and often concentration of use rights was necessary [79–81]. When viewed through this narrow economic lens, these policies have in some ways been successful: industry profits have improved in some cases, and over-capitalization (e.g., an excess number of fishing vessels or fishing capacity) has been reduced [82]. However, when viewed in broader, holistic terms [83,84] including considerations of social justice, employment and equity, these rationalization and privatization strategies, which are either direct or indirect choices about who should have access to fish, have been underwhelming [85,86]. On the Pacific coast, rationalization and privatization, and the resulting shift from many jobs with smaller-scale gear to few jobs with industrialized gear have resulted in job loss (for example 2,750 crew and skipper jobs from the BC salmon fishery) [87], and decreasing and inequitable profit margins for local and small-scale fishers due to high quota lease fees [74]. While research on access in Canada as linked to privatization and rationalization has provided some geographically-situated evidence that these choices are not socially optimal, there is as yet no systematic comparison on the social, economic, ecological, and cultural impact of different access regimes across the country's three coasts. Additionally, work on what social and institutional factors allow for community well-being to persist in spite of privatization is only in its infancy [12,58,88]. Finally, there has been substantially more research on access to fisheries than to other marine resources.

In addition to licensing regulations and policy programs that have changed the way people access ocean resources, research has also begun to investigate how spatial access is changing in Canada [11,12,89]. This is related to both marine development related activities, such as oil exploration and aquaculture, and also to conservation-related activities, such as marine protected areas (MPAs). Some of these changes have taken place as a result of direct federal or provincial policy and may have had genuinely good intentions, but in the case where changing access has resulted in detrimental outcomes to prior resource users or rights holders, these processes have been called ‘ocean grabbing’ or ‘coastal grabbing’ [5,6,15]. The term ocean grabbing refers to the dispossession or appropriation of resources or areas of the ocean from previous users or rights holders [5]. The argument has been made that privatization and neoliberalism have enabled ocean grabbing to occur more now than in the past [15]. The Canadian commitment and rapid push to meet globally agreed marine protection targets (i.e., 10% coverage by 2020 under the Convention on Biological Diversity [90]), will likely result in more conflicts over marine resource and spatial access [91]. To identify and plan for competing values and uses, integrated ocean and coastal management (ICOM) and marine spatial planning (MSP) are being used throughout Canada [55,92] and indeed the world [93,94]. However, the extent to which these planning processes explicitly acknowledge and address adjacency and access issues remains to be seen.

It is evident that changes to marine resources and space have profound impacts, be they purposeful or unintended, for coastal people in Canada. However, the continuing lack of knowledge about access to ocean and coastal resources and spaces in Canada undermines our ability to effectively address related aspects of coastal and Indigenous community well-being. Developing a better understanding of how changes in access impact well-being, who bears the brunt of these impacts and to what degree is a critical area that requires attention to ensure the equitable advancement of ICOM and Integrated Fisheries Management [36,95]. Additionally, our lack of understanding of spatial access issues is a significant gap. Further research is needed both on describing the current institutional, social, ecological, and economic situation, including both drivers and outcomes of changes in access, as well as on developing solutions (research methods, governance processes, policies, and management practices) to address access issues within key decision-making processes related to coastal community well-being, economic development, fisheries management, marine spatial planning and marine conservation (Table 1). Future research on the topic of access in Canada needs to build on past studies and scale-up to move beyond single-sector, single-location, single-group, and uni-disciplinary investigations.

Table 1 – Future research priorities related to access to marine and coastal resources and areas in Canada

Themes	Example research questions
Access in legal and policy frameworks	<ul style="list-style-type: none"> • Where and how are decisions related to access made in the current federal legal framework? Who, ultimately, is responsible for making the decisions? • Who is able to participate in current decision-making and policy processes regarding access and benefits? • How does Fisheries and Oceans Canada’s (DFO) mandate shape the extent to which coastal community access is considered in policy and practice? How is DFO’s authority to manage access defined and implemented on Canada’s three coasts? • How and to what extent are current laws and policies related to access being applied? • What Indigenous legal frameworks currently exist to support Indigenous access? How do the access rights of other groups impinge on these traditional frameworks? • What might an alternate governance regime for facilitating an Indigenous rights-based fisheries look like within the Canadian legal context?
Access impacts, benefits and well-being	<ul style="list-style-type: none"> • To whom and how are benefits from Canadian fisheries and marine resource allocations currently distributed? How and why has this changed over time? How are quotas and licenses allocated between different groups and types of fisheries, and how are these groups benefiting economically? • Through what pathways does access to fisheries and other marine resources, and changes to this access, impact the well-being of different groups (e.g., producers, independent fleet, workers, processors, indigenous people, men, women, youth, etc.) in coastal communities?

Themes	Example research questions
	<ul style="list-style-type: none"> • What have been the economic, social, health, and cultural impacts of different past resource allocation regimes? • How will coastal community access issues change under future socio-economic and environmental scenarios? How might climatic and global environmental change alter access? • How might notions of equity, justice and fairness guide decisions related to resource allocations and access?
Spatial access valuation and issues	<ul style="list-style-type: none"> • What values are associated with access to areas of the oceans and coast? How do different values and uses conflict? • What social and cultural activities require access to the ocean? Which areas are important for different groups? • How do various uses of the marine environment impact the ability of different groups to access areas of the ocean?
Barriers and supports for access	<ul style="list-style-type: none"> • What factors influence (support or undermine) the ability of different coastal and Indigenous communities, as well as sub-groups within these communities, to access marine resources, and areas of the ocean or coast? How might these barriers be overcome?
Prioritization and transfer of access	<ul style="list-style-type: none"> • How, for what activities and for whom, should access be prioritized and who should be involved in processes defining prioritization? What might a doctrine of priority look like? • How is (and in the future, should) access be transferred: inter-generationally, between fisheries sectors (small-scale, Indigenous, industrial), and between industries? • How might decisions about allocations be made to align with principles of historical use and adjacency? • What factors contribute to reconciling society's need to access marine resources with declining ecosystem goods and services (i.e. availability) arising from human impacts due to access?
Implementation of Integrated Coastal and Ocean Management (ICOM)	<ul style="list-style-type: none"> • How can and should integrated coastal and ocean management (ICOM) and marine spatial planning (MSP) processes take coastal community access to marine space (current and future) into account? • What are the best practices for taking coastal community access to the marine environment into account across the three coasts of Canada? • How might local communities gain better access to marine spatial planning processes, or even drive the process from the bottom-up, to ensure that local visions and needs are taken into account?
Best practices for maintaining, supporting or increasing access and benefits	<ul style="list-style-type: none"> • What are priority policies and actions for supporting access and increasing the level of benefit to coastal communities from adjacent fisheries and resource harvesting? What supports are needed to enable the next generation to enter fisheries? • What are the potential implications of different fisheries future management scenarios for access and associated social impacts? • What community-oriented access policies have been implemented elsewhere in the world and to what effect? Where have significant reallocations been made? • What actions might be taken to increase local benefit from development activities occurring in adjacent territories?
Decision-making methods and processes	<ul style="list-style-type: none"> • How can and should different types of knowledge (scientific, local, traditional) be integrated into deliberations related to marine access? • How might decentralized decision-making, collaborative governance arrangements or co-management processes contribute to protecting community access? How might international norms, principles and institutions contribute to these processes? • How can different levels of government and agencies work together to better support the viability of community-based fisheries economies? What factors prevent inter-agency and inter-jurisdictional collaboration and coordination on this issue? • What methods are available to aid decision-making to optimize access for different groups and uses, in particular, under conditions of scarcity and uncertainty and taking into account trade-offs and cumulative effects?

6. Coastal community access in Canada's oceans

In summary, we reiterate that access to marine resources and areas of the ocean for coastal and Indigenous communities is both morally and legally required to be an important policy and programmatic priority in Canada. Coastal and Indigenous communities are an important part of Canada's history, present, and future. Consensus around this important conclusion has emerged from a number of Government of Canada funded research projects, including the Ocean Management Research Network [96], the Coasts Under Stress Project [21], the Community-University Research for Recovery Alliance (CURRA [20]), the Canadian Fisheries Research Network (CFRN [12,26]), the Community

Conservation Research Network (CCRN), and the *OceanCanada* Partnership, as well as other work by various organizations and individual researchers.

While access issues are an ongoing concern, this is a particularly salient topic for study and policy deliberations right now, for several reasons. First, the socio-economic situation of coastal communities and small-scale fisheries is dire [21,35] and fisheries allocations and access rights are increasingly being captured by distant parties [10,26,58] including corporate interests in other countries. Second, coastal and Indigenous community access to areas of the ocean continues to be altered or threatened in a number of ways: marine protected areas are being rapidly implemented to meet international obligations and to ensure the sustainability of marine resources and biodiversity [90,91]; ocean-related development and shipping continues to grow [97]; and, there are numerous ongoing marine planning processes throughout Canada [55]. Third, the Government of Canada, through the Standing Committee on Fisheries and Oceans, is currently engaged in processes to revise two relevant legislations – i.e., the *Oceans Act* and the *Fisheries Act* - creating an important window for policy change. Fourth, territorial and resource access are critical elements of the ongoing process of reconciliation with Indigenous peoples and the relationship with neighbouring communities. Fifth, the convergence of environmental degradation and climate change will likely increase conflicts over access to scarce resources and newly accessible areas in the Arctic. Moreover, as the processes that are reducing access (e.g., social-economic conditions of communities, the capture of licenses by distant parties, increasing use of the marine environment, unsustainable harvesting, and government decisions and policies) are hard to reverse, we encourage a rapid and proactive approach to addressing current and emerging access issues in Canada. Given that Canada's own authority (along with associated responsibilities) over the resources and areas within the EEZ is supported by claims of adjacency, we ask rhetorically: is it not time that claims to adjacency for coastal and Indigenous communities are also recognized and safeguarded in Canada? Fisheries and Oceans Canada's (DFO) 2002 New Access Framework acknowledges adjacency as a key criteria for preferential access for coastal communities and fishers in Atlantic commercial fisheries [60]. We argue that it is time for these claims and criteria be given priority standing in all decisions related to fisheries, marine resources and the ocean environment in Canada.

7. Conclusion

In conclusion, we make four broad recommendations. First, all decision-making processes related to conservation, fisheries management, and development activities in Canada's oceans need to explicitly and transparently address issues of access and benefits distribution both now and in the future. The well-being and survival of coastal communities depends on access and related benefits, particularly under changing environmental conditions and levels of resource availability. Second, Canadian fisheries and ocean science and decision-making must evolve to include more investment in and engagement with social science, interdisciplinary research and Indigenous knowledge [98–100]. As this paper has shown, Canada lacks a comprehensive picture of marine and coastal access issues, including the current situation, historical underpinnings, ongoing challenges and potential solutions. Third, the necessary data, repositories and communications must be publicly accessible to allow a better understanding of access issues to be developed, and potential policy solutions to be identified with communities. Further, coastal and Indigenous communities need to be integral to all decision-making and policy processes that grant or restrict access to adjacent marine resources and spaces. Fourth, as laws and policies related to the oceans, fisheries and coastal communities are created and updated, explicit language (e.g., adjacency, access, equity, benefits) and processes ought to be developed and included to guarantee consideration and protection of access of adjacent communities. Finally, practical actions need to be identified and prioritized and taken immediately to support the ability of coastal and Indigenous communities in

Canada to maintain and, in many cases, increase access to marine resources and areas of the ocean. Providing adequate support for local monitoring, enforcement, response, stewardship efforts and participation in decision-making and management is critical. Taking action now may help to reverse the current trend and ensure that coastal and Indigenous communities will continue to thrive in the future.

Acknowledgements: We acknowledge the financial support of the OceanCanada Partnership, which was made possible through a Partnership Grant from the Social Sciences and Humanities Research Council (SSHRC) of Canada. NJB also acknowledges the support of the Liber Ero and Banting Postdoctoral Fellowship Programs. We appreciate insightful comments given on an earlier draft of this manuscript by Dr. Terre Satterfield.

8. References

- [1] D. Armitage, A. Charles, F. Berkes, *Governing the Coastal Commons: Communities, Resilience and Transformation*, Routledge, Oxford, UK, 2017.
- [2] M.E. Lowe, C. Carothers, *Enclosing the fisheries: people, places, and power*, American Fisheries Society, 2008.
- [3] O. De Schutter, “Ocean-grabbing” as serious a threat as “land-grabbing” - UN food expert, (2012). http://www.srfood.org/images/stories/pdf/press_releases/20121030_fisheries_en.pdf (accessed November 24, 2014).
- [4] C. Pedersen, T. Feodoroff, R. Reuter, J. Franco, N. Buxton, M.C. Barbesgaard, P. Vervest, *The Global Ocean Grab: A Primer*, Transnational Institute, Masifundise, Afrika Kontakt and World Forum of Fisher Peoples, 2014.
- [5] N.J. Bennett, H. Govan, T. Satterfield, Ocean grabbing, *Mar. Policy*. 57 (2015) 61–68. doi:10.1016/j.marpol.2015.03.026.
- [6] M. Bavinck, F. Berkes, A. Charles, A.C.E. Dias, N. Doubleday, P. Nayak, M. Sowman, The impact of coastal grabbing on community conservation – a global reconnaissance, *Marit. Stud.* 16 (2017) 8. doi:10.1186/s40152-017-0062-8.
- [7] A. Davis, J. Wagner, A right to fish for a living? The case for coastal fishing people’s determination of access and participation, *Ocean Coast. Manag.* 49 (2006) 476–497. doi:10.1016/j.ocecoaman.2006.04.007.
- [8] J. Kearney, F. Berkes, A. Charles, E. Pinkerton, M. Wiber, The Role of Participatory Governance and Community-Based Management in Integrated Coastal and Ocean Management in Canada, *Coast. Manag.* 35 (2007) 79–104. doi:10.1080/10.1080/08920750600970511.
- [9] M.G. Wiber, M.A. Rudd, E. Pinkerton, A.T. Charles, A. Bull, Coastal management challenges from a community perspective: The problem of “stealth privatization” in a Canadian fishery, *Mar. Policy*. 34 (2010) 598–605. doi:10.1016/j.marpol.2009.11.010.
- [10] A. Robertson, T. Sutcliffe, D. Fernandes, B. Reid-Kuecks, J. McIsaac, D. Nobles, L. Moriel, K. Pepper-Smith, D. Brown, M. Mesmain, *Caught up in catch shares*, Ecotrust Canada and T. Buck Suzuki Environmental Foundation, Vancouver, BC, 2014.
- [11] J.J. Silver, From fishing to farming: Shellfish aquaculture expansion and the complexities of ocean space on Canada’s west coast, *Appl. Geogr.* 54 (2014) 110–117. doi:10.1016/j.apgeog.2014.07.013.
- [12] P. Foley, C. Mather, B. Neis, Governing enclosure for coastal communities: Social embeddedness in a Canadian shrimp fishery, *Mar. Policy*. 61 (2015) 390–400. doi:10.1016/j.marpol.2014.11.009.
- [13] E. Pinkerton, R. Davis, Neoliberalism and the politics of enclosure in North American small-scale fisheries, *Mar. Policy*. 61 (2015) 303–312. doi:10.1016/j.marpol.2015.03.025.
- [14] A.J. Barnett, R.A. Messenger, M.G. Wiber, Enacting and contesting neoliberalism in fisheries: The tragedy of commodifying lobster access rights in Southwest Nova Scotia, *Mar. Policy*. 80 (2017) 60–68. doi:10.1016/j.marpol.2016.03.002.

- [15] C. Knott, B. Neis, Privatization, financialization and ocean grabbing in New Brunswick herring fisheries and salmon aquaculture, *Mar. Policy.* 80 (2017) 10–18. doi:10.1016/j.marpol.2016.10.022.
- [16] J.C. Ribot, N.L. Peluso, A Theory of Access*, *Rural Sociol.* 68 (2003) 153–181. doi:10.1111/j.1549-0831.2003.tb00133.x.
- [17] A. Charles, Rights-Based Fisheries Management: The Role of Use Rights in Managing Access and Harvesting, in: K.L.C. Chief, S.M.G.F. Director (Eds.), *Fish. Manag. Guideb.*, Wiley-Blackwell, 2009: pp. 253–282. <http://onlinelibrary.wiley.com/doi/10.1002/9781444316315.ch10/summary> (accessed August 9, 2017).
- [18] A. Gager, J. van den Bergh, A critical review of fishing agreements with tropical developing countries, *Mar. Policy.* 38 (2013) 375–386. doi:10.1016/j.marpol.2012.06.016.
- [19] D. Belhabib, K. Greer, D. Pauly, Trends in Industrial and Artisanal Catch Per Effort in West African Fisheries, *Conserv. Lett.* (2017) n/a–n/a. doi:10.1111/conl.12360.
- [20] B. Neis, R. Ommer, P. Hall, Moving forward: Building Economically, Socially and Ecologically Resilient Fisheries and Coastal Communities, (2005) 245–257.
- [21] R.E. Ommer, Team, *Coasts under stress: Restructuring and social-ecological health*, McGill-Queen’s Press, Montreal, QC, 2007.
- [22] R.C.G. Capistrano, A.T. Charles, Indigenous rights and coastal fisheries: A framework of livelihoods, rights and equity, *Ocean Coast. Manag.* 69 (2012) 200–209. doi:10.1016/j.ocecoaman.2012.08.011.
- [23] Ecotrust Canada, Briefing: A cautionary tale about ITQs in BC fisheries, Ecotrust Canada, Vancouver, BC, 2009.
- [24] P. Foley, C. Mather, B. Neis, Fisheries allocation policies and regional development: Successes from the Newfoundland and Labrador shrimp fishery, Leslie Harris Centre of Regional Policy and Development, Memorial University, 2013. <https://www.mun.ca/harriscentre/reports/arf/2011/11-12-ARF-Final-Mather.pdf> (accessed April 29, 2017).
- [25] P. Foley, C. Mather, R. Morris, J. Snook, Shrimp allocation policies and regional development under conditions of environmental change: insights for Nunatsiavutimmuit, Leslie Harris Centre of Regional Policy and Development, Memorial University, St John’s, Newfoundland, 2017. http://www.mun.ca/harriscentre/reports/FOLEY_ARF_15_16.pdf (accessed August 19, 2017).
- [26] A.R. Haas, D.N. Edwards, U.R. Sumaila, Corporate concentration and processor control: Insights from the salmon and herring fisheries in British Columbia, *Mar. Policy.* 68 (2016) 83–90. doi:10.1016/j.marpol.2016.02.019.
- [27] K. O’Donnell, T. Hesselgrave, E. Macdonald, J. McIsaac, T. Sutcliffe, D. Fernandes, B. Reid-Kuecks, Understanding Values in Canada’s North Pacific: Capturing Values from Commercial Fisheries, T. Buck Suzuki and Ecotrust Canada, Vancouver, BC, 2013. http://ecotrust.ca/wp-content/uploads/2015/02/2013_Report_UnderstandingValuesCanadasNorthPacific.pdf (accessed June 22, 2017).
- [28] N.J. Turner, M.B. Ignace, R. Ignace, Traditional ecological knowledge and wisdom of aboriginal peoples in british columbia, *Ecol. Appl.* 10 (2000) 1275–1287. doi:10.1890/1051-0761(2000)010[1275:TEKAWO]2.0.CO;2.
- [29] A. Garibaldi, N. Turner, Cultural keystone species: implications for ecological conservation and restoration, *Ecol. Soc.* 9 (2004). <http://www.ecologyandsociety.org/vol9/iss3/art1/inline.html> (accessed June 22, 2017).
- [30] A. Goodfellow, *Talking in Context: Language and Identity in Kwakwaka’wakw Society*, McGill-Queen’s Press - MQUP, 2005.
- [31] A.S. Groesbeck, K. Rowell, D. Lepofsky, A.K. Salomon, Ancient Clam Gardens Increased Shellfish Production: Adaptive Strategies from the Past Can Inform Food Security Today, *PLOS ONE.* 9 (2014) e91235. doi:10.1371/journal.pone.0091235.

- [32] D. Islam, F. Berkes, Indigenous peoples' fisheries and food security: a case from northern Canada, *Food Secur.* 8 (2016) 815–826. doi:10.1007/s12571-016-0594-6.
- [33] S.C. Klain, R. Beveridge, N.J. Bennett, Ecologically sustainable but unjust? Negotiating equity and authority in common-pool marine resource management, *Ecol. Soc.* 19 (2014) 52. doi:<http://dx.doi.org/10.5751/ES-07123-190452>.
- [34] Ecotrust Canada, CATCH-22: Conservation, communities and the privatization of B.C. fisheries, Ecotrust Canada, Vancouver, BC, 2004.
- [35] A. Stocks, State of Coastal Communities in British Columbia 2016, T. Buck Suzuki Environmental Foundation, 2016.
- [36] A. Charles, M. Wiber, K. Bigney, D. Curtis, L. Wilson, R. Angus, J. Kearney, M. Landry, M. Recchia, H. Saulnier, C. White, Integrated Management: A Coastal Community Perspective, *Horizons.* 10 (2010) 26–34.
- [37] J. Gough, Managing Canada's Fisheries: From Early Days to the Year 2000, Fisheries and Oceans Canada, 2007.
- [38] UFAWU-UNIFOR, Open letter to Nuuchah-nulth Tribal Council & BC herring fishermen - Jan. 7, 2015, (2015). <http://uuathluk.ca/open-letter-to-nuuchah-nulth-tribal-council-bc-herring-fishermen/> (accessed September 20, 2017).
- [39] F. Côté, R. Dufresne, The Arctic: Canada's legal claims, Library of Parliament, Government of Canada, Ottawa ON, 2008. <https://lop.parl.ca/content/lop/researchpublications/prb0805-e.htm> (accessed August 9, 2017).
- [40] J. Mathias, B. Ayles, S. Blakney, A. Charles, H. Fast, P. Irniq, Arctic Change and Coastal Communities: Overview of the Coastal Zone Canada Conference, Tuktoyaktuk, August 2006, Arctic. (2008) iii–xi.
- [41] Truth and Reconciliation Commission of Canada, Final report of the Truth and Reconciliation Commission of Canada., 2015. <http://www.trc.ca/websites/trcinstitution/index.php?p=890> (accessed July 13, 2017).
- [42] Government of Canada, Constitution Act, 1982, 1982. <http://laws-lois.justice.gc.ca/eng/const/page-15.html#h-38> (accessed August 9, 2017).
- [43] C.P. DesRivières, R. Chuenpagdee, C. Mather, Reconnecting people, place, and nature: examining alternative food networks in Newfoundland's fisheries, *Agric. Food Secur.* 6 (2017) 33. doi:10.1186/s40066-017-0112-x.
- [44] F. Berkes, Sacred ecology: traditional ecological knowledge and resource management, Taylor & Francis, Philadelphia; London, 1999.
- [45] Coastal First Nations, Coastal Stewardship Network, Guardian Watchmen Programs | Coastal Guardian Watchmen Network, (2017). <http://coastalguardianwatchmen.ca/guardian-watchmen-programs> (accessed September 21, 2017).
- [46] MaPP, Implementation Priorities, Mar. Plan Partnersh. North Pac. Coast. (2017). <http://mappocean.org/about-mapp/implementation-priorities/> (accessed September 21, 2017).
- [47] D.P. Ball, Coast Guard to throw feast to thank Heiltsuk for sunk tug spill efforts | Metro Vancouver, Metro News. (2016). <http://www.metronews.ca/news/vancouver/2016/11/25/coast-guard-feast-for-heiltsuk-for-sunk-tug-spill-efforts.html> (accessed September 21, 2017).
- [48] D. Wilson, Funding coming for Indigenous Coast Guard auxiliary, CBC News. (2016). <http://www.cbc.ca/news/canada/british-columbia/coast-guard-auxiliary-indigenous-search-and-rescue-1.3846386> (accessed September 21, 2017).
- [49] M.P. Weinstein, R.C. Baird, D.O. Conover, M. Gross, J. Keulartz, D.K. Loomis, Z. Naveh, S.B. Peterson, D.J. Reed, E. Roe, R.L. Swanson, J.A. Swart, J.M. Teal, R.E. Turner, V.D. Windt, H. J., Managing coastal resources in the 21st century, *Front. Ecol. Environ.* 5 (2007) 43–48. doi:10.1890/1540-9295(2007)5[43:MCRITS]2.0.CO;2.

- [50] R. Wieland, S. Ravensbergen, E.J. Gregr, T. Satterfield, K.M.A. Chan, Debunking trickle-down ecosystem services: The fallacy of omnipotent, homogeneous beneficiaries, *Ecol. Econ.* 121 (2016) 175–180. doi:10.1016/j.ecolecon.2015.11.007.
- [51] C. Hoover, S. Ostertag, C. Hornby, C. Parker, K. Hansen-Craik, L. Loseto, T. Pearce, The Continued Importance of Hunting for Future Inuit Food Security, *Solut. J.* 7 (2016) 40–50.
- [52] S. Tuler, J. Agyeman, P.P. da Silva, K.R. LoRusso, R. Kay, Assessing vulnerabilities: Integrating information about driving forces that affect risks and resilience in fishing communities, *Hum. Ecol. Rev.* 15 (2008) 171–184.
- [53] L.V. Weatherdon, Y. Ota, M.C. Jones, D.A. Close, W.W.L. Cheung, Projected Scenarios for Coastal First Nations' Fisheries Catch Potential under Climate Change: Management Challenges and Opportunities, *PLOS ONE*. 11 (2016) e0145285. doi:10.1371/journal.pone.0145285.
- [54] U.R. Sumaila, W. Cheung, P.M. Cury, T. Tai, Climate change, marine ecosystems and global fisheries, in: K.N. Ninan, M. Inoue (Eds.), *Build. Clim. Resilient Econ. Soc. Chall. Oppor.*, Edward Elgar Publishing, 2017.
- [55] L. Nowlan, Brave New Wave: Marine Spatial Planning and Ocean Regulation on Canada's Pacific, *J. Environ. Law Pract.* 29 (2016) 151–198.
- [56] Government of Canada, Government of Newfoundland and Labrador, The Atlantic Accord - Memorandum of Agreement between the Government of Canada and the Government of Newfoundland and Labrador on Offshore Oil and Gas Resource Management and Revenue Sharing, (1985). http://www.servicenl.gov.nl.ca/printer/publications/aa_mou.pdf (accessed September 20, 2017).
- [57] Government of Canada, Consolidated federal laws of canada, Canada–Newfoundland and Labrador Atlantic Accord Implementation Act, 1987. <http://laws-lois.justice.gc.ca/eng/acts/c-7.5/> (accessed September 21, 2017).
- [58] E. Pinkerton, Hegemony and resistance: Disturbing patterns and hopeful signs in the impact of neoliberal policies on small-scale fisheries around the world, *Mar. Policy*. 80 (2017) 1–9. doi:10.1016/j.marpol.2016.11.012.
- [59] Fisheries and Oceans Canada, Policy for Preserving the Independence of the Inshore Fleet in Canada's Atlantic Fisheries, Government of Canada, Ottawa, ON, 2007. <http://www.dfo-mpo.gc.ca/reports-rapports/regs/piifcaf-policy-politique-pifpcca-eng.htm> (accessed September 21, 2017).
- [60] Fisheries and Oceans Canada, New Access Framework, Government of Canada, Ottawa, ON, 2002. <http://www.dfo-mpo.gc.ca/reports-rapports/regs/access-acces-eng.htm> (accessed September 21, 2017).
- [61] S. Denny, L. Fanning, A Mi'kmaw Perspective on Advancing Salmon Governance in Nova Scotia, Canada: Setting the Stage for Collaborative Co-Existence, *Int. Indig. Policy J.* 7 (2016) 4. doi:10.18584/iipj.2016.7.3.4.
- [62] S. Denny, L.M. Fanning, Balancing Community Autonomy with Collective Identity: Mi'kmaq decision-making in Nova Scotia, *Can. J. Native Stud.* XXXVI (2016).
- [63] S.A. Boudreau, L. Fanning, Nunavut Fisheries Co-management and the Role of the Nunavut Land Claims Agreement in Fisheries Management and Decision Making, *Ocean Yearb. Online*. 30 (2016) 0–0. doi:10.1163/22116001-03001009.
- [64] J. Young, Reimagining Mi'kmaq-State Relations: Facing colonialism at the Mi'kmaq-Nova Scotia-Canada Tripartite Forum, Thesis, Dalhousie University, 2015. <https://DalSpace.library.dal.ca/handle/10222/60769> (accessed September 20, 2017).
- [65] Indigenous and Northern Affairs Canada, Terms of Reference for a Mi'kmaq-Nova Scotia-Canada Consultation Process, (2010). <https://www.aadnc-aandc.gc.ca/eng/1100100031918/1100100031919> (accessed September 20, 2017).

- [66] A. Giles, L. Fanning, S. Denny, T. Paul, Improving the American Eel Fishery Through the Incorporation of Indigenous Knowledge into Policy Level Decision Making in Canada, *Hum. Ecol.* 44 (2016) 167–183. doi:10.1007/s10745-016-9814-0.
- [67] FAO, Voluntary guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication, Food and Agriculture Organization of the United Nations, Rome, 2015. <http://www.fao.org/documents/card/en/c/21360061-9b18-42ac-8d78-8a1a7311aef7/> (accessed October 29, 2015).
- [68] FAO, ed., Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security, Food and Agriculture Organization of the United Nations, Rome, 2012.
- [69] United Nations, United nations declaration on the rights of indigenous peoples, United Nations, Washington, DC, 2007. <http://www.converge.org.nz/pma/DRIPGA.pdf> (accessed October 27, 2015).
- [70] United Nations, Sustainable development goals, United Nations, New York, NY, 2015. <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> (accessed August 14, 2017).
- [71] G.G. Singh, A.M. Cisneros-Montemayor, W. Swartz, W. Cheung, J.A. Guy, T.-A. Kenny, C.J. McOwen, R. Asch, J.L. Geffert, C.C.C. Wabnitz, R. Sumaila, Q. Hanich, Y. Ota, A rapid assessment of co-benefits and trade-offs among Sustainable Development Goals, *Mar. Policy.* (2017). doi:10.1016/j.marpol.2017.05.030.
- [72] A. Charles, The Atlantic Canadian groundfishery: Roots of a collapse, *Dalhous. Law J.* 18 (1995) 65–83.
- [73] M.G. Wiber, Fishing Rights as an Example of the Economic Rhetoric of Privatization: Calling for an Implicated Economics*, *Can. Rev. Sociol. Can. Sociol.* 37 (2000) 267–288. doi:10.1111/j.1755-618X.2000.tb00591.x.
- [74] E. Pinkerton, D.N. Edwards, The elephant in the room: The hidden costs of leasing individual transferable fishing quotas, *Mar. Policy.* 33 (2009) 707–713. doi:10.1016/j.marpol.2009.02.004.
- [75] E. Pinkerton, Alternatives to ITQs in equity–efficiency–effectiveness trade-offs: How the lay-up system spread effort in the BC halibut fishery, *Mar. Policy.* 42 (2013) 5–13. doi:10.1016/j.marpol.2013.01.010.
- [76] D. Pauly, M.L. Palomares, R. Froese, P. Sa-a, M. Vakily, D. Preikshot, S. Wallace, Fishing down Canadian aquatic food webs, *Can. J. Fish. Aquat. Sci.* 58 (2001) 51–62. doi:10.1139/f00-193.
- [77] K.L. Yamanaka, G. Logan, Developing British Columbia’s Inshore Rockfish Conservation Strategy, *Mar. Coast. Fish. Dyn. Manag. Ecosyst. Sci.* (2010) 28–46.
- [78] T. Wappel, Northern cod: a failure of Canadian fisheries management. Report of the standing committee on Fisheries and Oceans., House of Commons, Ottawa, ON, 2005.
- [79] A. Scott, The Fishery: The Objectives of Sole Ownership, *J. Polit. Econ.* 63 (1955) 116–124. doi:10.1086/257653.
- [80] R. Hannesson, *The Privatization of the Oceans*, MIT Press, 2004.
- [81] L.G. Anderson, M.C. Holliday, The design and use of limited access privilege programs, US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, 2007. <http://spo.nmfs.noaa.gov/tm/tm86.pdf> (accessed June 27, 2017).
- [82] G.R. Munro, B. Turris, C. Clark, U.R. Sumaila, M. Bailey, Impacts of harvesting rights in Canadian pacific fisheries, Fisheries and Oceans Canada, Ottawa, Ont., 2009. <http://www.deslibris.ca/ID/222936> (accessed June 27, 2017).
- [83] P. Copes, A. Charles, Socioeconomics of Individual Transferable Quotas and Community-Based Fishery Management, *Agric. Resour. Econ. Rev.* 33 (2004) 171–181. doi:10.1017/S106828050000575X.

- [84] U.R. Sumaila, A Cautionary Note on Individual Transferable Quotas, *Ecol. Soc.* 15 (2010). doi:10.5751/ES-03391-150336.
- [85] S. Macinko, D.W. Bromley, Who owns America's fisheries?, Pew Charitable Trusts, 2002. <http://www.vliz.be/imisdocs/publications/252537.pdf>.
- [86] D.W. Bromley, Abdicating Responsibility: The Deceits of Fisheries Policy, *Fisheries*. 34 (2009) 280–290. doi:10.1577/1548-8446-34.6.280.
- [87] G. Gislason, E. Lam, M. Mohan, Fishing for Answers: Coastal Communities and the BC Salmon Fisheries, ARA Consulting Group, 1996. <http://www.dfo-mpo.gc.ca/Library/209979.pdf> (accessed June 27, 2017).
- [88] P. Foley, C. Mather, Making Space for Community Use Rights: Insights From “Community Economies” in Newfoundland and Labrador, *Soc. Nat. Resour.* 29 (2016) 965–980. doi:10.1080/08941920.2015.1089611.
- [89] A. Charles, L. Wilson, Human dimensions of Marine Protected Areas, *ICES J. Mar. Sci. J. Cons.* 66 (2009) 6–15. doi:10.1093/icesjms/fsn182.
- [90] CBD, Aichi Biodiversity Targets, *Conv. Biol. Divers.* (2010). <http://www.cbd.int/sp/targets> (accessed March 23, 2013).
- [91] A. Charles, L. Westlund, D.M. Bartley, W.J. Fletcher, S. Garcia, H. Govan, J. Sanders, Fishing livelihoods as key to marine protected areas: insights from the World Parks Congress, *Aquat. Conserv. Mar. Freshw. Ecosyst.* 26 (2016) 165–184. doi:10.1002/aqc.2648.
- [92] A. Chircop, L. Hildebrand, Beyond the buzzwords: A perspective on integrated coastal and ocean management in Canada, *Princ. Oceans Governance—Australian Can. Approaches Chall.* (2006) 19–71.
- [93] C. Ehler, F. Douvère, Marine spatial planning, a step-by-step approach towards ecosystem-based management., (2009). <http://www.oceandocs.org/handle/1834/4475> (accessed May 22, 2017).
- [94] S. Jay, W. Flannery, J. Vince, W.-H. Liu, J.G. Xue, M. Matczak, J. Zaucha, H. Janssen, J. van Tatenhove, H. Toonen, A. Morf, E. Olsen, J.L.S. de Vivero, J.C. Rodríguez Mateos, H. Calado, J. Duff, H. Dean, International Progress in Marine Spatial Planning, *Ocean Yearb. Online*. 27 (2013) 171–212. doi:10.1163/22116001-90000159.
- [95] R. Stephenson, M. Wiber, M. Allain, S. Paul, E. Angel, A. Benson, A. Charles, O. Chouinard, D. Edwards, P. Foley, D. Lane, J. McIsaac, B. Neis, C. Parlee, E. Pinkerton, M. Saunders, M. Squires, U.R. Sumaila, Integrating diverse objectives for sustainable fisheries in Canada, *Can. J. Fish. Aquat. Sci.* (in review).
- [96] A. Charles, A. Evans, L. Grattan, A. Gill, Canada's coasts and oceans: Identifying the issues, Ocean Management Research Network, Ottawa, Canada, 2005.
- [97] Lloyds Register Group Ltd., Global Marine Trends 2030, Lloyd's Register Group Limited (LR), QinetiQ, University of Strathclyde, Marine Strategies International Limited (MSI), London, UK, 2014.
- [98] R.L. Stephenson, A.J. Benson, K. Brooks, A. Charles, P. Degnbol, C.M. Dichmont, M. Kraan, S. Pascoe, S.D. Paul, A. Rindorf, M. Wiber, Practical steps toward integrating economic, social and institutional elements in fisheries policy and management, *ICES J. Mar. Sci.* (2017) online. doi:10.1093/icesjms/fsx057.
- [99] N.J. Bennett, R. Roth, S.C. Klain, K.M.A. Chan, P. Christie, D.A. Clark, G. Cullman, D. Curran, T.J. Durbin, G. Epstein, A. Greenberg, M.P. Nelson, J. Sandlos, R.C. Stedman, T.L. Teel, R.E.W. Thomas, D. Veríssimo, C. Wyborn, Conservation social science: Understanding and integrating human dimensions to improve conservation, *Biol. Conserv.* 205 (2017) 93–108.
- [100] J.N. Kittinger, L.C.L. Teh, E.H. Allison, N.J. Bennett, L.B. Crowder, E.M. Finkbeiner, C. Hicks, C.G. Scarton, K. Nakamura, Y. Ota, J. Young, A. Alifano, A. Apel, A. Arbib, L. Bishop, M. Boyle, A.M. Cisneros-Montemayor, P. Hunter, E.L. Cornu, M. Levine, R.S. Jones, J.Z. Koehn, M. Marschke, J.G. Mason, F. Micheli, L. McClenachan, C. Opal, J. Peacey, S.H. Peckham, E.

Schemmel, V. Solis-Rivera, W. Swartz, T. 'Aulani Wilhelm, Committing to socially responsible seafood, *Science*. 356 (2017) 912–913. doi:10.1126/science.aam9969.