

MOVING FORWARD
**Building Economically, Socially *and* Ecologically Resilient
Fisheries and Coastal Communities**

A Policy Paper

April 16, 2014



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Foreword

Building resilient fisheries and coastal communities for Newfoundland and Labrador's future is one of the most important opportunities and challenges of our time. We have rich and diverse marine resources around our coasts that have supported a substantial fishing industry for centuries. In many of our coastal communities, fisheries continue to be the major source of employment and wealth generation -- they are a crucial part of rural economies along all of our coasts.

To a substantial degree our fisheries are still, as they should be, a "common good," in that ownership of these resources remains in the public domain. Access to them continues to be based on important principles like historical attachment and adjacency, and on fleet separation and owner-operator policies. These principles and policies help to anchor people and wealth in coastal communities through harvesting, processing and other kinds of employment.

Despite their strengths, our fisheries need our attention *now*. We need to develop them for the present time and for the future. Collectively we need to develop a strategy to revitalize our fisheries. A key part of that strategy is an appropriate policy framework. The right policy framework will allow them to contribute not only to profits but, more importantly, to community and regional development, and thus to the common good of present and future generations.

The Community-University Research for Recovery Alliance was a seven-year initiative that used community-engaged research in west coast Newfoundland fishery-dependent communities to help identify ways our fisheries could realize their full ecological, social, economic and cultural potential. We sought to make the sea, the creatures in it, and the tangible and intangible world of our fisheries *visible* to those people who have lost sight of the benefits derived from our fisheries. They are to be found among our young and working-age people, employers, politicians, and other citizens in this province, as well as in the rest of Canada.

Our research covered fisheries ecology, invasive species, an assessment of the effectiveness of lobster conservation initiatives and many other issues. We helped develop community sustainability plans, explored the place of fisheries in community food security and identified missed opportunities for promoting synergies between fisheries and tourism. We examined youth employment options and their perceptions of their communities. We used research reports, drama and art to make visible the social and environmental challenges in our fisheries, as well as local knowledge and infrastructure like fish plants, and to encourage reflection on the future of our fisheries.

This Policy Paper has been written because of discussions at and following the CURRA-supported International Symposium on Rebuilding Collapsed Fisheries and Threatened Communities held in October, 2012. The rich array of presentations that were given, and the lively discussions that followed involving researchers, policy-makers, industry representatives, municipal leaders and others, told us that one of the most important things we can do is ensure that our future fisheries will be regionally and economically diverse, socially and ecologically resilient, and community-based. This is a task that will benefit not only Newfoundland and

Labrador but other parts of Canada and the world.

We need a roadmap to get there. Our research, like that of many researchers globally, showed us there is no panacea that will automatically ensure our future fisheries are sustainable, profitable, and equitable. No magic wand can be waved to ensure they contribute substantially to regional economic development and community food security in the future. It will take hard work -- a collective drive to balance all of these diverse objectives as we revitalize our fisheries and coastal communities. The place to begin that drive is with appropriate policy.

This Policy Paper and linked Policy Booklet start that process. The Paper discusses our strengths and vulnerabilities, and presents a series of policy recommendations designed to orient our collective efforts towards building economically, socially and ecologically resilient fisheries and coastal communities for the future. In writing this Policy Paper, we have been guided by nine basic principles:

1. Fisheries and coastal communities are complex social-ecological systems.
2. Diverse fisheries and coastal regions are fundamental to economic, social *and* ecological resilience.
3. Our living marine resources already contribute substantially to that resilience. If governed appropriately they can contribute much more; if poorly stewarded and developed, we will lose ground.
4. There are no panaceas – simple, universal solutions – to governing them effectively.¹
5. Flexibility (the capacity to respond to uncertainty with a variety of strategies which can be tested and secured) is essential – we need a number of strings to our bow.
6. Knowledge matters, takes diverse forms and is always partial; no one group has a monopoly on knowledge.
7. To think of our fisheries as ‘broken’ and thus in need of a major overhaul is not correct.
8. To think of sustaining and enhancing (where necessary) the capacity we need to resolve emerging issues and challenges in fisheries and coastal regions on an ongoing basis is correct.
9. Because our fisheries are common goods, we must always balance efficiency with equity and pragmatism.²
10. Because resources are scarce, innovation in our fisheries and coastal regions should start with what we already have; this is something we (people in coastal communities) are good at.

This Policy Paper is intended to promote more and fuller public discussion and action related to our fisheries and coastal communities—past, present and future. It is also an invitation to our local, regional, provincial and federal policy makers to embrace our fisheries and work together to find ways to revitalize them so that they will become an ever-richer part of our world and that of our children and our children’s children.

Executive Summary



Building resilient fisheries and coastal communities for Newfoundland and Labrador's future is one of the most important opportunities *and* challenges of our time. In many of our coastal communities, fisheries continue to be ***the major source of employment and wealth generation, a crucial part of rural economies, of our identity and our cultural heritage. The owner-operator small and medium-scale enterprises and fish plants generate most of this wealth and employment.*** In recent decades our fisheries and coastal communities have weathered some severe storms, including the 1990s collapse of our groundfish stocks. Their capacity to respond to such challenges without fundamental cultural, social and ecological change is evidence of their resilience, which is now in serious jeopardy. It is threatened by unfounded claims that our fisheries are broken and the best way to fix them is by turning fisheries quotas and licenses into commodities that can be bought and then sold to the highest bidder. It is also suggested that we get rid of policies that limit vertical integration, although such policies have kept access to many (not all) of our fish resources widely dispersed around our coasts. As a result they have both enhanced the employment and wealth they produce for the province, and anchored much of that wealth in the households of people who work in the industry and in the communities where they live. This is not the time to jettison them.

The resilience of our fisheries and coastal communities is also threatened by being undervalued by all levels of government, leaving them vulnerable to policy failure. That vulnerability will deepen unless we shift our emphasis from downsizing to revitalizing our fisheries and coastal communities, investing particularly in our small- and medium-scale fisheries and coastal communities. For this, we need a new policy framework that builds on their strengths and addresses their vulnerabilities because our fisheries are *not* broken. The intent of this Policy Paper, and the associated Policy Booklet, is to lay the foundations for that new framework.

Chapter 1 provides a snapshot of current marine fisheries and coastal communities at the level of regions and the province. It sets the statistical and information stage for our more detailed discussions in subsequent chapters of our fisheries strengths and vulnerabilities, and for our recommendations for building resilient fisheries and coastal communities for the future in the province.

Chapter 2 examines the argument, common among some commentators, that our fisheries are 'broken' and require a different policy framework that supports greater vertical integration through the fuller commodification of access rights. We conclude that our fisheries are not broken, and that the recommended policy changes, if implemented, would devastate the economies of many coastal communities, be costly for those who actually work in the industry, erect new barriers for the entry of young people into fisheries, and would not deliver the

conservation and other benefits claimed. The chapter concludes by arguing that we need to develop a different policy framework that aims to build resilient fisheries and coastal communities for the future.

Chapter 3 considers the strengths of our fisheries and fishery-dependent communities. We examine the network of communities around our coasts and the strengths in our fishing and seafood processing, including the many lessons learned since the 1992 cod collapse. We look at the strengths in species diversity, and in industry diversity (including aquaculture), which show that we possess strategic, flexible industrial structures that enhance our global competitiveness under conditions of uncertainty (climatic and other). We identify the owner-operated fleet as the economic engine of growth for our coastal communities, pointing to its role as Atlantic Canada's largest sectoral employer. We discuss the significant infrastructural investment that has taken place in our fisheries, and also look at the strengths we possess in local and professional knowledge of fisheries, including a major investment in scientific (natural, social, humanities and engineering) knowledge. Turning to governance, we point to the vital role of the Federal government in stewarding Canada's oceans and the resources contained therein, and identify strong policies that have supported our fisheries. We examine provincial-level governance, looking at the Department of Fisheries and Aquaculture (DFA) and the role of the Fish Food and Allied Workers (FFAW) Union and processors, and then turn to regional and municipal involvement in our fisheries and coastal communities.

Chapter 4 then turns to the real vulnerabilities that exist in the industry and fishery-dependent communities. Communities are faced with population decline, plant closures, and reductions in the size of their working-age populations. Furthermore, cuts to funding for municipalities and in the public sector in rural areas -- including cuts in educational, health, rural development and employment services, and the absence of strong regional governments -- are sources of vulnerability in many fisheries-dependent communities and regions.

The industry also has problems. Despite its strengths, it continues to focus on mass production of a relatively narrow range of commodities, derived from a few species and destined for export to a relatively small number of countries and buyers. New niche markets are opening up in which we could be players, but we have made little progress in these. Moreover, we are poorly positioned to take advantage of new opportunities to produce pharmaceutical, nutraceutical, cosmetic and other kinds of products that offer the potential for economic diversification in rural areas. There are regulatory and other barriers to enhancing synergies between fisheries and other sectors, particularly tourism. The absence of sustained opportunities to bring together representatives of a range of different groups from chefs to artists and innovators with people in fisheries is another constraint on the knowledge and insights available to our fisheries.

There are also vulnerabilities in our marine and coastal knowledge and governance. Effective governance of fisheries and marine and coastal development more generally is very challenging. Fish (and other living marine resources) are common goods and need to be governed in a way that maximizes mutual gain (the benefits to current and future generations of harvesters and processing workers, coastal communities, and the province) by enhancing long-term public value. We have too little information on many marine species to adequately assess their current and future status under climate change. We have lost, and will continue to lose, a great deal of

expertise (including fisheries science) from our fisheries over the next several years. Federally and provincially, we have under-valued our marine and coastal living resources, including fisheries and coastal communities. Regionally and municipally, there are no formal bridging mechanisms between the various development, sector-specific and industrial organizations and municipal governments. This is a serious gap. Municipal governments are a potential, but seriously under-utilized, resource for the development of diverse, dynamic and resilient regional fisheries.

Recommendations

In Chapter 5 we offer and explain the following list of recommendations on how shift our emphasis from *downsizing* to *revitalizing* our fisheries and coastal communities.

[The recommendations marked ****** need to be acted upon immediately in order to protect the base from which we can build a resilient future.]

SECTION 1: OVERARCHING RECOMMENDATIONS

**** Recommendation 1.** The federal and provincial governments, the FFAW and industry should continue to shift their emphasis from downsizing to revitalizing our fisheries and coastal communities, by developing and implementing a policy framework with revitalization (achieved through integrated rural development) as its core objective.

Recommendation 2. This new federal-provincial policy framework for revitalized fisheries should include clear recognition of the interdependence that exists between fisheries resilience, integrated rural development and the resilience of coastal communities.

Recommendation 3. The federal and provincial governments, the FFAW and industry should bring representatives of coastal municipalities and of other sectors more fully into fisheries discussions, so that they are better aware of what is happening in the industry and can provide input on issues that are vital to the future resilience of both our fisheries and these communities.

Recommendation 4. The new policy framework should include a carefully developed strategy for supporting the viability of small and medium-scale owner-operator enterprises. This should include attention to the intergenerational transfer of harvesting and processing enterprises and their assets in a way that ensures these are retained, wherever possible, by people living and working in the regions adjacent to the resources on which they rely. Developing this will require a labour market study of employment and recruitment, since both of these are essential to revitalization.

**** Recommendation 5.** The federal government should provide the investment needed to ensure that it is able to live up to its commitments in international agreements, including implementing the ecosystem-based management approach to which it is already committed.

SECTION II: CONSERVATION AND MANAGEMENT RECOMMENDATIONS

**** Recommendation 6a.** The federal government should commit to the further development of nested governance structures, with policies developed through open consultation, and with decision-making being carried out as near as possible to, and with the involvement of, those affected. Policy-making will still need to take into account larger societal concerns and the interests of future generations.

Recommendation 6b. As part of the better-developed nested governance structure, the Province should increase its capacity to participate as a major stakeholder in fisheries science and management, particularly as these affect coastal communities.

Recommendation 6c. The provincial and federal governments should invest more fully in the science, governance and integrated development of our inshore and coastal zone. They should work with the university, industry and community groups to establish a coastal community observatories network (C-CON) in the province. C-CON should have the capacity to carry out interdisciplinary, community-engaged collaborative research that cuts across disciplinary and institutional boundaries, and links resource management and conservation concerns to those related to institutional and infrastructural requirements and regional economic development priorities.

Recommendation 6d: This revitalized science and governance system should be based on collaborative science and management principles that ensure that fish harvesters and others are involved in designing the research, carrying it out, and interpreting the results. It must include the development of a conservation strategy for each of our fisheries and for different parts of our marine ecosystems. Those strategies should be monitored and evaluated on a regular basis.

SECTION III: INDUSTRY-RELATED RECOMMENDATIONS

****Recommendation 7.** The federal government should retain and enforce the owner-operator and fleet separation policies and the policy around controlling-agreements.

**** Recommendation 8.** The federal government, with support from the FFAW, the provincial government, and other groups, should develop strategies to enhance the longer-term resilience of our small and medium-scale owner-operator fleets.

**** Recommendation 9.** The federal government should ensure that a core objective of its strategies to address vulnerability is to protect the viability of these fleets into the future, through balanced and coherent policies arrived at through transparent processes.

**** Recommendation 9a.** An unbalanced policy that the federal government should review and reject is the ‘last-in-first-out’ policy (LIFO) in the shrimp fisheries. It appears to have been arrived at through non-transparent processes. More importantly, it will undermine the diversity and resilience of our owner-operator shrimp enterprises by allocating the vast majority of the quota cuts to those owner-operators thereby threatening these enterprises’ future viability.

Recommendation 10. The federal and provincial governments should work with the FFAW and other groups to ensure that the resources on which the owner-operator small and medium scale fleets depend are sustainably managed and not intercepted by boats from other sectors.

****Recommendation 11.** It is time for the provincial government to launch a systematic investigation into the history and effects (past and present) of the Minimum Processing Requirements. This should include an assessment of the full range of other types of strategies that might be used to achieve, or ideally exceed, the capacity of these Requirements to support diverse fisheries and to anchor fisheries wealth in coastal areas, where it can contribute to economic development.

Recommendation 12. The provincial government should then work with the federal government, the FFAW and industry to develop new mechanisms for processing and marketing that will anchor fisheries employment and wealth in coastal areas, where they can contribute to economic development.

Recommendation 12a. All levels of government and industry, with input from municipalities, should identify optimal ways of organizing harvesting and processing licensing and management that maximize the wealth (including employment) generated from these resources, and then anchor that wealth in the relevant regions and the province as a whole.

Recommendation 12b: Instead of concentrating our attention on only a few species -- crab, shrimp, lobster and cod – all levels of government, with input from the FFAW and processors (and with help from the university and other organizations as appropriate), should be considering the full basket of more than 50 different species that are currently landed in different regions. They should also take stock of other species, not currently landed, that could be commercialized in the future.

Recommendation 13. All levels of government should help to carry out market analyses for all of these species, including markets for fish and shellfish of different qualities and sizes, and develop a comprehensive marketing program for these species.

Recommendation 13a. The marketing program should seek to develop new and existing national, as well as international, specialized market niches for seafood products.

Recommendation 13b. It should also include the development of fair-trade marketing options that -- unlike Marine Stewardship Council Certification (our current focus) -- emphasize fair wealth distribution as well as sustainable fisheries. This will help to ensure that those harvesters and processors who are investing in both stewardship and their communities, receive a price/wage premium for their products.

SECTION IV: COASTAL COMMUNITIES RECOMMENDATIONS

Recommendation 14. While the fishing industry will always be export-based, the federal and provincial governments, the FFAW and the industry should develop strategies to enhance the contribution of the industry to provincial food security, because this will both boost our access to excellent market opportunities and contribute to the health of our population.

****Recommendation 14a.** The provincial government should document per capita local seafood consumption in the province down to regional levels and then quickly develop a strategy to triple that consumption or more by 2020.

****Recommendation 14b.** The provincial government should ensure locally-sourced, high-quality seafood is a regular menu item in school cafeterias, public buildings and onboard ferries servicing this province. Ferries should also have refrigeration and freezer capacity available for use by passengers, as needed, to store locally-purchased seafood while they are in transit.

Recommendation 14c. The provincial government should work with the FFAW and industry to encourage the establishment of more retail seafood outlets and the establishment of community-supported fisheries where consumers have the opportunity to purchase fresh seafood directly from harvesters and learn from them about the different species, how to catch them and how to prepare them for consumption.

Recommendation 15. The provincial government should create a mechanism (ideally some form of regional government) to bring municipalities together, both with each other and with different groups in the region, to support regional initiatives. Ideally, that mechanism should have a mandate that encompasses land, shore and water-based activities inside harbours, including new developments. There will be legislative challenges to this kind of mandate, but in its absence we are unlikely to achieve the level of coordinated local knowledge, monitoring and enforcement required for effective integrated coastal zone management.

Recommendation 15a. The provincial government should ensure that this regional mechanism is adequately resourced and not subject to the changing political agendas of federal and provincial governments for its survival.

Recommendation 15b. Those involved in this new regional governance mechanism should be elected by, and accountable to, local people. They should be supported in their activities by both the federal and provincial government.

**** Recommendation 16.** The provincial government should document the benefits that fisheries bring to communities and regions in an ongoing and systematic fashion, including both the direct and indirect contributions they make.

**** Recommendation 16a.** The provincial government should also document the services coastal communities provide to fisheries, and identify things communities cannot provide, which could/should be provided at the regional, provincial or federal level.

Recommendation 17. The provincial government and other organizations (as appropriate) should end the regulatory and organizational silos that have shaped fisheries development to the detriment of the industry and our coastal communities.

Recommendation 17a. They should develop partnerships between people in the industry and other interested parties (local people and others, including chefs, artists, filmmakers, and people in ecotourism, marine ecology, engineering, business and other sectors) to foster collaboration on future initiatives, events and opportunities (including study and work opportunities) so that these people can work alongside those who are already in the industry, thus making the sector and our communities more vibrant and creative.

Recommendation 18. The provincial government should eliminate any regulatory barriers (such as the freeze on processing and retail licenses) to these kinds of partnerships. It should also identify strategies for enhancing the use of social finance mechanisms, both to support fisheries enterprises and also to integrate them better with other sectors of regional economies, such as tourism.

Recommendation 19. The provincial government should expand its provincial nominee program, and use it to (i) encourage and support the immigration of knowledgeable people from other places who have a history of involvement in fisheries and (ii) to build up the population of our coastal communities.

****Recommendation 20.** The provincial government should work with the FFAW, processors and the Workplace Health, Safety and Compensation Commission to establish a Seafood Processing Safety Sector Council as soon as possible. Opposition from processors must not be allowed to prevent action in this area.

Recommendation 21. Governments, schools and other institutions should encourage young people's interest in, and entry into fisheries, encouraging them to get the on- and off-water training they will need to thrive in this complex and challenging industry.

Recommendation 22. The governments, the FFAW and the industry should recognize that young people have key skills and assets that could play a crucial role in revitalizing our fisheries and develop strategies to incorporate those assets and skills into the revitalization process.

Recommendation 22a. That policy framework (Recommendation 1) might include the creation of special licences or quotas for young people, as has been done in Norway, to give them a chance to get on the water and experience fisheries while receiving some financial compensation for their apprenticeship work.

Recommendation 22b. The policy framework should give high schools in fishery-dependent regions the resources to encourage their students to undertake projects related to the promotion of stewardship, economic diversification, entrepreneurship, and other aspects of our fisheries. Such encouragement is already happening to some degree through the work of the FFAW but should be much more widespread.

In Chapter 6 we conclude that there are no short cuts to vibrant fisheries. They have to be resilient—economically strong, ecologically and socially diverse, conservative because the future is unknown, but with lots of space for creative innovation. Our fisheries are not broken—but they are fragile. We can and must learn from what is happening in other places and work with people in other areas to protect our fisheries and our oceans. Without this kind of focused work and investment, our future and that of our children will be much bleaker and less rich with opportunity, beauty, and diversity.

Acknowledgements

The Community-University Research for Recovery Alliance (CURRA) was funded by the Social Sciences and Humanities Research Council (SSHRC) of Canada, Memorial University, the Research and Development Corporation of Newfoundland and Labrador, and received additional financial and in-kind support from numerous community partners and groups (www.curra.ca).

The Policy Paper draws on research by CURRA researchers some of which is posted on the CURRA website at www.curra.ca and on the page where you can find the Policy Paper and linked Policy Booklet. It also draws on research from elsewhere. The cover design is by Pam Hall and the artwork and photographs come from Pam Hall's *Towards an Encyclopaedia of Local Knowledge*—a Ph.D. dissertation and body of artwork supported by the CURRA that can be found at http://www.curra.ca/local_knowledge.htm and from some of her other projects. Victoria Neville and Jennifer Dawe worked as research assistants on the paper, helping to organize meetings, find and organize relevant reports, and formatting the paper.

The Rural Secretariat and other community partners provided support and extensive input into the CURRA work. The Policy Paper was developed and written in dialogue with members of a multi-stakeholder and multi-disciplinary steering committee identified on the cover page. Members of the committee contributed substantially to helping us frame the document and provided extensive input over multiple meetings around design, content, sources and themes. Charles Mather provided Figure 3 and substantial support around the development of the shrimp fishery discussions in the text. Marc Allain, Sean Cadigan, John Davis and Charles Mather provided useful comments on earlier drafts of these documents. Katie Schleit of the Ecology Action Centre provided links to some relevant documents.



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Chapter 1 Taking stock: an overview of contemporary fisheries and coastal communities in Newfoundland and Labrador



1a Introduction

This Chapter of the Policy Paper provides a snapshot of current marine fisheries and coastal communities at the level of regions and the province. It sets the stage for a more detailed discussion in subsequent chapters of our fisheries strengths and vulnerabilities, and of strategies for building resilient provincial fisheries and coastal communities for the future.³

The world of marine commercial fisheries includes everything from the ocean to the plate: from the marine ecosystems that produce seafood, through harvesting and processing and the communities that support that work, to the markets in which it is sold. Increasingly, these fisheries also include aquaculture, recreational fisheries, nutraceuticals and other products, and in many parts of the world are intertwined with recreation, tourism, art, heritage and other kinds of activities. Fisheries are shaped by the larger *social and ecological system(s)* of which they are a part. That broader system includes biophysical dynamics of marine ecosystems, fisheries science and local knowledge, fisheries management, regional, community and household dynamics, social welfare programs, trade agreements, marine biodiversity and other matters. *Resilient* fisheries and associated communities have the capacity to respond to change (such as major ecosystem shifts like the anticipated shift from shellfish to groundfish), market changes, and other substantial shifts in the structure of fisheries, including their relationship to communities, without losing key elements of that fundamental structure.⁴

1b Newfoundland and Labrador's marine fisheries: an overview

Government reports contain information on fisheries landings, landed and production value, and trends in employment. They show that in 2012, at the level of the province as a whole, more than 10,000 harvesters and companies reported landings totalling 273,447 metric tonnes (live weight). Of these landings, 186,332 tonnes consisted of shellfish, 58,792 tonnes were pelagic and other finfish, 25,410 tonnes consisted of groundfish, and 2,913 of other types of landings including lumpfish roe.⁵ The number of seals landed in 2012 was 67,567.⁶ In 2011, the *landed value* of our commercial fisheries was \$613 million – **much of that landed by owner-operator enterprises**. Indeed, in 3Pn, 100% of the landed value came from inshore and nearshore enterprises between 1998 and 2011.⁷ The *production value* (the landed value plus the value added from processing) was approximately \$1 billion,⁸ with most of that value added happening with seafood landed by the inshore and nearshore fleets. Much of the seafood from our capture fisheries was exported, going to markets located in more than 50 countries. However, approximately 79.2 per cent of exports went to only five markets including the United States (33.5%), China (27.5%), the United Kingdom (7.2%), Russia (6.8%), and Denmark (4.8%).⁹

In 2011, there were 10,597 registered *fish harvesters* in Newfoundland and Labrador (a decline of approximately 44 percent from 1990) and, according to Statistics Canada data, processing employment had declined to about 8,000 workers employed in 114 plants—a 60 per cent decline from 1988-89.¹⁰ By 2012, an unknown (to us) percentage of our seafood was processed at sea. Onshore, in 2012, there were 83 primary processing facilities, only 3 were secondary processing plants, 4 were aquaculture plants, and 10 were retail operations (probably focusing on the local market), for a total of 100 plants. More plants were closed in 2013, further reducing employment. Indeed, in 2013, there were no plants operating in some regions such as White Bay South, raising questions about where the landings from White Bay and other such places are now being processed and about the future of communities in that region.

Roughly 100 communities have lost plants as a source of direct and indirect employment, tax, and other kinds of revenue (such as retail purchases) since the closure of the groundfisheries in the early 1990s. While the industry and communities obviously had to adapt in the wake of this and other major changes in the fishery (including the shift from groundfish to shellfish), there have been serious negative consequences for the affected households, communities and, in some cases, regions.¹¹ These consequences have included high rates of outmigration from rural areas of the province (these are well documented on the province's Community Accounts website¹²) and an increased, but poorly documented, reliance on income from intra- and inter-provincial migrant work among people who still live in these communities.

Provincial-level statistics indicate that the labour force in commercial fishing is aging (as is the labour force in much of the province as a whole). A recent summary of age distributions among registered fish harvesters provided by the Professional Fish Harvesters Certification Board showed that in 2011 only 7 percent of registered harvesters were age 31 or younger compared to 13.6 percent in 2005. That is a major reduction of *more than 50% in 6 years*.¹³ In 2009, roughly 10% of processing workers were aged less than 20, and roughly 22% were between 20 and 39 years of age (for a total of 32% under 40 compared to roughly 41% in 2004). There is thus no doubt: the proportion of younger workers in the labour forces in both harvesting and processing is declining.¹⁴

Newfoundland and Labrador's *aquaculture* sector has expanded rapidly in recent years (particularly the production of farmed salmon in Fortune Bay), with production increasing 23 per cent between 2011 and 2012. This resulted in a 2012 market value of \$113 million¹⁵ and has helped, in some regions, to compensate for employment losses in the capture fisheries. Aquaculture employment is generally less seasonal than that in inshore and nearshore wild fisheries, but it is low; government numbers vary between 467 jobs in 2012¹⁶ and 925 jobs associated with production and processing in the aquaculture sector.¹⁷ Furthermore, recent problems with disease and other challenges have shown employment can also be volatile (the Harbour Breton plant was closed in the fall of 2013).

The province also has *recreational fisheries*—some of which take place on the ocean and in river estuaries. There are recreational fisheries for salmon, cod, trout, char, smelt, mackerel, and scallops—with brook trout, Northern cod, and smelt being the main species caught by anglers. In 2010, 14 per cent of Newfoundland and Labrador residents participated in angling and 4,500 non-resident and foreign anglers fished in the province.¹⁸

1c Digging deeper

These general provincial statistics are useful, but there is a lot they don't tell us that we need to know if we are to evaluate the strengths and vulnerabilities in our fisheries and opportunities for future resilience. For instance, *the wealth that is generated from our fisheries for the people working in the industry and for the province* varies substantially across species. To illustrate, shellfish comprised 66 per cent of total landings, and generated 83.1 per cent of landed value in 2012.¹⁹ By contrast, pelagics comprised 23.3 per cent of total capture fisheries landings, but they generated only 2.9% of landed value. Clearly, then, the price fishermen get for their catch plays an important role in determining the amount of wealth a fishery generates for them and for the province.

The *distribution of landed value* across firms and regional economies also varies substantially across the industry. In 2011, for example, one or more companies landed 22,216 tonnes of surf clams valued at approximately \$36 million. We don't know how many jobs were created for the province from harvesting this resource. Landed value from 1,934 tonnes of lobster, valued at approximately \$17 million, was shared between 2,866 licensed lobster fishers widely distributed around the coast (known from the number of lobster licenses in the province in 2010).²⁰ Snow crab and northern shrimp comprise the largest volume of landings and landed value *in some regions* of the province and some sectors, but are of negligible importance in others. Furthermore, due to volatility in prices and resource availability, the relative importance of particular species to particular sectors can vary a lot over time. Average revenue/enterprise in different sectors also varies across time and between regions.

There is a relatively small difference between fisheries landed value and production (processed) value in the provincial level statistics. This supports the conclusion that, *despite extensive rationalization and down-sizing, our fishing industry is still largely focused on volume versus value-added production and marketing* (at least within the province).²¹ In the case of some species, such as yellowtail flounder, this focus on volume has increased in recent years, with more yellowtail flounder now exported unprocessed from the province than in the past. Other species undergo some processing in the province, but there is no longer any value-added for the region where they are landed, because there are no longer any plants in these locations. One example of this is White Bay South—a region with a long history of engagement in the fishery and limited alternative sources of employment. A second example is Black Tickle off the Labrador coast.

Limited resource supplies, improving productivity and the continued emphasis on volume over value-added production and diversified niche markets have all contributed to *high levels of seasonality in key parts of the industry*. When considered alongside changes to the Employment Insurance system in the 1990s (that affected processing workers more negatively than fish harvesters)²², all these factors have come together to generate low incomes and sustained social and economic vulnerability among processing workers in particular. It is not surprising, then, that the labour force is aging rapidly. That, in turn, helps explain why -- despite substantial rationalization in the processing sector (more than 100 plants closed since the 1990s) and high rural unemployment -- some companies appear to be having difficulty recruiting workers. Hence, in 2012 at least one company was able to justify bringing into an industry that has been characterized by labour surpluses since the late 19th century, a number of Thai temporary foreign

workers (TFWs) to process seafood.²³ Another reason why companies may be having difficulty finding and retaining processing workers is a history of failure to prevent the development of serious occupational illnesses like shellfish occupational allergy, asthma and work-related musculoskeletal disorders, resulting in work-related disabilities.²⁴

1d West coast Newfoundland fisheries -- What regional level analyses can tell us

These provincial-level patterns are echoed in the detailed statistical descriptions of patterns and trends in fisheries in NAFO areas 3Pn and 4R on Newfoundland’s west coast, where the CURRA research was focused. Reports produced by Sharmane Allen (DFO) for the CURRA and posted to our website,²⁵ show that in recent decades, Area 3Pn has had only inshore and nearshore fishing enterprises. Allen estimates that in 2011, 177 people participated in these fisheries. Between 1998 and 2011, the number of active inshore harvesters declined by more than half (from 151 to 60), but the number of active nearshore longline and gillnet enterprises (from 18 to 23) did not substantially change. During that period, inshore enterprises landed 51 species (Figure One), making up 1 per cent of provincial landings and landed values. Between 1989 and 2004, cod was the main species landed, but cod landings declined dramatically after 2004, while lobster landings increased more than fivefold. Landings of lumpfish roe, American plaice, herring, and white hake were very volatile between 1998 and 2011.

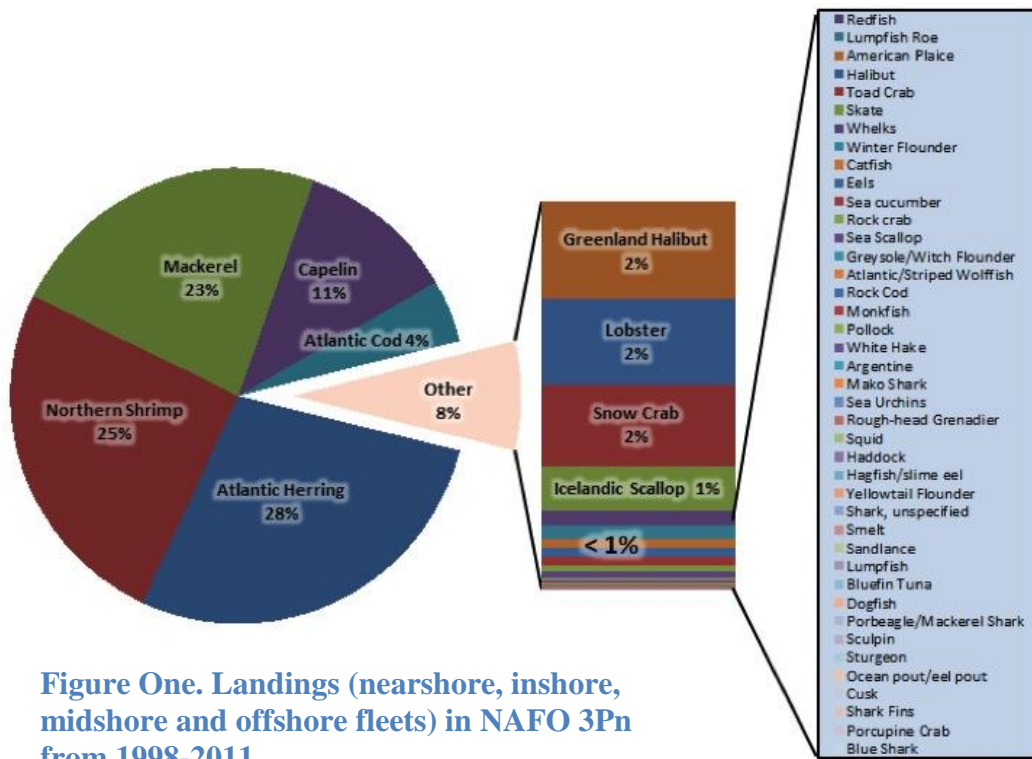


Figure One. Landings (nearshore, inshore, midshore and offshore fleets) in NAFO 3Pn from 1998-2011.

In 3Pn, *nearshore* landings differed substantially from those in the inshore, with “greysole, cod, redfish, skate and American plaice accounting for 37, 27, 12, 9, and 5 per cent respectively”²⁶ in the nearshore landings. Between 1998 and 2011, the average landed value per *inshore* enterprise was \$26,000 (peaking in 2007-2008 at about \$35,000). This compared to \$78,000 for each *nearshore* enterprise (peaking in 1998-1999 at roughly \$100,000). Over the past decade, however, landed values in the inshore and nearshore have become much more similar, since lower cod and grey sole landings have reduced nearshore values, while increased lobster landings have enhanced inshore landed values.

In both the inshore and the nearshore sectors, the price/kg for key species varied quite a lot between species and over time, suggesting that better average prices for some core species, along with improved quotas for cod, could substantially improve enterprise earnings in the region into the future. However, access to cod may be constrained by a government commitment to allow midshore, <65 foot trawlers from 4R back into this fishery once the Total Allowable Catch reaches 9,000 metric tonnes -- even though that is a very low level compared to historic catches.²⁷

Area 4R is much larger than area 3Pn, and has many more fishing enterprises. There are *inshore, nearshore, midshore and offshore fleets*, including a longstanding owner-operated shrimp fishery and midshore and offshore purse seine fisheries. *Midshore* and *offshore* landings are almost exclusively pelagic—mackerel, capelin and herring – species that are also important to the nearshore fishery (Figure Two). In 4R, as in 3Pn in recent years, there has been *substantial price and landings volatility*. For example, the value of seal pelts was more than \$3 million in 2006 but fell as low as \$12,104 in 2011. In contrast to 3Pn, lobster landings declined between 2008 and 2011. Finally, the gap in average landed value between inshore and nearshore enterprises for 1998–2011 was much greater than in 3Pn (\$20,000 compared to \$162,000).²⁸

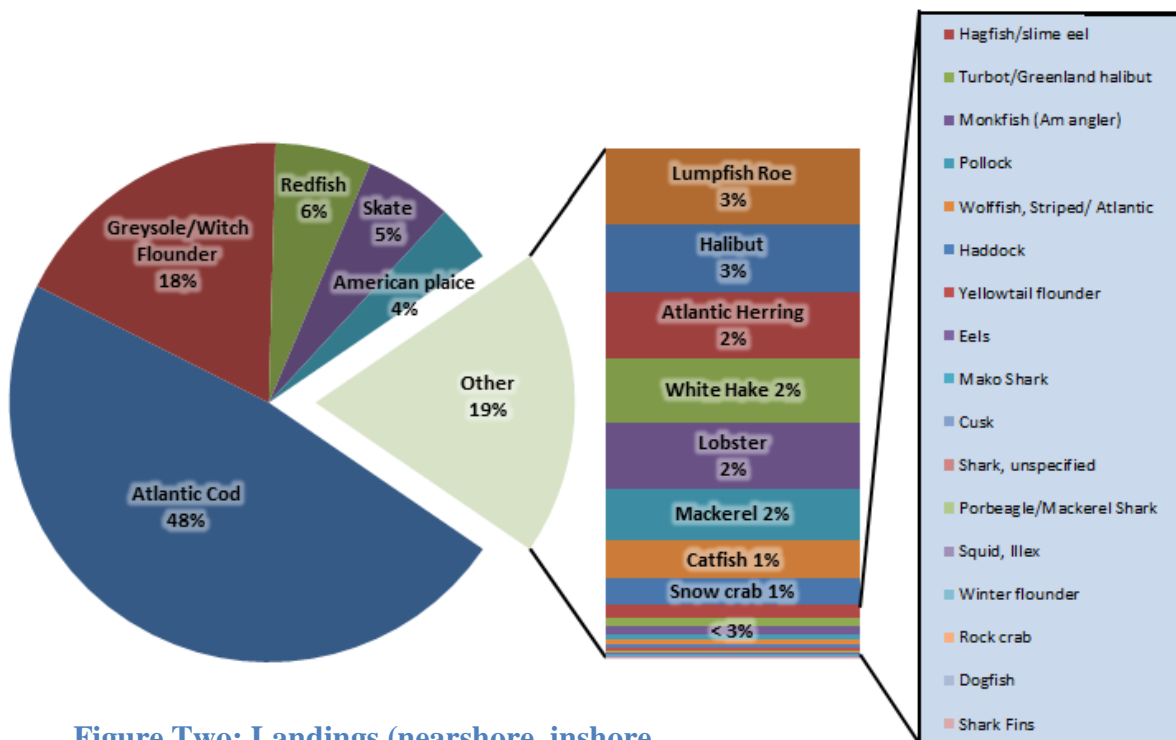


Figure Two: Landings (nearshore, inshore, midshore and offshore fleets) in NAFO 4R from 1998-2011.

1e What this overview shows

This kind of detailed examination of changes over time in provincial fisheries at regional, sectoral and species levels, illustrates the *diversity, complexity and volatility of our fisheries*. Across the province, the most valuable *species* vary from area to area, from fleet to fleet and year to year – as do prices, quotas/availability and effort. Thus landed value and actual incomes vary across regions, time and sectors – realities that need to be taken into account as we look for ways to build resilient fisheries and coastal communities in the province in the future. We have big, vertically-integrated companies controlling large amounts of quota in some fisheries such as offshore shrimp, surf clams, flounder, redfish, herring and mackerel, whereas small- and medium-sized enterprises completely control other fisheries, such as lobster and snow crab. The fleet basis and income-generating potential of the fisheries varies across sectors (inshore, nearshore, midshore, offshore), from region to region, and across time. Some fisheries are *capital intensive* and thus need to be operated year-round, harvesting large volumes of seafood if they are to be profitable. Others are more *labour intensive and seasonal*. This makes them more resilient to certain kinds of changes in the industry, because of their lower capital and labour costs, and creates opportunities for harvesters and processing workers to combine fisheries work with other kinds of income-generating activities. However, such enterprises often have low incomes from fisheries and may have difficulty getting good prices for their product.

This overview and our regional examples also remind us of the need to be aware of how regionally- and species-specific policies (such as the policy to permit <65 foot trawlers from 4R back into the 3Pn codfishery once the Total Allowable Catch reaches 9,000 metric tonnes) can influence harvester options and fishery dynamics in different contexts.

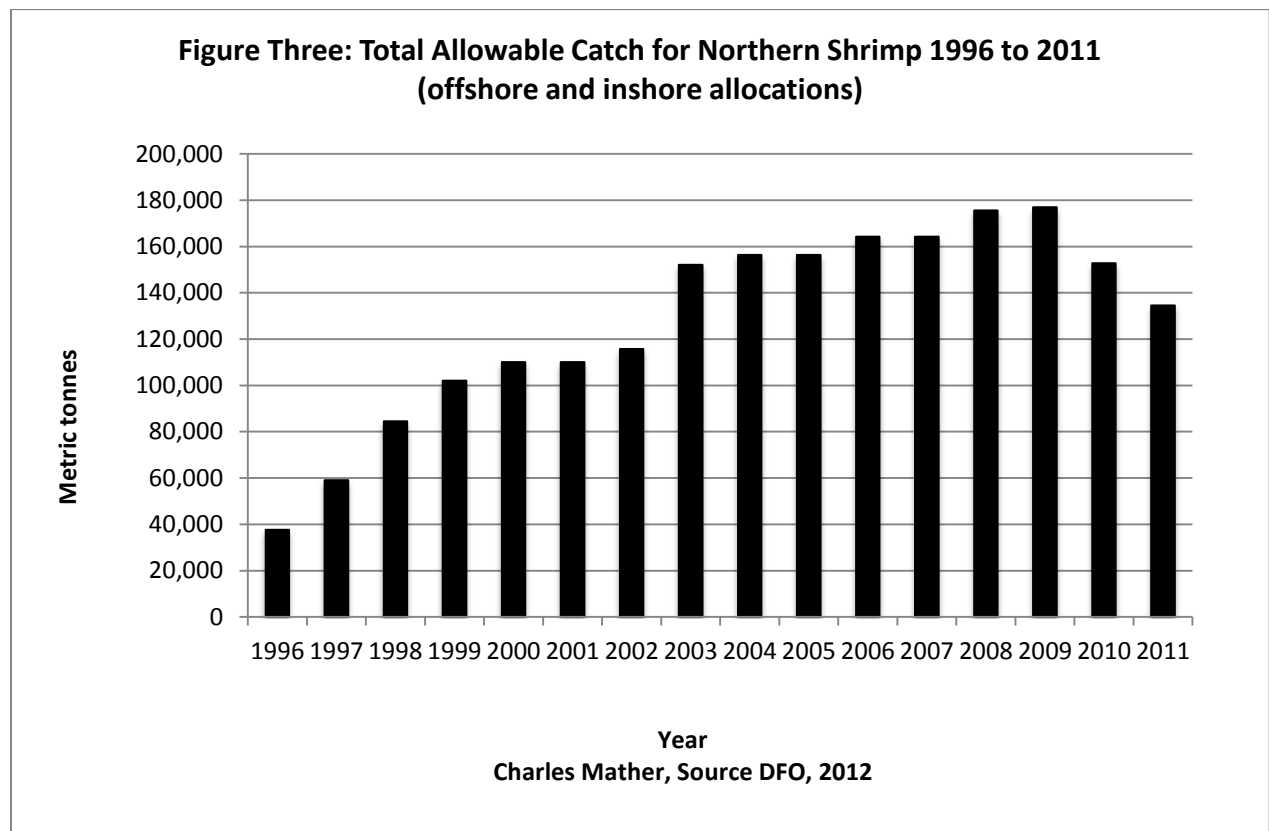
There is also substantial diversity in our *processing sector*. Some happens offshore (on vessels); others process both on and offshore; a substantial amount of processing takes place onshore and processing takes place outside the province and even sometimes the country. Some small, locally owned onshore plants derive incomes from both *processing* and *retailing* locally produced seafood. Others are larger volume and more capital-intensive operations, specializing in a single species (like shrimp) and on export markets.

The *shrimp fishery* is a good example of the diversity and complexity of our fisheries. Figure Three²⁹ shows the volume of shrimp landed between 1997 and 2011, since the introduction of shrimp permits and then licenses in the inshore sector. The inshore allocation is divided among enterprises holding more than 300 licenses (an estimated 1500 harvesters) that are relatively widely distributed from Port au Choix on the west coast, around the Northern Peninsula and in Southern Labrador and area 3K; their shrimp is landed and processed onshore.

In 2009, when the TAC was at its peak, 10 corporate holders of offshore licenses controlled almost 40,000 tonnes of shrimp, or just under 60% of the share of the TAC going to offshore license holders and 22% of the total TAC (offshore and inshore) of 176,868mt. Much of the remainder of the offshore share of the TAC (40%) was allocated to aboriginal groups (based on a requirement to take into account Aboriginal and treaty rights to fish in the policy),³⁰ while other kinds of community-based enterprises such as the Labrador Fishermen's Union Shrimp Company, co-operatives and St. Anthony Basin Resources Incorporated (SABRI) also received some. These latter organizations are, in diverse ways, bound by more or less explicit obligations

to use the revenue resulting from these licenses (royalties) to support inshore and nearshore fisheries, including making investments in processing and regional economic development.³¹ The allocation of offshore licenses and special allocations to them has generally had a very positive economic and social impact on the relevant regions and groups. It has been shown to support diverse fisheries and balance efficiency with concerns of equity and economic diversification – concerns that are not addressed in the share of the fishery that is exclusively under corporate control.³²

Licenses and special allocations to different entities have been used, in part, to support the building up of small and medium-scale shrimp enterprises and to keep them (and their shrimp allocations) in often-remote regions by supporting the construction of plants and other infrastructure that they need to process their catch. These enterprises have also generated employment for processing workers, and so have played a key role in revitalizing fisheries that were devastated by the groundfish moratoria of the early 1990s.



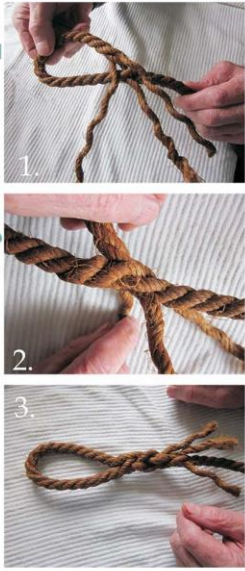
1f Conclusion

This Chapter makes it clear that we need to go beyond simplified descriptions of fisheries to an awareness of their complexity and diversity. That is, we need to identify both their strengths and weaknesses at multiple and appropriate scales, because only thus can we understand whence comes both their resilience and vulnerability, as well as their past, present and potential future contribution to fishing households, communities and regions and to the provincial economy.

The current industry structure seems messy and haphazard to some people – including some industry leaders whose arguments for dramatic change we discuss in Chapter 2. However, that complex structure is, to a substantial degree, the product of our commitment as a province to balancing the needs of a diverse industry (that has to interact with somewhat volatile resources and markets), with those of the community and the province as a whole. Its complexity also reflects our commitment to balancing efficiency in the industry with equity and other concerns such as historical attachment, regional dependency and other priorities. The structure is also the product of a history of relatively democratic decision-making within which the powerful voice of big companies has been counterbalanced by input from an active and strong union representing fishermen and plant workers organized at sectoral, regional and community levels; by input from small processors; and also by input from politicians concerned about the welfare of the communities they represent. For these reasons, we think the complexity and diversity of our marine fisheries, with their combination of a strong owner-operator base, regional landing sites and community-based processing of a substantial portion of the catch (combined with some vertical integration in key areas) fits well with the ecological diversity and volatility typical of marine fisheries, the fisheries dependency of many of our coastal communities, and the uncertainties that come from engagement in diverse markets in a changing world. We return to this argument in Chapter 3.

On the Utility of Rope and Twine: SPLICING PRACTICE

Various kinds of rope and twine are used for a vast array of activities and most fishers are adept at **HITCHING** (a knot used to secure a line to a spar, ring, or post), **WHIPPING** (binding the end of a rope with lighter twine to prevent fraying), **MOORING** (knots specifically used to secure a vessel to a wharf, stage head, or haul-up/moorings) and **SEIZING** (lashing two spars, ropes or parts of the same rope tightly together). (When done around a single rope this binding or lashing is called **SERVING**). **SPLICING** (to join two ropes or make a secure eye in the end of a rope, by interweaving its strands), like other forms of knot work, takes practice. Most guys learn through watching, then trying, then sometimes being shown, then trying more until they are expert. They learn through observation, doing, and **PRACTICE**.



Guy Bussey in St. Lunaire-Griquet splicing three-strand rope.



Found on the public wharf in Main Brook - more than 20 or 30 bits of rope-spliced, whipped, seized and served: evidence of practice.

A SPLICED EYE THAT IS SEIZED FOR STRENGTH

LASHING or SERVING

Chapter 2 Are our fisheries “broken”?



2a Introduction

In recent months, some industry leaders have maintained that our fisheries are “broken” and have therefore called for major changes in the industry. In this Chapter, we challenge the validity of this view and assess existing evidence concerning claims about the benefits of the panacea that they and others commonly bring forward to ‘fix’ the industry – Individual Transferable Quotas and vertical integration. This discussion sets the stage for the rest of the paper, in which we discuss *what is known and not known* about the real strengths and vulnerabilities of our current fisheries and then provide some recommendations for moving forward.

2b The corporate argument for brokenness

Claims that our fishery requires particular kinds of radical change are not new—they have been with us for more than 150 years and have always been related, to a substantial degree, to struggles for control over our fishery resources and the wealth that control can deliver.³³ Today, those who are arguing most strongly for radical change include some representatives of a handful of large, vertically integrated companies in the industry. There has been a push, from these company representatives, for at least three decades, for the more widespread introduction of ITQs into our fisheries, and for the elimination of policies (like the fleet separation and owner-operator policies) that limit companies’ ability to directly own and harvest a larger share of quotas.³⁴ They present their proposed changes as the panacea for achieving sustainable fisheries and year-round, good jobs that will attract young people and capital to the industry and help us compete in a changing global marketplace.³⁵

However, a significant body of international research, including that of Nobel laureate Elinor Ostrom, shows that ITQ and associated vertical integration policies are not likely to deliver such benefits. Furthermore, those policies have the potential to substantially erode the contributions of fisheries to our coastal communities and society as a whole, as well as narrow future options for management, for economic diversification, and for the future resilience of our fisheries. All that substantial body of research points to the dangers of looking for this and other kinds of panaceas for fisheries governance challenges.³⁶

Are ITQs a panacea? The international evidence

In a careful review of the experience with ITQs in Canada, New Zealand, the United States and Iceland, McCay observes that “ITQs make commodities out of the right to catch wild fish and shellfish,” bringing market forces to the task of allocating shares of fish and shellfish between different groups.³⁷ Her research and that of others³⁸ (we provide a sample below) has shown that ITQs can erode the incomes and working conditions of harvesters, particularly crew members;

they can contribute to the ‘greying’ of fisheries work; they can have disproportionately negative impacts on small-scale processors, and lead to widespread plant closures and other changes that have negative effects on communities. ITQs can also contribute to problems with overfishing, and are associated with *high* management costs, although both of these are problems they are supposed to solve. In her comparative analysis of the history of ITQ systems in four countries, McCay finds that the actual or potential negative impacts of ITQs on equity, employment and communities have meant that they are widely associated with subsequent strong pressures on government to take steps to constrain those impacts, including returning some resources to community control, often at substantial public expense.

In *Iceland* the introduction of ITQs resulted in the closure of many fish plants and has led to ongoing conflict and management challenges. Olson’s review of the research on ITQs in Iceland found that they led to consolidation and concentration of ownership favoring larger-scale operations, a decrease in shore-side employment, an increase in vessel capacity, high leasing costs, debt dependence, violation of cultural norms, and negative impacts on community sustainability.³⁹ Indeed, some researchers have gone so far as to argue that the ITQ system and related financial speculation contributed to the collapse of the Icelandic economy in 2008.⁴⁰

Carothers’ extensive research on *Alaskan* fisheries showed, in a recent survey of fishermen in Kodiak, that a majority of the respondents believed privatization of access to the resource (ITQs) had negatively affected the community. This included “contributing to loss of fishing town identity, demographic changes -- a “graying” of the fleet, negative social shifts, a widened rich versus poor gap in the community, a downturn of the local economy due to loss of jobs and services, absentee owners and reduced crew shares.”⁴¹

In *British Columbia*, where the fishing industry has undergone extensive rationalization in recent decades, an industry-sponsored 2013 labour market report found that “the fishing industry faces daunting challenges in terms of an aging workforce that is difficult to retain”. The same report noted the problems created by “emerging certification and skill requirements set by regulation, and barriers to the intergenerational transfer of fishing assets and the entry of young people to the vocation.” Indeed, young people are likely to be disproportionately negatively affected by privatization of access to fisheries resources and related reductions in the number of plants, fleet downsizing, and vertical integration, because they have less seniority in fishing and processing, higher debt loads, and less control over licenses than do older workers and enterprise owners.

Pinkerton and Edwards’ research on the *B.C. halibut fishery*, (one of the best managed ITQ fisheries globally), found that the regime did not achieve its stated objectives of ‘stability and viability of the existing fleet’. In this fishery, quota owners often lease quota to fishermen (sometimes by means of processors) to do the harvesting, rather than harvesting the halibut themselves. The relationship between catch value, fishing costs and the quota lease price in the leasing arrangements in this fishery, showed that quota *owners* were retaining roughly 70% of the catch *value*, leaving skippers and crews only 30% of that value with which to both cover their costs of fishing and generate incomes for themselves.⁴² Those who had to lease quota from the owners were seriously disadvantaged and often took on significant debt, whereas those who originally received the quota benefitted substantially. The combination of this and other factors threatened the stability and viability of the enterprises of those who leased quota.⁴³

ITQs are generally claimed to improve fishing safety, by reducing the race to fish and improving harvester control over decisions about when and where to fish. However, the claim assumes that it is the quota *owner* who is doing the fishing. Fishing safety is a more complex matter than that, potentially influenced by a wide range of factors.⁴⁴ For example, recent evidence from research on the *Tasmanian* southern rock lobster fishery shows that if the quota is owned by someone else and leased to the harvester, or if the harvester is an employee of the owner, this safety premium is likely to be compromised.⁴⁵

A recent detailed investigation of parts of *New Zealand's* ITQ-based fisheries found that the exploitation of fishing crews by some companies had gone even farther than had happened in the BC halibut fishery. These companies had chartered 27 foreign trawlers to fish their quotas inside New Zealand's exclusive economic zone. This chartering practice limits the value contributed by that fishery to New Zealand in terms of employment generated.⁴⁶ In addition, the study found that, "for over three decades, forced labour has been a key element of the New Zealand foreign chartered vessel business model."⁴⁷ Documented aspects of this forced labour included exceptionally prolonged working hours, violence, hidden contracts, and 'slave-like' conditions aboard chartered South Korean vessels. The New Zealand ITQ-based quota management system has also been associated with the exiting of predominantly small-scale fishers from the industry encouraged by, among other things, the compliance costs associated with the system, the high cost of quota and uncertainty about future quota management system policy.⁴⁸

Research done in *New England* has found that quota management mechanisms like ITQs tend to produce fisheries that are vertically integrated and mobile, with landings concentrated in few communities, thus 'unmaking' (according to Brewer⁴⁹) local capacity to adapt to social and ecological change as more traditional approaches to fisheries are marginalized or destroyed. Brewer also argues that the introduction into the *New England* groundfisheries of ITQs and other forms of limited access privileges held by groups such as fleet sectors, appear to be "at odds with" ecosystem-based management. These practices constrain progress on the implementation of ecosystem-based management and on related efforts to address habitat protection, interspecies interactions, cross-scalar interactions, related threats to ecosystem goods and services, and the capacity of fisheries to adapt to change and surprise.

One reason for the failure to move forward on ecosystem-based management is the focus by fisheries scientists and managers on the single-species stock assessments associated with quota-based management, to the neglect of attention to underlying ecological complexity. Thus, for example, the protection of local stocks is neglected. Another problem with ITQs is the consequent neglect of such management tools as area closures and gear restrictions. This is further evidence of the potential ecological consequences of ITQs in some contexts.

One of the reasons why management costs are high in ITQ-based fisheries is that they bring with them strong incentives for high-grading, discarding and under-the-table sales.⁵⁰ For instance, *New Zealand* research has documented extensive discarding and high-grading activities on the foreign trawlers in its fisheries, and these are practices vulnerable foreign workers are under pressure not to report.⁵¹ Hidden fishing mortality is a serious threat to the accuracy of stock assessment science and thus, where such activities are not prevented (and preventing them can be costly), there is a substantial risk of overfishing in ITQ-based fisheries, as happened on Newfoundland's west coast in the 1980s.⁵² Indeed, Beddington et al. found that management

costs are highest in some of the most thoroughly privatized fisheries.⁵³

Bromley, a fisheries economist, argues that fundamental flaws in the economic theory on which ITQs are based are among the reasons why they don't deliver as promised. One of their major failings, he notes, is that they freely gift in perpetuity an allotment of a fishery to the members of a specific fishery, which those members can then lease or sell to others, with no attempt being made by governments to require state capture of part of the resource rent. Because of this and the flawed assumptions on which they are based, ITQs do not achieve the gains in stewardship, efficiency and rent that they claim. They also support the development of monopolies, thereby undermining competition and contributing to excess profits. This means that government (at whatever level: regional, provincial, national) foregoes resource rents that belong to the public, rents that could and should be used for effective management, economic diversification, the promotion of equity and other public goals.⁵⁴

In the conclusion to her overview of the literature on the effects of fisheries privatization, Olson says that, while its effects can vary substantially across contexts, groups and time, “negative effects from privatization often fall on less powerful segments of the fishing industry, namely the crew, or the small business owners without a fleet of vessels or vertically integrated business.”⁵⁵

Those who are better able to take advantage of such measures are then increasingly able to exert control in various markets, such as leasing quota, hiring crew, or even affecting prices that fishermen receive for their product. These kinds of changes, in turn, affect the structure of communities – through changing relations between people and shifts in dominant values – and affect the viability of fishing communities as some are disproportionately impacted by geographic shifts in fishing businesses, aspiring new participants find entry increasingly difficult and smaller operations are increasingly dominated by larger ones. Thus the question of whether to introduce or further privatize fishery resources is ultimately not simply an issue of economic efficiency, but a question of what values to promote and what the future of the fishery and its fishing communities should look like and who should decide.⁵⁶

Some of the people who advocate the widespread introduction of ITQs have used the fact that the labour force in the Newfoundland and Labrador fisheries is aging to suggest that most of the job losses that would result from the introduction of ITQs would be dealt with through attrition. This, they argue, would limit the negative social impacts of ITQs. However, that ignores the fact that substantial parts of our industry tend to be community-based and located in remote areas of the province. Further plant closures and the permanent removal from these communities of access to harvesting will affect not only individuals, but also the employment opportunities of family members, as well as community economic bases. Furthermore, it is not a simple matter for displaced workers to travel substantial distances to other communities to work in the surviving plants. Such travel can add substantially to their employment-related costs in an industry characterized by relatively low wages for both plant workers and many crew members. Moreover, corporate concentration of control over quotas and plant closures will also limit employment options and thus the capacity of surviving plant workers to demand reasonable

wages. Nor should we ignore the fact that women tend to be disproportionately affected by plant closures because women are concentrated in the processing sector and have limited employment alternatives in rural areas. Female harvesters are also disproportionately at risk from the impact of ITQs on the size of the fleet, because these women tend to be concentrated in apprenticeship categories and comprise a very small proportion of core license holders.

Moreover, it is wrong to claim (as some corporations do) that, in the absence of transferable allocations, no property rights exist. McCay's research and that of others shows that ITQs are only one form of property rights in fisheries. Many other forms exist, both here and elsewhere,⁵⁷ and the strengths and limitations of all of these -- as well as what would be the best or most appropriate combination of such rights for various fisheries, regions and the province as a whole -- need to be taken into consideration in any assessment of what changes might enhance the resilience of our fisheries. For instance, lobster fishing zones and licenses are a type of formal *use right* to our lobster resources that often coincides with informal use rights to particular territories within those zones. Today, accessing these use rights requires the development of Integrated Fisheries Management Plans by fishermen's committees in the relevant zones prior to the exercise of these rights. Revealingly, this use rights system has produced a range of conservation initiatives, including slot fisheries, v-notching, marine protected areas, and trap limits, the conservation benefits of which can be assessed—as was done recently through a CURRA-affiliated research initiative.⁵⁸ The use rights system has also supported the development of alternative kinds of programs to reduce effort while keeping access to the resource in the region and in the hands of small-scale fish harvesters and their families.

All of the above examples and related discussions pose serious challenges to corporate claims. They provide evidence-based refutation of arguments that making a commodity out of the right to catch fish and shellfish, removing policies that limit the ability of corporations to directly control more fisheries and leaving it up to the market to dictate access to quotas, will contribute to improved stewardship of the resource, a more productive and stable fishery, recruitment of young people into the industry, and thus create a stronger, more adaptable fishery with better wages and working conditions for those employed. On the contrary, our examples support McCay's observation that, "[t]here are 'tragedies of the privatized commons' just as there are 'tragedies of the open-access commons.'"⁵⁹ They remind us that ITQs are not a panacea for the problems in what needs to be seen as a complex social-ecological system. Ostrom's research shows very clearly that such panaceas do not exist for such systems.⁶⁰

We conclude that ITQs are unlikely to generate effective governance structures that will support economic, ecological, and social sustainability, as well as meet food security and social justice needs, in such complex and dynamic entities as marine and coastal regions and the fisheries and fishing communities within them. Those interests that propose a strategy of greater vertical integration through the fuller commodification of access rights and elimination of the fleet separation and own-operator policies are really arguing, not for the establishment of access rights where none exist, but for the replacement of an existing system of complex, diverse, regionally and historically negotiated access rights with a simplified system based on ITQs and corporate control. In the process they will significantly enhance the already substantial privilege

particular corporate groups already exercise, at the expense of others in our fisheries and also at the expense of other options that are more likely to produce future fisheries and coastal communities that are economically, socially and ecologically resilient.

2c Others who claim brokenness

There are, however, others, not in the corporate large-scale sector, for whom the fishery also feels “broken”. Fish harvesters who have invested heavily in new, expensive fishing vessels and require more quota to pay for them are likely to see our fisheries as broken, as they struggle to cover the cost of purchasing and running bigger boats – particularly in the context of low prices. Unfortunately, detailed data on *costs and earnings* (we need both sets of statistics) for different fleet sectors in the province are rare—the most recent report on this was produced in 2006. But where the data exist, they suggest bigger is by no means always better. The 2006 survey included enterprises in several fleets with vessels between 35 and 64 feet, 11 inches. It found that in 2006, the small supplementary and inshore 35 to 64-foot crab fleets were more likely to be making a before-tax profit from fishing than were enterprises in the large, fulltime and supplementary crab fisheries.⁶¹

As indicated by our data on areas 4R and 3Pn, the small boat fishery has seen a substantial decline in participation, while some harvesters (we don’t know how many) are leaving temporarily, or on a part-time basis, so they can earn some or all of their living from work outside of the fishery (such as in Alberta). Some of these harvesters want to sell their enterprises, which would likely be worth more with a quota attached. Also, fishermen and plantworkers are aging; many would like to leave the industry and may not have anyone coming up behind to take over their enterprises/jobs. These are among the problems in the industry that need to be addressed. However, this needs to be done in a way that minimizes rather than maximizes its consequences for employment, equity, regional economic development and wealth generation for the province.

2d The need for an alternative strategy

If, then, we are going to find a way to attract more young people into our fisheries and to address the employment and income needs of owner-operators, crew members, small and large scale processors and plant workers equitably, and if we are going to also ensure that we maximize the regional economic development and public benefit generated from our fisheries, then we need much wiser strategies than a narrow policy focus on ITQs and vertical integration. Others agree: according to a recent study of the Change Islands fishery, “When we asked fish harvesters of Change Islands to tell us what are the key issues facing the inshore fishery today, the term ‘rationalization’ often came up. For Change Islanders the term represents a multifaceted effort to eradicate small-scale fish harvesters in favor of larger, corporate fishing enterprises. Not only are individual livelihoods at stake, but also the traditions that go along with them, the cultural heritage they represent, and even the survival of coastal communities in the province.”⁶²

We need a strategy for our fisheries that makes the industry more (not less) rewarding for all harvesters and processors, women as well as men, young as well as older participants. We need

policies that do not permanently divide up and alienate our resources from government and coastal communities. Instead, we need a strategy that will lay a better foundation for the resilience we will need if we are to *maximize our ability* to benefit from future opportunities like expanding markets and *minimize the negative effects* of future threats.

2e Future opportunities and threats

What are those future opportunities and threats? The information we can glean about the future of fisheries is fragmentary and somewhat contradictory but it is important for any assessment of the state of our fishery and future options. We know, for example, that the volume of seafood and other marine products that will be available in the future is difficult to predict, as is their likely origin and value. This is partly because they will be affected by the extent to which fisheries are successfully managed, and by other factors like the impacts of coastal and offshore development, market changes, and a range of environmental factors including in particular, climate change and ocean acidification.

The UN has calculated that by 2050 the world's population could reach 9.3 billion. Population growth, a shortage of seafood supply, and rising wages—especially in Asia—were recently projected by one analyst as likely to fuel seafood price increases of up to 70 per cent, by the same time.⁶³

Future demand for seafood and prices are expected to increase substantially by 2050. Much of the expansion in supply needed in the future is expected to come from aquaculture, both because wild fisheries landings have levelled off and because intensive aquaculture is somewhat better suited to the needs of vertically-integrated industrial food systems than are wild fisheries. Aquaculture expansion, however, is also fuelling demand for some types of wild fish, small pelagics in particular, and this could lead to higher prices and value for these fisheries. Some other markets for wild fish are currently strong and prices can be very good, particularly in niche markets.

Some people in the province have argued that growing market demand is primarily for raw, fresh or chilled product with minimal processing – an argument they then use to justify eliminating the province's Minimum Processing Requirements in some cases.⁶⁴ Other industry representatives predict an expansion (in Asia and elsewhere), of the market for value-added goods rather than the frozen commodity products (like fillets and crab 'clusters' [of legs]) that have dominated provincial production until now.⁶⁵ While such goods could be produced either here or in low wage areas like China where production has been growing, it is fruitful to consider that we could grasp this as an opportunity for branding and selling more diverse seafood products from Newfoundland and Labrador in local, national and international markets.

The opportunities are particularly great if we think more in terms of adding wealth by producing, not only more diverse and high quality products, but also experience-based commercial activities as when seafood marketing links the consumer to the harvester (as when, for example, 'catch your own fish' means going fishing with a harvester and eating your catch in a local restaurant). We could also do much more to use our conservation initiatives in a way that enhances sea

product marketing, generating wealth both directly through tourism and educational tours and indirectly by building such markets. All of the living creatures of the sea -- algae, plants, invertebrates, fish and marine mammals, not just our current commercial species -- have the potential to fuel our coastal economies in novel ways and to engage people in the fishing industry and fisheries infrastructure. New opportunities can be seen, for example, in developing markets, not just for different kinds of seafood, but also for ingredients for the manufacturing of pharmaceuticals, nutraceuticals, cosmetics and other products.

The future effects of climate change on our fisheries, while still uncertain in detail, are likely to be very significant. In 2013, the International Program on the State of the Ocean Report concluded that a “deadly trio” of impacts: acidification, warming, and deoxygenation are affecting the ocean.⁶⁶ The report predicts that the “redistribution of commercial fish species through range shifts caused by ocean warming will lead to a 40% decrease in catch potential in the tropics by 2050, and 30-70% increase in the high-latitude zones—where richer societies and more industrialised fisheries [including our own] are located.”⁶⁷

At one level, then, it appears that some of our wild fisheries will benefit from climate change – as was suggested in a recent study of the ability of marine fisheries and aquaculture to meet future fish demand in the context of climate change. That study projected that market price increases would range from 16–42 per cent for fishmeal and from 5–50 per cent for fish oil.⁶⁸ This is potentially good news for our pelagic fisheries, but less positive for our expanding aquaculture industry. Within our pelagic fishery, that trend could encourage us to dump our capelin, herring and mackerel into such high-paying markets, while neglecting others that might be more important in the long term. Moreover, the authors suggest that large price increases could trigger sequential stock collapses due to overfishing. Weak stock assessment capacity for the relevant species will contribute to this risk.

We also need to be aware that, while ocean warming is projected to substantially increase fish supplies and the ‘catch potential’ in our waters, it will also substantially reduce catch potential in many other parts of the world, thus increasing market demand for larger landings.⁶⁹ The negative effects of ocean acidification will be greater in northern latitudes including here. The combined result of acidification *and* the movement north of fish species could therefore be increased competition for space between species in constricted ‘green pastures.’⁷⁰ There will also be accompanying food web changes as shellfish fall prey to ocean acidification and invasive species increase, as will the types and probable abundance of some kinds of pathogens. All of these impacts will affect biodiversity and catch potential. Furthermore, the potential benefits of some of these changes to our fisheries could easily be offset by the costs to coastal communities and the province as a whole of sea level rise, coastal erosion and flooding, wind damage and other problems caused by global warming.

2f Conclusion

Our fisheries, then, are diverse, landing many species that vary somewhat from region to region and fleet sector to fleet sector. We have small- and medium-sized enterprises that continue to be widely distributed around our coasts. We also have small processors and large vertically-integrated firms that harvest, process and market our marine resources in different parts of the world. Our fisheries are somewhat volatile – which species is most profitable varies from fleet to

fleet, over time and across regions and with climate change and ocean acidification, that volatility is likely to increase. This highlights the importance of multi-species fisheries that are still largely (although decreasingly) community and regionally-based. In Chapter 3 we explore these and other strengths in greater depth. Our fisheries also have real vulnerabilities that we will discuss in some depth in Chapter 4. Here we note that *being vulnerable is different from being broken* – “broken” implies that we need to throw out what we have and start over. That would be a fundamental mistake.

Corporate calls for the introduction of ITQs across our fisheries and for the elimination of constraints on vertical integration are not new, but they are particularly forceful now. There are some reasons for this. Groundfish quotas are expected to *increase* in the future, but under current management policies, the inshore and nearshore fleets have priority access to cod until inshore allocations reach certain levels. This is a problem for the vertically integrated companies that ITQs would help solve. However, it would be solved at the expense of rural regions and the provincial economy as a whole.

In fisheries where licenses and quota are controlled by owner-operators, “trust” or so-called controlling agreements are one of the mechanisms used by *processors* to control access to raw material supplies for their plants. These agreements tie harvesters to particular processing companies in exchange for access to the capital needed to build up and operate an enterprise: a strategy that mirrors the ‘truck system’ of the old merchant fisheries of the 18th and 19th centuries. ITQs would eliminate the need for trust agreements between harvesters and processors, by allowing the processors to directly control more of the quota -- a pressing matter for vertically-integrated corporations that own processing plants, since trust agreements violate the owner/operator and fleet separation fishery policies captured in the *Policy for Preserving the Independence of the Inshore Fleet in Canada’s Atlantic Fisheries (PIIFCAF)* -- they were supposed to be eliminated by April 12, 2014.⁷¹

ITQs also have other advantages from the corporate perspective. Most vertically integrated companies already have offshore quotas and own, or have the capacity to lease, trawlers to harvest these quotas. The widespread introduction of ITQs into other parts of the Newfoundland and Labrador fishery would enhance corporate assets (already substantial in many cases) and increase profit-generating capacity. By this means, such changes would, “grow the pie” of corporate fisheries wealth. However, in the absence of mechanisms to ensure that substantial wealth and employment from our fisheries is captured in the province, particularly in rural regions and in the hands of the people doing the work in the industry, that corporate pie could grow very large, while the provincial, regional and owner-operator and employee share of fisheries wealth dwindles.

There is no doubt that our fisheries are facing real challenges, as are our oceans and coastal communities, but this is not unique to this province or even to Canada. It is a global challenge. To some degree the challenges we face are simply part of an industry that is based on natural resources that live and grow in an environment over which we have little control and that must continue to be largely export-oriented. There are, however, huge opportunities in our fisheries. They have the potential to generate more and different kinds of wealth and to distribute that wealth as, or more, equitably than they currently do in this province (and elsewhere).

The important question is: What kinds of policies and practices would be most likely to generate economically, socially and ecologically sustainable fisheries and coastal communities for Newfoundland and Labrador in the future?

A highly simplified, corporate, vertically integrated fishery is not the only, or the best, option for the future. We can and should move forward to create a future fishery that draws on and extends our existing strengths. We can do that by ensuring that a substantial share of our fisheries and marine resources is left under the control of people living in coastal communities, willing to invest in local and regional fisheries and do the work needed to make them succeed. This work must include an obligation as well as the support needed to steward them for current and future generations, and to use them as an important anchor for regional development and for the benefit of the province as a whole. Our recommendations for changes that can help make this happen can be found in Chapter 5.

How to Read the Wheelhouse of the *Lady Kearney*

Every fisher holds a range of knowledge and reads the world through different means. Sometimes it is the changing weather, sometimes the changing regulations at the Department of Fisheries and Oceans and sometimes it is the sound of an engine, the colour of a sky, the lats and longs or the contour lines on a chart. Everyday a fisher is reading everything he can see by all the means available.

SONAR and SOUNDER

Sonar and sounder technology detects depth, movement and mass. If you know how to read them, they will tell you about water depth, bottom configuration, and moving objects, including schools of fish. The sounder is sometimes called a "fish-finder."

RADAR

Radar indicates surface objects. If you know how to read it, it will tell you about land, icebergs, other vessels and their movement or distance from your current location.

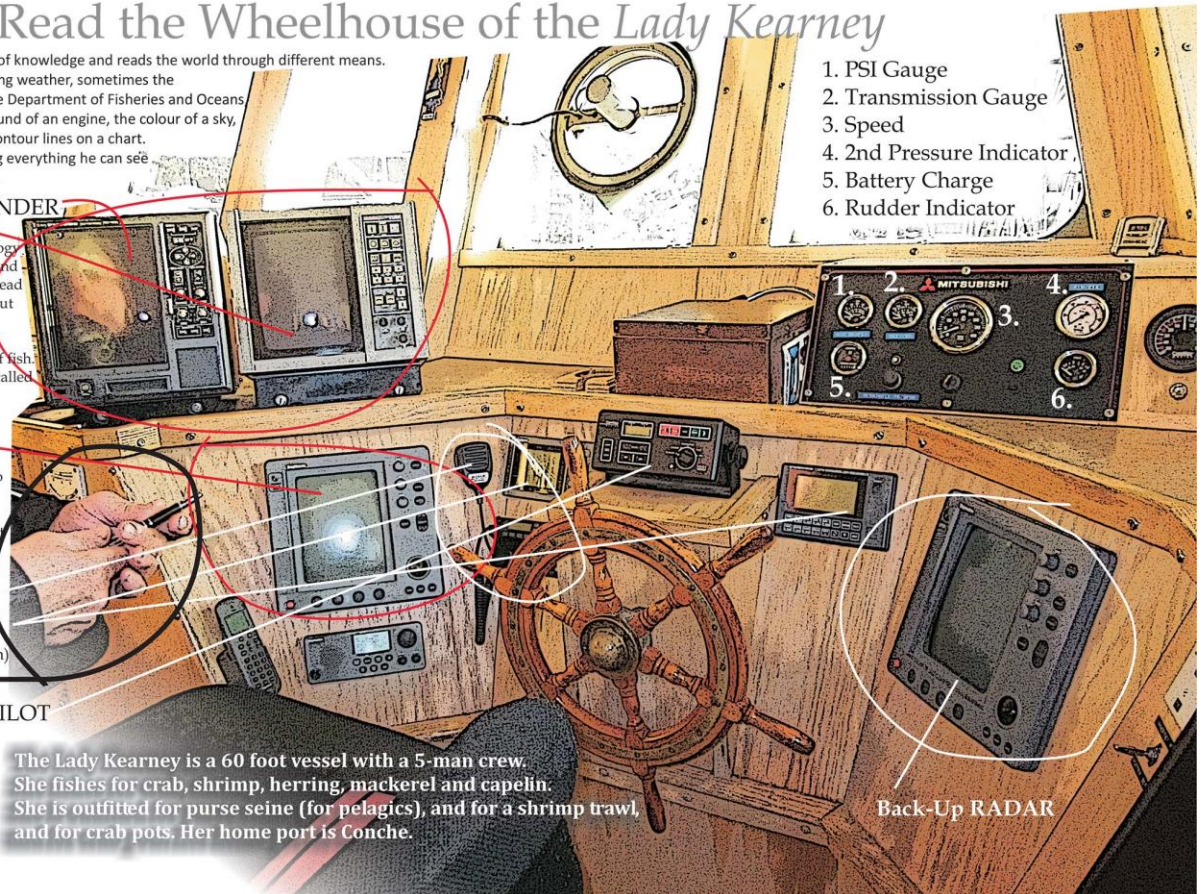
VHF RADIO

GPS and Back-Up
(Global Positioning System)

REAL PILOT

AUTOMATIC PILOT

1. PSI Gauge
2. Transmission Gauge
3. Speed
4. 2nd Pressure Indicator
5. Battery Charge
6. Rudder Indicator



The *Lady Kearney* is a 60 foot vessel with a 5-man crew. She fishes for crab, shrimp, herring, mackerel and capelin. She is outfitted for purse seine (for pelagics), and for a shrimp trawl, and for crab pots. Her home port is Conche.

Chapter 3 The strengths of our fisheries and coastal communities



3a Introduction

This Chapter discusses the real strengths of contemporary Newfoundland and Labrador fisheries. We detail these strengths under the following headings: communities, fisheries sector, knowledge and governance (federal, provincial, and community), although of course all these categories overlap to some degree. Chapter 4 uses the same broad framework to discuss current vulnerabilities in our fisheries. The two chapters show that in some cases, strengths are being weakened and countervailing policies are required; in others, vulnerabilities are deepening and must urgently be addressed. In a few places, they indicate that new thinking is essential if we are to achieve our goal of socially, economically and culturally resilient fisheries and coastal communities for our future. Chapter 5, therefore, lays out some of the core recommendations for a policy framework designed to achieve these goals.

3b Strengths in our communities

A network of fisheries-dependent coastal communities along much of our coast

Newfoundland coastal communities hold much of the formal and informal knowledge, skills, and tangible and intangible cultural heritage that have made them who they are. That cultural heritage is now proving to be a huge economic draw in a culture-hungry world. Much of it comes out of generations of learning how to create sustainable livelihoods in remote, diverse, fluid and changing marine and coastal environments and an industry where participants have had little control over resources, markets, and often too limited control over government policy.

People in and from our coastal communities still retain strong ties to place and kin. They understand the importance of sharing, of mutual support within and between generations, for sustaining lives and livelihoods in rural areas. People work in different sectors, both locally and away, helping to build the economic and social infrastructure required to sustain rural communities and their diversified economies. They support restaurants and other rural businesses after the summer tourists and cabin-owners have gone home; they run volunteer fire departments, harbour authorities, the Coast Guard auxiliary and municipal governments. Their families help to produce the knowledge, and hone the aptitudes and skills, required to build and maintain houses, businesses and steward rural resources.

Older and working-aged people who have recently retired from, or continue to make their living in, these communities have a great deal of knowledge, as well as business and other infrastructure, that they would like to pass on to the next generation. Young people from these communities have a lot of interest in their future: they understand their communities' strengths, and the benefits as well as the challenges of living locally.⁷² They will, however, have to be able

to earn livelihoods ‘at home’ if they are going to stay there.

3c Strengths in our fishing and seafood processing industry

The diversity in the structure of our commercial fisheries, coupled with substantial investments in training and infrastructure, have not only helped them weather the storm of the groundfish stock collapses and related moratoria, but have been a major source of resilience in our fisheries over the decades. They have positioned us to take advantage of ecological diversity and volatility, as well as uncertain and changing market opportunities, while also helping to ensure that coastal communities and the province benefit substantially from our fisheries.

Lessons learned from the collapse of the groundfish stocks and the moratoria

We have survived one of the world’s great ecological disasters—the collapse of Eastern Canadian groundfish stocks in the early 1990s.⁷³ Huge national, provincial, public, and individual investments helped people in fishery communities adjust to the collapse, because the fishery was so vital to the province. Likewise, significant research and monetary and other investments (in training young people, and in retraining and professionalizing others) have helped us to understand the strengths and weaknesses of our earlier science and management programs, and to diversify and enhance productivity in many parts of our fisheries. We have developed some (but not all) of the institutional, scientific and other requirements for the kind of ecosystem-based management that our resources need. That management actively engages local communities as well as the interest of other people who are most likely to be affected by such decision making.

Species diversity

The Canadian Exclusive Economic Zone, including the area around our coasts, still holds significant species diversity and huge, renewable wealth production capacity. Many different marine life “assemblages” can be found there. This vital biodiversity of our oceans and coastal waters is still largely in place, despite historical and ongoing problems with the overfishing of some species, and the ecological vulnerabilities of coldwater ecosystems, which are characterized by slow growth and late maturation of species. The continued richness of our marine ecosystems is a significant conservation achievement. It bodes well for the future of our fisheries if we can protect, strengthen, and build on it.

Industrial diversity (including aquaculture), strategic flexibility and global competitiveness

Twenty years after the collapse of the groundfish stocks, there is still a diversity of fisheries around much of our coast and out to sea. At the regional level, different fisheries sectors vary in terms of their contribution to local economies and the province, with offshore fisheries having played a larger role in employment in many communities on the Burin Peninsula historically (but not today), and the <65 foot fleet being more important in parts of Conception Bay and the Northern Peninsula. Small- and medium-sized, owner-operator enterprises continue to target a variety of species, despite heavy concentration on snow crab, lobster, shrimp and cod. In some fishing communities, fishermen work in regional fisheries ranging up and down the coast; in others they still fish largely on local grounds. Small- and medium-scale enterprises co-exist with

a substantial offshore, corporate-owned presence. We have invested heavily in fisheries innovation, vessel design, safety, and the production of high quality seafood that meets international food quality and traceability standards.

We have large, medium, and small fish-processing firms widely distributed around our coasts; these specialize in different species and products, destined for local, national and international markets. We do some processing at sea but most onshore. We have a skilled and experienced seafood-processing labour force that is largely unionized and whose work and wages have contributed enormously to sustaining the industry and local communities, and to generating industry profits. We have skilled managers, maintenance personnel, quality control personnel; some highly specialized, efficient plants and other plants with the capacity to process multiple species and products and to switch product lines relatively easily.

Owner-operator fisheries

The vast majority of fisheries-related employment in the province is provided by the owner-operator fisheries, and by the people operating and working in the plants that purchase and process their product.

In Atlantic Canada as a whole, *owner-operator fisheries ... function as the economic engines of coastal communities and as Atlantic Canada's largest private sector employer*⁷⁴ and the situation is similar for our province. They are essential to ensuring that coastal communities and the provincial economy benefit from our fisheries.

The current poor federal and provincial documentation of the full contribution of our fisheries to hundreds of coastal communities is a disservice to the province and to owner-operator fisheries in particular. That said, it is not hard to see that, beyond the thousands of direct jobs in harvesting and the processing associated with it, the presence of the fishery in or near hundreds of small rural coastal communities has a multiplier effect that (while poorly documented in official statistics) is crucial for regional socio-economic development and essential to the functioning of many rural communities. People in fisheries invest their money in local businesses and infrastructure. They invest and attract investment in public and private services in areas such as boat building and servicing, trucking, retail, hardware, healthcare, and education, as well as water, sewage, road and infrastructure construction. People in these fisheries build and maintain the buildings, boats, and other features of our cultural landscape that are part of our tangible and intangible cultural heritage and such a draw for tourists, bringing hundreds of thousands of them to the province. As restaurant owners know well, their access to locally and regionally-sourced excellent, high quality, healthy seafood is linked to the on-going presence of local, small-scale fisheries.⁷⁵

In rural coastal areas, local social relations, knowledge, and traditions, along with professional training and apprenticeship, are the means by which the complex craft of fish harvesting and processing is constructed, developed and transferred between generations. People in fisheries also help young people acquire a range of skills (navigation, small engine repair, construction)

that are not only important to fisheries but are also transferable to other occupations. Such skills provide employment opportunities for young people and help attract back and retain young families in rural areas. These young people are essential to the labour force, to building and maintaining communities, and to providing stewardship for our marine and coastal environments into the future.

Aquaculture

Aquaculture is both a real and potential strength and a potential vulnerability (see Chapter 4). It is “the world’s fastest-growing food production system, averaging 8.3 per cent annual growth between 1970 and 2008”⁷⁶ and there are “over 125 licensed sites across the province, including mussel, salmon, and cod farming...”⁷⁷ Finfish aquaculture employment is concentrated in the Fortune Bay area, while mussel aquaculture is particularly important in Notre Dame Bay. Aquaculture has created employment that has helped to compensate many rural communities for the loss of fishing and seafood processing employment and taxation revenue. As in New Brunswick, members of the same families can be engaged in employment in both sectors, thus mitigating the potential for conflict, but also contributing to the risk that local concerns about environmental and other risks will not be publicized.⁷⁸ Steps have been taken to accommodate the needs and space requirements of the small-scale wild fishery when decisions are made about siting and running aquaculture operations. Mussel production is showing particular promise and resilience. By 2013, Newfoundland was the second largest producer of mussels in North America and 80% of the fish farms and all of the processing plants had achieved organic certification. Markets for mussels are greater than current supply -- Newfoundland and Labrador mussels are beginning to have a distinct and positive presence in the markets according to Newfoundland Aquaculture Industry Association former executive director.⁷⁹

Infrastructure

An important strength of our fisheries is the substantial physical infrastructure we have built up over decades: different fleets of vessels designed for fishing close to, or far from, shore and for catching a range of species. This investment also includes extensive wharf infrastructure (these wharves and the activities around them are crucial links between NL society and the sea. The government of Nova Scotia calls them ‘working waterfronts’ and identifies them as a priority in its coastal strategy).⁸⁰ Our infrastructure includes processing and transportation capacity, and involves networks of ferries, trucking, airport and other shipping services. In many cases, commercial fisheries, recreational fisheries, and aquaculture share harbour infrastructure and coast guard search-and-rescue resources and services.

Commercial fishermen play a key role in Harbour Authorities, which are responsible for the management of harbours and wharves, and many are members of the Coast Guard auxiliary, which helps with search-and-rescue. There are some problems—including fuel inefficiencies and potential issues with stability and noise levels in some fleets (which can put hearing at risk)—but we have the basis for a multiple-species, productive fishery in our complex and well-developed physical infrastructure.

3d Strengths in our marine and coastal knowledge and governance

(i) Knowledge

Deep *local* knowledge supplemented by professional training

Frontline fish harvesters have played a key role in documenting marine habitat, threats to that habitat from fishing and invasive species,⁸¹ fish assemblage and migration patterns,⁸² and changes in the distribution of and abundance of different species over their careers.⁸³ Most are also knowledgeable about vessel and gear design and construction, vessel navigation, operation and repair, and when, where, and how to set gear safely and bring it back to port, because they are using this hands-on knowledge every day.

Since the moratoria, many harvesters and processing workers have added professional training to their local knowledge, as in the case of professionalization certification for harvesters, sentinel fisheries, and quality control and other work associated with running seafood-processing operations. The combination of local, experiential and professional knowledge has sustained our fisheries, helping to improve the quality, efficiency and sustainability of the resource and of production. It has helped reduce the risk experienced by harvesters and processing workers and helped make the industry competitive. That knowledge is also often transferable to other marine sectors, such as shipping, where there are currently global labour shortages.

Natural, social and interdisciplinary fisheries scientists and engineers

We should not forget or discount our strong history of fisheries natural science, reaching back many decades and recently broadened to include research on biodiversity, habitat, species at risk, and climate change. This huge investment has produced extensive databases on our marine areas and fisheries, derived from logbooks, research vessel surveys, costs and earnings surveys and other kinds of data. Researchers from many disciplines (who work in government, the university, industry, labour and community groups) have used these to help them understand fisheries and marine and coastal social-ecological systems, past and present. They have also built up new and different data documenting fish harvesters' local ecological knowledge, the history of fisheries and fisheries policy, issues related to occupational health and many other issues. All of this science and other kinds of research have played a key role in our ability to anticipate, detect, analyse and respond to management, environmental, economic, safety and other challenges.

Today we have here, and are networked to, nationally and internationally recognized specialists in many disciplines (including interdisciplinary scholars) who are researching marine biodiversity, fish physiology, the science of cod⁸⁴, seaweeds and other benthic species including coldwater corals⁸⁵, invasive species,⁸⁶ marine and coastal governance⁸⁷, marine protected areas, marine mammals, aquaculture⁸⁸, small-scale fisheries, food quality, fishing vessel and fishing and seafood processing technology design⁸⁹, folklore, fisheries economics⁹⁰, eco-certification⁹¹, the history of fisheries⁹², gender and fisheries⁹³, youth and fisheries⁹⁴, fisheries and community economic development, marine and coastal occupational health and safety⁹⁵ and other topics. Extensive investments in large, multifaceted interdisciplinary research initiatives, funded through applications to a range of different funders, have paid for the study of interactions between social

and ecological change⁹⁶, the challenges of rebuilding collapsed fisheries and threatened communities⁹⁷, community-level social, economic, and health impacts of different approaches to management, Fisheries management policies are another strength that has been developed here and in some cases transferred to other parts of the world.

Natural and social scientists and humanists often work closely with fish harvesters, industry and others to improve their mutual awareness of fisheries, fish ecology, and stewardship principles. Together their research has produced a rich and nuanced understanding of the province's fisheries and coastal communities, past and present. These significant investments in (the often co-production of) knowledge need to be sustained and drawn upon more effectively as we seek to develop socially, economically, culturally and ecologically resilient fisheries for the future.

(ii) Governance

Newfoundland and Labrador has approximately 29,000 miles of coastline for which it is responsible. In addition, there are vast, diverse and complex marine ecosystems and resources within our 200-mile EEZ that are the responsibility of the federal government. Many economic activities take place along and off our shores, including transportation, oil and gas extraction, aquaculture, fisheries and aquaculture. A complex system of largely collaborative governance, with no actual transfer of ownership of our resources to private groups, means fish harvesting and processing remain hubs of socio-economic development for coastal communities and regions in the province.

Federal Fisheries Governance

Sovereignty and Stewardship

Stewardship is the practice of what Roach calls “hands-on daily care.”⁹⁸ It is thus a primary responsibility of the Federal government, which holds Canadian resources in trust for the Canadian people and, in the case of fisheries, for the people of the world, present and future. It is also, however, a responsibility shared with the province and with the communities themselves. Indeed, our active and community-adjacent fishing industry has historically been the basis for our claims to sovereignty over our coastal waters. Those claims to sovereignty entail this responsibility to steward our fisheries and oceans for present and future generations, including first and foremost people in those communities with a long historical attachment to our fisheries. A key aspect of successful stewardship is attention to, and hence knowledge of, local ecologies that can then be used to protect habitat and biodiversity. This knowledge is found in local communities and in universities, government and other places. We have invested heavily in recent years in policy development and other initiatives to build on that knowledge and apply it. Much has also been done to promote stewardship in coastal areas and in the wider population through training, education, film, and collaborative research involving government, industry and university and other groups. Some marine protected areas have been established and used to promote stewardship and local governance.⁹⁹

The federal government is responsible for the management of marine resources and ocean ecosystems, for regulating and policing our 200-mile EEZ, for key aspects of offshore safety and

survival for such export-related policies and programs as food inspection (the Canadian Food Inspection Agency) and trade agreements and Employment Insurance. Some progressive and innovative federal policies helped us weather the storm of the groundfish stock collapses and moratoria of the 1990s. The development of new research helped us to understand more clearly the factors that contributed to these stock collapses and to identify some issues and opportunities related to the ecological shifts associated with them. The introduction of the Oceans Act has helped broaden the focus and responsibility of the federal government related to offshore research and governance, while the Species at Risk Act supports the identification of marine species at risk and the development of programs to support the recovery of those species (although the extent to which the Act has worked to actually achieve these objectives for marine species is less clear).¹⁰⁰ Adjustment funding, retraining opportunities and other programs helped fishery workers displaced by the moratoria adjust to the prolonged moratoria and widespread changes in our fisheries.

Despite strong pressures from organizations like the Fisheries Council of Canada to sever the connections between fisheries access and coastal communities through such policy initiatives as ITQs, access to many Newfoundland and Labrador fisheries continues to be based on recognition of historical use rights. Indeed, the existence of coastal communities that had relied for a long time on fisheries played a key role in our argument for sovereignty over our fisheries in the St Pierre and Miquelon Boundary case before the International Court of the Hague (1970s).¹⁰¹ This “adjacency principle”¹⁰² has also been important in the preferential allocation of first access to many resources within the 200-mile Exclusive Economic Zone (EEZ) to the inshore and nearshore sectors.¹⁰³

The fleet separation and owner-operator policies operating in many (but not all) fisheries in the province and other parts of Atlantic Canada have played a key role in keeping employment in fisheries widely distributed around our coasts, maintaining fleet diversity, and enhancing and anchoring our fisheries’ wealth in fishing and fish processing households and communities. This is in striking contrast to British Columbia, for example, where the absence of such policies decimated coastal communities and led to the removal of fisheries wealth from local operators in the coastal regions, making fishermen and their families more vulnerable.¹⁰⁴

These and other policies, along with years of investment in fisheries research, stewardship, training, consultations, and experimentation have resulted in a diverse set of management tools, whose use is informed by ecological knowledge. These tools include some of the key elements of the kind of governance framework that current research suggests is essential for complex fisheries associated with multiple interest groups, changing markets where control is limited, and scientific and ecological uncertainty. For instance, we have residency requirements governing access to some of our fisheries (such as lobster), and local harvester committees that meet to develop integrated fishery management plans before fisheries are opened. Indeed, we are moving towards developing the knowledge and mechanisms required for ecosystem based management and integrated coastal zone management, although this work is insufficiently resourced.

Innovative policy initiatives used in some fisheries (like northern shrimp) need to be employed more widely. They have resulted in progressive and successful initiatives -- such as is seen in the extensive investments of the Labrador Fishermen’s Shrimp Union Company, St. Anthony Basin Resources Incorporated (SABRI) and the Fogo Island Co-operative Society Ltd. -- in support of

regional fisheries and economic diversification. Such successful initiatives illustrate how fisheries policy can help anchor resource development opportunities in communities and ensure a portion of the wealth generated from fisheries is used for further fishery development and wider community economic development.¹⁰⁵ These initiatives have also encouraged important stewardship policies, like the implementation of the closed area for shrimp fishing off Labrador. Before what is now called the “triple bottom line” approach to business became fashionable, these kinds of initiatives helped place us in the forefront of creative approaches to fisheries governance that seek to integrate economic and social development with attention to ecological sustainability.

Our Employment Insurance system has played a key role in assuring a relatively stable labour force and reasonable incomes for people employed in seasonal industries like fisheries, tourism, forestry, guiding, and construction, who sometimes work in many sectors in their communities and elsewhere. Their seasonal activities are central to the economies and social fabric of our rural communities. They compel the year-round presence in the community of volunteers to work in government and volunteer fire departments, manage wharves, and act as caregivers for young people, the elderly and those with disabilities. Eligibility for fish harvesters’ Employment Insurance benefits and EI support have been more generous since changes in the mid-1990s. Rule changes for regular EI at that time, coupled with shorter processing seasons in the post-moratorium years,¹⁰⁶ have contributed to the vulnerability of processing workers to problems with EI eligibility and low overall incomes.¹⁰⁷

Provincial-level Governance

The Department of Fisheries and Aquaculture

The provincial government is responsible for a wide range of policies and programs that are vital to our fisheries and the communities that depend upon them. The lead agency is the Department of Fisheries and Aquaculture (DFA), but other Departments are also responsible for policies and programs relevant to fisheries including, for example, the Department of Tourism, Culture and Recreation, the Department of Innovation, Business and Rural Development and the Department of Education and Office of Public Engagement. DFA “develops, implements, and provides advice on fisheries and aquaculture policies in support of resource and industry management, research, growth, and development. Specific activities include fisheries and aquaculture policy review, analysis, and development; review of fisheries management plans and scientific assessments conducted by Fisheries and Oceans Canada (DFO); strategic planning; program development and review; review and analysis of legislation; information management and administration; seafood trade policy research and analysis; collection, compilation, and presentation of statistical data; support to fisheries and aquaculture science; and the completion of economic, financial, and statistical analysis.”¹⁰⁸

The DFA liaises with the federal government and related agencies such as the Atlantic Canada Opportunities Agency around fisheries-related issues, and is the lead agency on the province’s 2011 *Coastal and Ocean Management Strategy and Policy Framework* http://www.fishaq.gov.nl.ca/publications/CoastalStrategy_2011.pdf. It has played a key role in the development of collective bargaining legislation appropriate for the fishing industry, and in identifying strategies and devising regulations designed to ensure the province benefits as much

as possible from the harvesting and processing of our ocean resources. The province has funded and coordinated many important reviews of the processing and harvesting sectors, research on marketing options, and other aspects of the fishery. It implemented a Quality Assurance Program in 1996 in response to market place concerns about quality. The report of the Fish Processing Policy Review Commission found that this program, despite some weaknesses, had been effective in improving product quality and consistency up to 2003. It estimated that, for crab alone, the disappearance of the price differential that had existed as late as 1999 between Newfoundland and Labrador and Alaska crab, resulted in an industry gain of 30-40 million dollars by 2003.¹⁰⁹ Some other key strengths of provincial-level governance include the establishment, in the 1990s, of the Professional Fish Harvesters Certification Board (with active engagement and leadership from the FFAW) and related research and training initiatives in the areas of harvester safety (including the establishment of the Newfoundland and Labrador Fish Harvesting Safety Association in 2012),¹¹⁰ dockside monitoring, and its recent partnership with the FFAW to fund an initiative under the Lobster Sustainability Management Plan.¹¹¹ DFA used its processing plant licensing policy to try to help the industry adjust to the downsizing needs and adjustments in key species, and other processing challenges in the post-moratorium period. This included placing a freeze on most new licenses and requiring those interested in entering into fish-buying and processing to go through a review process.



The province's Minimum Processing Requirements have played an important but poorly documented role in helping to ensure that there is some provincial processing for many of our fisheries prior to export. This has related employment and other benefits for the fishery-dependent communities and the provincial economy. The regulations leave space for the government to respond to changes in market demand and price by changing the level of processing required.. However, despite minimum processing requirements, most of our exports continue to take the form of commodity-type products (primary production) rather than products that have undergone the secondary processing that creates real added value. DFA has also financed numerous studies and task forces including ones that have focussed on ways to improve the financial viability of the shrimp fishery¹¹² and alternative strategies for improving marketing – both important from a policy point of view.

DFA has provided substantial support to industry. It has done so directly, through the Fisheries Technology and New Opportunities Program (FTNOP) and its predecessors. More indirectly, it has supported the Canadian Centre for Fisheries Innovation, aquaculture research and development initiatives at Memorial's Marine Institute [MI] and (through the Newfoundland and Labrador Research Development Corporation), and ocean science and technology research, including providing matching funds (up to 20%) for interdisciplinary and other kinds of research initiatives (such as the CURRA, whose base funding was provided by national and other agencies).

The provincial government has helped to fund the Centre for Applied Ocean Technology, the Centre for Aquaculture and Seafood Development, the Centre for Marine Simulation and the Centre for Sustainable Aquatic Resources at the MI, all of which have an applied and largely industry-driven focus. A few years ago, DFA and the RDC established the Centre for Fisheries Ecosystems Research (CFER) also at the MI, with a 5-year mandate to “better understand fish stocks and the productivity of Newfoundland and Labrador's marine ecosystem through fisheries research.” CFER supports often-collaborative research with DFO scientists and others, and recruits and supports graduate students and postdoctoral fellows. It owns an inshore fisheries research vessel and charters an offshore research vessel on an annual basis. Provincial funding to Memorial has also helped to support large numbers of fisheries researchers in many university disciplines who have been doing community-engaged and other types of research, often funded by the national research councils, the Harris Centre at Memorial and many other agencies.

The provincial government has a long history of engagement with rural development associations. In the 1990s, it established and provided partial funding for (in conjunction with ACOA) the Regional Economic Development (RED) Boards. For some time, the Boards were not involved in fisheries issues, decisions being made largely by core industry associations and DFA and DFO. This had begun to change in recent years as staff in some boards began to investigate, and invest in, developing a better understanding of regional fisheries, their relationship to regional economies, and opportunities for change (such as might occur through staff involvement with integrated coastal zone management initiatives and fisheries forums). Unfortunately, this belated opportunity for multi-stakeholder regional-level engagement in fisheries development and coastal governance -- which brought together industry representatives, municipal leaders, economic development specialists and other groups and provincial department representatives -- largely evaporated with the dismantling of the RED Boards in 2012. The province's Rural Secretariat (now part of the Office of Public Engagement) has provided some

support for dialogue and research related to fisheries at the regional level, including bringing together multi-stakeholder groups and representatives of different departments and research groups (including the CURRA). These have been positive initiatives, but they are difficult to sustain in this complex area of the interdependence of fish and coastal communities, about which those outside of fisheries are often poorly informed.

Industry-level Governance

For decades, the Fish Food and Allied Workers Union has been another source of significant governance strength and support for our fisheries. Its members have helped to ensure that working people and the communities they live in have benefitted more from our fisheries resources than they would otherwise have done.

The union has pushed for fair prices and wages, policies such as the right to engage in collective bargaining, the fleet separation and owner-operator policies, and appropriate EI policies. It has represented many processing workers and harvesting sectors in a broad range of policy-making arenas and played a leadership role in the development of effective, nested governance structures (in which small and medium-scale fishermen and plant workers have been directly involved).

It has helped design and participated in a broad range of marine stewardship programs and community-engaged research initiatives, such as the CURRA and the Canadian Fisheries Research Network¹¹³. The FFAW has also worked to improve training, occupational health and fishing safety in the industry, and played a key role in the development of innovative strategies that have helped to sustain communities in some rural and remote areas, such as the Labrador coast and the Northern Peninsula. In recent years, it has become actively involved in fisheries science and conservation, in working in some schools, and in developing new kinds of marketing initiatives. Overall, its work has been key to sustaining a multifaceted fishery made up of several sectors, that is regionally dispersed and community-based, thereby ensuring that a substantial amount of the wealth generated by our fisheries ends up in rural areas and stays in the province.

Provincial-level processor organizations such as the Association of Seafood Producers and the Seafood Processors of Newfoundland and Labrador, Inc., also play a crucial role in our fisheries. These organizations and their members have extensive knowledge of fisheries here and elsewhere, and have invested in the development of key physical and informational infrastructure, as well as networks necessary for operating in a highly competitive international marketplace with strong demands for high quality and efficient production. These associations represent the interests of small and larger companies, negotiate on their behalf with the FFAW, and provide regular input into consultations around fisheries that are carried out by both the federal and provincial governments.

Regional and Municipal Governance

Many (but not all) of the fishery-dependent communities in the province are incorporated municipalities and thus exercise the power of the state in making and influencing certain kinds of decisions including those related to taxation, development and service provision. They are an important anchor for local planning and are responsible for key elements of local infrastructure such as water and sewer and transportation.

Unfortunately, Newfoundland and Labrador has no formal system of regional government. Formal regional government is essential for better policy development and implementation in rural Newfoundland, particularly that related to fisheries, because of their nested local, regional and larger-scale features. Interestingly, Municipalities Newfoundland and Labrador has been working for four years to develop background and strategic documents as well as support within municipalities for starting to put regional governance in place.¹¹⁴ This background work is another strength that should not be ignored, even if a great deal more needs to be done.

3e Conclusion

All these strengths demonstrate that our fisheries, coastal regions and governance organizations and mechanisms are far from broken. On the contrary, our fisheries are diverse, resilient, and are organized in a way that provides opportunities for engagement in decision-making by different parties in the industry and government. Fishing and fish-processing families, and families involved in all of the subsidiary work linked to fisheries (haulage, monitoring, market development and the like), have played a key role in the history of our settlements, and our consequent ability to lay claim to what is now our province's extensive marine coastal area and EEZ. The communities these families helped to build and have sustained over time, and their historical attachment to our fisheries, have been fundamental to our claims to sovereignty, to the establishment of our 200-mile EEZ and to our preferential provincial access to fisheries within that EEZ.

We have made substantial long-term investments in our fisheries through our federal and provincial governments and other bodies, particularly over the past two decades. These have the potential to repay us well as we move into the future, if fisheries are governed appropriately. Our fishery communities have raised children who work in every profession in the province and in many other parts of Canada as well. They are skilled in many fields and know how to live beside the ocean and steward our coasts. Small-scale harvesters, local fish plants, and the owner-operator and fleet-separation policies have anchored fishery wealth, sometimes in remote regions of the province, and in the country as a whole. Larger scale processing operations and the offshore industry have given us access to a wider range of species for more months in the year, and provided the opportunity to broaden both our production and marketing strategies.

Some innovative local initiatives are demonstrating the potential for adding value and improving the sustainability of fisheries through different kinds of niche marketing. The ShoreFast Foundation on Fogo Island has supported the development of markets for cod-potted cod and it is seeking to build tourism opportunities that work synergistically with local fisheries.

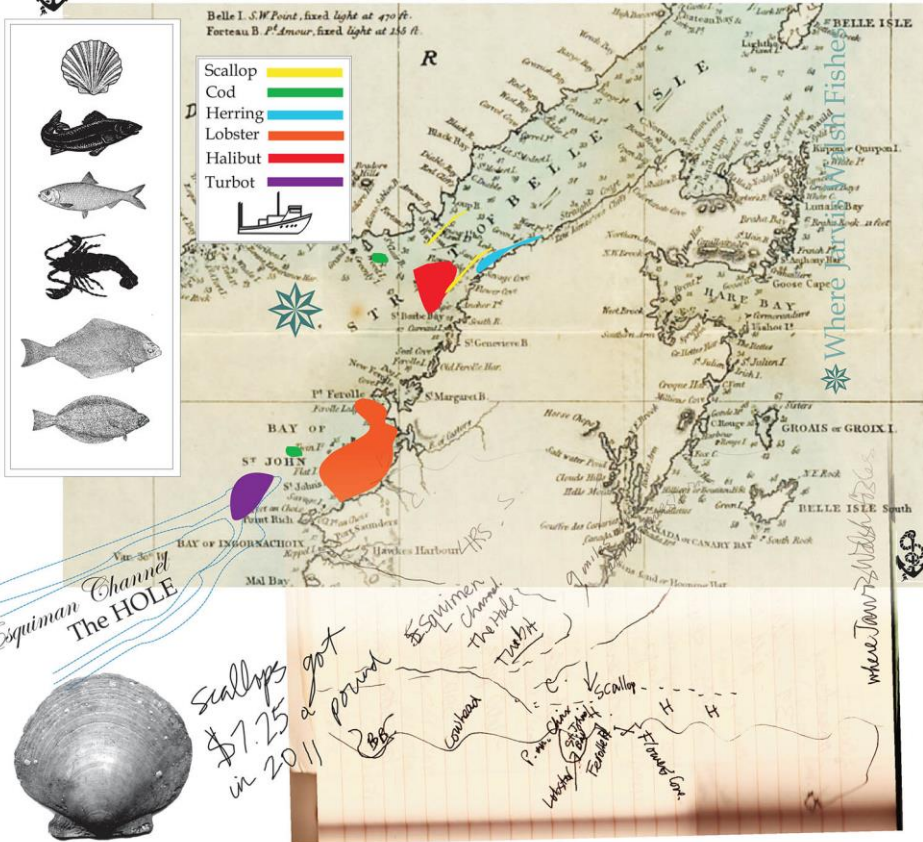
The most important thing we have to work with is our fishery. I mean there are a lot of pretty places in the world. You don't need to come to Fogo Island to watch a sunset. So, the fishery is a driving force, it is the only driving force really for a little bit of tourism activity now on the Island. We want to take that and add to it, because I really believe that this community-based fishery or, when I say community-based fishery, I really mean where licenses are owned locally and you can look at the guy in the boat and know they go together and you know where the money goes. That is necessary for us to survive and do well out there, but it is not enough. We're trying to add something to it.¹¹⁵

For instance, the production of ethically harvested Gooseberry Cove cod using herring and capelin to double the weight of summer cod catches and marketing that cod in the US through the CleanFish sustainable seafood marketing organization is demonstrating the marketing potential in a type of cod aquaculture that was pioneered in Newfoundland prior to the moratorium but has largely disappeared. The efforts of the FFAW to transfer the northern Gulf of St. Lawrence halibut fishery from a 10 hour derby fishery to a fishery that last much of the summer and sends traceable fresh halibut into the province's restaurants and elsewhere is another excellent example of efforts to strengthen our fisheries.¹¹⁶ The CURRA supported the establishment of the *People and the Sea Film Festival* – a festival that fits with the fisheries heritage, culture and economy of this place and that seeks to promote public awareness of what is happening in the ocean and in fisheries and to encourage the production of more films on these subjects within the province.¹¹⁷ It has also funded Anne Troake to produce a new film that is designed to encourage the people in the province to add more local seafood to their diets.¹¹⁸ These diverse fisheries and their effective governance are essential to our future economy, culture, well-being, and society.

Given these strengths, the real criticism that should be levelled is that our fisheries and coastal communities and the larger networks of which they are a part are undervalued, not broken. This is especially true given their provision of essential food in a world whose growing population is faced with limited supplies of high-quality protein. They are not a thing of the past: they can continue to support livelihoods, and provide important sources of employment, in the province. If we manage them sustainably, they will reward us with a good return on our investment into the foreseeable future.

Fisheries are actually crucial to the future of our coastal communities -- a key mechanism for anchoring people, employment and wealth in rural areas. One way to ensure that they can fulfil this role in the future is to ensure that discussions at the regional level about future policies take into account the needs of the diverse groups in our fisheries, and of the needs also of coastal communities. These diverse groups should play a central role in the future governance of our ocean ecosystem and ocean resources (renewable and non-renewable), and in positioning this province and its people (including future generations) to play a strong and positive role in the future of Canada and the planet as a whole.

On the Inshore Fisheries in the Strait of Belle Isle



Jarvis Walsh is a full-time inshore fisherman in Flowers Cove. For 30 years he has been fishing multiple species from more than one vessel, and currently has six licenses for the Straits area 4R. He fishes from May until late November as long as the weather holds and there is quota to catch. In 2011, he harvested the following species:

SCALLOP (Iceland): from May 9th until December 31st. In 2011 there was a quota of 1000 metric tons but it was not all caught. Harvested by dragging rectangular cages from his 39-foot vessel the *Frida M.*

COD: from July 4-21 and from September 6-15. Competitive weekly quota (free-for-all) of 3,000 lbs per license until quota is caught in 4R. About 50% of his catch comes from over on the Labrador side of the Straits near the 4S line. Cod is harvested with small gill-nets from the dragger or speedboat.

HERRING: May- June and October-November. Harvested with fixed gear in mid-water from St. Margaret Bay to St. Genevieve Bay. Quota in 4R for fixed gear was 4,600 metric tons.

LOBSTER: During the spring, Jarvis fishes 300 pots in St. John Bay from a small speedboat.

HALIBUT: Competitive quota. In 2011, it was a 24 hour fishery on June 28-29. Harvested with baited trawl (long-lines) from the speedboat.

TURBOT (Greenland Halibut): Harvested June 14th- 18th. From the *Frida M.* with gill-nets in deeper water where the Esquiman Channel ends south of St. John's Island. This deep water channel is called "The Hole" by local fishers and drops to depths of 250 meters. The fixed gear quota for turbot in Western Newfoundland 4R was 580 metric tons.

Chapter 4 The real vulnerabilities in our fisheries and coastal communities



4a Introduction

Despite their strengths, there are also *real* (as opposed to manufactured) vulnerabilities in our fisheries that need to be addressed. Claims that our fisheries are broken (outlined in Chapter 2), and that we should move to an industry based on ITQs and vertically integrated companies, are probably the greatest threats to the future resilience, even survival, of many of our coastal communities and owner-operator fisheries. They are a threat to the wealth and employment our fisheries create, and a threat to opportunities for using our fisheries as a core asset for regional economic diversification. However, even in the absence of such ill-advised policy shifts, there is no question (see Chapter 1) that harvesting and processing labour forces in the province are aging, and ongoing outmigration (particularly of young people and families) is affecting the viability and future options of both the industry and these communities and regions. What, then, will happen to coastal communities whose small- and medium-scale fisheries are an important part of the local economy, when those currently employed in the fisheries sector retire? The threat here is that there will be very low labour recruitment into the industry; harvester enterprises will either disappear or be transferred outside of these communities; and more plants will either be closed or their community-based labour force will be replaced by temporary migrant workers from elsewhere as is already happening in some regions. Further population loss and related erosion of the municipal tax and investment base could occur through the loss or devaluing of such key local assets as homes and fishing (vessels, gear, licenses) and other enterprises. The indirect effects of related ongoing outmigration and loss of infrastructure on businesses and service institutions (like schools, tourism operations, trucking and retail operations) is also a major threat to the future survival and resilience of the communities and regions of which our small- and medium-scale fisheries are a crucial part.

As in Chapter 3, we detail these vulnerabilities under the following headings: communities, fisheries sector, knowledge and governance (federal, provincial and municipal/regional), although of course all these categories overlap to some degree.

4b Vulnerabilities in our network of fisheries-dependent communities and regions

Population decline, plant closures, dwindling working age populations, cuts to funding for municipalities and in the public sector (including educational, health, rural development and employment services) in rural areas, and the absence of regional government or other regional institutions tasked with economic development, are key sources of vulnerability in fisheries-dependent communities and regions.

An examination of how fishery communities are faring in the post-moratorium world, done through the CURRA, found that those sample communities that are most dependent on the fishery had much greater population declines than the regional centres of Port aux Basques and St. Anthony on Newfoundland's west coast. However, the whole study area had lost a much higher percentage of its population (31-57% between 1991 and 2011) than Newfoundland and Labrador as a whole. Most of those leaving have been younger workers and their families, although some young families have returned to some areas in recent years.¹¹⁹

In the 1990s, substantial provincial government cuts to municipal grants – which occurred while fishery-dependent communities were struggling to rebuild after the closure of groundfish fisheries and the erosion of their economic base through outmigration and plant closures -- have added significantly to challenges facing our fishing communities. There has been some regionalization of services, along with regionalization of fisheries and other employment that has helped sustain regional economies, but these are not working as well as they should. A recent report produced by the Municipalities Newfoundland and Labrador gives a good description of the current situation confronting our municipalities, including those that depend on fisheries:

Having never been independent or autonomous, municipalities survive through stubborn perseverance and an increased tolerance of accepting and doing less. Many municipalities within the past 20 years have lost a quarter of their already small populations and have seen their overall level of provincial support decrease by approximately sixty percent. Municipalities continue to operate, but have been noticeably weakened. Towns have greater difficulty in retaining or improving their staff. They operate with aging infrastructure that they cannot maintain and have a difficult time replacing. The demands of economic diversification and environmental standards cannot be addressed by most municipalities, and are instead handled by other governance structures that are organized by the provincial and federal government. Municipalities are provided with enough support to get by, but not nearly enough to be sustainable and thrive.¹²⁰

Outmigration, particularly of young people, and the “Alberta Factor” (the pull of higher wages and more hours of work elsewhere), along with, some believe, changes in Employment Insurance, have all contributed to a shift from labour surpluses to concerns about labour shortages in some parts of the fishery and in other sectors like tourism. That said, revenues from migrant work are also bringing wealth and some stability into some fishery dependent communities -- this is an understudied area.¹²¹ In some cases, such as Burnt Islands on the Southwest coast, work away is being combined with work in the inshore fisheries to result in relatively high incomes.¹²²

Exacerbating the overall situation is the fact that many young people, including those living in communities with substantial local fisheries, now tend to see the fishery as something belonging to the past, to their parents' or grandparents' generation. Even worse, they see it as a sector with poor prospects for employment, associating it with low incomes. They hold this opinion despite the reality of often relatively good incomes and future opportunities available in the industry, especially when compared to other employment options for young people in rural areas.¹²³ These young people do not usually have an opportunity to participate in meaningful discussions about the fishery, or to provide input into fisheries decision-making. Unfortunately, there are few social and institutional mechanisms to help connect young people to the fishery and learn about opportunities there.

Work in fisheries allows young people to remain based in their communities, to benefit from family networks and to contribute in substantial ways to local economies through fisheries and potentially other kinds of employment (done locally or away). Training in fish harvesting and processing generates a range of skills and builds knowledge, both of which are of potential use, not only within this sector, but also in other sectors with a marine, food processing and marketing connection. The range of skills required for safe and effective fish harvesting, for example, includes construction skills (related to housing and other fishing enterprise infrastructure), marine safety (marine vessel and gear design and construction, through engine repair, to navigation), the ability to work in a mobile environment, comfort at sea and many other kinds of activities. These skills are not only useful for employment in fisheries, but also in other sectors within and outside of coastal communities.

Historically, fisheries related skills have been largely acquired on the job, through the intergenerational transfer of knowledge. Since the moratoria, these learning opportunities have been supplemented by opportunities and requirements for professionalization training. This combination of professional training and apprenticeship on board vessels (see Chapter 3) is one of the real strengths of our fisheries. However, if the current generation of harvesters exits the industry without passing on their knowledge and skills to the next generation, that will result in a huge loss of know-how in areas that are fundamentally important for a marine-based economy and potentially for many other sectors. Plant labour forces also have a great deal of knowledge about efficient seafood processing and preparation for international markets. They also know intimately the occupational health and other challenges in the industry, and their knowledge is a crucial asset to producing a more diversified, safer, community and regional industry in the future.¹²⁴ When the workers who are in charge of management and quality control exit the labour force and/or the region, their skills, which could be applied to new kinds of marine products and other kinds of food processing, will be lost.

Temporary foreign workers

The plants that remain open may end up being staffed to a substantial degree by migrant workers brought in under Canada's Temporary Foreign Worker Program. In other parts of Atlantic Canada, fish processing labour forces include substantial numbers of international migrant workers brought in under the 'Pilot Project for Occupations Requiring Lower Levels of Formal Training' (pilot project) part of that program.¹²⁵ In the case of Prince Edward Island, for example,

[t]he vast majority of PEI's Pilot Project workers have been employed on a seasonal basis in fish plants. Although there are some men among the foreign fish plant workers, they are overwhelmingly women. These workers come from several different countries. Although there have been Russian fish plant workers in PEI, the majority of these workers come from Asia. Due to the seasonal nature of most fish plants, these workers are not eligible to apply for permanent residency through the PNP (Provincial Nominee Program)... These 'temporary' workers are also being used as the long-term solution for a permanent problem."¹²⁶

The shift to reliance on plant workers brought into Canada under the temporary foreign workers program has started in Newfoundland and Labrador. If it continues, it will significantly change the social and economic relationship between fish processing and communities with less of the processing incomes remaining there, or being invested in homes and businesses by processing workers, because temporary foreign workers are not allowed to stay or bring their families with them.

We are also concerned about the introduction into processing of a pool of workers even more vulnerable to low wages, exploitation and occupational injury and disease than our existing seasonal processing workers. The vulnerability of temporary foreign workers is well documented in the existing research literature.¹²⁷ It results from a number of factors: they are not allowed to change employers; they lack knowledge of their labour and other rights; they lack representation; they are far from home and the costs of return travel are beyond them. Moreover, provincial departments with responsibility for the enforcement of labour standards and health and safety often do not know where such workers are located, because there is no policy in place to ensure that information about Temporary Foreign Workers is shared with the provincial government. These workers often come in the hope of finding a way to immigrate and bring their families to Canada, but these kinds of employment provide little opportunity to immigrate.

If we have a real and enduring labour shortage in our seafood processing sector, it makes sense to try to find a better solution. A strong provincial nominee program that would make it easier for such workers to become immigrants (as in Iceland) would provide a longer term solution while potentially adding to the population of rural communities. We should also try to recruit more higher-skilled workers who are, ideally, very familiar with the fishery including the fishing industry and markets in their place of origin and perhaps elsewhere and interested in immigrating to the province. If we can attract more employees who can come here and learn about our industry, invest in it and help us innovate by coming up with new ideas and products that can enhance what we earn from the abundance of resources off our shores we will be more likely to produce resilient fisheries and coastal communities. For this to work, however, there needs to be places for them to invest – i.e. in new fish processing, retail and marketing operations.

There are other community and regional-level vulnerabilities as well. CURRA-supported research on community food security and fisheries found that seafood consumption appears to be declining in coastal communities, a substantial proportion of what remains being accessed through ties to local harvesters and plant workers. Given the abundance of seafood we harvest and its nutritional value and quality, the absence of a program to stop, and indeed reverse, this decline is tragic, particularly given the well-documented health challenges facing the Newfoundland and Labrador population. Furthermore, on-going reductions in the regional presence of owner-operator fisheries are likely to exacerbate this problem, particularly in rural areas, by further eroding the access of people in these communities to the enterprises and family connections that allow them to acquire affordable, nutritious and attractive locally-sourced seafood.¹²⁸

4c Vulnerabilities in our fishing and seafood processing industry

Over-reliance on commodity-type export markets

Although seafood markets are expanding (see Chapter 2) and demand is expected to exceed supply in the future, our current approach to production and marketing makes us highly vulnerable to global competition. We are also vulnerable to pressures to outsource processing, thus continuing to be price-takers rather than price-setters in international marketplaces. Our industry, despite its strengths, continues to be dominated by the mass production of a relatively narrow range of commodities, derived from a few species, and exported to a relatively small number of countries and buyers. To illustrate: in 2012, we landed many species, but snow crab and shrimp comprised more than 50% of total export value. Companies in the United Kingdom, Russia and Denmark purchased our northern shrimp almost exclusively; China and the United States were the primary export markets for our snow crab. Our mackerel went mainly to the United States, Jamaica, and China; 82% of our herring went to the United States and China; Taiwan and the U.S. were the top export markets for our capelin.¹²⁹ In 2013, value-added (i.e. secondary processing) production may actually have declined as a result of the closure of the Burin plant and the decision to allow the export of more unprocessed yellowtail flounder. It could decline further if we end up channelling the vast majority of our cod and other groundfish into markets for whole, chilled fish.

This pattern is what Nikoloyuk et al. call the ‘commodity curse,’¹³⁰ and one of its consequences is it makes the industry as a whole very vulnerable to ecological and economic uncertainty. A key shortcoming of reliance on mass production and commodity markets is that it lumps together various kinds of seafood of differing size, colour, taste, condition and seasonal availability into a single homogeneous product, instead of encouraging the development of market niches that take advantage of diversity and that can offer higher-returns for more of the catch. When combined with vertical integration, reliance on commodity markets tends to decouple fisheries from other economic activity in communities and regions. It also undermines regional networking and collaborations in favour of dependency on external interests, thus limiting possibilities for economic diversification.¹³¹

Reliance on the export of bulk, commodity products is not a new problem. It has been a well-documented feature of many of our fisheries since the 19th century, despite repeated concerns about their failure to generate forward linkages through secondary processing (value added), backward linkages (manufacturing of inputs to the sector) and final demand linkages (good incomes). All of these are needed to diversify our fisheries-dependent economy and maximize the amount and quality of employment and wealth it generates for local people and the province as a whole.¹³² In the late 19th and early 20th century, our saltfish trade deteriorated into bulk commodity production (‘tal qual’) and then largely disappeared, to be replaced by cod block production in the post-World War II period.¹³³ In the 1980s, in response to market changes and resource scarcity, we finally shifted from an industry dominated by cod block production to one characterized by more diverse products, including some secondary processing. Now, however, there are pressures to export whole, chilled fish. Some of this might make sense but is this the best or only option for our growing cod resource? Until the 1990s, we exported crab meat-based products, but since then we have shifted away from value-added production to an industry dominated by the export of shell-on products, including clusters (i.e. clusters of crab legs). This

has given us access to more markets and prices to harvesters have generally been fairly good but could more of our crab be diverted to other kinds of markets so we could enhance the value that is generated? A simple example: how often do we find snow crab products on the menu of restaurants in Newfoundland and Labrador?

Our historic dependence on bulk, low-quality commodity products was greater than it needed to be: we lost ground to other countries in the saltfish markets due in part to weak government regulation of the industry. Our saltfish trade did not *have* to virtually disappear – we could have developed an industry, like the one in Norway that combined saltfish production with the production of fresh and frozen fish. That sector of the Norwegian seafood processing industry appears to have adapted very well to both a cod crisis and changing markets.¹³⁴ Saltfish production continues to be an important part of the groundfish industry in Nova Scotia¹³⁵ – why is that not the case here? Could we not have found new markets that wanted a value-added product for a portion of our crab, as well as entering cluster markets (i.e. markets for crab legs)? Why does snow crab rarely appear on restaurant menus in this province?

Our marine waters are cold and thus our fish and shellfish generally grow more slowly here than they do in places like the Barents Sea. This is particularly true off the Labrador and north east coasts. This makes our fisheries more vulnerable to the effects of overfishing. However, there are also potential advantages that come with cold water seafood that could be used more effectively in marketing. Memorial University research on scallops, cod and cod liver oil (including rock cod) in Gilbert Bay, Labrador, for example found that, “[c]ombining the high levels of ω -3 fatty acids with elevated levels of phytosterols (>62%) emphasizes the suitability of Gilbert Bay seafood for human consumption. Marine Protected Area status and local aquaculture development may help to secure this highly nutritional cold-water seafood resource.”¹³⁶ We need to do more to incorporate findings from research on the nutritional benefits of our seafood into market development.

For many years there have been strong recommendations made for the development of a marketing association for the province’s fisheries, similar to those that exist in Norway and elsewhere, but this has not yet materialized.

Production and marketing based on volume may be the easiest way to make a profit in the industry, but it is a highly vulnerable strategy that requires resource abundance and a steady flow of product into the market place. These are both major challenges for our fishery that will increase with the growth of competing aquaculture products and have contributed to an industry focus on controlling quota (and competition) rather than market diversification and collaboration.

This may help to explain why we have failed to develop a marketing association, but our failure here has added, and continues to add, to the vulnerability of our fisheries and coastal communities.¹³⁷ It must be addressed soon, and with care and creativity. Otherwise we will probably be condemned to reliance on commodity markets and a race to the bottom in terms of prices, particularly in the context of the tight control over retail markets by a few buyers that exists in Canada and elsewhere.¹³⁸

In the face of future uncertainties, we need to develop policy frameworks and incentives that will maximize our flexibility and opportunities for sustainable wealth generation. This is what will ensure that wealth is embedded in the province and dispersed in a way that is equitable, enhances our future capacity in fisheries and oceans-related production, and encourages future innovation and engagement. It is unlikely to happen if we do not depart from our longstanding over-reliance on commodity markets. One way to do this is to divert more of our landings into local, provincial and national markets. Stronger domestic markets for a portion of our seafood, particularly strong and diverse domestic markets could increase their wealth potential and reduce our reliance on distant markets over which we exercise little control. They have the potential to shorten commodity chains and leave more wealth in the hands of harvesters, small processors and within coastal communities. They also have been shown, in developing countries, to contribute to stronger export development because domestic marketing experience can build up the infrastructure and institutions we need to compete better internationally and ensure we use more of the seafood that we land.¹³⁹

Shifting ecosystems, specialized processing capacity and markets for seafood

Shrimp and snow crab quotas are in decline. At the same time, there is some indication that cod stocks are recovering. This possible shift in the ecological balance between species in our ecosystem is thought to be a product of changing predator-prey relations: crab and shrimp populations increased when cod were overfished, because the latter are considered to be important predators on these shellfish (and lobster). Thus, as groundfish stocks recover, crab and shrimp populations decline, as do/should total allowable catches and quotas. A substantial shift from shellfish to groundfish might occur, although after the groundfish collapsed, capelin stocks collapsed instead of exploding. If such a shift occurs, it would threaten the viability of some parts of our fishing industry, particularly those harvesting and processing operations that specialize in, or depend substantially on, shellfish quotas, processing and markets. Specialized shrimp processing plants would be affected, as well as the inshore fleet.

We need a creative and balanced policy framework that can help us respond to this kind of ecosystem shift (it won't be the last) without threatening the resilience and diversity of our fisheries. The absence of balanced policies in some fisheries is another source of vulnerability in our fisheries. For instance, we know that shrimp stock abundance is declining and the remaining biomass is shifting northwards. Most inshore harvesters (and onshore shrimp processing plants) only got involved in the shrimp fishery in the 1990s (the shrimp fishery in 4R is an exception) and aboriginal licenses and special allocations to community-based initiatives like SABRI and the Fogo Island Co-operative were introduced then. "[b]y 2009, the total allowable shrimp catch had increased to 176,000 mt, with 137,000 mt either landed in coastal communities by inshore owner-operators and processed by plant workers or caught by some offshore vessels that paid royalties to cooperatives and companies that reinvested the revenue in the inshore sector in often remote regions."¹⁴⁰ The remaining 22% was controlled by offshore companies that are not anchored in the same way in remote areas, adjacent to the resource, and that do not have the kinds of obligations as the Labrador Fishermen's Shrimp Company, SABRI and other organizations.

We must take note, however, that this allocation share has shifted substantially since 2009. . . DFO has implemented some sharp cuts to the Total Allowable Catch for northern shrimp based

on a controversial ‘last-in-first-out’ (LIFO) policy.¹⁴¹ It is not clear how the LIFO policy was arrived at. It runs counter to core principles in our fisheries, such as the adjacency principle, the owner-operator principle, and policies that support using fisheries resources to support the socio-economic development of coastal communities. One result of the LIFO policy is that some of the groups with special allocations, including the Fogo Island Co-operative, have lost them. Furthermore, the inshore fleet is facing the possibility of shouldering the bulk of an impending quota cut of up to 27% for Area 6 in 2014.¹⁴²

Because the current policy framework for the shrimp fishery is based on last-in-first-out (LIFO) principles, these harvesters and plant workers will be expected to shoulder the effects of almost all of the inevitable quota cuts, and that will affect their future viability.¹⁴³ The current policy benefits equally two classes of offshore license and special allocation holders -- those with obligations to use the profits generated from their licenses and allocations for the benefit of inshore fisheries and regional economic development, and those with no such obligations. At the same time, the policy disadvantages inshore shrimp enterprises, although these also contribute to the resilience of coastal communities. The LIFO principle needs to be balanced with other concerns, such as those related to socio-economic development if we are to sustain, rather than erode, the resilience of fisheries and coastal communities in regions where the shrimp fishery is important.

In the case of the cod fishery, while existing policies give small- and medium-scale enterprises priority access to expanding northern cod quotas up to the level of the historical inshore allocation of 115,000 Mt,¹⁴⁴ the ability of these NL harvesters to catch and sell their cod quotas at high enough prices will be constrained by the limited number of plants and processors presently willing to buy their cod. A pilot project to allow fish harvesters to export some of their cod in whole, fresh form¹⁴⁵ – a substantial part of Nova Scotia’s haddock catch is like this – could sustain some of these enterprises in the short term and may be a solution for some of our cod. It is not, however, a full and adequate strategy for longer term resilience and requires long-overdue attention to the development of diverse markets for groundfish and to the need to ensure a range of buyers exist for these products.

Eco- and other forms of certification

Current and future markets will generally require some kind of certification of environmental sustainability, in addition to food-safety certification and traceability, as the basis for product sales. A growing proportion of Newfoundland and Labrador’s seafood carries the Marine Stewardship Council (MSC) certification eco-label. This can help secure markets, but it is costly in terms of industry and government resources. Generally speaking, this label does not result in a price premium, and it can have the effect of marginalizing fisheries that are potentially as ecologically sustainable as those that are certified, but whose participants lack the resources to pay for certification. MSC certification has been used by some holders of the certificate to try to control resource access and production relations – i.e. to undermine small-scale harvesters and processors.¹⁴⁶ Furthermore, with MSC certification there are no requirements or rewards for social responsibility, either in the form of expectations of a fair distribution of wealth between producers and marketing firms, or safe working conditions, or support for communities. These are all things that matter to Newfoundlanders and Labradorians, and they could substantially influence the extent to which current and future generations in our coastal communities (and the

province as a whole), benefit from our fisheries. It is one option for protecting, if not enhancing, market share.

There are other eco-labelling options, such as paying more attention to organic certification (e.g. in the mussel aquaculture industry), adopting traceability initiatives like “This Fish” (<http://thisfish.info/>) and community-supported fisheries which can help link consumers to harvesters and create market niches that can support price premiums.¹⁴⁷ There are also options like fair trade certification that evaluate fisheries on the basis of both environmental and social justice criteria.¹⁴⁸ These other kinds of initiatives also have the potential to broaden tourism opportunities by doing more to connect people from other places to people, places and products from different parts of our coast. We return to these in Chapter 5.

Aquaculture-related vulnerabilities

Expansion in some parts of the Newfoundland and Labrador aquaculture industry is constrained by reliance on fishmeal, which is derived from wild fish such as capelin and herring. The latter are important prey for other wild fish species. Such reliance will limit the extent to which finfish aquaculture (here and globally) can continue to expand without jeopardizing wild fisheries and marine ecosystems. The growth of the industry, along with its employment and provincial, community-level and regional revenue-generating potential is also somewhat constrained by other on-going concerns. These include possible negative impacts on benthic habitats and wild salmon stocks (which are the basis for a key part of recreational fisheries in the province), inshore lobster and other fisheries. There are also the costs and concerns associated with disease outbreaks in aquaculture (as experienced by the industry in 2013). A key risk is the potential use of pesticides hazardous to lobsters in the treatment of sea-lice infestations -- Environment Canada and others have documented the negative effects of the use of such pesticides on lobster in parts of New Brunswick.¹⁴⁹

Newfoundland and Labrador aquaculture companies “recently requested permission to use European-origin, cultured Atlantic salmon in their operations to increase their competitiveness.” Importation of these salmon is currently prohibited, due to uncertainty about the extent and severity of the resultant interactions that might occur between European and local salmon. A recent ecological impact assessment, undertaken as a result of that request, concluded that such uncertainty is ongoing and impacts could be substantial. Native salmon in the region are already estimated to have declined by 42 per cent over the last three generations, leading the Committee for the Status of Endangered Wildlife in Canada to list them as Threatened.¹⁵⁰

4d Vulnerabilities in our fisheries, marine and coastal knowledge and governance

Fisheries have the potential to produce many outputs of which only one is commodities. Fish are a source of food security, culture, heritage and an inspiration for art. They are often a crucial ingredient in tourism, training in self-reliance and safety at sea and need to be integrated with the monitoring and extraction of other kinds of products as the industry diversifies into the future. A generation of research suggests this more complex understanding of fisheries is a good starting point for building on our strengths to develop socially, economically and ecologically resilient fisheries and fishery communities for the future.

Knowledge: Losing local knowledge and expertise

The sea is a huge part of this province/country and of the global world. At present, we have a comparative advantage in the comfort with, and knowledge of, oceans and ocean-based resources and how to work in a variety of different marine and coastal environments. This knowledge is found among those who are currently working or have recently retired from harvesting and processing. If nothing is done, we will lose a substantial amount of expertise over the next several years -- expertise shared among experienced fish harvesters with decades of experience on various fishing grounds, who have fished multiple species using different types of gear, and who are familiar with the local management of many fisheries. These losses will continue if the wave of plant closures we have seen in recent years continues into the future. More young recruits need to be found and apprenticed to these seasoned harvesters and processing workers, so that together they may explore both old and new ways to find and harvest fish, manage fisheries and process different species into a range of products appropriate for diverse markets. The fact that fisheries, past and present, are largely invisible in our school curriculum is contributing to this knowledge gap, as are the high costs of entry into fisheries and the absence of programs specifically designed to promote fisheries as a career opportunity among young people.



We turn now to some examples of obvious and serious gaps in research and in the capacity within government to learn about, understand, assess and apply insights from that research to policy development. Memorial University researchers have a strong history of fisheries-related research collaborations that take a community-engaged, problem-solving approach, cut across the boundaries between natural and social science, and sometimes include engineering and the Marine Institute as well as community partners. This approach has brought millions in research monies into the province. It works very well in a province like Newfoundland and Labrador, which is grappling with developing and mobilizing knowledge in so many complex areas. However, the provincial government has been a minor player in this kind of fisheries research, while the federal government has supported mostly research on fisheries science and stewardship

(sometimes in collaboration with industry). This is exacerbated by the absence of strong university commitment and institutional structures to support engagement in this kind of research across disciplines and the university as a whole, by very narrow disciplinary expertise within DFO, and by limited multi-disciplinary scientific capacity within the provincial government and at the regional and community level. Together these are all significant sources of vulnerability that constrain our ability to collectively assess the research that has been done here and elsewhere, and then systematically apply and build on it, in order to solve real world problems.

Provincial funding for research has tended to target industry and fisheries science and technology, thus involving only a narrow range of players and groups – too narrow to adequately deal with the complex social-ecological systems that comprise our fisheries and coastal communities. There also has not been enough investment in research. A relatively small proportion of funding from the Research and Development Corporation of Newfoundland and Labrador has been dedicated to fisheries and, we suspect, even less to intersectoral research and development initiatives that might help us link fisheries and tourism and other sectors. The result is under-funding and a patchwork of initiatives, relatively poor communication and understanding between groups of researchers (who are often starting from very different analytical premises), substantial and significant gaps in knowledge, some duplication of effort, and elements of territoriality as different groups compete to be the experts on fisheries rather than seeking to work together. While a range of perspectives and approaches to fisheries research is important, some duplication of effort is inevitable and indeed duplication of results is the basis of the scientific method. However, while debate is an essential part of science and governance opportunities, it is nonetheless true that we could and must do better at carrying out coherent, rigorous, defensible, community-engaged and integrated research, using that to inform policy. This is more likely to happen if there is clear leadership from government and the university, and targeted institutional and funding support are created to help make it happen.

Ocean-related activities are expanding at a very rapid rate nationally and globally, and they include a wide range of new as well as older types of industrial development including, for example, the development of marine-related pharmaceutical, nutraceutical and cosmetic products. As argued in a recent report on ocean science (defined as science that involves not only the natural sciences and engineering but also health, social science and the humanities) in Canada, there is a huge need for more ocean-related research.

Canada's extensive exposure to the ocean and the rapidly changing Arctic offers almost unlimited opportunities in fundamental research to improve understanding of oceans processes, as well as applied research on sustainable ocean and coastal development and management for the benefit of Canadian society. At the same time, it bestows on Canada the responsibility to act as a steward of the global ocean.¹⁵¹

Research and development initiatives that are directed not only to the needs of a particular company but more to the needs of the industry as a whole could help promote the kinds of innovation in our fisheries that are essential both to fisheries resilience and to ensuring that they contribute to other sectors and to regional economic development.

The typical North American kind of innovation asks *what is needed to solve a problem?* -- an approach to innovation that often requires lots of resources. Another kind of innovation is more commonly found in contexts of scarcity, such as we often find in small-scale fisheries and coastal communities. It asks, *what do we have that we could use to solve a problem?*¹⁵² Those who see our fisheries as broken are focused on the former kind of innovation: getting what they need to maximise profits in highly competitive global commodity markets. This isn't surprising – it is what we should expect of business – it is how they operate: it is their job. The job of government, however, is to support all sectors of the industry, including large, small- and medium-sized enterprises, all groups within the industry including the most vulnerable, and to maximize the wealth and opportunities for all of us from our public resources. The people in coastal communities have, for the most part, had to make do with what they had available. Their innovation has been of the latter kind, carried out in a world where they have had very little control over nature, over policy, over markets and over decision-making. Creative thinking and strategies for drawing on, and transferring, the skills and expertise in our commercial fisheries to the next generation could help us succeed in new areas, while reducing the risk of negative impacts on our fisheries.

Governance

Effective governance of fisheries is very challenging: it has been called a “wicked problem,” one for which there is no clear solution – only ongoing resolution of emerging challenges at multiple scales.¹⁵³ We argued in chapter 2 that the commodification of access rights, particularly in the form of ITQs, is not a panacea (i.e. silver bullet) for the challenges of fisheries governance, and would have substantial negative impacts on the diversity and resilience of our fisheries and coastal communities. It would also seriously constrain the future options available to revitalize both. Instead of relying on a governance regime guided by private gain, we need a governance regime based on ‘mutual gain.’ Such regimes are, as defined by Bryson and Crosby, “shared-power arrangements that generate network power ... and mobilize bias in favour of long-term public value.”¹⁵⁴ They exploit the potential for promoting the public good in different segments of society, while minimizing the risks of failure associated with each. These segments include markets, nonprofit organizations, governments, the media, and communities. Democratic governments play crucial roles within regimes of mutual gain but “[g]overnment direction setting, oversight, support and regulatory agencies also can fail to do their job– for example, when they require many layers of authorization or become too allied with regulated industries.”¹⁵⁵

Communities promote “a sense of individual and collective identity, belonging, recognition, and security; [provide] people a place to live, work, learn, enjoy, express themselves, and build families; [build and maintain] physical, human, intellectual, social, and cultural capital of various sorts; and [foster] a civically engaged, egalitarian, trusting, and tolerant democratic society.”¹⁵⁶ Communities, however, can also fail as, “when they exclude or isolate some groups, accept the domination of traditional elites, neglect collective identity, become parochial, ignore harm to individuals and the environment, and offer few opportunities for civic engagement.”¹⁵⁷ Given the different potentials for success and failure in each of these segments of society, ‘regimes of mutual gain’ need to draw from the diverse strengths associated with the full range, while also taking account of and seeking to reduce or minimize, the associated threats of failure. This is similar to a ‘clumsy solutions’ approach to social policy, which tries to recruit all facets of

society to contribute to policy dialogue and collective action by creatively combining elements of opposing perspectives, including those that emphasize individualism, egalitarianism, hierarchy and fatalism. The approach has been advocated as one way to tackle the particularly wicked problem of fisheries like our own that have been and continue to struggle with the challenges of rebuilding from collapse.¹⁵⁸

One factor that has long contributed to the vulnerability of our fisheries in the policy realm, constraining (but certainly not preventing) the development of clumsy solutions and elements of ‘regimes of mutual gain’ (see Chapter 3), is the federal-provincial jurisdictional governance division of powers. This split gives responsibility for fish in the sea to the federal government, along with responsibility for managing and regulating processing, while marketing responsibility lies with the province. Federal fisheries science and management strongly influences what kinds and how much fish, shellfish and other marine products (like seals, seaweed, etc.) will be landed, where, when and (to a substantial degree) in what condition. The province struggles (often weakly, due to lack of resources and strong political and other constraints) to influence what products are generated from these resources, where and by whom. The seasonality of the industry makes the province vulnerable in another way, since the major social program in Canada that helps support seasonal work particularly in rural and remote areas, is Employment Insurance, and that is controlled by the federal government. Information-gathering on market options, and the capacity to influence international trade including (crucially) exchange rates, falls largely within the federal domain. Much of the remaining information is controlled by private industry who are generally unwilling to share it, for reasons of competition and because fisheries decision-making is so subject to politics and often short-term power struggles. These complexities are all well known, and frequently seen as a major source of vulnerability in our fisheries that countries like Norway do not have to deal with. They are exacerbated by the international problem of straddling stocks and the largely ineffectual policy context within which governance of these stocks has to operate.

Such major, longstanding sources of vulnerability, particularly at the provincial level, and especially when federal policies are dictated by interests (political and otherwise) and concerns that are only marginally linked to provincial concerns. The problem of vulnerability is exacerbated when provincial concerns are not informed by knowledge and policies that give priority to fisheries and remote coastal communities. In such cases, there is a particularly high risk that community concerns will be traded off against other priorities. As we seek ways to build resilient fisheries and coastal communities for the future, we need to take these vulnerabilities into account and build in resources, capacity and counter-mechanisms to help reduce them.

Vulnerabilities within Federal policies

- (i) Rapid erosion of federal infrastructure and capacity for government support for science, conservation, and management

Pressure on our fish resources is substantial. Over the next several decades there will be additional pressures on them and on other parts of our marine ecosystems as a result of increased oil and gas development, more shipping, the growth of intensive aquaculture, climate-change related ocean warming, species movements, and ocean acidification—to name a few of the known stressors on our marine resources.

The federal Department of Fisheries and Oceans (DFO) is responsible for the stewardship, conservation and management of our national ocean resources. Effective stewardship depends on effective conservation and management. These in turn depend in part on strong and comprehensive science carried out on an ongoing basis and at appropriate, scales – that is, on effective and appropriate management approaches that mesh with ecological, social and economic changes, including market opportunities. Science needs to be adequately resourced and its work and findings transparent. It needs therefore to be informed by long time series of systematically collected, longitudinal data from both coastal and offshore areas, which accurately capture fishing and other kinds of mortality, and are sensitive to changing fishery dynamics, stock structure, related differences in productivity between stocks and in the reproductive value of different age groups.¹⁵⁹ DFO scientists also need to be informed by good data on changing predator-prey dynamics, and by the knowledge and insights of resources users. They further need to cover many (not just commercial) species, monitor biophysical changes and variability across marine ecosystems, and their findings must be presented in accessible formats and in a variety of public fora where they will be opened to discussion.

Since the 1990s, some responsibility for management and conservation has moved to regional levels, as is appropriate. We now have stronger collaborations between government, university, industry, and environmental organization scientists than we had in the past. But DFO science remains a crucial anchor, both for those collaborations and as the basis for management. Some of the types of science done at DFO (such as annual surveys and stock assessments) are unlikely to be carried out as well or as effectively by other organizations or groups. DFO's capacity to do this work has been undermined, however, by recent changes in Federal funding and policy. Equally, while we now have a Species at Risk Act, few marine species have been listed under that Act since it was introduced.¹⁶⁰ We have too little information on too many species to adequately assess their current and likely (due to climate change) changing status and distribution. This type of vulnerability is being exacerbated by the federal government's disinvestment from stock assessment science and from the science and other investments needed for ecosystem-based fisheries management and integrated coastal zone management (see below).

If fisheries management is to promote resilience, it should be informed, not only by effective and appropriate science, but also by the precautionary approach.¹⁶¹ Other features of governance that enhance resilience include management systems that are polycentric (having multiple centres and authorities associated with diverse resources and fisheries that operate at multiple scales) and multi-layered -- this helps to resolve issues that operate across scales and groups. Other important attributes include accountability – both upwards from groups closer to the ground and (less common) downwards from central authorities like DFO and the Department of Fisheries and Aquaculture. Independent monitoring is also important, as is social justice – addressing inequities that are often linked to power differentials.¹⁶² The recent extensive cuts to the DFO budget have the potential to seriously affect its ability to effectively monitor our fish stocks and the changes in our oceans, to manage our fisheries, and to conserve our resources for the benefit of future generations.¹⁶³ The shocking closure of many regional DFO libraries and dumping/dispersal of valuable textual resources going back over decades is a new and important source of vulnerability in our fisheries science capacity.¹⁶⁴

There are strong pressures on government from certain interest groups to retreat from their

responsibility for the consideration of equity and other issues in management by enforcing a more widespread implementation of ITQs. Some fisheries economists (but not all) support this kind of management ‘solution.’ However, as we argued in Chapter 2, that kind of management is unlikely to meet the ecological and other needs of our fisheries, and it certainly will not meet the needs of our coastal communities. Unfortunately, although DFO has some economists and people trained in resource management on staff, it continues to lack substantive expertise in the other social sciences and thus expertise from those disciplines that incorporate wider social and historical concerns and pay attention to community, power relations and equity in their research. Transparency in decision-making, along with established mechanisms for consultation with the full range of groups affected by decision-making, has also been eroded in recent years. This is reflected in the impoverished (and indeed bizarre) consultation process associated with the Department’s draft document, *The Future of Canada’s Commercial Fisheries* in January 2012,¹⁶⁵ and the resultant widespread concerns among harvester organizations that government was preparing to jettison policies that harvesters see as crucial to their survival and the survival of coastal communities.

(ii) Comprehensive Trade and Investment Agreements

Recent initiatives, like the agreement in principle on the Canada-European Union: Comprehensive Economic and Trade Agreement (CETA), can potentially broaden our access to some international markets. This could result in improved prices for harvesters and vertically-integrated companies, by opening up the possibility of new markets for some products, particularly shrimp and snow crab.¹⁶⁶ CETA *could* also open up possibilities for more seafood processing here, destined for European markets, given that processing wages are lower here than in Europe. However, European insistence that the Agreement remove provincial Minimum Processing Requirements for seafood exported to Europe is a cause for concern, since such requirements have, in the past, been a key mechanism for enhancing the number of jobs created by our fisheries, and thus for capturing wealth in rural and remote areas such as Labrador. At present, the removal of these requirements is confined to the European agreement, but its presence there could encourage similar demands in future comprehensive trade agreements from countries like China where wages are lower than ours. It is also of concern that protection for some key policies (like the fleet separation and owner operator policies that have helped support small-scale fisheries) is weaker than it should be in CETA. This leaves these policies vulnerable to future challenges that would be decided by an international body rather than the Canadian and Newfoundland and Labrador governments.¹⁶⁷ The federal-provincial \$400 million fisheries fund linked to the deal has the potential to support efforts to develop the kind of revitalized fisheries and coastal communities we are advocating in this Policy Paper, but only if used appropriately and only if such efforts address many of the key vulnerabilities outlined in this document. It could help the industry diversify, develop new markets *and* help those who lose their jobs retire with dignity or find other work – preferably in a diversified industry. However, Scott Sinclair (in his 2013 assessment of potential impacts on fisheries of CETA and other deals in the works) argued that, “fisheries are ... a sensitive sector, with many domestic policies at risk from the far-reaching provisions of these new trade and investment treaties.”¹⁶⁸

At stake is the ability of Canadians to pursue public policies that curb domination of the fishery by large corporations. Such policies help spread the

benefits of the fishery more widely among smaller, independent fishers and coastal communities. They also allow the regulation of the fishery for conservation and other public purposes without fear of undue pressure from international corporations or the threat of challenge under unaccountable international trade treaty enforcement mechanisms.¹⁶⁹

(iii) Ongoing overfishing and poor recovery and protection of some fish and shellfish populations

The risk of overfishing, along with poor management of our fisheries, are both still with us. The former is evidenced by the apparently-stalled rebuilding of diverse cod stocks or, minimally, the high uncertainty about what is happening with these. The latter can be seen in the failure to devise strategies to manage cod and many other fisheries in a way that would enhance the reproductive resilience of these stocks. We could, for instance, protect larger and more fecund spawners in our groundfish fisheries (as in some parts of the lobster fishery), by setting an upper size limit on the size caught in recreational and some commercial fisheries. The largely unexplained collapse and stalled rebuilding of capelin stocks, the extremely limited scientific information on some commercially important species including halibut, and recent concerns about the collapse of the scallop stocks in Port au Port Bay¹⁷⁰ are other indications that we are still vulnerable to the risk of overfishing. CURRA research by Paterson has shown that our west coast herring purse and tuck seine fisheries have been heavily concentrated in a relatively small area, opening up the risk of depleting populations and reducing biodiversity within our herring populations.¹⁷¹ What impact does this concentration of effort have on the status of spring spawning herring and of local spawning aggregations? Why aren't herring and capelin stocks in this province managed (as they are in New Brunswick) on the basis of spawning aggregations rather than at the level of large management zones?

Canada is doing too little to protect biodiversity and habitat¹⁷²: we have not done enough to identify sensitive and important habitats or to protect them. Protecting biodiversity is ecologically important because of the impact of species removal on fish-chain productivity and other effects. It is also economically important, because (as we can see from the case studies of fisheries in 3Pn and 4R) it is not always clear which will be the most valuable species in future fisheries. However, very limited progress has been made on the establishment of Marine Protected Areas (MPAs) – including exclusive fishing zones and areas closed to certain kinds of fishing and other activities in our ocean and coastal zones. Indeed, the federal government seems to have retreated from efforts to meet its international and conservation obligations in relation to MPAs in recent years. These are an important tool for protecting biodiversity and sensitive habitats, and can be a buffer against the risk of overfishing. Of the closed areas and exclusive fishing zones that exist in coastal areas, most are small and have been created after pressure from local small-scale harvesters rather than with leadership from DFO, and some of these closures may not last long enough to support stock rebuilding. Of course, it may be that not enough science is being done to even know what this would entail.¹⁷³

In short, much more could be done with increased government support operating with engagement with industry and communities. MPAs are an important tool, not only for sustaining fisheries and protecting habitat, but also as a potential mechanism for promoting tourism and

public and school-based education. They are thus an important indirect source of economic value-added for our fisheries. To our knowledge there is currently no strategy, or available resources, that would allow the federal government to work with fish harvesters to identify potential closed areas in different parts of the province, to monitor the impacts of those areas on an ongoing basis (in collaboration with universities), and to work with provincial departments, agencies and local communities to add value to the local economy in those areas through tourism and other activities.

Another vulnerability is the absence of a system designed to carry out systematic assessments of the extent to which current federal resources are sufficient to prevent problems in our fisheries. These may be of poaching, under-the-table sales, dumping, and quota-busting, for example, which are practices that undermined the accuracy of stock assessments and contributed to the collapse of the groundfish stocks in the 1990s.¹⁷⁴ Some recent court cases suggest under-the-table sales have not completely disappeared -- how widespread is this practice? Again, do we know what the fishing mortality in our herring and capelin fisheries, and in our halibut and recreational cod fisheries, actually is? The lessons of history are clear: in a fisheries management system based on stock assessment science, total allowable catches and quota allocations (particularly IQ and ITQs or Enterprise Allocations), these gaps in knowledge of fish biology and of the prevalence of illegal practices have the potential to seriously undermine the accuracy of stock assessments. This will result in Total Allowable Catches and quotas that are set too high. History also tells us that poor surveillance of illegal practices can lead to them spreading rapidly through a fleet.¹⁷⁵

Finally, the federal government changes to Employment Insurance regulations in January 2013 are a threat to workers, fisheries and other employers in seasonal industries in rural Newfoundland and Labrador. MacDonald, an expert on Employment Insurance, produced an overview of these changes and their potential impacts for the CURRA. She shows that they are only the most recent in a history of initiatives that have sought to treat so-called 'frequent claimants' (among whom are seasonal workers) differently from other claimants. MacDonald points out that the EI policy changes were opposed by Atlantic premiers, employers and unions. Furthermore,

the stated logic of the regulations reflects little understanding of rural seasonal labour markets. Seasonal workers typically have long-term attachments to their employer and return year after year. Employers, for their part, rely on this trained, experienced labour force. For the most part, seasonal employers, by the nature of the industry, are not in a position to offer year round work (although industries such as tourism are working hard to expand the season). Experienced seasonal workers are often not in a position to take what is deemed 'suitable employment' ... and, in terms of looking for other work, other seasonal jobs are not an option, as most are available simultaneously. Often full time jobs are limited and not necessarily a good match in terms of skills, or location. Furthermore, given the low wages in much seasonal work, taking a new job at 70% of your normal salary (an expectation in the changes), means working at minimum wage.¹⁷⁶

The changes penalize seasonal workers by requiring them to take jobs within a one hour commute. They enhance seasonal workers' sense of vulnerability by subjecting them to high levels of scrutiny and, importantly, by ignoring the often-limited employment options in the winter in most rural communities and the often-high costs and other risks associated with the commutes the government requires. Operators of seasonal plants and seasonal businesses in other sectors like tourism feared the EI changes would reduce, rather than enhance, their access to an increasingly limited pool of skilled labour in their region. In short, vulnerable seasonal workers mean vulnerable coastal and rural communities.

Provincial/community governance

We have some (but not all) of the provincial nested structures we need for effective governance of our fisheries, but they are not sufficiently integrated. There are also some key gaps that need to be addressed if we are to develop a strong, ecosystem-based approach to fisheries and coastal governance that will protect marine and coastal ecosystems, build strong links between regional economic development and fisheries conservation, and produce sustainable fisheries that meet multiple societal goals from ocean to plate.

(i) Undervaluing of our Fisheries and Disconnects between the Department of Fisheries and Aquaculture and other Departments

Evidence for the undervaluing of our marine resources is not hard to find. According to Russell Wangersky of *The Telegram*, the budget of the Department of Fisheries and Aquaculture (DFA) was cut by \$17 million in 2013/2014, a reduction of 37% from \$49.68 million to \$32.85 million. Furthermore, the 2012-2013 budget was underspent, with a particular failure to spend in support of marketing,¹⁷⁷ as was the 2013-2014 budget, and the budget estimate for 2014-2015 is only \$29,750,800, only 60% of the 2012-2013 budget.¹⁷⁸

DFA under-funded and its funding is in decline. In addition, there appear to be few formal bridging mechanisms between provincial departments for the Department of Fisheries and Aquaculture such as could occur with Industry, Business and Rural Development, Tourism, Culture and Recreation, or to Advanced Education and Skills. We have heard that the DFA operates largely in isolation from other departments. Some evidence for this can be found in a scan of a number of the reports produced on behalf of the Department over the past 10-15 years. The reports suggest a robust history of consultation with industry representatives, but limited evidence that other departments or community groups were invited to be part of, or contribute to, the consultations. If this is so, it is a fundamental problem with provincial level governance. This neglect of part of DFA's constituency will have contributed to the tendency to refer only in passing to the importance of communities to fisheries policy-making, and the lack of development of a framework that would encompass the necessary mechanisms for incorporating community and regional-level concerns into decision-making.

For coastal communities and regions to be economically, socially and culturally resilient into the future, they will require a set of policies and institutional arrangements that support a diversified economic base and range of employment opportunities. Since the collapse of the groundfish stocks, most economic effort in these areas has focused on tourism development. Tourism is a highly seasonal industry, often non-unionized, with relatively low wages. It is vulnerable to local, regional, national and international changes and opportunities. Making matters worse, the provincial government makes tourism-related decisions without careful attention to the possibilities for tourism inherent in fisheries, although the Department of Tourism's compelling advertisements on television revolve around the theme of coastal community life and culture, and draw many people to the province as a result. Consequently, we have no detailed awareness of the contribution that local fisheries make to our tourism industry. However, it is precisely this rural coastal community way of life that charms tourists -- we should be careful not to destroy it.

Although small-scale, community-based fisheries are crucial to our rural tourism economy, government has tended to make fisheries-related decisions -- such as those related to resource allocation and the distribution of plant licences -- without considering this. That means we are missing important opportunities for promoting synergies between the sectors that are essential to the enhancement of resilient fisheries and tourism-dependent communities. There is a real risk that current and future decisions that erode community-based fisheries could threaten the viability of the tourism sector and thus of coastal communities. Evidence of this includes the very limited number of programs in this province, particularly in rural areas, that allow visitors to meet with people in the fishing industry, to participate in fishing, or to tour fish processing plants, and sample and buy locally sourced, high-quality, freshly harvested seafood as well as other value-added products generated from our fisheries. Further evidence can be found in the *absence* of a strong policy framework to support these synergies¹⁷⁹ and to protect and enhance our tangible and intangible cultural heritage from fisheries. This heritage includes the kinds of local knowledge captured in Hall's *Encyclopaedia of Local Knowledge*, which makes visible in a beautiful way the knowledge of more than 80 collaborators on the Northern Peninsula. Such local knowledge and culture is an essential resource for future economic and social development, and will also be vital to environmental resilience.

Tourism currently contributes to the resilience of local fisheries through providing employment for members of fishing families, alternative business options, and a local market for seafood. The neglect of local markets in our formal fisheries policies, the current freeze on new processing and fish-buying licences, and regulatory constraints on combining fisheries with tourism, all weaken both sectors. They leave little space for new ideas, or for investment that could bring new kinds of enterprises and processes into fishery-dependent communities. Lack of support for, or the removal of commercial small-scale fisheries from, rural areas jeopardizes local resilience and innovation. Transport Canada rules and other regulations severely limit the ability of commercial fishermen to derive part of their livelihood from offering on-the-water opportunities for 'experiential tourism' to visitors from the province and elsewhere. This essentially means that less well-trained people who are poorly equipped to go to sea on their own do that job.¹⁸⁰ This is unsafe and unwise.

Other evidence of government (and industry) neglect of fisheries-tourism synergies can also be found in the absence of a quality fresh-seafood retail outlet on the Marine Atlantic ferry premises in Port aux Basques. Such an outlet could market quality local seafood to the approximately

400,000 ferry passengers who use the ferry each year. After all, many species are landed in that region each year. The outlet could also promote the provincial seafood industry to travellers by offering information about our fisheries, and providing high quality, fresh seafood for use in the meals served on the ferry. Along similar lines, we have not developed many fisheries-linked events like, for instance, the Working Waterfronts Festival in New Bedford Maine <http://www.workingwaterfrontfestival.org>.

(ii) Municipal and Regional Level Governance

Municipal governments are a potential, but seriously under-utilized, resource for the development of diverse, dynamic and resilient regional fisheries. Some form of regional government is badly needed to ensure fair taxation of residents and enterprises (including fisheries enterprises) both inside and outside of municipal boundaries, and to ensure that we have the infrastructure and services in place to meet the needs of marine and fisheries development and innovation. This will be particularly important as the level and complexity of marine interventions grows in future decades.

Some form of regional government will be needed to enhance the capacity for planning and innovation in fishery-dependent regions, to contribute both to employment opportunities and also opportunities for dialogue across sectors. Such a governance mechanism could support the development of planning in a context where this is currently almost non-existent. With the support of government, regional governments could help to ensure that we have vital measures in place, such as appropriate harbour and marine emergency response capacity. This capacity not only has to exist, it also has to be effectively co-ordinated if it is to help mitigate the risks and consequences of new and expanding forms of coastal development, including new marine industries, climate change and industrial innovations and changes.

Insufficient attention has been paid to documenting the full contribution of fisheries to rural regions and to the province as a whole, not only at the federal and provincial levels, but also regionally and at the municipal level. Researchers and others have neglected the contribution that socially, economically and demographically diverse and well-managed communities can make to viable fisheries. This includes the provision of dependable and well-trained employees and crewmembers for fisheries, and employment opportunities outside of fisheries for family members of harvesters and others. Local communities can be a marketplace, and a source of investment funds and opportunities for diversifying fisheries. They can help to protect and enhance the value of fishing enterprises and people's homes, by helping to ensure local markets for such enterprises and homes into the future. Communities can also augment provincial resources for providing the hands-on daily care (stewardship) of marine and coastal areas; they can augment the pool of volunteers to help with harbour authorities, conflict resolution and other key aspects of local government.

Sadly, municipal governments have had limited involvement in fisheries in recent decades, and council members sometimes lack knowledge and expertise about this complex and changing sector. A CURRA-supported review of traditional fisheries communities that have Integrated Community Sustainability Plans found that out of 61 such communities, only 17 referenced fisheries in their plans.¹⁸¹ While these plans are not active planning documents, this lacuna is one

indication of the disconnect that exists between municipal governments and fisheries in the province.

We have a complex network of fishermen's organizations that operate at the regional level and feed into provincial and national consultations and decision-making. Many plant workers are unionized; the union represents them in its consultations with employers and the provincial government. Vertically-integrated companies and smaller processors also have associations that connect them to each other and to the provincial and federal governments. However, provincially, there are no formal bridging mechanisms between these organizations and municipal governments, and this is another serious gap.

The challenges of fisheries-dependent Newfoundland and Labrador communities and regions are echoed in the province more generally. Municipalities have long struggled with financial weakness and 'reliance on provincial hand-outs.' This has been exacerbated by reduced support in the early 1990s and by lack of capacity for economic development and planning, not only in fisheries. These challenges have contributed (along with other things) to a growing tendency to have the 'election by acclamation' of councils, as the volunteer base for municipal politics is eroded.¹⁸²

Having never been independent or autonomous, municipalities survive through stubborn perseverance and an increased tolerance of accepting and doing less. Many municipalities within the past 20 years have lost a quarter of their already small populations and have seen their overall level of provincial support decrease by approximately sixty percent. Municipalities continue to operate, but have been noticeably weakened. Towns have greater difficulty in retaining or improving their staff. They operate with aging infrastructure that they cannot maintain and have a difficult time replacing. The demands of economic diversification and environmental standards cannot be addressed by most municipalities, and are instead handled by other governance structures that are organized by the provincial and federal government. Municipalities are provided with enough support to get by, but not nearly enough to be sustainable and thrive.

Keenan and Whalen, Municipalities Newfoundland and Labrador, The Umbrella of Protection

http://www.municipalnl.ca/?Content=CCRC/The_Regional_Government_Initiative.

At present, the province has 278 municipalities and 180 Local Service Districts. Only 158 of the municipalities have municipal plans in place¹⁸³ and these only apply to land-based activities, even though issues with waste water, coastline changes, climate change and adaptation work are all concerns which will impact communities increasingly in the future. They are matters for which municipalities have some responsibility. Local Service Districts would not have plans. Clearly, municipal planning needs to include marine and coastal developments. Some types of development have the potential to negatively affect our fisheries. These include intensive aquaculture, the cruise ship industry, tourism initiatives, waste water disposal requirements, and

new kinds of industries (such as those focused on the extraction of seaweeds or other marine products). Better coordination of development could enhance their positive, while removing their negative, potential contributions to the resilience of our fisheries and coastal communities. Regional government could build up the science capacity for marine and coastal monitoring and management in the vital, but neglected, coastal waters and bays and fjords in the province, and help to link education and training to tourism and management in these complex areas.

The now defunct Regional Economic Development (RED) Boards had a history of not getting involved in fisheries issues (some say they were not allowed/encouraged to get involved in the sector) and of not providing support to the sector. This had begun to change when they were dismantled. That is, the federal-funder ACOA (the Atlantic Canada Opportunities Agency), followed by the province withdrew financial support just as the RED Boards were beginning to work well with regional fisheries groups in some key areas like the Northern Peninsula. ACOA's rationale for discontinuing support for the RED Boards was they were "'a layer of intervention' that 'adds no value to the end product, which is job creation and wealth creation, which are the objectives of those programs.'"¹⁸⁴ We think that assessment was misguided.

Since at least the moratoria of the early 1990s, the disconnect between municipal governance, regional economic development initiatives, and governance of our fisheries has contributed to missed opportunities for intersectoral synergies and innovation. Targeting funding to individual businesses will not solve that problem. The same disconnect has limited the capacity of local governments and other groups in fishery dependent regions to work with industry on the integration of fisheries into regional development strategies. It has also likely contributed to the vulnerability of some municipalities and regions to the loss of their fisheries and the consequent loss of employment, tax revenue and other key elements of their communities. Consequently, it has probably exacerbated the existing serious problems with regional planning and constrained the development of effective and sustained integrated coastal zone management.

Weak municipalities and the absence of some form of regional government contribute to the persistence of patronage politics as the main vehicle for rural groups and businesses to influence policy. They leave municipalities and other local groups with few options other than to go to their MHA or MP to try to get things done, and they discourage collaboration and integration across sectors and agencies within regions. To be sure, strong regional government might erode the powerbase of MHAs and MPs, but it would substantially increase the capacity of fishery-dependent and other rural regions to govern themselves effectively and for the long term. Regional entities, funded at least in part by municipalities and other revenues, could provide strategic advice to communities. Some administrative responsibilities could move 'up' to the regional level, leaving local councils to deal with local issues.

Some municipalities will disappear (some are already disappearing), but regional government would give local residents a place to turn to that had responsibility for planning and services. This would create a mechanism for taxing businesses that choose to locate in rural areas outside municipal boundaries, and for monitoring their activities. It could also help with the development of social enterprises and other kinds of innovative entities that could use resource rents, as in the case of SABRI, to support economic diversification. Regional governments could also be a training ground for collaboration -- badly needed in an industry where there are often deep divisions between (for instance) processors and harvesters, and sometimes between groups of

harvesters and communities that are competing for new industry. CURRA researchers experienced these divisions first hand on the Southwest coast, where it took two years of research activity at the community level to build enough trust to lay the foundations for a regional fisheries and seafood festival. All of this work died when ACOA and the province removed the funding for the RED Board in that area – thereby removing the only regional entity that could play a coordination role for such events and manage external funds.

Finally, meaningful investment in the development of regional government could also reduce institutional duplication, and deal with the large number of regional entities in the province each of which has been set up to deal with a particular problem or situation.¹⁸⁵ This is a costly approach to managing complex rural and coastal planning and development challenges, both financially and from the perspective of coordination and organizational development. Such a governance entity could well reduce the volatility that has too often accompanied regional development options in rural areas. It happens, for example, when local groups, who have often just begun to find ways to make existing structures work, are faced with either a change in government or with a policy that eliminates them. This happened with the RED Boards, and that kind of volatility is extremely problematic in regions with very limited human and financial capital.

4e Conclusions

While there is no doubt that there are significant vulnerabilities in our fisheries and fishing communities, our examination of these has made it clear that they are not self-inflicted for the most part. Rather, they derive more from policy weaknesses (at all levels of governance), from the (related and post-1992) almost exclusive focus on downsizing our fisheries, and from the under-valuing and consequent neglect of marketing, fisheries revitalization and enhancement of the role of fisheries in regional economic diversification through better integration of fisheries with other sectors, communities and regions. The challenge that faces us now is to see what can be done to address the outcomes of years of neglect, thereby breathing life and hope into the industry and into fishery-dependent communities around our coasts.

In 2011, the provincial government rejected the report of the Steering Committee for Fishing Industry Memorandum of Understanding that called for major reductions in the size of inshore and nearshore fleets. The biggest reductions were to happen in northeast Newfoundland and southern Labrador, with a 30% reduction in crab and shrimp plants (by volume). The price tag for the changes was \$450 million.¹⁸⁶ The reason the Minister gave for rejecting the report was that it dealt only with down-sizing and not with restructuring.¹⁸⁷ We agree that this is a fundamental weakness in that report. We think it is not surprising, because the MOU portrays the fishery as though it is composed only of individual fishermen, plant workers and a few companies. The Report did not start, as we have done, with the strengths of our fisheries. It did not capture the complexity and diversity of our fisheries and there were no references to households, families or coastal communities and regions (or to intergenerational issues and equity). It therefore did not address the potential consequences of radical downsizing for communities and regions. Nor did it address the strong need to diversify markets, find new ways to add value to our seafood, or many other issues discussed in this policy paper.

It is time to shift our emphasis from downsizing to revitalizing our fisheries. There are many reasons why we must not lose our small and medium-scale fisheries. The most important of these is that the majority of them are *still contributing in crucial ways to the lives and livelihoods of thousands of people in the province* and to the *governance of thousands of square miles of ocean resources and thousands of miles of coastline* as well as hundreds of wharves and other types of infrastructure. But these fisheries in particular need vibrant communities and multiple and diverse opportunities for marketing their catches, be that locally, provincially, nationally or internationally. Opportunities must include not just commodity markets, but also the development of some processing capacity and the related targeting of high quality, traceable products to different market niches. Our fisheries are central to the economic base of many communities from Labrador to Cape Race and from Port aux Basques to Cape Freels. If we remove commercial, owner-operator fisheries from these communities, and seafood processing from coastal regions, those families, businesses and communities left behind will have even fewer options in the future.

On Low Technology, Work by Hand and Memory Loss:

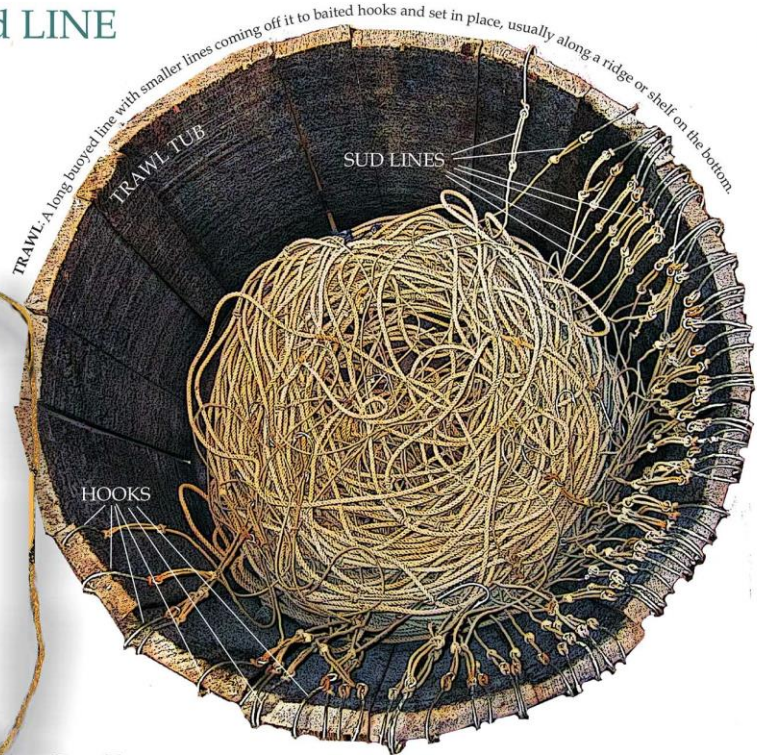


COD JIGGER - was used un-baited and attracted fish through "jigging."

Re-memembering HOOK and LINE

JIGGING: Using an unbaited hook attached to a line and jerked sharply upward to catch cod. Many fishers lower the hook to the bottom and pull it up a few feet then pull rhythmically on it to attract fish to its movement. Every three to six pulls they jerk more sharply to snag the fish on its large hooks.

HANDLINE is used baited or un-baited, sometimes with as many as a dozen hooks. It also attracts fish through the movement of "jigging." Handlining was most often done in the fall after the trap fish had moved away from shore.



TRAWL - A long buoyed line with smaller lines coming off it to baited hooks and set in place, usually along a ridge or shelf on the bottom.

Most of the small gear of the traditional inshore fishery is stored in the sheds and fishing premises of elder fishers. Much of it is appearing in museums and visitor centres with panels explaining what it is called and how it was used. Many younger people do not know what this simple but sustainable technology is, unless, during the food fishery, they might have an opportunity to engage in the hook-and-line practices of the past. You needed to know how to *make* the gear *and* how to *use* the gear.

Chapter 5 Recommendations for moving forward



Over the last several decades, and despite huge challenges, we have sustained diverse fisheries that combine vertically-integrated corporate enterprises in some areas with strong small and medium-scale owner-operator enterprises, and onshore, community-based processing in others.

The co-existence of different kinds of harvesting and processing enterprises strongly weighted towards owner-operator fisheries is a key strength of our fisheries that has helped us balance efficiency with equity, respond to diverse regional ecologies and histories, and deal with ecological and market volatility.

Although not perfect, this structure has helped us develop fisheries that are, by and large, competitive and that generate substantial wealth, while also anchoring a good share of it in fishing households and fisheries-dependent communities and regions.

It is time to shift our focus from *downsizing* to *revitalizing* our fisheries. To do that, we need a new policy framework. Given the strengths and vulnerabilities in our fisheries and coastal communities -- identified in the previous chapters -- we offer some broad recommendations for initiatives that, if followed, will *enhance our basic strengths and help reduce our vulnerabilities* as we move forward with building socially, economically *and* ecologically resilient fisheries and coastal communities/regions for the future.

Any policy framework that ignores the very real strengths in our diverse, community and regionally-embedded fisheries will exacerbate their real vulnerabilities. We need to keep the policies that work now, and develop new ones to address our current vulnerabilities. We urgently need a policy framework that will *enhance* the resilience of our marine resources (see Sections I and II of the recommendations), *protect and enhance* the owner-operator and community bases of our fisheries (Section III), *ensure* that fisheries contribute to the future resilience of our communities by broadening their economic base and retaining and attracting new industry and investors, thus *maximizing* our opportunities for equitable and sustainable wealth generation (Section IV). The following recommendations are, we recognise, all inter-related, but we have discussed them separately for clarity. We offer them as a road map to help us build socially, economically *and* ecologically diverse and resilient fisheries, and thriving coastal communities and regions for the future.

[The recommendations marked ** need to be acted upon immediately in order to protect the base from which we can build a resilient future.]

SECTION I: OVERARCHING RECOMMENDATIONS

**** Recommendation 1.** The federal and provincial governments, the FFAW and industry should continue to shift their emphasis from downsizing to revitalizing our fisheries and coastal communities, by developing and implementing a policy framework with revitalization (achieved through integrated rural development) as its core objective.

Our industry downsizing efforts since the 1990s have, to some degree, been so successful that we are approaching a tipping point where we could start eroding the diversity and many of the other strengths of our fisheries. Fixing the fundamental vulnerabilities in our fisheries will help to turn this tide. Some of these vulnerabilities include our reliance on commodity markets, limited recruitment of young people into the industry, and the removal of fisheries from the economic base of some communities and regions. Another possible vulnerability is the marine ecosystem shift, that some believe is happening, from shellfish species to groundfish species; this is a vulnerability because key parts of the industry have become overly specialized on the former. Ongoing downsizing will not, by itself, fix these kinds of problems.

Recommendation 2. This new federal-provincial policy framework for revitalized fisheries should include clear recognition of the interdependence that exists between fisheries resilience, integrated rural development and the resilience of coastal communities.

We need to build on the legacy of the hard work and investments we have made in our fisheries over many decades. The way to start is to draw on, and enhance, the relationship between fisheries and communities, locally and at the regional level, and use this to revitalize our fisheries. Communities are sometimes recognized in federal and provincial fisheries-related government documents, but they are referenced only relatively rarely and sporadically, almost as though those referencing them could not quite appreciate why they are there. The European Union is documenting the dependence of communities on fisheries and is taking this into account in decision-making.¹⁸⁸ We should be doing the same thing here. We were told recently that federal fisheries managers have been instructed to remove the mention of communities from their discourse. If this is the case, we have to ask why and to what end, given that communities are the places where we make our homes, produce our food, educate our children, care for the elderly and disabled, pass on and create our cultures, and build our futures. Why, then, would any democratically-elected government think it was wise to manage its fisheries without taking communities into account?

Recommendation 3. The federal and provincial governments, the FFAW and industry should bring representatives of coastal municipalities and of other sectors more fully into fisheries discussions, so that they are better aware of what is happening in the industry and can provide input on issues that are vital to the future resilience of both our fisheries and these communities.

Recommendation 4. The new policy framework should include a carefully developed strategy for supporting the viability of small and medium-scale owner-operator enterprises. This should include attention to the intergenerational transfer of harvesting and processing enterprises and their assets in a way that ensures these are retained, wherever possible, by people living and working in the regions adjacent to the resources on which they rely. Developing this will require a labour market study of employment and recruitment, since both of these are essential to

revitalization.

Much of the capital invested in our fish plants, vessels, harbours and gear will be lost if no one takes over the existing enterprises and if their licenses and quotas are transferred out of coastal regions. If that happens, many of our coastal communities will lose a substantial portion of their economic and social base. In the process, options for economic diversification within the industry and in these communities will likely be lost. We currently have what Norwegian researchers have called a ‘recruitment paradox’ in our fisheries.¹⁸⁹ That is, we have areas where there may still be too many enterprises involved; at the same time, we have claims from some quarters about labour shortages, along with clear evidence of rapid aging in our fishing and processing labour forces and those regions that have lost or are in danger of losing (through retirements) most of their fishery enterprises and labour forces. There is no easy or quick fix for these challenges. The recruitment paradox points to the need for a carefully developed strategy for supporting the viability of existing enterprises and the intergenerational transfer of regional fisheries assets. It is quite likely that here, as in Norway, the two parts of the paradox are linked, although the challenges vary across fleet sectors and regions. *Strategy development should therefore begin with a detailed study of the changing and varied employment and recruitment systems in different sectors of our fisheries.*

SECTION II: CONSERVATION AND MANAGEMENT RECOMMENDATIONS

**** Recommendation 5.** The federal government should provide the investment needed to ensure that it is able to live up to its commitments in international agreements, including implementing the ecosystem-based management approach to which it is already committed.

Canada has shown some leadership in ocean governance in the past. We were one of the first countries in the world to pass an Oceans Act. We have signed agreements that commit us to protect biodiversity,¹⁹⁰ adhere to the precautionary principle, engage in ecosystem-based fisheries management and create a growing network of Marine Protected Areas.¹⁹¹ For the most part, these commitments are not being met. Indeed, many fear we are barely holding our own, if not actually losing ground at the present time. For instance, the Royal Society of Canada Expert Panel Report *Sustaining Canada’s Biodiversity* concluded that, “After examining the evidence, we conclude Canada has made little substantive progress in meeting its commitments to sustain marine biodiversity. Although Canada has developed and signed on to sound policies and agreements, and heralded good ideas with strong rhetoric, comparatively little has actually been done, leaving many of our national and international obligations unfulfilled.”¹⁹²

Recommendation 6. The federal and provincial governments should work with industry, the universities and other interested bodies to put in place an appropriate and adequately resourced science and conservation framework for our fisheries and marine ecosystems, from the coast and bays to beyond the 200-mile Exclusive Economic Zone.

This is not the time to be under-investing, or even disinvesting, in key areas of fisheries science and conservation. We urgently need a science and conservation strategy that will give us a sound basis for stewardship so as to ensure that the ecological and economic resilience of our fisheries is maximized over the longer-term. Any science and conservation strategy that is inadequate for

that task can lead to overfishing *and* to unnecessary quota cuts and closures – particularly in diverse fisheries and marine ecosystems that are undergoing rapid change. It can also threaten our access to markets. These are things we can ill-afford.

Effective marine conservation requires substantial public investment in the development of high quality and often long-term, publicly-available datasets at various scales from the local/regional up. We also need public investment in the management, analysis, interpretation and dissemination of those data. Marine conservation further requires investment in research on species interactions, behavioural and evolutionary ecology, and conservation biology. These data should be collected using government, university and industry-supported platforms, in order to maximize the use of existing platforms and expertise, including those found in small-scale fisheries. The data should be made available to different groups, possibly through existing Research Data Centres, to take care of any concerns about confidentiality. The data will need to be supplemented by attention to the dynamic nature of marine ecosystems, and by finer scale science initiatives that can be used to help design, monitor and assess the implementation and effectiveness of conservation mechanisms like bycatch mitigation strategies, seasonal closures, exclusive fishing zones and other kinds of closed areas.

**** Recommendation 6a.** The federal government should commit to the further development of nested governance structures, with policies developed through open consultation, and with decision-making being carried out as near as possible to, and with the involvement of, those affected. Policy-making will still need to take into account larger societal concerns and the interests of future generations.

The ecological and social complexity and diversity of our fisheries is a crucial strength. Complex and diverse fisheries that are also dynamic and changing cannot be appropriately governed from a distance or in a top-down fashion. We have some elements of the appropriate nested governance structure in place, but they are not sufficiently developed. They are also in tension with other decision-making processes that are not based on open consultations or pay attention to different scales and interests. This has to be fixed.

Recommendation 6b. As part of the better-developed nested governance structure, the Province should increase its capacity to participate as a major stakeholder in fisheries science and management, particularly as these affect coastal communities.

Recommendation 6c. The provincial and federal governments should invest more fully in the science, governance and integrated development of our inshore and coastal zone. They should work with the university, industry and community groups to establish a coastal community observatories network (C-CON) in the province.¹⁹³ C-CON should have the capacity to carry out interdisciplinary, community-engaged collaborative research that cuts across disciplinary and institutional boundaries and links resource management and conservation concerns to those related to institutional and infrastructural requirements and regional economic development priorities

From a science perspective, our coastal areas have been seriously neglected in the past. They are often fish and shellfish nursery areas and are ecologically complex, with deep and shallow waters, diverse species and vulnerable habitats. The resilience of this part of our marine ecosystems is essential to the future of owner-operator fisheries and our coastal communities.

More knowledge, along with engagement with local people and resources, will help to ensure that our inshore and coastal zones (which are under growing pressure) are developed more effectively and sustainably. The network of coastal observatories could use existing infrastructure like the Bonne Bay Marine Station. This would allow researchers and students to work with government, industry and community groups to identify and ask key research questions that are relevant to that region, attract funding to support research to answer those questions, carry out community-engaged research, and work with stakeholders to identify ways to implement the research findings, thus building more sustainable communities and regional economies.

Recommendation 6d: This revitalized science and governance system should be based on collaborative science and management principles that ensure that fish harvesters and others are involved in designing the research, carrying it out, and interpreting the results. It must include the development of a conservation strategy for each of our fisheries and for different parts of our marine ecosystems. Those strategies should be monitored and evaluated on a regular basis.

Conservation strategies should identify and protect critical habitat, as well as enhance biodiversity. They should support species resilience by preventing the serial depletion of local populations and maximizing the reproductive value of species left in the water. A range of instruments can be used to achieve these goals, including seasonal and more permanent closures of particular areas (Marine Protected Areas), protection of spawning aggregations, and slot fisheries (such as those we have in some lobster fisheries) that leave both juvenile and large, old spawners in the water.

SECTION III: INDUSTRY-RELATED RECOMMENDATIONS

****Recommendation 7.** The federal government should retain and enforce the owner-operator and fleet separation policies and the policy around controlling-agreements.

The owner-operator fleets and our on-shore processing plants are producing most of the fisheries wealth that currently stays in the province, particularly in rural regions. If we lose those fleets and current policies that help to anchor the wealth they produce in rural regions, we will lose ground. When used effectively, strategies such as owner-operator and fleet separation policies, along with the principle of adjacency, keep control of our fisheries in the hands of local people who have a historical dependence on the resource. Last year the Canadian Federation of Municipalities supported fleet separation. Four of the eastern provinces did as well. The one left out, unfortunately, was Newfoundland and Labrador. This province needs to put its support behind all of these policies.

**** Recommendation 8.** The federal government, with support from the FFAW, the provincial government, and other groups, should develop strategies to enhance the longer-term resilience of our small and medium-scale owner-operator fleets.

The FFAW is already experimenting with a variety of creative strategies to address some of the vulnerabilities in our fisheries, including fleet viability and intergenerational recruitment, but they have very limited resources with which to do this. Their work would benefit from more

active engagement by other parties, including both levels of government, processors, retailers, researchers and others.

**** Recommendation 9.** The federal government should ensure that a core objective of these strategies is to protect the viability of these fleets into the future, through balanced and coherent policies arrived at through transparent processes.

**** Recommendation 9a.** An unbalanced policy that the federal government should review and reject is the ‘last-in-first-out’ policy (LIFO) in the shrimp fisheries. It appears to have been arrived at through non-transparent processes. More importantly, it will undermine the diversity and resilience of our owner-operator shrimp enterprises by allocating the vast majority of the quota cuts to those owner-operators thereby threatening these enterprises’ future viability.

There are several kinds of offshore license holders. Some operate under frameworks that require them to use their profits to enhance the viability of small and medium-scale fisheries and coastal communities on the Labrador coast and Northern Peninsula, rather than for individual gain. Others -- who have no such obligations and appear to contribute very little to wealth and employment in the province, or to regional economic development -- nevertheless are privileged over the owner-operator fleets by the LIFO policy. The federal government should create a more appropriate and balanced approach to dealing with quota cuts in the shrimp fisheries.

Recommendation 10. The federal and provincial governments should work with the FFAW and other groups to ensure that the resources on which the owner-operator small and medium scale fleets depend are sustainably managed and not intercepted by boats from other sectors.

There are three reasons for this recommendation. (i) Marine species that are not sustainably managed often contract in terms of their migratory range. This appears to have happened with 4R cod stocks when they were dramatically overfished in the 1980s, resulting in the virtual disappearance of cod from fixed gear coastal fisheries, which jeopardized the existence of those fleets. This must not be allowed to happen again as and when trawlers are allowed to return to fishing for cod. (ii) Habitat protection is crucial to future sustainable management. Different types of gear have different impacts on critical habitat, and trawlers are more likely to damage that habitat. (iii) One of the risks of permitting the fishing of migratory stocks by several fleet sectors is that mobile offshore fleets (trawler and purse seine vessels) will intercept migrating fish first, thereby preventing them from migrating into coastal waters where they would have been available to inshore fixed gear harvesters. The risk of interception needs to be addressed to avoid it becoming a practice that could force out small-scale enterprises. Limiting harvesting intensity on migratory fish aggregations will help to reduce the risk of overfishing local migratory populations, thus helping to sustain marine biodiversity.

****Recommendation 11.** It is time for the provincial government to launch a systematic investigation into the history and effects (past and present) of the Minimum Processing Requirements. This should include an assessment of the full range of other types of strategies that might be used to achieve, or ideally exceed, the capacity of these Requirements to support diverse fisheries and to anchor fisheries wealth in coastal areas, where it can contribute to economic development.

One of the reasons why our fisheries, particularly the owner-operator fleets, have survived and been able to make such a substantial contribution to regional economies, is that almost all of what they produce has been landed and processed in the province. The province's Minimum Processing Requirements have helped to ensure that this happens. Along with attention to regional concerns in the allocation of processing licenses, these Requirements have created business opportunities for processors, and employment for local plant workers. In the process, they have helped to sustain coastal communities. If we are going to waive or further weaken the use of Minimum Processing Requirements, it should not happen in the absence of systematic research on these and other alternative tools that might achieve the same outcomes. Among such alternatives are arrangements like those that produced the Labrador Fishermen's Union Shrimp Company, SABRI, and the Fogo Island Co-op – enterprises based on social investment principles that hold a clear mandate to use wealth generated from fisheries to support the development of regional fisheries and economic development.

Recommendation 12. The provincial government should then work with the federal government, the FFAW and industry to develop new mechanisms for processing and marketing that will anchor fisheries employment and wealth in coastal areas, where they can contribute to economic development.

Recommendation 12a. All levels of government and industry, with input from municipalities, should identify optimal ways of organizing harvesting and processing licensing and management that maximize the wealth (including employment) generated from these resources, and then anchor that wealth in the relevant regions and the province as a whole.

Recommendation 12b: Instead of concentrating our attention on only a few species -- crab, shrimp, lobster and cod – all levels of government, with input from the FFAW and processors (and with help from the university and other organizations as appropriate), should be considering the full basket of more than 50 different species that are currently landed in different regions. They should also take stock of other species, not currently landed, that could be commercialized in the future.

Recommendation 13. All levels of government should help to carry out market analyses for all of these species, including markets for fish and shellfish of different qualities and sizes, and develop a comprehensive marketing program for these species.

Careful attention to the species available in different regions, and to different sectors within those regions, will help us develop short and long-term strategies for minimizing the costs, and maximizing the wealth generated by the available mix of species, fishing and processing capacity. These sets of information will allow us to identify and fill gaps in capacity in the fisheries sector at the regional level.

Recommendation 13a. The marketing program should seek to develop new and existing national, as well as international, specialized market niches for seafood products.

By branding our seafood as “wild,” “organically grown,” “ethical,” and “community-supported,” we can benefit from the development of strong niche markets for our wild fish, while also enhancing the quality and diversity of employment created through the industry and its links to

other parts of the economy. Indeed, more fully-developed and effective local markets for our seafood could help us to develop these specialized market niches at national and international levels.

Recommendation 13b. It should also include the development of fair-trade marketing options that -- unlike Marine Stewardship Council Certification (our current focus) -- emphasize fair wealth distribution as well as sustainable fisheries. This will help to ensure that those harvesters and processors who are investing in both stewardship and their communities, receive a price/wage premium for their products.

Recommendation 14. While the fishing industry will always be export-based, the federal and provincial governments, the FFAW and the industry should develop strategies to enhance the contribution of the industry to provincial food security, because this will both boost our access to excellent market opportunities and contribute to the health of our population.

****Recommendation 14a.** The provincial government should document per capita local seafood consumption in the province down to regional levels and then quickly develop a strategy to triple that consumption or more by 2020.

****Recommendation 14b.** The provincial government should ensure locally-sourced, high-quality seafood is a regular menu item in school cafeterias, public buildings and onboard ferries servicing this province. Ferries should also have refrigeration and freezer capacity available for use by passengers, as needed, to store locally-purchased seafood while they are in transit.

These items should be a standard part of contracts between government and these institutions for such services. Institutions such as Marine Atlantic should also be encouraged to create space for the marketing of high quality, locally-sourced seafood on their boats and at ferry terminals.

Recommendation 14c. The provincial government should work with the FFAW and industry to encourage the establishment of more retail seafood outlets and the establishment of community-supported fisheries where consumers have the opportunity to purchase fresh seafood directly from harvesters and learn from them about the different species, how to catch them and how to prepare them for consumption.

At present, there is not a single seafood shop (one gas station sells cod fillets, and fish is sometimes sold from trucks) along the 200 km stretch of highway from Clarenville to St. John's. There is a great deal of traffic on this highway and it has more than enough fast food outlets selling food that is neither good for us nor locally sourced. The fish assemblages in Trinity and Placentia Bay are rich and diverse. They could easily support a seafood shop similar to the one that exists in Rocky Harbour on the west coast. These kinds of missed opportunities should not be happening. More of these kinds of outlets would be good for the consumer, would improve our health and would contribute to employment and other opportunities in small and medium-scale fisheries. The government, the FFAW and industry need to create an environment that encourages investment in these kinds of enterprises and in community-supported fisheries.

SECTION IV: COASTAL COMMUNITIES RECOMMENDATIONS

Recommendation 15. The provincial government should create a mechanism (ideally some form of regional government) to bring municipalities together, both with each other and with different groups in the region, to support regional initiatives. Ideally, that mechanism should have a mandate that encompasses land, shore and water-based activities inside harbours, including new developments. There will be legislative challenges to this kind of mandate, but in its absence we are unlikely to achieve the level of coordinated local knowledge, monitoring and enforcement required for effective integrated coastal zone management.

The kinds of initiatives those regional bodies might support are, for example, protection of our tangible and intangible cultural heritage related to fisheries and other activities, and joint work with other organizations to support marine stewardship, marketing initiatives and the generation of spin-off benefits from those working in areas like tourism. Those bodies could help connect university, industry, philanthropic and government resources to fisheries and other groups on the ground. They could attract well-connected and skilled people to coastal regions, and build up a store of knowledge and networks crucial for more effective fisheries diversification and cross-sectoral innovation.

Recommendation 15a. The provincial government should ensure that this regional mechanism is adequately resourced and not subject to the changing political agendas of federal and provincial governments for its survival.

Once that regional governance mechanism is established, it will become what has been the missing ‘point of articulation’ between local, provincial and federal concerns. It will do the essential work of supporting the local development and maintenance of infrastructure that is crucial to vibrant fisheries and other marine activities. It will also be able to support the development of multi-stakeholder initiatives that have the capacity to promote synergies within and between sectors and groups. These could include, for example, protection of those parts of our tangible and intangible cultural heritage that are related to fisheries, joint work with other organizations to support marine stewardship, marketing initiatives, and the generation of spin-off benefits from areas like tourism. The new governance mechanism could also help to connect university, industry, philanthropic and government resources to fisheries and to other groups on the ground.

Recommendation 15b. Those involved in this new regional governance mechanism should be elected by, and accountable to, local people. They should be supported in their activities by both the federal and provincial government.

**** Recommendation 16.** The provincial government should document the benefits that fisheries bring to communities and regions in an ongoing and systematic fashion, including both the direct and indirect contributions they make.

Including direct and indirect benefits will make them visible, allow us to see variations in contributions across fisheries, sectors and regions, and thus be able to identify and address gaps and opportunities for strengthening those contributions.

**** Recommendation 16a.** The provincial government should also document the services coastal communities provide to fisheries, and identify things communities cannot provide, which could/should be provided at the regional, provincial or federal level.

The obvious services communities provide include water, sewer, streetlights, garbage disposal, municipal planning, but others are important as well. Individual communities and regional clusters of communities, for example, are the anchor that attracts schools and health care facilities to the regions where people involved in fisheries live. Families in those communities are a potential source of crewmembers, plant workers and of people interested in buying existing harvesting and processing enterprises, developing new enterprises, and running them in the future. They include people with skilled trades training who can help harvesters and processing workers build their homes and businesses. They include other family members who can help people directly employed in fisheries care for their elderly parents and children.

Recommendation 17. The provincial government and other organizations (as appropriate) should end the regulatory and organizational silos that have shaped fisheries development to the detriment of the industry and our coastal communities.

Recommendation 17a. They should develop partnerships between people in the industry and other interested parties (local people and others, including chefs, artists, filmmakers, and people in ecotourism, marine ecology, engineering, business and other sectors) to foster collaboration on future initiatives, events and opportunities (including study and work opportunities) so that these people can work alongside those who are already in the industry, thus making the sector and our communities more vibrant and creative.

Fisheries-tourism and fisheries-agriculture initiatives are two possible areas where *hybrid enterprises* could be developed. A good existing example of this is “This Fish,” the traceability pilot project for lobster and other seafood funded by Ecotrust in collaboration with the Canadian Professional Fish Harvesters Association. Hybrid enterprises can potentially help key parts of our industry become more visible and profitable, with further benefits for other parts of the industry also possible. Organizations that link tourism and fisheries (such as ecotourism) may attract a new and slightly different type of young person to fisheries-related work. For example, they might take on the creation of an “economusée” enterprise, combining the manufacturing of high value products with public education and tourism in a way that draws on local knowledge as well as fisheries culture and heritage.

Recommendation 18. The provincial government should eliminate any regulatory barriers (such as the freeze on processing and retail licenses) to these kinds of partnerships. It should also identify strategies for enhancing the use of social finance mechanisms, both to support fisheries enterprises and also to integrate them better with other sectors of regional economies, such as tourism.

A review of our existing fisheries-related regulations should identify and address regulatory barriers to the establishment of these kinds of hybrid enterprises. Ecology Action Centre research has also pointed to the potential contribution that social finance initiatives (such as community development corporations, community loan funds, and sustainable tax credits supported by the Nova Scotia government) can make to the creation of resilient, community-based fisheries. Their

detailed report on a recent workshop entitled Social Impact Investing for Sustainable Fishing Communities describes a number of mechanisms relevant to this province.¹⁹⁴

Recommendation 19. The provincial government should expand its provincial nominee program, and use it to (i) encourage and support the immigration of knowledgeable people from other places who have a history of involvement in fisheries and (ii) to build up the population of our coastal communities.

The investments, insights and skills of these immigrants would enrich the ideas, options, and strategies available to us as we revitalize our fisheries. Such an approach will be a more productive strategy for addressing developing labour and investment capital shortages than would be the currently-proposed reliance on vulnerable temporary foreign workers.

****Recommendation 20.** The provincial government should work with the FFAW, processors and the Workplace Health, Safety and Compensation Commission to establish a Seafood Processing Safety Sector Council as soon as possible. Opposition from processors must not be allowed to prevent action in this area.

There is an unfortunate history of neglect of occupational health and safety in fisheries in this province. This should never have happened and must not be allowed to continue. A revitalized fishery cannot afford to undermine the health of its labour force. The burden of occupational injury and disease among existing workers has produced substantial suffering and hardship for affected plant workers. It is likely contributing to apparent labour shortages in the industry both directly, by reducing the pool of workers acceptable to processors and indirectly, by discouraging young people from entering the industry. We have a fish harvesting safety council in the province, jointly financed by the provincial government and the Workplace Health, Safety and Compensation Commission, that is taking a pro-active approach to identifying and addressing occupational health risks in fishing. We need the same kind of mechanism for processing workers.

Recommendation 21. Governments, schools and other institutions should encourage young people's interest in, and entry into fisheries, encouraging them to get the on- and off-water training they will need to thrive in this complex and challenging industry.

Our school curriculum is strangely devoid of information about marine ecology and about fisheries as a way of life and as a business. There is also next to nothing in it on fisheries culture and heritage. Many young people are now better formally educated than in the past, but they lack knowledge about the fisheries of their own communities. Indeed, youth often believe these fisheries to be a thing of the past and thus think they must move elsewhere to work, despite the fact that the industry is now starting to experience labour shortages.

The current reality is that young people everywhere are at high risk of unemployment and low incomes. In these circumstances, life away from their home communities can be much more costly than life in a region where they have the support of family and friends. Youth need to know this, and so the people who educate them also need to understand fisheries and create classroom opportunities for people who make their lives in the industry to speak to students. Some will come to love this complex, rewarding, and challenging way of life and, where

appropriate, find ways to combine this work with other kinds of employment, as generations of people in this industry have done before them.

The province needs to broaden its Youth Recruitment and Retention Strategy. The current strategy is not directed towards our fisheries—why? Much of the capital invested in our fish plants, vessels, harbours and gear will be lost if no one takes over the existing enterprises.

Recommendation 22. The governments, the FFAW and the industry should recognize that young people have key skills and assets that could play a crucial role in revitalizing our fisheries and develop strategies to incorporate those assets and skills into the revitalization process.

Young people are, for example, masters of social media and social media skills. Many are very interested in, and concerned about, the future of the environment and they are also often fascinated by marine ecology. A policy framework that appropriately values our fisheries and coastal communities (such as that we advocate in Recommendation 1) would create more places where young people would have opportunities to use their skills and interests to improve and capitalize on our stewardship initiatives, to identify and develop new markets, and to promote and adapt new technologies and business approaches for our fisheries.

Recommendation 22a. That policy framework (Recommendation 1) might include the creation of special licences or quotas for young people, as has been done in Norway, to give them a chance to get on the water and experience fisheries while receiving some financial compensation for their apprenticeship work.

Recommendation 22b. The policy framework should give high schools in fishery-dependent regions the resources to encourage their students to undertake projects related to the promotion of stewardship, economic diversification, entrepreneurship, and other aspects of our fisheries. Such encouragement is already happening to some degree through the work of the FFAW but should be much more widespread.

5e Conclusion

A great deal needs to be done, but there is a rich base from which to start. Much of the required effort lies with policy makers at all three levels of governance; some at the level of individual communities and some at the level of individual firms and enterprises. Working together, it will be entirely possible to build the diversified, socially and ecologically resilient, community-based fisheries that the province of the future deserves.

HOW TO SALT COD

1. First gut the fish, remove the head . 2. Split the fish. Cut along the backbone and remove it. Wash the fish.
3. Open up the fish flat with the skin side down, then layer the fish with heavy salt and store it in a cool place.

A well salted and dried fish is firm, easy to handle. It will last in a cool dry place for months.

Before it is dried- salt fish in brine is known as GREEN FISH or SALT BULK



Too much hot weather will spoil fish.

To prepare a salt cod for cooking, *water* the fish overnight (i.e. soak it in water) to remove some of the salt. If heavily salted the water must be changed before or while cooking, sometimes more than once.

5. To DRY fish, remove it from the brine and spread it in dry, windy weather for four to five days.

6. Store in a cool, dry place until ready to use.

4. Leave it for four or five days for a light salt and 21 days for heavily salted.

Chapter 6 Conclusion: What's at stake and why



Our fisheries resources are, relative to many other parts of the world, in quite good shape. However, vibrant fisheries have to be resilient—economically strong, ecologically and socially diverse, sustainably harvested and rebuilt where they are depleted, conservative because the future is unknown, but with lots of space for creative innovation. Fisheries and the ocean are both societal and natural – they pose social-ecological problems, because heavily fished areas are ecologically transformed and ecological changes influence social opportunities and outcomes. There are many ways we could improve our stewardship of them and increase the wealth, employment, training opportunities, heritage development and social, economic and ecosystem services they can generate, thereby achieving vibrant fisheries and coastal communities.

Fisheries and other living marine resources are fundamental to our future and, in the longer term, if governed sustainably, our richest physical asset. Our people -- including those who know how to make a living and to work on and by the sea, those who study our oceans and coasts and those who know how to process high quality seafood, market it, prepare it and feed it to us -- are our major human asset. This province may thrive in the short-term but *cannot* thrive in the long term, if we turn our back on these assets. We can and must invest in developing them and the organizations and communities they are part of for current and future generations.

Oil and gas development is paying dividends now—it took huge investments, both public and private, to get to that place. It is also contributing to our role in creating those future costs and challenges that are linked to greenhouse gas emissions, climate change, ocean acidification and related environmental vulnerabilities. Ironically, those who will pay most dearly for such costs are coastal communities (the present and future generations of people), through their enhanced exposure to extreme events, sea level rise and the potential erosion of marine food chains. Oil and gas are non-renewable (unlike our fisheries) so it makes a great deal of sense to invest more of the royalty wealth from them in the revitalization of our fisheries. With effective stewardship our living marine and coastal assets can and will enhance our collective well-being, future potential, and the longer term social, economic and ecological resilience of this place we call home, as well as other parts of the globe.

This Policy Paper has applied a set of fundamental principles to understanding the strengths and vulnerabilities of our current fisheries and coastal communities (see the Foreword). It has warned against complacency, disinvestment and uninformed acceptance of claims that what we have built up through generations of investment, creativity and some suffering – public, community and private – is broken.

Our (and others') research findings are clear. There is no quick and simple route to the effective governance of living marine resources. The panacea that some vested interests recommend for our supposedly (but not actually) 'broken' fisheries – ITQs and vertically-integrated, deregulated fisheries – would maximize corporate wealth in the short term, but would jeopardize our collective resilience, including particularly that of our fisheries and coastal communities in the short *and* the longer term. This does not mean that there is no place for vertically-integrated companies in our fisheries -- they already occupy an important place there. But we also need our small and medium-scaled fisheries that are tied to coastal communities and regions. Fisheries policies that encourage, and help to protect, publicly-funded investment in our living marine resources, should not give those resources to one group only, to the detriment of other groups and of our longer-term ability to manage our marine resources for the public good. Unlike non-renewable resources, with effective stewardship, our living marine resources have the potential to grow rather than dwindle over time.

Unfortunately, as a society we (Canada and the province) have undervalued our living marine and human resources as well as our fisheries culture, heritage, infrastructure and knowledge.

As a consequence, we have under-invested both in their conservation and in providing the institutional and other kinds of support needed to maximize their potential and that of the enterprise-owners, workers, scientists and communities who have sought to balance wealth generation, exploitation, employment and stewardship on our behalf. The DFA budget was cut in 2013 (see Ch 4) when it was already too low relative to other departments, but had underspent (ironically) on marketing -- a recognized priority for the province and the industry. The Department of Fisheries and Oceans is currently undergoing large budget cuts that are significantly eroding its capacity to conserve our living marine resources.

Evidence for the *undervaluing of our communities* is not hard to find. The effects of the DFA and DFO cuts were exacerbated this last year by the cuts by ACOA to the funding for the Regional Economic Development Boards, by the provincial government decision to withdraw its matching funds, by changes to Employment Insurance that threaten the livelihoods of vulnerable seasonal workers and small processors, and the withdrawal of services from rural areas. In effect, just as we figure out how to make a less-than-perfect set of rural resources work better, St. John's and Ottawa are unwittingly undermining the things that are working.

That is not all: *we undervalue the important contribution seafood has* and should be making to community food security and to health. As a consequence, we invest more than we should in treating illness, and too little in illness prevention, which could be achieved in part by ensuring that we have access to good nutrition, safe work, employment, social support, equity and an opportunity to get outdoors, along our coasts and on the ocean. *We undervalue our fisheries' tangible and intangible cultural heritage.*

Perhaps most of all, *we undervalue our young people*, particularly those from coastal communities, by not giving them the opportunities and training they need to work with us to find ways to best use our living marine resources. We should be enhancing the knowledge and the

talents of these young people and trying harder to access those of people elsewhere (regionally and globally) who can help us build sustainable livelihoods. Instead, we erect barriers, financial and otherwise, to their engagement with this crucial part of our economy and heritage.

We need to create more spaces, networks and resources for innovation in our coastal regions if we are to steward this huge, complex living offshore asset that is our marine ecosystems. As discussed in Chapter 4, to the degree that innovation has played an important role in policy and particularly in corporate fisheries, it has tended to be the kind of innovation that focuses on what is needed to survive in competitive, international marketplaces and seeks to do this by finding more resources (i.e. quota). The type of innovation that is more characteristic of coastal communities and other contexts of scarcity is innovating that begins with what is available – we need more of that kind of innovation. Our approach to innovation in this paper is of that latter kind -- we begin with the assets, capacities and policies we and they have developed and sustained over time, and look for ways we could use what we already have as the foundation on which to build resilient fisheries and coastal communities for the future.

This parsimonious kind of innovation is what resilience and sustainability mean. They are about making do with what we have already, so that excess demands do not destroy it. They are what is needed in a world where resources are scarce, where there are increasing levels of uncertainty and a huge need to make do with less.

We need to find a balance between both kinds of innovation as we search for a resilient future but we must not sacrifice one for the other, as those who argue our fisheries are broken would have us do. It is time, therefore, to return to basic principles, to explicitly commit ourselves to building economically, socially and ecologically resilient fisheries and coastal communities/regions for the future.

And so we conclude, our fisheries are not “broken”—they are diverse, rich but vulnerable in key areas. They, and our marine and coastal communities and ecosystems, are a tremendous “common good”: a benefit to the province, Canada, and other parts of the world. They can become stronger or more vulnerable still, depending on how we invest in and govern them.

The governance structure we need for strong, resilient fisheries and coastal communities will be polycentric—appropriately designed to fit the complex patchwork quilt of fish assemblages, and gendered, multi-generational and culturally complex communities that comprise our fisheries. This requires an approach similar to one that is now advocated by researchers from many disciplines, and by other groups in the wider society who are seeking to address fisheries and oceans issues. For instance, Worm et al.’s large, multidisciplinary review of rebuilding outcomes for many collapsed fisheries concluded that:

the best management tools may depend on local context. Most often, it appears that a combination of traditional approaches (catch quotas, community management) coupled with strategically placed fishing closures, more selective fishing gear, ocean zoning, and economic incentives holds much promise for restoring marine fisheries and ecosystems.¹⁹⁵

Others go further, arguing that fisheries governance for the common good needs to go beyond a focus on stock recovery and better management of harvesting, to take into account the effects of changing markets, trade agreements and other developments from ocean to plate on a broad range of common goods including food security, equity, social capital, and community economic development. They talk about multiple and diverse economies, not a single economy.

We have elements of a regime of mutual gain in some parts of our fisheries, but there is a great temptation to resort to technical fixes. That ‘quick fix’ model is reinforced by pressure from powerful groups with vested interests, and also by measures that reduce decision-making transparency, seriously constraining the capacity of nongovernmental organizations, communities and other groups to participate in decision-making. Together, they constitute a major threat to our capacity to sustain and enhance our fisheries into the future.

The ideologically-driven mindset that can direct DFO employees in B.C. in 2012 to remove any reference to ‘communities’ and to ‘social’ from their vocabulary, is jeopardizing, not just our marine ecosystems and fisheries resources, but also the benefits to all of us that come from the opportunity to actively engage in governance. Fortunately, people who care about our fisheries support many of the institutions and policies that are our current strengths, and are pushing back against that kind of approach.

As John Shepherd once said, “Managing fisheries is hard: it’s like managing a forest in which the trees are invisible and keep moving around.” Indeed, it is even harder than he thought, because in this era of climate change, the biophysical foundation of our fisheries—the ocean itself—is shifting. Water warms and acidifies, oxygen levels change, weather becomes less predictable and more inclined to extreme events. Life in fishery-dependent coastal areas depends on the flexibility that comes with synergies—fisheries *and* agriculture *and* tourism *and* forestry *and* local and distant learning, with experienced *and* new participants from many different backgrounds. It requires extensive local *and* expert knowledge, much of it acquired on the sea and in the industry, shared across groups, with its validity tested for its relevance to particular places and particular times. That knowledge needs to begin with the premise that fisheries will always be characterized by high levels of uncertainty and fluidity, *and* by politics and power struggles, rather than trying to do the impossible and eliminate these from the equation.

Managing fisheries involves knowing how to catch the right types and amount of fish and leave the rest in the water for the future, to support food chains. It needs knowledge of how to preserve and sell fish, understanding that they have to be handled with care at sea and on land. It requires knowing how to process them into safe, delicious food that will be attractive in the many different and changing markets that are sometimes—but not always—far away and beyond our control. Above all, it requires the resources and policy and governance mechanisms that will ensure that the great potential in our fisheries becomes a reality.

We need to celebrate our fisheries—both past and present—and the people who work in them. There need to be more basic opportunities for Newfoundlanders and Labradorians to learn about our fisheries, to enjoy the fruits of our work and generations of investment. Governments at the federal, provincial and municipal levels need to raise the profile of fisheries, particularly small- and medium-scale fisheries, and help the industry realize its full potential contribution to coastal communities. Over centuries we have built some, but not all, of the knowledge, experience, and

institutions we need to govern our fisheries sustainably. They are not broken but they are fragile. With the kind of focused work and investment that we advocate in this Paper, our future and that of our children will be much more resilient, endowed with opportunity, beauty, and diversity.



Notes

¹ E. Ostrom. 2007. A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences*. 104(39), pp. 15181-15187.

² These are sometimes referred to as ‘clumsy solutions’. A. Khan and B. Neis. 2010. The rebuilding imperative in fisheries: clumsy solutions for a wicked problem? *Progress in Oceanography* 87, pp. 347-356.

³ This chapter and the report as a whole do not address policy questions related to aboriginal involvement and rights to fisheries. These are important questions but are above and beyond the expertise of the authors and the research on which this paper is based.

⁴ F. Berkes and C. Folke. 2000. *Linking social and ecological systems for resilience and sustainability*. In Berkes and Folke (editors). *Linking social and Ecological Systems Management Practices and Social Mechanisms for Building Resilience*. Cambridge: Cambridge University Press.

⁵ Department of Fisheries and Oceans 2012. Commercial Fisheries Landings Seafisheries. <http://www.dfo-mpo.gc.ca/stats/commercial/land-debarq/sea-maritimes/s2012aq-eng.htm> Retrieved on February 1, 2014

⁶ Department of Fisheries and Aquaculture. 2012. Seafood Industry Year in Review 2012. http://www.fishaq.gov.nl.ca/publications/SYIR_2012.pdf Retrieved on February 1, 2014

⁷ We don't have the breakdown in landed value by fleet sector for Newfoundland and Labrador as a whole -- it would be good to get it. However, in area 3Pn near Port aux Basques, all of the landed value between 1998 and 2011 came from inshore and nearshore enterprises; in area 4R, 91% came from these enterprises. See S. Allan 2013a. Profile of Commercial Fishery in NAFO Division 3Pn Newfoundland and Labrador (NL) Region and Sharmane Allen 2013b. Profile of Commercial Fishery in NAFO Division 4R Newfoundland and Labrador (NL) Region. www.curra.ca. In Atlantic Canada as a whole (including Quebec), according to figures compiled by Marc Allain, Canadian Association of Professional Fish Harvesters, there are approximately 10,000 individual enterprises that employ approximately 20,000 crew. They land approximately 75% of the landed value for the region. Presentation to the Social Impact Investing Workshop, Ecology Action Centre, Halifax, referenced by Jordan Nikoloyuk. 2013. Social Impact Investing for Sustainable Fishing Communities. Halifax: Ecology Action Centre. <https://www.ecologyaction.ca/files/images-documents/file/Marine/EAC-Social%20Finance%20report.pdf>

⁸ Department of Fisheries and Oceans. 2012. Seafood Industry Year in Review http://www.fishaq.gov.nl.ca/publications/SYIR_2012.pdf Retrieved on February 1, 2014

⁹ Ibid.

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- ¹⁰ Neis, B., S. Gerrard, and N. G. Power. 2013. Women and children first: the gendered and generational social-ecology of smaller-scale fisheries in Newfoundland and Labrador and northern Norway. *Ecology and Society* 18(4): 64. <http://dx.doi.org/10.5751/ES-06010-180464> See also, The Report of the Independent Chair: MOU Steering Committee Newfoundland and Labrador Fishing Industry Rationalization and Restructuring (February, 2011) which includes estimates of the number of primary processing plants for 1989 (214) and 2010 (102), <http://www.fishaq.gov.nl.ca/publications/mou.pdf> pg. 6. Retrieved on February 1, 2014
- ¹¹ Ommer, R.E. and Team. 2007. *Coasts Under Stress: Restructuring and Social-Ecological Health*. Montreal and Kingston: McGill-Queen's University Press.
- ¹² Newfoundland and Labrador Community Accounts. <http://nl.communityaccounts.ca/> Retrieved on February 1, 2014
- ¹³ Neis, Gerrard and Power op. cit.
- ¹⁴ The Report of the Independent Chair: MOU Steering Committee Newfoundland and Labrador Fishing Industry Rationalization and Restructuring (February, 2011) includes estimates of the number of primary processing plants for 1989 (214) and 2010 (102), <http://www.fishaq.gov.nl.ca/publications/mou.pdf>, pg. 11. Retrieved on February 1, 2014
- ¹⁵ Government of Newfoundland and Labrador. 2013. Fishery and Aquaculture in *The Economy*, pg. 23-24. www.economics.gov.nl.ca Retrieved on February 1, 2014
- ¹⁶ Government of Newfoundland and Labrador. 2013. Fishery and Aquaculture in *The Economy* 2013, pp. 22-25. www.economics.gov.nl.ca
- ¹⁷ Department of Fisheries and Aquaculture. 2012. Newfoundland and Labrador Aquaculture Industry Highlights 2011 (Revised) and 2012 (Preliminary). http://www.fishaq.gov.nl.ca/stats/aquaculture_2011-2012%20factsheet.pdf Retrieved on February 1, 2014
- ¹⁸ Department of Fisheries and Oceans, Economic Analysis and Statistics Branch. 2010. 2010 Survey of Recreational Fishing in Canada. <http://www.dfo-mpo.gc.ca/stats/rec/can/2010/section4-eng.htm> Retrieved on February 1, 2014
- ¹⁹ Department of Fisheries and Aquaculture. Op. cit. 2012.
- ²⁰ Fisheries and Oceans Canada. 2013. 2010 number of licenses issued by type by province and region. Prepared by Resource Management – Atlantic. <http://www.dfo-mpo.gc.ca/stats/commercial/licences-permis/species-especies/se10-eng.htm> Retrieved on February 1, 2014
- ²¹ R. Verge, 2013. Adding value through process innovation. Presentation to the World Seafood Congress 2013, St. John's, September 28–October 3, 2013.

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- ²² M. Macdonald, B. Neis and G. Murray. 2009. State policy, livelihood protection and gender on Canada's East coast. *International Journal for Canadian Studies*, 38, pp. 149-180.
- ²³ CBC. 2012. Thai workers flown in to staff Newfoundland fish plant. CBC News, June 2, 2012. <http://www.cbc.ca/news/canada/newfoundland-labrador/thai-workers-flown-in-to-staff-newfoundland-fish-plant-1.1237248> and R. E. Ommer. 1994. One hundred years of fishery crises in Newfoundland. *Acadiensis* 23(2), pp. 5-20.
- ²⁴ D. Gautrin, A. Cartier, D. Howse, L. Horth-Susin, M. Jong, M. Swanson, S. Lehrer, G. Fox , B. Neis. 2010. Occupational Asthma and Allergy and Snow Crab Processing in Newfoundland and Labrador. *Occup Environ Med.* 67: 17-23; D. Howse, M. Jeebhay and B. Neis. 2012. The changing political economy of occupational health and safety in fisheries: lessons from Eastern Canada and South Africa. *Journal of Agrarian Change* 12 (2-3), pp. 344-363. M. E. Major. 2011. Étude ergonomique du travail saisonnier et de ses impacts sur les stratégies et les troubles musculo-squelettiques de travailleuses d'usines de transformation du crabe. Thèse de doctorat, Université du Québec à Montréal.
- ²⁵ S. Allen. 2013a. Profile of Commercial Fishery in NAFO Division 3Pn Newfoundland and Labrador Region and S. Allen. 2013b. Profile of Commercial Fishery in NAFO Division 4R Newfoundland and Labrador Division. Reports produced by Allen for DFO, January 2013. Available at http://www.curra.ca/policy_brief.htm
- ²⁶ S. Allen. 2013a. Profile of Commercial Fishery in NAFO Division 3Pn Newfoundland and Labrador Region P. 14. http://www.curra.ca/policy_brief.htm
- ²⁷ A.Khan, B. Neis and R. Ommer. Under Review. Towards a power analysis of social-ecological systems: using Gaventa's power cube to make sense of fishery collapse and stalled rebuilding in the Northern Gulf of St. Lawrence. *Ecology and Society*.
- ²⁸ S. Allen. 2013b. Profile of Commercial Fishery in NAFO Division 4R Newfoundland and Labrador Division. http://www.curra.ca/policy_brief.htm
- ²⁹ Charles Mather generated this figure from DFO statistics. and some of the related background information in this section from his ongoing SSHRC-funded research on social development, value chains and the northern shrimp fishery.
- ³⁰ Ernst and Young. 2012. Review of the application of rules and management policies in the Northern Shrimp fishery. Report submitted to the Department of Fisheries and Oceans. <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/reports-rapports/eap-pce/rep-rap-ns-cn-eng.htm#cl>
- ³¹ Charles Mather generated the data summarized here as part of his ongoing SSHRC-funded research on social development, value chains and the northern shrimp fishery. See also, P. Foley, C. Mather and B. Neis. 2013. Fisheries allocation policies and regional development: successes from the Newfoundland and Labrador shrimp fishery. Report prepared for the Leslie Harris Centre of Regional Policy and Development, Memorial University.

<http://www.curra.ca/documents/11-12-ARF-Final-Mather.pdf> This research was partly funded by the Canadian Fisheries Research Network.

³² P. Foley, C. Mather and B. Neis. 2013 and P. Foley, C. Mather, B. Neis. Submitted. Enclosure, rent and commodification for regional development: catch shares and policy in Canadian shrimp fisheries. *Marine Policy*.

³³ R. E. Ommer. 1994. One hundred years of fishery crises in Newfoundland. *Acadiensis* 23(2), pp. 5-20.

³⁴ J. Gough. 2006. *Managing Canada's Fisheries: from Early Days to the Year 2000*. Sillery Quebec: Les editions du Septentrion and Department of Fisheries and Oceans. Gough provides a fairly detailed overview of debates and initiatives related to the implementation of both the fleet separation and owner-operator policies and various policies like limited entry licensing, individual quotas, enterprise allocations and individual transferable quotas in the history of the Newfoundland and Labrador fisheries.

³⁵ In a speech to the 2013 World Seafood Congress in St. John's, Martin Sullivan of Ocean Choice International argued that globally, good fisheries are based on property rights (he means ITQs) such as exist in Alaska, New Zealand and Iceland. In a letter to the Minister of Fisheries sent March 13, 2012, Senator Stephen Greene, a former employee of Clearwater Fine Foods urged the Minister to end fleet separation arguing that it has "prevented capital from forming in the Atlantic fishery because it disallows vertical integration. Fleet Separation stunts private enterprise." Gabe Gregory of Quinlan Brothers maintains in a submission to the minister dated Feb. 25, 2102, obtained under access to information and entitled *Modernization of Commercial Fisheries in Canada*, that there is no benefit from owner/operator and fleet separation policies and that "[t]he restrictions on ownership are too many to comment on here but the current policy is counterproductive to any of the principles of economic prosperity. Canadian private citizens are not allowed to own or invest in a fishing license in the inshore sector of our Atlantic fishery. So can we state that the fishery is a common property resource owned by Canadians? If it were common property would we not have a right to participate in ownership ..."

³⁶ E. Ostrom. 2007. A diagnostic approach for going beyond panaceas. Proceedings of the National Academy of Sciences of the United States of America, 104(39), pp. 15181-15187. <http://www.pnas.org/content/104/39/15181.full.pdf+html>

³⁷ B. McCay. 2004. ITQs and Community: An Essay on Environmental Governance. *Agricultural and Resource Economics Review* 33(2), pp. 162.

³⁸ P. Copes and A. Charles. 2004. This paper provides excellent comparative analysis of the socioeconomics of ITQs and community-based fishery management including a comparison of their relative impact on conservation and communities. Socioeconomics of individual transferable quotas and community-based fishery management. *Agricultural and Resource Economics Review* 33(2), pp. 171-181.

³⁹ J. Olson 2011. "Understanding and contextualizing social impacts from the privatization of

fisheries: an overview. *Ocean and Coastal Management* 54, pp. 353-363.

⁴⁰ A. Karlsdottir and K. Benediktsson. 2011. Iceland: Crisis and regional development - thanks for all the fish? *European Urban and Regional Studies* 18(2), pp. 228-235. See a related recorded presentation at http://www.curra.ca/videos_iceland_talk.htm

⁴¹ N. Klauss. 2013. Social science survey shows most Kodiak fishermen see negative consequences of catch shares. *Kodiak Daily Mirror*. July 10, 2013.

⁴² E. Pinkerton and D. N. Edwards. 2009. The elephant in the room: The hidden costs of individual transferable fishing quotas. *Marine Policy* 33(4), pp 707–713

⁴³ Ibid. and E. Pinkerton. 2013. Alternatives to ITQs in equity-efficiency-effectiveness trade-offs: how the lay-up system spread effort in the BC halibut fishery. *Marine Policy* 42: pp. 5-13.

⁴⁴ M. J. S. Windle, B. Neis, S. Bornstein, M. Binkley and P. Navarro. 2008. Fishing occupational health and safety: a comparison of regulatory regimes and safety outcomes in six countries. *Marine Policy*, 32, pp. 701-710.

⁴⁵ T. J. Emery, K. Hartmann, B. S. Green, C. Gardner, J. Tisdell. 2014. Fishing for revenue: how leasing quota can be hazardous to your health. *ICES Journal of Marine Science* doi:10.1093/icesjms/fsu019 <http://icesjms.oxfordjournals.org/> and Windle et al. 2008. Ibid.

⁴⁶ The two main objectives of the New Zealand ITQ-based quota management system were conservation and maximizing the economic benefits of the nation's fishery (J. Steward, K. Walshe, B. Moodie. 2006. The demise of the small fisher? A profile of exiters from the New Zealand fishery. *Marine Policy* 30[4], pp. 328-340). This is only one example of the growing reliance on offshoring fishing and seafood processing in this fishery since the 1990s – a growing proportion of processing is also being done in China (see C. Stringer, G. Simmons and E. Rees. 2011. Shifting post production patterns: exploring changes in New Zealand's seafood processing industry. *New Zealand Geographer* 67, pp. 161-173).

⁴⁷ C. Stringer and G. Simmons. 2013. Forced into Slavery. *Samudra Report No. 65*. <http://www.icsf.net/en/samudra/article/EN/65-3893-Forced-into-Sla.html>. See also C. Stringer, G. Simmons, D. Coulston and D. Hugh Whittaker. 2013. Not in New Zealand's waters, surely? Linking labour issues to GPNs. *Journal of Economic Geography*, pp. 1-20. See also E. B. Skinner. 2012. The fishing industry's cruellest catch. *Bloomberg Businessweek*, February 23. <http://www.businessweek.com/articles/2012-02-23/the-fishing-industrys-cruellest-catch>.

⁴⁸ J. Steward and K. Walshe. 2008. Compliance costs and the small fisher: a study of exiters from the New Zealand fishery. *Marine Policy* 32(1), pp. 120-131.

⁴⁹ J. F. Brewer. 2011. Paper fish and policy conflict: catch shares and ecosystem-based management in Maine's groundfishery. *Ecology and Society*. 16(1), pp 15.

⁵⁰ Parzival Copes described these incentives in an early paper on Individual Quotas. P. Copes. 1986. A Critical Review of the Individual Quota as a Device in Fisheries Management. *Land Economics*, 62(3), pp. 278-291. A later paper by Copes and Tony Charles provides an excellent

comparative analysis of the socioeconomics of ITQs and community-based fishery management including a comparison of their relative impact on conservation and communities. P. Cope and A. Charles. 2004. Socioeconomics of individual transferable quotas and community-based fishery management. *Agricultural and Resource Economics Review* 33(2), pp. 171-181.

⁵¹ Stringer, op cit.

⁵² C. Palmer and P. Sinclair. 1997. *When the Fish are Gone: Ecological Disaster and Fishers in Northwest Newfoundland*. Fernwood Publishing, Halifax.

⁵³ Beddington, J. R., D.J. Agnew and C. W. Clark. 2007. Current problems in the management of marine fisheries. *Science* 316, 22 June, pp. 1713-1716. Cited in D. W. Bromley. 2009. Abdicating responsibility: the deceits of fisheries policy. Perspective: Socioeconomics, *Fisheries* 34(6), pp. 280-290.

⁵⁴ D. W. Bromley. 2009. Abdicating responsibility: the deceits of fisheries policy. Perspective: Socioeconomics, *Fisheries* 34(6), pp. 280-290.

⁵⁵ J. Olson. 2011. Op. cit. pg. 361.

⁵⁶ Ibid.

⁵⁷ R. Matthews. 1993. *Controlling Common Property: Regulating Canada's East Coast Fishery*. Toronto: University of Toronto Press.

⁵⁸ This research program, headed up by Dr. David Schneider, a Memorial biologist, has resulted in multiple publications, posters, presentations and plain language reports. The latter are available at <http://www.curra.ca/presentations.htm> Retrieved on February 1, 2014 and http://www.curra.ca/documents/Raper_MScThesis_PlainLanguageSummary_latitudinal_variations.pdf Retrieved on February 1, 2014

⁵⁹ McCay, Op. cit. 2004, pg. 168.

⁶⁰ Ostrom, Op. cit. 2007.

⁶¹ Fisheries and Oceans Canada Newfoundland and Labrador Region. 2006. *Costs and Earnings Survey 2006*.

⁶² Change Islands Policy Brief 1, Rationalization of the Fishing Industry. <http://gracilis.carleton.ca/tgeog/downloads/Using%20Local%20Knowledge,%20PB%201%20%28June%202012%29.pdf> Retrieved on February 1, 2014

⁶³ M. Godfrey. July 03, 2013. Seafood prices to rise 70 percent by 2050. SeafoodSource.com. https://www.facebook.com/permalink.php?id=119364148225904&story_fbid=19356367413928

4

⁶⁴ Martin Sullivan. 2013. Presentation to the world Seafood Congress, Creative Solutions for Global Challenges, Sept. 30-Oct. 2, St. John's, Newfoundland.

⁶⁵ Alex Augusto Concalves from the Federal Rural University of Brazil argued recently that fish and fishery products recorded the highest increase in price both in the domestic and export markets in recent years compared to any other items and that the trend is into value-added products (Concalves, 2013. Value-added products: a challenge or necessity. Presentation to the World Seafood Congress, Creative Solutions for Global Challenges, Sept. 30-Oct. 2, St. John's, Newfoundland).

⁶⁶ International Program on the State of the Ocean (IPSO) and IUCN. 2013. The State of the Ocean 2013: Perils, Prognoses and Proposals. Executive Summary. See also, IPCC Fifth Assessment Report, Working Group 2, "Impacts, Adaptation and Vulnerability" UN; released March 31st 2014.

⁶⁷ G. Merino, M. Barange and C. Mullon. 2010. Climate variability and change scenarios for a marine commodity: modelling small pelagic fish, fisheries and fishmeal in a globalized world. *Journal of Marine Systems* 81, pp. 196-205. In assessing future demand for fish and its relationship to climate change, it is also important to pay attention to how climate change might affect the production of competing protein products such as beef and chicken. Effects are likely to be substantial on food production in places like California and this could influence the price of other kinds of protein.

⁶⁸ Ibid.

⁶⁹ W. L. Cheung, V. W. Y. Lam, J. L. Sarmiento, K. Kearney, R. Watson, D. Zeller, D. Pauly. 2010. Large-scale redistribution of maximum fisheries catch potential in the global ocean under climate change. *Global Change Biology* 16, pp. 24-35.

⁷⁰ International Program on the State of the Ocean (IPSO) and IUCN. 2013. The State of the Ocean 2013: Perils, Prognoses and Proposals. Executive Summary.

⁷¹ Fisheries and Oceans Canada Policy for Preserving the Independence of the Inshore Fleet in Canada's Atlantic Fisheries. <http://www.dfo-mpo.gc.ca/fm-gp/initiatives/piifcaf-pifpcca/index-eng.htm>

⁷² A. Canning, N. Power and T. Norman. n.d. Rural youth and quality of work. CURRA Research Report. [http://www.curra.ca/documents/Research_Report-Rural_Youth_and_Quality_of_Work_\(final\)_revised.pdf](http://www.curra.ca/documents/Research_Report-Rural_Youth_and_Quality_of_Work_(final)_revised.pdf). N. G. Power, M. Norman, K. Dupré "The fishery went away": The impacts of long-term fishery closures on young people's experience and perception of fisheries employment in Newfoundland coastal communities. Forthcoming, *Ecology and Society* Special feature on Rebuilding Collapsed Fisheries and Threatened Communities, eds. B. Neis and R. E. Ommer.

⁷³ D. Bavington. 2010. *Managed Annihilation: An Unnatural History of the Newfoundland Cod*

Collapse. Vancouver. UBC Press.

⁷⁴ J. Nikoloyuk. 2013. Social Impact Investing for Sustainable Fishing Communities. Halifax: Ecology Action Centre. <http://www.ecologyaction.ca/socialfinancingfisheries> Retrieved on February 1, 2014

⁷⁵ B. Neis (editor and compiler). 2013. Working Better Together: Fisheries and Tourism in Newfoundland and Labrador: A workshop for opinion leaders, policy makers and practitioners. http://www.curra.ca/documents/report_Working_Better_Together_workshop_report_August_2012_Final.pdf Retrieved on February 1, 2014

⁷⁶ World Wildlife Fund. 2012. The 2050 Criteria: Guide to Responsible Investment in Agricultural, Forest, and Seafood Commodities. http://awsassets.panda.org/downloads/the_2050_criteria_report.pdf Retrieved on February 1, 2014

⁷⁷ P. Gagnon. 2013. "CURRA Symposium – Summary of session 'Aquaculture benefits and challenges'". http://www.curra.ca/policy_brief.htm

⁷⁸ B. B. Walters. 2007. Competing use of marine space in a modernizing fishery: salmon farming meets lobster fishing on the Bay of Fundy. *The Canadian Geographer* 51(2), pp. 139-159.

⁷⁹ Fisheries Broadcast. 2014. Canadian Broadcasting Corporation, January 6, 2014. <http://www.cbc.ca/fisheriesbroadcast/episodes/2014/01/06/cyr-cotourier-on-the-broadcast/> Retrieved on February 1, 2014

⁸⁰ Government of Nova Scotia 2009. Our Coast Live. Work. Play. Protect. The 2009 State of Nova Scotia's Coast Summary Report. http://www.novascotia.ca/coast/documents/state-of-the-coast/WEB_SummaryReport.pdf (Retrieved on February 1, 2014) . According to this report, "[w]orking waterfronts are sites or facilities that provide physical access to the sea for ocean-dependent uses and businesses." (pg. 10). They identify research and support for these working waterfronts as a priority in their coastal strategy including both the capacity of local groups and associated communities to operate and maintain them and potential ways to diversify and strengthen their role in these communities.

⁸¹ E. Colpron, E. Edinger and B. Neis 2010. Mapping the distribution of deep-sea corals in the Northern Gulf of St. Lawrence using both scientific and local ecological knowledge. DFO, *Canadian Science Advisory Secretariat Res. Doc. 2010/047* and references therein and Scott Caines. 2010. Population dynamics of the invasive bryozoan *Membranipora membranacea* along a 450-km latitudinal gradient in Newfoundland and Labrador. M.Sc. Thesis. Biology, Memorial University.

⁸² G. Murray, B. Neis and C. Palmer. 2008. Mapping Cod: Fisheries Science, Fish Harvesters' Ecological Knowledge and Cod Migrations in the Northern Gulf of St. Lawrence. *Human Ecology*. 36, pp. 581-598

-
- ⁸³ B. Neis, D. C. Schneider, L.F. Felt, R. L. Haedrich, J. A. Hutchings and J. Fischer 1999. "Northern Cod Stock Assessment: What Can Be Learned From Interviewing Resource Users?" *Can. J. Fish. Aquat. Sci.* 56: 1949-1963.
- ⁸⁴ D. Robichaud and G. A. Rose. 2004. Migratory behaviour and range in Atlantic cod: inference from a century of tagging. *Fish and Fisheries* 5, pp. 185-214.
- ⁸⁵ O. A. Sherwood and E. N. Edinger. 2009. Ages and growth rates of some deep-sea gorgonian and antipatharian corals of Newfoundland and Labrador. *Can. J. Fish. Aquat. Sci.* 66: 142-152.
- ⁸⁶ R. E. Scheibling and P. Gagnon. 2009. Temperature-mediated outbreak dynamics of the invasive bryozoan *Membranipora membranacea* in Nova Scotian kelp beds. *Marine Ecology Progress Series* 390, pp. 1-13.
- ⁸⁷ Svein Jentoft and Ratana Chuenpagdee. 2008. Fisheries and coastal governance as a wicked problem. *Marine Policy* 33(4), pp. 553-560.
- ⁸⁸ K. Hindar, I. A. Fleming, P. McGinnity, O. Diserud. 2006. Genetic and ecological effects of salmon farming on wild salmon: modelling from experimental results. *ICES J. Mar. Sci.* 53(7), pp. 1234-1247.
- ⁸⁹ P. D. Winger, H. DeLouche, G. Legge. 2006. Designing and testing new fishing gears: the value of a flume tank. *Marine Technology Society Journal*, 40(3), pp. 44-49.
- ⁹⁰ N. Roy, R. Arnason and W. E. Schrank. 2009. The identification of economic base industries, with an application to the Newfoundland fishing industry. *Land Economics* 85(4), pp. 675-691.
- ⁹¹ P. Foley. 2013. National government responses to Marine Stewardship Council (MSC) fisheries certification: insights from Atlantic Canada. *New Political Economy*. 18(2), pp. 284-307.
- ⁹² S. T. Cadigan. 2003. The moral economy of retrenchment and regeneration in the history of rural Newfoundland. R. Byron, ed. *Retrenchment and Regeneration in Rural Newfoundland*. Toronto: University of Toronto Press.
- ⁹³ B. Neis, M. Binkley, S. Gerrard and C. Maneschy (Eds.) 2005. *Changing Tides: Gender, Fisheries and Globalization*. Halifax: Fernwood Books.
- ⁹⁴ M. E. Norman, N. G. Power and K. Dupré. 2011. Playing in the woods: youth, leisure and the performance of gender relations in rural Newfoundland. *Annals of Leisure Research*. 14(2-3), pp. 155-175 and N, G. Power, M. Norman, K. Dupré. Forthcoming. "The fishery went away": The impacts of long-term fishery closures on young people's experience and perception of fisheries employment in Newfoundland coastal communities. *Ecology and Society* Special feature on Rebuilding Collapsed Fisheries and Threatened Communities, eds. B. Neis and R. E. Ommer.

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- ⁹⁵ M. J. S. Windle Op. cit.
- ⁹⁶ R. E. Ommer with the Coasts Under Stress Team. 2007. *Coasts Under Stress: Restructuring and Social-Ecological Health*. Montreal and Kingston: Queen's University Press.
- ⁹⁷ Forthcoming Special Feature, *Ecology and Society* edited by B. Neis and R. E. Ommer Op. cit.
- ⁹⁸ C. M. Roach. 2000. "Stewards of the Sea: a Model for Justice?" In H. Coward, R. E. Ommer and T. Pitcher (eds.) *Just Fish: Ethics and Canadian Marine Fisheries*. St. John's: ISER Books, pp. 67-82.
- ⁹⁹ K. B. Kincaid and G. Rose. 2014. Why fishers want a closed area in their fishing grounds: exploring perceptions and attitudes to sustainable fisheries and conservation 10 years post closure in Labrador, Canada. *Marine Policy* 46, pp. 84-90; R. Davis, J. Whalen and B. Neis. 2006. From Orders to Borders: Efforts Toward a Sustainable Co-managed Lobster Fishery in Bonavista Bay, Newfoundland. *Human Ecology* 34: 851-867.
- ¹⁰⁰ J. Dawe and B. Neis 2012. Species at risk in Canada: lessons learned from the listing of three species of wolffish. *Marine Policy* 36, pp. 405-413 and related plain language summary on the CURRA website at http://www.curra.ca/documents/Report_Dawe_Marine_Fish_LEK.pdf
- ¹⁰¹ American Society of International Law, Washington, D. C. *International Legal Materials* 31(5). 1992. Court of Arbitration for the delimitation of maritime areas between Canada and France: decision in case concerning delimitation of maritime areas.
- ¹⁰² H. Coward, R. E. Ommer and T. Pitcher (eds.). 2000. *Just Fish: Ethics and Canadian Marine Fisheries*. St. John's: ISER Books, p. 274.
- ¹⁰³ Newfoundland and Labrador has also used the adjacency principle to defend access to its coastal resources from fleets from other provinces.
- ¹⁰⁴ Vodden, K. (2009). *New Spaces, Ancient Places: Collaborative governance and sustainable development in Canada's coastal regions*. Unpublished Doctoral Dissertation, Simon Fraser University, Burnaby, BC.
- ¹⁰⁵ Kyle White and Heather Hall. 2013. Innovation Case Study: St. Anthony Basin Resources Incorporated (SABRI): Expanding Regional Social and Economic Benefits <http://innovationnl.ca/wp-content/uploads/2013/08/SABRI.pdf> (Retrieved on February 1, 2014) and P. Foley, C. Mather and B. Neis. 2013. Fisheries allocation policies and regional development: successes from the Newfoundland and Labrador shrimp fishery. A report prepared for the Leslie Harris Centre of Regional Policy and Development.
- ¹⁰⁶ E. Dunne. 2003. Final Report Fish Processing Policy Review. Submitted to the Department of Fisheries and Aquaculture. http://www.fishaq.gov.nl.ca/publications/dunne_report.pdf Retrieved on February 1, 2014

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- ¹⁰⁷ M. Macdonald, B. Neis and G. Murray. 2009. State policy, livelihood protection and gender on Canada's East coast. *International Journal for Canadian Studies*, 38, pp. 149-180.
- ¹⁰⁸ Government of Newfoundland and Labrador. 2013. Department of Fisheries and Aquaculture Annual Report 2012-13, p. 2.
http://www.fishaq.gov.nl.ca/publications/annual_report_2012_13.pdf Retrieved on February 1, 2014
- ¹⁰⁹ E. Dunne. 2003. Fish Processing Policy Review Commission Report. Department of Fisheries and Aquaculture, Government of Newfoundland and Labrador. December.
http://www.fishaq.gov.nl.ca/publications/dunne_report.pdf
- ¹¹⁰ www.releases.gov.nl.ca/releases/2012/servicenl/0926n03.htm
- ¹¹¹ Fisheries and Oceans Canada. 2011. Governments of Canada and Newfoundland and Labrador Partner with Fishing Industry Partner to Fund Lobster Sustainability Plan. November 18. <http://www.dfo-mpo.gc.ca/media/back-fiche/2011/nl-tnl09a-eng.htm>
- ¹¹² T. Clift. 2011. Report of the Independent Chair: MOU Steering Committee.
<http://www.fishaq.gov.nl.ca/publications/mou.pdf> Retrieved on February 1, 2014.
Recommendations for marketing agencies go back at least as far as the Kirby Task Force Report in the early 1980s. J. Gough. 2006, p. 334.
- ¹¹³ <http://www.cfrn-rcrp.ca/CFRN-RCRP>
- ¹¹⁴ These reports can be found at the following link:
http://www.municipalnl.ca/?Content=CCRC/The_Regional_Government_Initiative
- ¹¹⁵ Zita Cobb Presentation to the International Symposium on Rebuilding Collapsed Fisheries and Threatened Communities, October 1-4, 2012.
- ¹¹⁶ S. Hayward. 2014. Sustainable seafood: a growing trend. The Telegram, March 22.
<http://www.thetelegram.com/Horizons-2014/Innovation/2014-03-22/article-3655545/Sustainable-seafood%3A-a-growing-trend/1>
- ¹¹⁷ See People and the Sea Film Festival <http://peopleandtheseafilmfestival.com/>
- ¹¹⁸ <http://www.mun.ca/anthro/graduate/gradprofiles/troake.php>
- ¹¹⁹ M. MacDonald, P. Sinclair and D. Walsh. 2013. Globalization, Fisheries and Recovery: Report of the CURRA Globalization Group. 13 November 2013.
[http://www.curra.ca/documents/Globalization_Report_Feb_2013_FINAL_\(1\).pdf](http://www.curra.ca/documents/Globalization_Report_Feb_2013_FINAL_(1).pdf)
- ¹²⁰ Robert Keenan with Philip Whalen, Municipalities Newfoundland and Labrador. n.d. The Umbrella of Protection: Regional Government as the protector and promotor of municipal strength and autonomy in Newfoundland and Labrador. Community Cooperation Regional Government Papers.
http://www.municipalnl.ca/?Content=CCRC/The_Regional_Government_Initiative

¹²¹ The On the Move Partnership, an international team of researchers and community partners is currently seeking to address this crucial gap in our knowledge. The website for the On the Move Partnership can be found at <http://www.onthemovepartnership.ca/>. The Newfoundland and Labrador team leads for the partnership program of research are Nicole Power in the Department of Sociology at Memorial University and Kelly Vodden at the Environmental Policy Institute, Grenfell Campus.

¹²² MacDonald et al. Op. cit.

¹²³ A. Canning, N. Power and T. Norman. n.d. Rural youth and quality of work. CURRA Research Report. [http://www.curra.ca/documents/Research_Report-Rural_Youth_and_Quality_of_Work_\(final\)_revised.pdf](http://www.curra.ca/documents/Research_Report-Rural_Youth_and_Quality_of_Work_(final)_revised.pdf). Nicole G. Power, Moss Norman, Kathryne Dupré “The fishery went away”: The impacts of long-term fishery closures on young people's experience and perception of fisheries employment in Newfoundland coastal communities. Submitted to *Ecology and Society*.

¹²⁴ At the SafetyNet Centre for Occupational Health and Safety Research, we have carried out extensive research on ergonomics in seafood and other food-processing sectors. We have identified substantial risks and real challenges associated with improved prevention in these sectors in part because of their dynamism, seasonality and location in rural areas. Urban-based models for ergonomics developed for big industry don't work in these kinds of contexts. We have sought to address these challenges by developing and pilot testing a participatory ergonomics approach to food-processing that both draws on and builds the knowledge of workers in plants to identify and fix ergonomic hazards. We have produced a tool kit that can be used to guide the implementation of worker-management ergonomics teams in fish plants and other kinds of enterprises. The tool kit can be down-loaded for free from the following website: http://www.participatoryergonomics.mun.ca/PE_Toolkit/. Other tools and resources can be found on the main SafetyNet website at <http://www.mun.ca/safetynet/Tools/>

¹²⁵ J. Baker. 2012. Changing hands: temporary foreign workers in Prince Edward Island. Charlottetown: Cooper Institute. <http://www.cooperinstitute.ca/sitefiles/File/Changing-Hands---Temporary-Foreign-Workers-in-PEI.pdf>

¹²⁶ Ibid., p. 12.

¹²⁷ J. L. Hennebry. 2010. Not just a few bad apples: vulnerability, health and temporary migration in Canada. *Canadian Issues*. F. Faraday. 2012. Made in Canada: how the law constructs migrant workers' insecurity. Metcalf Foundation. <http://metcalffoundation.com/wp-content/uploads/2012/09/Made-in-Canada-Full-Report.pdf>. Temporary foreign workers are not only employed in fish processing. The labour abuses document in New Zealand's fishery involved foreign workers employed on foreign chartered vessels fishing quotas owned by New Zealand-based companies. Stringer, Simmons, Coulston and Whittaker, 2013, “Not in new Zealand's waters, surely? Linking labour issues to GPNs in the *Journal of Economic Geography*, (op. cit.) provides an excellent overview of the labour vulnerabilities and human rights violations associated with the use of foreign-crewed deep sea fishing vessels.

-
- ¹²⁸ K. Lowitt. n.d. Examining the foundation for stronger fisheries-tourism synergies and increased local seafood consumption in the Bonne Bay region of Newfoundland. http://www.curra.ca/documents/CURRA_Fisheries-Tourism_Full_Report_Nov_2011_Final%20revised.pdf and K. Lowitt. 2013. An examination of rural and coastal foodscapes: insights for the study of community food security and sustainable food systems. Unpublished Interdisciplinary Ph.D. dissertation. http://www.curra.ca/documents/PhD_Thesis_Kristen%20Lowitt_Final%20version_Sept%202013.pdf. See also C. Nelson, D. Bavington, K. Lowitt and M. Nagy. 2013. Where's the Fish? *Alternatives Journal*. <http://www.curra.ca/documents/Neville%20Effect%20of%20A%20Voluntary%20Fishing%20Mentorship%20on%20an%20Inshore%20Stock%20of%20Snow%20Crab.pdf>
- ¹²⁹ Government of Newfoundland and Labrador. 2012. Op. cit.
- ¹³⁰ J. Nikoloyuk, D. Adler, L. Foster, S. Fuller and B. Haugen. 2013. Valuing our fisheries: breaking Nova Scotia's commodity curse. Ecology Action Centre, Halifax.
- ¹³¹ P. Arbo and B. Hersoug. 1997. The globalization of the fishing industry and the case of Finnmark. *Marine Policy*, 21(2), pp. 121-142.
- ¹³² R. E. Ommer, 1985, "What's Wrong with Canadian Fish?" *Journal of Canadian Studies* vol. 20 #3 (Fall), 122-142
- ¹³³ R. E. Ommer. 1988. What's wrong with Canadian fish? In P. R. Sinclair (ed.) *A Question of Survival: The Fisheries and Newfoundland Society*. St. John's: ISER Books.
- ¹³⁴ A. Fløysand and S. E. Jakobsen. 2001. Culture and competitiveness in global capitalism. *Geografi Bergen Arbeider fra Institutt for geografi – Bergen*.
- ¹³⁵ J. Nikoloyuk, D. Adler, L. Foster, S. Fuller and B. Haugen. 2013. Valuing our Fisheries: Breaking Nova Scotia's Commodity Curse. Halifax: Ecology Action Centre.
- ¹³⁶ L. A. Copeman and C. C. Parrish. 2004. Lipids classes, fatty acids, and sterols in seafood from Gilbert Bay, Southern Labrador. *Journal of Agricultural and Food Chemistry*, 52, pp. 4872-4881.
- ¹³⁷ J. Gough. 2006. *Managing Canada's Fisheries: From Early Days to the Year 2000*. Les éditions du Septentrion and the Department of Fisheries and Oceans and Department of Fisheries and Oceans and Department of Fisheries and Aquaculture. 2006. *Fishing Industry Renewal: a Discussion Paper*.
- ¹³⁸ Nikoloyuk et al. Op. cit.
- ¹³⁹ S. Jaffee and P. Gordon. 1993. *Exporting high value food commodities: success stories from developing countries*. World Bank, Washington DC.

¹⁴⁰ P. Foley, C. Mather, B. Neis. Submitted. Enclosure, rent and commodification for regional development: catch shares and policy in Canadian shrimp fisheries. Submitted to *Marine Policy*.

¹⁴¹ See, for example, the Ernst and Young report and linked submissions, Review of the Application of Rules and Management Policies in the Northern Shrimp Fishery. 2012. Department of Fisheries and Oceans <http://www.dfo-mpo.gc.ca/fm-gp/peches-fisheries/reports-rapports/eap-pce/rep-rap-ns-cn-eng.htm#exec> and recent media coverage of protests around shrimp cuts (April 2014).

¹⁴² A. Randell. 2014. Shrimpers reject Area 6 quota cuts. The Telegram, 13 March. <http://www.thetelegram.com/Business/2014-03-11/article-3643876/Shrimpers-reject-Area-6-quota-cuts/1>

¹⁴³ Adam Randell. 2014. Shrimpers reject Area 6 quota cuts. The Telegram, March 11. <http://www.thetelegram.com/Business/2014-03-11/article-3643876/Shrimpers-reject-Area-6-quota-cuts/1> . P. Foley, C. Mather and B. Neis. 2013. Fisheries allocation policies and regional development: successes from the Newfoundland and Labrador shrimp fishery. Reported prepared for the Leslie Harris Centre of Regional Policy and Development, Memorial University. <http://www.curra.ca/documents/11-12-ARF-Final-Mather.pdf>

¹⁴⁴ G. Blackwood. 1996. Past and future goals and objectives in the allocation of the Northern cod resource. Unpublished masters thesis, Dept. of Geography, Memorial University. <http://collections.mun.ca/cdm4/document.php?CISOROOT=/theses2&CISOPTR=256643&CISOSHOW=256525>

¹⁴⁵ C. Hunt. Some 3Ps whole cod could be exported to the US. *The Coaster*. Feb. 13. <http://www.thecoaster.ca/News/Local/2014-02-13/article-3614407/Some-3Ps-whole-cod-could-be-exported-to-the-US/1>

¹⁴⁶ P. Foley. 2013. National government responses to Marine Stewardship Council (MSC) fisheries certification. *New Political Economy*, 18(2), pp. 284-307.

¹⁴⁷ L. M. Campbell, N. Boucquey, J. Stoll, H. Coppola, M. D. Smith. 2014. From vegetable box to seafood cooler: applying the community-supported agriculture model to fisheries. *Society and Natural Resources: An International Journal*, 27(1), pp. 88-106; Ecology Action Centre. 2010. Fishing for Change: Atlantic Canada's First Community Supported Fishery is 'Off the Hook'. <https://www.ecologyaction.ca/content/fishing-change-atlantic-canada%E2%80%99s-first-community-supported-fishery-%E2%80%98hook%E2%80%99> .

¹⁴⁸ These options are explored in K. Temple with input from B. Neis, M. Ryan, P. Brownrigg and R. Chuenpagdee. 2010. Opportunities for Sustainable livelihoods in the Southwest coast lobster fishery. This report can be found at: [http://www.curra.ca/documents/Sustainable Lobster Fishery Report December 21 2010 Final revised.pdf](http://www.curra.ca/documents/Sustainable_Lobster_Fishery_Report_December_21_2010_Final_revised.pdf). See also, Nikoloyuk et al. 2013. Op. cit. In April 2014, Fair Trade USA announced it was going to create the first Fair Trade Capture Fisheries Standard.

<http://www.atuna.com/index.php/2-news/838-fair-trade-goes-also-into-...>

¹⁴⁹ M. G. Wiber, S. Young and L. Wilson. 2012. Impact of aquaculture on commercial fisheries: fishermen's local ecological knowledge. *Human Ecology*. 40, pp. 29-40.

¹⁵⁰ D. Cote, I.A. Fleming, J.W. Carr and J.H. McCarthy. 2012. Ecological Impact Assessment of the Use of European Origin Atlantic Salmon in Newfoundland Aquaculture Facilities. Fisheries and Oceans Canada, *Canadian Science Advisory Secretariat Res. Doc.* 2012/nnn.

¹⁵¹ The Expert Panel on Canadian Ocean Science. 2013. *Ocean Science in Canada: Meeting the Challenge, Seizing the Opportunity*. Ottawa: Council of Canadian Academies, p. xii.

¹⁵² Gautam Ramdurai. 2014. Scarcity drives creativity: Gautam Ramdurai at TEDxManhattan. <http://www.youtube.com/watch?v=zlljFkpFFFA&feature=youtu.be>

¹⁵³ S. Jentoft and R. Chuenpagdee. 2009. Fisheries and coastal governance as a wicked problem. *Marine Policy* 33(4), pp. 553-560. A. Khan and B. Neis. 2010. The Recovery Imperative in Fisheries: Clumsy Solutions to a Wicked Problem? *Progress in Oceanography* 87, pp. 347-356.

¹⁵⁴ B.C. Crosby and J. M. Bryson. 2007. Leadership for the common good: creating regimes for mutual gain. In *Transforming public Leadership for the 21st Century* edited by R. Morse, M. Kinghorn and T. Buss. New York: M.E. Sharpe, p. 185.

¹⁵⁵ Ibid. p. 190

¹⁵⁶ Ibid. p. 191

¹⁵⁷ Ibid. p. 191.

¹⁵⁸ M. Verweji and M. Thompson (eds.) 2006. *Clumsy Solutions for a Complex World: Governance, Politics and Plural Perceptions*. New York: Palgrave Macmillan and A. Khan and B. Neis. 2010. The rebuilding imperative in fisheries: clumsy solutions for a wicked problem. *Progress in Oceanography* 87, pp. 347-356.

¹⁵⁹ D. C. Schneider et al. Presentations and reports on their research on the effectiveness of lobster conservation initiatives based on the contribution of these initiatives to reproductive value. <http://www.curra.ca/presentations.htm>

¹⁶⁰ J. Dawe and B. Neis. 2012. Species at Risk in Canada: Lessons learned from the listing of three species of wolffish. *Marine Policy* 36, pp. 405-413.

¹⁶¹ Food and Agriculture Organization. 1996. Precautionary Approach to Capture Fisheries and Species Introductions. <ftp://ftp.fao.org/docrep/fao/003/W3592e/W3592e00.pdf>

¹⁶² Lebel, L., J. M. Anderies, B. Campbell, C. Folke, S. Hatfield-Dodds, T. P. Hughes. and J. Wilson. 2006. Governance and the capacity to manage resilience in regional social-ecological

systems. *Ecology and Society* 11(1): 19. <http://www.ecologyandsociety.org/vol11/iss1/art19/>

¹⁶³ P. G Wells. 2013. Canadian aquatic science and environmental legislation under threat. *Marine Pollution Bulletin* 69, pp. 1-2.

¹⁶⁴ A. Nikiforuk. 2013. Secret memo casts doubt on feds' claims for science library closures. *The Tyee*, 30 December 2013. <http://thetyee.ca/News/2013/12/30/Harper-Library-Closures/>
Retrieved on February 1, 2014

¹⁶⁵ See http://www.curra.ca/future_of_the_fishery.htm for a copy of this document and responses from a wide variety of groups.

¹⁶⁶ CBC Radio Fisheries Broadcast, November 1, 2013. Interview with John Sackton.

¹⁶⁷ CBC Radio Fisheries Broadcast, November 1, 2013. Interview with Scott Sinclair. Winston Fiander. 2013. Presentation to the Standing Committee on International Trade on CETA and Our Fishing Communities. Halifax, 26 November.

¹⁶⁸ Scott Sinclair. 2013. Globalization, Trade Treaties and the Future of the Atlantic Canadian Fisheries. Canadian Centre for Policy Alternatives, pg. 5.
<https://www.policyalternatives.ca/publications/reports/globalization-trade-treaties-and-future-atlantic-canadian-fisheries>

¹⁶⁹ Ibid.

¹⁷⁰ F. Gale. 2014. Scallop collapse: harvester concerned about future of all shellfish in Port au Port Bay. *The Telegram*, March 11, p. A3.

¹⁷¹ B. Paterson. 2014. Study of the small pelagic fisheries for Atlantic herring and Atlantic mackerel on the west coast of Newfoundland (NAFO Division 4R). Research Report prepared by Barbara Paterson for the CURRA. http://www.curra.ca/policy_brief.htm

¹⁷² I. M. Côté, J. J. Dodson, I. A. Fleming, J. A. Hutchings, S. Jennings, N. J. Mantua, R. M. Peterman, B. E. Riddell, A. J. Weaver, D. L. VanderZwaag. 2012. The Royal Society of Canada Expert Panel Sustaining Canada's Marine Biodiversity: Responding to the Challenges Posed by Climate Change, Fisheries, and Aquaculture. Royal Society of Canada. https://rsc-src.ca/sites/default/files/pdf/RSCMarineBiodiversity2012_ENFINAL.pdf

¹⁷³ V. Neville. 2011. Effects of a fishing moratorium on snow crab *Chionoecetes Opilio* in Bonne Bay, Newfoundland and future implications for the local fishery. Honours dissertation, Department of Biology, Memorial University. See also V. Neville and R. Hooper. Effect of a voluntary fishing moratorium on an inshore stock of snow crab.
<http://www.curra.ca/documents/Neville%20Effect%20of%20A%20Voluntary%20Fishing%20Moratorium%20on%20an%20Inshore%20Stock%20of%20Snow%20Crab.pdf>

¹⁷⁴ C. Palmer and Sinclair. 1997. When the Fish are Gone: Ecological Disaster and Fishers in the

Northwest Newfoundland 1982-1995. Halifax: Fernwood Books.

¹⁷⁵ Ibid.

¹⁷⁶ M. MacDonald. 2013. Bill C-38 Changes to EI and the CURRA Study Area. January.
http://www.curra.ca/policy_brief.htm

¹⁷⁷ R. Wangersky. 2013. A tale of two industries. The Telegram, April 13.

¹⁷⁸ Government of Newfoundland and Labrador. 2014. Estimates 2014: Shared Prosperity, Fair Society, Balanced Outlook.
http://www.budget.gov.nl.ca/budget2014/estimates/budget_estimates_2014.pdf

¹⁷⁹ I. Murphy and B. Neis. 2012. Navigating the legislative requirements for fisheries-tourism initiatives in Newfoundland and Labrador.
http://www.curra.ca/documents/TCR_Fisheries_Tourism_Regulations_Report.pdf and other related CURRA reports.

¹⁸⁰ Ibid.

¹⁸¹ J. Dawe. 2013. Spreadsheet with links to ICSPs that identifies ICSPs that deal with fisheries issues.

¹⁸² R. Keenan with Philip Whalen of Municipalities Newfoundland and Labrador. n.d. Searching for a purpose: a current assessment of municipal government and regional governance in Newfoundland and Labrador. A Municipalities Newfoundland and Labrador Community Cooperation Project.
http://www.municipalnl.ca/?Content=CCRC/The_Regional_Government_Initiative. Peter Sinclair and B. Neis. 2008. Network Governance: Interactive restructuring and opportunities and challenges for local development in rural Newfoundland. In *Practicing Local Governance: Northern Perspectives* edited by Nils AarsÆther, Asbjorn RØiseland and Synnove Jennsen. New York: Nova Science Publishers, Inc., pp. 111-126.

¹⁸³ A. Myers. 2014. Personal Communication, April 7.

¹⁸⁴ *The Telegram*, 2014. "New economic plan formed following elimination of regional boards", March 8th, pg. B1.

¹⁸⁵ K. Vodden, H. Hall, D. Freshwater and the Research team. 2013. Understanding Regional Governance in Newfoundland and Labrador: A Survey of Regional Development Associations. Report to the Harris Centre, May 2013.
http://www.mun.ca/harriscentre/reports/research/2013/1305_UnderstandingRegionalGovernance.pdf

¹⁸⁶ CBC News. 2011. N. L. fishery report recommends massive cuts. February 25, 2011.
<http://www.cbc.ca/news/canada/newfoundland-labrador/story/2011/02/25/nl-report-cuts-.html>

-
- ¹⁸⁷ A. Fitzpatrick. 2011. Industry leaders, union, attend ‘frank’ meeting. The Telegram, March 8, 2011. <http://www.thetelegram.com/Business/2011-03-08/article-2311157/Jackman-to-spell-out-direction-for-fishery-MOU/1>
- ¹⁸⁸ F. Natale, N. Carvalho, M. Harrop, J. Guillen, K. Frangoudes. 2013. Identifying fisheries dependent communities in EU coastal areas. *Marine Policy* 42, pp. 245-252.
- ¹⁸⁹ S. A. Sønvisen, J. P. Johnsen and J. Vik. 2011. The Norwegian coastal employment system: what it was and what it is. *MAST* 10(1), pp. 31-56.
- ¹⁹⁰ See, for example, the Convention on Biological Diversity list of parties. <https://www.cbd.int/convention/parties/list/> .
- ¹⁹¹ D. L. VanderZwaag, J. A. Hutchings, S. Jennings, and R. M. Peterman. 2012. Canada’s international and national commitments to sustain marine biodiversity. *Environmental Review* 20, pp. 312-315. Within the Convention on Biological Diversity, Target 11 states “By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystems services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.” <https://www.cbd.int/sp/targets/rationale/target-11/>
- ¹⁹² I. M. Côté, J. J. Dodson, I. A. Fleming, J. A. Hutchings, S. Jennings, N. J. Mantua, R. M. Peterman, B. E. Riddell, A. J. Weaver, D. L. VanderZwaag. 2012. The Royal Society of Canada Expert Panel Report in Brief, *Sustaining Canada’s Marine Biodiversity: Responding to the Challenges Posed by Climate Change, Fisheries, and Aquaculture*. http://rsc-src.ca/sites/default/files/pdf/RSCMarineBiodiversity2012_ENFINAL.pdf
- ¹⁹³ Charles Mather. 2014. Coastal Community Observatories Network (C-CON), Memorial University. Available at http://www.curra.ca/policy_brief.htm
- ¹⁹⁴ J. Nikoloyuk. 2013. Social impact investing for sustainable fishing communities. Halifax: Ecology Action Centre. <https://www.ecologyaction.ca/files/images-documents/file/Marine/EAC-Social%20Finance%20report.pdf> . See also a recent workshop report from the Ecology Action Centre, Small Scale, Big Value: Creating a Value Chain to Support Atlantic Canada’s Sustainable Fisheries. 2014. <https://www.ecologyaction.ca/files/images-documents/file/Marine/Small%20Scale%20Big%20Value%20Report%20online.pdf>
- ¹⁹⁵ B. Worm, R. Hillborn, J.K. Baum, T. A. Branch, J.S. Collie, C. Costello, M.J. Fogarty, E. A. Fulton, J. A. Hutchings, S. Jennings, O. P. Jensen, H. K. Lotze, P. M. Mace, T. R. McClanahan, C. Minto, S. R. Palumbi, A. M. Parma, D. Ricard, A. A. Rosenberg, R. Watson, D. Zeller. 2009. Rebuilding global fisheries. *Science* 325 (5940), pp. 578-585.