

**ADDRESSING QUESTIONS ON THE SOCIAL AND ECONOMIC OUTCOMES OF AN
INDIVIDUAL TRANSFERABLE QUOTA FISHERY**

by

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Quota Fishery

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Abstract

In Canada, fisheries are expected to contribute to prosperous coastal communities and the maintenance of stable and viable fishing fleets, alongside other objectives that include conservation and complying with legal obligations to Indigenous Peoples. Individual transferable quotas (ITQs) have been promoted as a management approach to improve the conservation and economic outcomes of fisheries. The use of ITQs in British Columbia (BC) groundfish fisheries is widespread, following successive introductions of ITQs into the fisheries since 1990. There has been no comprehensive evaluation of the social and economic outcomes of ITQ management in the BC fisheries during this time, despite more than a decade of fishery participants and Indigenous and coastal community representatives raising concerns about the negative impacts of quota ownership and leasing. With a focus on the BC Pacific halibut fishery, I construct a database for licences and quota, including ownership and leasing. I examine changes in the ownership profile of the fishery over a 25-year period and consider the extent to which processors exercise control over the quota market through leasing. I construct a financial enterprise model based on accounting principles to assess the impact of quota ownership and leasing prices on the financial performance of owner-operator halibut vessels. I compare the results of this research against objectives for fisheries in Canada, determined through an extensive search of the literature, including current and historical policy and legal documents, conference proceedings, testimony to Senate and House of Commons committees, speeches and briefing material dating from the 1970s.

Owner-operators have been increasingly marginalized in the halibut fishery. Owner-operators that have entered the fishery since 2001 catch 15% but own less than 1% of the halibut quota.

Lease fees for halibut have regularly exceeded 80% of the landed price, reducing lessee fishing enterprises to minimal earnings that do not support reinvestment or renewal of the fleet. The BC halibut fishery is not meeting objectives for fisheries in Canada with respect to fleet viability and the equitable distribution of benefits. I provide an overview of measures that can be used for a just and fair transformation of fisheries to achieve socio-economic objectives.

Lay Summary

The British Columbia Pacific halibut fishery has long been held up as an example of successful fisheries management. Through an in-depth investigation of this fishery, I have identified significant failings of the management system. The ownership profile of the fishery has changed dramatically since the introduction of individual transferable quotas (ITQs), which allow the holder of the ITQ to catch or transfer the privilege to catch halibut. The fishery has transitioned from predominantly owner-operated to absentee investor owners and lessee fishermen. An analysis of fishing enterprise financial performance demonstrates the overwhelming negative impact of leasing on fishing enterprises. New owner-operator entrants cannot earn enough from the fishery to re-invest, including vessel maintenance and replacement. The fishery, under current conditions, is not self-sustaining as an owner-operator fishery. Socio-economic objectives are not being met, raising important questions about the design and implementation of ITQ management systems and their use in Canada's fisheries.

Preface

The work undertaken in this thesis developed from research questions posed by the Canadian Fisheries Research Network (CFRN), with a goal of researching questions that are relevant to Canadian fisheries while simultaneously fostering collaboration between members of industry, government and academia. The questions examined in this thesis were developed in partnership with representatives from small boat / inshore fisheries in BC as part of the research co-construction process.

I completed this dissertation while employed with the federal public service of Canada. However, this work is in no way a reflection of the Government of Canada or any of its departments, agencies, or personnel. The analysis conducted and views expressed are entirely my own. Furthermore, none of this work used resources provided for official government business. All government data used in the dissertation are publicly available, either being available online, in published reports, or through *Access to Information Act* requests.

I wrote this entire thesis with my supervisors, Dr. Villy Christensen and Dr. Evelyn Pinkerton, providing guidance. All chapters aside from Chapters 1 and 6 were prepared as individual manuscripts. Chapters 2 through 4 were submitted to peer-reviewed journals and accepted for publication. Further, Appendix B is based on a published peer-reviewed paper. I am the senior author on all chapters (and Appendix B) and was responsible for the data compilation and the design and implementation of the analyses.

A version of Chapter 2 has been published as: Edwards, D.N. and E. Pinkerton. 2019. Rise of the Investor Class in the British Columbia Pacific Halibut Fishery. *Marine Policy* 109. I gathered necessary data, undertook the data analysis and wrote the manuscript. E. Pinkerton and V. Christensen provided guidance at the conceptualization and initial draft stages. The co-author, E. Pinkerton, provided comments for improvement of the final manuscript.

A version of Chapter 3 has been published as: Edwards, D.N. and E. Pinkerton. 2019. The Hidden Role of Processors in an Individual Transferable Quota Fishery. *Ecology and Society* 24(3): 36. I gathered necessary data, undertook the data analysis and wrote the manuscript. E. Pinkerton and V. Christensen provided guidance at the conceptualization and initial draft stages. The co-author, E. Pinkerton, provided comments for improvement of the final manuscript.

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For Chapter 5, I undertook the analysis and wrote the manuscript. E. Pinkerton and V. Christensen provided guidance at the conceptualization and initial draft stages, and comments for improvement of the final manuscript.

A version of Appendix B, provided as supplementary material, has been published as: Edwards, D.N. and D.G. Edwards. (2017). Licence Banks as a tool to mitigate corporate control of fisheries: A British Columbia groundfish example. *Marine Policy* 80: 141-146. While published during the period of this dissertation research, this paper was not prepared under the auspices of this research project. The paper provides a summary of, and observations on, a project undertaken prior to the start of this dissertation. The paper is included here to provide additional background and context as well as an example of licence banks, which is a concept discussed in chapter 5. I wrote the manuscript and gathered reference materials. Dan Edwards contributed to the identification of lessons learned as well as comments for improvement of the manuscript in all stages, including conceptualization, drafting and finalizing the manuscript.

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List of Abbreviations

BC	British Columbia
CCFRN	Canadian Capture Fisheries Research Network (original name, renamed to CFRN)
CFRN	Canadian Fisheries Research Network
CGIPP	Commercial Groundfish Integration Pilot Project
DFO	Fisheries and Oceans Canada (Department of Fisheries and Oceans)
DMP	Dockside Monitoring Program
FAO	Food and Agriculture Organization of the United Nations
GoC	Government of Canada
IFMP	Integrated Fisheries Management Plan
IPCC	Intergovernmental Panel on Climate Change
IPHC	International Pacific Halibut Commission
ITQ	Individual transferable quota
OECD	Organization for Economic Co-operation and Development
PCFCC	Pacific Coast Fisherman’s Conservation Company
SDGs	UN Sustainable Development Goals
TAC	Total allowable catch
UN	United Nations
UNEP	United Nations Environment Programme
UNU-IHDP	United Nations University International Human Dimensions Programme on Global Environmental Change
VRN	Vessel Registration Number

Glossary

After-lease price – The price received by the lessee fishing enterprise, as the difference between the landed price and the lease price.

Beneficial owner – The individual who receives the benefits from ownership, such as the financial benefits from lease fees and the power and influence that comes with owning a valuable asset.

Captain – The person in command of a fishing vessel. For owner-operator enterprises, also the owner of the enterprise.

Constant Dollars – Dollar value that has been adjusted / corrected for changes in purchasing power over time to express the value in a single year, called the base year. Calculated by multiplying current dollars by an index of price movements (e.g., consumer price index). Is used to accurately compare dollar values over time by eliminating the impact of price changes on the observed trend. Also referred to as real-value.

Current Dollars – Dollar value that has not been adjusted for changes in purchasing power / inflation over time.

First Nation – The Canadian Constitution recognizes three groups of Indigenous peoples of which ‘Indians’ is one. The term ‘Indian’ is no longer considered acceptable outside of its use as a legal term and has been replaced with the term ‘First Nations’. The term ‘First Nation’ does not have a legal definition. ‘First Nations’ in the plural refers to the ethnicity of First Nations peoples. The singular ‘First Nation’ can refer to a band, a reserve-based community, or a larger tribal grouping.

Fish sales slip – A record of the landing, required by DFO, which must list the buyer, seller, weight and price for each species and grade of fish sold.

Fleet – The aggregation of units (e.g., vessels) of any discrete type of fishing activity (e.g., fishery, gear type, fishing pattern) utilising a specific resource (e.g., species such as halibut, or species aggregate, such as groundfish or salmon).

Indigenous Peoples – A collective name for the original peoples of North America and their descendants. Often, 'Aboriginal peoples' is also used. The Canadian Constitution recognizes three groups of Aboriginal peoples: 'Indians' (which is no longer an accepted term for use although it remains the legal term; more commonly referred to as First Nations), Inuit and Métis.

Inshore fleet (BC) – Fisheries in which the dominant licence length is less than 65'; historical fishery ownership was independent and owner-operated; home ports are distributed widely throughout coastal BC; and, the enterprises are at a scale that can be operated by a single owner or small family group.

Inshore groundfish fleet (BC) – The fishing vessels that operate in the BC integrated inshore groundfish fisheries (all groundfish fisheries excepting trawl), with: common vessel characteristics such as length and capacity; the ability of the different vessels to use the range of different gears used in the fisheries (i.e., longline, gang troll, jig); and, that target groundfish (e.g., halibut, lingcod, dogfish, sablefish, rockfish).

Individual transferable quota (ITQ) - Permits allowing the holder of the ITQ to catch or transfer a share of a total allowable catch.

Landed price – Price, in dollars per pound, for a product at the landing point, not taking account of any transportation, handling or quota lease costs. Equivalent to the ‘farm gate’ price for aquaculture. Also referred to as ex-vessel price.

Landed value – Value, in dollars, of the total catch for the fishery / species.

Licence – Also known as permits. A license or permit is a document giving the producer the right to operate in a fishery according to the terms established by the regulating authority. In British Columbia ITQ fisheries, vessels must have a licence to legally participate in the fishery, and quota to cover the catch.

Non-directed catch – The catch that is taken incidentally or secondarily to the primary target species towards which fishing effort is directed. Also referred to as bycatch.

Overall Length (OAL) – The length of a vessel, based on an official measurement survey according to established DFO guidelines, which includes a measurement of the extreme ends of the outside of the hull.

Owner-operator – The owner of a vessel and licence personally fishes it. An owner-operator may own multiple vessels and/or licences, but only to an extent which can be reasonably fished by a single owner.

Party based Licence – A licence eligibility held by an individual – a person, a company or a First Nation. Party based licence eligibilities include Herring, Rockfish, Clam, Sea Cucumber and Sea Urchin.

Skipper – The person in command of a fishing vessel. Can be the owner of the fishing enterprise or hired by the owner to operate the vessel.

Total allowable catch - Total catch allowed to be taken from a resource in a specified period (usually a year), as defined in the management plan. Portions of the TAC may be

allocated to the stakeholders in the form of quotas as specific quantities or proportions.

Vessel-based Licence – A licence is issued ‘in respect of a vessel’ as the licence eligibility must be attached to a vessel and not to an individual. The reported vessel owner(s) is recognized as the owner of vessel-based licences attached to the vessel. Includes Salmon, Schedule II Species, Geoduck and Horseclam, Halibut, Sablefish, Shrimp by trawl, Groundfish Trawl, and Prawn and Shrimp by trap.

Vessel Registration Number (VRN) – A vessel registration number assigned to all vessels registered with DFO that are engaging in commercial fishing or transporting activities.

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I would like to acknowledge my friends who have supported me through this (long) process. I want to acknowledge Cody, in particular, whose support, most notably over this past year, meant so much to me. I would also like to thank Katarina who provided much appreciated support and encouragement through some challenging times over the course of this research.

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I was not only a student and researcher undertaking this project, but also the daughter, sister, cousin, granddaughter and niece of fishermen. I want to acknowledge my family – those that fish and those that stay on shore – most notably Bonnie, Ryan, Emily and Paul. Last, but most certainly not least, I want to thank my father, Dan Edwards. I cannot express the depth of my gratitude for all that he has done, both for myself as an individual and his work on behalf of the fishing communities of BC. I have learned so much from him over the years and his advice and guidance in this research was critical. His unwavering dedication to supporting vibrant, sustainable and equitable fisheries is inspiring.

Dedication

To my parents, Bonnie and Dan, who have been a constant
source of support and inspiration.

To my grandmother, Jorunn, who always encouraged me to believe in myself.

And to British Columbia's vibrant fishing communities –
a past worth remembering and a future worth fighting for.

Chapter 1: Introduction

The world is in a time of unprecedented change and upheaval. The gap between the rich and the poor is growing (Keeley 2015). Human activity is depleting many resources previously considered inexhaustible, at rates that undermine resource renewal (UNU-IHDP and UNEP 2012). Climate change impacts are becoming increasingly apparent, with the potential for climate devastation becoming ever more possible, including ocean acidification and the irreversible loss of many marine and coastal ecosystems (IPCC 2018). At the same time, the world has enormous potential to address these issues and successfully navigate this time of crisis. Knowledge is increasing at an unprecedented pace (Weinberger 2014). The rapid growth in data, the development of new technologies and the wide-scale dissemination of knowledge has the potential to lead to the innovations needed to address global challenges (OECD 2018).

Governments around the world have committed to achieving progress through concerted efforts, including initiatives such as the United Nations Sustainable Development Goals (SDGs), an urgent call for action by all countries adopted by all United Nations member states in 2015 (United Nations 2015). The SDG agenda recognizes that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve oceans and forests. Identifying the ocean as the world’s greatest common resource, the UN Global Compact has highlighted the role of the ocean in accelerating work across all 17 of the SDGs. The challenge will be to translate that potential into informed action that is appropriate and effective.

Canada, among the wealthiest countries in the world with extensive capacity to address challenges both domestically and globally, has a particular responsibility to act. Canada has

made firm commitments to address some of the world's most pressing problems, as exemplified in adoption of the SDGs and other international commitments, including through Canada's presidency of the G7 in 2018 during which the oceans figured prominently (G7 2018).

Successive governments in Canada have also committed to strengthening the middle-class in Canada, reducing inequality and eradicating poverty, addressing reconciliation with Indigenous Peoples, and ensuring a prosperous future for all Canadians. It is within this context that I am considering issues related to the socio-economic objectives for fisheries management in British Columbia (BC), Canada.

1.1 Canadian Fisheries Research Network

This PhD project was undertaken as part of the Canadian Fisheries Research Network (CFRN), supported by the Natural Sciences and Engineering Research Council of Canada (NSERC). The CFRN was a six-year research partnership with the goal of addressing questions relevant to Canadian fisheries while simultaneously fostering collaboration between members of industry, government and academia (Thompson et al. 2019). The organizing theme for the research network was the use of co-construction to develop research objectives and carry out research activities. Co-constructed research is “research that facilitates equal partnership in research between at least one academic party and one non-academic party” (Horner 2016, 8). The CFRN promoted an approach to science that was “founded in collaborative, interdisciplinary, multi-stakeholder participation in research of relevance to management decision making” (Thompson 2016, 677). As part of issue identification in the early stages of the network, fisheries representatives from the BC small boat / inshore fleet identified a primary area of concern as the diminished viability of their fleet arising from the licencing and quota leasing framework under

which a number of fisheries in BC operate. Citing lease costs in the individual transferable quota (ITQ) managed groundfish fisheries that at that time, in 2010, exceeded 70 to 80% of the landed value of the more valuable fish species that they fished, fisheries representatives were concerned about the long-term outlook for the BC inshore fleet. ITQs are permits allowing the holder of the ITQ to catch or transfer a share of a total allowable catch (TAC). ITQs have been promoted as a solution to numerous long-standing issues in fisheries and credited with a number of improvements where fisheries have become ITQ-managed (Branch, Rutherford, and Hilborn 2006; Casey et al. 1995; Grafton 1996; Grafton et al. 2006; Grimm et al. 2012; McRae and Pearse 2004). Fisheries representatives identified concerns about ITQs for both existing ITQ fisheries as well as other fisheries such as salmon and crab that had been proposed for transitioning to ITQs (McRae and Pearse 2004). While ITQs are generally acknowledged to have negative consequences for the equitable distribution of benefits, employment, fisheries-related services and infrastructure, and intergenerational access (Copes 1986; Copes and Charles 2004; Ussif Rashid Sumaila 2010; McCay 2004; Pálsson and Helgason 1995; Pinkerton and Edwards 2009), these negative consequences in the BC context have been regularly downplayed or dismissed outright as unfounded or exaggerated (BC Seafood Alliance 2019b; 2019c; 2019a; Boyes 2019; Gislason 2008; Morley 2019; Nelson 2011; B. R. Turris 2010). Representatives from the inshore fleet in BC asked that the ITQ managed fisheries be evaluated to address questions about ownership, the distribution of benefits, and the long-term viability of the fleet.

1.2 Objective and research questions

The overall research objective of this study is to assess the social and economic outcomes for the BC small boat / inshore groundfish fleet of being managed under an individual transferable quota system. More specific research objectives include:

1. Understand the ownership structure of the BC groundfish fisheries;
2. Identify the primary factors impacting financial viability of the small boat / inshore BC groundfish fleet;
3. Explore the role of processors in the BC groundfish fisheries;
4. Evaluate whether objectives for fisheries in Canada related to the distribution of benefits and the stability and viability of the small boat fleet are being met within the groundfish fisheries; and,
5. Consider options to achieve socio-economic objectives.

1.3 Objectives for fisheries in Canada

Fisheries in Canada occupy a unique role, being a common pool resource belonging to the people of Canada for the benefit of Canadians, particularly those in coastal communities (*Fisheries Act (R.S.C., 1985, c. F-14) 1985; Oceans Act (S.C., 1996, c. 31) 1996*). The predominant focus for fisheries management in Canada over the previous two decades has been on meeting ecological objectives (Stephenson et al. 2017). A review of policy documents and management plans for BC fisheries since 1990 demonstrates a low emphasis placed on socio-economic objectives. There are also significant gaps and deficiencies in the collection of the socio-economic data needed to evaluate fisheries against these objectives (Cisneros-Montemayor et al. 2017). Despite this, socio-economic objectives are central to societal expectations about the benefits derived

from fisheries, and have been recognized in policy and legislation and by fisheries ministers and senior government officials over a period spanning decades.

The importance of understanding and clearly articulating management objectives has long been recognized by the federal fisheries management agency, Fisheries and Oceans Canada (DFO). In 1974, Maury Houghton, Manager of Special Programs, Fisheries and Marine Services, Department of the Environment (the predecessor to DFO), spoke at a workshop on limiting entry into commercial fisheries and provided the following advice (Mundt 1974):

Suggest for each program you take a strong look at your objectives and try to tailor your implementation program to meet those objectives.

This workshop included reflections on the licence limitation program introduced into the BC fisheries in 1968, in what was known as the Davis Plan. Chris Newton, manager of the Species Economics Program and Intelligence Branch, Fisheries and Marine Services, Department of the Environment, identified the objectives of the Davis Plan:

The initial objective of the program was to raise average incomes of fishermen to the regional average.

In 1998, the then Fisheries Minister, the Honourable David Anderson, in testimony to the House of Commons Standing Committee on Fisheries and Oceans, reaffirmed that fisheries in Canada are meant to provide a good living for the people in the industry (D. Anderson 1998):

Now, the overriding objective in this province, as elsewhere, is conservation and protecting the marine resources for future generations. But there is a

substantial fishery as a secondary but very important objective as well, and by that I mean a fishery that both conserves the fish stocks and provides a good living for the people in the industry itself. I do not see as an objective simply a subsistence fishery for British Columbia. I see an industry that pays the people in it adequate amounts of money so they can care for their families at the decent level they deserve.

In a 2017 speech to the Canadian Independent Fish Harvesters Federation, then fisheries Minister Dominic LeBlanc reaffirmed the intent of his government that:

The benefits of the fishery go to those who work hard to prosecute it, and the communities that support them.

In 2019, in testimony to the House of Commons Standing Committee on Fisheries and Oceans, Rebecca Reid, regional director general for Fisheries and Oceans in the Pacific region, stated the following (DFO 2019b):

The conservation, protection and sustainable management of the resource is still the department's core mandate. However, the department recognizes the importance of social, economic and cultural considerations in fisheries management decision-making. ...

The department's fisheries management regime is designed to achieve five objectives: conservation outcomes; compliance with legal obligations, such as First Nations rights; promoting the stability and economic viability of fishing

operations; encouraging equitable distribution of benefits; and facilitating the necessary data collection for administration, enforcement and planning purposes.

Despite clear socio-economic objectives associated with fisheries in Canada, within a national and international context prioritizing inclusive and sustainable economic growth and the reduction of inequalities, there has been a lack of explicit consideration of socio-economic objectives in developing policy and management approaches in BC fisheries and only limited evaluations of the social and economic outcomes of past decisions.

While Canada's Pacific fisheries share a common vision and set of objectives with Canada's Atlantic fisheries, the Pacific fisheries have not had the same level of policy development as the Atlantic fisheries, particularly with respect to socio-economic objectives. Despite a shared history and more similarities than differences in the development of their fisheries and coastal communities, informal approaches to fisheries management common to both coasts were formalized in the Atlantic region and abandoned in BC (Gough 2008). The abandonment of these approaches in BC was not a deliberate or intentional action, but one of timing and inattention, and poor implementation (DFO 2019b; Gough 2008).

With a strong inshore fleet in BC in the 1970s, independent and owner-operated, the view was that there was no need to formalize fleet separation and owner-operator policies (Government of Canada 1976; Tansley 1979). By the time corporate and absentee ownership became an issue, a new narrative had taken hold that pitched the objectives for BC fisheries as somehow different

from those in the rest of Canada, and the attempt has been made to rewrite BC fisheries history to be one of longstanding corporate ownership and control (BC Seafood Alliance 2019b; Morley 2019; Gislason et al. 2017). This does not accurately reflect the history of fisheries in BC or the Atlantic region, the national interest in responsibly managing oceans and fisheries to meet a national vision, nor the common shared objectives for fisheries in Canada.

In 1979, in a speech delivered by Donald Tansley, Associate Deputy Minister, on behalf of the Honourable Romeo Leblanc, Minister of Fisheries, told the Fisheries Association of British Columbia that:

In the east, we hold up the B.C. fishing industry as a good model. That should permit me to hold up the Atlantic industry to you, as a model of certain difficulties. ...

In the Atlantic fishing fleet, we have seen buyer domination through ownership or credit. This lowers prices, prevents united bargaining, and restricts the freedom of the fisherman to sell fish where he wants. In the east, I've promoted separating the fleet from processors, to create equal bargaining and the free work supply and demand, such as you have here in the B.C. Fleet.

What followed from this statement was the formalization of a fleet separation policy in Atlantic Canada in 1979 and an owner-operator policy in 1989 (Gough 2008). Forty years later, the story is a very different one. In testimony to the House of Commons Standing Committee on Fisheries

and Oceans in 2019, fish harvester Carl Allen told members of Parliament (FOPO 2019a, 30–31):

Right now, on the East Coast we're in a boatbuilding boom, with many boatbuilders having at least a two-year wait if you want a new boat, while shipwrights struggle to keep up with the demand for repairs and refits on existing vessels.

Compare that to the West Coast. There, as a result of the lack of sound policies to keep the net benefit of the resource in the hands of the people who actually harvest it, the boatbuilding industry has diminished to the point where, I've been told, fishermen are sourcing new boats from the U.S. and elsewhere. Again, this is the complete opposite of the East Coast, where we are selling vessels into the U.S. at a constant rate....

I recently had a member of my community approach me. He shook my hand and congratulated me on a good season. This is what he had to say to me: "When fishermen are doing well, the community does well. We all benefit from the riches of the oceans."

When I compare that to what a young fisherman told me on a recent trip to British Columbia I was saddened and disgusted at the results of the DFO's B.C. region policies over the last 25 plus years. He said this to me: "We lost the ability to take care of our communities like we used to, and therefore our communities don't see the need to take care of us."

There is much to be learned for the BC fisheries from Atlantic Canada's fisheries, where efforts have been taken to defend and promote the inshore fleet. Just as at one time there was much for the Atlantic fisheries to learn from BC. Unfortunately, the lessons Canada's East Coast fishermen take from the Pacific fisheries in 2019 is what not to do.

The importance of addressing socio-economic objectives for fisheries in Canada is further heightened by the role of fisheries in reconciliation efforts with Indigenous Peoples, alongside improving opportunities for economic participation of Indigenous Peoples in Canada, which have been identified by the Government of Canada as top priorities. A number of court cases have affirmed, to varying degrees, the rights of Indigenous People with respect to fisheries and the legal obligations that the Government of Canada has with respect to fisheries and Indigenous Peoples. Court cases have been brought forth related to the constitutionally protected rights of Indigenous People to access fish for food, social, and ceremonial purposes (*R. v. Sparrow* 1990), to earn a living from fisheries as identified in historical treaties (*R. v. Marshall* 1999), and to address the question of unextinguished rights and title where treaties were never signed, as is the case for the majority of First Nations in coastal British Columbia (*Ahousaht Indian Band and Nation v. Canada (Attorney General)* 2009; *Lax Kw'alaams Indian Band v. Canada (Attorney General)* 2011; *Ahousaht Indian Band and Nation v. Canada (Attorney General)* 2018). There are myriad expectations that the government has committed to achieving, and legal requirements that the government is obliged to meet, that are centred on the social and economic outcomes of fisheries in Canada.

1.4 Defining the BC small boat / small-scale / inshore fleet

There is a terminology gap when describing the BC fishing fleets. Terms such as ‘small boat fleet’, ‘owner-operator fleet’, ‘small-scale fisheries’, and ‘inshore fleet’ are all used interchangeably to refer to fisheries that are small boat, historically owner-operator and independent, fishing relatively low impact gear in the coastal regions of BC. This fleet stands in contrast to the other fleet segment referred to as the ‘corporate fleet’, ‘big boat fleet’, and ‘industrial fleet’. However, there are no official designations for the different fleet segments in BC.

The use of the term ‘small-scale fisheries’, while widely used internationally, by the EU, the FAO and others, to distinguish smaller-scale fisheries and fishing enterprises from larger, corporate and more industrial fisheries, has met with limited uptake in Canada. There is no one definition for small-scale fisheries, which are instead defined on a country-by-country or region-by-region basis (FAO 2005). Within the EU, small-scale fishing is defined as “vessels under 12 m in length not using towed gear” (Macfadyen, Salz, and Cappell 2011, 12). This definition is problematic for many of the EU fisheries that are viewed separate from the larger, more corporate and industrial fisheries, either because of the strict length limitation or the use of towed gear (Urquhart, Acott, and Sanghera 2014). This same issue applies in Canada, particularly given ocean conditions that often dictate the use of larger vessels for safety reasons (e.g., the mean vessel size of the small salmon boats in BC (gillnetters and trollers) is 12.7 m). DFO has further contributed to confusion over the use of the term ‘small-scale fisheries’ in Canada by deviating from the international norms for defining this term. The widely accepted approach for defining small-scale fisheries, while context specific, focuses on the characteristics of the participants and

fishing activity (Chuenpagdee 2016; FAO 2005). In the context of providing science advice, DFO in 2018 defined small-scale fisheries based on the value and/or volume of fishery landings (DFO-CSAS 2018). In fact, many small-scale fisheries are quite large, in terms of number of participants and catch (Béné, Macfadyen, and Allison 2007). A further obstacles to the uptake of ‘small-scale fisheries’ term in Canada is that it is often treated as synonymous with artisanal fisheries (Chuenpagdee et al. 2006), and few fisheries in Canada could be considered artisanal. This does not mean that small-scale fisheries are not widespread in Canada, particularly given that the defining characteristics fundamentally are not about the size of the vessel or the size of the fishery, but rather about the social and cultural linkages that exist between these fisheries and coastal communities (Urquhart, Acott, and Sanghera 2014; van Ginkel 2001; Acott and Urquhart 2014; Brookfield, Gray, and Hatchard 2005).

The term that is more generally used in Canada to refer to small boat, independent, owner-operator dominated fisheries is ‘inshore fleet’, which is also widely used in Europe and is roughly analogous to the broader conceptualizations of ‘small-scale fisheries’. In Atlantic Canada, the fleet division was formalized with the 1979 fleet separation policy, which separated the harvesting and processing sectors in the inshore fisheries. The use of ‘inshore’ to delineate the different fleets in Canada was entrenched in legislation with amendments to Canada’s *Fisheries Act* completed in 2019. The amendments included the addition of a provision to the section on ‘considerations for decision making’ that the Minister may consider “the preservation or promotion of the independence of licence holders in commercial inshore fisheries”. ‘Inshore’ has not been defined within the Act and the accompanying regulations apply only to Quebec and Atlantic Canada, leaving open the question of how to define ‘inshore fleet’ for BC fisheries.

The Geography of Inshore Fishing and Sustainability project addressed the issue of defining ‘inshore’ in the European context, considering usage of the term in different European countries, and identified a range of factors used, including vessel length, distance from shore, engine power and gross tonnage (Urquhart, Acott, and Sanghera 2014). In the policy for Preserving the Independence of the Inshore Fleet in Canada’s Atlantic Fisheries (PIIFCAF), ‘inshore’ is defined as “the fishing sector where fish harvesters are restricted to using vessels less than 19.8m (65') Length Over All (LOA), and in the Newfoundland and Labrador Region, where fish harvesters may be permitted to use a vessel less than 27.4m (90') LOA when specific conditions are met” (DFO 2007b). The Atlantic Canada inshore fleet definition can be reasonably applied in BC, with only a few adjustments needed to account for differences in the licencing systems. Licence length limitations in the BC fisheries are not by fishery but by individual licence, being based on (1) length of vessels that received licences at the time of licence limitation, and (2) increases to licence length through the stacking and marrying of licences, which could allow for licence lengths to increase by up to 30% (DFO 2019a). If you consider the fisheries based on the dominant licence lengths within the fisheries, most fisheries in BC based on a 65' (19.8m) cut-off would qualify as inshore fisheries, with the exceptions being the groundfish trawl fishery and the salmon seine fishery. While the herring seine fishery licences do not have individual vessel length restrictions, the herring seine fishery has similar historical corporate ownership and gear that would qualify it in the same category as the trawl and salmon seine fisheries. The sablefish fishery average length is below the cut-off, but has both large and small vessels, consistent with the historical development of this fishery that encouraged both large corporate and small independent ownership. In all other fisheries, the fishery can be reasonably considered to be inshore, consistent with the characterization of inshore in other parts of the world, including

ownership (independent, owner-operator), home ports (distributed widely throughout coastal areas), and scale of enterprises (owner-operator, at a scale that can be operated by a single owner or small family group).

1.5 Overview of the BC Groundfish Fishery

The BC groundfish fisheries are highly diversified with six licence types, seven distinct fisheries (Table 1.1), a complex management history, and vessels ranging in length from less than 5 m to greater than 55 m. The vessels in the fleet range from very small rod and reel vessels, through mid-size hook and line vessels, to large scale factory processor trawlers. The fisheries substantially contribute to BC's economy and employment base with over 200 vessels participating in the groundfish fisheries annually.

The BC groundfish fisheries were integrated in 2006 through the Commercial Groundfish Integration Pilot Project (CGIPP) (CIC 2005; DFO 2006). CGIPP was a response to concerns about discard of non-directed (bycatch) catch, particularly of inshore rockfish. Under CGIPP: ITQs were introduced to the hook and line rockfish, dogfish and lingcod fisheries; all groundfish vessels were required to have either an electronic monitoring camera or an observer on board every trip; all rockfish catch had to be landed (discarding of rockfish – which has a near 100% discard mortality – was not permitted); all catch had to be recorded and mortality of 'marketable'¹ ITQ species covered by quota acquired by the fisherman; and, quota transferability between the commercial groundfish sectors was instituted on a limited basis. The individual

¹ The meaning of marketable is identified in the Integrated Fisheries Management Plans for the groundfish fisheries and is not analogous to legal size or market acceptability.

fisheries maintained their autonomy through this process, with the capacity to set limits on the amount of quota that left the sector (for example, the halibut fishery could set limits on how much halibut quota could be leased out of the halibut fishery to other fisheries to cover its non-directed catch of halibut). As well, each fishery established its own internal limits for its fishery, such as trip limits and annual non-directed quota caps to manage individual access to non-directed quota. The actual acquisition of quota, for both directed and non-directed catch, continued to be on the unregulated quota market, with individual fishermen or processors responsible for finding and leasing quota to cover catch.

Table 1.1 Characteristics of the BC commercial groundfish fishery sectors, including the year licences were limited, the total number of limited licences, the year that the dockside monitoring program (DMP) was introduced, and the year that ITQs were introduced (DFO 2008a; 1991; 1999c; 1998a; 1999b; 1993).

Fishery	Gear	Licence	Limited Licence	# of Licences	DMP	ITQ
Groundfish Trawl	bottom or mid-water trawl	T & FT	1976	142	1994	1997
Sablefish	longline trap or hook	K & FK	1980	48	1990	1990 ⁱ
Halibut	hook and line	L & FL	1979	435	1991	1993 ⁱⁱ
Rockfish – Outside ⁱⁱⁱ	hook and line	ZN(O) & FZN(O)	1992	183	1995	2006
Rockfish – Inside ⁱⁱⁱ	hook and line (jig)	ZN(I) & FZN(I)	1991	74	1995	2006
Dogfish	hook and line	Schedule II ^{iv}	-	>2000	1996	2006
Lingcod	hook and line (gang troll or jig)	Schedule II ^{iv}	-	>2000	1996	2006

ⁱ full by the pound transferability introduced in 1995, permanent transferability in 2000

ⁱⁱ individual quotas introduced in halibut in 1991, limited transferability in 1993, and full transferability, unlimited by the pound temporary and permanent, in 1999

ⁱⁱⁱ Inside refers to the inside waters, where the fishery is located, between Vancouver Island and mainland British Columbia. Outside refers to the outer waters of British Columbia.

^{iv} the dogfish and lingcod fisheries do not have fishery-specific limited licences. They can be fished on any vessel with 'schedule II' privileges, which all commercially licenced fishing vessels in BC have.

1.6 Thesis overview and scope of the study

This thesis contains four main research chapters, chapters 2-5. The overall objective for the research was to address social and economic outcomes for the small boat / inshore groundfish fisheries. Due to data limitations and to scope the research appropriately, I focused my research on the halibut fishery. The halibut fishery is the largest and most valuable of the small boat groundfish fisheries, and has fishery and data characteristics that lent themselves well to the investigation, including full utilization of the total allowable catch in each year, a low carryover amount (10%) – whereby a percent of the uncaught quota could be carried over into the following years – and a high quota value incentivizing full usage of quota. Furthermore, due to the integration of the small boat groundfish fisheries in 2006, the small boat groundfish fleet is largely a single fleet, with common vessel characteristics across five of the seven fisheries (excepting the trawl and inside rockfish fisheries), albeit with a number of different fishing patterns employed across the fleet.

In Chapter 2, I construct an ownership database for the Pacific halibut fishery in BC through aggregation of datasets received from DFO, supplemented with additional data sources, to examine changes in the ownership profile of the BC Pacific halibut fishery over a 25-year period. I consider who owns the quota, including to what extent the owners of quota fish or lease out quota, and if there is an enduring impact of being an initial grantee of quota.

In Chapter 3, I use the same ownership database constructed for Chapter 2 and extend it to consider the extent to which processors exercise control over the halibut quota market through

leasing. I develop a network analysis to visualize the role of processors in the quota lease market and consider issues of power dynamics and the role of government in managing markets.

In Chapter 4, I construct a financial enterprise model based on accounting principles for evaluating revenue, costs and income to assess the impact of quota ownership and leasing prices on the financial performance of owner-operator halibut vessels. In the absence of detailed costs and earnings data for the fleet, I use available data to determine relative and generalized financial performance metrics under different leasing arrangements for a hypothetical fishing enterprise.

In Chapter 5, I provide an overview of measures that can be used to transform an established fishery licencing system to achieve socio-economic objectives. I consider issues related to equitable distribution and process for ensuring a just and fair approach to fisheries transformation.

In scoping this study, I recognized the importance of Indigenous access and rights issues to questions related to social and economic outcomes of fisheries in BC. This is an important aspect of the fisheries and one deserving of study and consideration. However, this was not a central focus of my research, which was concerned with the functioning of the ITQ groundfish fisheries and implications for fisheries participants, as identified through a research co-construction process with fisheries representatives. The database compiled for this research can be used to consider, in part, issues related to First Nation ownership, access and participation, although additional research approaches would also be warranted to fully address this issue, including interviews and research co-construction with First Nation representatives. I determined that the

focused and dedicated consideration that the important issue of First Nation access and rights deserves was beyond the scope of this research project, particularly as it would require the use of very different methodological approaches than was planned for this project and the development of a number of research partnerships to ensure that the research met best practices with respect to representation and participation (Assembly of First Nations 2009; University of Victoria 2003).

Chapter 2: Rise of the Investor Class in the British Columbia Pacific Halibut Fishery

Individual transferable quotas (ITQs) have been promoted as a management approach to address many of the economic and conservation challenges encountered in fisheries. ITQs are expected to improve fishery outcomes based on assumptions about who owns the quota, how ownership is transferred, and how ownership incentivizes environmental stewardship. Changes in the ownership profile of the British Columbia Pacific halibut fishery were examined over a 25-year period. This analysis revealed that, despite the halibut fishery traditionally being an owner-operator fishery, with owner-operators owning and catching 90% of the halibut in 1991, owner-operators have been increasingly marginalized in the fishery, catching 45% of the halibut in 2016 while owning 15% of the quota. The original grantees of quota from 1991 continue to own over half of the quota, and original grantees comprised half of the owner-operators active in the fishery in 2016. However, these original grantees have been steadily becoming a new investor class, non-existent in 1991, alongside new investors who have bought into the fishery as a source of income from leasing. A new dynamic has emerged in the fishery, with the separation of quota ownership from fishing operations. This raises questions about the assumptions underpinning the rationale for ITQs as an efficient market-based mechanism for fishery management and as a means to improve stewardship incentives. Also questionable are the equity, the long-term viability, and the objectives this fishery is serving with this new ownership structure.

2.1 Introduction

Individual transferable quotas (ITQs) are permits allowing the holder of the ITQ to catch or transfer a share of a total allowable catch (TAC). ITQs have been promoted as a solution to numerous long-standing issues in fisheries and credited with a number of improvements where fisheries have become ITQ-managed (Branch, Rutherford, and Hilborn 2006; Casey et al. 1995; Grafton 1996; Grafton et al. 2006; Grimm et al. 2012; McRae and Pearse 2004). The rationale for ITQs rests on a number of assumptions. ITQs are assumed to promote the equitable transfer of access rights to the most efficient operators, through a market-based mechanism that compensates existing access holders while providing incentives for the most efficient operators to purchase access rights (Arnason 2012; Newell, Sanchirico, and Kerr 2005). ITQs are assumed to align economic and conservation objectives by creating a clear and direct link between long-term stock productivity and resource rents, which is then expected to motivate fishermen to act as stewards (Lubchenco et al. 2016; Grafton, Nelson, and Turriss 2006; Berkes et al. 2006; Hanna, Folke, and Mäler 1995; Grafton et al. 2006). ITQs are assumed to maximize economic rent, reduce over-capitalization, and generally lead to safer and more sustainable fisheries (Moloney and Pearse 1979; Pfeiffer and Gratz 2016). As per Coase (1960), for markets to be effective and efficient in the trading of property rights, they must meet the following conditions: (1) no wealth or income effects from the initial allocations of rights, (2) perfect information among all parties, (3) low transaction costs, and (4) a well-functioning capital market. ITQs are generally acknowledged to have enforcement issues related to discards and quota busting and have negative consequences for the equitable distribution of benefits, employment, fisheries-related services and infrastructure, and intergenerational access (Copes 1986; Copes and Charles 2004; Ussif Rashid Sumaila 2010; McCay 2004; Pálsson and Helgason 1995; Pinkerton and

Edwards 2009), although these negative consequences are frequently ignored or downplayed (see Brandt 2005; Symes and Crean 1995 as examples).

There is growing evidence that challenges the efficacy of free-markets to achieve optimal outcomes (Hahnel and Sheeran 2009). Bromley (2009) critiqued the economic theory underpinning individual fishing quotas (IFQs), identifying “manifold contrivances” with reference to the supposed “magic of IFQs” (p. 289). Parslow (2010) demonstrated that the possession of an ITQ does not in fact provide an incentive for stewardship at the individual level. McCormack (2017) demonstrated that the sustainability being achieved through ITQs in New Zealand is concerned with sustaining the income stream of quota holders. Emery et al. (2014) identified how quota leasing can result in safety compromises. Szymkowiak and Himes-Cornell (2017) noted that even where active participation measures are in place, strong incentives for quota shareholders to retain their fishing privileges in high earning fisheries can lead to participants actively seeking to exploit loopholes. Szymkowiak and Felthoven (2016) explored the distributional consequences of leasing and initial quota allocations. Van Putten and Gardner (2010), in considering the Tasmanian Rock Lobster fishery, noted that the industry was characterised by a growing number of investors. Van Putten et al. (2014) concluded that there was insufficient evidence to attribute improved environmental outcomes to changes in stewardship ethics arising from ITQs. Many of the assumptions underpinning ITQs have already been shown not to hold for the BC halibut fishery (Pinkerton and Edwards 2009). Despite this, ITQs and market-based approaches more generally continue to enjoy the support and endorsement of the management agency in Canada directly and through commissioned reports (McRae and Pearse 2004; Munro et al. 2009; Nelson 2011; DFO 2012c) and there is significant

resistance to the introduction of measures to ameliorate the negative outcomes of the ITQ system (DFO 2019b).

This chapter is part of a larger project to assess the state of the groundfish fisheries in British Columbia, with a focus on the small-boat fleet and impacts of the ITQ management system. In this chapter, changes in ownership in the British Columbia Pacific halibut fishery over a 25-year period, from 1991 when individual vessel quotas were initially allocated to 2016, were assessed to answer the questions:

1. Who owns the quota – to what extent are the owners of quota the fishing enterprise operators?
2. Is there an enduring impact of being an initial grantee of quota?

2.1.1 Background on the British Columbia halibut fishery

This assessment of the changes in the ownership structure of the halibut fishery under ITQs is grounded in the stated objectives for fisheries in Canada and the BC halibut fishery specifically. The Government of Canada is mandated to safeguard the interests of Canadians in managing fisheries as a common pool resource (*Fisheries Act (R.S.C., 1985, c. F-14)* 1985). Fisheries are expected to be managed to meet a full spectrum of socio-economic objectives, including benefits to adjacent communities, maintenance of small boat independent fleets, and distribution of benefits amongst participants (Stephenson et al. 2018). The document that established national fisheries policy in Canada for the modern era is the 1976 ‘Policy for Canada’s Commercial Fisheries’ (Government of Canada 1976), which stated that “the guiding principle in fishery management no longer would be maximization of the crop sustainable over time but the best use

of society's resources. 'Best use' is defined by the sum of net social benefits (personal income, occupational opportunity, consumer satisfaction and so on) derived from the fisheries and the industries linked to them" (p. 53). These objectives have been affirmed in legislation (*Oceans Act* (S.C., 1996, c. 31) 1996) and policy (DFO 1999a; 2018a). Past Fisheries Ministers have affirmed that fisheries in Canada are meant to provide a good living for the people in the industry (D. Anderson 1998), where the benefits of the fishery go to those who work hard to prosecute it, and the communities that support them (LeBlanc 2017). A common management objective that has also been explicitly identified for the halibut fishery is the stability and viability of the fleet (DFO 1999a; 1990). It is against these objectives that the state of ownership in the halibut fishery is considered.

Canada's Pacific halibut fishery is one of the highest valued fisheries in BC, with \$58.3 million in landed value and \$93 million in wholesale value in 2016 (Province of BC 2017). Since 1933, the BC halibut fishery has been managed by the International Pacific Halibut Commission through which the US and Canada jointly conduct stock assessment, regulate gear, set fishing seasons, and set the total allowable catch (TAC) for the management areas, of which British Columbia is one area. Since 1991, the halibut TAC has ranged from a high of 13 million pounds (5897 t) in 1998 to a low of 5.3 million lb (2404 t) in 2018. The stock is determined to be not overfished and not subject to overfishing (IPHC 2018). While the TAC is at a more than 25-year low, market demand has been strong and landed prices almost doubled between 2004 and 2018.

The halibut fishery was one of the first individual transferable quota (ITQ) fisheries in Canada and has been frequently cited as an example of successful ITQ fisheries management (McRae

and Pearse 2004; Grafton, Nelson, and Turriss 2006; Munro et al. 2009). Limited licences were introduced in British Columbia in fall 1968 for the 1969 fishing year, with the creation of three types of licences – two types of salmon limited licences (‘A’ and ‘B’ licences) that also included all other fisheries and a non-salmon (non-limited) licence (‘C’) that permitted fishing of all other species but not salmon (Gough 2008). The ‘C’ licence was subsequently limited in 1977. Halibut could be fished by holders of any of these licences. The separate halibut limited ‘L’ licence was established in 1979, based on catch history in 1977 and 1978, with 435 ‘L’ licences created. By 1989, with increasingly short seasons and rising concerns about overcapacity in the fleet, the management agency had conceded that entry limitation had not achieved the desired results (DFO 1990). Although there were other options that could have been explored (Pinkerton 2013), the management agency had a very positive view of the potential of ITQs and focused their efforts on securing industry support for individual quotas (DFO 1990).

The halibut fishery was transitioned to an individual quota fishery in 1991 and an individual transferable quota fishery in 1993. Quota were allocated to halibut licences in 1991 based on licence length and catch history. Full and unlimited transferability, including permanent transfers, was established in 1999. Each ‘L’ licence is required to hold a minimum of 0.01149% of the TAC. A maximum of between 1% and 1.25% of the TAC can be held on a licence, depending on its fishing history. These restrictions apply to the individual licence only.

In contrast to the Alaska Pacific halibut fishery and many Canadian East Coast fisheries, the BC halibut fishery has no fleet separation, owner-operator, or ownership concentration restrictions. The absence of restrictions should not be interpreted as an indication that the role of owner-

operators in Canada's Pacific fisheries was somehow less prominent or valued than in Canada's Atlantic fisheries. As noted in the 1976 national fisheries policy (Government of Canada 1976), the Canadian fishing fleet historically was a small-craft fleet, and most were owner-operated. A robust, independent small boat owner-operator fleet was valued for providing employment and the wide distribution of socio-economic benefits to fishing communities all along the coast (Canadian Council of Professional Fish Harvesters 2002). Whereas fleet separation (no ownership by processors of the small boat licences or vessels) and owner-operator policies were implemented in Atlantic Canada in 1979 and 1989 respectively, in BC the prevailing view within the management agency at that time was that these policies were not needed as the small boat fleet in BC was owner-operator dominated and independent of overt corporate ownership (Government of Canada 1976; Gough 2008). In 1974, Maury Houghton, Manager of Special Programs, Fisheries and Marine Services, Department of the Environment, observed that "as far as capitalization or ownership goes, in British Columbia we have never had the ownership in the hands of the fishermen to a greater degree than it is right now" (Mundt 1974, 46). The extent of corporate control was regularly evaluated through the 1970s and remained under the 12% cut-off that would have triggered government action (Mundt 1974). By the time corporate ownership, vertical integration and leasing was becoming more widely acknowledged in BC fisheries, particularly in the herring and salmon fisheries, the management agency was fully supporting the adoption of market based mechanisms such as ITQs as a 'no cost/low cost' solution to address overcapacity (DFO 1990; Canadian Council of Professional Fish Harvesters 2002; Cruickshank 1991). In recent years, there have been efforts to re-cast the history of BC fisheries as corporate dominated to diminish the historical role of owner-operators and negate calls to maintain the viability and independence of the small boat fleet in this region of Canada (BC Seafood Alliance

2019b; 2019c). When the entrenchment of owner-operator and fleet separation policies in regulation was proposed in 2019 following adoption of enabling amendments in the national Fisheries Act (*Fisheries Act (R.S.C., 1985, c. F-14)* 1985), the approach taken by the government was to make these provisions apply only to the Canadian Atlantic fisheries, despite their origin in national policy (Government of Canada 1976) and calls to legislate a coherent national approach to owner-operator and fleet separation applicable across Canada (Canadian Council of Professional Fish Harvesters 2019).

As part of government efforts to repatriate fisheries access to First Nations people, the First Nation communal licence ‘F’ designation was created and the Government of Canada has been purchasing ‘L’ licences and quota and transferring them to the ‘FL’ designation since the 1990’s, with the first ‘FL’ licences created in 1997. There were 76 ‘FL’ licences identified in 2018 with combined quota totalling about 16% of the TAC. The Government of Canada retains ownership of these licences and issues the licences and quota annually to First Nation organizations for their use within the commercial halibut fishery. It is at the discretion of the First Nation organizations how those licences and quota are then used. Disposition of licences and quota each year can range from being fished by First Nation members, leased to non-members that employ members as crew while also generating lease revenue for the organization, and leased to the highest bidder to generate lease revenue.

Initial outcomes of the transition to ITQs in halibut were viewed as largely positive, with a longer fishing season than had existed after the layup system (see Pinkerton 2013) was abandoned in the mid-1970s, higher landed price, and lower fishing costs (EB Economics 1992).

In more recent years, however, fisheries participants, observers and other stakeholder interests have raised concerns, citing excessively high lease prices, diminishing financial returns for fishing enterprises, an aging fleet and workforce, failure to attract new entrants, inequitable distribution of benefits and questionable societal benefits from the resource (Nuu-chah-nulth Tribal Council 2005; United Fishermen and Allied Workers' Union 2005; Ecotrust Canada 2009; Pinkerton and Edwards 2009; Davidson 2010; Canadian Council of Professional Fish Harvesters 2018). It was these concerns, in light of the stated objectives for the fishery, that prompted an in-depth investigation of the halibut fishery in BC.

2.2 Methods

An ownership database for the Pacific halibut fishery in BC was constructed through analysis of three datasets from the management agency, Fisheries and Oceans Canada (DFO), supplemented by the Statistics Canada Inter-Corporate Ownership historical databases, BC Provincial Corporate Registry Services records, BC provincial processor licence lists, the Transport Canada ships registry and online searches including court proceedings, address directories, fisheries advisory process documents and meeting attendance lists. Input was also received from BC fishermen active in the halibut fishery, facilitated through the Canadian Fisheries Research Network – a six-year research network funded by the Natural Sciences and Engineering Research Council of Canada (NSERC) that brought together academia, industry and government to undertake collaborative research on fisheries in Canada.

All halibut weights are expressed as ‘dressed head off’ weight, in pounds, as per the management and industry standard. The conversion factor for round to ‘dressed head off’ is 0.75. For weight conversion, one tonne is equal to 2204.6 pounds.

Edwards and Pinkerton (2019c) provide a detailed overview of the three datasets that were used for the analysis: (1) licence/vessel ownership, (2) quota transactions administrative records, and (3) quota allocations. These datasets include licencing data by vessel, where vessel ownership is a proxy for licence ownership, all temporary and permanent quota transfers, and the quota allocated to each licence.

2.2.1 Assigning Beneficial Ownership

Beneficial owners are those who receive the benefits from ownership, such as the financial benefits from lease fees and the power and influence that comes with owning a valuable asset. There are no requirements in BC for the beneficial ownership of licences or of companies to be declared. To determine beneficial ownership, a detailed analysis was conducted of DFO licence ownership lists and of the BC corporate registry to identify parent companies and the individuals associated with those companies. This analysis built on work assessing corporate concentration in the BC salmon and herring fisheries (Haas, Edwards, and Sumaila 2016), extending this approach to identify individuals associated with companies. Halibut ‘L’ licences are ‘vessel-based licences’, meaning that the licence is associated with a vessel and not an individual. The management agency does not track ownership of the licence, only ownership of the vessel with which the licence is associated. Vessel ownership was used as a proxy for licence ownership and by extension quota ownership, as vessel ownership is the only source of quota ownership

information available and consistent with the practice of the management agency. Vessels can have multiple owners, of which one is listed as the contact owner for the licence. The contact owner is treated as the ‘primary’ owner and the remaining owners are considered ‘secondary’ owners. Beneficial ownership was assigned based on the primary/contact owner.

As a consequence of how ownership is tracked based on vessel ownership, licence ownership can be obscured by licence leasing, whereby a licence is transferred to the lessee’s vessel. The BC halibut fishery, as with all the BC groundfish fisheries, is managed to facilitate temporary leasing of quota, but not of licences. Quota can be transferred between licences on a temporary basis through requests submitted to the management agency, with no impact on recognized ownership or permanent allocation. In contrast, there is no temporary transfer mechanism for licences – all transfers between vessels are considered permanent by the management agency. Licence leasing is a regular occurrence, though the incidence of licence leasing is low. More than 200 halibut licences are not fished, with the quota on those licences leased to others to fish each year. The purchase price of a halibut licence is a small fraction of the cost to purchase a significant amount of quota (Edwards 2019). The lease value of the halibut licence itself is low. Coupled with complications associated with moving licences onto already licenced vessels and licence length restrictions, few fishing enterprises rely on leased licences.

To enable consideration of ownership over time, names were standardized across the years, addressing differences in punctuation and name abbreviations. Beneficial ownership was determined for halibut licences in four years across a 25-year span: 1991, 1996, 2006 and 2016. These years include the first year of individual (non-transferable) vessel quotas (1991), the last

year for which a full dataset was available (2016), and interim years at 10-year intervals. Beneficial ownership was identified through a combination of: purchasing access to individual company annual reports and corporation summaries from the Province of BC through the online BC corporate registry, from which directors and officers of companies and addresses of individuals were identified; comparing addresses for individuals and companies as listed in the public vessel registry and public listings online; and conducting a search for declarations of affiliation in public documents such as DFO integrated fisheries management plans and International Pacific Halibut Commission meeting minutes. Intra-family transfers were treated as a continuation of ownership. When an individual was a partner in multiple companies, ownership was assigned to the dominant individual, based on declared contact information, role in the company (e.g., president), history with the licence, disposition of the licence, and assets contributed to the company. When individuals had multiple overlapping and individually held assets, ownership was assigned to a single jointly owned entity. When a company was purchased by a new owner, which is uncommon except among processing companies, this was treated as discontinuous ownership. From an initial list of just under 950 owners, name standardization yielded a list of just under 800 unique owners, from which 625 unique primary beneficial owners across the four years considered were identified.

2.2.2 Categorizing Halibut Licence and Quota Ownership

A halibut licence holder is the designated contact (primary) owner of a halibut licence. All halibut licences have quota associated with the licence, ranging from 0.01149% of the halibut TAC (706 lb [320 kg] in 2016) to just under 1.25% of the TAC (75,800 lb [34,383 kg] in 2016). The owner of the licence is also the owner of the quota on the licence. There are five categories

of ownership identified in this analysis: owner-operated fishing enterprises, corporate fishing enterprises, First Nation communal, processors and investors. Owner-operators fish their vessel and quota, and frequently lease quota from other categories to fish (Figure 2.1). Corporate fishing enterprises own vessels that are fished by hired skippers, that fish the company owned quota as well as quota leased from others. The degree of participation in the fishery by First Nation communal licence holders and processors varies. First Nation communal licences and quota can be fished by First Nation members on their own vessels, fished by hired skippers, or leased outside the First Nation. Some processors maintain their own fleet operated by hired skippers while others do not participate in the fishery. Investors, by definition, do not participate in the fishery, leasing their quota to others to fish.

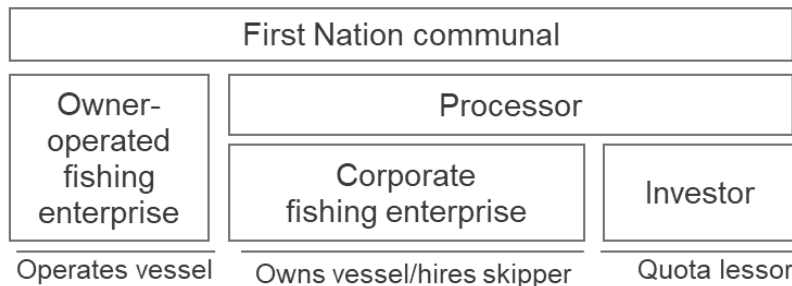


Figure 2.1 Degree of halibut fishery participation, from high (operates vessel) to no participation (quota lessor) by licence holders in the different ownership categories.

Halibut quota and licence ownership were categorized according to the following criteria:

1. Owner-operated fishing enterprises – the individuals and companies that own a vessel and licence that the beneficial owner of the licence, or a close family member of the beneficial owner, personally fishes (DFO 2019c)². They may have multiple vessels

² BC does not have an owner-operator policy nor an official definition for owner-operator. The definition of owner-operator used here is generally consistent with the owner-operator definition entrenched in Atlantic Canada owner-

and/or licences, but only to an extent which can be reasonably operated by a single owner. This category does not include 'FL' licences.

2. Corporate fishing enterprises – fishing companies that own halibut licences that are fished, but are not owner-operated. This category includes former owner-operators that have retained their vessel but no longer fish it themselves, which can be an intermediate state from shifting from being an owner-operator to being an investor. This category also includes owners that have never been participants in the fishery themselves but have invested in boats, licences and quota for others to fish. To be included in this category, a licence owner had to have a halibut licence that was fished in the year, and to meet at least one of three criteria. The first criterion is that the owner must have a high degree of vessel and/or licence ownership, which a single owner could not reasonably fish personally. This was determined, based on observation and discussion with fishery participants, to be more than 2 halibut 'L' licences, or more than 1.25% of the halibut quota, or more than 4 licenced fishing vessels, or more than 9 fishing licences from the following licence types: halibut (L), sablefish (K), rockfish (ZN), trawl (T), shrimp (S), crab (R), prawn (W), herring seine (HS), salmon (A, AT, AG, AS, AR, AC) and herring gillnet (HG), where HG licences were treated as equivalent to one-third of a licence. The second criterion is that the licence is leased to another fishing enterprise in the year, as determined by a review of ownership patterns for individual licences as well as

operator policies, adapted to the BC context. For the Atlantic Canada inshore fleets (comprised of the small boat, independent, owner-operator vessels), licences are issued in the name of an individual fish harvester, the licence holder is required to actively fish their licence personally (with a few exceptions), and unless "grandfathered" by DFO, fish harvesters are only permitted to hold one licence for a given species. In BC, many licences, including halibut, are issued to a vessel rather than an individual and many fishermen have incorporated companies for tax purposes.

information provided by fishery participants. The third criterion is that the owner hires a skipper to fish the licence and vessel, as determined by information provided by fishery participants.

3. First Nation communal – licences that are held communally by a First Nation government or organization (e.g., economic development organization, not-for-profit). Most of the licences within this category are ‘FL’ licences, which are dedicated First Nation communal licences that are permanently held by DFO for use by First Nation governments and organizations. This category also includes regular ‘L’ licences owned by First Nation governments or organizations. Licences and quota held by First Nation organizations can be fished by First Nation members or leased to non-member processor, corporate or owner-operated fishing enterprises.
4. Processors – companies that purchase halibut from fishing enterprises to process and sell in the wholesale or retail market. They own quota that is either fished by hired skippers on a processor owned vessel or leased to another processor, corporate or owner-operated fishing enterprise. Licences for which processors have a leasing arrangement or other affiliation are not included in this category – only those licences that are directly owned by processors are classified as processor-owned licences.
5. Investors – companies and individuals that own halibut licences that are not fished and quota that is leased to processor, corporate or owner-operated enterprises to be fished. This includes former fishing enterprises that no longer fish halibut but have retained their halibut quota to lease to others. The focus for this analysis is on the halibut fishery. Whether or not investors participate in fisheries other than halibut was not evaluated.

The dynamics of ownership changes are illustrated through alluvial diagrams below (Figure 2.3 and Figure 2.4), which were drawn with ‘ggAlluvial’ (Brunson 2018) in R version 3.5.2 (R Development Core Team 2019).

2.2.3 Original Quota Grantees and New Entrants

To assess the extent to which the initial allocation of quota continues to be reflected in quota ownership in 2016, the time period during which owners first owned a halibut licence in the 1991 to 2016 period was identified. Owners who owned licences and were the recipients of quota grants during the quota allocation in 1991 were termed ‘original grantees’. Owners that were not ‘original grantees’ and purchased licences and quota after 1991 were termed ‘new entrants’, and their entry period determined to be one of: 1992 to 1996, 1997 to 2006, or 2007 to 2016, corresponding to the years for which beneficial ownership data was available (1991, 1996, 2006 and 2016).

2.2.4 Valuing Quota

The value of quota held by the different categories of owners was calculated, in terms of both annual lease value and purchase price. Lease and purchase prices for 1998 to 2000, 2002, and 2004 to 2016 were taken from values reported in annual valuation reports commissioned by DFO (Castlemain 2018; Nelson 2000; 2007; 2005). Prices for 1991 to 1997, 2001 and 2003 and supplementations to valuation report prices were compiled from industry trade publications (e.g., Westcoast Fisherman magazine) and input from industry informants. Prices, including those from valuation reports, are based on a limited sample and are an estimated average price and not a true average, as there is no comprehensive tracking or reporting of quota lease and purchase

prices. All values are in constant dollars, having been corrected for inflation to the 2016 equivalent.

2.3 Quota ownership and the emergence of an investor class

The halibut fishery was traditionally an owner-operator fishery. Even after limited licencing was introduced in 1979, processors and larger fishing companies had only a minor presence in the fishery, accounting for less than 10% of licences and catch. The investor class was non-existent prior to ITQs. With 435 licences participating in a competitive time-limited fishery, there was only a very limited market for leasing a licence, with costs being low. This limited the incentive for the purchase of licences to lease to others. The fishery transitioned from a limited licence fishery to an individual quota fishery in 1991. For the first two years, the quota was not transferable. In 1991, owner-operated fishing enterprises owned and caught just over 90% of the halibut quota (Figure 2.2). With transferability in 1993, a new category emerged – that of the investor who owns a licence and quota, but does not fish the licence and leases out the quota to others to fish. ITQs provided a means to monetize the access privilege for each pound of fish caught. Investors owned 43% of the halibut quota in both 2006 and 2016, up from 0% in 1991 and 23% in 1996. The processor, First Nation communal, investor, and corporate fishing enterprise all increased their ownership of quota from 1991 to 2016. For owner-operators, the pattern over time has been a continuous diminishment. Owner-operators still contributed nearly half of the catch in 2016 (45%), but their ownership of quota fell from 90% in 1991 to 15% in 2016. Owner-operators increasingly lease the majority of the quota that they catch. Corporate fishing enterprises accounted for just over one quarter of the catch in 2016, up from 4% in 1991,

indicative of the concentration of ownership and corporatization of the fleet since the introduction of ITQs.

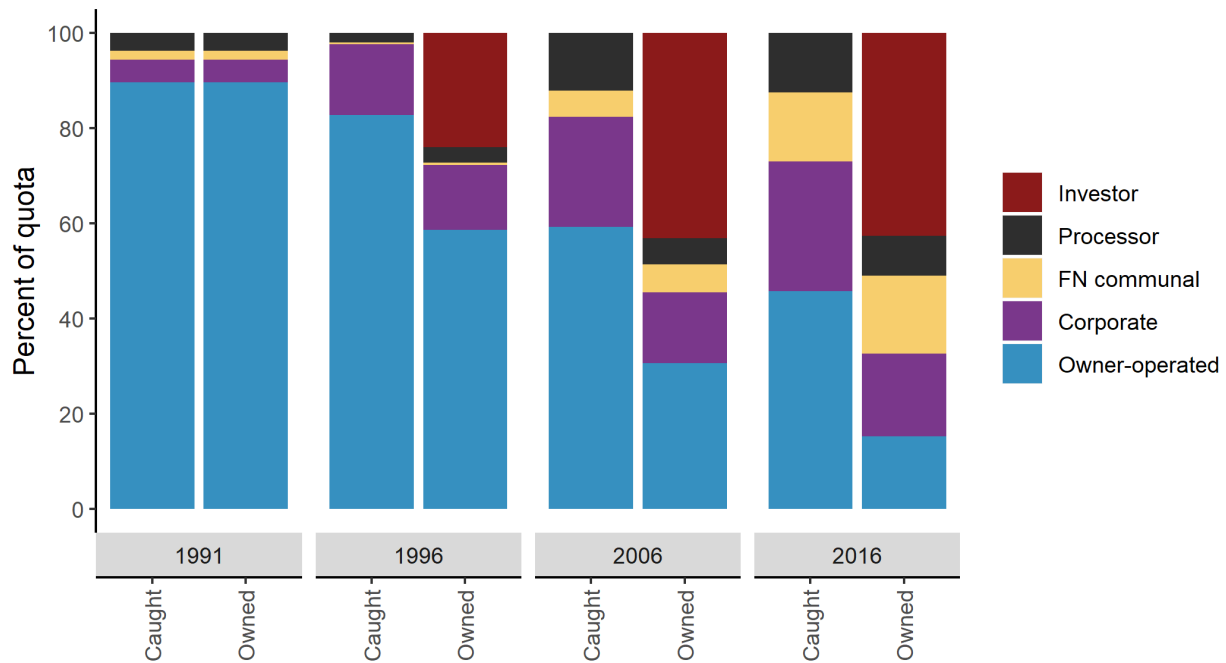


Figure 2.2 The percent of halibut quota caught and owned by each of the five categories in each of the four years considered.

An examination of the flow of licences between the ownership categories provides insights into how the ownership profile of the fishery has been changing over time (Figure 2.3). There were a set number of licences (435) established at the time of licence limitation in 1979. The owner-operator licences, which comprised the vast majority of licences in 1991, have been the primary source for licences in the categories that grew – notably the corporate fishing enterprises, investor and processor categories. During the period of highest growth for the First Nation communal licences, between 2006 and 2016, the majority of licences came from the investor category. The flow of licences has been dynamic, with movement of licences between all categories, but ownership overall has been stable with the majority of licences remaining within

their ownership category from one time period to the next. Changes between categories arise for one of two reasons: (1) owners continuing to own the licence but changing categories, such as owner-operators becoming investors; and, (2) owners selling their licences to new owners in different categories, such as the sale of owner-operated or investor licences into the First Nation communal category.

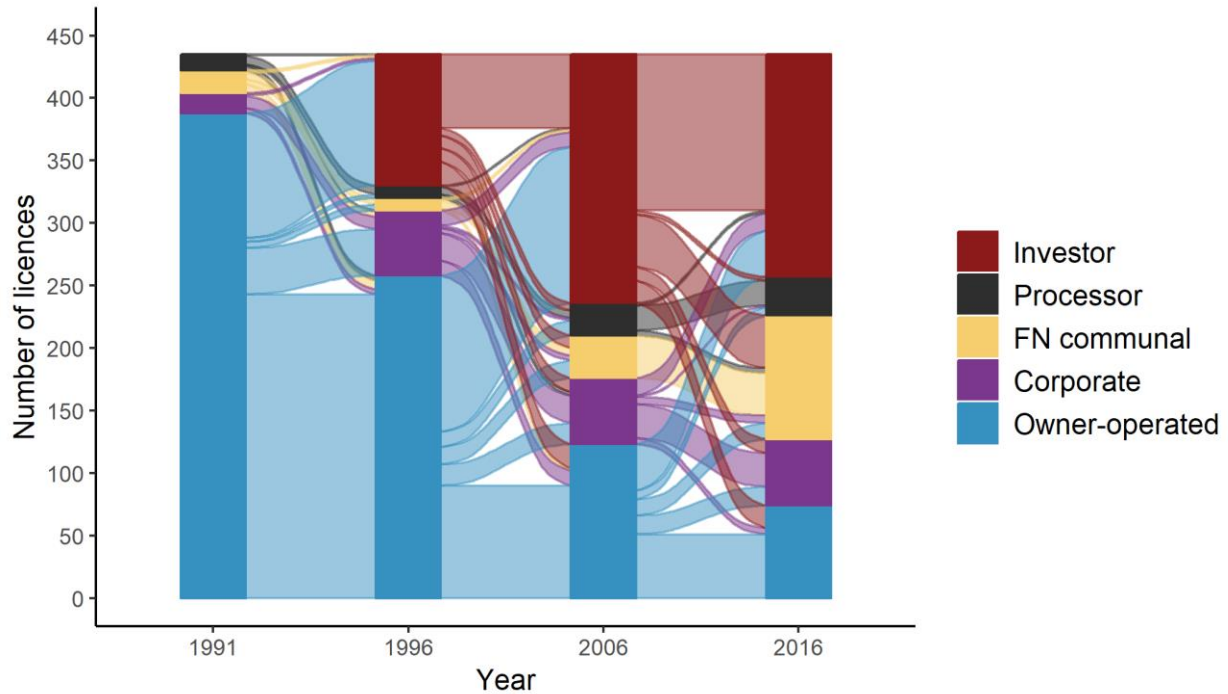


Figure 2.3 Mapping the changes in ownership category for each licence in the halibut fishery.

An examination of the flow between the ownership categories provides further insights into the drivers of ownership change within the fishery (Figure 2.4). The proportion of new entrants that have been entering directly into the investor category has been increasing over time. The large majority of new entrants after 1996 entered the investor and First Nation communal categories. The proportion of new entrants entering into the owner-operator category has been decreasing, accounting for 64% of the 78 new entrants in the period between 1991 and 1996 and 11% of the 62 new entrants between 2006 and 2016. The new entrant owner-operators own almost no quota,

leasing the majority of the quota that they catch. To enter they purchase a licence and quota, usually with only the minimum quota – the combined price of a halibut licence and minimum quota in 2016 was about \$135,000 (Simpson 2017).

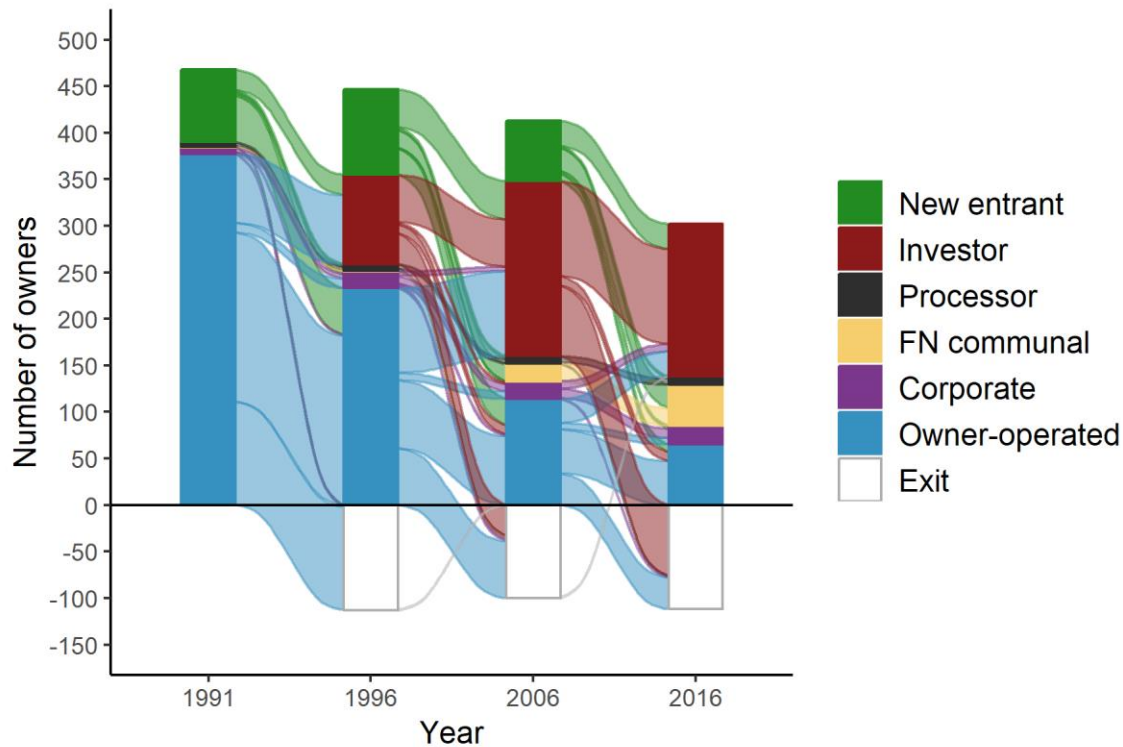


Figure 2.4 Mapping changes in ownership category for owners in the halibut fishery. The ‘new entrant’ category are those owners who entered the fishery in the years following the year specified, the ‘exit’ category are those that exited the fishery in the time period preceding the year specified.

The initial exits from the fishery were primarily from the owner-operator category, with the initial First Nation communal owners also exiting within the first ten years. Investors have also been exiting, particularly in the period after 2006, coinciding with the buyback of licences by DFO to transfer to First Nation communal owners. Over this period, the TAC has fallen by almost half while quota purchase prices have increased by more than double, to \$95 per pound in 2016 and a high of \$120 per pound in 2017 – a combination of factors that has provided

sufficient incentive for some investors to forego an annual revenue stream for a one-time buyout. The investor category has remained stable between 2006 and 2016 as a proportion of total owners (54%), as the total number of owners has decreased by 14% over that time and as the investor category has been replenished with both new investor entrants and owner-operators shifting to the investor category.

The ownership flows reveal consolidation in the number of owners and the progressive diminishment of the owner-operator category. Owner-operators have been leaving the fishery in greater numbers than new owner-operators have been entering. Owner-operators primarily exit by first becoming investors for a period of time before selling their quota, although many have chosen not to sell at all, staying in the investor category. Ownership is not associated with efficient operators, as quota ownership and fishing operations have diverged, with the majority of quota leased out to be fished either by owner-operators supplementing their own holdings, by vessel owners leasing a licence and quota, or by skippers hired to fish a vessel and quota.

Similar patterns of ownership change have been observed in other ITQ fisheries. Emerging investor classes were noted in the Tasmanian rock lobster fishery (van Putten and Gardner 2010) and the mid-Atlantic clam fishery (Brandt 2005). In the Tasmanian fishery, a quota ownership cap was posited to limit concentration and maintain diverse ownership. The emergence of the investor class in the mid-Atlantic clam fishery was interpreted as a positive outcome in that it provided a mechanism for those ‘forced out’ of the fishery to continue to generate income (Brandt 2005). The BC Pacific halibut fishery, as with other fisheries in BC, has no ownership caps. There is a limit on the amount of halibut quota that can be on a single licence (between 1% and 1.25% of the TAC), but there are no limits on the number of licences an individual or

company can own. Furthermore, objectives for the BC halibut fishery include the accruing of benefits to fishery participants and communities. The negative impacts for the fishery and fishing dependent communities of an emerging investor class should not be overlooked.

The investor class, which owns quota that they lease to others to fish, and earns lease revenue from the fishery:

1. Does not add value to the fishery. They do not reinvest in the fishery except in licences and quota. They do not support infrastructure, vessels, or innovation and advancement of technology and processes in the fishery, thus negatively impacting the long-term development of the fishery. They do not invest in depreciable assets such as vessels, which is considered a positive when a fleet is over-capitalized and when considering efficiency to extract rent. However, this lack of investment is not a sustainable state over the long-term when re-investment is needed to replace depreciated assets.
2. Negatively impacts the viability of the fleet by capturing upwards of 80% of the landed value of the quota that investors lease to fishing enterprises. The current financial situation for new entrants in the halibut fishery indicates that lease prices are not sustainable and the level of income generation for new entrants does not offer a path to ownership (Edwards and Pinkerton 2019a). The stagnation in ownership, particularly among owner-operators and original grantees, are warning signs that the rates of return from the fishery are not sustainable and cannot support investments in the fishery from regular financing channels without significant risk of default.
3. Negatively impacts the equitable distribution of benefits. Equity is about more than the quotas allocated to the original grantees, who benefit when they join the investor class

and lease their quota to others, and when they sell their quota to investors. Fisheries in Canada are intended to provide a wide range of socio-economic benefits, including employment opportunities and good incomes, and to deliver benefits to those who work in the fishery and the communities that support them (Stephenson et al. 2018; Government of Canada 1976; LeBlanc 2017). Investors own nearly half of the halibut quota. The majority of the landed value from that leased quota, about 80%, is paid through lease fees to investors that do not work in the fishery. This transfer of wealth to investors comes at a cost to fishery participants – those benefits are no longer available for crew, hired skippers and lessee owner-operators, nor the businesses in coastal communities that those fishery participants rely upon. When assessed against the stated objectives for the fishery, the rise of the investor class represents a fundamental failure of the halibut fishery to meet objectives for the distribution of benefits.

2.4 Long-term wealth effects of initial allocation

To evaluate the impact of the initial quota grants, the quota ownership and catch of the original grantees was considered by their ownership category (Figure 2.5). Initial grantees from the 1991 licencing year continued to have a prominent role in halibut licence and quota ownership in 2016. Of the 302 unique owners of halibut licences and quota in 2016, 154 were original grantees of quota from 1991. These original grantees collectively owned 53% of the halibut quota in 2016. This quota had a lease value of about \$27 million in 2016 and an estimated purchase price at 2016 prices of \$310 million.

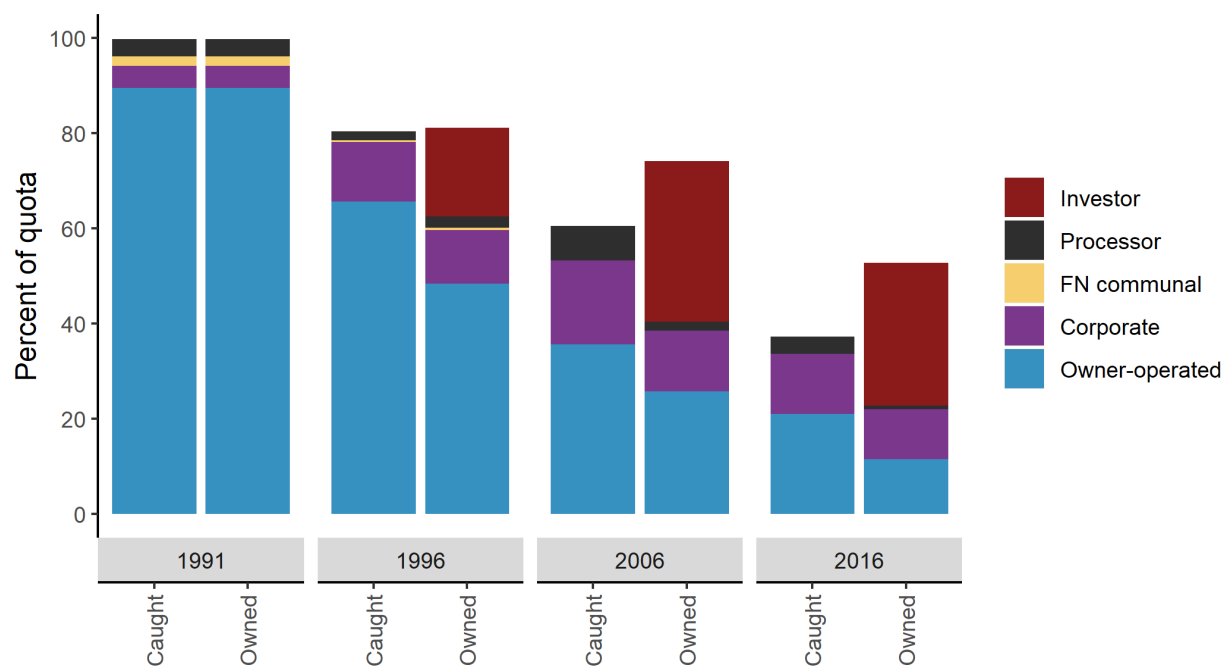


Figure 2.5 The percent of halibut quota caught and owned by the original grantees – licence holders that were granted quota in 1991 – in each of the five categories of ownership.

The prominence of original grantees in the current fishery would not be evident from a cursory review of the data. An assessment of original grantee ownership based only on declared ownership listed in the original DFO licence list found that original grantees owned 35% of the halibut quota in 2016. Once beneficial ownership was accounted for, original grantees were found to own 53% of the halibut quota in 2016. Similarly, of the 154 owners identified as original grantees still in the fishery in 2016, 64 had different names, having either incorporated (38), dissolved their company (15), transferred ownership between companies (5), or transferred ownership between family members (6).

Aside from a large exodus in the 1992 to 1995 period, in which about a third of owner-operators exited the fishery outright, the majority of original grantee owner-operators have transitioned to

an investor role in the fishery after they stop fishing halibut. These former owner-operators comprise the majority of investors. Of the 164 investors in the halibut fishery in 2016, 107 were original grantees, and these original grantees owned 30% of the total halibut quota. Original grantees that continue to fish hold an additional 11% of quota and corporate fishing enterprises hold 11%. These quota holdings are both from originally granted quota as well as purchases of additional quota. The 148 owner-operated fishing enterprises granted quota in 1991 that remained in the fishery in 2016 were collectively granted 41% of the halibut quota in 1991 and in 2016 owned 49% of the halibut quota. At the individual level, 47 of the 148 original owner-operator grantees remaining in the fishery had less quota in 2016 than in 1991, 61 original grantees had increased their quota holdings, and the remaining 40 had quota holdings that were unchanged (Figure 2.6).

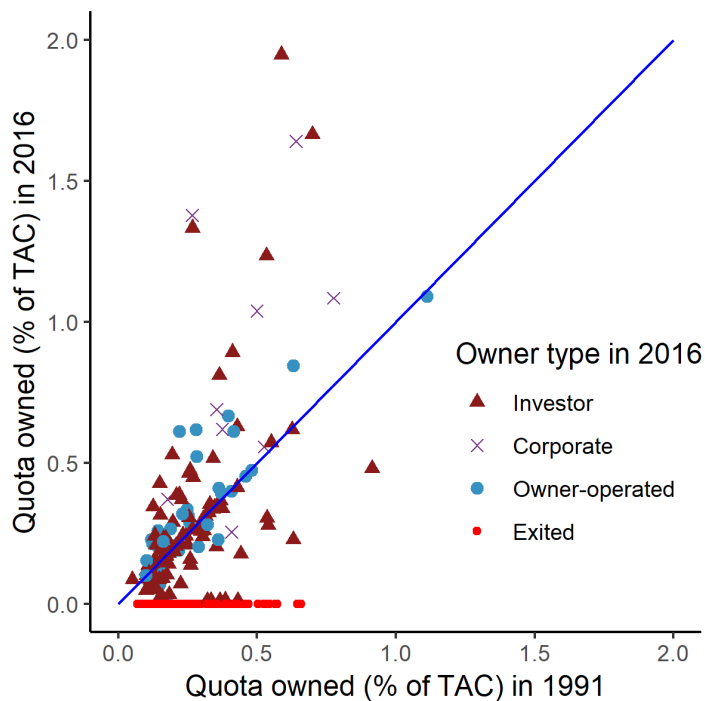


Figure 2.6 The percent of quota owned in 1991 and in 2016 by the individual owner-operator original grantees, by the owner type category in 2016. Those along the blue line have identical quota holdings in both years. Those below the blue line have reduced their holdings and those above have increased their holdings.

Most investors that have remained in the fishery have significant quota holdings. Over 80% of investors held quota with a lease value of at least \$50,000 in 2016 (Figure 2.7), as calculated using the reported average lease price.

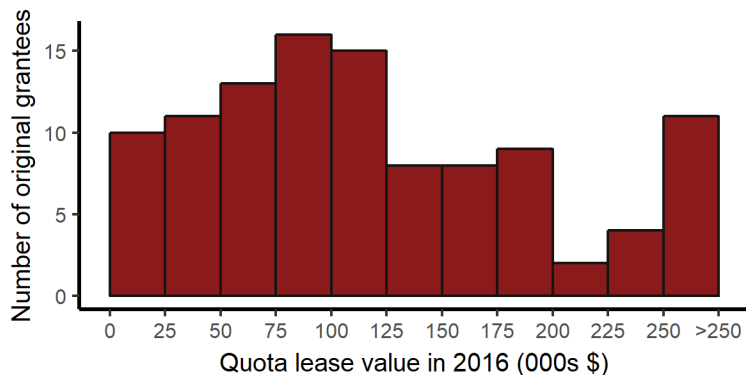


Figure 2.7 The number of original grantees by the 2016 lease value of the quota that they own, in thousands of dollars.

Nowhere is the significance of being an original grantee more evident than in the owner-operator category. Of the 65 owner-operators active in the halibut fishery in 2016, half (33) were original entrants. Of the 15% of quota owned by owner-operators, three quarters, 11% of the total halibut TAC, was owned by original grantees. These owners caught 23% of the halibut catch. In contrast, the owner-operators that entered after 1991 caught 24% of the halibut catch and owned just over 3% of the halibut quota. Of particular note is that the 18 owner-operators that entered the fishery since 2001 collectively caught 16% of the halibut and owned less than 1% of the halibut quota.

The impact of the initial grantees extends into the representation of the fishery with the management agency. DFO consults on a regular basis with advisory committees, including the

Halibut Advisory Committee (HAB). These advisory committees include both elected and appointed members and are intended to represent the full cross section of stakeholders and advise the department on changes to the annual management plan for the fishery as well as long term policy directions (DFO 2009b). Commercial fishery representatives are elected to HAB, with each halibut licence equalling one vote and 20 votes needed to become a licence holder representative. In 2016 there were 12 licence holder representatives elected by halibut licence owners. Of these 12 members, all were licence holders; 2 entered the fishery after 1991, and the remaining 10 were original grantees; 5 were owner-operators and the remaining 7 were investors. Thus, the majority of representatives providing policy advice do not fish halibut.

2.5 Conclusion

The examination of the change in ownership from 1991 to 2016 in the BC Pacific halibut fishery has revealed that:

1. While the halibut fishery is traditionally a small boat, owner-operator dominated fishery, whose objectives state that benefits should accrue to fishery participants and communities, owner-operators are increasingly marginalized. The diminished role of owner-operators is evident in both catch and ownership, although it is ownership that has seen the greatest change, falling from 90% in 1991 to 15% in 2016. While other categories of licence ownership have seen increased ownership, the greatest impact on owner-operator ownership, by far, has been the rise of the investor class, which was non-existent in 1991 and owned 43% of the halibut quota in 2016. The diminished role is also evident within the advisory committee process, with owner-operators comprising just 5 of 12 licence holder representatives, and investors holding the remaining seats.

2. Permanent access rights are not migrating to more efficient operators, but are instead being kept by investors to generate income without having to participate in the fishery. Furthermore, there is clear evidence of a wealth effect that benefits the original grantees, limiting opportunities for new entrants to gain a foothold in the fishery regardless of their relative efficiency.
3. Ownership is increasingly disconnected from fishing operators, calling into question assertions that ITQs improve stewardship by linking resource ownership and participation in the fishery. The majority of operators in the fishery in 2016 have minimal ownership in the fishery and are under significant pressures to maximize catch at lowest cost due to high lease prices, with implications for safety and harvesting practices. Those operators that do have significant quota holdings, primarily original grantees that continue to fish, are insulated by the value of their quota holdings, limiting incentives for efficiency and innovation in the fishery.

Based on this analysis, it is clear that for the BC Pacific halibut fishery, ITQs have not been an effective mechanism for efficient operators to enter the fishery and take on an ownership stake, given that ownership is not migrating to operators at all, but rather primarily to investors and corporate and processing interests. While there is evidence that conservation and stewardship gains are correlated with the introduction of ITQs in the halibut fishery (Munro et al. 2009; Melnychuk et al. 2016), a causal relationship should not be assumed. With the majority of fishing enterprise operators disconnected from meaningful quota ownership, conservation gains cannot be reasonably attributed to the introduction of private property rights. Rather, the introduction of an extensive monitoring and enforcement system that accompanied the

introduction of ITQs is a more likely explanation. The initial quota allocation process was a boon to the original grantees at the expense of new owner-operators entering the fishery. In the absence of quota market, ownership and participation regulations (such as owner-operator requirements), the ownership structure of the halibut fishery has become one in which investors receive more of the value from the fishery than owner-operators. As original grantees, that comprised half of the owner-operators active in the fishery in 2016, continue to exit, ownership by owner-operators can be expected to further decline. At the same time, investors do not contribute to the development of the fishery – they do not invest in boats or equipment for the fishery, they do not add to coastal infrastructure, and they do not support innovation of new technologies and techniques. Investors represent the flight of wealth out of the fishery and out of fishery-dependent coastal communities, which raises questions about whether ITQs, particularly those without ownership restrictions or mechanisms to support new entrants, are appropriate for a fishery that is intended to support a strong fishing fleet and adjacent coastal communities.

Chapter 3: The Hidden Role of Processors in an Individual Transferable Quota Fishery

The economically and culturally important Pacific halibut fishery in British Columbia, Canada, managed as an individual transferable quota fishery since 1993, has frequently been held up as an example of management best practices. This narrative of success has continued despite repeated warnings that there are serious problems with the fishery, including processors exerting ever greater control over the fishery, contrary to stated fisheries objectives. Administrative data from federal and provincial data sets were used to consider ownership and control in the halibut fishery, with a focus on processor quota ownership, leasing, and brokerage of leases. The analysis indicated that direct processor ownership of halibut quota, while more than doubling between 1996 and 2016, remains relatively low at less than 10% of the available quota. Processor control through the leasing of halibut, however, is much higher, accounting for more than half of all halibut quota transfers in 2016. Through strategies such as ‘holding licences,’ processors increasingly act as hubs for leasing activity, which has shifted the balance of power in the fishery. This analysis (a) reveals that there is much more processor control than is obvious from a cursory review of ownership, (b) highlights approaches for assessing the level of processor control, and (c) recommends alternative government procedures for improving transparency and evaluating full spectrum outcomes of fisheries management such as equitable distribution of benefits.

3.1 Introduction

Fisheries management systems can have many unexpected and often unwelcome impacts, influencing power dynamics, resilience, and overall fisheries success (Hentati-Sundberg et al. 2015; Foley, Mather, and Neis 2015; Stoll, Beitzl, and Wilson 2016). Individual transferable quotas (ITQs) are permits that allow the holder of the ITQ to catch or transfer a share of a total allowable catch (TAC). ITQs as a fisheries management system have been widely promoted as a means of achieving positive economic and conservation outcomes (Branch, Rutherford, and Hilborn 2006; Casey et al. 1995; Grafton 1996; Grafton et al. 2006, 20; Grimm et al. 2012). ITQs have had a mixed record, however, when the full spectrum of fisheries objectives are considered, particularly related to equitable distribution of benefits, social and economic outcomes for fisheries-dependent communities, resilience, employment, and safety (Carothers 2015; Carothers, Lew, and Sepez 2010; Copes and Charles 2004; Emery et al. 2014; GSGislason & Associates Ltd 2013; McCay 1995; Pinkerton 2014; Pálsson and Helgason 1995; Ussif Rashid Sumaila 2010). Concerns over the competitiveness of markets (i.e., monopoly and monopsony issues) and related price manipulation, are responsible, in part, for the restrictions on the concentration of quota share ownership that are present in nearly all ITQ fisheries (L. G. Anderson 2008).

Analysis of quota lease markets in ITQ fisheries has focused primarily on ownership and related issues of market function (Newell, Sanchirico, and Kerr 2005; van Putten and Gardner 2010; van Putten, Hamon, and Gardner 2011; Ropicki and Larkin 2014; León et al. 2015). Mechanisms for non-ownership control in quota markets have been noted (Pinkerton and Edwards 2009) but have not been subject to the same level of scrutiny as ownership mechanisms. At the same time,

there is a growing interest in how hidden activities and relationships can exert control over fisheries and lead to unexpected and often negative impacts (Adger, Eakin, and Winkels 2009; Liu et al. 2013; Galaz et al. 2018).

It is within this context that consideration of the processor control of an ITQ fishery was undertaken. Processor control of fisheries can take the form of (1) limiting opportunities for fishing enterprises to sell product (oligopsony, where there are few buyers and many sellers) and (2) control over fisheries production and access to fishing opportunities (oligopoly, where there are few sellers). The potential for processors to exert control over fisheries through purchase of licences has long been recognized as a potential issue that can lead to market inefficiencies and inequitable distribution of benefits (Clark and Munro 1980; L. G. Anderson 1991; National Research Council 1999). In addition to direct ownership of fisheries access rights, processors have other avenues through which they can exert control, including financing, conditional sales agreements and joint or indirect ownership through which they can dictate the conditions of sale for fishing enterprise catch (Shaffer 1979; Cruickshank 1991; Windle et al. 2008). Concern over processor control in Canada arose historically due to both oligopsony and oligopoly issues (Government of Canada 1976; Pinkerton 1987a; Gough 2008). The potential for a small number of processors to exert control that distorts fish prices and disadvantages independent fishing enterprises was the impetus for both the fleet separation and owner-operator policies in Atlantic Canada (Gough 2008). While some processor control mechanisms have been well studied, the potential for processors to exert control over a fishery through a secondary quota leasing market, in which the processor is acting as an intermediary with limited ownership but extensive control of fisheries access rights, has not received the same attention and it is the focus of this chapter.

3.1.1 Overview of the British Columbia halibut fishery

Canada's Pacific halibut fishery is an iconic fishery that is economically and culturally important throughout coastal British Columbia (BC). It is one of the highest value fisheries in BC, with \$58.3 million in landed value and \$93 million in wholesale value in 2016 (Province of BC 2017). Individual vessel quotas were implemented in the halibut 'L' licenced fishery in 1991, followed by limited temporary transferability in 1993 and full temporary and permanent transferability in 1999. Temporary transferability refers to leasing of quota annually and permanent transferability refers to the sale of quota off the licence to another licence. During the period of limited transferability, quota could be transferred only in blocks, with the quota on each licence split into two blocks. A licence with 10,000 lb (4536 kg) of quota would have two blocks of 5000 lb (2268 kg) each, whereas a licence with 40,000 lb (18,144 kg) of quota would have two blocks of 20,000 lb (9072 kg) each, and these blocks were the minimum unit of transfer. With the introduction of full ('by the pound') transferability, the minimum unit of transfer for quota became one pound. Unlimited transfers of halibut were permitted, subject to rules on minimum and maximum holdings on the licence (DFO 2019a). There are no restrictions on the number of licences that an individual or company can own.

As part of government efforts to repatriate fisheries access to First Nation people, the First Nation communal licence designation was created in the 1990s. First Nation communal halibut licences are designated as 'FL'. The Government of Canada has been purchasing 'L' licences and quota and transferring them to the 'FL' designation since 1997. There were 76 'FL' licences identified in 2018 with combined quota totalling about 16% of the TAC.

The BC halibut fishery is one of the earliest major ITQ fisheries in Canada and has often been referenced as an example of success in fisheries management (McRae and Pearse 2004; Grafton, Nelson, and Turris 2006; Munro et al. 2009; Casey et al. 1995). Fisheries participants and observers have raised concerns, however, about the state of the fishery, citing excessively high lease prices, diminishing financial returns for fishing enterprises, an aging fleet and workforce with little opportunity to attract and retain new entrants, inequitable distribution of benefits and questionable societal benefits from the resource (Nuu-chah-nulth Tribal Council 2005; United Fishermen and Allied Workers' Union 2005; Ecotrust Canada 2009; Pinkerton and Edwards 2009; Davidson 2010; Canadian Council of Professional Fish Harvesters 2018). The quota leasing system is central to these concerns.

The Government of Canada is mandated to safeguard the interests of Canadians in managing this common pool resource (Fisheries Act, R.S.C. 1985, c. F-14) and fisheries are expected to be managed to meet a full spectrum of socio-economic objectives, including benefits to adjacent communities, maintenance of small boat independent fleets, and distributed benefits amongst participants (Stephenson et al. 2018), as affirmed in legislation (Oceans Act, S.C. 1996, c.31) and policy (DFO 1999a; 2018a). Processor ownership of fisheries access privileges has long been recognized as running counter to a number of fisheries management objectives in Canada. In 1977, then Fisheries Minister Romeo LeBlanc, in a speech in Nova Scotia in which he proposed the separation of fishing fleets from processing companies in Atlantic Canada, stated that "Fishermen should own their own boats, and be able to sell fish where they want. ... Creating a truly independent fleet should improve the efficiency of vessel operations, improve the match of fishing and processing capacity, raise fish prices and fishermen's incomes, increase

the fishermen's bargaining power, create a healthier balance of forces in the industry, and invigorate fleet development by the fishermen" (Gough 2008, 325). Concerns about the negative impact of processor ownership of fisheries access led to the establishment of limits on corporate concentration in the BC fisheries (Shaffer 1979; Pinkerton 1987a; Gough 2008) and owner-operator and fleet separation provisions in other regions of Canada (Gardner 1995; DFO 2007b; Gough 2008; Foley, Mather, and Neis 2015; Barnett, Messenger, and Wiber 2017). Despite the early recognition of the importance of placing limits on processor ownership, BC's fisheries are some of the only ITQ fisheries in the world without any kind of ownership restrictions. The restrictions on processor control of BC fisheries that were in place were never formalized in legislation or regulation and monitoring and enforcement of these restrictions was abandoned by Fisheries and Oceans Canada (DFO) in the late 1970's, long before the introduction of ITQs to the BC groundfish fisheries. The prevailing view in the 1970's was that processor ownership in the BC fisheries was minimal (Government of Canada 1976). This stood in contrast to Canada's East Coast fisheries where processor ownership was acknowledged to be significant, and was theorized to be the cause for artificially low prices due to pricing practices of vertically integrated processing companies (Gough 2008). The resulting establishment of fleet separation and owner-operator policies subsequently led to further formalization of ownership and control restrictions in some of Canada's East Coast fisheries (Gough 2008; Barnett, Messenger, and Wiber 2017).

A further rationale for the absence of processor limitations in the BC ITQ fisheries was the perception that ITQs would favour fishing enterprises over processors. ITQs were credited with shifting the balance of power between the licence/vessel owner and the processor-buyer, with the

licence/vessel owner appropriating a greater share of the increase in value than the processor (Gislason 2008). What the evaluation by Gislason (2008) failed to account for was the fact that the quota owner and the fishing enterprise are increasingly distinct entities, thereby providing an opening for other actors, namely processors, to exert control through the quota leasing system. Furthermore, oligopsony concerns in BC have historically focused on herring and salmon (Pinkerton 1987a). Halibut was not considered a concern, given a competitive, non-collusive market while a layup system was in place to spread effort in time and create transparent auction-like conditions in the delivery to processors (Pinkerton 2013). This chapter considers the extent of processor control in an era of quota leasing by processors.

3.2 Methods

Methods consisted primarily of a detailed analysis of datasets obtained from the management agency, DFO, supplemented by the Statistics Canada Inter-Corporate Ownership historical databases, BC Provincial Corporate Registry Services records, BC provincial processor licence lists, and the Transport Canada vessel registry on-line query system and historical vessel lists. Methods also included input from BC fishermen active in the halibut fishery, facilitated through the Canadian Fisheries Research Network – a six-year research network that brought together academia, industry and government to undertake collaborative research on fisheries in Canada (Thompson et al. 2019). This research was also informed by testimony from BC fishermen to the Parliament of Canada House of Commons Standing Committee on Fisheries and Oceans for their study on the regulation of West Coast fisheries.

3.2.1 Data

All DFO data used for this research were obtained through access to information requests, which are governed by legislation that requires government departments to release most publicly-held data upon request (*Access to Information Act (R.S.C., 1985, c. A-1)* 1985). Only a small portion of the data that is collected for the management and oversight of the BC fisheries is made publicly and freely available, namely the licence lists. However, licence list data were unusable for the purposes of this research due to an error in the dataset. It consists of current and historical licence holdings and includes the licence type, number, and year; associated vessel; vessel length; and, the name of the contact owner. At some point between 2008 and 2013, DFO began incorrectly linking licences and vessel ownership for vessel-based licences in this dataset by assuming that the most recent owner of the vessel on record was the owner throughout the lifetime of the vessel. This meant that when a vessel was sold to a new owner, that new owner would be recognized as the owner of the vessel and all associated vessel-based licences in the dataset for the entire period of the dataset, which extended from 1981 to the date the dataset was published.

Over a 15-year period, multiple access to information data requests for catch, management and ownership data for BC licences and ITQs were made to DFO. DFO has been inconsistent in its release of data, redacting individual identifiers at times and releasing the requested information in its entirety at other times. DFO has cited the exemption for confidential information supplied by a third party (exemption 20(1)(b)) to justify redactions. As the governing legislation had not changed over the period of requests, and the type of information being requested had not changed, this inconsistency can only be attributed to variable interpretation by the department of

their legislative requirements to release this information. The main issue seems to be whether the quota allocations and reallocations that DFO regulates and manages, issuing quota each year and processing quota reallocations upon request, constitute government records or third party supplied information, and that the exemption cited is only available for third party supplied information. Catch data by vessel are indisputably third party supplied information and are consistently redacted and thus not available for the analysis. The three datasets that were available and used for the analysis were: (1) licence/vessel ownership, (2) quota transactions administrative records, and (3) quota allocations.

Licensing data by vessel is readily available from DFO, but with limitations. Whereas the ‘FL’ licence is a ‘party-based licence’, meaning that the licence is attached to an individual (person or organization), the ‘L’ licence is a ‘vessel-based licence’, meaning that the licence is attached to a vessel and not an individual (DFO 2019a). In most cases, the owner of the vessel and the owner of the licence are the same, but when vessel-based licences are leased, the owner on record is a lessee and not the actual licence owner. It is important to note the distinction between licence leasing and quota leasing. Quota leasing is common, and there is an administrative procedure for the management agency to recognize quota leases that does not impact recorded ownership. In contrast, there is no mechanism to ‘lease’ a licence; the licence must be transferred to the lessee vessel in the same way as if the licence were sold, and is regarded as a permanent transfer by the management agency, which then impacts recorded ownership. This process is typically governed by a trust agreement – a legal contract between the lessor and lessee – that affirms that while the licence transfer is regarded by the management agency as a permanent transfer, ownership remains with the lessor and the licence will be transferred back to the lessor’s vessel at the end of

the lease period. While quota leasing is common, licence leasing in the halibut fishery is not widespread, although it does occur. Vessel ownership is used in this analysis as a proxy for licence ownership, as this is the only available source of ownership data and is consistent with the approach taken by DFO in assigning ownership. The other limitation in assigning ownership relates to multiple owners. The vessel can have multiple owners associated with it, either due to joint ownership of the vessel or licences, to recognize ownership of licences or quota by different owners, or due to financing arrangements. In this analysis, ownership was assigned to the contact owner on record. Secondary ownership by processors based on the full list of owners was also assessed.

The second dataset is the quota transfers administrative data. Quota transactions consist of both temporary and permanent transactions. A temporary transfer is a time-limited (in-season) transfer of quota between licences. These transfers can be between licences owned by a single owner or, more commonly, between different owners. In the latter case, the transfer is referred to as a lease. A temporary transfer applies only to the current fishing year, with the quota reverting to its primary licence the following year. Once fished, quota cannot be moved from the licence on which it was fished until the next year. Before it has been fished, quota can be transferred an unlimited number of times, and it is common for quota to be transferred two or three times before it is fished. Temporary transfers are expressed in pounds and permanent transfers can be expressed in either percentage or pounds, although ultimately the purchaser of quota is purchasing a percent of the TAC in each year, not a guaranteed poundage. A complete time series for quota transfers was compiled for 1993 (the beginning of quota transferability) to 2016. The analysis of quota transfers considered only halibut quota from halibut licences.

Administrative quota transfers not associated with leasing – e.g., the transfer of quota between DFO-held licences and the 2006 transfers of 10% of the halibut quota to and from the Pacific Halibut Management Association as per an agreement with the department (DFO 2006) – were excluded from the analysis. Quota transfers between licences owned by a common owner were also excluded from the analysis of leasing.

The third dataset is the initial quota allocation data by licence, which is expressed as a percentage of the commercial halibut TAC. These data have been treated as confidential at different times by DFO, but have been released at other times. A complete time series for quota allocation was compiled for 1991 through 2016 using available allocation data and the quota transaction dataset, with the exception of 1997 when a different allocation formula was used due to a court case that was later overturned on appeal.

3.2.2 Analysis

Determination of which vessels fished, in the absence of individual catch records, was based on the presence on the licence of greater than 3500 lb (1588 kg) of halibut quota at the end of the year. This was determined by the difference between the initial allocation and quota transferred on and off the licence during the year. For the years 2001 through 2006, end of year quota on the licence was also available, which was used to validate this approach. A cut-off of 3500 lb (1588 kg) was chosen based on the lowest amount allocated to a licence in the initial allocation in 1991, verified with industry input that indicated that this corresponded to a reasonable minimum catch level of quota that a vessel would need to justify gearing up for a halibut season.

Additional data analysis was undertaken to identify parent company ownership and company affiliations. Processors were identified through a review of the Province of BC list of processor licences, supplemented by a review of trade publications (e.g., Westcoast Fisherman magazine). Building on work to assess corporate concentration in the BC salmon and herring fisheries (Haas, Edwards, and Sumaila 2016), the Statistics Canada Inter-Corporate Ownership records were accessed to identify ‘parent-child’ company relationships for large companies. To examine ownership of the smaller companies, searches of the BC Provincial Corporate Registry Services records and the Transport Canada vessel registry were also undertaken. ‘Parent-child’ relationships and affiliations were identified based on co-occurring directors, records of sales, and home addresses on record. For licences with a high degree of quota transfer activity, where affiliations were not obvious from direct or parent ownership, an analysis of the patterns of quota transactions and discussion with active halibut fishermen were undertaken to identify affiliations in three years: 1996, 2006 and 2016.

The quota trading system in 1996, 2006 and 2016 was mapped as social networks to visualize the relationships between the different quota trading entities. Network analysis is a well established field of research that can provide insights into the characteristics of a system of connected actors (Jackson 2008). Network analysis has been used to consider relationships between participants in fisheries (Crona and Bodin 2006; Ramirez-Sanchez and Pinkerton 2009; van Putten and Gardner 2010). In this analysis, connections in the network denote temporary transfers of halibut quota between different actors within the halibut fishery, to examine leasing relationships. Quota trading relationships were visualized using the network analysis package ‘igraph’ (Csardi and Nepusz 2006) in R (R Development Core Team 2019).

3.3 The halibut quota leasing system

The halibut fishery consists of four primary types of actors: fishing enterprise, processor, investor, and First Nation communal lessor. Within the DFO licence list, there is no classification of licence holders according to these categories. Furthermore, for the BC fisheries, DFO does not track affiliations/control due to leasing or other arrangements such as controlling agreements, does not track which companies are processors and does not distinguish between licence holders that fish (e.g., ‘fishing enterprises’) from licence holders that do not fish (e.g., ‘investors’).

For this analysis, licences were assigned to categories according to the following criteria:

- 1) Fishing enterprise: includes individuals and companies that can have multiple vessels and licences. The main distinguishing feature of this category is that the enterprise must have at least one vessel that catches halibut in the directed halibut fishery in a given year. The second distinguishing feature is that the enterprise is not classified as a processing company. This includes fishing enterprises that fish communal First Nation (‘FL’) licences as well as those that fish regular (‘L’) halibut licences, as either owner-operator or corporate fishing enterprises.
- 2) Processor: companies that purchase halibut from fishing enterprises to process and sell in the wholesale or retail market. They may own licences, quota and/or fishing vessels that are fished by a hired skipper. For the purposes of the analysis of quota leasing, licences that are owned by the processor, either wholly or jointly with a fishing enterprise, as well as licences that are ‘affiliated’ with but not owned by processors, either being leased or in some other controlling arrangement, are classified here as processor licences. When considering ownership, only those licences that are directly owned by processors are classified as processor licences.

- 3) Investor: companies and individuals that own halibut licences and quota that they do not fish themselves and which they lease to others. This includes former fishing enterprises that no longer fish halibut but have retained their halibut quota to lease to others.
- 4) First Nation communal lessor: licences held communally by First Nation organizations (e.g., by a First Nation government entity, economic development organization, or not-for-profit) that are not fished by them, but the quota is leased to fishing enterprises. Most of the licences within this category are 'FL' licences. First Nation individuals holding regular 'L' licences are not included in this category, being included in either the 'fishing enterprise' or 'investor' categories, depending on whether they fish halibut or lease the quota to others. First Nation companies that both hold 'FL' licences and process fish are classified in the First Nation communal lessor category, not the processor category.

Anyone across any of the categories can act as a broker. Independent quota brokerage firms have existed in the BC groundfish fishery, primarily servicing the groundfish trawl fishery. A separate broker category was not identified for the halibut fishery as the evidence suggests there is only minimal leasing activity within the halibut fishery that could qualify as being carried out by a broker separate from investors, fishing enterprises, First Nation communal lessors and processors. The low penetration of independent brokerages in halibut can be attributed to: (1) relatively high transaction costs for using a brokerage company, (2) established relationships, particularly between processors and investors, and processors and fishermen, and (3) the widely held view that processors are willing to pay higher lease prices than are fishermen, and thus are a more attractive target for investors (Pinkerton and Edwards 2009).

3.3.1 Extent of leasing

By the mid-2000's, nearly every licence in the halibut fishery engaged in leasing to some extent (Figure 3.1). This can be attributed to (1) the minimum permanent quota holdings requirement for halibut licences (at least 0.01149% of the TAC on each licence, equivalent to 706 lb [320 kg] in 2016) (DFO 2019a), (2) high quota lease value (\$8.40/lb in 2016) (Simpson 2017), (3) a strong leasing market, and (4) low levels of quota ownership by many fishing enterprises. In 2016, investors owned 43% of the halibut quota, up from 0% in 1991 and 23% in 1996 (Edwards and Pinkerton 2019b). In contrast, owner-operators went from owning 90% of quota in 1991 to 15% in 2016.

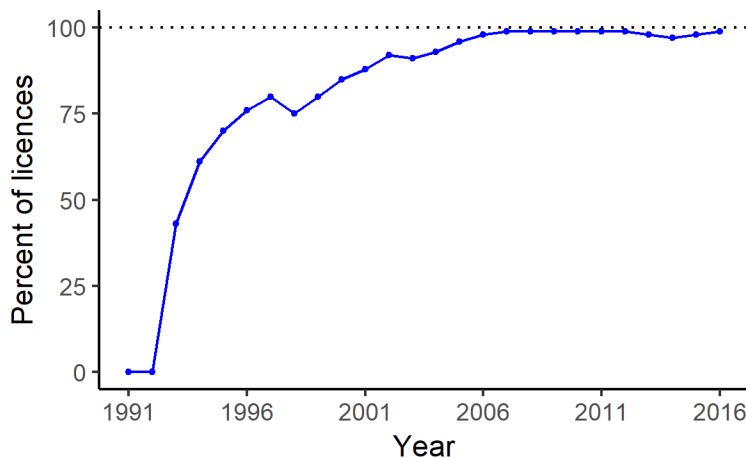


Figure 3.1 The percent of halibut licences involved in temporary quota transactions each year.

3.4 Processor ownership and control

If one looks only at licence and quota ownership based on the DFO licencing database, there is little evidence of processor control or changes in processor ownership over the last twenty years. Based on reported ownership, the maximum percent of halibut quota owned by a single entity in 2016 was 1.95% of the TAC, which increased to 3.35% when parent ownership was considered.

While not an insignificant amount of quota, having a lease value of \$1.7 million in 2016 and a current market value of more than \$20 million, this level of ownership is not on its own indicative of high corporate concentration. When ownership by processors as a whole was considered, ownership steadily increased but was still less than 10% in 2016 (Figure 3.2). Processors as declared secondary owners of licences was also considered. When secondary ownership was included, processor ownership nearly doubled in 1996, but was of diminishing importance in later years. In 2006, processors had ownership interests in vessels associated with 30 halibut licences, for which they were the primary contact owner of 18 and secondary owners of 12. In 2016, the number of these licences increased to 31, but processors were secondary owners of only 6. Secondary ownership should be interpreted with caution, however, as the nature of the secondary ownership by the processor is not known and could be anything from a loan against the vessel, or ownership of another licence on the vessel, to full ownership of the halibut licence and quota. Where processor control becomes more evident is in an examination of quota leasing, particularly the use of holding licences.

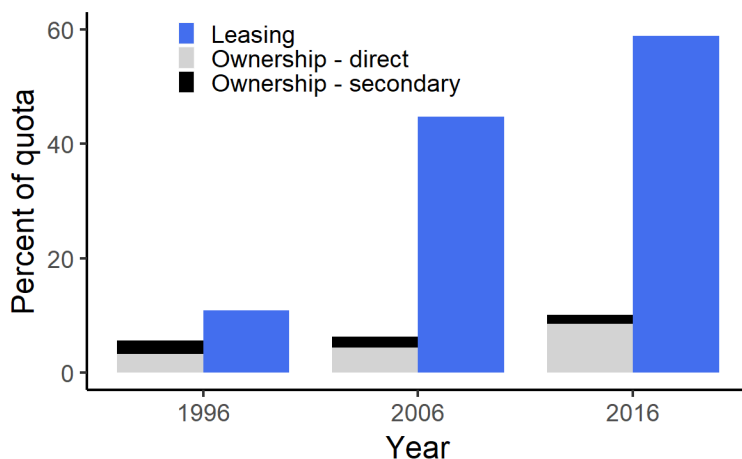


Figure 3.2 Processor quota ownership expressed as a percent of TAC, for both direct ownership and ownership where the processor is listed as a secondary owner, and processor control over leasing as measured as quota transfers through processor owned and affiliated licences as a percent of total quota temporarily transferred in the year, for 1996, 2006 and 2016.

An approach that has gained prominence in the halibut fishery is the use of holding licences by processors, used to hold quota in-season. For example, a processor may own or lease (for a nominal price) one of the more than 200 halibut licences that are not being fished, and use it to hold quota temporarily when acting as a broker between lessors and lessees of halibut quota. These holding licences have a high poundage of quota transferred on and off, and the licences are typically not fished themselves. These licences serve to consolidate control by processors, enabling them to lease in quota early in the season, take possession of it on a licence they control, and then lease it back out to fishermen through the season when fish is delivered to them. The previously dominant practice was for fishing enterprises to lease directly from lessors or for processors to arrange the quota lease and transfer the quota directly from the lessor to the fishing enterprise. Even when the processor was arranging the lease, this approach afforded information to the fishing enterprise on the source of the quota and to some extent the amount of quota leased. The use of holding licences impedes transparency in the quota leasing system, reducing information available to fishing enterprises about the original source of the quota that they are leasing. They know only that it has been transferred from the processor's holding licence and are not provided any indication of how much quota the processor has leased or from whom or at what price.

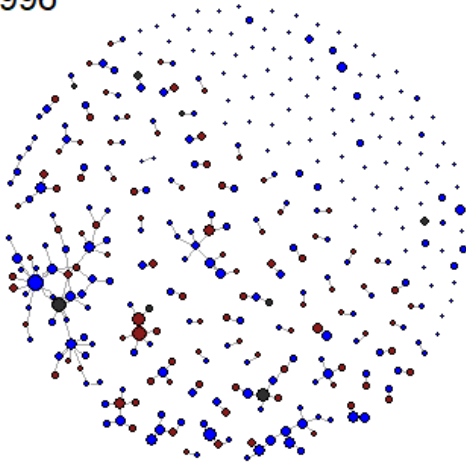
The use of holding licences by processors has evolved over time. There was one processor-controlled holding licence identified in 2006, which had more than 2 million pounds (907 t) of quota transfers on and off the licence that year. The quota transfers through this one holding licence represented control over about 1 million pounds (454 t) of quota, equivalent to about 9% of the TAC in 2006. The difference between the quota transfers (2 million pounds [907 t]) and

the quota involved (a maximum of 1 million pounds [454 t]) is due to the fact that for a holding licence, quota leasing includes both inward and outward transfers, with quota leased from quota owners and transferred onto the holding licence and then leased out again to fishing enterprises and transferred off the holding licence to the licence used to fish the quota. As evident from analysis of the quota transfers dataset, the practice of using holding licences became more widespread and sophisticated in the years following as other processors adopted the practice. By 2016, there were nine licences with transfers of more than 200,000 lb (91 t) of quota each while not being fished in the year, with processors managing multiple holding licences to provide more flexibility, given individual licence cap limitations of 1% of the TAC. The same processor with the more than 2 million pounds (907 t) holding licence from 2006 had holding licence leases representing up to about 9% of the TAC in 2016 as well, only over multiple licences. This same processor had declared ownership of less than 2% of the halibut quota. The second most active processor in 2016, with quota leases corresponding to about 7.5% of the halibut TAC, did not own any halibut licences or quota. While the practice of leasing through holding licences has become more widespread, processor leasing continues to be concentrated: the top four processors in 2016 were responsible for more than 80% of the quota holding licence leasing by processors. These processors were all well-established, having operated in the BC fisheries for decades.

Processor penetration into the overall halibut quota leasing system, as measured based on quota transactions that involved a processor owned or affiliated licence, is significant, reaching 59% of temporary quota transfers by weight in 2016. Quota was predominantly leased from investors, although First Nation communal quota lessors, other processors and fishing enterprises also leased quota to processors (Figure 3.3). In Figure 3.3, the nodes (circles) represent individual

quota traders, and the size of the nodes is indicative of the total poundage of quota transferred by the entity in that year, inclusive of both inward and outward trades. Nodes that do not connect to others are cases where no quota was traded or where quota was traded only within a fishing enterprise or to licences outside the directed halibut fishery. The total poundage transferred decreased from 2006 to 2016 because of an almost 50% drop in the TAC. Total temporary quota transfer activity of halibut, inclusive of all licences, increased over this period, both in terms of percent of TAC (79% of TAC in 2006 to 108% in 2016) and in the total number of temporary quota transfers (779 in 2006 and 911 in 2016). Consideration of direct ownership and leasing through holding licences was possible only through the amalgamation of a number of different data sources from DFO and the BC provincial government, combined with information from fishery participants. This information is not currently tracked by DFO and is not readily available. The extent of processor control presented here represents only a minimum estimate, given limitations of both the quota transfer data that are released and the data that are collected in the administration of quota transfers by the management agency. Processors continue to lease quota that they transfer directly from the original lessee to the fishing enterprise licence, in which cases processor involvement is not evident from the information provided within the quota transfers administrative data received from DFO.

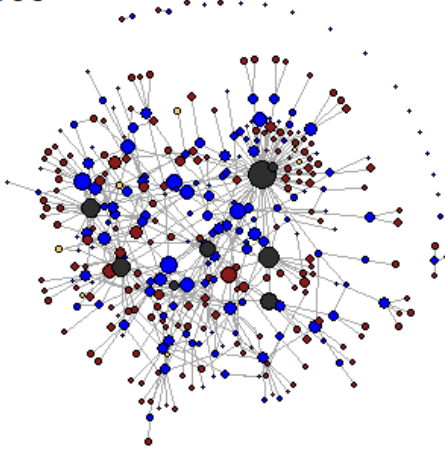
1996



Quota trader category

- Fishing enterprise
- Processor
- Investor
- First Nation communal

2006



Total quota transferred

- 10,000 lb (4.5 t)
- 50,000 lb (22.7 t)
- 100,000 lb (45.4 t)
- 500,000 lb (226.8 t)

2016

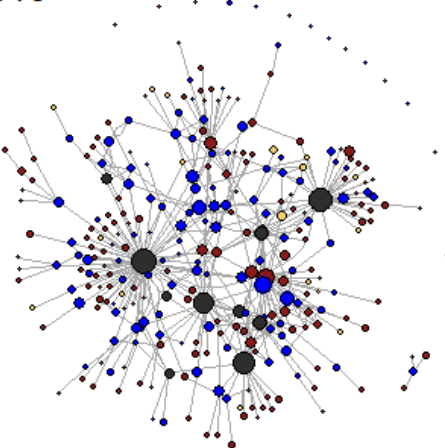


Figure 3.3 The quota trading network in the BC halibut fishery in 1996, 2006, and 2016, as characterized by temporary quota transactions between quota traders.

3.5 Power dynamics in the quota leasing relationship

Processors are able to readily fill a brokerage role in the quota leasing system in large part because of their access to capital. For fishing enterprises that do not own appreciable amounts of halibut quota, which is now the majority of the vessels that are fishing, it is often a financial struggle to operate (Edwards and Pinkerton 2019a). About 70% of fishing enterprises in 2016 fished at least 20,000 lb (9072 kg) of halibut quota. The lease cost for 20,000 lb of halibut quota is estimated to have been as high as \$168,000 in 2016 (Simpson 2017). Most halibut fishing enterprises do not have access to this amount of capital to lease quota at the beginning of the season. Financial institutions in BC will not loan against quota, particularly for an in-season lease, unless other more tangible assets are used as collateral and, even then, at a high cost. This puts leasing of any larger amount of quota at the beginning of the season beyond the reach of most fishing enterprises, and indeed, even smaller processors looking to enter the business. The requirement to access significant capital strongly favours incumbents that are already in a good financial position and have a business that accommodates large fluctuations in cash flow through the year, which characterizes successful, established processors, but not most fishing enterprises. At the same time, quota owners have expressed a preference to lease to processors, with the prevailing view in the industry that processors are willing to pay higher lease prices for quota than are fishermen, and that there is less social pressure on owners to lower their lease price when dealing with processors (Pinkerton and Edwards 2009).

Access to capital is but one aspect of the power imbalance between fishing enterprises and processors. In part because of their greater access to capital, processors are in a preferred position to lease quota from investors, who have emerged as a major ownership class under ITQs

in the halibut fishery (Edwards and Pinkerton 2019b). This then allows the processors to establish relationships with the investors that further entrenches their access to quota over time, and control of the quota market. These processor-investor relationships have been identified by fishery participants as an obstacle to more independent fishing enterprises (FOPO 2019b). These relationships also afford processors access to information about who holds quota, in what amounts, and at what price they will lease it out – which, unlike regulated trading markets, is information that is not readily available to most other participants in the quota market.

As processors gain greater control over leasing, industry norms related to information sharing about landed value and lease fees have also shifted. When processors provide access to most of the quota that a vessel fishes, the fish slip that records the sale of fish to the processor no longer reflects the actual landed price or the lease price for the quota; instead, it provides only the after-lease price. The fish slip is a record of the landing, required by DFO, which must list the buyer, seller, weight and price for each species and grade of fish sold. The after-lease price is the price received by the lessee fishing enterprise – the difference between the landed price and the lease price, as well as any fees or adjustments added in by the processor. For fishing enterprises, the listing of only the after-lease price on the fish slip means that they do not know what lease price they are paying per pound, or what their catch is worth at the dock. They only know what they are receiving as the difference of the two. Because fishing enterprises must sell to the processor that is providing access to the quota that is needed to cover the catch, and basic information such as landed price is often not provided, fishing enterprises are at a distinct disadvantage in any attempt to better their position and seek higher prices.

Processors have a strong incentive to lease quota pre-season as a means to secure supply of halibut deliveries during the season, with most of the risk borne by fishing enterprises. The processor is able, in most instances, to pass on the full costs of the lease to the fishing enterprise while also guaranteeing that the lessee will deliver their catch to the processor. While indications are that competition between processors for quota remains very high, evidence suggests that competition to attract and retain fishing enterprises as suppliers of the actual catch is low. Despite steep increases in landed price of halibut since 2010 (Province of BC 2014a; 2017), the average after-lease price has been stable to trending downwards (Edwards 2019). Quota leasing is not without some risk for processors, particularly when leasing large amounts of quota pre-season at prices that assume that the wholesale market in the coming year will support the lease price. The risk to processors is ameliorated, however, by the ability of processors to adjust the after-lease price to make up for lower than expected wholesale prices. Often, fishermen do not know the price they will receive for the fish they deliver to the processor until delivery. Furthermore, given the limited information available to lessee fishing enterprises, they do not know the components of the after-lease price they are receiving – if it is the landed price less the lease price paid, or if lease losses or management or financing charges are included. Adjustments to the after-lease price are bounded to some extent. Even though fishing enterprises are highly competitive for access to quota to fish, few fishing enterprises, when given the choice, will fish if short-term costs, such as bait, fuel and monitoring costs, are not being covered (Edwards and Pinkerton 2019a). Not all fishing enterprises have the choice, however, as fishing enterprises may fish at a loss if the enterprise risks losing future access to quota if they do not fish (FOPO 2019b).

3.6 The role of government in managing markets

The management agency has taken on a strictly administrative role in the quota market, processing quota transfer requests. With no public quota registry or management of the quota leasing system, quota leasing operates in a black box that is opaque to most fishing enterprises and the management agency and without official oversight or influence. DFO has characterized the quota leasing system as “willing buyer/willing seller” (Mawani 2009, 44) and has absented itself entirely from a role in overseeing those relationships or in mitigating the potential of the system to violate management objectives.

Governments in a market economy are, at a minimum, expected to intervene in cases of market failure arising from externalities, imperfect information, or market control (Smith 1776; Stiglitz 1993; Nayak 1996; Tanzi 2011). A minimalist approach to government intervention often focuses on research, education, and developing market mechanisms to improve information availability, counter monopolies or oligopolies, and correct externalities such as ecosystem degradation (e.g., pollution, habitat destruction). A minimalist approach to government intervention has been criticized for not adequately accounting and adjusting for disruptions in society and the economy (Tanzi 2011). An alternative view has been posited that identifies an important role for government in leading on transformational change (Mazzucato 2015). Under either scenario, there is a clear role for government to intervene in the BC halibut quota lease market. At the very least, there is a strong rationale for government to undertake research and investigations into the state of the quota market and address the asymmetric information and capital availability issues that are leading to uninformed decision-making and price distortions that challenge the viability, stability and independence of the fleet (Edwards and Pinkerton

2019a). Stabilizing the quota market, instituting rules and procedures to create transparency including new reporting requirements for tracking ownership and leasing and preventing price distortions are further actions that may be expected of government that is seeking to prevent or correct market failure.

There is extensive literature on the importance of the availability of information to all parties involved in negotiation for effective and efficient market function (Coase 1960; Stigler 1966; Stiglitz 2000; Holland et al. 2015). The lack of transparency and limited data collection by the management agency to track ownership and control of a public resource is an issue that has been previously highlighted for the BC salmon and herring fisheries (Haas, Edwards, and Sumaila 2016) and groundfish fisheries (Pinkerton and Edwards 2009). This situation is exacerbated by the corporate reporting requirements in Canada. There are no requirements for public reporting of private company shareholders, there are no requirements to disclose beneficial ownership when creating a corporation (Meunier 2018), and anonymous shell companies can be readily established (Sharman 2011). Federal tracking and reporting of intercorporate ownership through Statistics Canada only reaches the very largest fishing companies. The BC provincial government only requires BC registered companies to list directors and not shareholders in annual report filings, and does not make information on directors or other basic information such as incorporation date freely available or readily searchable. Rather, the provincial government requires payment of a fee to access the corporate history, such as it is, for each corporation. The practice of DFO in not tracking licence ownership of vessel-based licences is a further obstacle to understanding, monitoring and reporting conditions in the BC fishery.

3.7 Conclusion

There has been a marked change in the role of processors over time as the number of quota transactions has increased and processors have exerted a more pronounced influence in the quota leasing market. Despite their hidden role in the fishery, directly owning less than 10% of halibut quota, processors have considerable influence through their role as quota lessees and lessors by controlling more than 50% of temporary quota transfers by poundage. This influence consolidated in the period between 2006 and 2016, with processors becoming the primary hubs for quota leasing. The central role of processors in controlling the leasing market has shifted the balance of power in the fishery to disadvantage fishing enterprises, particularly those that are in the position of having to lease the majority of their quota, which is a steadily increasing proportion of fishing enterprises. This has implications for the ability of fishing enterprises to negotiate for higher prices, and thus for the distribution of benefits in the fishery. Established processors have been controlling access to enough of the quota market through leasing to limit the pool of buyers, thus gaining the ability to control the market, and by extension, the after-lease price received by fishing enterprises. This raises concerns about oligopsony and the competitiveness of the raw halibut market.

Despite data limitations, analysis and determination of the minimum level of processor ownership and control is possible, as was demonstrated with this analysis. Indeed, the management agency's preferential access to data would enable a more complete consideration of the processor control issue. For example, a more direct evaluation of oligopsony in the halibut fishery would be possible with access to data that are treated as confidential by the management agency, notably through examination of fish slips to identify more completely the relationships

between fishing enterprises and processors and to determine what proportion of halibut deliveries and the associated benefits the dominant processors receive. There is also an opportunity for collaboration across the provincial and federal governments to combine their respective datasets to better understand ownership and control within the BC fisheries.

An improved understanding of how processors can exert control over an individual transferable quota fishery offers lessons for implementation and management of ITQ fisheries globally. As interest in full spectrum evaluation of fisheries increases, the need to address a broad range of issues (e.g., distribution of benefits, power dynamics and resilience) and to consider the levers of control and influence within fisheries systems have become increasingly important. Better understanding of how the fishery operates and the power relationships across the fishery could also directly inform the development of fisheries and rural economic development policy in Canada. Fisheries, as a common pool resource and economic driver for coastal communities in Canada, are meant to contribute to objectives for economic prosperity and social inclusion. Improved access to fisheries by coastal and First Nation communities has been identified as a policy imperative for BC (Bennett et al. 2018). Despite a widely held view that, once implemented, ITQs are nearly impossible to change, there are mechanisms available to the management agency and others to retroactively address processor and corporate control in ITQ fisheries (Edwards and Edwards 2017), which would be aided by a full understanding of conditions in the fishery. The BC halibut fishery is an example of asymmetric information between parties and poorly functioning markets that act as impediments to informed management and business decision-making. Further analysis is needed, warranting both new approaches to data collection by the management agency and consideration of existing data,

either conducted and reported by the management agency or by making heretofore restricted data available to external researchers and stakeholders.

Chapter 4: Priced Out of Ownership: Quota leasing impacts on the financial performance of owner-operators

Individual transferable quotas (ITQs) have been widely promoted as a means to improve the conservation and economic outcomes of fisheries by enabling the transfer of quota access privileges to the most efficient operators who in turn have a strong financial incentive to safeguard the long-term sustainability of the fishery. The British Columbia Pacific halibut fishery has long been held up as an example of successful ITQ management. An in-depth investigation of this fishery, however, has identified significant failings of the ITQ system. The ownership profile of the fishery has changed dramatically under ITQs, transitioning from predominantly owner-operated to absentee owners and lessee fishermen. An analysis of fishing enterprise financial performance demonstrates the overwhelming impact of leasing on the viability of fishing enterprises. A representative owner-operator fishing enterprise leasing more than 80% of the quota that it fishes, which characterizes all of the owner-operators that have entered the fishery since 2001, cannot earn enough from the fishery to re-invest, including replacement of the vessel or purchasing of quota. The fishery, under current leasing and purchase price conditions, is not self-sustaining as an owner-operator fishery. Socio-economic objectives for the fishery are not being met, raising important questions about the design and implementation of ITQ management systems.

4.1 Introduction

Individual transferable quotas (ITQs) are permits allowing the holder of the ITQ to catch or transfer a share of a total allowable catch (TAC). ITQs have been promoted as an effective mechanism for efficient fishermen to buy out their less efficient counterparts and, in so doing, increase the returns to the fishery (Scott 1989; Arnason 1990; Grimm et al. 2012; Grafton 1996; Grafton et al. 2006). The implicit assumption is that fishing is undertaken by those who own the majority of the quota that they fish (i.e., quota owners) (Eythórsson 1996; Emery et al. 2012). ITQs are an example of a market-based approach to fisheries management that focuses on the privileges of quota owners, in whose interest the fishery is managed (Copes and Charles 2004). This is one of two dominant visions for fisheries management that has emerged since the discrediting of top-down approaches in the 1990s following harvest declines and fishery collapses, with the other being that of community-based fisheries management to achieve current and future needs of fishermen and fishing dependent communities (Copes and Charles 2004).

The successive implementation of ITQs in British Columbia (BC) fisheries over the previous three decades has demonstrated a clear preference of the management agency, Fisheries and Oceans Canada (DFO), for market-based mechanisms. However, fisheries in Canada, as in many countries, are held to objectives that extend beyond the needs and wants of current quota owners. In Canada, “the oceans and their resources offer significant opportunities for economic diversification and the generation of wealth for the benefit of all Canadians, and in particular for coastal communities” (*Oceans Act (S.C., 1996, c. 31)* 1996). Historically, the vision for fisheries in Canada was to “create a healthy, stable industry; one which can bring prosperity and security to the people in it” (Government of Canada 1976).

The British Columbia Pacific halibut fishery is an ITQ-managed fishery that is a well-managed and prosperous fishery by metrics of success typically used to assess fisheries (Grimm et al. 2012; Casey et al. 1995). The halibut fishery was an early example of ITQs in Canada, with individual non-transferable quotas introduced in 1991 and temporary transferability of ‘blocks’ of quota introduced in 1993 (DFO 2019a). ITQs were fully implemented in the fishery in 1999, with the introduction of permanent and temporary ‘by the pound’ transferability. With 100% on-board monitoring and dockside validation, and requirements to own or lease quota to cover their directed and non-directed (bycatch) catch, the small-boat groundfish fisheries in BC are closely monitored and strictly managed, with respect to the fish stocks (DFO 2018a). The halibut stock is managed jointly by Canada and the United States through the International Pacific Halibut Commission, which is responsible for adjusting the total allowable catch (TAC) annually to account for stock status and to ensure that the stock is not overfished in any part of its range from northern Alaska to California. Since 1991, the halibut TAC has ranged from a high of 13 million pounds (5897 t) in 1998 to a low of 5.3 million pounds (2404 t) in 2018. Market demand for halibut is high and the landed price for halibut has almost doubled since 2004, offsetting the loss of landed value from the drop in the TAC. Evaluations of halibut fishery performance commissioned by DFO have been positive (Nelson 2009; 2011; Munro et al. 2009).

The ownership profile of the fishery has changed dramatically under ITQs, however, transitioning from a traditionally owner-operated fishery to one with growing corporate and

processor control and ownership by ‘investors’³. A fishing enterprise is considered owner-operator in BC when the owner of a vessel and licence personally fishes it, consistent with the definition in Atlantic Canada owner-operator policies (DFO 2019c; Edwards and Pinkerton 2019b). An owner-operator may own multiple vessels and/or licences, but only to an extent which can be reasonably fished by a single owner. In 1991, when individual quotas were first introduced, owner-operators owned and caught about 90% of the halibut quota. In 2016, owner-operators caught 45% of the halibut catch and owned just 15% of the halibut quota (Edwards and Pinkerton 2019b). This major shift in the ownership profile in the fishery has implications for both individual fishing enterprises and the performance of the fishery as a whole, particularly in meeting objectives for stable and prosperous fisheries that provide benefits to fishery participants and adjacent communities. Fishery participants and observers have asserted that ownership trends and leasing practices in the fishery are undermining the viability of the small boat owner-operator fleet in the BC halibut fishery (Davidson 2010; FOPO 2019a; 2019b; Pinkerton and Edwards 2009). The majority of quota that is fished is leased, and only a small fraction of the landed value of leased quota remains with the vessel to cover operating costs and crew and captain wages after quota owners are paid (Pinkerton and Edwards 2009; FOPO 2019a).

Fishery participants have pointed to the lack of owner-operator provisions or other ownership restrictions having allowed quota ownership to shift to non-fishing interests (FOPO 2019a). This lack of restrictions has led to the emergence of a new ‘investor’ class of owners, who have no

³ Investors, by definition, do not participate in the fishery, leasing their quota to others to fish. The investor class in the BC halibut fishery consists of companies and individuals that own halibut licences that are not fished and quota that is leased to processor, corporate or owner-operated enterprises to be fished. This includes former fishing enterprises that no longer fish halibut but have retained their halibut quota to lease to others.

participation in the halibut fishery beyond the owning and leasing out of quota (Edwards and Pinkerton 2019b). However, there has been little government consideration of the impacts of leasing in the fishery. Past evaluations have primarily considered economic performance, concerned with metrics related to efficiency. In contrast, financial performance is concerned with income and the distribution of revenues and costs (see Whitmarsh et al. 2000 for an overview of the distinction between financial performance and economic performance). In a 1997 assessment of BC fishing fleet financial returns commissioned by the department, it was noted that, while leasing may be a relevant concern in a broader policy context, leasing was excluded from consideration on the basis that “lease costs do not affect the investment return of a vessel-licence owner” and “lease costs are only a transfer among the capital and labour interests of the fleet” (Gislason 1997, 2–3). DFO completed an evaluation of the Commercial Groundfish Integration Pilot Program (CGIPP) in 2009 that concluded “the diversity and complexity of leasing arrangements under CGIPP makes it challenging to provide a snapshot analysis” and acknowledged that quota leasing was the most contentious issue (DFO 2009a, 16), but with no subsequent follow-up. Ownership and leasing are not regularly tracked and reported on by DFO, and until recently (Edwards and Pinkerton 2019b), there has been little evidence available on how the ownership profile of the fishery has changed, the extent of leasing, and the impact of leasing on the halibut fishing fleet.

Contributing to the lack of analysis on ownership and leasing has been the dearth of financial performance data for BC fisheries, despite acknowledgements of the importance of financial performance information for the management and planning activities of the management agency (DFO 1992; Nelson 2009). DFO regularly conducted a costs and earnings survey to update

information on the financial performance of Canada's Pacific commercial fisheries, but discontinued the survey, citing low response rates. The last year for which halibut cost and earnings data was made publicly available from this survey was 1994 (Gislason 1997). In 2008, a new series was commissioned to address the gap in costs and earnings data for Pacific commercial fisheries, and two reports were completed that included the halibut fishery, for 2007 and 2009 (Nelson 2009; 2011). The data presented in these reports, by the author's own admission, were not based on a census or a statistically representative sample and did not include analysis of the actual ownership and transfer data to quantify the extent of quota leasing in the halibut fishery. The financial performance of halibut fishing enterprises considered only scenarios where 0%, 30% or 60% of the halibut quota was leased, with 30% being the base case. However, more than a third of the halibut fishing fleet was leasing more than 60% of its catch in 2006, and a quarter of the fleet was leasing more than 80% (Pinkerton and Edwards 2009). By 2016, the majority of fishing enterprises leased more than 60% of the halibut quota they fished, and all owner-operators that entered the fishery since 2001 leased more than 80% of the quota that they fished, on average leasing 95% (Edwards 2019).

In Canada, fisheries are expected to meet a full spectrum of socio-economic objectives, including benefits to adjacent communities, maintenance of small boat independent fleets, and distribution of benefits amongst participants (Stephenson et al. 2018). The Canadian fishing fleet historically was a small boat fleet, and most were owner-operated (Government of Canada 1976). A robust, independent small boat owner-operator fleet is valued for providing employment and the wide distribution of socio-economic benefits to fishing communities all along the coast (FOPO 2019a; Canadian Council of Professional Fish Harvesters 2002; Tansley 1979). Amendments to the

Fisheries Act (*R.S.C., 1985, c. F-14*) passed in 2019 affirmed in legislation the importance of preserving and promoting the independence of licence holders in commercial inshore fisheries. While there is no official definition for inshore fisheries in BC, inshore fleets in Atlantic Canada are, in part, defined as “the fishing sector where fish harvesters are restricted to using vessels less than 19.8m (65') Length Over All (LOA)” (DFO 2007b). Most fisheries in BC, including the halibut fishery, fit this definition – the overwhelming majority of vessels operating in the halibut fishery are less than 65' (Edwards 2019). The BC fleet historically was characterized by relatively small vessels (under 65'), independent of processors and large corporate fishing companies, owner-operated, primarily operating in coastal waters, and distributed along the BC coast with close ties to coastal communities (FOPO 2019a; Canadian Council of Professional Fish Harvesters 2002; Tansley 1979). The Government of Canada has committed to protecting and promoting these characteristics and to achieving related socio-economic objectives, such as prosperous coastal communities, the equitable distribution of benefits, and the stability and viability of the fishing fleet. These objectives have been affirmed repeatedly in legislation (*Oceans Act (S.C., 1996, c. 31)* 1996; *Fisheries Act (R.S.C., 1985, c. F-14)* 1985), policy (DFO 1999a; 2018a), by senior DFO officials (DFO 2019b), and by Fisheries Ministers over a period spanning more than three decades (Tansley 1979; D. Anderson 1998; LeBlanc 2017). Despite this, there has been little assessment by DFO of the impact of fishery management systems in BC on social and economic outcomes. This includes overall economic performance of the fisheries, enterprise-level financial performance, and the distribution of benefits along coastal regions and between different stakeholder groups, among other considerations.

To reconcile the discrepancy between what superficially appears to be a healthy, successful fishery and the experiences of fishery participants that are struggling to remain viable, this chapter evaluates financial performance under different lease price and quota ownership scenarios common in the fishery. Impacts of leasing on enterprise and fleet level viability and stability and on new entrants and fishery reinvestment are considered.

4.2 Background on the British Columbia Pacific halibut fishery

The BC halibut fishery is a multi-species fishery, with catch of a number of rockfish species and other groundfish including lingcod and sablefish caught alongside halibut, and the halibut fishery has an allocation of rockfish quota in recognition of this. The allocation of rockfish is seldom sufficient to cover non-directed catch, and there is no halibut fishery allocation for sablefish or lingcod. The ‘non-directed’ catch accounted for about one-quarter of the catch by weight in the halibut fishery in 2016 (DFO 2017). With the implementation of the Commercial Groundfish Integration Pilot Program in 2006, lingcod, sablefish and higher volumes of rockfish were permitted to be landed in the fishery, but all catch also had to be accounted for with quota, enforced through an on-board camera monitoring system in addition to dockside validation (CIC 2005; Koolman et al. 2007). This has meant that halibut fishing enterprises must own or lease quota for their non-directed catch. The majority of the owner-operator fleet must lease quota to cover most of the rockfish that they catch. While there is considerable overlap between the halibut and sablefish fisheries, joint ownership in the fisheries is concentrated with corporate and processor owners. Only 3 of the 65 owner-operators in the halibut fishery in 2016 owned sablefish licences and quota. For sablefish catch, most owner-operators must lease 100% of the sablefish quota that they catch. Many owner-operators must also lease at least some lingcod

quota. Lingcod quota is split between four management areas, and was allocated to hundreds of licences in the implementation of lingcod ITQs in 2006. The average lingcod catch on halibut fishing trips was about 2400 lb (1089 kg) per vessel in 2016, with an average landed value of \$5700. Half of the owner-operators owned less than 2000 lb (907 kg) of lingcod and a quarter of owner-operators owned less than 500 lb (227 kg), with those quota amounts split across the four management areas.

In addition to revenue from the halibut fishery, most fishing enterprises that fish halibut in BC also own licences for other fisheries, which has been a long-standing feature of the fishery (DFO 1992; Edwards 2019; Gislason 1997). In 1991 and 1994, the halibut fishery provided about one third of the gross fishing income of the average halibut fishing enterprise, with fisheries such as salmon and herring providing the remainder (DFO 1992; Gislason 1997). Information on the contribution of the halibut fishery to fishing enterprise gross revenue, from the DFO cost and earnings survey, is not available for the years after 1994, but most halibut fishing enterprises continue to be multi-licenced with other fisheries. Only 7 of 65 owner-operators were licenced solely for halibut fishing in 2016. Most halibut fishing enterprises are multi-licenced with salmon, followed by herring, rockfish and tuna. These other fisheries can be an important source of additional fishing income, helping cover fixed costs, the captain share, and the long-run costs, and offsetting low returns in the halibut fishery. However, owning multiple licences is not a guarantee that these other fisheries will make a positive contribution to the enterprise. Fishery participants have noted an increased reliance on the halibut fishery, as returns from other fisheries, notably salmon and herring, have declined. In 1994, the average gross income for vessels in the salmon troll fleet was \$91,000, of which \$64,000 was from the salmon fishery,

with earnings before interest, taxes, depreciation and amortization (EBITDA) of \$27,000 (1994 current dollars) (Gislason 1997). In the salmon gillnet fleet, average gross revenue was \$37,000 and EBITDA was \$9000. In 2009, the average salmon troll gross revenue was \$30,000 with EBITDA of \$7500 (2009 current dollars) (Nelson 2011). For salmon gillnet, average gross revenue in 2009 was \$13,000 and EBITDA was -\$2700 and the herring fishery also yielded marginal returns (Nelson 2011).

There are a number of licence conditions and requirements that impact how a halibut fishing enterprise operates, including minimum quota holdings, limits on how much quota can be fished on one vessel and the transferability of licences. As a ‘vessel based licence’, halibut ‘L’ licences are issued ‘in respect of a vessel’ and not to an individual person or company (DFO 2019a). The vessel must be registered as a Canadian commercial fishing vessel and can have only one halibut licence issued to it at a time. Once a licence has been fished in a year, it cannot be transferred off that vessel until the following year. There are no restrictions on the number of vessels, or halibut licences, that an individual person or company can own, and no restrictions on who can own a vessel or licence. Ownership of multiple halibut licences is uncommon among owner-operators and only one owner-operator owned and fished two halibut vessels in 2016.

Halibut licences must retain a minimum 0.01149% of the halibut TAC, which was 706 lb (320 kg) in 2016⁴. This quota can be leased off the licence each year but cannot be permanently transferred off the licence. Halibut licences can hold a maximum quota amount, a ‘full block’, of

⁴ For this paper, all halibut weights are expressed as ‘dressed head off’ weight, in pounds, as per the management and industry standard. The conversion factor for round to ‘dressed head off’ is 0.75. All other fish weights are expressed as round weight, in pounds. For weight conversion, one tonne is equal to 2204.6 pounds.

1% of the halibut TAC, equivalent to about 61,000 lb (27,669 kg) of quota in 2016 (with some exceptions up to 1.25% based on historical catch). The maximum quota cap applies to both leased and permanently held quota. Of the 65 halibut owner-operators in 2016, 42% fished at least 90% of a full block and the median for the amount fished was 80% of a full block.

Quota leasing by owner-operators in the Pacific halibut fishery is extensive. Nearly all owner-operators lease in at least some quota and the majority lease more than half of the quota that they fish. One-quarter of all owner-operators in 2016 owned the minimum quota, and about half of all owner-operators owned less than 0.17% of halibut quota, equivalent to about 10,000 lb (4536 kg) in 2016. For those that entered the fishery since 2001, two-thirds owned only the minimum quota in 2016, and all owned less than 10,000 lb (4536 kg). For those that fished a full block (1%, 61,000 lb [27,669 kg]) of halibut quota, ownership less than 0.17% would have meant leasing quota of between about 51,000 lb and 60,000 lb, at an estimated average lease cost of between \$428,000 and \$504,000, out of a total landed value on 61,000 lb (27,669 kg) of halibut of about \$580,000.

4.3 Methods

An enterprise-level financial performance model was developed for a hypothetical owner-operated halibut fishing enterprise to consider the financial impact of quota leasing. The model provides relative and generalized financial performance metrics under different leasing arrangements. The approach uses costs and earnings inputs based on a standard accounting framework (Whitmarsh et al. 2000; Ovenden 1961; Hartmann et al. 2015). Given the lack of data on regular or comprehensive costs and earnings in BC fisheries, the assessment relies on

modelling financial outcomes of a hypothetical owner-operator halibut fishing enterprise, informed by analysis of fleet characteristics.

The financial performance model was informed by an ownership and quota leasing database that was constructed as part of a broader research project into the BC groundfish fisheries (Edwards and Pinkerton 2019c; Edwards 2019). The database was compiled from three datasets received from DFO through access to information requests, supplemented by the Statistics Canada Inter-Corporate Ownership historical databases, BC Provincial Corporate Registry Services records, BC provincial processor licence lists, the Transport Canada ships registry and online searches including court proceedings, address directories, and fisheries advisory process documents. The database was used to determine the extent of leasing, participation in other fisheries, and licence and quota ownership of both halibut and non-directed species quota caught in the halibut fishery to develop financial performance scenarios that are reflective of the conditions under which owner-operator fishing enterprises are operating in the fishery. As well, DFO's conditions of licence, vessel and licence registration requirements and annual management plans were reviewed to ensure scenarios were consistent with the regulatory environment within which fishing enterprises operate.

As detailed financial information, particularly at the enterprise level, is not readily available for BC fisheries, cost inputs for a representative fishing enterprise were estimated from available data, with corrections and updates informed by information provided by fishery participants. Revenue and cost inputs were informed primarily by the DFO-commissioned reports on Pacific fishery financial performance for 2007 and 2009 (Nelson 2009; 2011), with adjustments to better

reflect prices and costs in 2016 (Edwards 2019). Industry participation was facilitated through the Canadian Fisheries Research Network – a six-year research network funded by the Natural Sciences and Engineering Research Council of Canada (NSERC) that brought together academia, industry and government to undertake collaborative research on fisheries in Canada.

4.4 Fishing enterprise cost and earnings categories

A fishing enterprise financial model consists of gross revenue and a series of cost and earnings categories (Figure 4.1) (Whitmarsh et al. 2000). The gross revenue is the landed value of the enterprise catch, which in the case of halibut enterprises includes halibut catch and non-directed catch of other species in the halibut fishery, such as sablefish, lingcod and rockfish. The gross revenue for a fishing enterprise must cover a number of short-run (e.g., operational and fixed costs, labour) and long-run costs (e.g., vessel replacement, quota amortization). There is no consistent approach for the treatment of the captain share, with some approaches including the captain share with net profit (EB Economics 1992; Pascoe, Robinson, and Coglán 1996; Whitmarsh et al. 2000), while others separate it out as a cost category (Gislason 1997; Hartmann et al. 2015). The risk of including the captain share with the net profit is that it can inflate the perceived profitability of the enterprise and can undervalue the importance of the owner-operator earning a living wage. It was for these reasons, as well as the fact that from the perspective of the enterprise, the captain share is a cost, that captain share was included as a labour cost category for this analysis. What remains after short-run costs are deducted is the earnings before interest, taxes, depreciation and amortization (EBITDA) (Duy, Flaaten, and Long 2015). The EBITDA covers debt servicing of previous investments as well as new investments to upgrade or replace the vessel or make purchases of quota or licences. The remainder of the earnings after interest,

taxes, depreciation and amortization have been deducted is the ‘net profit’. Net profit can also be referred to as the financial profit, boat income or enterprise income. Net profit is important to financial viability to mitigate losses in years when costs are greater than planned and to provide the financial opportunity to innovate new technologies and approaches and re-invest in the fishing enterprise to improve performance and safety.

Gross revenue	Lease fees		Short-run Costs	
	Operational costs	Licence fees		
		Fuel		
		Bait & ice		
		Gear		
		Monitoring		
	Fixed costs	Insurance		
		Moorage		
		Maintenance		
		Other		
	Labour costs	Crew share		
		Captain share		
	EBITDA	Amortization		Long-run Costs
		Depreciation		
		Taxes		
		Interest fees		
Net profit				

Figure 4.1 Enterprise level financial cost and earnings categories, consisting of the gross revenue to the enterprise, the after-lease revenue to the enterprise (gross revenue less lease fees), operational costs, annual fixed costs, labour costs (crew share and captain share), and EBITDA (earnings before interest, taxes, depreciation and amortization – long-run costs plus net profit).

4.5 Data inputs for the financial performance model

There is no regular, statistically valid data collection of enterprise-level costs and earnings in the BC fisheries. The last year for which data from DFO cost and earnings survey data is available is 1994. To assess the performance of a typical owner-operator vessel participating in the halibut fishery, revenue and cost inputs for a representative fishing enterprise were estimated from a

number of sources, primarily two reports commissioned by the management agency for the 2007 and 2009 fishing years (Nelson 2009; 2011). The sources, assumptions and rationale for each of the cost and earnings inputs used are provided in the following subsections.

4.5.1 Halibut catch revenue

The halibut catch revenue input value used was based on 61,000 lb (27,669 kg), about the amount of a full block (1% of the TAC) in 2016, at the 2016 average landed price of \$9.50/lb (Edwards 2019; Province of BC 2017). Due to the fixed costs in the fishery, the most profitable amount to fish is a full block of quota (Nelson 2011), provided the operating and crew costs are less than the after-lease price. A full block of quota can be readily caught within the fishing season. The fishing season typically extends from March to November (DFO 2016b). For larger vessels, 61,000 lb (27,669 kg) of halibut can usually be caught in 2 or 3 trips, of up to 8 days each. For smaller vessels, this catch can be spread out over as many as 5 or more trips. To catch a full block of quota is common in the fishery. In 2016, 21 of 65 owner-operators caught at least 95% of a full block. Of the 18 owner-operators that entered the fishery after 2001, 13 caught at least 75% of a full block and 8 caught at least 95% of a full block.

4.5.2 Non-directed catch revenue

The non-directed catch can vary widely by vessel. Non-directed catch limits cap the amount of non-directed catch that can be landed by an individual vessel as well as the quota that can be transferred into the sector as a whole (DFO 2016b). Fishery participants have also reported difficulty in accessing non-directed quota (FOPO 2019b), even though the majority of the quota for nearly all of the species caught as non-directed catch in the halibut fishery are unfished at the

end of the year (DFO 2017). This difficulty in accessing quota can arise from a number of factors, including the initial allocation of rockfish quota in 2006 that allocated small amounts of more than a dozen species/area quotas onto nearly 200 licences, as well as the absence of any quota registry or open trading mechanism to enable fishery participants to identify quota for lease. Also, the generally low prices for most non-directed quota is not a strong incentive for owners of the quota to lease it out. For most non-directed catch, with the notable exception of sablefish, landed prices are typically between \$0.30/lb and \$3.00/lb and lease prices usually from \$0.01/lb to \$2.00/lb, depending on the species and area. There is little demand for many of the species/area quotas and the lease value for the typically small amounts of sought-after quota that owners hold is often only in the tens to hundreds of dollars.

An input value of \$25,000 in earnings for non-directed catch revenue was assumed, based on a gross revenue of \$45,000 less a lease price of \$20,000, from typical non-directed catch reported in Nelson (Nelson 2011), updated to 2016 landed and lease prices reported by government statistics (Province of BC 2017) and information provided by fishery participants, and consistent with the average non-directed catch for the halibut sector (DFO 2017). Enterprises were assumed to lease 100% of the sablefish quota and 50% of the rockfish and lingcod quota. Consideration of different fishing patterns of non-directed catch, and the functioning of the non-directed quota leasing market, were beyond the scope of this research, but are logical extensions for further analysis.

4.5.3 Operational and fixed costs

The operational costs and the fixed costs were based primarily on aggregate values reported in Nelson (2009; 2011). Operational costs reported by Nelson, when converted to a per pound basis and adjusted to a catch of 61,000 lb (27,669 kg) of halibut, ranged from \$30,700 to \$57,200, with the vessels catching a full block of halibut having the lowest per pound cost. The average operational costs for 2016 were estimated to be \$40,000. Fixed costs for vessels catching a full block were reported as \$19,200 in 2007 and \$22,500 in 2009. The average fixed costs for 2016 were estimated to be \$25,000, of which 50% was assumed to be covered by the halibut fishery under the base scenario, and the other 50% covered by other fisheries that the fishing enterprise participates in, yielding a fixed cost of \$12,500. This assumption is consistent with the historical reliance on other fisheries (Gislason 1997) and the current multi-licenced nature of the fleet (Edwards 2019). However, given the recent poor financial health of other fisheries that many halibut fishermen participate in (Nelson 2011), assuming a 50% contribution from other fisheries may not be warranted. This situation underlines the importance of assessing the sensitivity of EBITDA and net profit to the estimated fixed expense cost category. As well, when income is insufficient to cover fixed costs, maintenance and repairs of the vessel can also be deferred, albeit at the risk of having an unsafe and deteriorating vessel.

The assessment of the sensitivity of the EBITDA to the cost inputs included low and high cost operational and fixed expense scenarios, to consider how the results would vary if the fishing enterprise were a lower cost versus a higher cost operation. This sensitivity analysis tested the impact of the assumptions on input costs and also provided insights into how variable input costs would impact the financial outcomes for different fishing enterprises. The operational costs were

reduced by 50% to \$20,000 for the low cost scenario and increased by 50% to \$60,000 for the high cost scenario. The portion of the fixed costs covered by the halibut fishery was set at 25% of the fixed costs (\$6250) under the low cost scenario and 75% of the fixed costs (\$18,750) under the high cost scenario.

4.5.4 Crew share

Nelson (2011) reported crew costs to be 10% of gross revenue per crew member with 3 crew members on vessels fishing about 66,600 lb (30,210 kg) of halibut quota, which was a full block of quota (1% of the TAC) in 2009, totalling 30% of gross revenue equivalent to \$120,000. The common practice for crew share arrangements, since the introduction of ITQs in halibut, is for crew to be paid a percentage of the after-lease revenue rather than the gross revenue. Even when the quota is owned by the captain, a lease fee is usually applied that is paid directly to the captain and the crew is paid on the after-lease revenue (Pinkerton and Edwards 2009). As confirmed by fishery participants, the crew share typically ranges from 10% to 20% of the after-lease revenue per crew member, depending on experience and performance. As well, other costs beyond lease fees (e.g., monitoring fees, fuel, bait) can be subtracted from the gross revenue before applying a percentage share, although, unlike the subtraction of lease fees, there is no common practice for the treatment of other costs and the formulas used can vary widely, even between trips on a single vessel.

Paying the crew a percentage of the after-lease revenue is a highly significant change from paying the crew a percentage of the gross revenue. Not only does a share of the after-lease revenue translate into much lower earnings than a share of the gross revenue (10% share of gross

revenue in 2016 would be about \$62,000 whereas a 20% share of after-lease revenue would be about \$29,500), but while landed price has sharply increased in recent years, lease fees have closely tracked this increase (Figure 4.2). As a result, the after-lease price has been stable to decreasing even as landed price has almost doubled. This has meant that crew earnings, on a per pound basis, have not increased as landed price increased. The entire crew share for a crew of three was estimated to be 50% of the after-lease revenue (e.g., two crew receiving 15% each and the senior crew member receiving 20%), to a maximum of \$110,000, as even the highest paid senior crew member would not expect to make more than \$40,000 from the halibut fishery in 2016, and junior crew members even less (Pynn 2018).

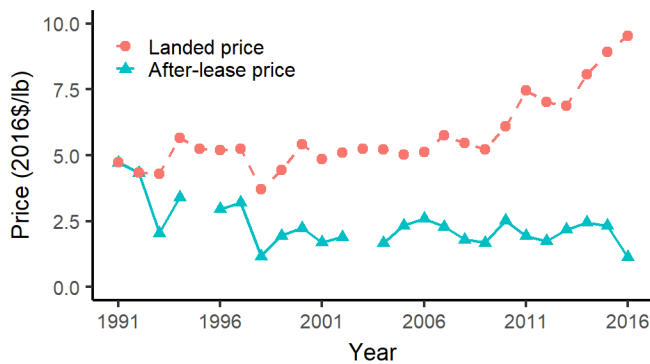


Figure 4.2 The halibut landed price (\$/lb) and average after-lease price (\$/lb), in 2016 constant dollars, for 1991 to 2016 (Edwards 2019).

4.5.5 Captain share

For the captain share, information on average and living wages was sourced from government and third-party sources (Statistics Canada 2019a; Canadian Centre for Policy Alternatives 2018). The average wage for a supervisor in the natural resources industries before taxes was \$60,000 in 2016 (Statistics Canada 2019a), which is at the low end of a living wage in coastal British Columbia (Canadian Centre for Policy Alternatives 2018). This is considered a minimum for a

reasonable wage, particularly given the skills and experience needed to be a successful captain of a fishing vessel. The captain share can also be supplemented by non-fishing income, family income, and government benefits. Employment Insurance (EI) is used by both crews and captains to supplement their income if their earnings are low. An individual could receive up to a maximum of about \$14,000 in taxable EI benefits in 2016 (Employment and Social Development Canada 2018).

The assumption for the base input for the financial performance model assumed that 50% of the captain share (\$30,000) would be covered by the halibut fishery and 50% covered by other fisheries/income sources. This assumption was informed by fishery participants' historical reliance on other fisheries (Gislason 1997) and multi-licence holdings (Edwards 2019). As discussed previously in the section on operational and fixed costs, the recent poor financial returns from a number of other fisheries important to halibut enterprises (Nelson 2011) calls into question the validity of the assumption that there will be income from other sources to cover the remainder of the captain share. To test the sensitivity of the EBITDA to this assumption, the captain share covered by the halibut fishery was set at 25% of the captain share (\$15,000) under the low cost scenario and 75% of the captain share (\$45,000) under the high cost scenario, the results of which are discussed in the results section below. As well, when income is insufficient to cover the captain's share, the captain can take a reduced share, although this is not a strategy that can be sustained over the long-term.

4.5.6 Quota leasing

Short-term financial performance was assessed for three ownership scenarios: (1) the minimum quota holdings on a licence (710 lb [322 kg]), (2) 10,000 lb (4536 kg), and (3) 40,000 lb (18,144 kg). Ownership is actually a percentage of the TAC, not a poundage, with percentage translated into quota pounds each year. As such, quota pounds owned, including the minimum holdings, will change from year to year as the TAC changes. The minimum scenario of 710 lb (322 kg) is a rounded value of the minimum in 2016 (706 lb [320 kg]). Financial performance was also assessed for three price scenarios: (1) \$1.15/lb, which was the average after-lease price in 2016 based on the reported lease fee (Simpson 2017) and average landed price (Province of BC 2017) – the lowest after-lease price since 1998 (Edwards 2019), (2) \$2.00/lb, the ten-year average after-lease price from 2007 to 2016, and (3) \$4.75/lb, a lease price of 50% of landed value available on a preferential basis to some fishing enterprises (Boyes 2019) – typically those with significant quota ownership (i.e., more than 10,000 lb [4536 kg]) that are able to negotiate a better lease price from processors in exchange for delivering the entirety of their catch to the processor.

4.5.7 Interest, taxes, depreciation and amortization

For the assessment of earnings after interest, taxes, depreciation and amortization, base inputs were identified for enterprise taxes, depreciation of an existing owned vessel, interest for debt servicing the purchase of a halibut licence and quota, and amortization of the licence and quota. The tax rate in Canada for small businesses with less than \$500,000 in income in 2016 was 10.5%. Vessel depreciation was set at 5%, on a replacement cost of \$200,000, which is a low-end vessel cost (Castlemain 2018). The purchase price for minimum quota (770 lb [349 kg]) in

2010, 706 lb [320 kg] in 2016) and a halibut licence was \$100,000 in 2010 and \$135,000 in 2016 (Edwards 2019). The purchase price of 10,000 lb (4536 kg) of quota and a licence was about \$475,000 in 2010 and about \$1.02 million in 2016, and for 40,000 lb (18,144 kg) of quota and a licence was about \$1.82 million in 2010 and \$3.87 million in 2016.

In BC, banks will typically not lend more than 50% of the value of the licence and quota, at a maximum, at commercial interest rates (averaging about 5% in recent years, plus or minus 1%), and only for a short amortization period (i.e., 3 to 5 years). If the borrower has other assets such as a house that can be used for collateral, the terms of the loan can be more favourable, including a longer amortization period and a lower interest rate. Both low and high end cost scenarios for the debt servicing of the purchase of a halibut licence and quota were considered, for the low end at the 2010 purchase price at 3% interest and a ten-year amortization and for the high end at the 2016 purchase price at 5% interest, also with a ten-year amortization.

4.5.8 Net profit

The net profit is the earnings after interest, taxes, depreciation and amortization. Net profit margin is the net profit divided by the total revenue. The average net profit margin was 7.0% for small enterprises in Canada in 2012 and 3.7% for medium-sized businesses (Government of Canada 2015). Based on the average net profit margin for small and medium enterprises (SMEs) in Canada and a gross revenue of \$624,500, which was the average gross revenue for a halibut fishing enterprise fishing a full block of quota in 2016, the net profit for a halibut fishing enterprise was expected to be between \$20,000 to \$45,000.

4.5.9 Summary of Data Inputs

The data inputs used to assess the financial performance of a hypothetical owner-operator vessel participating in the halibut fishery, as described in the previous sub-sections, are summarized below (Table 4.1).

Table 4.1 Scenario inputs for a hypothetical owner-operator halibut fishing enterprise, catching a full block of quota (61,000 lb [27,669 kg] or 1% of the TAC in 2016), including low cost and high cost scenarios.

Category	Value
Halibut catch gross revenue	\$579,500
Non-directed catch net revenue	\$25,000 (net after lease)
Operational costs	\$40,000; Low Cost: \$20,000; High Cost: \$60,000
Fixed costs	\$12,500; Low Cost: \$6250; High Cost: \$18,750
Crew share (for 3 crew)	lower of 50% of after-lease landed value or \$110,000
Captain share	\$30,000; Low Cost: \$15,000; High Cost: \$45,000

4.6 Results: financial performance

Financial performance was evaluated through a (1) basic profit model to calculate earnings before interest, taxes, depreciation, and amortization (EBITDA) under different quota ownership and after-lease price scenarios (Figure 4.3) and (2) through an extension of the basic profit model to also consider high and low cost scenarios for both EBITDA and net profit (earnings after interest, taxes, depreciation, and amortization) (Figure 4.4).

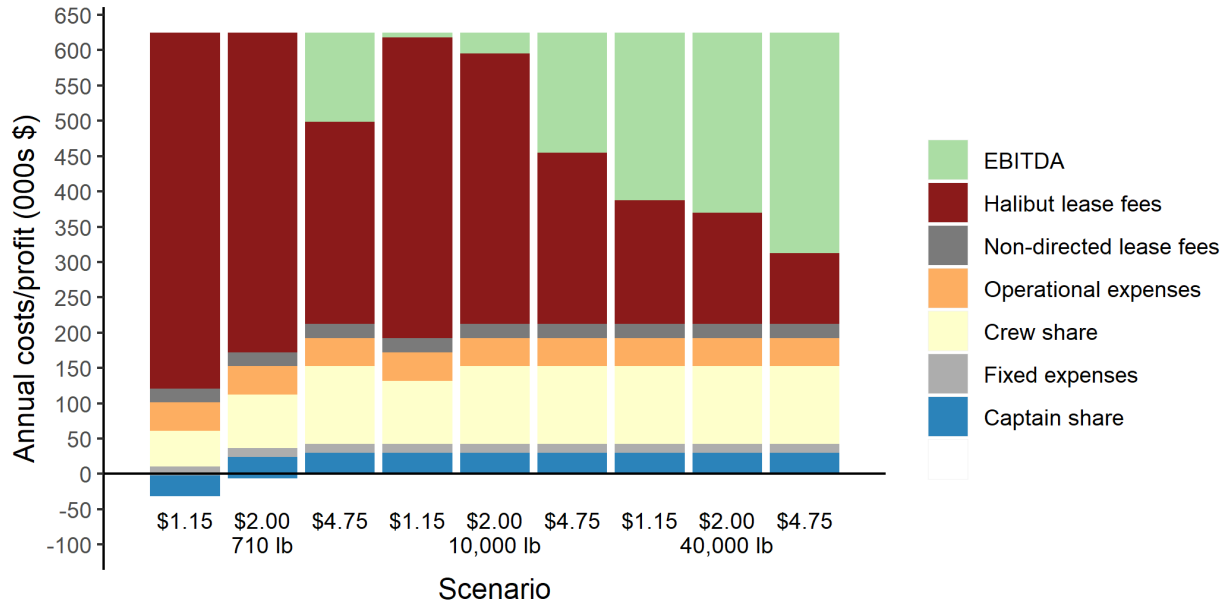


Figure 4.3 The financial performance of a halibut fishing enterprise under different leasing and ownership scenarios, where the after-lease price is one of \$1.15/lb, \$2.00/lb, or \$4.75/lb, and where the quota owned by the fishing enterprise is 710 lb (322 kg), 10,000 lb (4536 kg), or 40,000 lb (18,144 kg).

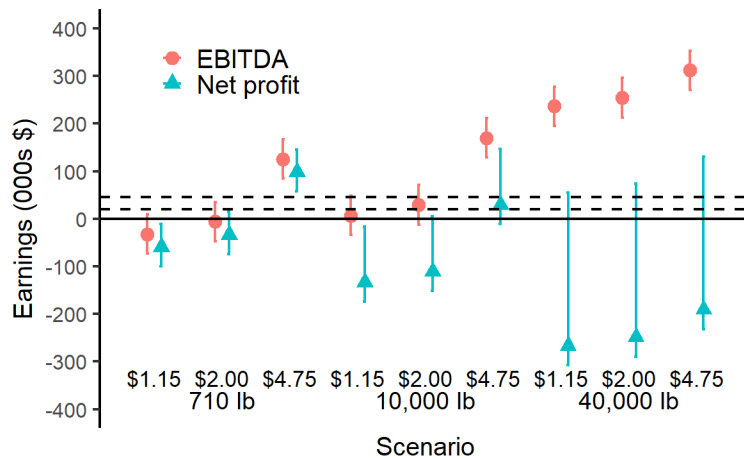


Figure 4.4 The earnings of a halibut fishing enterprise before interest, taxes, depreciation and amortization (EBITDA) and after (net profit), for three after-lease price (\$1.15/lb, \$2.00/lb and \$4.75/lb) and three quota ownership (710 lb [322 kg], 10,000 lb [4536 kg] and 40,000 lb [18,144 kg]) scenarios. The vertical bars indicate the range of earnings under high and low cost scenarios. Dashed horizontal lines at \$20,000 and \$45,000 indicate the range of expected net profit.

For fishing enterprises leasing most of the quota that they catch, lease fees are the largest cost category by far. At \$1.15/lb, for an enterprise that owns only the minimum quota holdings,

operational costs could be covered, crews receive a reduced share, the halibut fishery makes a partial contribution to fixed costs for the year and the captain receives no income from the fishery. At \$2.00/lb, the crew share is still reduced, but double what is paid under the \$1.15 scenario, the halibut fishery portion of the fixed costs are covered, and the captain receives some income from the fishery. If a 50% lease rate were available to fishing enterprises with low ownership ratios (enterprises leasing more than 80% of the quota that they fish), enterprises would be profitable. However, preferential lease prices have typically only been available to owners of large blocks of quota that are able to negotiate prices with processors by guaranteeing delivery of their own quota to the processor. Owner-operators that own 10,000 lb (4536 kg) or less of quota cannot expect to be recipients of a preferential quota price. For those that own 40,000 lb (18,144 kg) of quota, the fishery is highly profitable, regardless of the lease price being paid for the remaining 21,000 lb (9526 kg) that they lease. Owners of 40,000 lb (18,144 kg) of quota, compared to those that own the minimum or moderate amounts of quota, earn at least \$200,000 more that would otherwise be paid in lease fees. Even if these owners receive only \$1.15/lb on the 21,000 lb (9526 kg) of halibut that they lease, their fishing operations are profitable on the basis of the quota on which they receive the full landed value. Yet it is these owners, with substantial quota ownings that they can leverage in accessing additional quota from processors, that are most likely to receive a higher after-lease price through preferential lease arrangements (Boyes 2019).

While enterprises that owned 10,000 lb (4536 kg) and 40,000 lb (18,144 kg) of quota would be profitable under EBITDA scenarios, when debt servicing and repayment costs for the purchase of the halibut quota and vessel depreciation are included, these scenarios are only profitable

under the lowest cost scenarios. Even for the 40,000 lb (18,144 kg) quota ownership scenario that is highly profitable under EBITDA, the cost of repaying the quota purchase at 2016 quota purchase prices overwhelms earnings and leads to high annual losses, close to \$300,000 per year, over the repayment period. The main difference between the lower and upper cost scenarios for the 10,000 lb (4536 kg) and 40,000 lb (18,144 kg) scenarios is the cost of purchasing the quota, with the purchase price per pound of quota more than doubling between 2010 (the low cost year) and 2016 (the high cost year). Given current price conditions in the fishery, in which lessee owner-operators are not profitable over the long-term and income from the fishery does not support repayment of quota purchase costs, there is no scenario in which the fishery is self-sustaining for owner-operators over the long-term.

The results of the historical costs and earnings surveys for 1988, 1991 and 1994 are compared to 2016 values to consider how financial performance has changed over time (Table 4.2). The historical results are sourced from two reports: an evaluation of the halibut fishery conducted in 1992 (EB Economics 1992); and a 1997 report on the BC fishing fleet financial returns in 1991 and 1994 (Gislason 1997). Both reports were commissioned by DFO, and cited the DFO costs and earnings survey as their data source for costs. There are discrepancies in the 1991 values between the two reports that can be attributed to minor methodological differences. Values for 1991 from both reports are included here. There are a number of data availability issues with the historical surveys that had to be accounted for in the comparison. Fixed costs, interest and depreciation were not broken down by fishery in the historical surveys. As well, taxes and amortization data were not collected. Furthermore, the practice at the time of the 1992 report was to not separate out the captain share. For these reasons, the earnings before interest, taxes,

depreciation, amortization, captain share and fixed costs (EBITDACF) values per pound are compared between years. For 2016, a range of values is identified for a lessee owner-operator with minimum quota holdings (710 lb [322 kg]) fishing a full block of quota (61,000 lb [27,669 kg]). The low end of the range represents the high end of operating costs and an after-lease price of \$1.15/lb and the high end of the range is for the low end of operating costs and an after-lease price of \$2.00/lb.

Table 4.2 Earnings before interest, taxes, depreciation, amortization, captain share and fixed costs, per pound of halibut quota, for the years 1988, 1991 (from two sources), 1994 and 2016, in current dollars and constant 2016 dollars. For 2016, the value represents the range of expected earnings for a lessee owner-operator with minimum quota holdings.

Year	current \$/lb	constant 2016 \$/lb
1988 ^a	0.87	1.57
1991 ^a	1.76	2.73
1991 ^b	1.90	2.94
1994 ^b	2.42	3.63
2016		-0.16 to 0.92

^a (EB Economics 1992)

^b (Gislason 1997)

4.7 Discussion

There is no scenario in which the ITQ halibut fishery in BC is self-sustaining for owner-operators. It is not possible for new owner-operator entrants, or existing entrants with minimal quota ownership, to earn sufficient income from the halibut fishery to purchase quota and improve their ownership position. The only possible avenue for new entrants to become owners is through the infusion of external capital not tied to commercial repayment terms. Crews on majority lessee vessels cannot earn a living wage, contributing to difficulties attracting and retaining crew, consistent with well-documented negative impacts of ITQs on employment

(Casey et al. 1995; Gislason 2008; Guyader and Thébaud 2001; Carothers 2015). This raises serious questions about the success of the ITQ management system, given longstanding objectives for fisheries in Canada to support viable, independent inshore fleets.

4.7.1 Landed Price Gains and the Distribution of Earnings

ITQs have been lauded as delivering improved financial performance to halibut fishery participants, driven by higher landed values associated with spreading catch over a longer time period to reduce market gluts and enable access to higher value markets and more efficient fishery operations (Casey et al. 1995; EB Economics 1992; Gislason 2008). A 1992 evaluation of the halibut IQ fishery (EB Economics 1992) attributed 40% of the near doubling in the landed price between 1988 and 1991 to individual quota (IQ)⁵ implementation. A 1995 paper on the fishery attributed a 55% increase in landed price to IQs (Casey et al. 1995). This early narrative has been persistent, with these reports consistently referenced in justifying and promoting the ITQ management system (Grafton et al. 2006; Gislason 2008; B. R. Turriss 2010). However, these claims should be considered with caution, as a re-examination of the price trends do not support these conclusions (Edwards 2019); the evaluations did not follow best practices; and, the distribution of the benefits from landed value gains was not considered.

Based on annual DFO price data from the required submission of fish sales slips, rather than on a costs and earnings survey conducted every 3 years, and once corrected for inflation, the halibut landed price was increasing in BC prior to IQ implementation. The landed price in 1990, one

⁵ The halibut fishery was a non-transferable individual quota fishery for its first two years of implementation (1991 and 1992). Transferability was introduced on a limited basis in 1993 and transferability restrictions gradually loosened over time until quota became fully transferability in 1999.

year prior to IQs, increased 33% over the 1989 price. The price in 1991 (the first year of IQs) increased 14% over the 1990 price, and the price in 1994 was a 37% increase over the 1990 price. To attribute these increases to IQs, given the existing trend prior to IQs, is not supportable. Furthermore, these studies considered only IQs versus business-as-usual scenarios, on the assumption that in the absence of IQs, no management changes would have been made to the fishery. Evaluations should not only consider the chosen management approach versus business-as-usual, but also alternative approaches that could have been used (Day and Gunton 2003). There were a number of alternative management approaches that also could have resulted in catch spread over a longer time period (Pinkerton 2013; Pinkerton et al. 2018); however, these alternative approaches were not evaluated at the time that ITQs were being considered for implementation nor in the subsequent evaluation of the ITQ fishery commissioned by DFO. And finally, and perhaps most importantly, despite landed price increases, lessee owner-operators are realizing earnings per pound substantially less than earnings per pound available to fishery participants in 1988, let alone in 1991. Financial improvements in the fishery attributed to IQs, whether appropriately attributed or not, are not available to fishery participants that entered the fishery following IQ implementation. In contrast, the Atlantic halibut fishery has been successfully managed to spread effort throughout the year and receives some of the highest halibut prices in Canada, with no investor class and the fishermen as the recipients of the majority of the landed value from the fishery (Pinkerton et al. 2018; Fish, Food and Allied Workers 2018).

4.7.2 Original Grantees and New Entrants

Quota lease prices are expected to reflect the resource rent generation in the fishery (Eythórsson 1996), and sustained high prices are claimed as proof that a fishery is successful and healthy (Newell, Sanchirico, and Kerr 2005). The implicit assumption is that lease prices will adjust to be profitable for the lowest cost operators. In the case of the BC halibut fishery, profitability is much more a function of quota holdings than operating costs. Operating costs are estimated to equal between 3% and 10% of gross revenue. For a lessee owner-operator, owning minimum quota, lease fees are estimated to equal between 72% and 81% of gross revenue. Half of the owner-operators active in the fishery are original grantees, many of whom have significant quota holdings. About half of owner-operators in 2016 owned more than 10,000 lb (4536 kg) of quota, of which 80% were original grantees and the remaining 20% were early entrants having entered the fishery by 2001. An enterprise with significant quota holdings will have substantially better financial performance than an enterprise with minimum holdings, regardless of their relative operating costs.

New entrants are continuing to participate in the halibut fishery because they have few other employment opportunities and can leverage existing assets such as vessels and gear. For these lessees, financial performance is very sensitive to lease price and fishing costs. If owner-operators receive an average or better than average after-lease price and are able to keep fishing costs low, then the captain and crew can earn a marginal living, in most years. Over the short-term, this is rational, if highly optimistic, behaviour. However, at current lease rates and costs of fishing, long-term requirements, such as major vessel repairs and vessel replacement, are not being met.

As original grantees and early entrants exit the fishery and sell their quota or transition to the investor class, owner-operators who own a significant portion of the quota that they fish are not being replaced. Yet it is the quota-owning owner-operators that past evaluations of leasing in the halibut fishery have focused on (Nelson 2009; 2011), which has provided a much more positive impression of financial performance than is the reality for new entrants. New entrant owner-operators own virtually no quota and are not buying halibut quota in any appreciable amount. The lack of investment can be attributed to a combination of factors: (1) poor returns to lessees in the halibut fishery, (2) high quota purchase costs, and (3) limited access to capital.

4.7.3 Fishery Reinvestment and Fleet Renewal

While fishing enterprises are an important source of jobs and economic activity for coastal communities, this is not true of investors that lease their quota out. The practice of leasing quota, and high lease prices, are undermining fishing enterprises and eroding the ability of fishing enterprises to reinvest in their business and remain viable. For lessor quota owners who do not own a fishing enterprise, there is no financial incentive to make investments in a fishing enterprise. The profit generated from leasing their quota to others to fish is higher than what could be earned from fishing it, given costs to purchase and maintain a vessel. For lessee fishing enterprises, revenues after-lease do not support re-investment in the fishery. For original grantee owner-operators, with existing investments in vessels and who are also participating in other fisheries, the revenue generated from fishing their own quota can be enough of an incentive to continue fishing, particularly if they receive a preferential lease rate to supplement their own quota holdings. As these original grantees age, however, they are leaving the fishery and the new

entrants replacing them do not have the benefit of existing quota holdings that they can leverage for better lease prices or to supplement their revenue from leased quota. This has implications not just for the fishery and owner-operator fleet, but also for the BC shipbuilding, ship repair, and marine service industries, and associated coastal communities.

4.7.4 Data Availability and Analysis

Assessing the financial performance of fishing enterprises can provide insights into the viability of individual enterprises that comprise the fishing fleet, the distribution of the costs and benefits of the fishery, the potential for new entrants to replenish and maintain the fleet, and the ability of enterprises within the fleet to reinvest. There are significant data gaps in Canada's fisheries management system, including sparse socio-economic data (Cisneros-Montemayor et al. 2017). A lack of disaggregated socio-economic data can negatively impact the design and assessment of management measures (OECD 2019). A Canadian Parliamentary House of Commons Standing Committee on Fisheries and Oceans report, released in May 2019, provided twenty recommendations for transforming the West Coast fisheries licencing system, including three recommendations specific to data, analysis and reporting. One of these recommendations was that DFO "prioritize the collection of socio-economic data for past and future regulatory changes and make this information publicly available" (FOPO 2019a, 33). The collection of costs and earnings data, and the subsequent analysis of that data to understand the impact of ITQ management and quota leasing on the halibut fleet, would address a critical gap in the evidence-base and inform decision-making in BC fisheries. This analysis would also provide insights into the impact of leasing in ITQ fisheries of relevance to other jurisdictions with ITQs or considering their implementation.

4.8 Conclusion

Owner-operators are being priced out of ownership in the halibut fishery. There is no reasonable avenue for new owner-operators to enter the fishery. The financial performance of original grantee owner-operators has led to the mistaken impression that the situation for owner-operators within the halibut fishery is sustainable over the long-term. The financial performance of new entrants into the fishery tells a different story, and points to a lack of renewal and re-investment and unsustainable lease prices that are inhibiting the renewal of the fleet and fishery. This jeopardizes the safety of the fishing fleet and suggests that the long-term outlook for the fishery is a continued decline of the owner-operator fleet. This has implications not just for the fishery and owner-operator fleet, but also for the businesses that provide services to the fishing sector and the communities that rely on the fishery.

The halibut fishery is an important source of employment and business opportunities in BC, but leasing is critically undermining the ability of the fishery to provide prosperity to anyone beyond a few investors and original grantees. Fisheries policy should consider the overall objectives for the fishery, which in Canada includes supporting prosperous communities, the equitable distribution of benefits, and maintaining a viable and stable fleet. With new entrants priced out of ownership, the owner-operator fleet struggling to remain viable, and the wealth from the fishery increasingly captured by investors that do not contribute to the fishery or the coastal communities that have traditionally depended on the fishery, questions should be raised about whether the management approach that has been taken is appropriate. New costs and earnings data collection processes and regular analysis and reporting would provide much needed insights into the state of the fleet and the extent to which objectives for the fishery are being met.

Chapter 5: Unscrambling the Omelet: Introducing socio-economic measures to an established Individual Transferable Quota fishery

In Canada, fisheries are expected to contribute to prosperous coastal communities and the maintenance of stable and viable fishing fleets. Mounting evidence has definitively demonstrated that these objectives are not being met in Canada's Pacific fisheries, with the wealth from the fisheries increasingly captured by investors and corporate interests. Representatives of the government management agency have asserted that the Pacific fisheries licencing system is like an omelet – an egg that has been scrambled and partially or even “fully baked” (Minister of Fisheries and Oceans 2019), implying an irrevocability to past licencing decisions. However, the Government of Canada has considerable scope to make changes to address failings in the current management system. This chapter considers options for introducing measures to established fisheries to achieve socio-economic objectives.

5.1 Introduction

The Pacific fisheries licencing system in British Columbia (BC), Canada has been likened to an omelet (Minister of Fisheries and Oceans 2019), implying that past licencing decisions in BC have granted *de facto* property rights which are essentially irreversible. That seemingly rights based licencing systems are viewed as unalterable once implemented is a common refrain in fisheries around the world, particularly so for those fisheries managed under individual transferable quotas (ITQs) (Arnason 2007; Scott 1996; 2000; Eythórsson 1996), that provide “the illusion of certainty” (Charles 1997, 108). ITQs are permits allowing the holder of the ITQ to catch or transfer a share of a total allowable catch (TAC). ITQs are discussed by many as if they

were private property rights and licencing systems based on them have been widely promoted as a means to achieve positive economic and conservation outcomes (Casey et al. 1995; Grafton 1996; Grafton et al. 2006; Branch, Rutherford, and Hilborn 2006; Grimm et al. 2012). Although ITQs do not legally qualify as property in most jurisdictions, including Canada, ITQs are generally treated as private property in practice (Grafton et al. 2006), and property rights are regarded as a critical component of ITQs (Arnason 2005). The seeming security of access that ITQs offer through the establishment of pseudo-property rights has been cited by proponents as an argument for their implementation (Grafton et al. 2006; Arnason 2005; Hannesson 2004; Scott 1989). The introduction of property rights (*de jure* or *de facto*) in fisheries has been shown to contribute to inflexible fisheries management that can be incompatible with the precautionary approach to fisheries management (Appleby, Cardwell, and Pettipher 2018; Bromley 2009; Phillips, Kriwoken, and Hay 2002; Acheson, Apollonio, and Wilson 2015; Copes 1998). The precautionary approach is a cornerstone of fisheries management in Canada (*Oceans Act (S.C., 1996, c. 31)* 1996; Government of Canada 2002). Furthermore, ITQs have been widely criticized for their inequitable distribution of benefits, the social and economic outcomes for fisheries-dependent communities, and poor outcomes in resilience, employment, and safety (McCay 1995; 2004; Pálsson and Helgason 1995; Copes and Charles 2004; Ussif Rashid Sumaila 2010; Carothers, Lew, and Sepez 2010; Pinkerton 2014; Emery et al. 2014; Carothers 2015). This has not prevented their continued adoption, however, with ITQ management in widespread use, including in Canada, Australia, Iceland, Chile, New Zealand, and the United States (Arnason 2012; OECD 2019; 1997).

Fisheries are expected to achieve a myriad of social, economic and ecological objectives. In Canada, fisheries management is expected to meet a full spectrum of socio-economic objectives, including benefits to adjacent communities, maintenance of small boat independent fleets, and distribution of benefits amongst participants (Stephenson et al. 2018). The Government of Canada is mandated to safeguard the interests of Canadians in managing fisheries as a common pool resource (*Fisheries Act (R.S.C., 1985, c. F-14)* 1985). The 1976 ‘Policy for Canada’s Commercial Fisheries’ (Government of Canada 1976) established the national fisheries policy in Canada for the modern era and stated that “the guiding principle in fishery management no longer would be maximization of the crop sustainable over time but the best use of society’s resources. ‘Best use’ is defined by the sum of net social benefits (personal income, occupational opportunity, consumer satisfaction and so on) derived from the fisheries and the industries linked to them” (p. 53). These objectives have since been affirmed in legislation (*Oceans Act (S.C., 1996, c. 31)* 1996) and policy (DFO 1999a; 2018a). Past Fisheries Ministers have reaffirmed that fisheries in Canada are meant to provide a good living for the people in the industry (D. Anderson 1998), where the benefits of the fishery go to those who work hard to prosecute it, and the communities that support them (LeBlanc 2017) and DFO has repeatedly affirmed the objective of stable and viable fleets among other objectives (DFO 1999a; 1990). In testimony to a parliamentary standing committee in 2019, the senior DFO official for the Pacific region summarized the objectives that the management regime is intended to achieve as: (1) conservation outcomes; (2) compliance with legal obligations, such as First Nations rights; (3) promoting the stability and economic viability of fishing operations; (4) encouraging equitable distribution of benefits; and, (5) facilitating the necessary data collection for administration, enforcement and planning purposes (DFO 2019b).

Fishermen, academics, Indigenous Peoples and representatives from health authorities and not-for-profit organizations have identified the licencing system in BC as responsible for undermining the resilience of the BC inshore fishing fleet⁶ and the communities that rely on them (FOPO 2019b; 2019a). Inattention to the social and economic consequences of fisheries management has allowed absentee owners and corporate interests to take control and concentrate the wealth from the fisheries into very few hands, to the detriment of working fishermen and coastal communities, including First Nation fishermen and communities (FOPO 2019b; Nuu-chah-nulth Tribal Council 2005; United Fishermen and Allied Workers' Union 2005; Ahousaht Indian Band and Nation v. Canada (Attorney General) 2009). The management agency, Fisheries and Oceans Canada (DFO), does not collect data or publicly report on beneficial ownership, quota leasing, corporate ownership, absentee ownership or the distribution of benefits in the BC fisheries to directly address the concerns that have been raised. Corporate fishing representatives have dismissed the concerns raised as largely unfounded (BC Seafood Alliance 2019a; Morley 2019). However, independent analysis of ownership and leasing trends in the BC fisheries have demonstrated increasing corporate concentration and control (Haas, Edwards, and Sumaila 2016; Edwards and Pinkerton 2019c), high levels of corporate and absentee ownership (Edwards and Pinkerton 2019b), the loss of fisheries access from coastal communities (Edwards et al. 2006), and the financial barriers that quota leasing poses to new entrants (Edwards and Pinkerton 2019a). Calls for further examination of the impacts of licencing policy in the Pacific fisheries

⁶ The inshore fishing fleet in BC is the fleet operating in fisheries that are primarily fished by vessels under 65' in length, characterized as historically independent, owner-operator, primarily operating in coastal waters, and distributed along the BC coast with close ties to coastal communities.

prompted a review by the Parliament of Canada House of Commons Standing Committee on Fisheries and Oceans (the ‘Committee’) into the issue (FOPO 2019a).

In May 2019, the Committee issued a unanimous report “West Coast Fisheries: Sharing risks and benefits” following public hearings during which the Committee heard testimony from 40 witnesses (FOPO 2019a). The Committee made 20 recommendations for consideration by the Government of Canada. The Committee’s 20 recommendations generally fall within one of four categories: policy, planning and process; data, analysis and reporting; support programs and structures; and, management. A heavy emphasis was placed on policy, planning and processes, including the importance of stakeholder engagement and representation. The lack of data and analysis was also highlighted, with three recommendations focused on improving data collection, analysis and data availability. Support programs and structures were also recommended, including loan boards, licence banks, and loan and mentorship programs. A number of discrete management actions were identified, with two recommendations focused on transparency and market access. The issue of quota leasing costs was addressed in three recommendations: (a) as a topic for consideration by an independent commission, (b) within a support program recommendation related to financial incentives, and (c) as a management action, directing DFO to take immediate steps to regulate quota leasing costs.

This chapter provides an overview of measures that can be taken to transform an established fisheries licencing system to achieve socio-economic objectives, and considerations for ensuring a just and fair approach for fisheries transformation.

5.2 Measures to achieve socio-economic objectives

5.2.1 Ownership measures – policy, regulations and licence banks

Measures to restrict, control, or direct ownership are common in fisheries around the world.

These can take the form of policy direction providing guidance, regulations to restrict ownership and ensure active participation in fisheries by owners, and collective ownership approaches to support and encourage certain types of participants or participation, such as licence banks. Most individual quota (IQ) managed fisheries around the world have ownership restrictions, that often extends to transferability restrictions to ensure active participation of owners. BC's ITQ fisheries are unusual among global IQ fisheries in the complete absence of ownership restrictions. Some BC fisheries have a cap on how much quota can be held on a licence (e.g., halibut, hake), but this is only at the licence level; there is no restriction on how many licences can be owned by an individual or company, and thereby no cap on ownership. Most licences in BC are vessel-based licences; the licence is attached to the vessel, and the registered owner of the vessel is the acknowledged owner of the licence. For an individual to be the registered owner of a fishing vessel, they must be a Canadian citizen or permanent resident. However, there is no requirement that vessels be registered to an individual; they can be registered to a company, and there is no requirement that the owner of the company be a Canadian or permanent resident, or even a requirement to declare ownership of the company. Furthermore, there is no requirement that the company be registered in Canada, with foreign registered companies able to register vessel ownership. There are also no requirements for owner-operator, owner-on-board, or any other active participation measure for licence ownership in BC.

The Tasmania rock lobster fishery has a maximum ownership of 200 quota units (van Putten and Gardner 2010). Alaska fisheries have a number of active participation measures, including leasing prohibitions and owner-on-board requirements in the halibut, sablefish and Bering Sea and Aleutian Islands crab fisheries (Szymkowiak and Himes-Cornell 2017). IQ fisheries in Denmark, Norway, Sweden and the United Kingdom have transferability limits (Asche et al. 2008). Sweden has ownership concentration limits (Stage, Christiernsson, and Söderholm 2016). New Zealand ITQ fisheries prohibit foreign ownership and have ownership concentration limits (Macgillivray 1990). Iceland has ownership caps (Oostdijk et al. 2019) and Icelandic fishing companies are required by law to be controlled by Icelandic entities and not to exceed 25% ownership by foreign entities (Government of Iceland 1996). Atlantic Canada fisheries have a fleet separation policy prohibiting corporate ownership in the inshore fisheries, owner-operator requirements for the inshore fleet, and foreign ownership restrictions (Nguyen 2014; DFO 2007b).

In addition to policy and regulations to achieve ownership objectives, licence banks are a tool that has been used in fisheries for decades (Copes 2000). Some early examples include the Community Development Quota (CDQ) program in Alaska and the Northern Native Fishing Corporation in British Columbia (Pinkerton 1987b; Ginter 1995; Pinkerton 2019). A licence bank refers to the collective ownership of licences and/or quota by a government (federal, Indigenous, provincial or municipal) or non-governmental organization. While many licence banks have similarities in their design and objectives related to social and economic outcomes, the licence bank concept does not dictate the purpose or objectives, and it is the objectives that will dictate the appropriate design. These objectives can vary widely, from the repatriation of

licences to marginalized interests, maintaining access to adjacent coastal resources, providing a pathway for new entrants, reducing gear impacts, or securing access rights for members (Carothers 2011; Ecotrust Canada 2008; GAP2 2014; Pinkerton 2019; WCVI Aquatic Management Board 2009; Native Brotherhood of British Columbia 1989). Licence banks can also serve as, or support, community hubs: intermediary organizations that provide a number of benefits to community members, including facilitating collaboration and providing support services (Wiber et al. 2004; Tolley and Hall-Arber 2015). Licence banks are a tool that holds promise, but that also has challenges and limitations that should be carefully considered (Edwards and Edwards 2017; Sutcliffe, Edwards, and Edwards 2008).

To be established, licence banks require an initial allocation of licences and/or quota, or the allocation of financial resources to purchase licences and quota from the market. If the licence bank is to be self-sustaining, this allocation must be sufficient to support the licence bank's operations. To be successful, the allocation must be sufficient to achieve the licence bank's objectives, either immediately through the initial allocation or over the long term, with the initial allocation and licence bank design supporting generation of the income necessary to reinvest. The initial capitalization of the licence bank is the major impediment to the wider adoption of licence banks. Options for capitalizing the bank include investment by fishermen, by government, and/or by a foundation or through the allocation of the resource directly. The allocation of the resource directly is only a viable option at the implementation of an ITQ system. For existing ITQ managed fisheries, a financial allocation is required to compensate existing rights holders while establishing the licence bank to address intergenerational transfer and equity issues. Investment by fishermen or communities is rarely an option in such cases as

the identified need for a licence bank is typically for those that have been disenfranchised from the fishery with no means of entry. The cost of purchasing any meaningful amount of quota would be beyond their financial means. Both government and foundations have the financial wherewithal to capitalize a licence bank and support from one or both is critical.

Despite the common use of ownership regulations and licence banks to achieve socio-economic objectives in fisheries, there are a number of criticisms of these measures as ineffective or insufficient to meet socio-economic objectives (Carothers, Lew, and Sepez 2010; Szymkowiak and Himes-Cornell 2017; Edwards and Edwards 2017; Devlin 2009). At the same time, any restrictions on IQs, particularly related to transferability, have been criticized by ITQ proponents as undermining the potential of ITQs to monetize fisheries and increase rent generation (Arnason 2005; Asche et al. 2008). This tension highlights the importance of having clear objectives to guide decision-making and the evaluation of outcomes, and also the importance of considering best practices and lessons learned from other jurisdictions. This tension also points to the importance of data and analysis to be able to track ownership and evaluate the performance of the fishery system against objectives. There is no one measure that can be expected to address all the concerns raised with the fishery. Just as ITQs are not a panacea (Young et al. 2018), neither are approaches such as owner-operator or licence banks. Their success or failure will depend on the specific design and implementation, and how the measures operate in concert given the particulars of the given context.

5.2.2 Fair-Share

The failure of the fisheries licencing system in BC to achieve socio-economic objectives related to the distribution of risks and benefits, concentration of ownership, community impacts and accessibility for new entrants led to the development of a ‘shared risks and benefits’ plan supported by a number of BC commercial fishermen (B. Turris and Mose 2018). Given the urgent call for action to maintain what remains of the inshore fleet in BC, and the expected multi-year timeline for implementing transformation of the licencing system in BC, the House of Commons Standing Committee, in their report on the West Coast licencing system, recommended that a shared risks and benefits plan be implemented immediately.

The shared risks and benefits plan was developed by a diverse group of fishing interests in BC. This plan would provide immediate relief to lessee fishermen by imposing a cap on lease fees as a proportion of landed value. This could be done through the collection of additional data by DFO through the fish sales slip, to explicitly require recording both landed price and lease price, and requirements added to the integrated fisheries management plan (IFMP) and conditions of licence, capping the percentage of landed value that can be charged for lease fees. This would also require enforcement, to ensure that landed prices are not undervalued on the fish slips, with the available sanction being the risk that owners found to be violating the licence conditions would not have their licences reissued in subsequent years. The authority of the Minister to mandate these types of requirements and enforce them through the licence issuance system has been affirmed in court through the Elson case (*Elson v. Canada (Attorney General)* 2017). This approach could be implemented in the short term and is dependent upon DFO to enact changes in data collection, the IFMP, and monitoring and enforcement.

An alternative approach to achieve ‘fair-sharing’ would be to use collective bargaining. There is a long history of collective bargaining in fisheries, including within British Columbia. There have also been repeated attempts to limit the ability of fishermen to bargain collectively (Crutchfield 1955; United Fishermen and Allied Workers’ Union et al. v. British Columbia Provincial Council 1977). Legal arguments disqualified fishermen and their trade unions from collective bargaining on the basis that fishermen did not meet legal definitions of employees. The legal framework to support participation of fishermen as designated ‘employees’ in collective bargaining was adopted in British Columbia in 1996 through the *Fishing Collective Bargaining Act* [RSBC 1996]. However, this legislation went unused for more than two decades. It wasn’t until June 2019 that the first bargaining unit for workers on commercial fishing boats in BC was certified, to enable this group of workers to engage in collective bargaining with the protections afforded by the labour code. The bargaining unit encompasses all salmon seine boat crew members employed by Canadian Fishing Company, including captains, engineers, deckhands and cooks. Other fisheries and other employers are not part of this bargaining unit. There are challenges to applying the existing collective bargaining legislation to a multi-buyer fishery, however. An approach that would depend on the provincial government and would likely take 1-2 years to enact would be for the provincial government to make changes to the BC collective bargaining legislation to mirror the legislation in Newfoundland and Labrador (NL). NL has a Standing Fish Price Setting Panel that facilitates collective bargaining, establishes parameters for negotiation, and acts as an arbitration panel for the parties in setting fish prices. The Panel may also set fish prices if the parties to negotiation are unable to agree on price. Amendments to the NL Fishing Industry Collective Bargaining Act were passed in 2006 and provided the legislative framework for the Panel.

A further option, although longer-term still, would be for the Government of Canada to enact legislation similar to the *Canadian Dairy Commission Act*. The Dairy Commission is intended to provide “efficient producers of milk and cream with the opportunity of obtaining a fair return for their labour and investment and to provide consumers of dairy products with a continuous and adequate supply of dairy products of high quality”. Among the powers of the Commission is establishing prices. Canada did at one time have legislation directly related to fisheries prices. The *Fisheries Prices Support Act*, passed in 1944, provided the legislative authority to establish the Fisheries Prices Support Board. The Board had the authority to buy and sell fishery products and influence prices paid to producers in that way, but had no direct authority to set prices. The *Fisheries Prices Support Act* was repealed in 2002 and was not replaced.

5.3 Equitable distribution and a just and fair approach to transformation

The issue of equitable distribution, inextricably linked to fairness (Doering et al. 2016), is a longstanding objective for fisheries in Canada. It was cited as an objective by a DFO official in testimony to a parliamentary committee in 2019 (DFO 2019b). The 1976 national fisheries policy identified ten policy objectives for fishery management and development, one of which was “[a]llocation of access to fishery resources in accordance with optimal (best) use, an assurance of equity of access and security of tenure for resource users” (Government of Canada 1976, AI-1). Despite the longstanding objective for equitable distribution of benefits from the resource, spanning more than four decades of DFO policy and management, this issue is frequently overlooked and seldom evaluated. DFO has not defined ‘equitable distribution’ or

‘equity of access’, equity issues are not subject to regular assessment and reporting, and a number of important policy documents do not acknowledge this objective.

A review of more than thirty DFO policies and frameworks found few references to equity or equitable distribution. Most of the reviewed documents do not reference ‘equity’ or ‘equitable distribution’ at all, including the Sustainable Fisheries Framework. The “Atlantic fisheries policy review - A policy framework for the management of fisheries on Canada's Atlantic Coast” references the equity objective in the introduction and acknowledges the “New Access Framework” which includes as one of three overarching principles that “the Minister will ensure that decisions are equitable — that they are fair both in procedure and substance” (DFO 2004). The “Integrated Aboriginal Policy Framework” has one reference to equity, stating that “DFO’s Integrated Aboriginal Policy Framework addresses interests and objectives of all users in a positive, responsive and equitable fashion” (DFO 2007a). The “Pacific Wild Salmon Policy” references equity only in the appendix on the legal and policy background, in the section on agreements. The first reference is to the Pacific Salmon Treaty between Canada and the United States, that requires “the conduct of fisheries so as to provide for optimum production and equitable exploitation of salmon stocks”. The second reference is to acknowledge that Canada ratified the UN Convention on Biological Diversity, which had three main goals: “(1) the conservation of biodiversity; (2) sustainable use of the components of biodiversity; and (3) fair and equitable sharing of the benefits arising from the commercial and other use of genetic resources” (DFO 2005). The “Wild Salmon Policy: 2018-2022 implementation plan” has only one reference to equity, in the glossary for the definition of the ‘ecosystem-based approach’: “a strategy for the integrated management of land, water and living resources that promotes

conservation and sustainable use in an equitable way; conservation of ecosystem structures, processes and interactions through sustainable use” (DFO 2018b). The one document reviewed that addressed equity in a substantive way was the “New Access Framework”, released in 2002 to “guide all decisions on new or additional access to Atlantic commercial fisheries which have undergone substantial increases in resource abundance or landed value” (DFO 2002). The framework identifies two components of equity – procedural and substantive – and defines them:

1. Procedural Component: Access criteria must be applied in a fair and consistent manner through a decision-making process that is open, transparent and accountable and that ensures fair treatment for all.
2. Substantive Component: The fishery is a common, public resource that should be managed in a way that does not create or exacerbate excessive interpersonal or inter-regional disparities.

The framework also identifies four criteria against which access would be considered. The first of these, conservation, is primary and considered first and independently of the other criteria. The remaining three criteria consist of: adjacency (priority of access to those closest to the resource), historic dependence (priority of access to those who historically participated in and relied on the fishery), and economic viability (promote rather than compromise economic viability of existing and potential new entrants, to contribute to economic resilience and stability of individuals and the fishing industry as a whole). This framework, while specific to new access to fisheries in the Atlantic region, provides valuable insight into what is meant by equitable distribution and can be used as guidance for considering the equity issue more generally for fisheries in Canada, particularly as it relates to the initial allocation of resources.

For an established fishery, the initial allocation decisions have been made and the challenge is one of balancing the rights and interests of existing benefit recipients with those that have a claim based on equity considerations. This challenge is apparent among those in the BC inshore fleet who consider the current distribution of benefits as inequitable but who also own licences and quota, often purchased at significant cost. With corporate and absentee owners receiving lease fees of more than 80% of landed price in some fisheries, many in the BC inshore fleet are struggling financially, particularly given the cost of buying licences. Fishermen have expressed the concern that the inshore fleet could be further negatively impacted through arbitrary and uncompensated losses, and this has been a source of resistance to change in the fisheries. This concern is not without merit. Despite the longstanding commitment to equity, there are a number of recent examples of reallocation of fishing access without compensation. In 2012, the then-Minister of Fisheries and Oceans, acting against the advice of his department, made the decision to permanently reallocate 3% of the halibut total allowable catch (TAC) from the commercial fishery to the recreational fishery without compensation (*Malcolm v. Canada (Fisheries and Oceans)* 2013). The salmon fishery has also been subject to reallocation of access, from the commercial to recreational fishery, between different sectors within the commercial fishery (*Kimoto v. Canada (Attorney General)* 2011), and to Indigenous fisheries (DFO 2019d). The loss of access to meet conservation targets, including the establishment of marine protected areas, has also proceeded without compensation to those whose livelihoods are affected, despite the need to consider social justice when transitioning to sustainability (Bennett et al. 2019). There are also examples in which equity issues have been taken into account, however. The program documents for the Pacific Integrated Commercial Fisheries Initiative (PICFI), a program to repatriate fisheries access to Indigenous Peoples through the purchase of licences and quota (DFO 2008b)

has a principle of “Equitable, Fair and Transparent - First Nations commercial access is acquired through the voluntary relinquishment of existing commercial fishing licence eligibilities and quota”.

There are legal, social, political and moral considerations that argue against reallocation without compensation. A court case brought against the Government of Canada related to the loss of income arising from a Pacific salmon allocation decision affirmed the Minister’s legal authority (Kimoto v. Canada (Attorney General) 2011). The justice in that case, in rendering judgement, concluded that “there is no legal obligation on the part of the Government to help make good the Applicants’ loss, although politically and morally that may well be the right thing to do”. The law has been clear in Canada: the minister has wide discretion, and that discretion has been exercised in ways that have at times been characterized as unjust and engendered fear among those that stand to lose what little they do own. Any fisheries transformation that impacts existing access rights, even in the pursuit of achieving a more equitable distribution of benefits, should consider the arguments against arbitrary and uncompensated reallocation:

1. Many international trade agreements, including the North American Free Trade Agreement and its replacement the Canada-United States-Mexico Agreement (CUSMA), have provisions addressing expropriation and compensation. Fishing licences fall into a grey area, in terms of whether they qualify as a “property right or property interest in an investment” that would then require compensation, which is one of a number of outstanding questions as to the extent to which trade agreements would apply to fisheries in Canada (Nguyen 2014).

2. Expropriation without compensation is bad for business, increasing uncertainty, undermining business confidence and discouraging investment (Tisdell and Harrison 1999).
3. Government actions viewed as arbitrary and unfair are bad for democracy, undermining trust in government (Andrain and Smith 2006).
4. The arbitrary deprivation of property and livelihoods violates the tenets of human rights, particularly when it is small scale fishermen that are affected (Moser et al. 2001; Conway et al. 2002; Ratner, Åsgård, and Allison 2014). Canada is signatory to both the UN Universal Declaration of Human Rights and the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries, which address this issue (FAO 2015; United Nations 1949).

While there have been attempts to characterize the options for fishery transformation as one of (a) costly expropriation with compensation, (b) unfair and damaging expropriation without compensation, or (c) do nothing (Boyes 2019), there are other options. Phased approaches can be enacted that enable industry-funded buyouts of existing owners that do not meet incoming ownership requirements. Phased approaches provide time for the market for licences and quota to adjust, to avoid large swings in purchase prices, and for the orderly exit of those that do not meet the required conditions for ownership or use. A phased approach was taken with implementation of the policy for Preserving the Independence of the Inshore Fleet in Canada's Atlantic Fisheries (PIIFCAF), where owners that violated the policy have been provided seven years to exit (DFO 2007b). The use of phased approaches through policy and regulation to address failures to meet conservation objectives is common practice in Canada's fisheries, such

as with the BC Commercial Groundfish Integration Plan. This plan was developed and implemented through a phased, multi-step process, over a period of years. A policy paper was released in 1999, a conservation strategy in 2002, and a set of principles for the groundfish fisheries in 2003, followed by a two-year consensus-based planning process, release of the plan in 2005, implementation in 2006 as a three-year pilot and permanent adoption in 2009 (CIC 2005; DFO 2009a; PFMI 2003). In both cases, extensive consultation and time for planning and implementation were afforded to the process.

Governments have to balance many issues when making decisions, including legal obligations, international commitments, and issues of fairness and moral responsibility. The issue of human rights within a pseudo-property rights regime highlights the challenge that governments face. While the arbitrary removal of property and livelihoods can be a violation of human rights, the use of property rights regimes over a common pool resource itself can be a violation of human rights. The United Nations Human Rights Committee declared that the Icelandic ITQ fishery system violated basic human rights, turning local fishing rights into a transferable financial commodity with the potential to cause irreversible damage to people and communities (Einarsson 2015). There are no easy answers or simple solutions, but there are objectives and principles, and best practices, to guide actions. There is an indisputable objective for the equitable distribution of benefits from Canada's fisheries. Achieving that objective should in turn embrace equity as a principle guiding planning and implementation of a process to transform the Pacific fisheries.

5.4 Considerations on a process to implement transformation

The use of collaborative processes to address complex multi-stakeholder issues is a well developed field (Innes and Booher 2018; Ury 1993; Frame, Gunton, and Day 2004). Day and Gunton (2003) summarize the three phases of collaborative planning from an extensive review of the collaborative planning literature. They outline the three phases consisting of multiple steps, from pre-negotiation which includes preparing draft terms of reference that include objectives, rules of procedure, roles and responsibilities, timelines, and logistics, through negotiation to come to and bind parties to an agreement, through to post-negotiation, commencing implementation and creating a monitoring process to evaluate. They also identify ten key design and management principles, including preconditions for the process, inclusive representation, clear ground rules, addressing inequities, ensuring process accountability and sound process management, and the use of multiple-objective evaluation to evaluate success.

The House of Commons Standing Committee, in their recommendations on the West Coast fishery, called for a new policy framework developed through a process of extensive multi-stakeholder engagement and an independent commission to develop the elements of the new licencing regime. Stakeholders identified by the Committee include active fish harvesters, First Nations commercial fish harvesters, processing companies representatives, First Nation licence and quota holder representatives, provincial government representatives, municipal government representatives, coastal community socio-economic development, health and cultural agency representatives, and academic and non-governmental experts. The commission, established according to the best practices outlined by Day and Gunton (2003), would be well positioned to identify and design measures that can be introduced to the BC fisheries to address the current

failings related to socio-economic objectives. Management actions and support programs should be designed in a concerted and deliberate way, well informed by data and analysis and consideration of best practices and lessons learned from around the world.

5.5 Conclusion

“While constitutional law may place some restrictions on the power of the federal government to legislate over tidal fisheries, there is nevertheless broad authority to manage and control those fisheries for biological, economic, social, cultural or other purposes. This broad authority to regulate tidal fisheries clearly gives a flexibility to fisheries managers to alter management schemes where, for example, biological, social or economic considerations dictate a change.” (Government of Canada 1995)

Governments have many tools in their toolbox when fisheries are not meeting objectives and expectations. Governments are able to act through policy, legislation, regulation, programs, procurement and information/communication (Salamon and Elliott 2002). A fair and just approach to transforming a fishery can include publicly funded buy-back of fisheries access, introduction of provisions to meet fisheries objectives that are phased-in over time, and/or implementation of government programs to support the fishery and communities in the transition. There are many examples of how to undertake the complex process of unscrambling the BC licencing system. To move forward requires a commitment to process and implementation which has:

1. clear and agreed upon objectives

2. an inclusive and appropriate decision-making process, which is
 - a) principled (fair and just)
 - b) multi-stakeholder and collaborative
 - c) evidence-based (robust data collection and analysis)
 - d) transparent (in data, in analysis, in decision-making)
3. implementation of a management system that is deliberate in achieving declared objectives, with regular and ongoing evaluation against the full suite of objectives

Addressing the failings of the current licencing system is a choice. Steps to address this issue have been identified. The best practices for managing what will undoubtedly be a complex process are known. The decision to take action to transform the BC fisheries to meet stated socio-economic objectives is not a matter of whether it can be done, but whether it will be done, and if it will be done according to best practices and informed by the lessons learned in Canada and around the world.

Chapter 6: Conclusion

The overarching objective of this dissertation work was to explore the social and economic outcomes of ITQ management in the BC small boat / inshore groundfish fishery. I focused on the BC Pacific halibut fishery as the largest and most valuable of the inshore groundfish fisheries, and with characteristics that made it the most suitable for consideration, including full TAC utilization, low carryover percentage, and high-value quota, which enabled the use of quota holdings as a proxy for catch. I did an extensive review of the literature, including grey literature, through the online federal science library as well as offline material from Library and Archives Canada, to understand the objectives that underpin the fisheries in BC and the evolution of fisheries management in the region. I constructed an ownership database for the Pacific halibut fishery in BC through aggregation of datasets received from DFO, supplemented with multiple additional data sources, that served as the basis for the analysis of ownership and leasing. In Chapter 2, to examine changes in the ownership profile of the BC Pacific halibut fishery over a 25-year period, I considered who owns the quota, including to what extent the owners of quota fish or lease out quota, and if there is an enduring impact of being an initial grantee of quota. In Chapter 3, I considered the extent to which processors exercise control over the halibut quota market through leasing. I developed a network analysis to visualize the role of processors in the quota lease market and considered power dynamics and the role of government in managing markets. In Chapter 4, I constructed a financial enterprise model based on accounting principles for evaluating revenue, costs and income to assess the impact of quota ownership and leasing prices on the financial performance of owner-operator halibut vessels. In Chapter 5, I provided an overview of measures that could be used to transform an established fishery licencing system

to achieve socio-economic objectives and considered issues related to equitable distribution and process to ensure a just and fair approach for fisheries transformation.

6.1 Research summary

The dominant narrative over the previous three decades from both the federal fisheries management agency, Fisheries and Oceans Canada, and corporate fishing representatives has characterized the fisheries on the West Coast of Canada as wholly distinct from the fisheries on the East Coast of Canada – in their origins, their evolution and their objectives. In a rewriting of the history of fisheries policy, BC fisheries have been characterized as traditionally corporate controlled and driven by the objective of maximizing economic returns to licence owners. This has been used to justify the introduction and continuation of pseudo-property rights regimes in fisheries management in BC with no corresponding owner-operator or fleet separation rules, in stark contrast to fisheries management on the East Coast of Canada. Through an analysis of historical documents, and the testimony of senior DFO officials and successive Ministers of Fisheries, it is convincingly clear that this narrative is without factual basis. Fisheries in BC have traditionally been owner-operated, with a predominantly independent and small-boat fleet operating in most fisheries. Fisheries in BC, as with those in eastern Canada, were and are intended to support a viable inshore fishing fleet, providing employment and economic opportunities for coastal communities.

The BC halibut fishery is failing to meet stated objectives for fisheries in Canada. An increasing portion of benefits are accruing to investors and corporate interests, and not to fishery participants and communities. The diminished role of owner-operators is most evident in quota

ownership, as owner-operator quota ownership is replaced by an investor class that has emerged following the introduction of individual transferable quotas. As ownership becomes disconnected from fishing operations, the already questionable assertion that ITQs improve stewardship by linking resource ownership and participation in the fishery becomes untenable.

High lease and purchase prices have meant that there is no reasonable avenue for new owner-operators to enter the fishery. The initial quota allocation process was a boon to the original grantees at the expense of new entrants and crew. As original grantees continue to exit, ownership by owner-operators can be expected to further decline.

The halibut ITQ market in BC, with no government oversight, no transparency, and unequal access to information among parties, is in a state of market failure, not meeting the conditions necessary for a market to function effectively and efficiently. Processors have stepped into the gap that has been created by this market failure, acting as quota leasing hubs with increasing control over the quota market, further shifting the balance of power in the fishery to disadvantage lessee fishing enterprises, with implications for the competitiveness of the market and the ability of fishermen to access the best prices for their product.

The emergent investor class captures the wealth from the fishery without contributing back: they do not invest in boats or equipment; they do not add to coastal infrastructure; and, they do not support innovation of new technologies and techniques. This jeopardizes the safety of the fishing fleet and the viability not just of the fleet but also the businesses that provide services to the fishing sector and the communities that rely on the fishery.

The results of this research should lead to serious questioning of the supposed benefits of ITQs while confirming a number of negative impacts of ITQ management. ITQ management systems, particularly those without ownership restrictions or mechanisms to support new entrants, are not appropriate for a fishery that is intended to support a strong inshore fishing fleet and adjacent coastal communities.

6.2 On data and future research

Despite data limitations, ownership and leasing in the halibut fishery was evaluated, based on an extensive undertaking that included combining multiple, disparate datasets and addressing data gaps through a large number of supplementary sources. This is the first time in the BC halibut fishery that beneficial ownership was comprehensively evaluated, and is the most extensive accounting to date of leasing and quota ownership in the BC groundfish fisheries. What was a difficult, time-consuming effort could be pursued in a much more straightforward way by the management agency. DFO's access to data that is not made available, notably catch data by vessel, would enable extension of the enterprise financial model to consider financial performance for a range of fishing patterns. This would also enable a more complete evaluation of leasing for those species that have low TAC utilization, including rockfish and lingcod. DFO is also well positioned, given existing data sources, to further explore the relationship between processors and fishermen, and the extent to which processor control is concentrating, through the fish sales slips submitted to the department.

In addition to data that is already collected, DFO could also institute new data collection that would support a much more robust, ongoing assessment of the social and economic outcomes of the fisheries management system. Minor changes to the regulations related to fish sales slips and vessel registration would support the collection of lease price data, landed price data, declared beneficial ownership and quota leasing. There is also the potential to collaborate with the provincial government to further assess corporate ownership, through the use of the provincial corporate registry. The re-establishment of costs and earnings surveys would also support assessment of financial outcomes and the distribution of benefits.

An important consideration that was not addressed directly in this research was that of Indigenous ownership, access and participation in BC fisheries. While unquestionably an important and timely issue, Indigenous access and rights issues related to fisheries in BC was outside the scope of this dissertation. There is an opportunity to build upon the database compiled for this research to address issues such as the loss of fisheries access in First Nation communities in BC and to consider the effectiveness of past and present government programs to repatriate access to and improve opportunities for economic participation in BC's fisheries. Research focused on Indigenous issues should follow research best practices (University of Victoria 2003; Assembly of First Nations 2009), including a research co-construction process to develop, implement and report on the research in a full partnership with First Nation representatives.

6.3 Recommendations to policy makers

For fisheries that are being considered for ITQ implementation, an honest and comprehensive assessment, considering risks and benefits, the full suite of fisheries objectives, and exploring underlying assumptions, would be appropriate before making any move to entrenching an ITQ system in a new fishery.

For established ITQ fisheries, while making changes is not a simple matter, it can be done. There are multiple tools available to governments to retroactively address socio-economic objectives in established ITQ fisheries. In moving forward with adjusting an existing fishery, considerations should include objectives, process and evaluation.

6.3.1 Objectives

Fisheries policy should consider the overall objectives for the fishery, which in Canada includes supporting prosperous communities, the equitable distribution of benefits, and maintaining a viable and stable fleet. As a first step in any evaluation or policy development process, objectives should be identified. The full suite of objectives should be identified, not only those that are easily measured or fit into a pre-determined evaluation approach. Careful consideration should be given to what objectives underpin the fishery, including the historical and current context. How these objectives would be evaluated (i.e., indicators for assessing the objectives) needs to be identified.

6.3.2 Process

In complex management scenarios, such as adjusting an established ITQ fishery, a collaborative multi-stakeholder approach to consultation and decision-making has been shown to be highly effective, provided necessary conditions are met (Day and Gunton 2003; Innes and Booher 2018). The full range of stakeholders should be included. To limit the perspectives that are considered can introduce bias in the process (Slooten et al. 2017). This can undermine the value of the process and over the long-term have a corrosive influence on the stakeholder/management agency relationship. Other necessary conditions include the support and agreement of the management agency, robust data collection and analysis to inform discussions, transparency in the data, analysis and decision-making process, and a principled approach that builds trust in the process and the management agency.

6.3.3 Evaluation

Following implementation of a management regime, outcomes should be regularly assessed and publicly reported on against the full suite of objectives for the fishery. The data needed to do this should be collected and made available. It is not enough to do an evaluation one, two or three years after a program has been implemented, and then never again. Some outcomes take time to emerge. Observed trends can also be conflated with other events that prevent a true accounting of the impacts of a program. Evaluation should be fully integrated into the fisheries management process, and the data needed to evaluate collected and made available publicly to be transparent and to enable third party evaluation.

6.4 In Summary

Only when there is considerate and thoughtful policy that specifically and explicitly addresses entrenched inequality will equitable distribution of benefits be achieved.

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Appendices

Appendix A Data for the Consideration of Social and Economic Outcomes in the British Columbia Halibut Fishery

The data that I present in this appendix was aggregated and consolidated to inform the research presented in the research chapters but was not itself presented and discussed. This appendix describes the sources and methodology used for these data inputs and summarises the data. The data presented here are all publicly available, compiled from multiple sources including published reports, online datasets, a government pay for access dataset (BC Online corporate registry), and government data requests (through the federal Access to Information process). I have made the raw data available online through a data repository (Edwards 2019).

A.1 Data Sources

The ownership and transactions database for the Pacific halibut fishery in BC, through which the majority of the analysis was conducted, was constructed through analysis of a number of governmental and non-governmental data sources:

- Access to Information requests to Fisheries and Oceans Canada (DFO), focused on three datasets which comprised the backbone of the database:
 1. Licencing data by vessel, including all BC commercial fishing licences, associated vessel name and owner name, and vessel length
 2. Quota transfers administrative data, providing each temporary and permanent transfer of quota, including source licence, destination licence, species/area and amount of quota transferred, type of transfer (temporary or permanent), transfer date and transfer status (i.e., completed, pending, cancelled)

3. Initial annual quota allocation data by licence, providing the quota permanently allocated to the licence in each year
- Statistics Canada Inter-Corporate Ownership historical databases, providing information on the ownership of subsidiary companies by the largest fishing company in BC
 - BC Provincial Corporate Registry Services records, providing information on provincially incorporated organizations, including company history such as incorporation date and name changes, and current and historical directorship information, such as names, addresses and role in company (e.g., president, secretary)
 - BC provincial processor licence lists, to identify processors
 - Transport Canada Vessel Query Registration system, for information on vessel characteristics (e.g., length, build date, gross tonnage), and vessel ownership including owner addresses
 - *Investment Canada Act* filings, to identify purchases of Canadian fishing companies by foreign owners
 - Corporations Canada online registry, to identify names and addresses of directors of federally incorporated organizations
 - Court proceedings and rulings from the BC Provincial Court, BC Court of Appeal, BC Supreme Court, Federal Court of Appeal, and the Supreme Court of Canada
 - Fishing company websites
 - International Pacific Halibut Commission and DFO websites, including fisheries advisory process documents and meeting attendance lists

A.2 Units of measurement

The management and industry standard for Pacific halibut is to report weight as ‘dressed head off’. This is true for both the International Pacific Halibut Commission (IPHC) and DFO when reporting TAC, catch and quota. In British Columbia, the standard for all other groundfish is to report based on round weight, even where the catch is typically delivered as a dressed product. All halibut weights throughout are reported as ‘dressed head off’ weight. The conversion factor for round to ‘dressed head off’ is 0.75. The industry standard in the British Columbia halibut fishery is to express weights in pounds. For weight conversion, one tonne is equal to 2204.6 pounds.

A.3 Consumer price index

Consumer Price Index data for Canada was retrieved from Statistics Canada, Table 18-10-0005-01, Consumer Price Index, annual average, not seasonally adjusted, ‘all-items’ (Statistics Canada 2019b). The original base year was 2002 and I adjusted it for a 2016 base year. All price and value multi-year trend data was adjusted for inflation using the consumer price index multiplier to present data in 2016 constant Canadian dollars.

A.4 Halibut total allowable catch, landed value and landed price

Halibut total allowable catch (TAC) was retrieved from IPHC annual reports (1981 through 1990) and DFO integrated fisheries management plans (1991 through 2017) (Figure A.1).

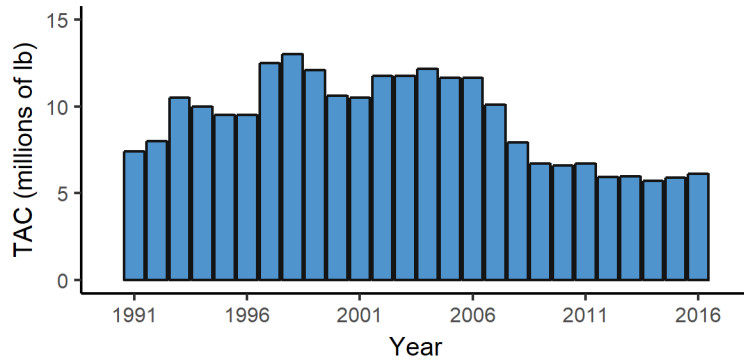


Figure A.1 Halibut total allowable catch in millions of pounds.

Landed weight and landed value for 1981 to 1995 were retrieved from DFO commercial catch statistics online summary ‘commercial halibut landings in BC, landed weight by species and value 1951-1995’ (DFO 2012a). Landed weight and landed value for 1996 through 2017 were retrieved from the British Columbia Seafood Year in Review reports published annually by the Province of British Columbia (Province of BC 1999; 2002; 2005; 2006; 2008; 2011; 2014a; 2014b; 2017). Landed weight in the Seafood Year in Review is reported as round tonnes. Weights were converted to dressed head-off based on the official DFO conversion factor (0.75) (DFO 2016a) and to pounds based on the standard metric to imperial conversion factor (2204.6).

The average landed price was calculated as the total value divided by the total weight.

A.5 Quota lease and purchase prices

There is no comprehensive tracking of quota purchase and lease prices in BC by government at either the federal or provincial level. Halibut quota purchase and lease prices were compiled for 1998 to 2000, 2002, and 2004 to 2016 from the values reported in annual valuation reports commissioned by DFO (Castlemain 2018; Nelson 2000; 2007; 2005), which were estimates based on a limited number of interviews. Purchase and lease prices for 1991 to 1997, 2001 and

2003, and supplementations for the years reported in the valuation reports (e.g., high and low values) were compiled from industry trade publications (e.g., Westcoast Fisherman magazine). Additional supplementary sources included advertised prices from licence brokerages and from fish landings slips that fishery participants have made available, to verify average prices and address gaps in the data for high-end lease prices. Values are provided in both current and constant dollars, having been corrected for inflation to the 2016 equivalent.

The halibut after-lease price is the price received by the fishermen, as the difference between the landed price and the lease price. This price was calculated where landed and lease price data were available. When there was no lease price (i.e., before individual transferable quotas), after-lease price was equivalent to landed price.

Licence fees are paid to the management agency by the quota owner and collected from the lessee with the lease fee. Licence fees averaged \$0.11/lb in 1991, \$0.07/lb in 1993 to 1995, and then between \$0.15/lb and \$0.19/lb in 1996 to 2006, when cost recovery of validation costs were included in the fee on a rate per tonne allocated to the licence (DFO 2001; 2016b; EB Economics 1992; Nelson 2003). The validation costs were collected directly by DFO for the period to 2000, and then collected by the Pacific Halibut Management Association (PHMA), an industry association, from 2001 to 2006 through a joint project agreement with DFO, on a per pound basis enforced by DFO through a 10% quota set-aside (*Burnell v. Canada (Fisheries and Oceans)* 2013). Since 2001, licence fees collected directly by DFO have been between \$0.08 and \$0.12 per pound, based on the formula that has remained unchanged over the period up to and including 2018: \$310 per tonne less 40% up to a maximum reduction of \$1000 (DFO 1998b;

2001; 2018a). DFO did not play a role in validation fee collection after 2006 and the PHMA subsequently discontinued their own role in the collection of validation fees. Validation costs are now paid directly by the fishing enterprise delivering fish. Quota lease prices as reported here do not include management fees nor validation fees. The primary source for the price data (annual valuation reports) stated that they subtracted this fee from the lease fees reported. The practice of subtracting this fee, where it was included with the lease fee, was followed for lease data from supplementary sources.

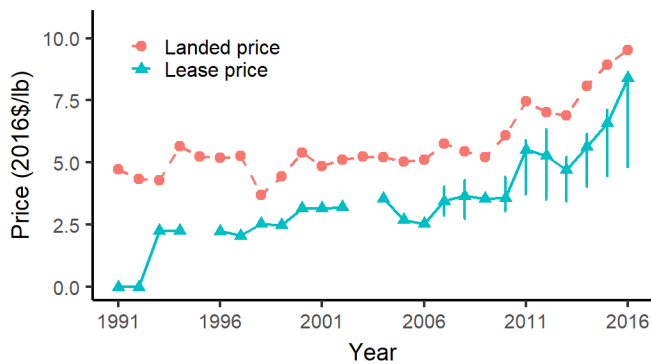


Figure A.2 Average halibut landed price and lease price, in constant 2016 dollars.

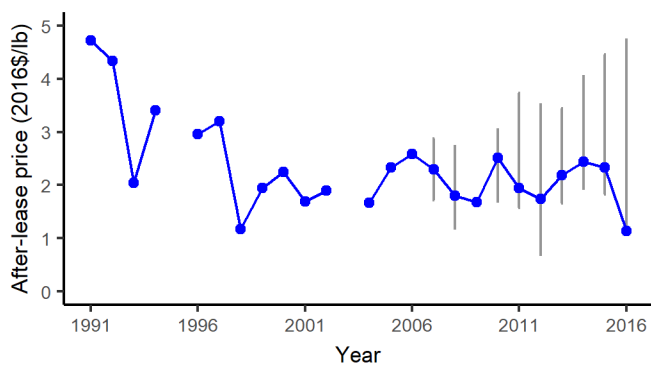


Figure A.3 Average halibut after-lease price, with upper and lower range for lease prices, in dollars per pound, in constant 2016 dollars.

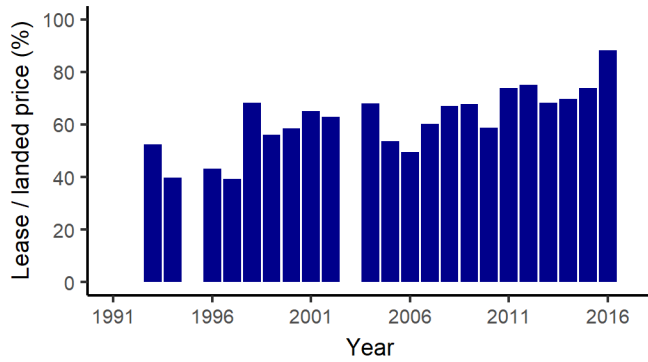


Figure A.4 Average halibut lease price as a percentage of landed price.

A.6 Halibut fleet characteristics

Catch data is compiled by DFO but is not available at the individual level. To assess licence catch concentration in the absence of individual catch data from DFO for the halibut fishery, I used a proxy for catch – temporary and permanent quota holdings on the vessel at the end of the year. There are a number of conditions necessary in order to consider year end quota holdings a reasonable approximation of vessel catch:

1. caught quota cannot be transferable to other licences;
2. catch must closely match the TAC, to within the percentage difference that is considered acceptable;
3. the quota lease value must be high enough to discourage loss of uncaught quota;
4. the carryover allowance of uncaught quota must be low enough to be considered acceptable; and
5. regulations limit the amount by which an individual vessel’s catch can exceed its quota holdings.

The halibut fishery meets these conditions. Quota in BC cannot be transferred to another licence once caught. The halibut catch is consistently within 10% of the TAC each year (DFO 2014;

2017). Halibut quota lease prices have exceeded \$2/lb since 2000, creating a strong incentive to catch or lease the quota. Halibut has a carryover allowance of 10%. For most other groundfish species, the carryover allowance is 30%. The sablefish fishery also meets most of these conditions. Sablefish had a 15% carryover allowance that was increased to 30% in 2012 (DFO 2012b). At 30% carryover, quota holdings can be up to 30% greater than catch without the loss of any quota. However, this only applies for licences that catch quota, so the carryover allowance does not impact the ability to use this method to determine active licences in the fleet.

Fisheries where year end quota holdings are not a reasonable proxy for catch because of TAC utilizations less than 70% and low value quota include the trawl, dogfish, rockfish and lingcod fisheries.

The halibut fishery is a multi-species fishery that catches rockfish, lingcod, dogfish, and sablefish alongside halibut. Aggregated catch in the halibut fishery for non-directed species is available (DFO 2017). The catch of non-directed species by vessel is not available, and can only be considered from the available data to a limited extent, given that non-directed catch is retained by fishermen to safeguard against unexpected catch, and is often of low lease value. This has meant, along with issues accessing quota in the unregulated quota market, that many of the species caught as non-directed catch in the halibut fishery have underutilized TACs (Figure A.5). The implication for the analysis is that quota for non-directed species quota on a licence will often be uncaught (with the exception of sablefish), and so it would not be appropriate to consider quota holdings for any species, except sablefish and halibut, as a proxy for catch.

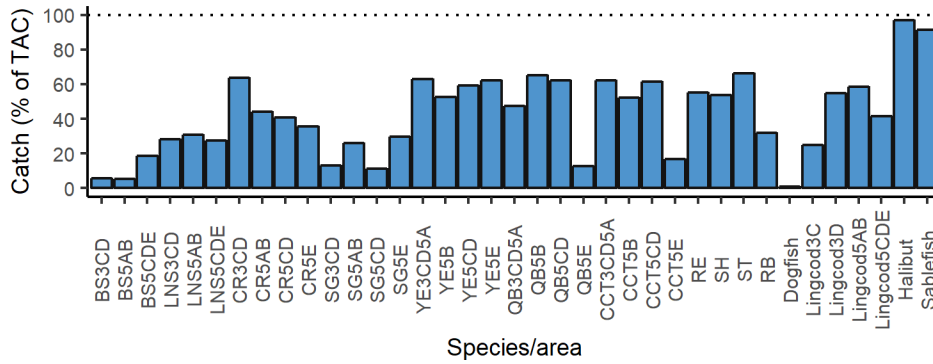


Figure A.5 The hook and line sector catch in 2016 of the non-directed species caught in the halibut fishery, as a percent of hook and line TAC for each of species / management area unit.

Once beneficial ownership, active fishing licences (based on halibut quota holdings as a proxy for catch) and ownership categories (owner-operator, First Nation communal, corporate fishing enterprise, processors, investors) were identified within the ownership database, a number of summary statistics were generated, including the number of active owners by ownership category (Table A.1), quota ownership by ownership category (Table A.2), multi-licence ownership within the halibut fleet (Table A.3 and Table A.4) and fleet vessel characteristics (Table A.5 and Figure A.6).

Table A.1 The number of active halibut licences and the number of owners of ‘active’ halibut licences, by ownership category.

		1991		1996		2016	
Number of ‘Active’ Licences		435 ⁱ	100%	274	63%	152	35%
	Processor	13	3%	4	1%	14	9%
	FN communal	18	4%	4	1%	42	28%
	Corporate	16	4%	30	11%	30	20%
	Owner-operator	388	89%	236	86%	66	43%
Number of Owners		390		255		115	
	Processor	5	1%	3	1%	5	4%
	FN communal	1	<1%	1	<1%	25	22%
	Corporate	7	2%	18	7%	20	17%
	Owner-operator	377	97%	233	91%	65	57%

ⁱ In 1991, there were between 431 (Gislason 1997) and 435 ‘active’ licences, with the exact number unknown.

Table A.2 Quota ownership by ownership category.

Owner Category	1991	1996	2006	2016
Investor	0%	23.7%	42.8%	41.6%
Processor	3.7%	3.2%	5.4%	8.1%
FN communal	2.0%	0.5%	5.8%	16.0%
Corporate	4.7%	13.5%	14.7%	16.9%
Owner-operated	89.5%	58.1%	30.4%	15.0%
Original grantee	89.5%	48.4%	25.8%	11.5%
New entrant, 1992-1996	-	9.6%	2.7%	1.6%
New entrant, 1997-2001	-	-	1.1%	1.3%
New entrant, 2001-2006	-	-	0.9%	0.4%
New entrant, 2007-2016	-	-	-	0.2%

Table A.3 The licences held by halibut owner-operators in 1996 and 2016, in number of owners and % of owners holding that licence type (233 owner-operators in 1996 and 65 in 2016).

Licence Type	1996		2016	
	# of Owners	% of Owners	# of Owners	% of Owners
Salmon (AG, AS, AT)	206	88%	40	62%
Herring (HG, HS, J)	80	34%	17	26%
Rockfish (ZN)	43	18%	24	37%
Tuna (CT) ⁱ	n/a	n/a	22	34%
Prawn (W)	12	5%	7	11%
Sablefish (K)	11	5%	4	6%
Crab (R)	8	3%	4	6%
Other	52	22%	9	14%

ⁱThe tuna limited licence (CT) was first introduced in 2013.

Table A.4 The number of licences associated with halibut owner-operators.

Number of Licences	1996		2016	
	# of Owners	% of Owners	# of Owners	% of Owners
1	11	5%	7	11%
2	69	30%	12	18%
3	59	25%	12	18%
4	42	18%	8	12%
5	21	9%	13	20%
6	16	7%	5	8%
>6	15	6%	8	12%
Total	233		65	

Table A.5 The vessel characteristics of ‘active’ halibut vessels in 2016, by ownership type.

Owner Type	Build Year	Avg Vessel Length (ft)	Gross Tonnage	Propulsion Power (bhp)
Processor	1977	58	67	318
Corporate	1980	50	46	244
Owner-operator	1978	43	30	217
FN communal	1978	36	19	201

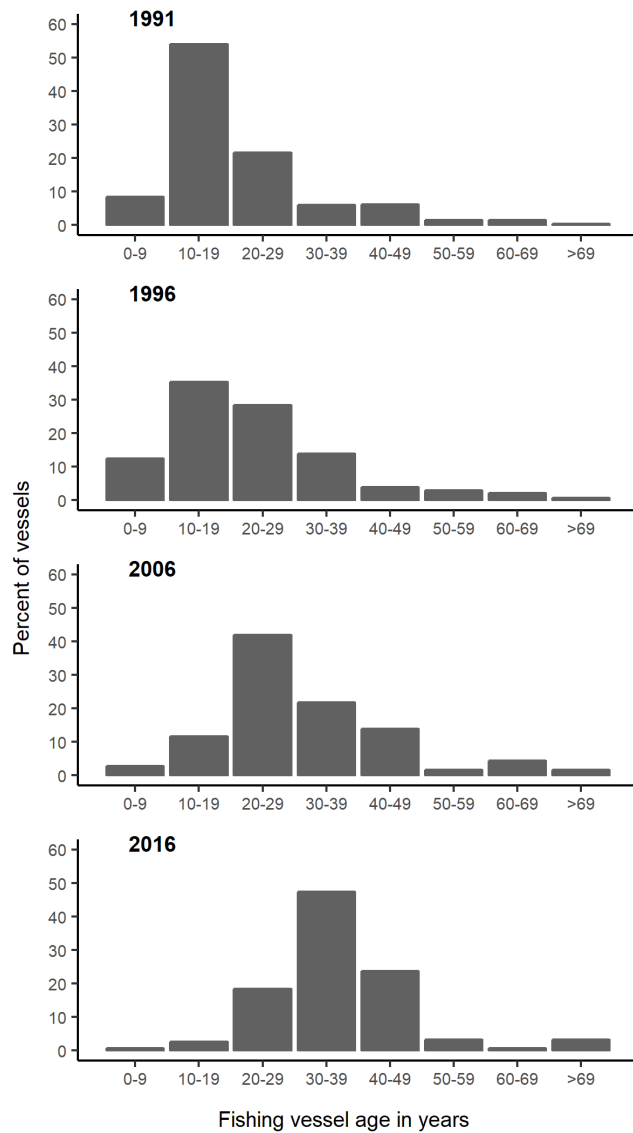


Figure A.6 The percent of active halibut fishing vessels in each vessel age category for each of 4 fishing years (1991, 1996, 2006, and 2016).

Appendix B Licence Banks as a Tool to Mitigate Corporate Control of Fisheries: A British Columbia groundfish example

This appendix provides as supplementary material a paper that was completed concurrent to but separate from this dissertation research. It outlines an example of how one group of fishermen, operating in an ITQ fishery in British Columbia, Canada, used a licence bank to attempt to mitigate the negative consequences of ITQs. After ten years in operation, the licence bank was self-sustaining and had realized modest and limited success. A number of lessons were learned from the experience, and opportunities were identified for licence banks to serve as an alternative mechanism to redress the negative consequences of ITQs, which is described in the following.

B.1 Introduction

Individual transferable quotas (ITQs) have been held up as a near cure-all for fisheries (Costello, Gaines, and Lynham 2008; Grafton 1996; Grafton et al. 2006). Expected to address problems ranging from stock collapse to habitat destruction to fleet overcapacity, early warnings about the impact of ITQs on non-directed stocks and on fleet composition, among other concerns (Copes 1986) went largely unheeded. Governments in several jurisdictions enthusiastically embraced ITQs with relatively little regard for negative consequences related to the redistribution and consolidation of benefits and associated social and economic impacts (Eythórsson 2000; Pinkerton and Edwards 2009; Pálsson and Helgason 1995). Some jurisdictions, such as Alaska, while adopting ITQs also took steps to mitigate negative consequences such as owner-operator provisions and limits on transferability, with variable success (Szymkowiak and Himes-Cornell 2015).

Enthusiasm for ITQs in Canada has been driven in large part by those seeking to reduce capacity in the fishery with a mechanism that operates without public funds. It can also be a windfall to a segment of existing fishermen leading to some degree of support from industry. In contrast to other rationalization programs which can require hundreds of millions of dollars sourced from the government, ITQs can lead to similar outcomes in terms of reduced capacity, while being entirely industry funded. While this is viewed as a benefit for those seeking to limit the use of public funds, there are consequences to having allocation determined by access to capital. The other sought after outcome is concentration of benefits where there is concern about rent dissipation and reliance on public income support mechanisms (e.g., employment insurance), but again, there are often consequences as concentration of benefits dictates the loss of benefits from some traditional beneficiaries.

For fishermen operating in jurisdictions with ITQs, the consequences of ITQs are well-known. Fishermen in BC have observed the patterns of quota concentration, control and price inflation since fully transferable quotas were introduced in BC in the mid-1990s. In an unfettered ITQ system such as BC has, the distribution of access rights and resulting benefits is a function of initial allocation and access to capital.

In response to the proposed extension of ITQ management in the British Columbia groundfish fishery, a group of small boat independent fishermen sought solutions to mitigate the anticipated negative consequences. These fishermen partnered with Ecotrust Canada, a not-for-profit organization dedicated to building the conservation economy, to form a small licence bank. The

Pacific Coast Fisherman's Conservation Company (PCFCC) was formed in 2006 as a limited corporation. The licence bank provides a means for the collective ownership of quota by a group of independent owner-operators, with an overarching goal to support sustainable groundfish fishing enterprises by meeting ecological, social and economic objectives.

B.2 Licence banks

The concept of the licence bank is well-founded in fisheries and has been a tool used for decades (Copes 2000). Some early examples include the Community Development Quota (CDQ) program in Alaska (Ginter 1995) and the Northern Native Fishing Co-op in British Columbia (Pinkerton 1987b). A licence bank provides a means for the collective ownership of licences and/or quota to meet the objectives of the founding organization, be that government (federal, Indigenous, provincial or municipal), a non-profit or a stakeholder group⁷. These objectives can vary widely, from the repatriation of licences to marginalized interests, to maintaining access to adjacent coastal resources, to providing a pathway for new entrants, to reducing gear impacts (Carothers 2011; Ecotrust Canada 2008; GAP2 2014; WCVI Aquatic Management Board 2009; Native Brotherhood of British Columbia 1989).

Interest in licence banks has been fueled in recent years by proponents of market-based approaches to fisheries management (Fujita and Bonzon 2005; Grimm et al. 2012) as well as by

⁷ A licence bank refers to any allocation of fishing rights to a collective group in a limited access scenario. There is no requirement for a licence bank to have objectives related to a full range of social, ecological or economic outcomes, nor are there restrictions on the types of economic outcomes that may be sought after from a licence bank. A licence bank can be anything from collective ownership by a group of fishermen to pool resources or a means for a community to hold quota that it then leases strictly to gain income for other uses. The licence bank concept does not dictate the purpose of the entity and only through consideration of the objectives for any specific licence bank can the success and value of the licence bank be evaluated.

those seeking to meet social and economic objectives in ITQ fisheries where legislative or regulatory mechanisms are absent or ineffective (Holland and Wiersma 2010; Sutcliffe, Edwards, and Edwards 2008). Licence banks are a tool that holds promise, but they are not without their challenges, pitfalls and limitations.

The initial capitalization of the licence bank is the major impediment to the wider adoption of licence banks. Options for capitalizing the bank include investment by fishermen, by government, and/or by a foundation or through the allocation of the resource directly. The allocation of the resource directly is only a viable option at the implementation of an ITQ system. Once the resource has been fully allocated and allowed to be traded on the market, to reallocate what is often a highly valued property that is critical to fisheries participant's livelihoods⁸ without compensation would be a violation of human rights (United Nations 1949) and would undermine the social objectives of fairness and commitments to the treatment of small-scale fisheries (FAO 2015). For an ITQ that has been implemented, only through investment can existing rights holders be fairly compensated while establishing a new mechanism (i.e., a licence bank) to address intergenerational transfer and equity issues. Investment by fishermen, or at least by fishermen alone, is rarely an option in such cases as the cost of purchasing any meaningful amount of quota is often beyond the financial means of fishermen. Both government and foundations have the financial wherewithal to capitalize a licence bank and support from one or both is critical.

⁸ While there is considerable debate about whether or not fisheries quota can be considered property, particularly where the fisheries resource is considered a common pool resource, in the case of Canada, the Government of Canada has enabled, supported and participated in the market for access rights resulting in fisheries licences and quota having *de facto* property rights. Furthermore, the value of fisheries licences and quota has been recognized in Canadian law with respect to bankruptcies (Saulnier v. RBC (2008 SCC 58)).

B.3 Methods

This paper is based primarily on the anthropological method of participant-observation. The authors are a father and daughter with a combined >65 years working in the fishing industry in British Columbia in different capacities. The second author has been a commercial fisherman for more than 50 years, and an industry representative and community activist over the previous 25 years. He was closely involved in the development of a regional aquatic management board and has held positions with regional and national fisheries organizations. He was a representative at the Commercial Industry Caucus (CIC) negotiations for the BC Commercial Groundfish Integration Pilot Project (CGIPP). The first author has worked in an advisory capacity to the fishing industry, including as a technical advisor at the CIC negotiations and related tables. The two authors were co-owners of a fisheries management consulting company which held contracts with different organizations to deliver fisheries management related services.

The authors were among the founding members of the PCFCC licence bank and remain active in the company. They have managed the licence bank since its inception. As well, the second author is a fisherman-member of the licence bank. The paper was provided to all members of the licence bank to review and verify the conclusions presented.

B.4 ITQs in the BC groundfish fishery

The British Columbia groundfish fishery is frequently lauded as an example of a successful ITQ fishery (Grafton, Nelson, and Turris 2006; Munro et al. 2009; Sporer 2001). Comprised of 7 distinct yet interrelated fisheries, the BC groundfish fishery has a complex history of ITQ

implementation. Sablefish longline was the first to have individual quotas (IQ) introduced, in 1990, but not fully transferable until 2000 (DFO 1999c). Halibut hook and line had IQs introduced in 1991, with full transferability in 1999 (DFO 1991; 1999a). Groundfish trawl was transitioned to an ITQ fishery in 1997 (DFO 1998a). ITQ adoption in the BC groundfish fishery culminated in the BC Commercial Groundfish Integration Pilot Project (CGIPP) in 2006 (CIC 2005; DFO 2006).

CGIPP was a response, under mounting pressure, to improve the management of groundfish stocks of concern. This new system was intended to create a more manageable and cost-effective approach to the complex multi-species, multi-gear groundfish fishery while achieving conservation objectives. Under CGIPP: ITQs were implemented in the hook and line rockfish, dogfish and lingcod fisheries; all groundfish vessels were required to have either an electronic monitoring camera or an observer on board every trip; all rockfish catch had to be landed (discarding of rockfish – which has a near 100% discard mortality – was not permitted); all catch had to be recorded and mortality of “marketable”⁹ ITQ species covered by quota acquired by the fisherman; and, quota transferability between the commercial groundfish sectors was instituted on a limited basis.

Prior to integration, the small boat hook and line dogfish fishermen operated in a competitive fishery in which they were legally required to discard their non-directed catch of halibut, sablefish and rockfish species. While supportive of the groundfish integration process in general,

⁹ The meaning of marketable is identified in the Integrated Fisheries Management Plans for the groundfish fisheries and is not analogous to legal size or market acceptability.

and the change in regulations that would allow fishermen to land their non-directed catch in particular and eliminate the practice of discarding dead rockfish, dogfish fishermen expressed concerns about the seemingly inevitable movement of quota to corporate interests, due to factors such as market control and access to capital. At the time of CGIPP development, there was already increased corporate ownership and control, loss of independence for small boat fishermen beholden to processors to access quota, and increased costs for fishing enterprises due to quota leasing fees that were threatening the financial viability of many formerly successful fishing enterprises (Pinkerton and Edwards 2009). The costs of purchasing quota was considered an insurmountable obstacle, putting the fishermen in the position of having to lease their non-directed catch quota each year with no guarantees of access to quota year to year and subject to fluctuating and frequently high quota prices.

It was increasingly seen that success in the fishery was not dictated by how well you were able to fish, but by how much quota you were able to secure. This heavily favoured those that were granted quota in the initial quota allocation, at the expense of new entrants, as well as those who were able to access capital to buy quota – favouring vertically and horizontally integrated large corporate interests as well as urban fishermen benefiting from the rapid increase in the value of real estate in the BC lower mainland. There was also a new player in fisheries – the investor. Increasingly, quota was owned by individuals with no other connection to the fishery, for the sole purpose of leasing the quota to generate a return on investment. As holders and leasers of an intangible asset, these investors did not add any value to the fishery while being the recipients of the wealth being generated.

CGIPP was seen as further entrenchment within a management system in which access to capital was the determinant of success, and where there was no path for the average, or even the exceptional, independent fisherman to access capital. In advance of CGIPP implementation, a group of small boat independent groundfish fishermen sought solutions to mitigate the anticipated negative consequences.

B.5 The challenges

B.5.1 The quota system

The BC groundfish fishery is a highly complex fishery. There is competition among participants for fishing spots, intensified by bycatch avoidance and gear conflicts (e.g., between hook and line, long line trap and trawl), for markets, and increasingly and dominantly, for quota. The complexity of the system substantially increased with the implementation of ITQs for more than 40 units of quota management, corresponding to species or species agglomerations and management areas.

The federal fisheries department, in instituting the ITQ system, adopted a free market approach of “willing buyer, willing seller” in which the department maintained responsibility for tracking the individual allocations and transfers of quota, but did not institute any form of quota trading system. The reasoning provided was that fishing enterprises would self-organize to manage their quota trading on a strictly voluntary basis. At the same time, the department did not release quota holdings information, citing business confidentiality restrictions. Several years after CGIPP was implemented, the department did begin to release initial allocation information on their website, although not in a machine readable format. However, the department continued to refuse the

release of information on current holdings, which would reflect temporary and permanent transfers made within the year. This approach by the department stymied the development of an external quota exchange and entrenched a quota market characterized by no transparency of either current quota holdings or lease prices paid.

B.5.2 Access to capital

ITQs create a mechanism to more fully monetize access rights to fish, placing a value on each pound of fish. In BC, with the absence of ownership restrictions, the quota asset for a number of fisheries has become highly valued as an income generator. This asset can be bought up by investors and large corporate interests who have access to capital. The path to quota ownership does not exist for the most part beyond the relatively few granted sufficient quota at the implementation of ITQs to both earn a living from fishing and reinvest in the fishery. The impact is that there is a reduction in new entrants and a shift in the ownership profile of the fishery away from small boat independent owner-operators. Over time, as the initial quota grantees retire or otherwise exit the fishery, the majority of fishermen operating in the fishery do so as renters more than owners. They may own their vessel and even their licences and a nominal amount of quota, but they rent the majority of the quota that they fish. Without access to the capital to even lease the quota on an annual basis, many fishermen have become reliant on business relationships with processors who own and/or lease the quota, further removing fishermen from control over the leasing situation. Fishermen have become price takers and are frequently unaware of the lease price they are even paying. Processors typically issue sales receipts that show only the price paid to the fishermen, not the landed value of the fish or the lease price deducted from the landed value.

Over the previous 3 decades, financial institutions in Canada have typically refused to accept licences or quota as collateral. Recently there have been limited instances in which exceptions have been made, but only on highly restrictive lending terms. To purchase quota, fishermen must compete with investors, processors, and governments¹⁰, all of whom have access to capital at relatively low or even no cost. The competition for quota and lack of financing options leaves most active fishermen operating in the fishery today – who were not part of the initial allocation of the higher value quota more than two decades ago or having benefited from another windfall (e.g., real estate) – in a perpetual renter’s cycle, unable to earn enough from the fishery, due to the high lease fees they are paying, to enable them to purchase quota.

B.6 The PCFCC

Seven small boat fishermen partnered with a for-profit consulting company and a not-for-profit community development organization (Ecotrust Canada) to form a limited company, the PCFCC, in spring 2006. The purpose of the PCFCC was to purchase, hold and make available fishing quota to members. A set of social, economic and ecological criteria were established to govern the structure and operations of the PCFCC. The consulting company and Ecotrust Canada participate as the management partner and in an advisory/policy support role respectively.

¹⁰ The Government of Canada, in order to repatriate fishing access rights to Indigenous Peoples in Canada, has been a consistent purchaser of fishing licences and quota through programs such as the Pacific Integrated Commercial Fisheries Initiative (PICFI), initially funded at \$175 million over the period 2008 – 2012 and subsequently extended.

An initial investment by member fishermen, later bolstered with financial support from the Gordon and Betty Moore Foundation, was used to purchase halibut and rockfish licences/quota to be held by the corporation and leased back to member fishermen at a “fair” lease rate, determined through consultation with fishermen members, consideration of the PCFCC founding principles and review of the financial dynamics of member fishing enterprises. The lease rate was capped at a percentage of average landed value in a given year, with the percentage variable by species and the directed species (e.g., halibut, lingcod) capped at a lower percentage of landed value than non-directed species (i.e., rockfish).

The PCFCC completed its first fishing season in the summer of 2006, working with a third of a rockfish licence which had associated with it approximately 5500 lb (2495 kg) of rockfish quota split between 19 different species and management area groupings. This quota helped fishermen cover their catch of rockfish without having to pay exorbitant lease fees for rockfish quota. Additional licences and quota were purchased that fall and winter.

The PCFCC is structured so that, as the fishermen pay off any loans through the lease fees charged to use the quota, revenue is reinvested to purchase additional quota and build the assets of the licence bank. The quota that is owned is a percentage of the overall total allowable catch (TAC), with that percentage translated each year into poundage based on the annual total allowable catch allocation. The PCFCC halibut quota holdings represent 0.0222% of the BC halibut commercial TAC. As the TAC is subject to change each year in response to stock assessments and management (e.g., allocation) decisions, the poundage that this percentage represents can fluctuate year to year. In 2016, the PCFCC quota holdings totaled approximately

2000 lb (907 kg) of halibut quota, 23,000 lb (10,433 kg) of mixed rockfish quota and 1500 lb (680 kg) of lingcod quota. The halibut and rockfish quota was all purchased within the first year of the incorporation of the company and the lingcod quota purchased in 2014 out of the lease fees charged to its members.

B.6.1 Founding Principles

The PCFCC's three main goals or founding principles are summarized below.

Ecological goal: to promote fisheries that are sustainable and conservation-based by meeting the following criteria:

- minimize bycatch and discard mortality by promoting selective harvesting and multispecies fisheries¹¹
- minimize habitat degradation and maintain habitat integrity through the use of low-impact fishing gear technology
- ensure monitoring and full reporting of catch and landings
- support scientific research and traditional ecological knowledge to inform fisheries management
- encourage a value chain approach to promote the re-use of waste products¹²

Social goal: to promote equity and uphold local traditions and culture by meeting the following criteria:

¹¹ Many fisheries, while traditionally managed as single species fisheries, in reality intercept a wide variety of species. By managing such a fishery as a multispecies fishery, the intent is that the full range of species intercepted and not just the primary target species have appropriate stock assessment, regulations and management procedures in place for effective management.

¹² There is a long history in fisheries of the sub-optimal use of fish, such as the use of potentially high quality, high value food for the production of fish meal and other low value products as well as the sale of only a small portion of the fish harvested to specialty markets and the discard of the remainder. The intent of the value chain approach is to promote the full, optimized use of resources extracted from the ocean environment, to minimize waste and maximize value. This value chain approach was exemplified in the BC dogfish fishery in which virtually every part of the fish was used, from the fillets to cartilage. Even the final waste product remaining after processing was used to produce a high quality fertilizer.

- increase benefits of adjacent fisheries resources accruing to local communities and active working fishermen
- promote effective participation of fishermen and the community at large in the decision-making and management of fisheries
- support intergenerational equity and youth employment in the fisheries
- ensure fair distribution of benefits to active working fishermen
- promote reinvestment in infrastructure

Economic goal: to maximize socio-economic benefits of resource use by fostering the viability of small boat independent fishing enterprises and local processing to meet the following criteria:

- ensure adequate financial returns to sustain and grow the assets of the quota bank, while providing a good living to working fishermen
- promote the economic viability of the small-boat fleet in rural communities
- increase value-added and local processing
- increase economic diversification and year-round employment through the harvesting of a wide range of marine species

B.6.2 Enabling conditions

The near total lack of restrictions on quota and licence ownership in BC meant that there were no regulatory barriers for a for-profit company owned by multiple interests purchasing and holding licences and quota. However, there is a notable lack of corporate structures available for social innovation enterprises in Canada. At the time of incorporation, the co-operative legislation in BC was deemed to be a difficult piece of legislation to operate within and legal advice was given to incorporate as a for-profit corporation under the BC *Business Corporations Act*. To address the limitations of this Act, given the objectives of the licence bank, a detailed shareholder agreement was developed that identified mechanisms to ensure entry into the licence bank remained affordable over time.

The support of a not-for-profit and a foundation were critical to the establishment of the licence bank, in terms of advice as well as financing support. A licence bank pools the resources of its

members but that would have been insufficient to purchase any meaningful amount of quota, reflecting the fact that the licence bank was implemented well into a period of quota concentration and quota price inflation. Fishermen have a strong incentive to participate in the licence bank because it represents one of very few options available to them to attempt to break the renting cycle. The licence bank is also attractive to members because it is self-sustaining, given a sufficient quota base for operation.

B.7 Lessons learned

B.7.1 Peer support

One of the most important outcomes of the licence bank, but also one of the most difficult to measure, is how peer support among members of the licence bank helped its members in the early, difficult days of adapting to the new integrated groundfish fishery system. Six of the seven founding fishermen members are still active in the fishery 10 years later; the only fisherman no longer active left the PCFCC and the fishery due to illness. During this period, the fishery as a whole saw a reduction of about 30% in the number of vessels participating. Although the licence bank cannot claim credit for why its fishermen members have continued in the groundfish fishery, it was an organizing entity for its members. Through the PCFCC, members received moral support as well as peer support in the form of shared advice, contacts for quota leasing, help navigating the quota trading system, and modest quota access to participants, particularly during the early stages of the CGIPP pilot. The founding fishermen were all dogfish fishermen prior to CGIPP with no history in the trading of quota. Within three years of the start of CGIPP, the market for dogfish collapsed due to a combination of external factors, including the sharply increasing value of the Canadian dollar, the global recession, and increased supply driven by

higher dogfish catches in the US. Despite the loss of their primary fishery, the members were all able to successfully transition within the newly integrated groundfish fishery.

B.7.2 Licence bank capitalization

In the initial work to develop the licence bank, a number of capitalization options were identified and pursued. It became clear early on that traditional financing mechanisms (i.e., banks) and venture capital would not be viable to capitalize the licence bank as the repayment terms could not be met based on revenue from the purchased asset alone. Quota for halibut and sablefish in BC typically sells at between 12-20 times the annual lease fee. Once interest fees are factored in as well as a typical repayment period of 10 years, it is immediately clear that the quota purchase cannot be paid back from lease revenue alone. This necessitated a commitment by fishermen to independently finance the establishment of the bank and was greatly bolstered by the support of a foundation, which was critical support. There has been no support from the Government of Canada for a licence bank in BC to mitigate corporate control and establish a mechanism to support adjacency, intergenerational transfer and more equitable distribution of benefits. In another situation, the Pacific Salmon Treaty chinook mitigation which saw a \$30 million transfer of funds from the US to Canada to reduce fishing pressure in Canada for a period of 10 years, a licence bank was proposed in 2009 as the mechanism to temporarily reduce fishing pressure while supporting future fishing opportunities for the region(WCVI Aquatic Management Board 2009). In that case, the Government of Canada flatly refused to direct funds to a licence bank. There was an important lesson in both the PCFCC experience and that of the salmon mitigation, that a source of capital is needed, be it foundation or government, and that an early assessment should be made as to whether support from either is possible and likely.

B.7.3 Size and scale

Due to the small size number of members and the limited assets of the licence bank, its impact has been limited. The quota available to members represents a tiny fraction of the quota that they fish each year. Despite having a financial impact of only a few thousand dollars per year for members, for fishermen operating on very tight margins, that additional income from accessing quota at a fair lease price can be important. As well, the licence bank is a reservoir of the types of quota (i.e., certain rockfish species) that can be difficult to access at times throughout the year, providing a limited safety net for fishermen. The licence bank has also been able to serve as a purchaser for members having to sell their personal quota holdings for financial reasons. The licence bank pays fishermen market value for their quota and is then able to continue providing limited access to that quota by leasing back to members.

The greatest disappointment with the PCFCC has been the inability to scale it up, to have a more meaningful impact for current members as well as offering the opportunity to bring in more members. This limitation is entirely due to the size of the initial capital investment coupled with the high cost of quota purchase in BC. The initial investment enabled only a small quota purchase to be made, which in turn resulted in small financial returns each year to the PCFCC, which in turn has meant few resources available to reinvest. Exacerbating this has been reduction in the halibut total allowable catch, by about 50% since the initial purchase of the halibut quota in 2007, both due to a reduction in the total TAC as well as a reallocation of TAC from the commercial to the recreational sector in 2012. The asset value of the halibut quota has remained virtually unchanged, since quota is sold as a percentage of the TAC and the price per pound has

adjusted upward as the TAC falls. However, the income to be earned from leasing the quota to members is substantially less as a result, in part due to the commitment of the licence bank to only charge a “fair” lease price. Market halibut lease prices have risen dramatically in recent years, further eroding the financial viability of independent fishermen who must lease quota.

B.7.4 Cooperation

ITQs are often promoted as a means to eliminate the “race for the fish”. However, the race is not eliminated, it is just shifted. Certain time pressures (e.g., overly short seasons) may be reduced with ITQs, but fishermen instead find themselves competing for quota, for favoured fishing spots, and for markets. This is exacerbated when fishermen find themselves leasing quota at very high prices, where delivering by a certain time to take advantage of a market upswing can mean the difference between losing money on a trip and breaking even. In this environment, maintaining cooperative relationships between fishermen can be very challenging. These challenges have been witnessed in the licence bank on a number of occasions. Although business partners, they remain competitors for the most part. It is only because of the strong rationale for continued benefits from participation in the bank that the bank has continued to exist despite this very real constraint. The licence bank has helped to improve relationships among fishermen, although on a limited basis.

B.8 Conclusions

Starting with a very small pilot project allowed testing of the concept of a licence bank, put the legal and technical framework in place, and built credibility within the fishing community. While small and limited in scope, this licence bank pre-dates many of the larger licence banks now in

place in the eastern United States, and has established a successful track record from which lessons can be learned. The licence bank also differs from many other licence banks in its emphasis on addressing the consequences of leasing in ITQ fisheries, and the importance placed on establishing “fair” lease rates. The initial capitalization of the licence bank is the greatest hurdle to overcome and how and to what extent it is accomplished will determine the success and shape of the licence bank in the future. The PCFCC benefited from a strong core of member fishermen committed to seeing the licence bank succeed and willing to invest their own limited resources to make it happen. The modest investment that was made into the licence bank, however, even with foundation support, has limited the impact of the licence bank and its ability to scale up. While the licence bank has demonstrated a mechanism by which corporate control within an ITQ fishery can be mitigated, the PCFCC has not had a notable impact on corporate control in the BC fisheries due to its small scale. The licence bank has been a benefit for the members, providing peer and moral support and limited but important access to quota, and continues to uphold and further its objectives as identified through its founding principles.