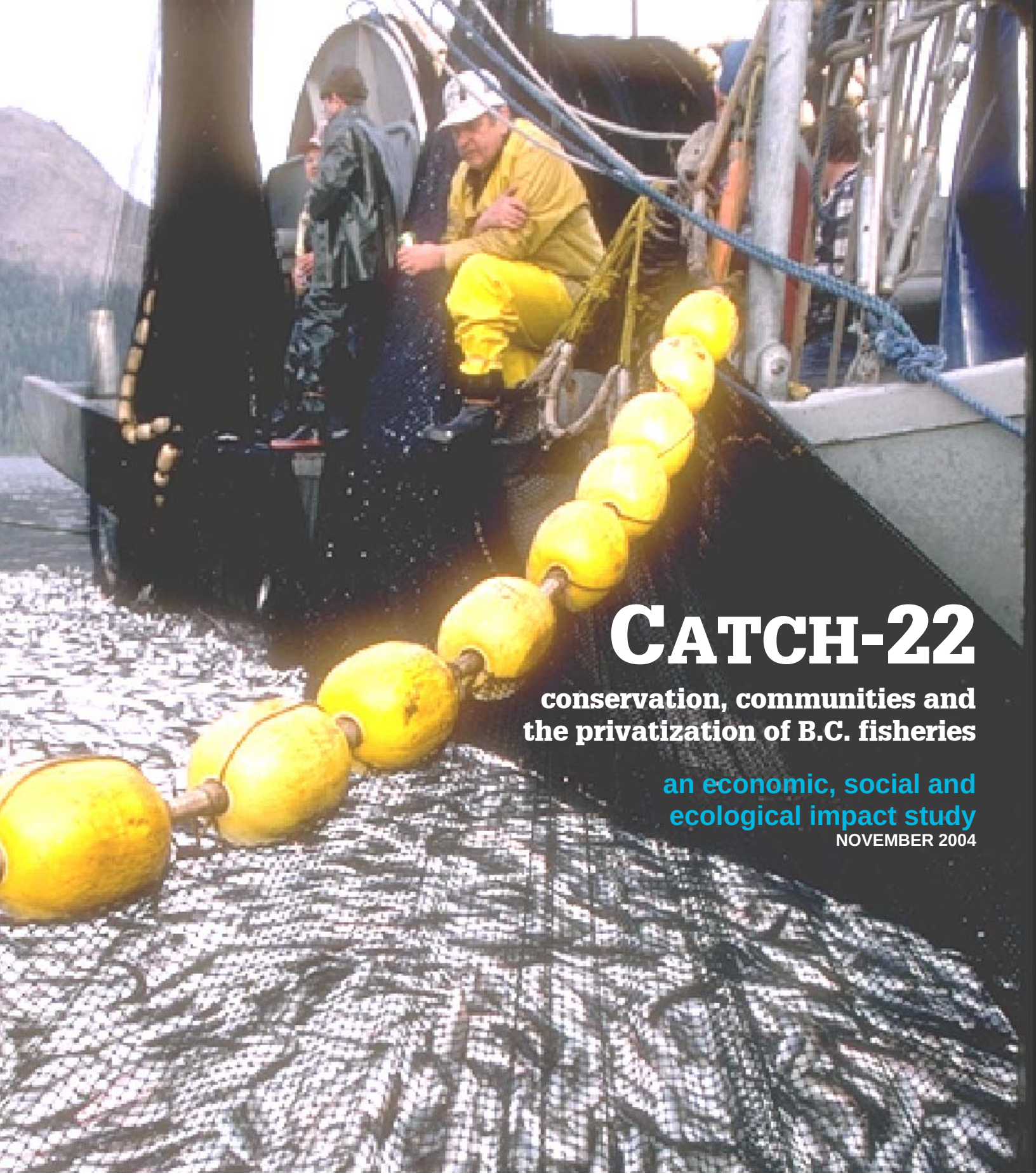

CATCH-22

conservation, communities and the privatization of B.C. fisheries

an economic, social and ecological impact study

NOVEMBER 2004

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executive summary

Catch-22: Conservation, Communities and the Privatization of B.C. Fisheries investigates the economic, social and ecological impacts of federal fisheries licensing policy, especially those promoting individual fishing quotas (IFQs). Under an IFQ system, an individual or company owns a preset portion of the total allowable catch called an individual fishing quota. Quotas are bought, sold or traded like shares on a stock exchange. IFQs are considered a form of resource privatization.

The Department of Fisheries and Oceans (DFO) has implemented IFQs in the geoduck, halibut, sablefish, groundfish trawl and three shellfish fisheries. It is currently developing a controversial plan—opposed by many working fishermen and First Nations—to implement IFQs in B.C.'s salmon fishery.

Many of the major reforms of B.C. fisheries in the 1990s, including the introduction of IFQ programs and the Mifflin Plan in the salmon industry, represented a catch-22 for fishing-dependent communities. DFO's solutions created as many economic, social and ecological problems as they solved.

Economic Impact

In the 1990s, Ottawa committed to reducing overcapitalization in the B.C. fishing industry in order to increase its economic viability and conserve fish stocks. Capitalization in the fishing industry takes two forms: investment in vessels and equipment, and investment in fishing licences and quotas.

Through licence buybacks and licensing policy reforms, Ottawa cut the fishing fleet in half in the 1990s. In 1988, DFO estimated the capital investment in vessels and equipment for the salmon fleet was about $777 million (in 2003 dollars). By 2003, the capital investment in the entire fishing fleet for all species was estimated to be $286 million.

However, the decrease in the capital value of vessels and equipment was offset by the soaring capital value of licences and quota for most commercial fisheries. DFO policies that gave "windfall profits" to some fishermen and allowed for the consolidation and leasing of licences and quota, tax incentives and growing demand for allocations from First Nations and recreational fishermen, all contributed to an inflationary trend in licence and quota prices.

Between 1994 and 2002, the prices of troll and gillnet salmon licences doubled while catches declined. Other fisheries experienced skyrocketing trends, too. The advertised price of halibut quota increased from $9 per pound in 1991 to $36 per pound in 2004. In fact, the quota fisheries such as halibut, sablefish and groundfish trawl are some of the most capital-intensive fisheries in B.C.

By 2003, the capital value of licences and quotas reached $1.8 billion. Vessels and equipment now make up only 14 percent of the total capitalization in the B.C. fishing industry. In the past, the problem was too many fishermen chasing too few fish, but today it has become too much money chasing too few fish. Overcapitalization in licence and quota has become the problem, especially in terms of social equity.

Indeed, the extremely high market value of licences and quotas is well outside the reach of many rural working families, First Nations and younger fishermen. A fisherman now needs to be a millionaire to enter into most fisheries.

Social Impacts

With catches declining in some fisheries and the prices of licences and quota soaring, many fishermen have sold out either through government-funded licence retirement

programs or by selling their licences to fellow fishermen.

Not surprisingly, many of those fishermen who sold out were in rural and Aboriginal communities. Because of lower incomes, limited economic opportunities and lower property values, rural fishermen have less access to capital than their urban counterparts. First Nations people face even more obstacles, since their incomes are 35 percent lower than the B.C. average and unemployment rates are double. Additionally, many native people living on Indian reserves do not have fee-simple ownership of their homes and therefore cannot use home equity to borrow money to buy fishing licences or quotas.

As a result, both rural and Aboriginal individual ownership of commercial fishing licences and quota has declined precipitously. Between 1994 and 2002, rural communities with a population of less than 10,000 lost 540 licences in major fisheries such as groundfish, salmon and shellfish as a result of fleet downsizing and the sale of licences to urban areas. That's almost half (45 percent) of all licences for major fisheries owned by rural people.

The most resource-dependent rural regions are losing their connections to the sea because of the urbanization of the fishery. Local residents on the West Coast of Vancouver Island, for instance, only own two percent of all individual fishing quotas in B.C. The number is three percent in the North Island and nine percent in the North Coast. By contrast, residents of metropolitan Vancouver and Victoria own 44 percent of quotas.

In effect, fisheries policy, whether intentional or not, is skewed in favour of urban-based corporations and individuals with greater access to capital and economic opportunities. Those communities most dependent on fishing for their economic lifeblood are being squeezed out of B.C.'s fisheries.

Ecological Impacts

The conservation record of privatizing fisheries through individual fishing quotas is inconclusive. By giving fishermen a set individual quota, IFQs end the frenzied "race for fish." However, IFQs can induce unsustainable behaviour by fishermen, including quota busting, poaching, throwing back low-priced fish (high-grading) and misreporting catches. These problems can be solved in part by onboard and dockside observers but add considerable costs to fishing.

The U.S. National Research Council has concluded that "IFQs are not a conservation tool, they're mainly an economic tool." They're about promoting economic efficiency. Setting a total allowable catch that is scientifically defensible and sustainable is one of the most important fisheries conservation measures. Privatizing fisheries through IFQs, however, raises some fundamental problems about how sustainable catch levels are set.

First, IFQs create windfall profits for those who initially receive them, but create huge debt for new entrants who must buy the expensive quotas in order to fish. This capital investment puts pressure on the resource since fishermen lobby for higher catches to finance their large debt-loads. Previously, the problem was "too many fishermen chasing too few fish." Today, the problem is becoming "too much money chasing too few fish." Under such a scenario, short-term profits win out over long-term conservation as fishermen succumb to immediate financial pressures.

Second, as part of their policy to privatize fishery resources, DFO has established co-management agreements with exclusive groups of licence and quota holders, which has increased the influence of industry stakeholders. Conservation groups, communities, First Nations, and labour interests are marginalized, since fisheries

management becomes increasingly focused on maximizing the narrow economic returns of licence and quota holders. Economic interests must be balanced by community and conservation values.

Third, as part of its privatization, DFO is shifting the cost and responsibility for stock assessment and other scientific data collection onto industry and private companies. This trend calls into question the ownership of data and the transparency of fisheries management and science. The lack of access to data is hampering the efforts of independent scientists and conservation groups to scrutinize DFO's science and decision-making, especially annual catch levels.

The privatization of B.C. fisheries has netted a catch-22: DFO's solution has become the problem, worsening overcapitalization, undermining the sustainability of fishing-dependent communities and compromising conservation for economic efficiency. It is time for a serious re-examination of current policy and a move towards new solutions that work towards the long-term health and viability of fishing-dependent communities and fish stocks.

RECOMMENDATIONS

1) Public Registry

DFO should establish a public registry requiring individuals and companies to register all their leases, trades and sales of fishing licences and quota, and to fully disclose financial interests in these assets. The registry would allow the government, industry and public to monitor ownership and capital trends in the industry and to help protect against corporate concentration and overcapitalization.

2) National Standards

DFO should establish national standards for fishing licence and quota programs that would reduce overcapitalization in licences and quota, protect working crews from bearing the costs of quota leases, address unresolved First Nations rights, ensure that fair economic benefits are shared amongst various stakeholders and limit excessive consolidation and corporate concentration in the industry.

3) Community Quota Entities

DFO should permit the establishment of and provide funding for Community Quota Entities (CQEs), which would be non-profit societies established to hold fisheries licences and quota in trust for Aboriginal and non-Aboriginal rural fishing communities. The CQEs would lease fishing privileges to local fishermen and facilitate new entrants into the industry.

4) Public Data

DFO should establish a comprehensive data-access policy that provides full and transparent access to biological and catch data and thereby rebuild trust in DFO science and ensure rigorous review of fisheries decision-making by independent scientists and the public. Furthermore, all fisheries data funded and collected by private companies as part of IFQ fisheries should be placed in the public domain.

5) Fisheries Co-management

DFO should ensure that diverse interests are represented in fisheries co-management agreements and harvesting committees including licence and quota holders, labour, processors, coastal communities, First Nations, environmentalists and other citizen groups. Economic interests should be balanced by social and ecological values.

research team

This report is published by Ecotrust Canada and Ecotrust (USA), based in Vancouver, B.C, and Portland, Oregon, respectively. The work of both non-profit organizations is predicated on the notion that economic and ecological systems are mutually interdependent. To this relationship, Ecotrust Canada and Ecotrust have sought to add a third "e"—social equity—to ensure that economic development awards benefits to all the citizens of the Pacific Northwest. Economy, ecology, equity: the triple bottom line. That's the vision and methodology we have applied in *Catch-22: Conservation, Communities and the Privatization of B.C. Fisheries.*

The team of researchers in Canada and the United States includes Dr. **Astrid Scholz**, a resource economist for Ecotrust; **Eric Enno Tamm**, a researcher and writer for Ecotrust Canada; Dr. **Andrew Day**, a fisheries management consultant; **Danielle N. Edwards**, a fisheries database specialist and marine biologist; and **Charles Steinback**, a GIS (Geographic Information Systems) analyst for Ecotrust.

Ecotrust Canada
200 – 1238 Homer Street
Vancouver, B.C. V6B 2Y5, Canada
www.ecotrustcan.org

Ecotrust
721 Jean NW Ninth Avenue, Suite 200
Portland, OR 97209, USA
www.ecotrust.org

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note on statistics

Unless otherwise noted, data for this report were obtained from the DFO Pacific Fishery Licence Unit, DFO Catch Statistics Unit, on-line landings statistics, and various publications and reports. Due to considerable challenges in obtaining complete time series of information for all fisheries, our analysis deals with the years 1994 and 2002—the two most complete years of data available to us, which also fall before and after several major regulatory and policy changes in B.C. fisheries. The comparative analysis for 1994 and 2002 excludes the party-based, non-vessel licences (such as herring gillnet, intertidal clam, goose barnacle, herring bait and smelt fisheries), because the 1994 licence lists were not available from DFO. Financial figures have been converted to constant 2003 dollars, unless otherwise noted.

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CHAPTER 1
introduction

Over the past decade, Canada's Pacific fishery has undergone fundamental changes. A combination of factors—habitat degradation, overcapacity and overcapitalization, fish stock depletions, declines in ocean productivity and depressed global fish prices—have threatened the fishing industry's viability. In response, the Department of Fisheries and Oceans (DFO) introduced a sweeping set of policies to restructure and rationalize the industry. The objectives were two-fold: (1) to improve economic viability and (2) to impose stricter conservation measures including reduced bycatch, improved monitoring and the targeted protection of weak fish stocks.

In part, these changes came as a result of severe federal government restraint.[1] In the 1995 federal budget then-Finance Minister Paul Martin committed to privatizing many of the responsibilities and services of DFO by entering "into partnerships with the fishing industry and others in the management of capacity, licensing and compliance."[2] The objectives of cutting DFO's budget, increasing revenues through new user fees and downloading responsibilities to the fishing industry were well served by privatization.

This report, however, focuses on the impact of these policy reforms on communities and conservation. We begin by reviewing the history of federal fisheries licensing policy and the growing shift to privatized models of fisheries ownership and management. The study looks at how these policy reforms have changed the economics of fishing. Have fisheries reforms reduced or increased overcapitalization in the fishing industry? We then explore the social impacts in terms of distribution of wealth, especially to rural and Aboriginal communities. How have DFO policy reforms affected fishermen in rural communities and Aboriginal participation in fisheries?

Our research employs a novel approach, using GIS (Geographic Information Systems) to investigate the spatial patterns of licence ownership, effectively mapping the socioeconomics of B.C. fisheries. The final section of the report deals with conservation. What are the long-term ecological implications of this policy reform on fish stocks? Does privatizing the ownership of fisheries resources promote conservation?

Our analysis is based on DFO's licensing and catch landings data from 1994 to 2002, a survey of the market value of fishing licences and a review of relevant academic research and published reports. Using this data and information, we address the economic, social and ecological impacts of fisheries licensing policy in B.C.

'Many of the major reforms of B.C. fisheries in the 1990s represented a catch-22 for communities: The solutions became, in effect, part of the problem.'

We do so in the spirit of provoking a broad-based public discussion about the future of our ocean resources and to provide governments, fishermen, First Nations, coastal communities and the public at large with both data and analysis that will contribute to a better understanding of fisheries policy. Our report is also a challenge to decision-makers to conduct thorough and comprehensive impact analysis of policy options in fisheries prior to implementation. We caution that our report is only a beginning and invite discussion, debate and further research and analysis on these issues that are critical to the

survival of our ocean resources and coastal communities.

Our analysis shows that many of the major reforms of B.C. fisheries in the 1990s represented a catch-22 for communities: The solutions became, in effect, part of the problem. Far from reducing over-capitalization in fisheries, DFO policies exacerbated the problem and instead of increasing the economic viability of coastal communities, the rationalization, restructuring and ultimately privatization of B.C. fisheries marginalized Aboriginal fishermen and rural regions. Poor regions have become even poorer.

Despite the commitment stated in *Canada's Oceans Strategy* that coastal communities "be actively involved in the development, promotion, and implementation of sustainable oceans activities,"[3] our report reveals that quite the opposite is true. As far as commercial fisheries are concerned, coastal communities are less involved than a decade ago.

Human communities are part of the rich diversity of B.C.'s marine ecosystem. Recognizing the importance of the connection of coastal people to the sea, the U.N. Convention on the Law of the Sea calls upon states to consider the "economic needs of coastal fishing communities"[4] and the Food and Agriculture Organization's Code of Conduct for Responsible Fisheries recognizes "the important contributions of artisanal and small-scale fisheries to employment, income and food security" in fishing-dependent communities, which should receive "preferential access" to fisheries.[5]

A thriving coastal economy and bustling rural communities, social justice and the righting of historic wrongs for First Nations, abundant fish stocks and pristine marine ecosystems—these are the tangible benchmarks by which we must measure our success to manage our ocean resources. The ocean is part of humanity's common wealth. With this in mind, we have provided in this report some practical and innovative recommendations to enhance conservation and to re-engage coastal communities in the ownership and management of our common-property ocean resources.

CHAPTER 2

fisheries: public trust or private property?

Fish, by nature, are a common property. They are largely undomesticated animals and swim indifferently across the world's borders. Their home—the ocean—is a common pool, defying bureaucratic boxes, legal jurisdictions, economic theories, and physical barriers. This has created a challenge for fisheries managers throughout history.

Under British common law, the Crown has provided the public with a right to tidal fisheries dating back to the Magna Carta in 1215 AD. In Canada, the federal government, on behalf of the Crown, has legal authority to manage fisheries in the public interest.

Canadian federal authority, however, is balanced with First Nations' title and rights. Through various decisions, including *R. vs. Delgamuukw* and *R. vs. Sparrow*, among others, courts have defined Aboriginal title as a *sui generis* collective property right, meaning British common law and Canadian constitutional law need to be reconciled with the prior occupation of First Nations. Aboriginal title involves several issues—how the land and ocean resources are managed and used, the right to exclusive use or occupation, and the question of "fair" economic benefit from resource use. In addition to rights to fish for food, social and ceremonial purposes, First Nations have established rights to fish for economic purposes (*R. vs. Gladstone*). The extent of First Nations' rights and title are the subject of on-going litigation and negotiation.

Subject to certain conditions, including conservation measures and the aforementioned First Nations rights, the Minister of Fisheries and Oceans grants a fishing licence to a person (an individual or a company) to harvest a certain species of fish. Legally, a fishing licence is not a permanent authorization or right to fish nor a permanent grant of fish. It is a privilege granted on an annual basis. The courts have confirmed that under the Fisheries Act, "the Minister has absolute discretion in determining the issuance of licences."[6]

For much of the twentieth century, the Minister granted fishing licences to any citizen who wanted to fish. The only exceptions were, at times, racial restrictions placed on Aboriginal people and immigrants

'Legally, a fishing licence is not a permanent authorization or right to fish nor a permanent grant of fish. It is a privilege granted on an annual basis.'

of Asian descent. Otherwise, any Canadian was free to participate, commercially or recreationally, in fishing. By the 1960s, however, this open-access system became untenable. There were simply too many fishermen chasing too few fish in largely unregulated, highly competitive derby fisheries. There was a need for stricter government control.

LIMITED ENTRY

In 1969, Ottawa imposed limited entry in the commercial salmon industry in B.C., restricting access to vessels that historically participated in the salmon fishery. Under the "Davis Plan," named after Fisheries Minister Jack Davis at the time, any fishing vessel that caught 10,000 pounds or more of salmon in either 1967 or 1968 was granted a licence. A total of 5,870 salmon or "A" licences were issued. In 1974, herring licences were similarly limited. Limited entry ended the

open access nature of commercial fishing in B.C.

In 1977, Canada extended its jurisdiction 200 nautical miles offshore and asserted control over fisheries in its territorial waters, the so-called Exclusive Economic Zone (EEZ). With expansion of domestic fishing capacity, Ottawa imposed limited entry in several other fisheries by the early 1980s: halibut, groundfish trawl, geoduck, abalone, spawn-on-kelp and sablefish. A decade later, there was limited entry in almost every commercial fishery in B.C.

In 1969 the estimated value of the salmon fleet was $483 million (in 2003 dollars), reflecting the value of vessels and equipment.[7] With the introduction of the Davis Plan, however, the value soared. Although a licence was still—by legal definition—only an annual permit to fish, the government allowed fishermen to buy, sell and transfer them. Fishing licences, despite their legal definition as a privilege granted by the Minister, took on some of the characteristics of private property: they acquired a market value and became a tradable asset. Indeed, a fishing licence became a very valuable asset, especially as prices for salmon and herring rose in the 1970s.

By 1988, the estimated market value of the salmon fishing fleet (including vessels, equipment and licences) was $1.7 billion. More than half of that, or $902 million, reflected the value of the fleet's licences. Taking inflation into account, the capital value of the fleet increased more than threefold in 20 years.[8] With virtually no limits on licence transferability and growing investment in new vessels and technology, capitalization in the industry soared.

INDIVIDUAL FISHING QUOTAS

Responding to overcapitalization and excess capacity issues in the fishing fleet, in 1982 Dr. Peter Pearse, then chairman of the Royal Commission on Pacific Fisheries Policy, recommended that Ottawa go further in formalizing private property rights through a new licensing regime. The proposed remedy had the same objective as in the 1960s: to reduce the fleet by excluding some fishermen while granting more secure fishing rights to others. Pearse recommended that DFO not only give fewer licences, but also give selected licence holders a pre-defined portion of the available fish. Individual fishing quotas, or IFQs, would grant an exclusive right to an individual or company to fish a certain percentage of the total allowable catch (TAC) of a fish species in a specific geographic area. Quotas would supposedly end the competitive nature of fisheries.

'The idea that fish should be privately owned and bought and sold like shares in the stock market is a radical departure from the notion of fish as common property.'

Pearse's proposal went further. He proposed that licence holders be able to buy, sell, lease and trade quota without restriction, making quotas fully transferable. This is known as an individual transferable quota (ITQ) system. As fishermen buy and sell licences, according to economic theory, larger, more efficient operators would buy out smaller ones, overcapitalization would decrease, and the fleet would become smaller and more manageable. (Pearse recently repeated this proposal in his co-authored federal-provincial report on the salmon fishery, *Treatise and Transition: Towards a Sustainable Fishery on Canada's Pacific Coast.*[9] In this latest version,

TABLE 1: Commercial Fishing Licences and Major Policy Reforms

	Licence	Year of limited entry	Major licensing reforms	Number of licences
Quota Fisheries				
Abalone	Closed	1977	Quota system in 1979; Closed for conservation reasons in 1990	26
Geoduck	G	1979	Quota system in 1989	55
Sablefish	K	1981	Quota system in 1990	48
Halibut	L	1979	Quota system in 1991	436
Red Sea Urchin	ZC	1991	Quota system in 1994	110
Green Sea Urchin	ZA	1991	Quota system in 1995	49
Sea Cucumber	ZD	1991	Quota system in 1995	85
Groundfish Trawl	T	1979	Quota system in 1997	142
Non-Quota Fisheries				
Salmon	A	1969	Mifflin Plan in 1996	2,220
Herring	HS / HG	1974	In 1979, an owner-operator provision was dropped and in 1991 the licence became transferable. Today, fishermen form licence pools that are assigned quotas, although the fishery is not considered an IFQ program.	252 / 1,257
Prawn	W	1990	Trap limits in 1995	251
Crab	R	1991	Licence retirement program in 1997	222
Clam	Z2	1998	1989 introduced area licensing	1,146
Rockfish Hook and Line	ZN	1991-1992	Catches were cut by 50% in 2002 and 89 Rockfish Conservation Areas were established in 2004.	262
Shrimp	S	1969	Fishery began in 1960s as part of A license. Mifflin Plan allowed separation of A from S licence.	247

SOURCE: Information on licensing policies obtained from DFO's homepage and various fisheries management plans.

he emphasizes the concept that licences should be long-term tenures rather than annual privileges. This would further entrench private property rights in the fishery.)

The idea that fish should be privately owned and bought and sold like shares in the stock market is a radical departure from the notion of fish as common property. Nevertheless, the idea of privatizing fisheries through tradable quotas has gained prominence. Some fishermen and fishing companies who stood to gain a "windfall profit" from the initial grant of quotas promoted privatization. Senior DFO officials, who saw an opportunity to offload management costs and responsibilities onto industry and meet their budget reduction targets, also supported privatization. Others, such as the Fraser Institute, trumpeted quotas for ideological reasons, believing that a free-market approach to managing natural resources would optimize economic benefits and ensure conservation.[10]

In 1989, DFO published a strategic outlook, *Vision 2000: A Vision of Pacific Fisheries at the Beginning of the 21st Century*, which announced a "move towards property rights concept for all fisheries."[11] Soon after, DFO implemented individual transferable quotas in the geoduck, sablefish and halibut fisheries.

SALMON DILEMMA

Salmon, however, were problematic and not so easily moved into a quota system. In 1994,

there were 4,415 salmon licences, divided among seiners, gillnetters and trollers, which caught five species of salmon from more than 4,000 distinct stocks spawning in some 1,500 streams and rivers. Salmon stock levels fluctuate wildly, forcing DFO managers to upgrade or downgrade the salmon runs and allowable catches during the fishing season. It would be logistically difficult, perhaps even impossible, to assign individual quotas to each fisherman for each species for each river, and adjust these in-season. Salmon stocks were nevertheless declining and excessive fishing capacity threatened the resource. A different solution was sought in 1996 with the introduction of the Pacific Salmon Revitalization Strategy, known as the Mifflin Plan, named after then-Fisheries Minister Fred Mifflin.

The Mifflin Plan involved three elements: an $80-million licence retirement or "buyback" program, single gear licensing which restricted fishermen to one kind of gear only, and area licensing which further restricted fishermen to one of two seine areas, or one of three gillnet or troll areas. If fishermen wanted to fish in another area or with different gear, they would have to buy out a fellow fisherman and "stack" the licence on their vessel. The stacking provision would further rationalize the fleet. Following Pearse's argument, fishermen with more efficient boats—and more money—would buy out smaller, marginal operators.

Groundfish Trawl IFQs

The following year DFO reformed the groundfish trawl fishery, implementing individual transferable quotas. At approximately 140,000 tonnes in annual landings, groundfish trawling is the largest fishery by volume in B.C. It equals about 60 percent of the total landed weight of all fisheries in B.C. There are 55 area-specific species quotas in the fishery and through a system of buying, selling, trading and leasing the fleet was rationalized to some 60 to 80 working vessels from 142. A Groundfish Development Authority (GDA), representing community and labour interests, was also established to provide advice to the Minister regarding 20 percent of the quota allocations.

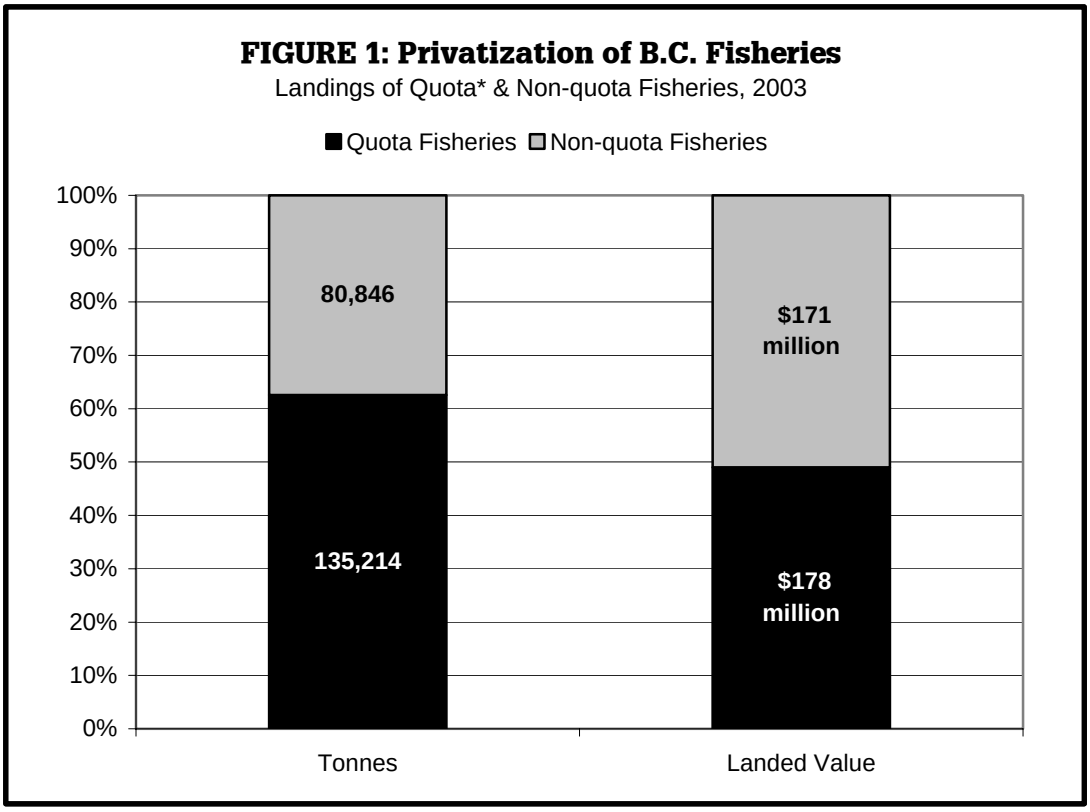
The privatization of the trawl fishery also saw the establishment of a commercial quota registry. According to its website, A to Z Quota Registry is "sort of like a small stock exchange. Vessel and licence holders register their quotas, vessels, licences, and equipment with our company, and we try and match buyers with sellers, or those interested in trading quota. When a match is found we collect either a service charge or commission from the participants."[12] Thus, B.C.'s first private fish stock exchange—with buyers, sellers and brokers—was created.

'More than 30 years after the introduction of the Davis Plan, the B.C. fishery is being consolidated and increasingly privatized.'

Resource Privatization

What has been the cumulative effect of all these licensing policy reforms? More than 30 years after the introduction of the Davis Plan, the B.C. fishery is being consolidated and increasingly privatized. By 2003, 63 percent of all commercial fisheries, by weight, were managed as quota fisheries (not including roe herring which involves licence pools and quotas, but is not formally considered an IFQ fishery); the ratio is 49 percent by landed value.

Participation in commercial fisheries—with the exception of special non-transferable native



SOURCE: DFO Commercial Catch Statistics homepage.
NOTE: Approximately $8 million (or 10%) of the groundfish landed value is caught in non-quota fisheries including Schedule II and rockfish hook and line fisheries. Because DFO does not publish data on landed catches for specific fisheries, these catches have been included in the quota fisheries for this chart.

and clam licences—is dependent on how much money one has. Access to capital has become the ultimate requisite for a successful fisherman. According to the A to Z Quota Registry, participation in commercial fishing "is just a matter of money." [13]

B.C.'s fisheries are being managed to maximize the returns of licence and quota holders—if not the *de jure* then the *de facto* owners of the fish in the ocean—while marginalizing or simply ignoring the interests of First Nations, crews, shore workers, marine suppliers and the broader socio-economic interests of rural communities. Ocean resources are shifting from being a public trust managed for the benefit of all Canadians to private property managed in the narrow interest of exclusive groups of licence and quota holders. This privatization of a public resource has fundamentally changed the economics of fishing and significantly skewed who participates in and benefits from Canada's Pacific fisheries.

CHAPTER 3

economic impacts: fishing for millionaires

Capital investment in the B.C. fishing fleet has soared since 1969.[14] Investment has taken two forms. The first category is investment in vessels and equipment. As earnings grew in the 1970s, fishermen reinvested in their operations to increase their fishing efficiency. Vessels became bigger, more powerful and faster to increase their catching capacity in the race for the fish. Many boats were retrofitted with bigger holds, better motors, keener electronics and refrigeration to freeze fish at sea. The fishing fleet had far more catching capacity than could be supported by sustainable harvest levels.

The second category is investment in licences and quotas. Increased earnings and more catching capacity, combined with limited entry, created a lucrative market for fishermen to buy and sell their commercial fishing privileges. These investments, in fact, became larger than investment in vessels and equipment. From 1969 to 1988, the total market value of the fleet (including vessels, equipment and licences) jumped by 360 percent. More than half this reflected the enormous value of licences, largely salmon and herring—the coast's two most lucrative

TABLE 2: Estimation of Licence and Quota Market Values by B.C. Fishery

Fishery (Licence)	No. of Licences	Value / Licence ($)	Total Licence Value ($)	Quota Value ($)	Fishery Value Licence + Quota ($)
SALMON					
Seine (AS)	266	$361,880	$96,260,000	-	$96,260,000
Gillnet (AG)	1075	82,767	88,975,000	-	88,975,000
Troll (AT)	520	99,115	51,540,000	-	51,540,000
Salmon Total			236,775,000	-	236,775,000
HERRING					
Seine (HS)	251	709,462	178,075,000	-	178,075,000
Gillnet (HG)	1250	140,564	175,705,000	-	175,705,000
Spawn on kelp (J)	37	925,000	34,225,000	-	34,225,000
Herring total			388,005,000	-	388,005,000
GROUNDFISH					
Trawl (T)	142	81,900	11,629,800	267,622,500	279,252,300
Halibut (L)	410	46,860	19,212,600	317,250,000	336,462,600
Sablefish (k)	47	190,000	8,930,000	139,568,817	148,498,817
Rockfish (ZN)	248	101,782	25,242,000	-	25,242,000
Schedule II (C)	527	20,400	10,750800		10,750,800
Groundfish total			75,765,200	724,441,317	789,455,717
SHELLFISH					
Crab (R)	213	352,000	74,976,000	-	74,976,000
Prawn (W)	247	438,000	108,186,000	-	108,186,000
Shrimp (S)	235	49,200	11,562,000	-	11,562,000
Geoduck (G)	55	3,000,000	165,000,000	-	165,000,000
Red Urchin (ZC)	104	235,000	24,440,000	-	24,440,000
Green Urchin (ZA)	49	40,000	1,960,000	-	1,960,000
Sea Cucumber (ZD)	85	100,000	8,500,000	-	8,500,000
Euphausiid (ZF)	18	75,000	1,350,000		1,350,000
TOTAL FISHERIES			**$1,096,519,200**	**$724,441,317**	**1,820,960,517**

SOURCE: Nelson Bros Fisheries Ltd, Licence Values in the Pacific Fishing Fleet, report prepared for DFO, March 31, 2003. Values are approximately December 31, 2002 and exclude AI, F and N licence categories.

fisheries.[15] Both categories of capital investment grew and lead to overcapitalization in the fishing industry.

A 1986 report by the Auditor General of Canada identified several negative consequences of DFO's licensing policy.[16] According to the Auditor General, although the number of fishing boats declined from 6,600 to 4,400 over a 15-year period, "the catching capability of the total fleet has increased dramatically through upgrading vessels under existing licences or by technological improvements."[17]

'A 1986 report by the Auditor-General of Canada identified several negative consequences of DFO's licensing policy.'

Furthermore, the Auditor General concluded that, "the high level of investment in fleet capacity in relation to the value of the fisheries resource makes it difficult for fishermen to earn an adequate return on their investment income and creates financial difficulties when there are poor fishing seasons, price declines, or interest rate increases."[18] As a result, "the risk of over-fishing has increased substantially in the past decade." The risk was reality. The Auditor General noted declining fish stocks and consistent over-fishing.

By 1995, salmon stocks and prices had declined to the point where the fishing fleet in B.C. began to lose money in terms of pre-tax income. The Mifflin Plan was designed to increase the fleet's economic viability. Between 1996 and 2000, the combined effect of the licence retirement program and licence stacking cut the fleet by 54 percent, reducing capital investment in vessels and equipment proportionately. By 1997, the number of jobs lost in the salmon industry was 6,445.[19]

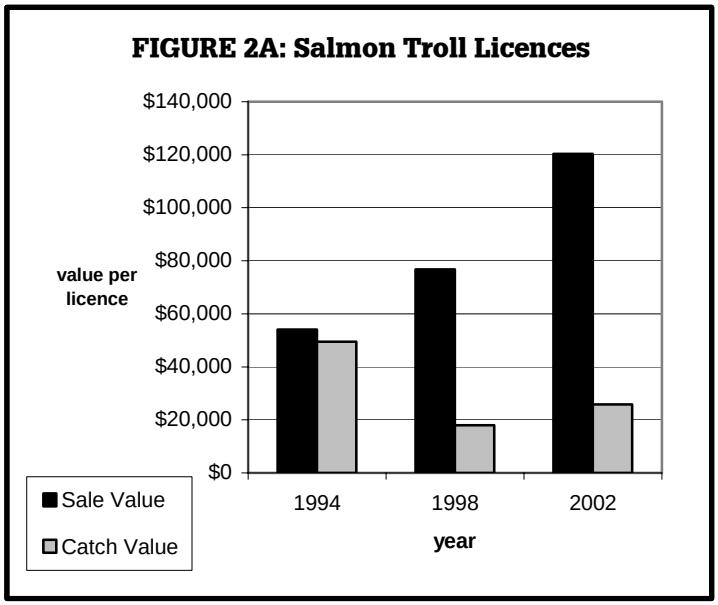
However, a report commissioned by the BC Job Protection Commission found that the Mifflin Plan's buyback and new licensing provisions doubled the market value of licences, even in the face of declining catches.[20]

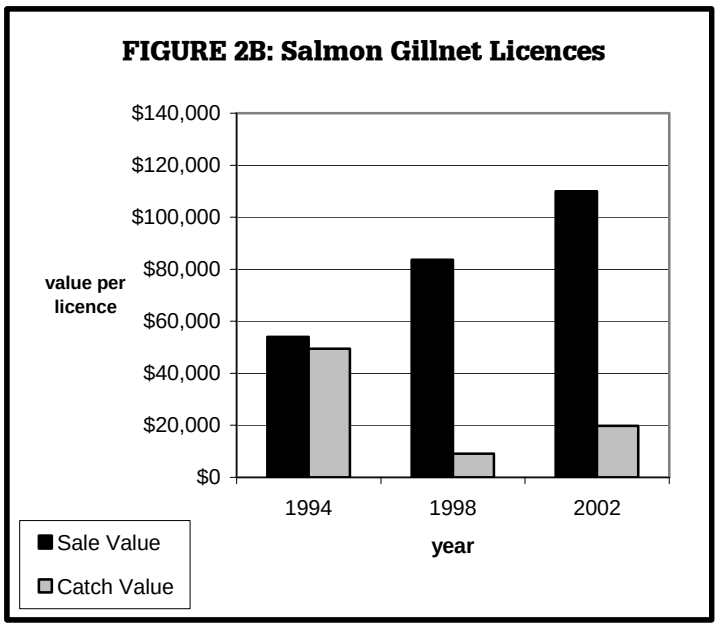
RISING MARKET VALUES

Indeed, licence values have increased across the board for almost all fisheries, especially in the salmon and groundfish IFQ fisheries. DFO set out to reduce overcapitalization in the fishing industry, but its policies have had the opposite effect on the capital value of licences and quotas.

A survey of average sale prices (in 2003 dollars) advertised in various maritime publications (including *The West Coast Fishermen* and *Fishermen Life*) provides a relative comparison of the growing capitalization in fishing licences and quotas. Between 1994 (before the Mifflin Plan) and 2002, the average advertised sale value of a gillnet salmon licence doubled, while the landed value per licence dropped by 60 percent. The sale value of troll salmon licences went up by 123 percent while the average catch per licence dropped 48 percent.

Although the Mifflin Plan was supposed to reduce capitalization in the fleet by reducing the number of boats, it had the opposite effect since licence values soared. It became more expensive than ever to become a salmon fisherman. Gillnet and troll licences were worth more than five times the value of their annual landed catch (See Figures 2A and 2B).





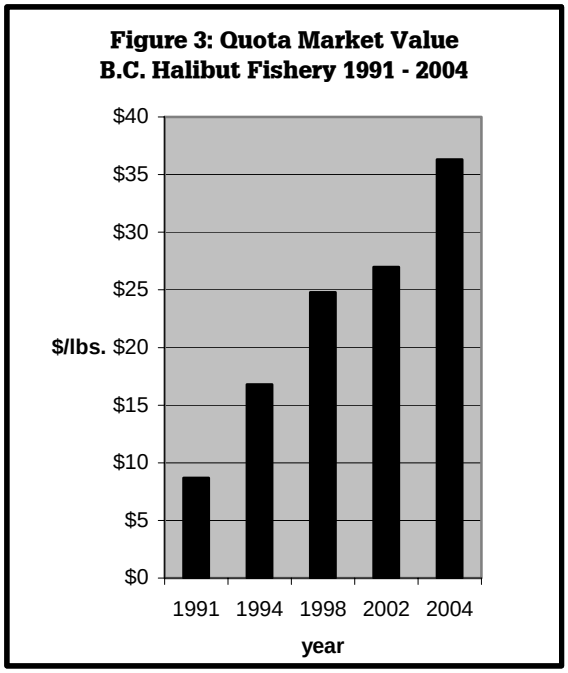


FIGURE 2A and 2B: The difference between the purchase price (sale value) of a licence and the average landed catch value per licence for gillnet and troll salmon fisheries for the years 1994, 1998 and 2002. In 1994, salmon troll and gillnet licences were the same licence, but were split into separate licence types and licence areas in 1996. The sale values per licence were calculated using advertised licence prices per foot multiplied by the average licence length in each year. The catch value was taken from DFO catch statistics.

Other fisheries, especially those with IFQ programs, experienced inflationary trends too. The advertised price of halibut quota, for example, increased from $9 per pound in 1991 (the first year of the quota system) to $27 per adjusted for inflation. By 2004, the price of pound in 2002, a three-fold increase when one pound of halibut quota reached $36. (See Figure 3). A similar trend occurred with sablefish quota, which was advertised in the *West Coast Fishermen* in 1990 (the first year of the quota system) for $7.86 per pound, but is valued now between $40 and $50 per pound.

Two factors contributed, in part, to the increase in the market value of halibut quota: first, harvesting costs decreased since fewer boats and crews fished the stock, and second, the landed value rose more from $21 million in 1990 to $39 million in 1999, an 84 percent increase, due to higher catches and prices.[21] Still, larger landings, better prices and lower costs do not account for most of the 300 percent increase in the market value of quota.

Other factors have had a significant effect on market values, including "windfall profits," tax subsidies, licence stacking, quota leasing, and increasing demand for shrinking supply.

"Windfall Profits"

The granting or gifting of licences and quota creates "windfall profits" for those who received them. In most cases, the allocation of licences and quota cost nothing to the initial recipients and represented "a giveaway of public resources."[22]

New entrants to fisheries must now buy these licences and quota to gain access to the resource. The market value paid to the initial recipient represents a windfall profit since these recipients initially acquired the licence or quota at no cost.[23] Nowadays, a geoduck quota licence is worth $3 million. The average sablefish licence and quota holder owns an asset worth $3.2 million. And the average halibut licence and quota holder has an $820,000 asset.

Tax Incentives

Many of those who were initially granted licences and quota at no cost and have thus earned themselves a windfall profit have reinvested their earnings in the fishery by buying more licences and quota. The tax system encourages this consolidation by making licence and quota purchases tax deductible. The initial windfall profit and subsequent buying and selling of licences and quota, encouraged by tax incentives, capitalized the fishery unlike never before.

Licence Stacking

Fisheries policy reform in the later 1990s created inflationary markets for licences and quota. The Mifflin Plan, for instance, encourage those remaining in the salmon industry to buy more licences to remain viable. A small-boat fisherman could "stack" multiple licences on a single vessel under the scheme. Many fishermen did just that. In 1994, 81 percent of salmon fishermen only owned one salmon licence; in 2002, that number declined to 52 percent.

Fisheries policies that permit "stacking" increase the market value of licences. It encourages the consolidation of the industry and economies of scale. According to one study, "Each dollar of fisheries revenue for which licences can be stacked has much greater profit potential than a dollar of revenue for unstackable licences. The reason is that the revenue from the additional licence(s) does not have to go to serving fixed costs, such as vessel insurance and repairs. This greater profit potential, in turn, is translated into a higher licence value."[24] The study found

that the market value of "stackable" licences (such as salmon) is three to six times the annual landed value per licence, while the market value of non-stackable licences are on par with annual catches. This is consistent with our findings for small-boat salmon licences: market values are about five times the annual landed value for each licence. (See Figures 3A and 3B.)

QUOTA LEASING

Quotas can also be stacked in that fishermen can accumulate quota on a single vessel and increase their efficiency through economies of scale. Fishermen can also stack quota on a derelict vessel that never gets used, and then lease the quota to a bona fide working fishermen. Fully transferable quotas encourage leasing whereby a quota holder rents quota to a working fishermen for a fee. Leasing fees, especially in the B.C. halibut fishery, have been as high as 70 to 80 percent of the revenue from the landed catch, which is similar to anecdotal evidence in Atlantic Canada.[25]

It's a lucrative arrangement for quota holders, since their economic returns are often secured through pre-season agreements irrespective of the fluctuating market price for the fish. Furthermore, quota holders bear no risk to property or personal injury from fishing, a dangerous occupation even during fair weather. Leasing—often done privately and informally—further increased the market value of IFQs, making them valuable, revenue-generating assets without the costs and risks of operating a vessel.

INCREASING DEMAND, SHRINKING SUPPLY

Another factor contributing to the rising market value for commercial fishing privileges is growing demand, especially in the face of declining stocks (decreasing supply) in many fisheries. Allocation disputes among recreational, commercial and Aboriginal fishermen have become more acrimonious as a result.

Over the past three decades, many of those fishermen initially excluded in limited-entry licensing were First Nation fishermen.[26] To address this loss of access, the government has chosen to purchase some licences back from commercial fishermen and reissue them to First Nations through the Northern Native Fishing Corporation or band-held, non-transferable communal licences.[27]

There is now growing demand for more native-held licences. In 2004, the Aboriginal Fisheries Commission's First Nation Panel on Fisheries recommended, "Canada take immediate steps to allocate to First Nations a minimum 50 per cent share of all fisheries, with the understanding that this may eventually reach 100 per cent in some fisheries."[28] Similar demands for an increased share of fisheries resources are also being made in modern treaty negotiations and litigation by coastal and in-river tribes. There is also growing demand from recreational fishermen for more fish.

'Windfall profits, tax incentives, fisheries policy that encourages licence stacking and quota leasing and growing demands by First Nations and recreational fishermen for allocations have all contributed to the rising price of fishing licences and quota.'

Realizing the growing demand for fisheries allocations, many commercial fishermen have supported IFQs to secure their ownership over fisheries and thus ensure they are adequately

TABLE 3: Relative Capitalization in B.C. Fisheries (values in 2003 dollars)

	capitalization (market value) of licences and quota	annual landed value (4-year average)	capital-revenue ratios
Groundfish Trawl (T)*	$ 279,252,300	$ 29,905,607	**9.4**
Roe Herring (HS, HG)	$ 353,780,000	$ 41,933,105	**8.4**
Halibut (L) **	$ 336,462,600	$ 42,461,839	**7.9**
Sablefish (K)	$ 148,498,817	$ 22,446,086	**6.6**
Sea Cucumber (ZD)	$ 8,500,000	$ 1,695,599	**5.0**
Salmon (AS, AG, AT)	$ 236,775,000	$ 50,618,718	**4.7**
Geoduck (G)	$ 165,000,000	$ 38,249,803	**4.3**
Prawn (W)	$ 108,186,000	$ 29,274,835	**3.7**
Green Urchin (ZA)	$ 1,960,000	$ 589,395	**3.3**
Spawn on Kelp (J)***	$ 34,225,000	$ 10,388,177	**3.3**
Red Urchin (ZC)	$ 24,440,000	$ 7,734,792	**3.2**
Shrimp (S)	$ 11,562,000	$ 4,694,994	**2.5**
Crab (R)	$ 74,976,000	$ 32,201,313	**2.3**

SOURCE: Most landed values for species are from DFO's Commercial Catch Statistics homepage (http://www.pac.dfo-mpo.gc.ca/pages/data_e.htm) with some exceptions footnoted below; and capitalization levels are from Nelson Bros Fisheries Ltd, Licence Values in the Pacific Fishing Fleet, report prepared for DFO, March 31, 2003.
* Groundfish Trawl T licence landed values (excluding hake) have been calculated from landed weights and prices per pound obtained from DFO and Living Oceans Society. Hake landed values have been obtained from DFO's statistics homepage. According to these calculations, the average landed value is about $30 million, significantly lower than the $65 million stated on DFO's Groundfish Trawl homepage. The report authors have submitted this data to DFO's Groundfish Unit for clarification and thus the landed value may change pending DFO's response.
** Halibut L licence landed values do not include non-halibut species such as various rockfish which are caught and sold by L licence holders. Rockfish species make up more than 10 percent of the landed weight of the L licence catch.
*** Spawn-on-kelp J licence landed values came from the B.C. Spawn-on-Kelp Association and are about 20 percent lower than the export values recorded on DFO's Commercial Catch Statistics homepage.

compensated if licences and quota are bought and transferred to First Nations through treaties. This has added the dynamic of speculative investment, a problem that DFO has recognized but apparently ignored. In 1994, an internal DFO memo from then-Assistant Deputy Minister Pat Chamut stated "the creation of IQs [individual quotas] creates disproportionate wealth for those who receive them... It has become evident that the adoption of IQs and the associated windfall profits that they will generate for fishermen will significantly increase the costs of future land claim settlements."[29]

Realizing this problem, the First Nations Panel on Fisheries has recently renewed calls that "a moratorium be placed on the further introduction of individual property rights regimes such as Individual Fishing Quotas (IFQs) unless First Nation interests including allocations in those fisheries are first addressed."[30]

Windfall profits, tax incentives, fisheries policy that encourages licence stacking and quota leasing and growing demands by First Nations and recreational fishermen for allocations have all contributed to inflationary trends in the price of commercial fishing licences and quota.

MEASURING CAPITALIZATION

How can capitalization in fishing quotas and licences be measured? One means to compare the relative capitalization of one fishery to another is to calculate the ratio of the market value of licences and quota (capitalization) to the annual landed value in the fishery (revenue). It is a rough measure since it does not take into account the different operating costs and capital costs of vessels and

equipment for each fishery. Keeping this in mind, however, capital-to-revenue ratios have been calculated for B.C. fisheries in Table 3.

A higher ratio indicates a relatively higher level of capitalization in the fishery's licences and quotas. The fisheries with the lowest capitalization ratios tend to be non-IFQ, non-stackable or have a low landed value.

In the 1990s, Ottawa committed to reducing overcapitalization in the B.C. fishing industry in order to increase its economic viability and conserve fish stocks. Through licence buybacks and licensing policy reforms, Ottawa cut the fishing fleet in half. In 1988, DFO estimated the capital investment in vessels and equipment for the salmon fleet was about $777 million (in 2003 dollars). By 2003, the capital investment in the entire B.C. fishing fleet for all species was estimated to be $286 million.

However, the decrease in the capital value of vessels and equipment was offset by the soaring capital value of licences and quota. By 2003, the capital value of licences and quotas reached $1.8 billion (See Table 2). Vessels and equipment now make up only 14 percent of the capitalization in the B.C. fishing industry. In the past, the problem was too many fishermen chasing too few fish, but today it has become too much money chasing too few fish. Overcapitalization in licence and quota has become the problem, especially in terms of social equity.

Fishing for Millionaires

Expensive fishing licences and quotas are now becoming increasingly concentrated in fewer and fewer hands. The number of fishermen owning only one licence in B.C. declined from 43 percent in 1994 to 35 percent in 2002.[31]

The extremely high market value of licence and quota is well outside the reach of rural working families, First Nations and younger fishermen. Increasingly, B.C.'s fishery is being divided between quota and licence holders and tenant crews and skippers, that is, working fishermen who must lease licences and quota in order to go commercial fishing. Most people simply don't have the capital necessary to buy quotas or licences.

This inequity will become especially acute in the next decade as aging fishermen retire and either lease their quotas and licences or sell them to the highest bidder. At one time, a young fisherman could earn the money needed to invest in the fishery by working as a deckhand on a fish boat and being mentored into the industry at the same time. Today, that is not a possibility. A fisherman now needs to be a millionaire to enter into most fisheries.

'Canada's public fisheries resources are being bought, sold and traded in a highly unregulated, speculative market through private brokers and quota registries acting as fish stock exchanges.'

Conclusion

Canada's public fisheries resources are being bought, sold and traded in a highly unregulated, speculative market through private brokers and quota registries acting as fish stock exchanges. There is a complete lack of transparency and accountability in the ownership system. Trading and leasing is often done privately, without DFO's knowledge and even contrary to licensing policy. Prices and lease costs are unmonitored.

There is no transparent, public registry or regulated exchange whereby individuals and companies can obtain information on the ownership of fisheries resources. While publicly traded corporations are subjected to certain ownership regulations and disclosure rules, Canada's public fisheries resources, by comparison, are not. Ownership of real estate is also subjected to strict disclosure rules in stark contrast to fisheries.

Furthermore, there are no national standards for licensing policy and especially IFQ programs, protecting crew and community benefits and limiting consolidation of the industry and mitigating against other negative impacts of IFQs. Ottawa has taken a laissez-faire approach to licensing policy, abdicating its role in establishing basic standards regarding socio-economic benefits to society as a whole and limits on corporate concentration in the industry.

In the United States, legislation is currently being proposed and debated on the introduction of new IFQs and the need for national standards to mitigate the negative impacts of IFQs including increased management costs, industry consolidation, loss of rural community ownership, unfair allocations, exclusion of crew and skipper interests, among others. Canada needs to embark on a similar discussion regarding the expansion of IFQs in the Pacific fishery.

RECOMMENDATION 1: PUBLIC REGISTRY
DFO should establish a public registry that would ensure full disclosure of ownership and market values of licences and quota. Fishermen would be required to register all their leases, trades and sales of licences and quota, and fully disclose financial interests in the assets. The registry would allow the government, industry and public to monitor ownership and capital trends in the industry and to help protect against corporate concentration and overcapitalization.

RECOMMENDATION 2: NATIONAL STANDARDS
DFO should establish national standards for fishing licence and quota programs that would reduce overcapitalization in licences and quota, protect working crews from bearing the costs of quota leases, address unresolved First Nations rights, ensure that fair economic benefits are shared amongst various stakeholders and limit excessive consolidation and corporate concentration in the industry.

CHAPTER 4

social impacts: net loss to fishing communities

Fisheries are extremely important and valuable to coastal communities and First Nations whose economies are partially fishing-dependent and whose identity and culture are tied directly to fishing.

Not surprisingly, the decline of coastal resource industries, especially forestry and fishing, has adversely affected coastal communities more than other regions of the province. Statistics from the 2001 Census show that rural communities—those outside the Capital Region, Greater Vancouver and Nanaimo—have experienced the largest population decline in modern history, a drop of 2.6 percent in only five years.[32] Some communities lost more than a quarter of their populations in this same period. In fact, an index of human economic hardship in 2003 showed that the North Coast and West Coast of Vancouver Island are the poorest regions in B.C.[33]

SOCIOECONOMIC NEEDS

The major restructuring and rationalization of the fishing industry in the 1990s exacerbated the poor economic conditions in many communities. The objectives of fisheries policy focused on the economic viability of industry stakeholders (primarily licence and quota holders and processing companies), with little regard for, and only limited analysis of, regional or community impacts.

This was especially true of programs to privatize fisheries through IFQs. In assessing the first five years of the halibut IFQ program, DFO focused on the impacts on biological management, economic efficiency, crew employment and enforcement and administration. There was no mention of community or regional impacts.[34] IFQ programs, in fact, are not designed to increase the viability of rural or Aboriginal economies—and can even be detrimental to traditional fishing communities.[35]

The growing capitalization in fisheries in the 1990s has excluded many individuals from the fishing industry. Since investment and economic opportunities are limited and have declined significantly in resource-dependent communities over the last decade, urban-based fishermen and corporations have successfully outbid rural and Aboriginal fishermen to buy up commercial fishing privileges. The result has been a disproportionate loss of licences and quota in rural communities, and a disconnection between communities and their adjacent aquatic resources on the B.C. coast.

'The major restructuring and rationalization of the fishing industry exacerbated the poor economic conditions in many rural communities.'

MARGINALIZING RURAL COMMUNITIES

In Canada, household incomes are lower in rural communities, defined as areas with a population under 10,000. In fact, rural families have had the lowest average incomes compared to families living in communities with a population of 100,000 or more for three decades.[36] Furthermore, residential home values in Greater Vancouver are twice as high as on Vancouver Island and three times as high as Northern B.C.[37] Home equity is an important source of capital for fishermen, because commercial lenders do not accept a fishing licence as collateral since it is not legally a form of property. Fishermen therefore often use the equity in their homes

to borrow money to buy fishing licences. Because of lower incomes, limited economic opportunities and lower property values, rural families have less access to capital than their urban counterparts.

As fishing licence values increased, and catches declined, many rural and Aboriginal fishermen have sold out of the fishery through government-funded buyback programs. Others have simply sold out to fellow fishermen who stacked multiple licences and quota on a single vessel. With few exceptions the loss of licences has been more pronounced in rural areas than in urban areas. Between 1994 and 2002, 540 licences have been lost from rural communities as a result of fleet downsizing and the movement of major commercial fishing licences (excluding herring) to urban areas. That's almost half (45 percent) of all shellfish, groundfish and salmon fishing licences owned by rural people. The decline in urban coastal regions was only 30 percent. (See Table 4)

The downsizing of the salmon fishery through a government buyback of licences represented the largest loss of licences in rural and urban regions. Taking this into account, the number of non-salmon licences declined by 28 percent in rural communities compared to only five percent in urban regions. Even fisheries that have traditionally been based in small communities declined. According to DFO, "more than 84 percent of prawn licence holders live in smaller coastal communities outside of major metropolitan areas. Their incomes make an important contribution to local economies."[38] Between 1994 and 2002, however, the number of prawn licences in communities with a population of less than 10,000 people declined by 58 percent. With only two exceptions,[39] the rationalization and restructuring of fisheries has been significantly more detrimental to rural regions

Because of lower incomes, limited economic opportunities and lower property values, rural families have less access to capital than their urban counterparts.

TABLE 4: Loss of Licences from Rural Fishing Communities, 1994-2002

Fishery	License	Rural Licences 1994	Rural Licences 2002	Rural % change	Urban % Change
Salmon Gillnet & Troll	A	707	329	-53%	-47%
Salmon Seine	AS	95	30	-68%	-44%
Schedule II Species by Hook and Line	C	112	94	-16%	-1%
Geoduck	G	4	3	-25%	6%
Halibut	L	59	50	-15%	4%
Crab	R	50	29	-42%	13%
Shrimp	S	17	30	76%	-8%
Sablefish	K	2	2	0%	0%
Groundfish Trawl	T	3	6	100%	-2%
Prawn	W	53	22	-58%	12%
Green Sea Urchin	ZA	6	1	-83%	-43%
Red Sea Urchin	ZC	19	13	-32%	-41%
Sea Cucumber	ZD	16	10	-38%	-28%
Rockfish Hook and Line	ZN	56	42	-25%	-10%
Total	-	1199	659	-45%	- 30%

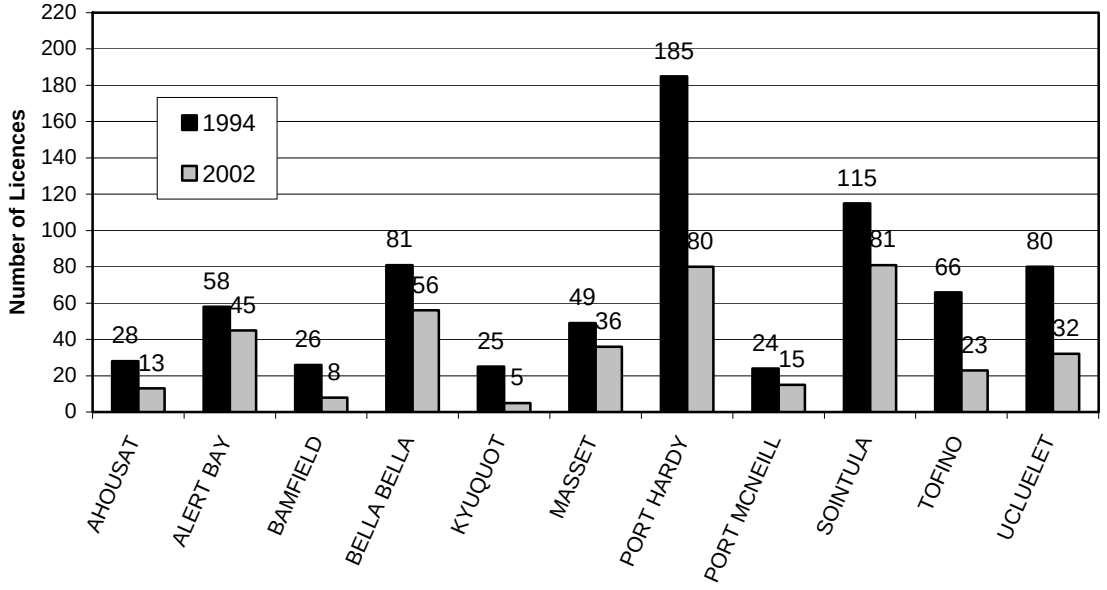
SOURCE: Data from DFO Pacific Fishery Licence Unit

TABLE 5: First Nation Ownership of B.C. Fishing Licences, 2003

	Licence	Communal Licences	Reduced Fee Licences	NNC / Other Licences	Full-Fee Licences	Native Held	Total Licences	% Native Held
Salmon (Seine)	AS	12	18		50	80	276	29%
Salmon (Gillnet)	AG	76	164	254	42	536	1406	38%
Salmon (Troll)	AT	19	24	0	7	50	539	9%
Herring (Gillnet)	HG	27	325		2	354	1256	28%
Herring (Seine)	HS	1	51		11	63	252	25%
Spawn on Kelp	J	11		15	11	36	46	78%
Halibut	L	26			27	53	435	12%
Sablefish	K	1			1	2	48	4%
Groundfish Trawl	T				5	5	142	4%
Rockfish	ZN	14			5	19	262	7%
Sardine	JS	25			4	29	50	58%
Eulachon	ZU				2	2	16	13%
Schedule II	C	8			12	20	541	4%
Crab	R	9			2	11	222	5%
Prawn	W	5			4	9	252	4%
Geoduck	G				1	1	55	2%
Red Sea Urchin	ZC	6		7	1	14	110	13%
Sea Cucumber	ZD			5	5	10	85	12%
Shrimp	S	11			4	15	246	6%
Krill	-	1			1	2	19	11%
Total		279	907	281	199	1666	6258	27%

SOURCE: James, Michelle. *Native Participation in British Columbia Commercial Fisheries—2003.* Victoria: Ministry of Agriculture, Fisheries and Food, November 2003.

FIGURE 4: Loss of Major Commerical Fishing Licences in B.C. Coastal Communities 1994-2002



SOURCE: Data from DFO Pacific Fishery Licence Unit
NOTE: Licence numbers do no include Z2 clam licences or HG herring gillnet licence.

than to urban regions.

Barriers to Aboriginal Peoples

First Nations face more obstacles in buying fishing licences and quota than non-native fishermen. According to the 1996 Census, incomes for Aboriginal people are 35 percent lower than the B.C. average and unemployment is double.[40] Many native people living on Indian reserves do not have fee-simple ownership of their homes either; thus, they cannot tap their home equity to borrow money to buy fishing licences or quota.

As a result, native ownership of full-fee commercial licences has declined precipitously. There are only 199 full-fee commercial licences owned by native individuals in B.C. (excluding clams, which has been traditionally a low-value, labour-intensive fishery and is currently a non-transferable licence). That is only three percent of all commercial licences. Through non-transferable native licences (including "A-I" which are reduced fee licences held by status Indians, "N" licences held by the Northern Native Fishing Corporation and "F" licences held communally by bands) the number climbs to almost 27 percent. These special provisions have stemmed the movement of licences leaving Aboriginal communities. This is particularly true in the salmon fishery.

The Northern Native Fishing Corporation (NNFC) holds 254 gillnet licences, about half of all native licences in that gear type in the North Coast. As a result, First Nations hold 38 percent of all commercial licences in the gillnet fishery coastwide. This contrasts sharply with troll licences. The NNFC holds no troll licences and there are relatively few communal licences, leading to very low native participation in the fishery, about nine percent.

A spatial analysis of salmon licence ownership depicted on coastal maps (See Appendix A) illustrates the important role the NNFC has played in protecting rural and Aboriginal ownership of salmon licences. Some 49 percent of North Coast gillnet salmon licences are held in North Coast communities. The number for northern troll licences is 27 percent and for northern seine licences only 11 percent.

The NNFC, based in Prince Rupert, increased its holdings from 100 licences in 1994 to 254 in 2002, which means the total number of commercial licences for Prince Rupert was 482 in 1994 and 467 in 2002, a decline of only three percent. The increase in NNFC-owned licences masks the otherwise drastic decline in local licence ownership in the North Coast.

'The high level of capitalization in IFQ fisheries and the poorer economic status of First Nations mean aboriginal people own relatively few IFQ licences.'

Excluding Prince Rupert (where the NNFC is based), the number of salmon licences in northern rural communities dropped from 299 in 1994 to 142 in 2002, a 53 percent decline.

The high level of capitalization in IFQ fisheries and the poorer economic status of First Nations mean relatively few IFQ licences (halibut, sablefish, groundfish trawl, sea cucumbers and urchins) are owned by Aboriginal people. Less than five percent of full-fee commercial IFQ licences are held by First Nations individuals. When communal and reduced fee IFQ licences are included, ownership of IFQ fisheries doubles to 10 percent.

TABLE 6: Ownership of Major Fishing Licences on the West Coast of Vancouver Island (WCVI) 2002

Fishery	License	Total Licences	WCVI-based Licences	% WCVI-based licences
Salmon Gillnet	AG	1405	10	0.7%
Salmon Troll	AT	539	55	10.2%
Salmon Seine	AS	276	0	0.0%
Groundfish Trawl	T	142	2	1.4%
Halibut	L	436	9	2.1%
Sablefish	K	48	0	0.0%
Geoduck	G	55	2	3.6%
Crab	R	222	14	6.3%
Shrimp	S	247	14	5.7%
Prawn	W	251	11	4.4%
Rockfish Hook and Line	ZN	262	12	4.6%
Total		3,883	129	3.3%

SOURCE: Data from DFO Pacific Fishery Licence Unit

Given the economic challenges facing Aboriginal communities, including lower incomes, limited employment opportunities on reserve and lack of home equity, the participation of native people in the West Coast fishery would have declined even more without the NNFC and other protective measures such as communal ownership. These non-transferable native licences represent a form of community-based ownership and are an exception to DFO's commercial licensing policy.

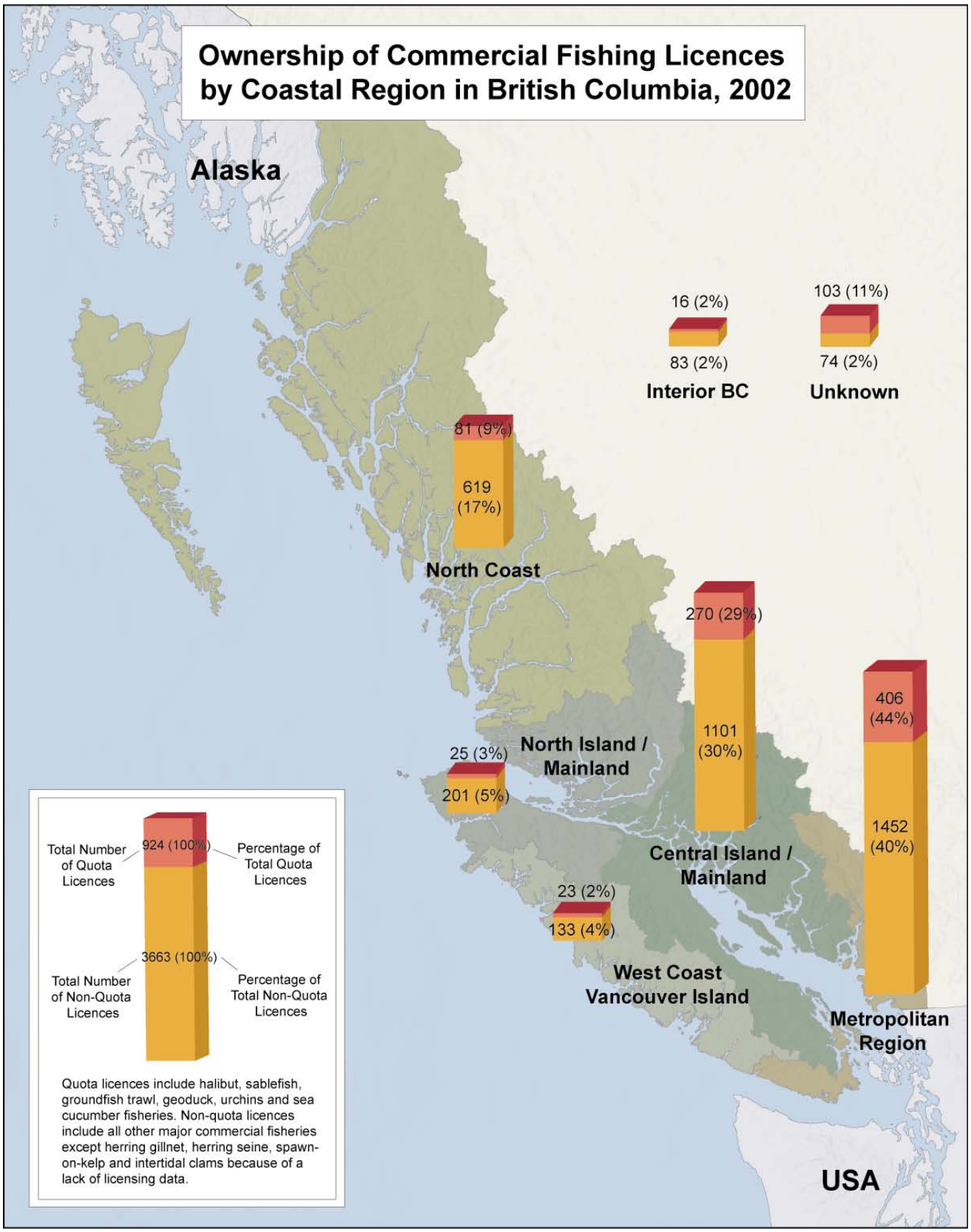
UNDERMINING THE ADJACENCY PRINCIPLE

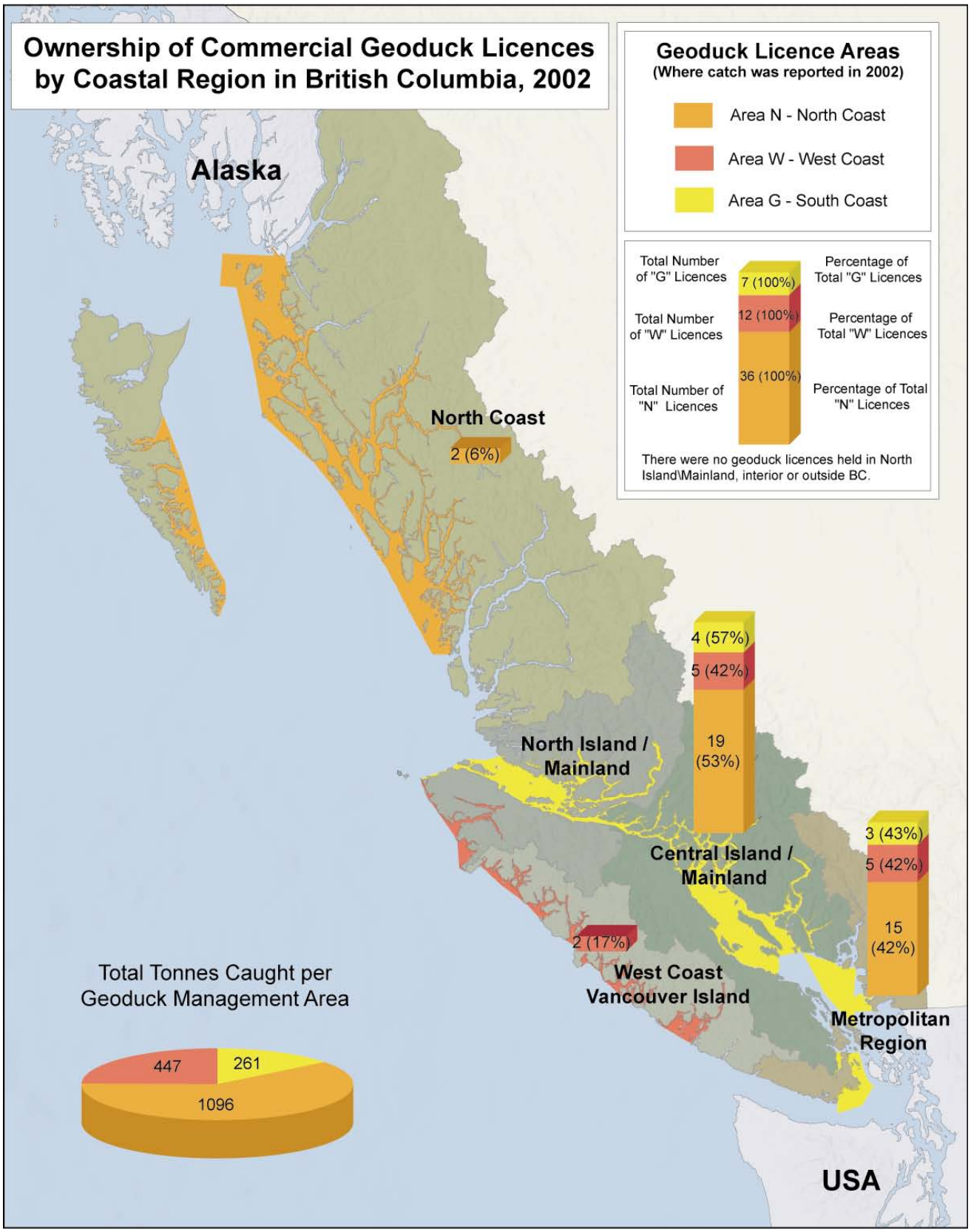
One of the effects of the shift in licence ownership is that many rural communities and First Nations see few benefits accruing from adjacent fisheries resources. The West Coast of Vancouver Island, stretching from Barkley Sound to Kyuquot Sound, is a case in point. Spatial analysis of the residency of licence owners shows that very few fishermen in this region own fishing licences. Yet the sparsely populated region is one of the most productive and diverse marine ecosystems in the world, supporting high catches of groundfish, shellfish, salmon and other species. By and large, ownership of licences and quota to fish on the West Coast resides with individuals who live outside the region.

Local residents and First Nations own only 11 (2 percent) of all groundfish quota licences, including groundfish trawl, halibut and sablefish. IFQs are capital-intensive fisheries and thus are less likely to be owned by residents of rural communities. On the West Coast of Vancouver Island, only two percent (23) of all B.C. quota licences are owned locally compared to four percent of non-quota licences. This is also true on the North Island and North Coast, where only three and nine percent of quota licenses are held, respectively.

The opposite is true in urban areas. Almost 44 percent of all quota licences are held in the metropolitan regions of Victoria and Vancouver. The portion of non-quota licences held in these metropolitan regions is slightly lower at 40 percent. In other words, individual fishing quotas tend to be more concentrated in metropolitan areas than non-quota fisheries.

By way of example, a spatial analysis of the landed value and ownership of geoduck quota shows how an IFQ fishery is concentrated in urban areas and how disconnected rural


Ownership of Commercial Fishing Licences by Coastal Region in British Columbia, 2002
Alaska
16 (2%)
83 (2%)
Interior BC
103 (11%)
74 (2%)
Unknown
81 (9%)
619 (17%)
North Coast
270 (29%)
1101 (30%)
Central Island / Mainland
406 (44%)
1452 (40%)
Metropolitan Region
25 (3%)
201 (5%)
North Island / Mainland
23 (2%)
133 (4%)
West Coast Vancouver Island
USA
Total Number of Quota Licences
924 (100%)
Percentage of Total Quota Licences
3663 (100%)
Total Number of Non-Quota Licences
Percentage of Total Non-Quota Licences
Quota licences include halibut, sablefish, groundfish trawl, geoduck, urchins and sea cucumber fisheries. Non-quota licences include all other major commercial fisheries except herring gillnet, herring seine, spawn-on-kelp and intertidal clams because of a lack of licensing data.


Ownership of Commercial Geoduck Licences by Coastal Region in British Columbia, 2002
Geoduck Licence Areas
(Where catch was reported in 2002)
Area N - North Coast
Area W - West Coast
Area G - South Coast
Total Number of "G" Licences
7 (100%)
Percentage of Total "G" Licences
Total Number of "W" Licences
12 (100%)
Percentage of Total "W" Licences
Total Number of "N" Licences
36 (100%)
Percentage of Total "N" Licences
There were no geoduck licences held in North Island\Mainland, interior or outside BC.
Alaska
North Coast
2 (6%)
4 (57%)
5 (42%)
19 (53%)
North Island / Mainland
Central Island / Mainland
3 (43%)
5 (42%)
15 (42%)
2 (17%)
West Coast Vancouver Island
Metropolitan Region
Total Tonnes Caught per Geoduck Management Area
447
261
1096
USA

communities have become to their adjacent aquatic resources. On the West Coast of Vancouver Island, only two of 12 licences to harvest geoducks in this region are owned by local residents. The situation is worse in the North Coast. Although $23 million in geoducks were harvested in the North Coast region in 2002, local residents only owned two of 36 quota licences. In a region that is suffering population loss and economic depression, most of the profits from the geoduck fishery went to individuals or companies outside the North Coast.

CORPORATE OWNERSHIP

Many licences in urban areas are owned by companies or individuals who effectively act as "absentee landlords" in that they lease their quotas or licences to tenant fishermen. Leasing is usually done through private, contractual agreements and so there is little or no data available on how widespread the practice is. There is, however, some data on corporate ownership of fishing licences.

In B.C., the largest corporate entity in fisheries is the Canadian Fishing Company (Canfisco), which owned 244 licences in various fisheries in 2002. The total market value of Canfisco's licences and quota is approximately $105 million. Jim Pattison Group, which also owns Overwaitea Food Group with 100 stores and Buy-Low Foods with 26 stores in Western Canada, owns Canfisco.

Canfisco is a large owner of the B.C. seine fleet. It directly owns one-third of all herring seine licences and 20 percent of all salmon seine licences. It is the largest canner of salmon in Canada and the largest roe herring exporter. Canfisco is dominant in these fisheries and is vertically integrated from the sea to the shopping cart.

COMMUNITY-BASED CLAM FISHERY

The wild clam (Z2 licence) fishery is a good example of a rural, community-based fishery. In 1998, licence limitation was introduced into the South Coast commercial clam fishery, reducing the number of clam harvesters to approximately 1,165. Clam licences are non-transferable, meaning harvesters cannot sell these licenses freely. In addition, DFO established a community management board on the West Coast of Vancouver Island (Area F) to allow for greater involvement of the local communities in the management of the fishery. Native people hold almost 57 percent of all Z2 intertidal clam licences and rural ownership—at approximately 30 percent—is one of the highest participation rates of rural people in commercial fisheries in B.C. On the West Coast of Vancouver Island, more than 85 percent of the 337 clam licences (237 Aboriginal communal and 100 regular clam licenses) are held locally, illustrating the local retention of non-transferable fishing rights and their associated economic opportunities.

TABLE 7: Canfisco Ownership of B.C. Fishing Licences in B.C., 2002

Licence	Number	Estimated Market Value
Salmon Gillnet (AG)	3	$ 248,301
Salmon Seine (AS)	90	$ 32,569,200
Herring Gillnet (HG)	81	$ 11,385,684
Herring Seine (HS)	51	$ 36,182,562
Sablefish (K) *	1	$ 3,159,550
Halibut (L) *	9	$ 7,385,764
Groundfish Trawl (T) *	7	$ 13,765,958
Other	2	-
Total	244	$ 104,697,027

* Estimated market value for groundfish licences calculated as average values per quota licence in fishery.
SOURCE: Licence numbers from DFO licensing database (2002) and prices are from Nelson Bros Fisheries Ltd. Licence Values in the Pacific Fishing Fleet, report prepared for DFO, March 31, 2003.

SOCIAL INEQUITY

Growing corporate concentration, absentee landlords and dwindling licence ownership in rural regions is indicative of a fundamental shift occurring in Pacific fisheries. The very measures that were meant to improve the economics of fishing have, in fact, undermined the viability of many rural and Aboriginal fishing communities. The rationalization and restructuring of the West Coast fishing industry has impacted them disproportionately. In effect, fisheries policy, whether intentional or not, is skewed in favour of urban-based corporations and individuals with greater access to capital and economic opportunities. Fishermen in those rural communities most dependent on fishing are being bid out of the fishery.

'The GAO found that IFQ programs have "raised concerns about the fairness of initial quota allocations, the increased costs for fishermen to gain entry, and the loss of employment and revenues in communities that have historically depended on fishing."'

Leasing, consolidation and the loss of licences in rural communities will likely become worse in the next decade as the current generation of fishermen retires. These fishermen will either sell their fishing privileges to the highest bidder or simply lease their licences and quota and thereby earn revenues throughout their retirement. This will make it increasingly difficult for young fishermen (new entrants) to own commercial fishing privileges.

The U.S. General Accounting Office (GAO) has singled out this inequity as a problem. In a report to Congress, the GAO stated that IFQ programs have "raised concerns about the fairness of initial quota allocations, the increased costs for fishermen to gain entry, and the loss of employment and revenues in communities that have historically depended on fishing."[41] The GAO outlined a series of measures that could protect community interests and facilitate new entrants in IFQ fisheries. Without similar measures in B.C. fisheries, social inequity will grow as fewer individuals gain greater access to and benefits from fisheries resources.

CONCLUSION

Governments can protect the next generation of fishermen by implementing measures to facilitate new entrants into fisheries and safeguard the interests of First Nations and coastal communities through a number of innovative policies. These measures, outlined by the GAO report, include:[42]

- Buying back quota in order to re-allocate it to younger, professional fishermen
- Issuing quota for a fixed period of time
- Setting aside increases in the total allowable catch for new entrants
- Providing financial assistance for new entrants to buy quota and licences
- Prohibiting quota and licence sales, making them non-transferable
- Placing geographic restrictions on quota and licence transfers
- Setting limits on the amount of quota or licences an individual or entity can hold
- Requiring quota and licence holders to be onboard their vessels when fish are caught
- Restricting the ports to which quota can be landed

- Creating separate quota markets for large and small vessels
- Giving communities the right of first refusal to buy licences and quota

Most countries with IFQ programs have recognized the detrimental effect of fisheries privatization on social equity and have introduced many of these provisions. These countries include Iceland, Norway, Scotland, New Zealand and the United States.

In Canada, DFO has granted special licences and quotas to protect First Nations interests and in 1997 established the Groundfish Development Authority (GDA), a non-profit society consisting of labour and community interests which advises the Minister of Fisheries on the allocation of 20 percent of the TAC. The allocation advice involves processors and quota holders jointly applying for quota from the GDA. However, the complex and weighted formula, on which allocations are based, limits the actual influence of community and labour interests over the allocations.

In assessing the suite of options available to fisheries managers, the U.S. General Accounting Office concluded that the "easiest and most direct way to help protect communities under an IFQ program is to allow the communities themselves to hold quota."[43] In June 2001, the U.S. North Pacific Fishery Management Council recognized the fact that a number of small coastal communities "are struggling to remain economically viable" and that "[a]llowing qualifying communities to purchase halibut and sablefish quota share for use by community residents will help minimize adverse economic impacts on these small, remote, coastal communities in Southeast and Southcentral Alaska, and help provide for the sustained participation of these communities in the halibut and sablefish IFQ fisheries."[44]

In April 2004, U.S. federal fisheries regulations were amended to allow 42 rural communities with a population of less than 1,500 people and with historic participation in the fisheries to establish non-profit Community Quota Entities (CQEs) to hold and lease quota for local residents. The Alaskan state government provided CQEs with up to $2 million (U.S.) in loans to purchase quotas.

This program comes on the heels of Alaska's successful Community Development Quota program, which granted a portion of Alaska's pollock fishery to rural communities. Since 1992, the CDQ program has generated $110 million (U.S.) in wages, education and training

'The GAO concluded that the "easiest and most direct way to help protect communities under an IFQ program is to allow the communities themselves to hold quota." '

benefits for over 25,000 residents of Bering Sea communities, $500 million (U.S.) in revenues and $260 million (U.S.) in asset value for six CDQ groups. The CDQ program has funded docks, harbours, seafood processing facilities, the acquisition of equity ownership in the pollock, Pacific cod and crab fisheries, and local economic development projects.[45] The program has received widespread, bipartisan support in Alaska.

Without similar measures to protect rural fishing communities and First Nations in B.C., ownership of fisheries licences and quota by local residents will continue to dwindle, adding to the downward economic spiral of coastal communities.

RECOMMENDATION 3: COMMUNITY QUOTA ENTITIES

DFO in partnership with provincial, municipal and First Nation governments should permit the establishment of and provide funding for Community Quota Entities, which would be non-profit societies established to hold fisheries licences and quota in trust for Aboriginal and non-Aboriginal rural fishing communities. The CQEs would lease fishing privileges to local fishermen and facilitate new entrants, i.e. the next generation, into the industry. The CQE program would be modelled on a similar program established in Alaska, including government-funded loans of up to $2 million for each CQE.

Chapter 5

ecological impacts: selling out conservation

Assessing the impacts of federal fisheries licensing policy on conservation is a difficult and complex task. Many factors, including habitat degradation, ocean survival rates and climate change, affect fish stocks. Nevertheless, fisheries licensing policy does play an important role in providing incentives and disincentives to fishermen to conserve fish stocks.

Fisheries licensing policy can take the form of *input* or *output* controls. Input controls limit the number of vessels, type and amount of gear, fishing methods, length of vessels and fishing season and permitted fishing areas. Output controls limit the amount of catch that can be taken out of the sea, which are usually set as annual TACs. An IFQ system can be both an input and output control. Quotas limit the amount of fish an individual fisherman can catch (an output control), but by making quotas transferable and stackable, the number of vessels fishing is often reduced (an input control) through fleet rationalization.

CONSERVATION RECORD

The conservation record of IFQ programs is mixed. By ending the race for the fish and rationalizing fishing fleets, they have helped fisheries managers control over-harvesting, ensuring that landings do not exceed TACs. For instance since the introduction of IFQs in the B.C. halibut fishery in 1991, the catch has been slightly lower than the TAC each year.[46] The Alaskan IFQ programs in halibut and sablefish were also successful at eliminating the frenzied derby fishery, improving crew safety and reducing waste resulting from ghost fishing by gear lost at sea.[47]

Still, IFQs can induce unsustainable behaviour by fishermen, including quota busting, discarding, poaching, high grading of catch and data fouling.[48] These problems can be solved in part by onboard and dockside observers, but add considerable costs to fishing operations.

A 1997 global study by the Organization for Economic Cooperation and Development found that 24 of 37 IFQ fisheries surveyed were experiencing varying degrees of stock decline.[49] One investigation of New Zealand fisheries under IFQ management found that in 1998, of the 187 stocks managed under IFQ programs, only 25 had stock assessments and of those 13 were below the biomass that would support maximum sustainable yield.[50]

A 1997 global study by the Organization for Economic Cooperation and Development found that 24 of 37 IFQ fisheries surveyed were experiencing varying degrees of stock decline.

The impact of IFQs on fisheries conservation in B.C. is equally inconclusive. The first IFQ program introduced in B.C. was in the abalone fishery in 1979, which closed in 1990 and remains closed today for conservation concerns. Catches in the geoduck, urchin and sea cucumber IFQ fisheries have remained stable, and increased in some cases. Catches of halibut have remained stable, though some First Nations claim that local depletions are considerable.[51] Catches in the sablefish IFQ program have been declining since the early 1990s. Since the introduction of IFQs in 1997, the groundfish trawl industry has had steady catches, although the hake fishery collapsed in 2000 and then bounced back a few years later.

One of the reasons why the conservation record of privatization is mixed, according to a major fisheries study by the U.S. National Research Council, is in part because "IFQs are not a conservation tool, they're mainly an economic tool to control overcapitalization and 'the race for fish'. The TAC and other management measures are the main conservation tools in IFQ systems."[52]

Setting a scientifically defensible and sustainable TAC is one of the most important fisheries conservation measures and is critical to the success of IFQ programs. Yet in B.C., only eight of 64 groundfish stocks are assessed in a given year—even though most of the stocks are under quota systems. Similarly, less than 50 percent of salmon stocks are assessed, and of these only a few are assessed or managed to a point where a TAC could be set and monitored in-season.

Furthermore, fisheries privatization through IFQs raises fundamental problems about how sustainable catch levels are set.

Overcapitalization Jeopardy

As outlined in this report, IFQs have reduced overcapitalization in fishing capacity in B.C. by reducing the number of working vessels, but licences and quota market values have soared. Overall, capitalization in the fishing fleet has actually increased. In the past, the problem was "too many fishermen chasing too few fishermen." Today, with market values for quota and licences at unprecedented levels, the problem could become "too much money chasing too few fish."

The growing capitalization in fisheries licences and quota has serious long-term implications for conservation. Although the soaring price of quota and licences represents a "windfall profit" to those initially granted them, it represents a capital cost that will have to be borne by new entrants into fisheries, once current fishermen retire. This enormous financial cost will put pressure on future fishermen to catch more fish and to apply political pressure on DFO and/or industry-funded scientists to maintain high catch levels.

Declines in fish stock biomass, even as a result of natural fluctuations in ocean productivity, could result in lower catches and create financial difficulty for fishermen who are overcapitalized. Obviously, those fishermen will be under enormous financial pressure to lobby to maintain current catch levels, despite the long-term jeopardy this could cause for the fishery.

Undue Industry Influence

Past over-fishing has often been attributed to undue influence of industry stakeholders, as the Auditor General pointed out in its 1986 report on fisheries. This was certainly true of

'Today, with market values for quota and licences at unprecedented levels, the problem could become "too much money chasing too few fish."'

the Atlantic cod fishery. Privatization through IFQs and the establishment of co-management agreements with exclusive groups of licence and quota holders is likely to increase the influence of industry stakeholders, while marginalizing conservation, community and citizen groups in fisheries management. DFO's concept of co-management focuses on narrow, economic interests in fisheries, negating social and conservation values represented by non-industry groups.

According to one assessment of the quota management system in New Zealand, "ITQs in combination with 'cost recovery' has distorted

perceptions of the legitimacy of quota owners compared to recreational fishers, the environment, the other non-extractive values and uses of the environment."[53] Their economic clout has given them "a disproportionate voice" and allowed quota owners to engineer "the evolution of institutions to further enhance their power and control and to marginalise other interests." In British Columbia, a similar system dominated by licence and quota holders is being established to manage fisheries.

PRIVATIZING SCIENCE

Full-cost recovery for data collection by private companies also raises questions about the ownership of fisheries data and the transparency of fisheries management and science. Already, the Marine Conservation Caucus, a DFO advisory process for environmental groups, has run into serious problems accessing data on the groundfish industry and has withdrawn from DFO's groundfish consultation process as a result. The lack of access to data has hampered the efforts of independent scientists to scrutinize DFO science and decision-making. There's also concern that privileged access to data by certain industry consultants has strengthened at least the perception of biased science.

While it is important to incorporate the traditional knowledge of fishermen into stock assessment, there are serious concerns about having industry pay for and carry out data collection and stock assessment and act as exclusive co-managers of the resource. Short-term profits could win out over long-term sustainability in the fishery.

HABITAT PROTECTION

The shifting nature of the ownership of fisheries may also have serious implications for fisheries habitat protection and restoration. This is especially true of the salmon fishery, since the anadromous species is highly dependent on terrestrial habitat for its survival. According to one group of fisheries experts, the move to an IFQ fishery in salmon "takes the economic benefit of fisheries out of coastal communities, removing the incentive for local residents to protect critical salmon habitat."[54] Without access to the commercial salmon fishery, communities will lose their economic incentive to protect and restore streams and rivers for their local salmon runs.

Habitat protection is also vitally important for rockfish and sea corals. DFO is currently promoting the integration of all groundfish

'Without access to the commercial salmon fishery, communities will lose their economic incentive to protect and restore streams and rivers for their local salmon runs.'

fisheries, including trawl (T), halibut (L), sablefish (K), rockfish (ZN) and Schedule II (C) licences, into a single IFQ system. Under a fully integrated system, quotas could be transferred between gear types: trap, hook and line and trawl. This could further rationalize the fishing fleet as large, efficient trawlers buy out smaller hook-and-line operators. This would have adverse impacts for conservation considering the impact trawlers have on seafloor habitat.

Bottom trawls constitute one of the most invasive methods of fishing and the rate of habitat alteration of the seafloor has been calculated at more than 150 times the rate of global deforestation by clear-cutting.[55] Coastal communities would also suffer from decreased employment, since so few trawlers are based in rural and Aboriginal communities.

In both the salmon and groundfish fisheries, licensing policy must provide economic incentives for habitat restoration and protection. Yet there has been little research so far in B.C. linking biological and socio-economic fisheries data. The authors believe that understanding these links is necessary in designing sustainable fisheries and believe that further research should be a priority for government in reforming the groundfish and salmon fisheries.

CONCLUSION

IFQs are about economic efficiency: bigger boats and fewer licence and quota holders earning higher profits and wielding greater influence over fisheries. With privatization, the resource is eventually sold to the highest bidder, those with the deepest pockets. The soaring capitalization in licences and quota, and resulting debt load, threatens the resource by putting pressure on new entrants to catch more fish. At the same time, the disenfranchisement of rural and Aboriginal communities adjacent to fisheries resources undermines the stewardship role these communities could play in promoting fisheries conservation and especially protecting fisheries habitat in the case of salmon.

Fisheries co-management must be inclusive of diverse interests, accountable to the public and transparent in its decision-making. A mix of values, experience and interests must share the responsibility for fisheries. To limit co-management to the narrow economic interests of exclusive groups of licence and quota holders is to effectively privatize a public resource.

RECOMMENDATION 4: PUBLIC DATA

DFO should establish a comprehensive data-access policy that provides full and transparent access to biological and catch data. Public access to fisheries data would re-build trust in DFO science, promote public accountability and ensure rigorous review of fisheries management by independent scientists and concerned citizens. Furthermore, all fisheries data funded and collected by private companies as part of IFQ fisheries should be placed in the public domain.

RECOMMENDATION 5: FISHERIES CO-MANAGEMENT

DFO should ensure that diverse interests are represented in fisheries co-management agreements and harvesting committees including licence and quota holders, labour, processors, coastal communities, First Nations, environmentalists and other citizen groups. Furthermore, DFO should protect against the undue influence of licence and quota holders in the management of fisheries resources.

Chapter 6
conclusion and recommendations

Integrating ecological, economic and social values in fisheries management is paramount to conservation. Both human communities and marine ecosystems must be healthy for sustainability to occur.

This report focuses on a fundamental paradox of Canadian fisheries policy. While the objective of several decades of reform and rationalization in the West Coast fishery has been to increase economic viability, it has had the opposite effect for communities. The privatization of B.C. fisheries has netted a catch-22. DFO's solutions have become problematic, worsening overcapitalization in the fishing industry even in the face of declining stocks, undermining the sustainability of fishing-dependent communities and threatening long-term conservation.

While some of the problems that have been created are difficult to reverse, immediate and tangible actions can be taken that will have substantial short and long-term benefits for communities and conservation.

RECOMMENDATIONS

1) Public Registry
DFO should establish a public registry that would ensure full disclosure of ownership and market values of licences and quota. Fishermen would be required to register all their leases, trades and sales of licences and quota, and fully disclose financial interests in the assets. The registry would allow the government, industry and public to monitor ownership and capital trends in the industry and to help protect against corporate concentration and overcapitalization.

2) National Standards
DFO should establish national standards for fishing licence and quota programs that would reduce overcapitalization in licences and quota, protect working crews from bearing the costs of quota leases, address unresolved First Nations rights, ensure that fair economic benefits are shared amongst various stakeholders and limit excessive consolidation and corporate concentration in the industry.

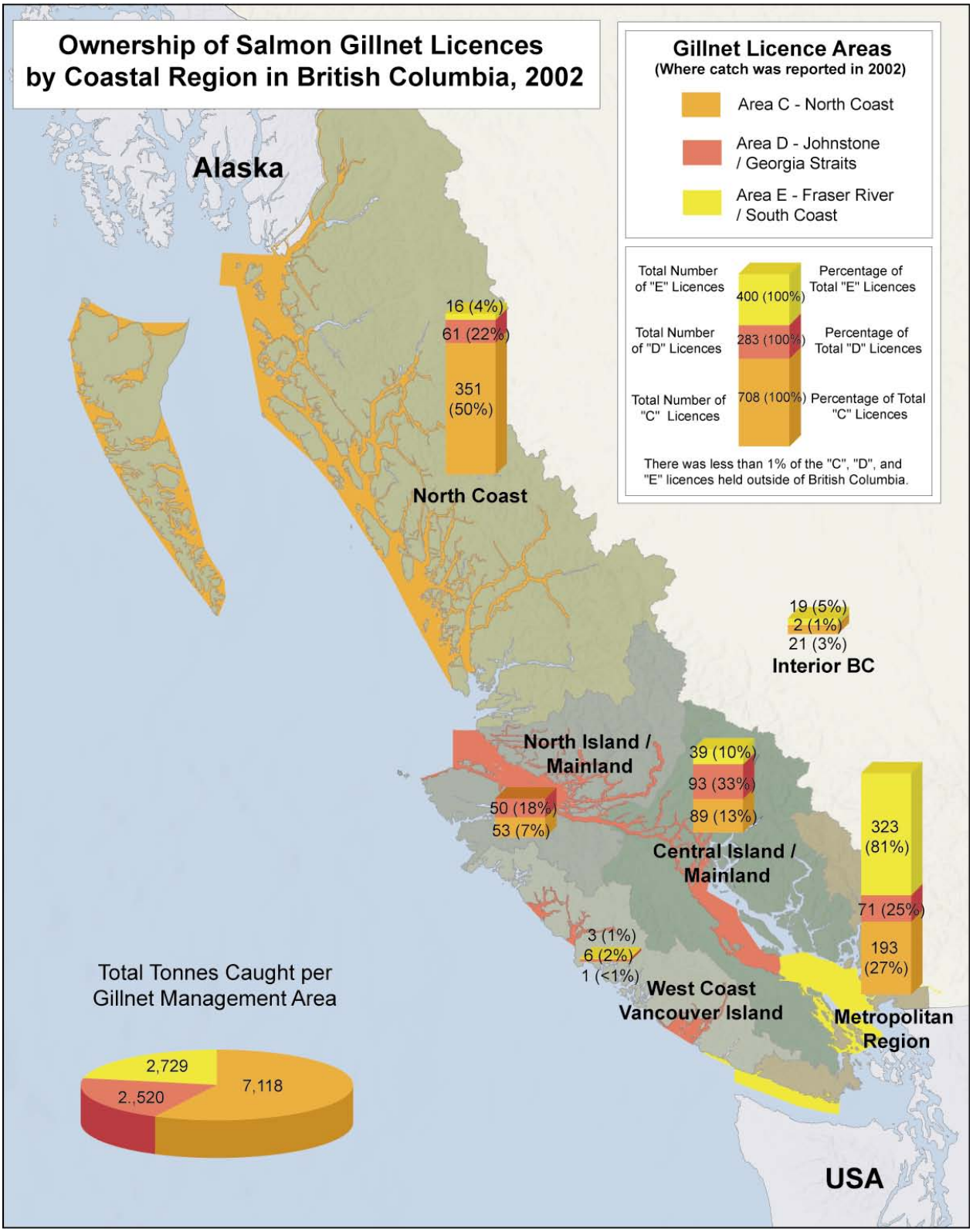
3) Community Quota Entities
DFO in partnership with provincial, municipal and First Nation governments should permit the establishment of and provide funding for Community Quota Entities, which would be non-profit societies established to hold fisheries licences and quota in trust for Aboriginal and non-Aboriginal rural fishing communities. The CQEs would lease fishing privileges to local fishermen and facilitate new entrants, i.e. the next generation, into the industry. The CQE program would be modelled on a similar program established in Alaska, including government-funded loans of up to $2 million for each CQE.

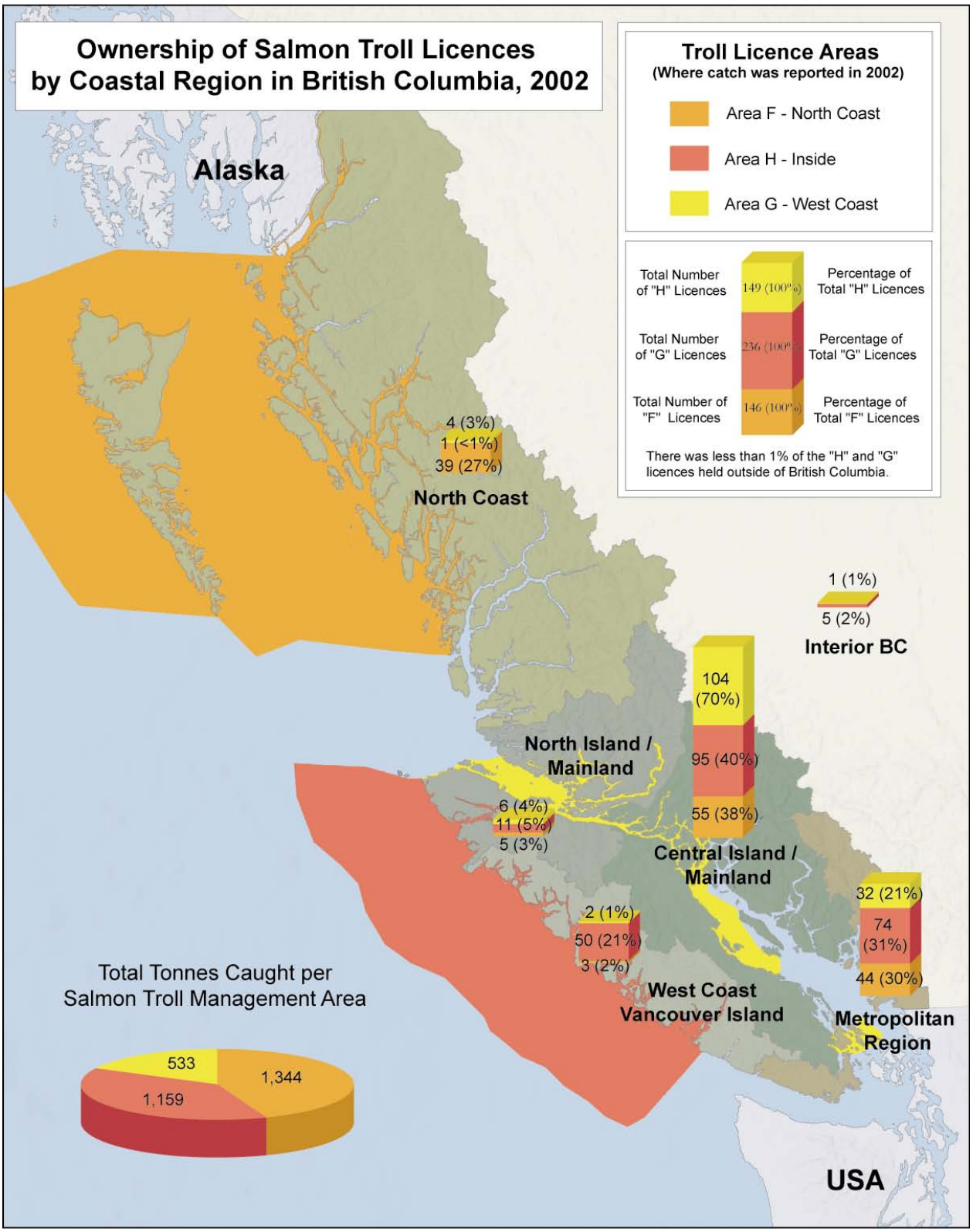
4) Public Data
DFO should establish a comprehensive data-access policy that provides full and transparent access to biological and catch data. Public access to fisheries data would re-build trust in DFO Science, promote public accountability and ensure rigorous review of fisheries management by independent scientists and concerned citizens. Furthermore, all fisheries data funded and collected by private companies as part of IFQ fisheries should be placed in the public domain.

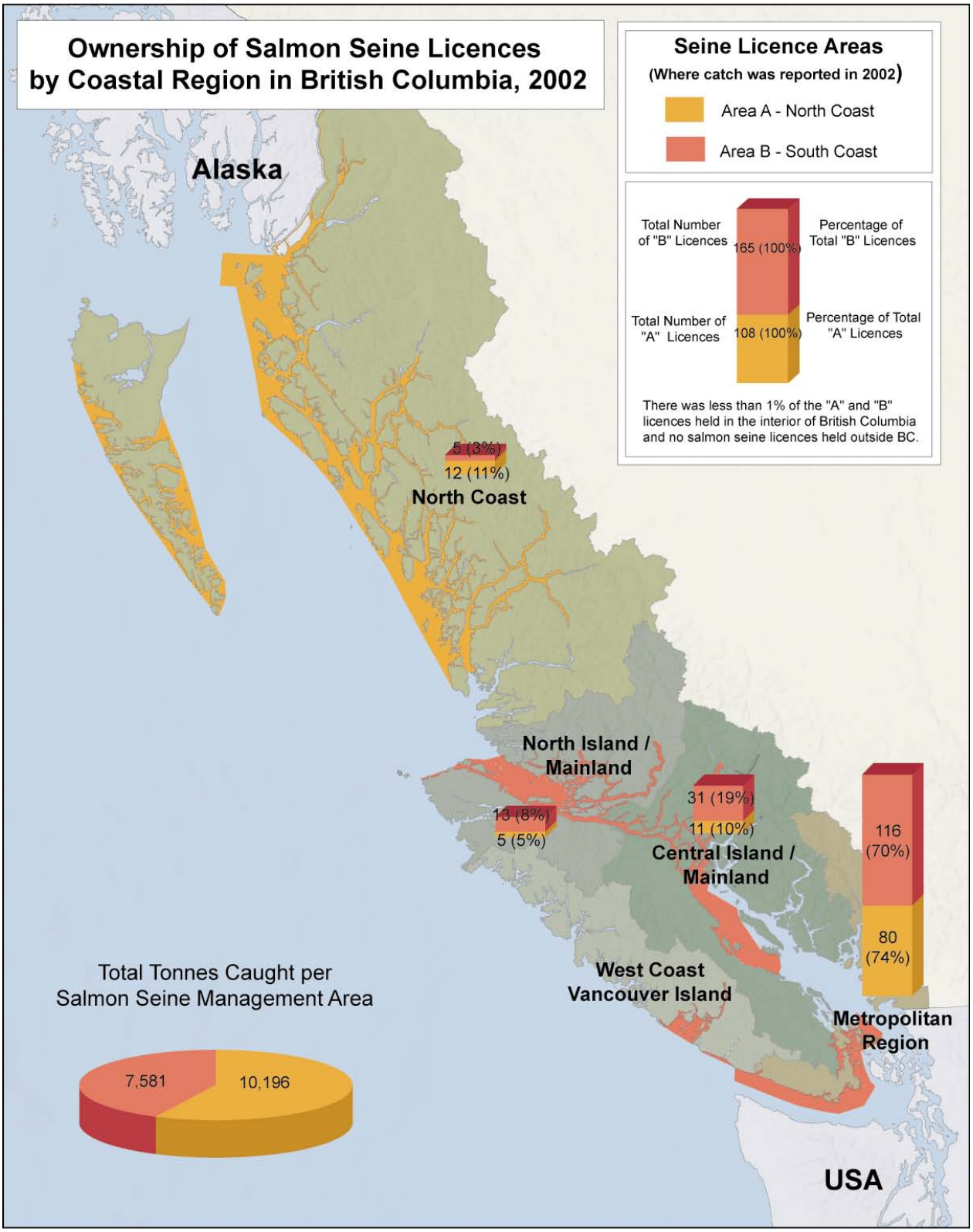
5) Fisheries Co-management
DFO should ensure that diverse interests are represented in fisheries co-management agreements and harvesting committees including licence and quota holders, labour, processors, coastal communities, First Nations, environmentalists and other citizen groups. Furthermore, DFO should protect against the undue influence of licence and quota holders in the management of fisheries resources.

Appendix A

SPATIAL ANALYSIS OF THE OWNERSHIP OF B.C. SALMON LICENCES


Ownership of Salmon Gillnet Licences by Coastal Region in British Columbia, 2002
Gillnet Licence Areas
(Where catch was reported in 2002)
Area C - North Coast
Area D - Johnstone / Georgia Straits
Area E - Fraser River / South Coast
Total Number of "E" Licences
400 (100%)
Percentage of Total "E" Licences
Total Number of "D" Licences
283 (100%)
Percentage of Total "D" Licences
Total Number of "C" Licences
708 (100%)
Percentage of Total "C" Licences
There was less than 1% of the "C", "D", and "E" licences held outside of British Columbia.
Alaska
16 (4%)
61 (22%)
351 (50%)
North Coast
19 (5%)
2 (1%)
21 (3%)
Interior BC
North Island / Mainland
50 (18%)
53 (7%)
39 (10%)
93 (33%)
89 (13%)
Central Island / Mainland
323 (81%)
71 (25%)
193 (27%)
Metropolitan Region
3 (1%)
6 (2%)
1 (<1%)
West Coast Vancouver Island
Total Tonnes Caught per Gillnet Management Area
2,729
2.,520
7,118
USA


Ownership of Salmon Troll Licences
by Coastal Region in British Columbia, 2002
Troll Licence Areas
(Where catch was reported in 2002)
Area F - North Coast
Area H - Inside
Area G - West Coast
Total Number of "H" Licences
149 (100%)
Percentage of Total "H" Licences
Total Number of "G" Licences
236 (100%)
Percentage of Total "G" Licences
Total Number of "F" Licences
146 (100%)
Percentage of Total "F" Licences
There was less than 1% of the "H" and "G" licences held outside of British Columbia.
Alaska
4 (3%)
1 (<1%)
39 (27%)
North Coast
1 (1%)
5 (2%)
Interior BC
104 (70%)
95 (40%)
55 (38%)
North Island / Mainland
6 (4%)
11 (5%)
5 (3%)
Central Island / Mainland
2 (1%)
50 (21%)
3 (2%)
West Coast Vancouver Island
32 (21%)
74 (31%)
44 (30%)
Metropolitan Region
Total Tonnes Caught per Salmon Troll Management Area
533
1,344
1,159
USA


Ownership of Salmon Seine Licences
by Coastal Region in British Columbia, 2002
Seine Licence Areas
(Where catch was reported in 2002)
Area A - North Coast
Area B - South Coast
Total Number of "B" Licences
165 (100%)
Percentage of Total "B" Licences
Total Number of "A" Licences
108 (100%)
Percentage of Total "A" Licences
There was less than 1% of the "A" and "B" licences held in the interior of British Columbia and no salmon seine licences held outside BC.
Alaska
5 (3%)
12 (11%)
North Coast
North Island / Mainland
13 (8%)
5 (5%)
31 (19%)
11 (10%)
Central Island / Mainland
116 (70%)
80 (74%)
Metropolitan Region
West Coast Vancouver Island
Total Tonnes Caught per Salmon Seine Management Area
7,581
10,196
USA

endnotes

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ecotrust index

a quirky and quintessential snapshot of statistics

Number of cows in Canada infected with mad cow disease: 1
Number of jobs lost in Ucluelet surimi fish plant (which uses beef plasma) because of that cow: 350
Value of geoduck clams harvested in B.C.'s North Coast in 2002: $25 million
Number of geoduck fishing licences owned by residents in Prince Rupert in 2002: 0
Number of geoduck licences owned by residents in the ski resort of Whistler in 2002: 1
Probability that geoduck diving will be a demonstration sport at the 2010 Olympics in Whistler: 0
Average market value of a geoduck fishing licence in B.C.: $3 million
Price of "signature home" on Nicklaus North Golf Course in Whistler: $3 million
New homes built in Prince Rupert in 1995: 74
New homes built in Prince Rupert in 2003: 1
GDP value of B.C. wild fisheries in 2002: $545 million
GDP value of B.C. aquaculture in 2002: $205 million
Amount (in metric tonnes) of farmed salmon produced in B.C. in 2002: 85,000
Energy (in litres of diesel fuel) needed to produce one kilogram of Atlantic farmed salmon: 2.4
Energy (in litres of diesel fuel) needed annually for B.C. farm salmon production: 205 million
Estimated barrels of crude oil that could be extracted from the Queen Charlotte Basin: 1.3 billion
Estimated number of years that B.C salmon farms could run on this crude oil: 1,000
Estimated number of years the Haida have lived in the Queen Charlotte Basin: 12,000
Number of B.C. commercial fishing licences owned by Jimmy Pattison's Canfisco in 2002: 244
Estimated value of Jimmy Pattison's fishing licences and quota in 2003: $105 million
Estimated value of Jimmy Pattison's privately owned companies in 2003: $5.5 billion
Number of guests that can dine comfortably on Pattison's 150-foot yacht *Nova Spirit*: 30
Percentage of Aboriginal adults in Alert Bay who fished for food in the past 12 months: 34
Percentage of global production of seafood from aquaculture in 1970: 3.9
Percentage of global production of seafood from aquaculture in 2000: 27.3
Number of B.C. salmon gillnet licences owned by residents in Kyuquot in 2002: 0
Number of gillnet licences owned by residents in Valley Center, California in 2002: 1
Distance between Valley Center and BC's salmon fishing grounds (in miles): 1,500
Number of B.C. halibut licences owned by residents of Ahousat: 0
Number of B.C. halibut licences owned by residents of Brooks, Alberta: 1
Percentage of halibut licences owned or operated by First Nations in 1950: 28
Percentage of halibut licences owned or operated by First Nations in 2003: 12
Price of one pound of halibut in Toronto grocery store: $16.50
Price of one pound of commercial halibut quota: $36.00
Percentage of catch revenue from leased halibut quotas going to "arm chair" fishermen: ~70
Number of working fishermen on disability leave or killed in B.C. in 2003: 347
Number of "fishermen" injured or killed while sitting in arm chairs collecting quota revenue in 2003: 0

SOURCES: BC Stats; GSGislason & Associates Ltd., *British Columbia Seafood Sector and Tidal Water Recreational Fishing: A Strengths, Weaknesses, Opportunities, and Threats (SWOT) Assessment*; Worldwatch Institute, "Matters of Scale: September/ October 2003, Factory-Fish Farming"; Department of Fisheries and Oceans; Ecotrust Canada; *Report on Business*, April 2004; West Coast of Vancouver Island Aquatic Management Board; Peter Tyedmers, UBC School of Community and Regional Planning; Government of B.C.; Statistics Canada, 2001 Census, Aboriginal Population Community Profiles; Workers Compensation Board, Claim Statistics; *Our Place at the Table: First Nations in the B.C. Fishery* (2004). First Nation Panel on Fisheries, Aboriginal Fisheries Commission; *Yachts International*, May 2000; Whistler Real Estate Company, www.wrec.com; B.C. Offshore Oil and Gas Team.