

**The trajectory of Canada's Pacific Coast fisheries:
Are current fisheries policies adequate to cope with
environmental, social and economic change?**

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This analysis and literature review was prepared under contract with DFO Evaluation Directorate, Fisheries and Oceans Canada, Ottawa as a background paper for the Pacific Integrated Commercial Fisheries Initiative (PICFI) formative evaluation

April 19, 2010.

The views expressed in this essay are those of the author, Russ Jones, and do not necessarily represent those of Fisheries and Oceans Canada or of the Government of Canada

Introduction

This essay examines how Canadian Pacific coast fisheries are coping with fundamental environmental, social and economic changes and whether policy responses are adequate to avoid a bleak future of altered ecosystems and increased social conflict over declining fish stocks. It also provides an interdisciplinary examination of Pacific Fisheries Reform and the Pacific Integrated Commercial Fishery Initiative that are attempting to address long term sustainability of the fishery and a long awaited transfer of fisheries access to First Nations.

World fisheries are in a state of crisis and are generally moving in the direction of unsustainable rather than sustainable fisheries (Grainger and Garcia 1996; Pauly 2006). Policy responses have focused on mechanistic approaches such as stopping “the race to fish” and redistributing fisheries access while using a single species management approach to deal with fundamental issues such as species declines. This narrow view of the fisheries system is expanded by considering the trajectory of Pacific coast fisheries in the parallel domains of ecology, economy, community/First Nation and policy. A matrix approach developed by Le Heron et al. (2008) is used to examine sustainability of Pacific coast fisheries. The trajectory of Canada’s Pacific fisheries is then compared to that of several jurisdictions that have addressed similar issues (New Zealand, US Pacific Northwest, and Atlantic Canada). The outcome provides insight into the design of effective fisheries management regimes and institutions in British Columbia (BC).

The Policy Context – Pacific Fisheries Reform

Pacific Fisheries Reform was the outcome of a two-year process that considered fishery management changes needed to ensure sustainable fisheries and prepare for a post-treaty environment in BC. Two independent panels were separately charged by federal and provincial governments, and leading First Nations organizations to review B.C. fisheries, outline a vision for the future and recommend changes in fisheries approach and management (JTG 2004; FNP 2004). In their recommendations, both panels highlighted the need to adjust to significant new fisheries allocations for First Nations but differed with respect to the type of fisheries management regime needed. The Joint Task Group (JTG 2004) emphasized the need for increased property rights through individual quotas, evergreen licencing and market mechanisms to provide for future sustainability. The First Nations Panel emphasized the need for immediate

interim transfers of fisheries access to First Nations and flexible management arrangements to accommodate their needs.

The eventual Pacific Fisheries Reform initiative had broad-ranging objectives that included: full economic and social potential of the resource is achieved; First Nations fishing interests are defined and reconciled with the interests of all Canadians; there is public, market and participant confidence that the fishery is sustainable; participants are self-reliant and able to self-adjust; participants are treated fairly and equitably and are involved in decision-making and share accountability for the conduct of the fishery; costs of management are shared by those who benefit from the harvest; all fishery participants enjoy certainty and stability necessary for business planning; and equitable treaty-based fisheries are achieved (DFO 2005).

Pacific Fisheries Reform recognizes that a parallel federal-provincial process is underway to address BC First Nation fishing rights. The “modern-day” BC treaty process began in 1990 and currently involves 49 negotiating tables with First Nations. Fisheries access and management are key elements in most treaties but progress has been slow. The modern day treaty process has resulted in the ratification of one treaty that is now in effect (Tsawwassen First Nation), the ratification of second treaty that has not yet come into effect (for the five Maa-nulth First Nations), the initialling of a third treaty that was concluded but not ratified by the First Nation (Lheidli T’enneh First Nation) and the recent initialling of a fourth treaty that has not yet been voted on (Yale First Nation). Another four First Nations have concluded agreements-in-principle with Canada and BC (Sliammon First Nation, Yekooche First Nation, In-SHUCK-ch Nation and Sechelt Indian Band) (<http://www.bctreaty.net>).

To implement several elements of the Pacific Fisheries Reform initiative, DFO developed the Pacific Integrated Commercial Fisheries Initiative (PICFI). PICFI is a five-year \$175 million program aimed at “achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations’ aspirations to be more involved are supported” (DFO 2005). A primary objective of PICFI was transfer of fisheries access to First Nations and it accordingly has four key elements with the first two exclusively addressing First Nations: acquiring fisheries access, distributing fisheries access, increased monitoring and co-management. The initiative was launched in 2007, and will culminate in 2012.

Allocation Framework

Allocations among competing users is a key factor that influences fisheries management. Canada’s allocation policy recognizes conservation as the first priority followed by First Nations food, social and ceremonial (FSC) fisheries (Figure 1, see Models 1 and 2). Model 1 reflects Canada’s current objective of an integrated commercial fishery that places First Nations commercial fisheries access on an equal footing with other commercial fisheries and recreational

fisheries. While commercial and recreational fisheries appear to have the same priority in Model 1, the Allocation Policy for Pacific Salmon (DFO 1999) gives the recreational fishery priority over the commercial fishery in allocation of chinook and coho salmon and thus priority over First Nation commercial fisheries for those species.

Model 2 reflects the priority of the First Nation right to fish for sale over fishing by other users as outlined in a recent court decision. The Nuu-chah-nulth fishing rights decision (*Ahousaht et al. v Regina* 2009 BCSC 1494) recognized a Nuu-chah-nulth right to fish and sell fish into the commercial marketplace and concluded that Canada's regulation of the fishery constitutes an infringement of that right. Building on the earlier Gladstone decision (*Regina v. Gladstone*, 1996, 2 S.C.R. 723), it identified a Nuu-chah-nulth right to fish and sell all species of fish in a territory that extends at least nine miles offshore. In the judgment Justice Garson relies on the interpretation by Justice Lamer in *R. v. Gladstone* who wrote at para. 62:

...the doctrine of priority requires that the government demonstrate that, in allocating the resource, it has taken account of the existence of aboriginal rights and allocated the resource in a manner respectful of the fact that those rights have priority over the exploitation of the fishery by other users ...

Similar to Lamer, Justice Garson states that the right to sale is not an exclusive right. The right may be limited but Canada must provide proper justification. Another limitation is that the right to sell fish is only for the purpose of earning a moderate livelihood, but not for the accumulation of wealth.

The current policy (Model 1) follows a proportional sharing approach between commercial, recreational and First Nation fisheries after conservation and FSC needs are met. Under Model 2 the First Nations fishing for sale has a priority although details still need to be resolved. One possible consequence illustrated in the figure is that in years of low abundance, First Nation fishing for sale would take place while recreational and commercial fisheries would be curtailed.

Co-management Framework

The co-management element of Pacific Fisheries Reform is being addressed through several avenues including potential *Fisheries Act* revisions¹, Aboriginal programming (Aboriginal Fisheries Strategy, Aboriginal Aquatic Resource and Oceans Management program and PICFI), consultation and advisory process administered by Pacific Region Fisheries and Aquaculture management, and the BC treaty process.

¹ The 2010 speech from the throne referred to introducing new legislation to reform Canada's outdated system of fisheries management. Legislation introduced in 2006 that proposed new measures for governance, access and allocation, licencing, co-management, habitat management and administrative sanctions was not passed.

The Pacific Fisheries Reform discussion paper identifies “shared management responsibility and accountability” as one of four key elements of policy change (DFO 2005). Changes are said to be in the direction of modern governance and that those who benefit directly from an activity bear a greater responsibility for funding that activity (DFO 2005: 7). This is stated by way of a principle: “First Nations and stakeholders will assume a greater role in operational decision-making and program delivery through effective co-management processes.” (DFO 2005: 27).

As part of Pacific Fisheries Reform DFO established coast-wide integrated advisory processes for salmon and herring. A similar process for groundfish is in the process of being established. Several previous studies had examined the challenges of consultation processes in terms of gathering effective and meaningful engagement in order to inform decision making processes (DFO 2000, Institute of Dispute Resolution 2001). The Integrated Harvest Planning Committee (IHPC) process for salmon has operated now for four years and has had mixed success (Cooley 2007).²

PICFI has a limited mandate with respect to co-management (DFO 2007). PICFI aimed to provide support for co-management at two levels, among First Nations as well as among all fishery participants.³ Co-management under PICFI is based on four principles: shared responsibility on the part of all fisheries participants, accountability, promoting inclusiveness in decision making processes, and transparency (DFO 2007). Under the co-management directive of PICFI, DFO has recently moved to provide funding support to a BC-wide First Nations fisheries organization, the First Nations Fisheries Council, to develop capacity and explore a framework to discuss co-management at a BC wide scale.⁴

Trajectory of BC Fisheries

Le Heron (2008) described the state of New Zealand fisheries in ecology, economy, community and policy domains from fisheries science and management (FSM) and ecosystem science and management (ESM) perspectives. FSM and ESM are two different and largely separate knowledge systems that can affect the direction that fisheries might take in addressing a

² According to Cooley (2006), the process has allowed a balanced exchange of views and provided a forum for commercial, recreational, environmental and First Nation representatives to provide advice to DFO. A major drawback has been that key representation has been lacking from First Nations due in part to concerns about participating in a multi-lateral consultation process. While the process has been efficient for DFO, commercial and recreational sectors, First Nations do not have a parallel representative structure that fits with the IHPC process. First Nation AAROM groups have provided a mechanism to bring some coordinated advice to the table. While there is a desire to shift from sharing information to resolving issues the group has rarely been able to achieve consensus on key issues.

³ Three tiers have been identified for dialogue with First Nations, Tier 1 is between First Nations; Tier 2 is between First Nations and Canada; and Tier 3 is multi-party processes (FNP 2004). PICFI seeks to support Tier 1 and 3 processes.

⁴ Personal communication, Brenda McCorquodale, Executive Director, First Nations Fisheries Council, March 2010.

sustainability agenda. We have following a similar methodology to assess the trajectory of British Columbia fisheries (Table 1). Sources of information for construction of the matrix included reports by the First Nation Panel on Fisheries (FNP 2006) and the Joint Task Group on Fisheries (JTG 2006), DFOs sustainable development strategy (DFO 2006) and the author's knowledge of Pacific coast fisheries.

The matrix format described by Le Heron is a valuable aid to exploring the origin of a fisheries landscape: "As a heuristic the matrix gives conceptual equivalence to each of the four domains, forcing explicit consideration (of each) ... Behind each domain is the assumption that various actors are speaking, advocating, illustrating and defending particular views. ... The matrix layout ... highlights tensions within the domains when the knowledge systems collide (the 45° axis) and the multiple interactions that are found amongst the four domains" (Le Heron 2008: 56). The first cell outlines fundamental difference in approach between FSM and ESM. The table can be read by row from left to right or by column from top to bottom. Similar to Le Heron, italics are used to show perspectives that are not documented in the literature for Canadian fisheries.

Similar to New Zealand, BC fisheries policies are currently framed largely from an industry and government perspective and dominated by a single-species approach to management. Several ecosystem management initiatives are underway that have potential to redefine fisheries management. Examples include the DFO Wild Salmon Policy (in the implementation stage) and integrated oceans management (a pilot project is underway in northern BC). The BC treaty process includes fisheries as a major component and has resulted in fisheries harvest agreements that are linked to existing fisheries management. The current direction under Pacific Fisheries Reform is for an integrated commercial fishery that applies the same rules to First Nation sale of fish and the commercial fisheries.

Generally industry and ecological trends have served to define BC fisheries. Industry trends include the establishment of individual transferable quotas (ITQs) in most fisheries, although over a more prolonged period than New Zealand. Economic efficiency for business and reduction of government funding for management has been a key consideration (DFO 2006). BC has been subject to a number of fishing induced collapses including herring in the 1960s (that subsequently recovered), abalone in the late 1980s, Pacific cod and southern BC coho in the 1990s. Two sockeye populations (Cultus Lake and Sakinaw Lake) and one coho population (Interior Fraser River coho) were proposed for listing under the *Species at Risk Act* (SARA) but were not listed due to socio-economic considerations. Boccaccio, a rockfish species caught in many fisheries, has been proposed for listing under SARA but no decision has been made. Efforts under the Pacific North Coast Integrated Management Area (PNCIMA) initiative have potential to move in the direction of ESM, but this process is still at an early stage (Jones 2009). Partnerships with First Nations in PNCIMA could help to align fisheries management in the direction of community and First Nation sustainability.

Having briefly described the fisheries management landscape in BC, it is helpful to examine how similar allocation and management issues have been addressed in other jurisdictions or settings, including the practical outcomes and lessons learned.

Case studies

Washington State and US Tribal Fisheries

Over the past 35 years, salmon fisheries in Washington State have adjusted to a major upheaval in allocation and management. Over the same period salmon populations have been affected by development pressures.

The 1974 US federal court ruling concerning Indian treaty rights (*U.S. v. Washington*, 384 F.Supp. 312) established a 50/50 share of harvestable salmon between Indian and non-Indian fishermen and ordered the Washington State Department of Fish and Wildlife to share management authority equally with the tribes. Following a decade of conflict the system began to adjust to a new co-management regime that was functioning fairly smoothly by the mid-1990s (Cohen 1986; Singleton 1998). In the 1990s the treaty right was further interpreted to include a 50% US Tribal share of shellfish and groundfish.

At the same time salmon populations have been declining. Currently numerous salmon populations in the state are listed as threatened or endangered under the US *Endangered Species Act 1973*. The decline in wild salmon runs has led to development of US federally funded salmon hatcheries that have largely replaced much of the natural salmon production caught in fisheries. Federal agencies, US Tribes and others have collaborated in development of salmon recovery plans to address key factors such as habitat loss, hydroelectric dams, harvesting and hatcheries.⁵

Co-management was instituted in the US Pacific Northwest as a result of court-ordered allocations and court interpretations about the need for joint resource management decisions. Co-management applies to management of fisheries and habitat that the fish depend upon. It has been extended to international agreements such as the Pacific Salmon Treaty between Canada and the US Tribes are involved in salmon enhancement and recovery plans for salmon.

A key factor in the success of co-management between the US Tribes and federal and state agencies has been the establishment of the Northwest Indian Fisheries Commission, a coalition of US tribes affected by the court ruling. The Commission provides a forum for the tribes to resolve their differences and a unified body to address common issues. Although their focus has

⁵ Salmon recovery was determined to require addressing all of these factors as an All-H working paper prepared by nine federal agencies. See <http://www.publicaffairs.noaa.gov/releases99/nov99/noaa99r160.html>

been on implementation of historic treaty rights it has been a springboard for becoming involved in management of shellfish, groundfish and wildlife.

A major lesson from Washington State has been the long period of conflict and adjustment after allocation changes were ordered by the courts. Another is the long term decline of salmon and difficulty in reversing trends or addressing threats. Societal interests such as agricultural development (requiring irrigation water), hydroelectric projects, or urbanization affected fisheries sustainability and encouraged technical fixes rather than holistic approaches to recovery.

New Zealand

New Zealand has made significant structural changes in its fisheries in the past two decades including implementing a quota management system in all fisheries and transfer of a significant share of commercial fisheries to Maori (Bess 2001, Day 2004). The shift to a quota management system prompted a court challenge on the basis of the 1840 Treaty of Waitangi between the Maori and the colonial government. A political solution was sought that resulted in several legislated transfers of fishing quotas to Maori.⁶ Maori interests were integrated into the fishery at all levels including fishing, processing and marketing. The current management regime is based largely on fisheries science and single species management and is attempting to cope with new challenges such as declining quotas for some species and Maori customary use and title rights to inshore areas under the Treaty of Waitangi.

Allocation transfers to Maori were accomplished through the creation of a Maori Fisheries Commission in the *Maori Fisheries Act* of 1989 (Day 2004). The Maori share was equivalent to about 33% in 2002. In November 2003 the Maori Fisheries Commission agreed on a final allocation model for assets including quota among individual *iwi* or tribes.⁷ Now that the assets are distributed, ITQs and the Quota Management System have become part of the Crown's settlement with *iwi* (Rees 2005: 98).

Le Heron et al. (2008) examined fisheries management outcomes and principles in the domains of ecology, industry, community and policy and compared the trajectory of New Zealand fisheries to Canada, US and Iceland. They concluded that a focus on a commercial fishery

⁶ New Zealand used a combination of buybacks and company purchases to transfer fishing quotas to a Maori Fisheries Commission (Day 2004). The first transfer in 1989 consisted of 10% of the total allowable commercial catch; the second in 1992 consisted of a joint venture purchase of Sealord, a major integrated seafood company. The Commission leased quota to tribes at a discount from regular lease rates and assisted them in forming their own companies. It also continued to buy quota through its revenues and invested in aquaculture and processing increasing the value of assets held in trust from NZ\$350 Million in 1992 to NZ\$700 million in 2002 and a total share of about 33% of the Quota Management System.

⁷ Half of the settlement assets were distributed among the *iwi* and remaining half remained with a commercial venture, Aotearoa Fisheries Limited that distributed dividends to Maori beneficiaries (Day 2004).

discourse stifles local dialogue concerning alternative approaches to fisheries management. Conflicts between commercial, recreational and Maori traditional fisheries are frequent with the latter two groups having a weak voice in the management system. Fisheries management in New Zealand has developed as largely independent trajectories around science, industry, Maori and policy which are aligning slowly. This separation has caused sustainability to be framed as health of target species and science and research questions to be likewise limited.

Maori and commercial fishers have seen a decline in quotas and concerns about sustainability of fisheries. New Zealand is moving ahead with a system to protect 10% of inshore waters as Marine Protected Areas by 2010 to maintain biodiversity (Department of Conservation and Fisheries 2005).

Lessons learned from the New Zealand experience are that action to seek political solutions eased the transition in allocation. Difficult issues such as intertribal allocation were left to an internal Maori process. This resulted in immediate social and economic benefits to the Maori. While the quota management system encouraged development of profitable fisheries, these were in some cases not sustainable and quotas were reduced. Other measures such as marine protected areas and traditional management reserves proved necessary to protect biodiversity and resolve conflicts with Maori traditional uses. Processes to reconcile approaches through the Treaty of Waitangi are still underway and the issue of Maori title to foreshore has added another level of complexity to the relationships.⁸

Atlantic Canada and the Marshall Response Initiative

Fisheries in Atlantic Canada underwent several major adjustments in the past decade including the collapse of a major fishery for Atlantic cod that had sustained a commercial fishery for centuries (Meyers et al. 1997) and a court decision that resulted in new opportunities for First Nations in the commercial fishery. The fishery collapse caused major disruptions in the economy of the area but also unexpectedly resulted in development of new fisheries for shrimp and crab (Frank et al. 2005).

The 1999 Marshall decision (*Regina v. Marshall*, 1999, 3 S.C.R. 456) involved Donald Marshall Jr., a Mi'kmaq charged with fishing and selling eels. The court held that First Nations had rights to fish for a moderate livelihood according to the *Treaties of Peace and Friendship* signed in 1760-1761. The Federal government was unprepared for the decision and the conflict that ensued between First Nations and commercial fishers. A new policy, the Marshall Response Initiative was initiated in 2000, to purchase fishing licences and transfer them to First Nations (DFO 2004b). The program included commercial capacity building and training.

⁸ See news story URL: http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10635579

The policy response to Marshall resulted in allocation transfers through commercial licences but little First Nations involvement in fisheries management. By 2009 Mi'kmaq and Maliseet First Nations access had increased up to 3-5% in several commercial fisheries, and higher for snow crab and shrimp.⁹ First Nation involvement in fishery management consisted of participation in fishery advisory processes although there was a desire to increase First Nations involvement in management decision-making and employment in resource management. As well, Atlantic First Nations were concerned with DFO's integrated commercial fishery approach of using commercial licences as a surrogate for treaty rights to fish.

An Atlantic Fisheries Policy Framework outlines a vision for Atlantic fisheries and four objectives including conservation and sustainable use, self-reliance, shared stewardship and a stable and transparent allocation and access framework (DFO 2004). In general the Atlantic Canada approach has been one of integrating First Nations into the existing commercial fishery (Davis and Jentoft 2001). The policy identifies a strategy to "facilitate Aboriginal participation in policy planning and decision making" under the shared stewardship objective. The AAROM program has provided some assistance in involving First Nation in fishery management processes as well as economic development. Discussions have proceeded slowly on treaty implementation that could address governance issues (APC 2009). A fundamental issue to be addressed is how population increases affect the expression of a treaty right which affords the pursuit of a "moderate livelihood" (APC 2009).

Progress in First Nations co-management on the Canada's Atlantic Coast has been slow (APC 2009). Over the past five years AAROM has provided resources for Atlantic and Gaspé First Nations to participate in Atlantic fishery management process. Broad-ranging discussions at treaty tables are expected to address First Nation fisheries access and management participation.

Lessons learned are the benefits of a staged approach to implement a redistribution of access. Although unprepared for the Marshall decision and the conflicts that ensued, the policy response involving purchase of commercial licences for transfer to First Nations reduced conflicts. The policy was applied to all species and all First Nations subject to the treaty which likely avoided further litigation. Significant issues remain to be addressed including the relative priority of the treaty right compared to commercial and recreational fisheries and First Nation involvement in resource management.

⁹ By 2009 the number of licences and percentage share of First Nation licences in the top five species were shrimp (24- 16%), snow crab (83 – 8%), bluefin tuna (38 – 5%) and scallop (58 – 4%) (Atlantic Policy Congress 2009)

Discussion

Fisheries management and allocation has been characterized as a wicked problem since problems are difficult to define, have no best solution and are usually not solved once and for all but tend to reappear (Jentoft and Chuenpagdee 2009). Another characteristic is that once an approach is taken the outcome will have to be taken into account the next time the problem reappears.

Pacific Fisheries Reform and PICFI need to be considered in the context of competing FSM and ESM perspectives and overarching DFO goals of healthy and productive ecosystems and long term sustainable fisheries.¹⁰ The transfer of fish to First Nations provides an opportunity to make changes in fisheries management that will support our common goals. The recent Nuu-chah-nulth fishing rights decision emphasizes the need for continued redistribution of fisheries access and flexible approaches.

A common theme in the above cases was the redistribution of resources as a result of Aboriginal fishing or treaty rights and resulting social change. Each case was at a different stage of evolution and had varying levels of success at achieving ecological, economic and community sustainability or reducing conflict. Approaches in the four settings (Washington, New Zealand, Atlantic Canada and Canada's Pacific coast) are now compared to see what can be learned about fisheries allocation; the path to ecosystem health and sustainable fisheries; governance, management and institutional design; and subsequent lessons for design of Pacific Fisheries Reform and PICFI.

Allocation and Redistribution of Access

Redistribution of fisheries access has been at the core of fisheries approaches in the four settings examined. Fisheries allocation is a contentious issue in fisheries management and changes have sometimes been used to achieve parallel objectives.

All cases involved an increased share of fisheries for indigenous or First Nation people. In Washington State allocation was decided by the courts and the system adjusted in an atmosphere of continued litigation that prolonged the period of adjustment. New Zealand took a pragmatic approach of adjusting for increased Maori allocations at a time when new property rights were introduced to the fishery (the Quota Management System). The drivers for this change were court challenges, risk management and the desire of the government of the day to move ahead with an individual quota system for fisheries. Adjustments in Atlantic Canada occurred in the wake of the collapse of the Atlantic cod fishery. Their approach followed a treaty-based

¹⁰ DFO's mandate is described in DFO's Sustainable Development Strategy (DFO 2006).

approach of buyback of fisheries access and transfer to First Nations that had been underway on a smaller scale in Pacific fisheries since about 1992.¹¹

Some approaches resulted in less intense or prolonged social conflict. Washington State's "fish wars" played out in a highly charged atmosphere of conflict, litigation and high level political negotiation over the period of a decade. In the Atlantic, Canada was unprepared for the Marshall decision and the conflict that ensued between First Nations, non-Aboriginal communities and DFO enforcement. After five months of conflict in the wake of the decision, negotiations started as part of the Interim Marshall Response that was replaced by the Marshall Response Initiative in 2001 aimed at an orderly transfer of fisheries access to First Nations. In comparison, allocation transfers on the Pacific coast through Pacific Fisheries Reform were already a generally accepted approach since transfers on a smaller scale had been underway through DFO Aboriginal policies and treaty negotiations. Conflict in all these situations was greatly reduced by use of buy-backs to minimize the impact of allocation changes on non-indigenous fishers.¹²

Recent court cases in Canada have helped to clarify and shape the understanding and scope of First Nations rights as they apply to fisheries. The Nuu-chah-nulth fishing rights decision has broad implications and potential to dramatically change the landscape of BC fisheries. It recognizes a Nuu-chah-nulth right to fish for all species in their territories and to sell the fish into a commercial market place, but not "on an industrial scale" (para. 383, 489). The decision also concluded that Canada's integrated approach to the fishery infringed upon these Nuu-chah-nulth's rights. In the proceedings the Nuu-chah-nulth demonstrated that trade of fish was an integral part of their pre-contact culture. Although the decision has been appealed, it provides an opportunity and the incentive to seek solutions and interim accommodation of these previously unrecognized rights through negotiation. The Marshall decision was applied broadly to all First Nations that had a treaty right. The Marshall decision also introduced the concept of fishing for a "moderate livelihood" leaving this term relatively undefined. In Gladstone DFO took the approach that the right to fish for sale had to be proven on a case-by-case basis. Hopefully with a second court case demonstrating the existence of aboriginal rights to sale of fish this approach will change, particularly since the BC treaty process is already moving towards increased fisheries allocations for First Nations. A possible positive outcome would be to accelerate current efforts to transfer fisheries access to all First Nations.

¹¹ The approach of purchasing commercial licences and transferring these to First Nations had been on-going in BC under AFS for more than a decade although on a reduced scale (\$5 million per year compared to \$20 million per year) through the allocation transfer program and pilot sales program. Mechanisms have included conversion to fisheries allocations or transfer of commercial licences to First Nations.

¹² Washington State implemented buy-back program from 1974-1981 to reduce the non-Tribal fishing fleet. New Zealand also used a combination of buybacks and company purchases to transfer fishing quotas to a Maori Fisheries Commission (Day 2004). A similar approach was used in Atlantic Canada possibly because it was already in use on the Pacific coast and seemed to be socially acceptable.

DFO policies for Pacific fisheries are intended to respond to and respect the changing legal landscape in BC. However, the prescribed allocation of fisheries access through recent DFO initiatives tends to be narrowly interpreted. For example, allocation transfers on the coast through PICFI are currently limited to commercial fishing licences. PICFI does allow for upriver allocations of salmon but there have been few opportunities to do this due to poor BC sockeye returns. Through a pilot sales agreement negotiated in the early 1990s under AFS the Nuu-chah-nulth manage a fishery on the Somass River in Alberni Inlet. Current DFO policies prevent new pilot sales fisheries on the coast. More flexibility in utilization of retired fisheries access on the coast appears to be necessary to promote fair allocation and to support future co-management regimes. Title to coastal areas has implications for co-management as indicated by recent developments in New Zealand (Gaertner 2004; Jones 2006).¹³

One of the factors influencing fisheries allocation on both Canada's Atlantic and Pacific coasts is the ambiguity surrounding the meaning of "a moderate livelihood". The concept of a "moderate livelihood" needs to be examined within the context of a growing First Nation population in Canada, the subsequent need to meet the growing FSC needs of communities, and to address the economic component of the right which the Courts have confirmed in the Nuu-chah-nulth and Marshall decisions. These discussions will need to occur in various arenas, including the treaty tables, and through the exploration of co-management.

Defining a "fair" allocation is not a challenge isolated to Canada. In Washington State, the Boldt decision provided certainty by ruling that the US Treaty Tribes had a right to 50% of the returning salmon. A "fair share" was not established in other disputes. New Zealand transferred 22% of fishing quotas to the Maori and the Maori increased this to 33% through skilful management. Transfers in British Columbia under PICFI are currently estimated to equate to about 9% of the value of BC licences and quotas.¹⁴ This is far short of the Joint Task Group's estimated 33% of sockeye that would be transferred to First Nations through treaties and the minimum 50% share of BC fisheries that the First Nations Panel (2004)¹⁵ had called for on an interim basis.

¹³ New Zealand recently took an approach of joint Crown and Maori title to foreshore, see footnote 6. Although Aboriginal title to marine areas was argued in the Nuu-chah-nulth decision, its relevance to First Nations fisheries access was not decided.

¹⁴ The current estimate is based on \$115 million available for PICFI licence retirement and a \$1.263 million value of BC licences and quota in 2009 (Nelson 2009). Total value has declined from \$1.393 million in 2008 and \$1.579 million in 2007.

¹⁵ The 33% was based on Agreements in Principle in place in 2004; the 50% was based on a balancing of First Nations and Crown title.

Path to Ecosystem Health and Sustainable Fisheries

The path to ecological, economic and community sustainability requires consideration of fisheries and ecological knowledge systems and the interaction of community with industry and the environment (Table 1). Canada's Pacific coast fisheries are moving along a path to ITQs similar to New Zealand, Norway and Iceland.¹⁶ This may address economic efficiency of the fishery but in itself does not ensure sustainability. To ensure the long-term sustainability of Pacific fisheries we need, among other things, a precautionary approach to management, protection of biodiversity and sustainability of coastal communities (including First Nations).

Redistributing access to indigenous peoples is unlikely to change the decline of fisheries. However accommodation of indigenous fishing rights may provide the opportunity to make systemic changes that can address problems inherent to single species management. Reallocation of salmon to US Treaty Tribes involved them in salmon enhancement, habitat protection and recovery planning. The tribes have become co-managers and a powerful advocate for salmon in the Pacific Northwest. It was recently suggested that US tribes should seek compensation for loss of access to salmon as a result of habitat degradation (Perron 2001).

The current FSM perspective in BC is based on single-species management with initiatives such as the SARA, integrated oceans management and marine protected areas positioned to maintain marine biodiversity. These initiatives may not be sufficient or timely to address the challenges facing the Pacific fisheries. A variety of marine species have been listed under SARA (e.g. Northern abalone, basking shark), and more listings are expected that will increasingly constrain fisheries. A similar trend is occurring in New Zealand and has been occurring with salmon in Washington State for close to two decades.

Over the past thirty years Canada's Pacific fisheries have been gradually moving towards property rights regime for commercial fisheries through ITQs. ITQs are seen as a means to stop the race for fish and avoid overcapitalization in fisheries. Individual quotas can have unintended impacts including highgrading, concentration of quotas, migration of fisheries access from rural areas to urban centers, less crew and social inequities between generations of fishers (Oceans Studies Board 1999; Le Heron et al. 2008; Ecotrust Canada 2004). They become insurmountable barriers of access for young newcomers as the costs associated with buying into the system are very high, which impedes the efficiency of markets and the survival of community. Quotas have

¹⁶ ITQ fisheries have been in existence on the Pacific coast since the late 1970s (herring spawn-on-kelp and abalone), while others were introduced in the late 1980s or early 1990s (halibut, sablefish, geoduck, sea urchin, sea cucumber). Pacific Fisheries Reform and PICFI provided a platform to test additional individual quota fisheries (rockfish, salmon). Recently the groundfish fishery moved towards near 100% observer coverage and a complex system of quota trading to minimize bycatch and discards. Other fisheries such as herring are already operating as *de facto* individual quota fisheries through requirements for pooling licences. Most ITQ fisheries are required to pay for monitoring costs and some fund stock assessments or research.

worked best in single species management situations but have been less successful at addressing biodiversity concerns and multispecies fisheries. ITQs are thus inadequate to address ecological and social concerns (Degnbol et al. 2006).

Le Heron et al. (2007) highlights the limitations of New Zealand's Quota Management System with regard to healthy ecosystems. The Quota Management System has resulted in economically sustainable fisheries (Rees 2005) but still needs to account for Maori customary and recreational fisheries. Le Heron surmises that fisheries management science (focused on species) can stifle research and lead to unsustainable fishery practices. Instead of science focused on fishing quotas, ecosystem science is needed that focuses on relationships and understanding of ecosystems.

All quota based systems in essence privatize the fisheries, and "once common property is transformed into private property, it is in practice very difficult to reverse even if it creates undesirable impacts, for instance with regard to distribution of wealth, power and social values" (Jentoft and Chuenpagdee 2009). An element of Pacific Fisheries Reform is a defined-share approach to provide greater certainty and stability. This has included demonstration fisheries both by inland First Nations and experiments with individual quotas in commercial salmon gear sectors as well as groundfish. Introduction of ITQs before fisheries allocations are addressed is likely to increase the cost of fisheries transfers to First Nations (FNP 2004). It is therefore problematic to provide defined shares in advance of First Nation allocations.

Governance, Management and Institutional Design

Governance is the shared, collective effort of government, private business, civic organisations, communities, political parties, universities, the media and the general public, while management is a technical issue requiring a set of tools to solve a concrete task with clear goals and measureable outcomes (Jentoft and Chuenpagdee 2009). Governance reform then is clearly what is needed to deal with wicked problems such as fisheries allocation and fisheries and coastal sustainability.

As shown in Table 1, current government interest for fisheries has been centered on economic efficiency. Measures of success need to be expanded to include the sustainability of the environment and communities. Sustainability of communities can be promoted by fostering meaningful engagement in decision-making. Existing Aboriginal programs such as AFS and AAROM support development of First Nation capacity and institutions. Likewise policies and programs such as Integrated Oceans Management, the Wild Salmon Policy and SARA initiatives have engaged DFO with First Nations and stakeholders to address sustainability issues through an ecosystem approach. Trust and meaningful engagement need to be fostered by strengthening these current DFO processes. As well the linkages between the BC treaty process and Pacific Fisheries Reform need to be more explicit, particularly the criteria for fisheries allocation and benefits and how this supports the ultimate goal of sustainable First Nation communities.

Fisheries discussions in the BC treaty process need to inform and be informed by these and other collaborative initiatives underway between First Nations and the government of Canada.

First Nations access should be related to the resources in a First Nation's territory, and provide a level of sustainability and independence within communities in preparing for a post-treaty environment.

Successful institutions are a good fit to the management system and the scale of management decision-making and appropriate to First Nations. The Northwest Indian Fisheries Commission successfully represented the US Tribes in fisheries negotiations and collectively engaged the tribes in broader management processes. In New Zealand the Maori Fisheries Commission was established by legislation to hold fisheries assets until an allocation system among *iwi* could be resolved. In BC and Atlantic Canada new institutions are forming as a result of the AAROM program that encourages groups of First Nations to work together and engage in fisheries management activities. This allows more efficient engagement on fisheries issues and also gives First Nations a more unified voice in decisions that affect them. First Nations participation in coast wide multi-sector bodies to develop fisheries management plans (e.g. salmon, herring and groundfish) has been limited. This is in part due to the disconnect between DFO's top-down management approach and the need for First Nations to use a bottom-up approach that is responsive to the authority of individual First Nations. DFO accordingly needs to work with First Nations to establish local and regional co-management processes that better link with First Nations management.

Lessons for Design of Pacific Fisheries Reform and PICFI

The following changes are needed to Pacific Fisheries Reform and PICFI to continue on a path of preparing for treaty-based fisheries and ensuring the long-term sustainability of fisheries:

- PICFI has been slow to transfer commercial fishery access to First Nations. The current process needs to be accelerated and plans should be laid for another five-year program with increased funding. Further delays will encourage increased litigation or conflict and add to uncertainty in Pacific coast fisheries.
- PICFI needs to be more flexible about how fisheries access is utilized particularly on the coast in order to better accommodate First Nations fishing rights and the preferred means of fishing.
- A stronger linkage is needed between Pacific Fisheries Reform and the BC treaty process. Pacific Fisheries Reform is preparing for a post-treaty environment so allocation transfers should be more closely linked to resources in a First Nation's territory. Since the Nuuchahnulth decision indicated that Aboriginal commercial fishing rights extend to a First Nation's

offshore fishing territory, the criteria of adjacency to fish and fish abundance in their territory relative to other areas should be considered in allocation.

- Pacific Fisheries Reform encourages new ITQ fisheries. The socio-cultural impacts of ITQs needs to be more carefully examined particularly the effects on ecology and communities and issues of transferability, initial allocation and concentration of quota. Licence holders generally support ITQs since they benefit from obtaining initial allocations but broader societal objectives need to be considered.
- PICFI should support capacity-building for First Nations governance.¹⁷ Economic development is successful where there is capable governance, which in turn requires practical sovereignty (ability to make real decisions), capable governing institutions, and a cultural match and is supported by a strategic approach and leadership (Cornell 2002; Cornell et al. 2004).
- Flexibility is needed in how First Nations organize themselves for co-management or distribution of fisheries allocations. A balance is needed between meeting interests of individual First Nations and collective benefits of working together.
- Integrated management processes are focusing on the BC-wide level which better accommodates top-down management systems. First Nations jurisdiction begins at the local scale and fits better with a bottom-up approach. Management authority needs to be devolved to the lowest practical level for successful co-management. More effective linkages are needed between institutions, management scale and allocation.

Summary

Fisheries policies attempt to achieve desired outcomes but the pathway to achieve change is influenced by the management system and restricted by a narrow viewpoint. Fisheries on Canada's Pacific coast are currently framed largely from an industry and government perspective and dominated by a single-species approach to management. Pacific Fisheries Reform and PICFI have reinforced this perspective by focusing on an integrated fishery that treats all participants in the commercial fishery equally while at the same time preparing for equitable treaty-based fisheries. Introduction of ITQs and defined fisheries shares is seen as a panacea for fishery sustainability problems. Despite similar efforts, fisheries in New Zealand, the US Northwest Pacific coast and Atlantic Canada continue to have biodiversity and habitat or ecosystem health challenges. A broader approach that emphasizes ecosystem relationships and considers ecosystem and community sustainability in addition to economic sustainability is necessary.

¹⁷ See for example the National Centre for First Nations Governance: <http://www.fngovernance.org>

Pacific Fisheries Reform and PICFI need to accommodate new legal precedents such as the recent Nuu-chah-nulth fishing rights decision that concluded an integrated fishery approach did not meet the needs of the Nuu-chah-nulth. That decision further emphasizes the need for DFO to continue down the road of making fisheries transfers to First Nations through programs such as PICFI and make these programs more flexible to accommodate First Nations fishing rights. Pacific Fisheries Reform needs to make better linkages between First Nation institutions and management processes as supported by AFS and AAROM through local and regional co-management processes.

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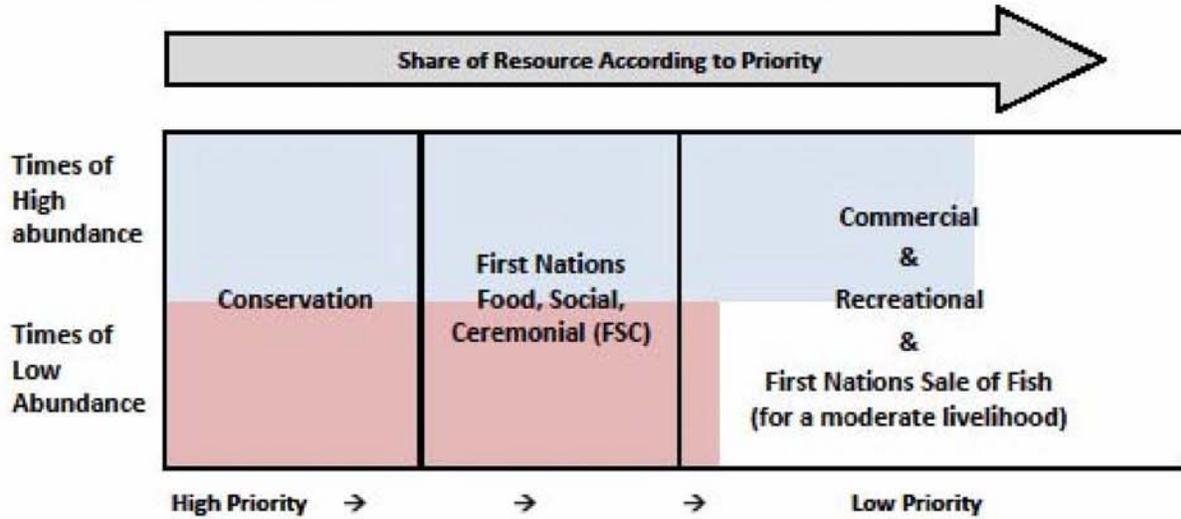
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Fig. 1. Resource allocation by use and sector according to alternative doctrines of priority.

Model 1: Resource Allocation according to current DFO policies



Model 2: Resource Allocation incorporating First Nation Priority

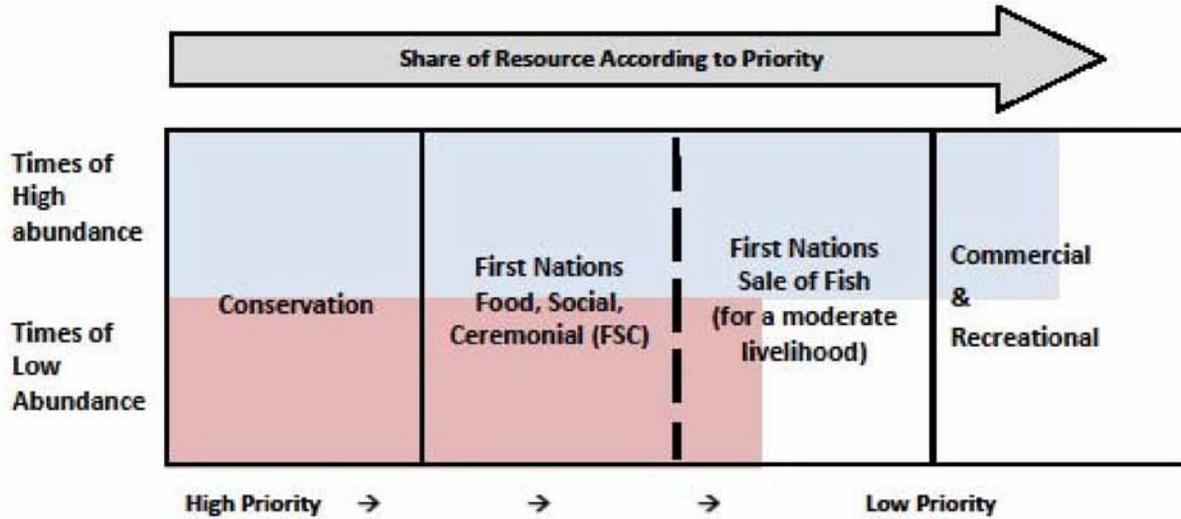


Table 1. FSM and ESM perspectives in British Columbia domains of ecology, industry, community and policy

		Ecosystem Science and Management			
		Ecology	Industry / Production	Community / First Nations	Policy
Fisheries Science and Management	Ecology	<p>Priorities</p> <ul style="list-style-type: none"> - relationships - burden of proof lies with industry - long term - multi-species - habitat protection - large scale/holistic 	<p>Emphasizes the precautionary principle</p> <ul style="list-style-type: none"> - responsible / ethical - participatory research generates shared goals 	<p>How community sees the environment and what is important to them</p> <ul style="list-style-type: none"> - protection of traditional food sources and areas of cultural importance - presence of large fish and marine mammals - concerned about visible elements of ecosystem - flow of local benefits from adjacent fisheries 	<p>Ecosystem based management approach</p> <ul style="list-style-type: none"> - Integrated oceans management i.e. Oceans Act implementation - Wild salmon policy to protect salmon and their natural habitats <p>Advocated in the literature</p> <ul style="list-style-type: none"> - Precautionary approach - adaptive management - Linkage from land to sea
	Industry / Production	<p>Priorities</p> <ul style="list-style-type: none"> - focused on single species - effects based knowledge (especially known effects) - environment considered a resource <p>How industry views ecosystems</p> <ul style="list-style-type: none"> - Licences and quota necessary for profitable business - Need diversification including entrance into new and emerging markets for stability - Concern about growing recreational and First Nation shares - Sees focused research as necessary to protect interests - Difficulty funding research during economic downturns - Decline of stocks seen as temporary rather than systemic e.g. salmon 	<p>Responsible industry</p> <ul style="list-style-type: none"> - Flexible and responsive to changing ecology - Locally grounded - Contributing to solutions to issues e.g. overcapitalization <p>Industry Goals</p> <ul style="list-style-type: none"> - Constructed through a neo-classical paradigm - Cost efficiency and profitability - Seeking property rights in fishery - Products for global markets (MSC certification) - Recreational sector dominated by lodge and charter industry 	<p>Community Expectations of Industry</p> <ul style="list-style-type: none"> - Local benefits from adjacent fisheries (jobs, fishing opportunity) - Engages the community and respects local values and interests - Breaking resource dependency and resource cycles 	<p>How policy would construct the industry</p> <ul style="list-style-type: none"> - Input and output controls (including property rights) contribute to a suite of tools to achieve responsible fisheries - industry pays management costs (including cost of enforcement) - fishing plans developed with industry participation - fishing plans ensure ecological integrity
	Community / First Nations	<p>How community views ecosystems</p> <ul style="list-style-type: none"> - Ecosystem providing a wide variety of services - Little recognition of First Nations and residents local and traditional knowledge - Desire to pass on intact to future generations but limited control over situation 	<p>Growing signs of eroding rights and privileges for communities</p> <ul style="list-style-type: none"> - Local depletion of some stocks such as abalone and rockfish - Fewer locals with licences and quotas - Charter and fishing lodge industry congesting fishing grounds - Commercial fish increasingly landed in major centers reducing opportunities in remote resource-dependent towns 	<p>Community expectations</p> <ul style="list-style-type: none"> - Participation in integrated oceans planning - First Nations and community stewardship - Flexible local communal First Nation and community allocations <p>Community expectations</p> <ul style="list-style-type: none"> - Limited local involvement as decisions made on BC-wide scale - Each sector monitors their own fishery - Largely have a weak voice in the process - Successful communities are constructed as being a function of successful economies 	<p>Community-based management initiatives</p> <ul style="list-style-type: none"> - Many AFS and AAROM initiatives preparing for treaty-based First Nation fisheries - PNCIMA oceans initiative in partnership with First Nations <p>Policy for building successful communities</p> <ul style="list-style-type: none"> - Informed communities in tune with the environment - Developing collaborative relationships and shared decision-making - meaningful two-way information sharing
	Policy	<p>How policy constructs environment</p> <ul style="list-style-type: none"> - Reactive - Government and industry constructs fisheries as single species - Output focused - Sustainable utilization of individual fish stocks - Effects based - Concerned with utilization rather than conservation or preservation - Operating in a knowledge deficit - Species at risk legislation and MPAs will conserve biodiversity - Environmental assessments used to assess risks e.g. aquaculture, pipelines and oil tankers 	<p>Negotiating with stakeholder organizations</p> <ul style="list-style-type: none"> - Increasingly complex rules for management requiring detailed information - industry is constructed as the primary stakeholder in a largely commercial and market framework - First Nations involved in pilot sales, demonstration fisheries and as holders of ATP or PICFI commercial licences - centralized management - Coastwide integrated management boards (industry, recreational, First Nation, NGOs) for salmon, herring and groundfish have difficulty addressing substantive issues 	<p>Current Involvement</p> <ul style="list-style-type: none"> - Bilateral consultations about priority First Nation FSC fisheries - Recreational sector has priority for chinook and coho and fixed halibut allocation - First Nations resort to courts to establish and implement priorities - BC Treaty process reaches a few fisheries agreements 	<p>Policy directions</p> <ul style="list-style-type: none"> - Property rights in context of wider obligations e.g. international treaties, social equity - Integrated oceans management and MPA network to preserve biodiversity - shift from MSY to EBM - cost effective - proactive <p>Policy direction</p> <ul style="list-style-type: none"> - Centrality of property rights - Output focused / effects based - Industry funded management and research - Seeking MSC certification of fisheries - operates in a wider neoliberal policy framework - support for new and emerging markets/uses of marine environment (i.e. aquaculture)