Co-management of Canada's Pacific sablefish fishery

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1. INTRODUCTION

In Canada, the *Constitution Act 1867* gives the federal government exclusive jurisdiction over all aspects of fisheries and fish habitat management (i.e. management, enforcement and monitoring). Through the *Fisheries Act 1985*, the federal Department of Fisheries and Oceans (DFO) administers all laws relating to fisheries. On Canada's Pacific coast, many commercial fisheries are co-managed by the DFO and the fishing industry. These co-management arrangements range from addressing specific tasks, such as industry funding of logbook programmes, to legally binding, multi-year agreements between industry organizations and the DFO that define specific roles and responsibilities, decision making processes and cost sharing arrangements. The sablefish fishery was one of the first fisheries on Canada's Pacific coast to move to co-management. The purpose of this document is to discuss co-management in the commercial sablefish (*Anoplopoma fimbria*) fishery.

2. BACKGROUND

2.1 Overview

Sablefish (also known as blackcod) are found from central Baja California to Japan and the Bering Sea. Sablefish are a charcoal-hued, bottom-dwelling finfish (Figure 1) that inhabit shelf and slope waters to depths greater than 1 500 metres (DFO, 2005). The directed sablefish fishery on Canada's Pacific coast is managed under an individual quota regime limited to 48 licensed vessels (DFO, 2005). Over the past five years, catches have ranged from 1 900 to 3 850 tonnes with an annual landed value ranging from $US20–25 million.

Licensed sablefish vessels are permitted to use trap or longline gear. The catch is taken primarily using trap gear, which accounts for about 80 percent of the harvest (DFO, 2005). The fishery takes place on the edge of the continental shelf at depths ranging from 350 to 1 100 metres (Turris, 2000). The distribution of catches is illustrated in Figure 2.

FIGURE 1
Sablefish

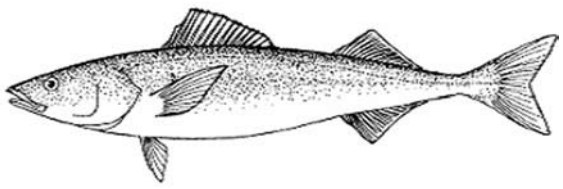


Image provided by the Department of Fisheries and Oceans.

2.2 History of the fishery

Prior to 1977, Canada's Pacific sablefish stocks were primarily targeted by the Japanese distant water fleet and domestic catches were relatively small (Turris 2000, Jones 2003). In 1977, Canada established its 200-mile Extended Economic Zone. This put an end to foreign fishing for Pacific sablefish in

FIGURE 2
Distribution of sablefish fishing activity

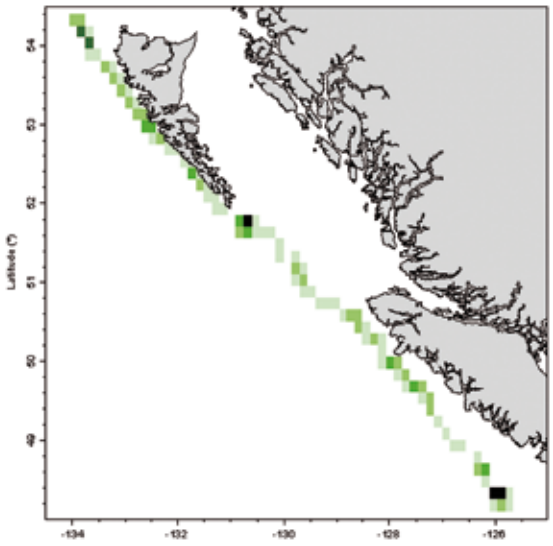


Image provided by DFO.

Canadian waters. Sablefish continued to be caught as a bycatch in domestic groundfish fisheries. However, it was largely considered a nuisance fish due to the low landed prices paid by local processors (Turris, 2000).

In the late 1970s, a small group of Canadian fishermen recognized the potential for exporting sablefish to Japan. They established a directed sablefish fishery and experimented with trap gear as a more productive harvesting method (Turris, 2000). Domestic harvests began to increase significantly as more vessels entered the fishery and as fishing technology improved (Jones, 2003). Faced with escalating trap and longline fishing effort, the Department of Fisheries and Oceans limited entry into the directed sablefish fishery in 1981, with 48 vessels receiving sablefish commercial fishing (Category "K") licences that are issued annually by DFO (Turris, 2000).

The directed sablefish fishery was managed by season length. The DFO closed the fishery when it estimated that the total allowable catch (TAC) had been taken. Unfortunately, limited entry regulation did little to curb the race for the fish due to the common property nature of the fishery. To compete and maintain their share of the catch, vessel owners invested in bigger boats, fished with more crew, fished twenty-four hours a day, deployed extra gear, used packer vessels to transport additional gear to the fishing grounds, and adopted new technology, such as improved sounders, sonars and lorans (Turris, 2000). The DFO responded by steadily reducing the season length.

As early as 1984, it was apparent that there were problems in the sablefish fishery. Various new management concepts were discussed in great length with the Sablefish Advisory Committee (SAC), a DFO stakeholder advisory board that provided (and still provides) advice on management of the sablefish fishery (Munro, 2001). Due to differences in ideologies, vessel size, and investments in gear, the fleet would not support the use of individual quotas (IQs) in the fishery (Munro, 2001). The fishery continued under the current management regime and the fishery went from 245 days in 1981 to just 14 days in 1989 (Figure 3) (Jones, 2003).

As noted by Turris (2000), the increasingly shorter fishing seasons led to:

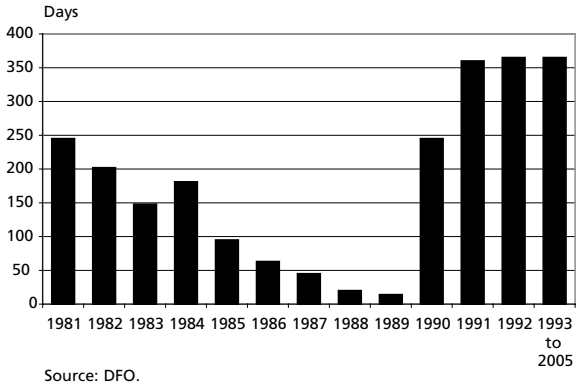
i. safety concerns as vessels carried excessive gear and as crews fished around the clock in inclement weather;
ii. poor product quality because fishermen were concentrating on setting and hauling gear instead of properly handling their catch (bleeding, dressing, icing, freezing and storing the catch) and because the fish would often sit on the dock for days due to the large quantities of fish being landed in a short period of time; and
iii. reduced landed prices because the shorter fishing periods meant that the industry could not meet the market demands for a consistent year-round supply of high quality sablefish.

Further, as the seasons grew shorter, the potential for financial loss from vessel breakdowns, sickness, injury and poor weather increased. Major vessel breakdowns could cost licence holders their entire season (Jones, 2003). Even a few days of missed fishing could threaten a season's earnings (Turris, 2000). At the same time, harvesting costs

were escalating as fishermen were forced to continually invest in their fishing operations in order to remain competitive. There was concern in the industry that the fishery was not economically viable (Jones, 2003).

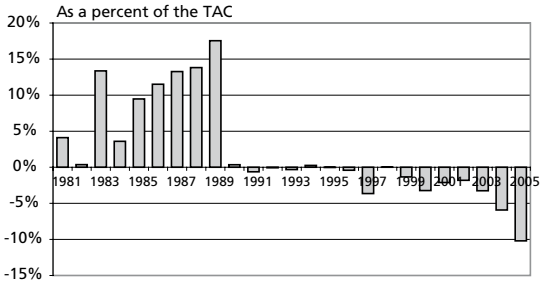
The DFO was also struggling as it was becoming increasingly difficult to manage the annual TAC – the sablefish fishery exceeded its TAC every year from 1981 to 1989 (Figure 4) (Turris, 2000). There were also rumours that sablefish fishermen were fishing before the season started and after it ended, and that other commercial users (groundfish trawlers and longline vessels) were illegally landing sablefish. There were no DFO enforcement officers specifically addressing sablefish issues and landings were not being monitored.

FIGURE 3
Season length 1981–2005



Source: DFO.

FIGURE 4
Catch overage or underage 1981–2005



Source: DFO

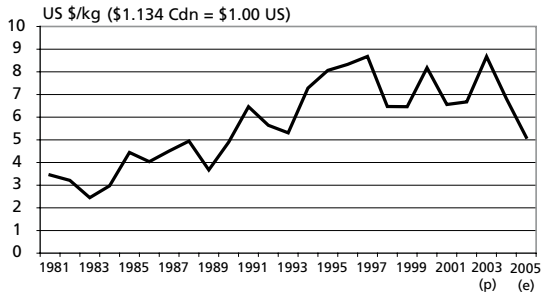
The sablefish fishery was projected to be open no more than eight days in 1990 (DFO, 1994). In October 1989, the Pacific Blackcod Fishermen's Association (later to become the Canadian Sablefish Association), an organization representing the majority of sablefish licence holders, approached the DFO to propose use of individual quota management for the fishery (Jones, 2003). The DFO conducted several months of consultation and a consensus was reached to implement individual vessel quota (IVQ) management into the sablefish fishery in 1990 on a trial basis (Turris, 2000). For the trial period, each licensed sablefish vessel was allocated an individual quota using a formula in which 70 percent of the allocation was based on historical catch (the licence's best catch in either 1988 or 1989) and 30 percent was based on the licensed vessel's overall length (Munro, 2001).

2.3 Individual vessel quota management

The trial IVQ programme proved very successful. Following the trial period and consultations with the industry, the DFO agreed to continue with IVQ management (Jones, 2003). The sablefish IVQ programme remains in place today. Each year, sablefish IVQ is allocated to each of the 48 licensed vessels, expressed as a percentage of the TAC (Turris, 2000). As discussed by Turris (2000), sablefish licences are issued annually by the Minister of Fisheries and Oceans and are considered a privilege that grants the sablefish vessel owner the opportunity to catch a specified share of the TAC. Neither the licence nor the IVQ is considered property.

The sablefish fishery is now open all year (Figure 4). Licensed sablefish vessels are permitted to fish at any time but must "hail-out" prior to fishing and "hail-in" prior to landing (Turris, 2000). Sablefish fishermen must maintain a logbook documenting their fishing effort, fishing location and catch (Turris, 2000). Each vessel is permitted to go over or under their IVQ by up to 15 percent. The amount of the overage or underage is subtracted or added to their quota in the following year (DFO, 2006). Landings are only permitted at designated ports. Industry-funded, DFO-certified fishery observers

FIGURE 5
Landed price 1981–2005 (adjusted for inflation)



Source: DFO, Province of British Columbia

monitor all landings. This information is used to update the vessel's remaining IVQ as well as to provide managers with timely and accurate catch data. As seen in Figure 3, IVQ management has allowed DFO to manage the fishery TAC with much greater precision.

According to Jones (2003), conservation has also improved in the fishery by reducing or eliminating the loss of fishing gear. The frantic pace of the pre-IVQ fishery led to gear being lost or left on the fishing grounds, where it continued to fish. Today, sablefish traps must have two escape rings with openings no smaller that 8.89 cm in diameter and a degradable panel that is sewn with fibre that will rot and prevent ghost fishing if the trap is lost (Turris, 2000).

The introduction of IVQ management also greatly improved the economic viability of the fishery. The longer season has dramatically improved the quality of the product – harvesters can now take the time to properly handle the fish (Jones, 2003). And, the fleet is able to better service the market demand by fishing all year. However, a significant proportion of the catch occurs between September and March to take advantage of greater market demand (Munro, 2001). As a result, vessel owners are receiving real higher prices (i.e. when adjusted for inflation) for their catch compared to pre-IVQ fishing (Figure 5) (Turris, 2000).

Fishing costs have also declined under IVQ management, which further improved the economic viability of the fishery (Jones, 2003). Fishermen are no longer forced to overinvest in their fishing operations to try to maintain a share of the catch. In addition, quota transferability has reduced the number of active vessels, which reduced total fixed costs. Just prior to IVQ management, all 48 vessels were active in the fishery. Since IVQs were introduced, the number of active vessels has ranged from 21 to 35.

The change to IVQ management has resulted in fewer crew being employed in the fishery (Jones, 2003). However, those crew members remaining in the fishery have more stable employment and are better paid (Turris, 2000). According to Turris (2000), the fishery is now safer, working conditions have improved, and the stress created by fishing under a time-competitive or derby-style fishery has been eliminated. The improved financial returns and increased stability of the fishery has led to higher licence and quota values for existing vessel owners (Turris, 2000). This has made it more difficult for new entrants to buy into the fishery.

2.4 Recent developments

Recently, the sablefish fishery (like all other commercial groundfish fisheries on Canada's Pacific coast) has moved to multi-species management, commonly referred to as "groundfish integration" (DFO, 2006). Seven distinct commercial groundfish fleets--Sablefish, Halibut, Inside Rockfish, Outside Rockfish, Lingcod, Dogfish and Groundfish Trawl--are managed as distinct fisheries. But they are integrated by the new requirement to reallocate IVQ between vessels and fisheries to cover catches of non-directed groundfish species (both retained and released). A vessel's catch is calculated by adding both landed weight and the estimated mortality of all catch either utilized at-sea or released at-sea.

Under this pilot programme, there is 100 percent dockside monitoring and 100 percent at-sea monitoring. Commercial groundfish vessels are individually accountable for all their catch (both retained and released). Each commercial groundfish vessel is now required to acquire individual vessel quota (IVQ) to account for mortality of all

legal/marketable-sized groundfish that are managed under species and area TACs. A vessel catching fish in excess of the IVQ holdings identified in its licence condition (plus any allowable overages) is restricted from further fishing until additional IVQ has been acquired. For groundfish species that are not managed under a TAC, all catches (retained and discarded) are recorded, monitored, and audited. For most of these non-TAC groundfish species, trip limits are in place.

3. CO-MANAGEMENT

Co-management arrangements have existed for the past fifteen years in Canada's Pacific fisheries. Co-management arrangements have been used to foster improved compliance with fisheries regulations and safer fishing practices and to put in place joint scientific, monitoring, and enforcement programmes. Through the *Fisheries Development Act*, the federal Minister of Fisheries and Oceans has the authority to enter into agreements. Specifically, Section 3(1) authorizes the Minister to undertake projects for specific purposes and Section 3(4) authorizes the Minister to enter into an agreement with an external group (Blewett, 2002).

With respect to financial authorities, any funds paid to a federal government department in Canada must go to the Consolidated Revenue fund. However, there are two exceptions to this general rule that are applicable to co-management arrangements. First, for purposes of *cost recovery*, a federal government department can seek parliamentary approval to retain funds. The funds in question must be tied to specific programmes or activities, and the department must make a clear business case that those activities advance the goals of the department and the interests of those from whom the fees are being collected. Second, under Section 21.1 of the *Financial Administration Act,* the federal Minister of Fisheries and Oceans has a *standing authority* to receive money from an external group that wishes, voluntarily, to provide funds for a specified purpose (Blewett, 2002).

When the sablefish fishery first moved to IVQ management in 1990, DFO's ability to recover costs with parliamentary authority was used as the tool for collecting co-management fees. Sablefish vessel owners were required to fund all the incremental costs associated with the IVQ programme, which included funding the dockside monitoring programme to validate all landings, DFO enforcement, DFO administration, conducting biological sampling and additional stock assessment research. This totalled approximately US$700 000 (DFO, 1994). These funds were collected by the DFO, and in the early stages of the sablefish IVQ programme, the DFO was responsible for most of the tasks associated with the management of the fishery.

The industry was soon given responsibility for coordinating the dockside monitoring programme and co-management evolved from there. Shortly thereafter, the industry, through the Pacific Blackcod Fishermen's Association, was collecting fees from vessel owners and funding DFO management costs in addition to employing service providers, independent researchers, scientists and fishery managers. The Pacific Blackcod Fishermen's Association (later to become the Canadian Sablefish Association) became one of the first vessel-owner associations on Canada's Pacific coast to enter into multi-year, legally-binding joint project agreements (JPA) with the DFO that spelled out respective roles and responsibilities for the management of a commercial fishery. Over time, these agreements became more comprehensive as the industry assumed a greater role in the management of its fishery.

As discussed by Turris (2000), a majority of the management activities associated with the sablefish fishery are now carried out by parties contracted by the Canadian Sablefish Association. The CSA is a legally-constituted organization that represents sablefish fishermen and develops programmes and policies for the protection and conservation of the Canadian sablefish resource and fishery both independently and in conjunction with the DFO. The CSA is governed by a Board of Directors made up

of members of the association – any member is entitled to sit on the Board. The CSA Board holds regular conference calls to discuss ongoing business and each year the association members meet to discuss issues facing the industry and to review the annual stock assessments. The CSA contracts with professionals (e.g. manager, administration staff, scientists, biologists and marketing consultants) to conduct the day-to-day business of the association and to undertake specific projects or programmes.

As outlined in the annual fisheries management plan (DFO, 2006), the Canadian Sablefish Association (CSA) and individual harvesters currently contribute, either through the JPA or directly, US$2.1 million for the following activities:

i. *Dockside monitoring programme:* The CSA contracts with an independent monitoring company certified by the DFO to validate all sablefish landings, to collate all data, and to enter it into a database system so it can be readily accessed by the DFO fishery managers and enforcement personnel.
ii. *At-sea monitoring programme*: Sablefish vessel owners directly pay an independent monitoring company certified by the DFO to provide at-sea observer or video monitoring systems to record fishing activity and catch, to audit logbook data, and to enter this information into a database system so it can be readily accessed by DFO fishery managers and enforcement personnel.
iii. *Sablefish Advisory Committee:* The CSA is responsible for covering all costs associated with the DFO advisory process for the sablefish fishery (e.g. meeting rooms, teleconference calls, travel expenses for elected representatives and hospitality).
iv. *Biological sampling and data collection programme:* The CSA contracts with an independent service provider company to collect and process biological samples taken during the commercial sablefish fishery.
v. *Stock assessment programme*: Each year a major stock assessment of the Pacific sablefish resource is conducted. The CSA conducts tagging charters vessel trips with contracted scientific technicians on board. Approximately 20 000 fish are tagged each year. Returns of tagged fish are collected at the point of landing by a company hired by the CSA. The annual assessment is then co-authored by DFO scientists and CSA contracted scientists.
vi. *Seamount programme*: Each year the CSA helps coordinate the application and vessel selection processes for the offshore seamount fishery. As outlined in the groundfish integrated management plan (DFO, 2006), there is an offshore fishery for sablefish on seamounts more than 100 miles offshore. Any vessel eligible for a sablefish licence may apply for a licence amendment to fish for sablefish from these seamounts. Eligible vessels may obtain sablefish from seamount areas in quantities additional to the individual quota issued to that vessel. Each year, the DFO conducts a lottery draw from sablefish licence amendment applications to select participants for the seamount programme.
vii. *Fishing log programme:* The CSA contracts with a service provider company to supply logbooks to all sablefish fishermen, to collect completed logbooks, and to enter the information into a database so that it can be readily accessed by the DFO.
viii. *DFO cost-recovery funding:* The CSA funds some of the DFO salaries, benefits, overtime and capital expenses incurred by the Department in the scientific assessment, management and enforcement of the sablefish fishery. The DFO funds items such as administration, salaries for fishery managers, scientists, biologists, support staff, enforcement staff, and research and patrol vessels and aircraft. The financial responsibilities of both parties are formalized in a legally-binding, multi-year JPA.

ix. *Fishery management programme:.* The CSA contracts staff and incurs expenses to manage the various programmes for which the industry is responsible.

4. EVALUATION

Many of the significant changes (longer season, reduced effort, improved financial returns, and increased licence and quota values) observed in the sablefish fishery can be attributed to the change to IVQ management. However, co-management has improved the monitoring and enforcement of the fishery. As previously noted, prior to 1990 there was little enforcement of the sablefish fishery and landings were not monitored. Today, there is a 100 percent at-sea monitoring programme in place, a dockside-monitoring programme validates 100 percent of the landings in the fishery, and there are five Halibut/Sablefish IVQ (HSIVQ) fishery officers dedicated to the halibut and sablefish fisheries. The positions are co-operatively funded by the two commercial fishing fleets though joint project agreements with the DFO (DFO, 2006).

Co-management has also led to significantly more resources being devoted to sablefish stock assessments and related scientific activities. For example, prior to 1993, major assessments of the sablefish resource only took place once every three years. However, through co-management arrangements, stock assessments are now being conducted annually. In addition to annual stock assessments, co-management has also led to the funding of long-term research (such as the impacts of climate) and the effectiveness of more selective harvesting methods (Jones, 2003). For example, in 1997, research was conducted on the use of escape rings in traps to reduce juvenile sablefish bycatch. The results were so impressive that by 1999 traps were required to have two escape rings (Jones, 2003).

5. DISCUSSION

Co-management of commercial fisheries on Canada's Pacific coast has evolved over time on a fishery-by-fishery basis. The process has been disjointed and generally fishery specific. Some fisheries are far along the co-management spectrum while in other fisheries there is only limited engagement. This can lead to concerns of equality and fairness within the general fishing industry, particularly with respect to the recovery of DFO costs and the funding of monitoring. This, in turn, can make it difficult to move ahead with co-management initiatives.

As a general comment, there should be a DFO policy on co-management that:

i. outlines which activities can be devolved to industry and which activities must remain the responsibility of the DFO;
ii. describes which activities should be funded by participants;
iii. details the core activities for which the DFO will be responsible for funding and
iv. provides some limit or direction on the level of costs that can be borne by the industry.

A general co-management policy would provide greater certainty for both industry and the DFO and would ensure that all parties understand what is expected of them.

As noted by Turris (2000), IVQs created an environment for co-management and greater industry involvement in the research, assessment, monitoring and administration of the sablefish fishery. Sablefish vessel owners no longer have to compete with one another for a share of the catch and instead can focus on working together to improve their fishery. In addition, IVQ management improved the economic viability of the fishery, which enabled the industry to fund various co-management initiatives. It is also suspected that the small number of participants in the sablefish fishery made it easier for vessel owners to form an association and to reach consensus to build the capacity necessary to move along the co-management spectrum.

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