

3 A Pilot Project for Salmon

A Pilot Project for Individual Quotas in the Salmon Fishery

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The following proposal emerged from a session at a workshop organized by The Fraser Institute to design a pilot project of individual quotas for the troll fleet. The workshop followed the Fraser Institute conference, *Managing a Wasting Resource: Would Quotas Solve the Problems Facing the West Coast Salmon Fishery?* at which experts from British Columbia, New Zealand, and Iceland met to discuss their experience with individual quotas. Two observations from that first conference made it logical to examine the idea of individual quotas more closely in a workshop.

First, it became clear that fisheries managed under individual quotas have been successful both in conserving stocks and in making fisheries economically viable. In the early 1970s, Iceland's herring fishery, for example, was suffering many of the same problems that the salmon fishery in British Columbia faces in 1997. Under a management system that controlled the number of fish caught through restrictions on fishing times, gear types and boat sizes, the herring fishery suffered from declining stocks and overcapitalization, and the situation became so serious that the fishery was completely shut down in 1972. It has been estimated that, since the fishery was re-opened under an individual quota system in 1975, both catch and technical efficiency have in-

creased tenfold. Because of this experience, all Icelandic fisheries are now managed under an ITQ system.

New Zealand introduced ITQs into all its major fisheries in 1986, and the quota system has since increased both catches and profitability. In addition, since the system was implemented, the government has moved to a policy of cost recovery, where all costs associated with fisheries research, enforcement and conflict resolution are paid for by the industry (see Arnason 1996).

Closer to home, the British Columbia halibut fishery offers another dramatic success story. During the 1980s, before the introduction of quotas fishermen increased the capacity of their boats by increasing crew sizes and using electronic gear and more efficient hooks. As a result, fishing seasons were shortened to limit the number of fish caught. Shorter seasons led to an increased propensity to fish in hazardous conditions and an increase in the number of sinkings. The quality of the fish declined because gluts in supply led to the freezing of most of the fish (see Casey et al.). But, after the introduction of individual quotas (IQs), seasons lengthened from 6 days to 214 days, increasing the quality, availability and, therefore, the landed prices of the catch. These and other successes with individual quotas suggest that there is a viable alternative to the current ineffective style of management that attempts to control the amount of effort that goes into the fishery. Individual transferable quotas are an option for salmon management that clearly merits further investigation.

Second, it became clear at the conference that there were many unanswered questions about the correct design for a quota system for Pacific salmon. The salmon fishery has a number of unique characteristics, notably the large number of stocks and the difficulty in estimating run sizes before the season begins. A quota system for salmon requires, therefore, a more complex design than a quota system for groundfish (e.g., halibut) or shellfish.

The workshop was organized to grapple with the problems inherent in designing a pilot project for individual quotas for the salmon troll fleet.¹ The following proposal outlines the specific issues that need to be addressed in order to implement a pilot

1 There are three different gear types used to fish salmon: seine, gillnet and troll. The workshop focused on establishing a pilot project for trollers.

project for trollers and, as well, some of the conclusions arrived at by the participants in the workshop.

Goal of the pilot project

The goal of the pilot project is to provide further information about whether salmon can be better managed under a quota system. The pilot project would provide information concerning potential increases in income due to improved quality, better marketing, higher quality catch, and reduced fishing costs.² In addition, it can be expected that the pilot project would make a contribution to stock assessment if, as was suggested, the quota holders give daily reports to the Department of Fisheries and Oceans (DFO), providing information about areas fished, species and numbers of fish caught, and how fish are processed. It was also suggested that detailed records be kept on hours of labour, wages paid, fuel consumption, repairs, and gear purchases.

The specific questions to be evaluated during the course of the pilot project include:

- Does the individual quota system contribute to biological knowledge (stock assessment and run timing)?
- Would individual quotas return the troll fleet to solvency?
- Would individual quotas eliminate the need for government subsidies including employment insurance and the management, enhancement and research currently funded by the Department of Fisheries and Oceans?
- Does the quality of the catch increase under the pilot project?
- Does the way in which the fish are marketed change under the pilot project?
- Does the cost per pound to harvest salmon go down under the pilot project?

² DFO estimates indicate that a troller's net operating income would increase by 24.6 percent to 40.2 percent if a quota program with no transferability were adopted. A quota program with transferability could increase incomes by 141.3 percent to 185.3 percent. See *Assessment of Individual Quotas in the Salmon Fishery* (Department of Fisheries and Oceans 1995).

- What kind of management regime (catch monitoring, enforcement and validation) is needed for a general quota system in the troll fleet?
- Will a quota system create a more stable economic environment in small communities?³
- Will fishers and processors relocate to be closer to the resource?

Implementation

Participation in the pilot project

The most ambitious pilot project would include an entire licensing area and all licensed fishermen in the area would be required to participate.⁴ This has the advantage of allowing an assessment of how individual quotas would contribute to conservation. It also would be more representative of how a system of individual quotas would work if implemented for the entire fleet.

An alternative would be to operate the pilot project within an existing licensing area on a strictly voluntary basis. In this case, participants in the pilot project would display an easily identifiable license on their boat that would allow them to fish until their quota was caught.⁵ The North Coast statistical area 2W (West Coast, Queen Charlotte Islands) and West Coast statistical areas 21-27 (West Coast, Vancouver Island) were suggested as areas in which a pilot project with voluntary participation could be tried.

Species

There was no general agreement on how many species should be covered. The pilot could include Chinook and Coho, or it could include all five species—Chinook, Chum, Coho, Pink, and Sockeye.

3 Although some argue that quotas would have a negative effect on coastal communities due to “corporate concentration,” the evidence suggests that quotas have a positive effect on small communities. On the contrary, quotas may allow smaller fishing operations to compete more effectively with larger operations because eliminating the race for the fish eliminates the need continuously to finance new investments in catching power. Direct spending by both the halibut and the sablefish fleet increased in coastal communities and declined in the larger urban centres when quotas were introduced. See Department of Fisheries and Oceans 1995.

4 Currently, each troll license entitles fishermen to fish in only one of three possible license areas.

5 Once quota holders catch their quota, they are no longer eligible to fish. They cannot reach their quota and then participate in the free-for-all fishery.

Allocation

There are two fundamental questions about allocation. First, how are the salmon to be allocated between the pilot project for IQs and the free-for-all fishery, and among the fishermen participating in the pilot project? Second, should the allocations be measured in pounds or in numbers of fish, by fixed volume shares or by percentage shares, by individual species or in sockeye equivalents?

If the pilot project for IQs is to operate in the same license area as a free-for-all fishery, the allocation to the pilot project could be based on the historical catch of the participants. Alternatively, it could be the projected fleet average for that area multiplied by the number of vessels in the pilot.

The allocation to individual fishermen participating in the project could be distributed as equal shares of the total allocation, or a formula could be worked out based on catch history. At the workshop, equal allocation was favoured for the pilot project as less complicated to implement than an allocation based on catch history. If individual quotas are set on catch history, a review panel and appeal board must be set up to hear grievances. Equal allocation also avoids the problem that arises with boats that, in the past, may have targeted species not covered by the pilot project. For example, if the pilot project covered Coho and Sockeye, a fisherman who had been fishing for Chinook would not receive an allocation under an catch-history formula unless that formula was based on a system of Sockeye equivalents.⁶

Allocations could be made in pounds of fish or numbers of fish. An allocation made in pounds eliminates the incentive for fishers to "high-grade" or throw away smaller fish.⁷ Allocations could be made by fixed volume shares or percentage shares of the total allowable catch (TAC). An allocation by percentage share would work only if the TAC for the pilot project was set at a low level initially, and adjusted during the season as information about the sizes of runs changed. This would allow the Department of Fisheries and Oceans more flexibility in responding to changing estimates of the sizes of the runs.

6 Sockeye equivalents relate the value of each species and grade of salmon in terms of sockeye units. For example, using average price data from 1991 to 1994, one sockeye is equivalent to .1 Pink, .48 Chum, 2.66 Chinook or .62 Coho.

7 An allocation made in pounds will not reduce the incentive to high-grade if there is a premium paid for larger fish.

A separate allocation could be made for each species that the boat catches (see table 1) or allocations for each species could be made in Sockeye equivalents, relating all species to a standard. Differential multipliers could then be applied to each species by size and grade of quality to eliminate high-grading. Catch should not exceed quota for any species by more than two percent, and amounts caught in excess of that margin would be deducted from the quota of the following year. Similarly, up to 5 percent of uncaught quota could be transferred to the following year.⁸

Table 1 Sample system of equal allocation based on each species for a pilot project fleet of 100 boats

	Number of fish	Weight per fish (lbs.)	Total weight (lbs.)	Weight (lbs.) per vessel
Chinook	20,000–40,000	20	400,000–800,000	4,000–8,000
Coho	200,000–400,000	5	1,000,000–2,000,000	10,000–20,000
Sockeye	300,000–1,000,000	6	1,800,000–6,000,000	18,000–60,000
Pink	700,000–2,000,000	3	2,100,000–6,000,000	21,000–60,000
Chum	50,000	7	350,000	3,500

Duration of Season

The free-for-all fishery will last, as usual, until the Department of Fisheries and Oceans estimates that the free-for-all allocation has been caught. There should be no closed season for the pilot project, however, and the quota fishery would remain open until all quota is caught, except when time and area closures are needed to protect weak stocks passing through an area. Boats should be marked to indicate that they are participating in the pilot quota fishery.

Duration of the Pilot Project

The general consensus was that the pilot project should last for at least two years in order to produce meaningful results.

⁸ This assumes that vessels, once enrolled, would continue in the program. There would have to be a formula to convert any amounts above or below quota for vessels should the program be terminated.

Transferability

Because of the “pilot” nature of the project, transferability should either not be permitted at all or limited to those in the program.⁹ Those participating in the project could be permitted to transfer or lease quota for a maximum of one year. It is important to note that while it may be desirable to limit transferability under a pilot project due to uncertainty that the program will continue, transferability should not be limited if a quota system were adopted on a permanent basis. Quota transferability provides a means of allocating the resource to the most efficient fishermen, and it also allows fishermen to buy quota if they overfish their allocations. Finally, if quotas were implemented on a wider basis, transferability would provide a market mechanism for re-allocating catch between gear types and the sports, commercial, and aboriginal fisheries.

Enforcement

The monitoring of catch under a quota system requires that fish be landed at designated stations, where port monitors would record catches. The port monitoring system in the halibut fishery could serve as a model. It is important that there be a deterrent to prevent the overfishing of quota. Penalties for overfishing or for not reporting could include the loss of all, or part of, assigned quota either on a temporary or permanent basis.

Conclusion

The Pacific salmon fishery is a complex fishery and difficult to manage under any system due to the biology of the fish, the large number of fishermen, the different gear types used in the commercial fishery, and the presence of recreational and aboriginal fisheries. This has been the central rationale for staying with the current system of management, which focuses on effort controls and which has been unsuccessful at meeting either conservation or economic targets. It was thought that there was no better way to manage salmon, but the evidence suggests otherwise. Individual quotas have been successful in fisheries all over the world and our proposal suggests that it is time to try a quota pilot for

9 It was also suggested that fishing vessels with stacked licenses should not participate in the pilot project as they would also be participating in the free-for-all fishery in other areas. This, it was felt, would call for too much DFO supervision and administration.

the troll fleet. The quota pilot, if implemented, would give fisheries managers valuable information about whether quotas are the best management option for Pacific salmon in the future.

Acknowledgments

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