A Review of Five Demonstration Projects from the 2008 Salmon Season

REPORT

Prepared for:

Fisheries and Oceans Canada

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ACRONMYS

AABM	Aggregate abundance-based management
AFHC	Area F Harvest Committee
AHC	Area Harvest Committees
ATP	Aboriginal Transfer Program
BCWF	British Columbia Wildlife Federation
CSAB	Commercial Salmon Advisory Board
CTC	Chinook Technical Committee
DFO	Department of Fisheries and Oceans
ESSR	Excess Salmon to Spawning Requirement
FOS	Fisheries operations system
FSC	Food, social, ceremonial
GPS	Global positioning system
IQ	Individual Quota
ITE	Individual transferable effort
ITQ	Individual Transferable Quota
JOT	J.O. Thomas and Associates
PICFI	Pacific Integrated Commercial Fisheries Initiative
PSC	Pacific Salmon Commission
TAC	Total allowable catch
UFAWU	United Fishermen and Allied Workers' Union
WCVI	West Coast Vancouver Island

I. PROJECT SCOPE AND OBJECTIVES

1. BACKGROUND AND SCOPE

The Department of Fisheries and Oceans (DFO) has been working with commercial salmon fleets and First Nations to implement share based management approaches in the salmon fishery since 2005. These initiatives have been consistent with Pacific Fisheries Reform and the Pacific Integrated Commercial Fisheries Initiative (PICFI). To explore which alternatives would provide potential development paths for the salmon fishery, between 2005 and 2007 DFO implemented eight salmon demonstration fishery projects including:

- **Area H Chum Troll Fishery, 2007**: 122 license holders were given the option for an IQ fishery; 15 accepted the individual quota (IQ) approach, the rest were placed in a competitive fishery.
- **Area B Seine Chum Fishery, 2005:** 39 of 166 Area B seine license holders held an IQ; the remaining 127 were eligible for two one-day competitive fisheries.
- **Area F Chinook Troll Fishery:** three demonstration fisheries in the three years 2005 - 2007; participation in the ITQ demonstrations was high; for example, in2005, 161 licenses holders chose ITQ and seven opted for the competitive fishery; in 2006, 161 vessels selected the ITQ fishery and 7 the competitive fishery.
- **Area H Fraser River Sockeye Troll Fishery:** three demonstration projects in 2002, 2003 and 2006; in 2002, 10 vessels tested the IQ approach; in 2003, the IQ fishery had 25 volunteer participants; in 2006, 73 license holders opted for the ITQ fishery and 49 for the competitive fishery, of which 64 and 46 vessels actively fished, respectively.

Formal reviews were conducted for all of the demonstration projects except the 2002 Area H Fraser River Sockeye Troll Fishery and the 2007 Area F Chinook Troll Fishery.

Demonstration projects continued during 2008, the main objective being to carry out demonstration fishery projects that support alternative management arrangements. These projects were intended to meet three key design principles:

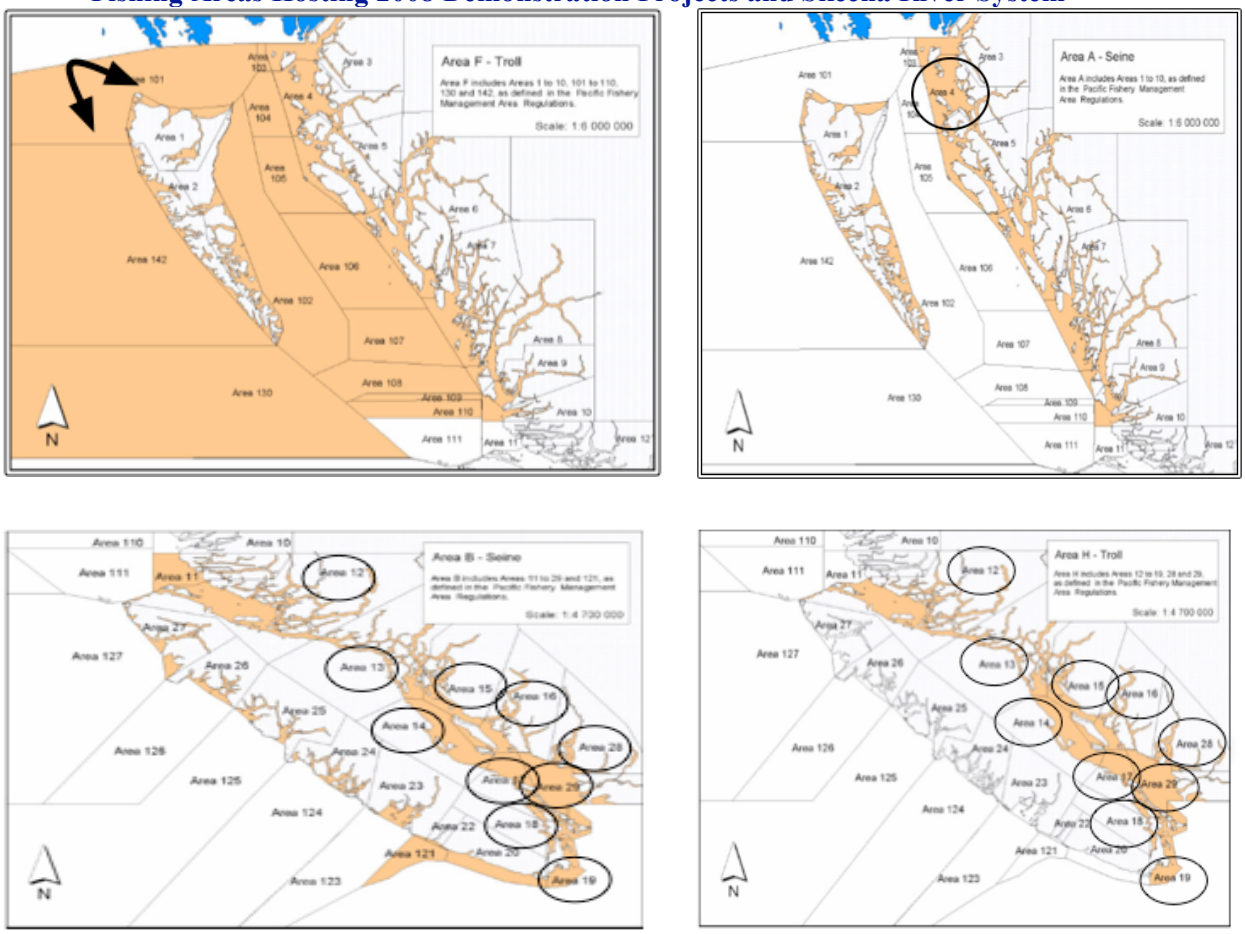
- Maintain or improve management control and conservation performance in the fishery.
- Promote the use of clearly defined shares to improve manageability and industry viability.
- Increase the ability of harvesters to work cooperatively to harvest available surpluses and to take on greater responsibility for control and monitoring of their fishery.

In this context, DFO worked with Area Harvest Committees and First Nations, where there was strong support for proceeding, to develop demonstration fishery projects for 2008. This led to five commercial demonstration fishery projects in the following areas identified specifically by the arrows and circles on the maps on the following page:

- Area F Troll Individual Transferable Quota (ITQ) fishery for North Coast Chinook salmon managed under Pacific Salmon Treaty provisions.
- Area A Seine ITQ fishery for Area 4 (e.g., Skeena River) pink and sockeye salmon.
- Skeena River Inland Demonstration Fishery for Skeena River sockeye and pink salmon.
- Area B Seine and Area H troll ITQ fisheries, including inter-fleet transfers, for Fraser River sockeye salmon.
- Area H Troll Individual Transferable Effort (boat days) fishery for mixed stocks of chum in Johnstone Strait.

In addition, several small inland demonstration projects were conducted by First Nations in the Fraser river system but were outside the scope of this report.

Figure 1:
Fishing Areas Hosting 2008 Demonstration Projects and Skeena River System



2. OBJECTIVES

The objective of this study was to undertake a review of the five commercial salmon demonstration fisheries (listed above) conducted in 2008.

3. STUDY APPROACH

Conducting this study involved a number of specific work activities:

- Compiling and analyzing formally collected data on the catch and quota reallocation results as available from DFO.
- Reviewing the findings of previous review studies, DFO project descriptions, catch and quota management reports, etc.
- Conducting interviews with representative samples of participant license holders, industry organizations, Skeena Fisheries Commission, DFO representatives, and contracted service providers; the views of First Nations and recreational fishers were also sought. (See the Interview Guide in Appendix B).
- Compilation and analysis of the data from the three sources above.
- Preparation of this report.

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II. SUMMARY AND CONCLUSIONS

This report covers four marine commercial salmon fishery demonstration projects and one inland commercial salmon demonstration project conducted in 2008:

- **Area F Troll ITQ fishery** for North Coast Chinook salmon managed under Pacific Salmon Treaty provisions.
- **Area A Seine ITQ fishery** for Area 4 (e.g. Skeena River) pink and sockeye salmon.
- **Skeena River Inland Demonstration Fishery** for Skeena River sockeye and pink salmon
- **Area B Seine and Area H troll ITQ fisheries**, including inter-fleet transfers, for Fraser River sockeye salmon.
- **Area H Troll Individual Transferable Effort (boat days) fishery** for mixed stocks of chum in Johnstone Strait.

The following table summarizes some of the key features of the four commercial fishery demonstration projects:

Project Element	Area F Chinook Troll ITQ Fishery	Area A Sockeye/Pink Seine ITQ Fishery	Area B Seine/Area H Troll Fraser River Sockeye ITQ Fishery	Area H Chum Individual Transferable Effort Fishery
Total Eligible Vessels (Licenses in DFO Inventory noted in brackets)	284 (6, and 1 vessel not licensed)	107(6)	Area B: 169 (17) Area H: 89 (3)	89 (3)
Vessels Fishing	136	Week 1: 43 Week 2: 41 Week 3: 40	Area B: 12 Area H: 15	42
Length of Season	Jun 20 – August 8; August 28-September 30	Three openings: July 22-27; July 29-August 3; August 5 – August 6	Area B: July 27,28 Area H: July 26, 27, 28	Block one: September 29 – October11 Block Two: October 14 – November 5
TAC (sockeye and pinks); Quota per vessel (pieces)	64,800; 228	Week 1: 288,900; 900 sockeye, 1800 pink Week 2: 192,600; 900 sockeye, 900 pink Week 3: 107,000; 500 sockeye, 500 pink	Area B: 0.2811% of the commercial TAC (281 sockeye) Area H: 0.1348% of the commercial TAC (135 sockeye) Commercial TAC – 100,000	267 days in first fishing period; 178 in second fishing period
Vessels transferring quota; vessels transferring total	277, 124	All but 4-12 vessels transferred quota depending the week; 51,47,47	Area B: 97, 83 Area H: 34, 22	First period: 54, 29 Second period: 61, 36

Project Element	Area F Chinook Troll ITQ Fishery	Area A Sockeye/Pink Seine ITQ Fishery	Area B Seine/Area H Troll Fraser River Sockeye ITQ Fishery	Area H Chum Individual Transferable Effort Fishery
ITQ		by weeks 1, 2 and 3		
Vessels validating catch; sockeye/pink catch (pieces)	136; 52,157	Week 1: 43; 91,284/18,036 Week 2: 41; 76,349, 42,239 Week 3: 40, 28,305, 31,492	Area B: 12; 12,250 Area H: 8; 440	42; 21,297

Quota Transfer

Across the four commercial fisheries, quota transfers took place with the result of concentrating fishing activity in fewer vessels than would otherwise have been the case under a competitive fishery. In the Area F Troll project, for example, 124 vessels reallocated their total quota (28,272 pieces, or about 44% of the TAC) to another vessel. In the Area A Seine project, it appears that close to half of the active vessels reallocated their total ITQ. In the Area B Seine/Area H Troll project, there were 107 reallocations covering 26,293 sockeye (also about 44% of the TAC), most of it seine-to-seine or troll-to-troll transactions although inter-fleet transfers were possible. Since this was the first year such transfers were possible, it remains to be seen whether further experience with the inter-fleet option would lead to greater cross fleet transfers. In the Transferable effort Chum Fishery, quota transfers accounted about 32% of available quota days in Block One and 44% in Block Two. The use of quota boats to accumulate quota and then reallocate it was most evident in the Area A project and to a lesser extent in Area F, where the 1,500 piece 'soft' cap (i.e. additional quota could be attained only after 1,500 pieces were harvested) on quota per boat may have been a factor but the difference in gear types (seine versus troll) was probably more important.

Main Benefits

The harvesters and processing companies cited a variety of benefits that appeared to be common to the ITQ approach across the projects. Some harvesters liked the fixed amount of catch associated with the individual quota (this point doesn't apply to the transferable effort fishery, of course). Others liked the idea of accumulating quota and catching more, and where license holders had more than one boat or groups of harvesters struck a cooperative arrangement, they could accumulate quota on one boat to do the fishing and cut their operating costs. Overall, in our view, adopting the ITQ style enabled individual harvester to make decisions that best fit with their particular situation, enabled recovery from early season mechanical breakdowns and gave more flexibility in making crewing decisions than under the competitive fishery. Because harvesting was more spread out through the season than in the competitive fishery, processing companies found that the ITQ fishery enabled them to schedule a more stable flow of raw product to their plants (This was less important in the relatively short season in the Area B/Area H sockeye fishery.) thus balancing their labour staffing and reducing overtime. The stable product flow was also an advantage in terms of placing high quality fresh product into markets at higher prices.

Criticisms

Criticisms of the ITQ style of fisheries management range from basic principles to specific outcomes of the demonstration fisheries. Some harvesters are opposed philosophically because they believe that the ITQ approach amounts to privatizing a public resource. This point is also made by representatives of recreational fishers and First Nations. Some harvesters and union representatives are concerned that the ITQ approach will lead to less crew employment because fewer vessels will be fishing, or vessels will be fishing less. Since reducing fishing effort is one of the reasons for using the ITQ approach, this point really expresses a difference of objectives: maximizing employment versus optimizing the level of resources and effort engaged in fishing. Highliners object to having to acquire additional quota at a cost (which increases their cost of fishing) if they are to be in a position to maintain their high catch levels. Others point out that in years of low abundance, when catch levels may fall, the cost of quota may not be fully recoverable which undercuts fishing viability. Harvesters also argue that validating catch, a mandatory aspect of the ITQ fisheries, creates a new cost that participants must pay. They object both to the high cost of validation and to a perceived inequity, since validation is not required under competitive fisheries. Some people objected to the difficulties they encountered in finding quota buyers/sellers. This seems to have been an issue mainly with the Chum Demonstration Project and may have been a function of relatively short notice on the conditions of the fishery at start up and inexperience in dealing with quota transactions that would decline with more experience.

Management Control and Conservation

From a management and control perspective, DFO managers were clear in their view that the ITQ approach was a much more precise method of managing to a TAC than the methods available under a competitive fishery. This gave them a greater sense of certainty in the overall fishing outcome, and in particular that the TAC would not be exceeded. This feature is especially appealing in times of low abundance, since it could mean allowing a fishery under ITQ that would not have been permitted under competitive conditions to avoid the possibility of over exploitation relative to a low TAC. Where the ITQ was being introduced for the first time, there were some initial start up costs related to the establishing the required quota database and linking into the catch database. However these did not appear to be excessive and would presumably not be repeated in a future ITQ fishery. One of the key requirements to be able to establish an ITQ fishery is the ability to set an acceptably accurate TAC that could then be allocated across the eligible license holders. DFO was able to meet his condition, either because it had good historical data and abundance forecasts, or as in the case of Chinook, the TAC was set by the international treaty mechanism. For the Chum fishery, a planning model is used to plan the fishery based on fixed effort levels, which helped inform setting the individual effort quota.

Industry Viability

From an economy wide perspective, under ITQ (at least in Area F and Area A; the short fishery in Areas B and H preclude any conclusions about the impact of ITQ on industry viability) there are generally fewer boats fishing and a reduced cost of harvesting as compared with the derby fishery. Because of the race for the fish, there is high overhead (in the form of additional boats fishing) for catching the same amount of fish. This may lead to improved industry viability for a smaller fishery as a result of the concentration of quota in the hands of a smaller number of fishermen or companies. It has already been noted that not everybody will consider it a benefit.

Quasi-derby Challenge

Conservation concerns about the health of particular stocks imposes constraints on the ITQ fisheries in some cases that may induce quasi-derby like fishing behaviour. This is because fishermen suspect the fishery may close earlier than its posted closing date. Consequently, they will focus their fishing effort in the early part of the season rather than spreading it out more evenly through the season. This was pointed out in connection with the Area F Chinook fishery, where the imposition of catch limits on the amount of West Coast Vancouver Island Chinook taken creates uncertainty about possible early closure. It is noted that some uncertainty about early closure was present in the other demonstration projects as well.

Transfers between Commercial Fishers and First Nations

The use of the ITQ approach provides a more definitive mechanism (because of the defined amount of quota per license) by which quota could be transferred from the commercial fishery to First Nations. In 2008, actual transfers occurred only in the north where some Area A seine licenses[1] were leased by the Skeena Inland Demonstration Project. In the south, transfer mechanisms for moving fish from commercial fishing areas to inland First Nation Fisheries have not been explicitly defined. How such transfers would occur in the Chum Demonstration Fishery where the individual quotas are fishing days rather than pieces remains an open question. In all cases, there will be a concern about the differential impacts of transfers on particular stocks. This is because the receiving First Nations are spread out along the rivers and their fishing activities will target different sub-sets of populations than in marine areas depending on location, creating problems for valuing transfers.

Skeena River Inland Commercial Demonstration Project

The Skeena River Project was an inland commercial demonstration fishery conducted on the Skeena River by the Gitxsan First Nation. The other four projects involved commercial fishery fleets operating in the marine environment.

The Skeena Inland Project fished 40 gill net licenses (30 leased from Area C gill net commercial fishermen and 10 from the DFO inventory of licences purchased back from commercial licence holders and five seine licenses - three licenses leased from the Area A seine fleet and two from the DFO inventory). In this sense, the demonstration project provided an effective mechanism to transfer salmon shares to terminal fishing areas, and in this case, an inland First Nation. The project fishermen caught 67,289 sockeye with a value of about $424,000, which represented substantial injection of earned income to an area with very few sources of earned income. The project employed about 66 people overall, covering fishing crews (three to seven people per crew), monitoring activities and operating the landing site. The Gitxsan were very active in monitoring and enforcement at three levels: Nation level enforcement, the Skeena Fisheries Commission and a strong relationship with DFO Enforcement in Hazelton. Overall enforcement was a joint effort by the Gitxsan, DFO Conservation and Protection and the RCMP. There are still concerns about the impact of this fishery on the mixed stocks in the Skeena River and the Skeena Fisheries Commission continues to do research on the situation. The main challenge for the Inland Demonstration Fishery continues to be trying to get the Tsimshian Nation to participate in the lower Skeena part of the planned project. This will remain a challenge because the coastal

[1] There were some gill net licenses involved as well but they are not part of the ITQ fishery.

First Nations believe that the demonstration project causes them to lose some of their previous access to the Skeena fishery and possibly lose processing jobs in Prince Rupert. With a strong preference for using gill nets, the Tsimshian object to the elimination of this gear as required by the demonstration project rules. Restricting fishing times below the mouth of Kitwanga River led to the discovery of other productive fishing areas. DFO and the Gitxsan are working on follow up to develop the fishery further in this regard.

Moving Forward

In terms of moving forward with salmon demonstration projects, the 2008 experience provides the basis for a number of observations and recommendations.

Low abundance levels relative to previous years or relative to initial forecasts characterized the 2008 projects. This provided a useful test of how the ITQ approach would work in fisheries where the TAC and individual quotas were relatively low. In the Area B/Area H Troll case, the first experience with inter-fleet quota transfers was somewhat limited and further testing would be helpful. Further experience with the individual transferable effort fishery for Chum would also be useful. Thus we would recommend:

1) *Repeating the demonstration fisheries in Area A and Areas B and H to gain further knowledge and experience with the system for DFO and the harvesters.*

In the case of the Area F Chinook fishery, the 2008 demonstration project was the fourth one. The accumulated experience suggests that ITQ works well in this fishery and moving towards a permanent ITQ approach is worth considering, even with the West Coast Vancouver Island (WCVI) chinook conservation concern. As is noted in the report, making such a change would be unlikely to receive unanimous approval among the fleet and there would probably be opposition from First Nations and recreational harvesters. Even so, moving forward to consider a variety of specific issues such as:

- Should ITQ's be reset each year or would they be permanent? If permanent, would a fisherman who reallocated ITQ be able to reenter the fishery only by acquiring a share back?
- What would be the rules around how the ITQ will operate across years?
- What will be the effect on other species such as coho that are not managed under an ITQ?
- What effects would such a change have on the current allocation process? How will this affect First Nations? Recreational harvesters?

On this basis, we would recommend:

2) *That DFO initiate discussions to consider adopting the ITQ approach as the permanent management regime for the Area F Chinook fishery.*

For the harvesters, the uncertainty created by the way in which the testing occurs to determine the level catch of the WCVI stocks is partly a function of the long lag between the DNA sampling and the test results. Harvesters believe this could be resolved by an at-sea sampling procedure although DFO's view is that the gains would be modest at a substantially increased cost. There are also issues oh how to deal with stock of concern migrating through the demonstration projects focussed mainly on the Johnston Strait/Georgia Strait area. We would recommend:

3) *That DFO and/or the Area Harvest Committees convene a joint harvester-DFO examination of the stocks of concern issue to explore the options in terms of their effectiveness and costs in managing ITQ fisheries.*

Facilitating the transfer of licenses and quota from the commercial fishery to First Nations is one anticipated outcome of the ITQ approach. In 2008, such transfers did occur from the Area A Seine Fishery to the Skeena Inland Demonstration Project involving both commercial leasing arrangements and the use of DFO license inventory. This limited experience gives some indication that an ITQ approach will help with such transfers. However, further experience would seem prudent and we would recommend (recognizing the challenges that could be involved given the general First Nations view on ITQ fisheries):

4) *That, in addition to continuing the Skeena Inland Demonstration Project, DFO adopt a pro-active approach in identifying in cooperation with interested First Nations other types of demonstration projects where there is a potential to test further the ITQ regime as a basis for license/quota transfer. This could include proposing a mechanism for transferring effort quota inland from the Area H Chum Troll fishery.*

One aspect of the ITQ fishery that creates a strong displeasure with the ITQ approach, even among those harvesters that favour it, is the fact that non-fishing license holders are awarded quota on an equal basis to active harvesters. Under current circumstances, it appears this situation will continue and thus be an on-going source of contention, if not a factor undercutting the viability of the active fishermen. Since reducing overall fishing effort is part of the effects sought from ITQs, it would be consistent to allow quota holdings to concentrate among a declining cadre of active fishermen. Admittedly, this is unlikely to be an easy issue to resolve because there will be strong views on both sides of the question, nevertheless we would recommend:

5) *That DFO initiate discussions (using the Area Harvest Committees (AHC) or a separate, more broadly inclusive workshop format) to consider options for and the pros and cons of a mechanism under which the share of quota allocated to non-fishing license holders would diminish over time according to an easy-to-understand formula.*

III. FINDINGS

1. AREA F TROLL ITQ DEMONSTRATION FISHERY

1.1 Background

The roots of the Area F Chinook ITQ can be traced to the fisheries renewal program started by DFO and the Pearce McRae report, which recommended a quota system for fisheries management. Some trollers expressed an interest to try the ITQ approach and for DFO the Chinook fishery was a good candidate as the Pacific Salmon Treaty process sets the TAC annually. The initial opposition to the ITQ approach led DFO to allow fishermen to choose either to fish under a derby or an ITQ option. The first ITQ fishery took place in 2005 at which time seven fishermen opted for the derby fishery and 161 chose the ITQ fishery. In subsequent years, DFO allowed license holders to choose ITQ or derby. In 2006, six license holders chose the derby fishery ands 240 selected the ITQ approach. In 2007, 245 chose ITQ and two selected derby. At the conclusion of the 2007 demonstration ITQ fishery, the Area F Harvest Committee (AFHC) recommended to DFO to continue the demonstration ITQ fishery for the 2008 salmon season. In 2008, DFO placed all license holders in the ITQ harvest style for Chinook salmon as the use of Section 52 scientific/experimental licences for commercial fishing was no longer available to allow a split ITQ/derby fleet post the Larocque court decision. A package outlining the elements and forms to be used as a part of the ITQ harvest style was issued to all license holders as a part of their 2008 vessel licensing package.

Now, some trollers are arguing in favour of making the ITQ approach permanent but this view is by no means unanimous as will be evident from the discussion of the 2008 ITQ fishery.

1.2 Project Process and Results

ITQ Fishery Harvest Performance

Tables 1 and 2 provide the details of the 2008 Area F Chinook Troll Demonstration Fishery. Figure 2 shows the distribution of the catch by units of quota held. The highlights of this fishery[2] are:

- There are 284 vessels licensed to harvest in salmon license Area F and as previously stated, all were placed in the demonstration ITQ harvest style for harvesting Chinook in 2008. Of these, seven vessels did not participate in the fishery: six were held by DFO in the inventory of licenses bought back from the fleet and one vessel was apparently not actually licensed.
- Since 2005, Chinook allocations have been established through an equal sharing arrangement, whereby all licensed vessels receive an equal share of the commercial Chinook allocation derived from the Chinook Technical Committee (CTC) of the Pacific Salmon Commission (PSC).
- The commercial Chinook allocation for 2008 was set at 64,800 Chinook, which allowed for each license to have an initial allocation of 228 Chinook.

[2] Based on Fisheries and Oceans Canada, 2008 North Coast Troll Fishery – Post Season Review.

- The Chinook ITQ demonstration fishery was to open on June 20 and remain open until September 30 or until the WCVI mortality allowance (exploitation rate ceiling) of 3,254 pieces was achieved, whichever came first. This restriction, which affected the overall fishing time, was meant to keep the harvest of WCVI Chinook near or below 3.2 % of the returning WCVI stock (similar to 2007).

  In fact, the ITQ fishery opened on June 20 and remained open until August 8, when it was closed on the rationale of a trend of increasingly high WCVI catch based on DNA results. The ITQ fishery re-opened on August 28 and continued until September 30.

- A total of 136 trollers validated Chinook salmon in the ITQ fishery for a validated catch total of 52,147 Chinook. This represents 47.9% of the salmon license Area F fleet.
- 103 vessels (75.7%) did not achieve their quotas with shortfalls ranging from 1 to 486 pieces. Trollers were able to take advantage of the transferability (reallocation) option as a part of the conditions of license. The AFHC recommended implementing a Chinook ITQ reallocation 'soft' ceiling not to exceed 1,500 pieces on one vessel. However, once the ceiling was achieved, the license holder could obtain additional quota. This was implemented to prevent 'quota brokering', where a license holder could buy up large amounts of quota and re-sell that quota at a higher price.
- A total of 272 reallocation transactions were undertaken involving exchanges between 277 vessels and involved 73,814 Chinook to and from these vessels in 2008.

Table 1:
Area F Chinook Troll Fishery
Quota, TAC and Catch
2005 – 2008

	2005		2006		2007		2008	
	Vessels	Pieces	Vessels	Pieces	Vessels	Pieces	Vessels	Pieces
Total number of Vessels eligible for Chinook ITQs and TAC	168	168,000	246	152,520	248	119,040	284#	64,800
Total number of Vessels with Chinook ITQ Experimental Licenses	132	132,000	161	83,720	171	112,320	*	*
Total number of Vessels who Validated Chinook and Catch	130	130,000	159	146,369	145	82,383	136	52,147
Total number of Vessels who achieved their ITQ and Catch	88	99,349	122	115,756	17	11,085	35	13,751
Total number of Vessels not licensed the salmon season and quota	3	3,000	1	620	13	6,240	1	228
Total number of Vessels/Licenses that did not fish and did not reallocate their ITQ, and quota	2	2,000	n/a	0	13	4,362	20	4,187
Total number of Vessels that reallocated their total ITQ	29	29,000	79	48,980	83	39,840	124	28,272

Source: Fisheries and Oceans Canada
Note; # - Of these six licenses were held in the DFO license inventory and on vessels was not licensed in 2008
* All vessels were licensed using commercial licenses

Table 2:
Area F Chinook Troll Fishery
Quota Transfers
2005 - 2008

	2005		2006		2007		2008	
	Vessels	Pieces	Vessels	Pieces	Vessels	Pieces	Vessels	Pieces
Total number of Vessels who potentially engaged in Quota Transfers and Transfers	121	71,894	209	111,906	193	92,640	277	73,814
Total number of Vessels who reallocated their total ITQ to another vessel and Quota transferred	30	30,000	79	48,980	77	36,960	124	27,272
Total number of Vessels who received a total ITQ from another vessel and Quota transferred	15	15,000	33	20,640	66	31,680	82	18,696
Total number of Vessels who reallocated or received a portion of an ITQ, quota transferred	76	27,894	99	57,966	51	24,480	31	3,553
Total number of Vessels/Licenses who did not take part in ITQ program, quota	7	7,000	27	16,740	55	26,400	32	7,296

Source: Fisheries and Oceans Canada

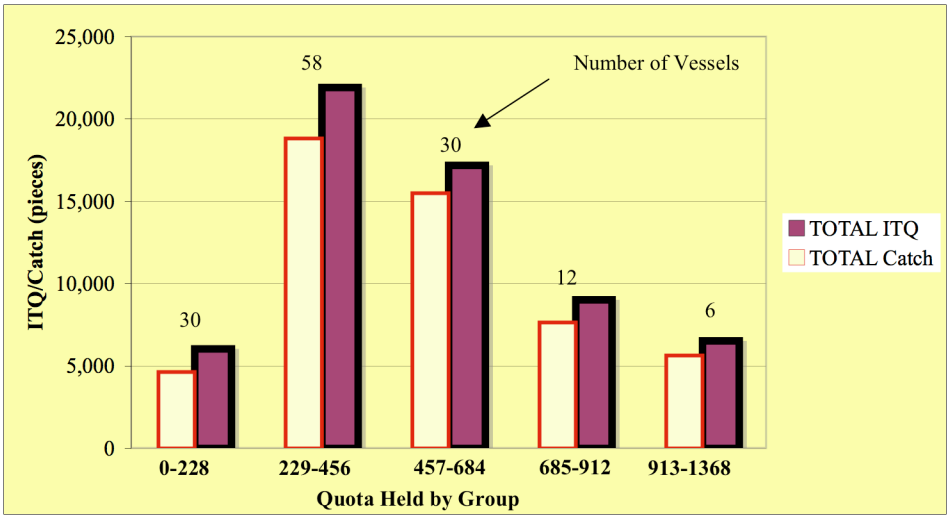
ITQ Dockside Validation

As in 2007, Chinook catch was validated employing an independent service provider –J.O. Thomas and Associates (JOT). Cost arrangements were established between the harvester and the service provider. Catch data with entered into a database and transmitted to DFO on a timely basis.

ITQ Catch Tracking and Quota Reallocation

At the start of the ITQ fishery, a database to track catches and reallocations was needed. This was designed and maintained by Scott Garard of Beyond Basics. The program was installed at both JOT offices and DFO. The program was designed to be synchronized at each start-up so that the user had the most updated validations and reallocations. JOT staff entered the validations and the program subtracted the delivery from the allocation to get remaining quota. The fisherman would then have an official document with their remaining quota displayed. At DFO the catch to date (validations) could be read for fisheries management purposes. All reallocations used a paper form to administer Chinook reallocations between vessels. These amendments to the conditions of vessel license were mainly faxed to DFO with the appropriate signatures and then returned (faxed) to the requesting vessel or his/her representative containing the amended ITQs for each vessel.

Figure 2:
Distribution of 2008 Area F Chinook Harvest by Quota Holdings



The pros and cons of the 2008 ITQ fishery can be summarized as follows:

Pros

Among those in favour of the ITQ fishery, what they liked differed considerably by person – some liked the fixed amount of catch; others liked the idea of accumulating quota and catching more. Overall adopting the ITQ style enabled individual decisions that best fit with the fishermen's situation. From the fisherman point of view, the range of benefits identified from the ITQ fishery are as follows (in no order of priority):

- For fishers holding more than one license, they could combine their quotas and have a better sense of options and possibilities for the season.
- Under ITQ, there is a better potential for a vessel to recover from mechanical breakdowns early in the season, which it wouldn't be able to under derby fishery because the fish would have been caught in their absence.
- One example cited of improved care and improved quality under ITQ was the introduction of a system to blow out the blood from the fish, which was attributed to having the time to introduce the technology.
- The ITQ system creates options: fishermen who want to fish can buy up quota to fish at a greater level for Chinook; others can lease their Chinook quota and fish for other species.
- In 2008, the ITQs did reduce the effort, through not fishing and trading quota, staying in port on stormy days, and switching to another fishery for a while (for those able to do so).
- The ITQ fishery gave fishermen a much better control over what would be caught.
- For some, the ITQ approach helps to bring greater certainty to value of the fishing license than under derby.
- The competitive (derby) fishery tends to maximize the number of boats fishing whereas ITQ spreads things out.
- For the processor, the ability to manage their product flow is enhanced through leasing of quota from non-active-fishers and subleasing it to active fishers, (and they argue that placing larger volume quota on a vessel makes it more financially feasible to fish).
- From the processor point of view, the increased flexibility in delivering the fish to the plant helps to even out the supply of fish to the market. With no gluts on the market, there is better price support.

Qualifiers on the benefits

Interviewees identified a range of ITQ benefits. It must be noted that 2008 was an exceptional year because of the drastic cut in the Chinook abundance index, the TAC and relatively poor weather conditions. 2008 was a good test of the ITQ system since the benefits were minimized because the time frame for the season was short, the fishing area was substantially reduced, and there was a drastic cut in TAC and a small quota size per license (228 pieces).

Although there was a tendency by some to blame the ITQ approach for the 2008 results, others believe that DFO might have closed the fishery entirely without the ITQ. This is because a derby approach would have allowed the whole fleet to go after the much smaller run, which DFO might have regarded as too risky. The ITQ approach reduced the number of boats on a reduced run. Nevertheless, the 2008 situation promoted comments such as:

> "We were promised that quota fishery would spread the season but in fact the season has been shorter and the area for fishing smaller."

Cons

The 2008 experience shows that when the abundance and TAC are small, the potential benefits for fishermen of the ITQ approach are substantially reduced, or least concentrated in a minority of harvesters. This is because the initial boat quota was low so that only those accumulating additional quota could potentially achieve financial viability. This process leads to fewer boats actually fishing. Leasing quota increases fishing costs and increases the risks of low net returns for those who do fish if a harvester achieves relatively low landings, as may be the case with low abundance.

There is general agreement that for a highliner, who would 'always' catch above the average, staying derby would make sense; for the average fisher, going ITQ gives him a fixed allocation that may be greater than he would have caught under the derby fishery. Lastly, human nature is a factor since most people would consider themselves an above average fisherman. On this basis, there will always be some opposition to ITQ. The opposition is also fuelled by the fact that under ITQ, fishermen have to lease quota at a cost that creates a definite increase in fishing costs with uncertain returns. For example, in 2008, participants reported that the quota cost was $22 per fish out of a value in the $50-60 per fish (36-44%). This process places the risk on fishermen who have to buy the quota up front (unless they are able to negotiate a quota lease rate based on a percentage of the value of the fish landed, which does not appear to be the norm).

There are some concerns regarding the DFO owned licenses such as those purchased through the ATP and PICFI programs. There is a perception that the quota from those licenses are not being used. While this is certainly possible, DFO argues that the majority of the quota was used in 2008 to mitigate Inland Economic Demonstration Fisheries in the Fraser River.

In 2008, the impact of a smaller fishing area and a shorter season (which were implemented for conservation reasons) was to push the ITQ fishery towards a derby style approach – in the sense that those boats fishing were more densely concentrated in both space and time than in the previous year.

The Arm Chair Harvesters

For the long time trollers licensed in Area F, two important changes have occurred over the 2005 – 2008 seasons:

- The number of licensed boats increased through area re-selection from 168 in 2005 to 284 in 2008, an increase of 69%.
- The TAC declined from 168,000 pieces in 2005 to 64,800 pieces in 2008, a decline of 61%.

The upshot has been a decline in the individual quota from 1,000 pieces in 2005 to 228 pieces in 2008. This drop in quota size combined with the growing cadre of 'armchair' fishermen (people who have an Area F license and hence get a quota allocation but do not fish it) is the root of much of the displeasure expressed about the ITQ system in 2008. As much as 70% of quota is held by non-participants, which creates an expectation, if not the necessity, that there will be leasing; as already noted, the current quota markets ends up with 40-50% of fish value going to quota holder, which undercuts the viability of the fishery. It seems clear that for many fishermen who view the ITQ fishery positively, the increase in licenses in Area F undercuts whatever benefits the system generates. This is because (in their view) the advantages of ITQ end up as quota lease payments to the non-fishing license holders, many of whom transferred into the area over the last several years. As one person put it,

> "Half of the fleet that transferred came from Area G where there was not a good fishery; so they transferred to Area F where they could lease out their quota."

Aside from this, it is also true that there is a core of ITQ opponents whose objections are based more on philosophical grounds than on the specific features of the system itself.

One troller noted that under ITQ the pace of the fishery was much slower but mainly because of the lower abundance. For example, he used to catch 74 per day but now cites an average of about 16 per day. In his view, only a dedicated troller with no other options would consider it as a

fishing option. For those holding multiple licenses, keeping the Area F license is worthwhile as a strategy to maintain their diversity across species because things change from year to year, especially when the quota can be leased out.

The West Coast Vancouver Island Chinook Conservation Constraint

> "As long as the WCVI limit exists, it turns the quota fishery into a derby quota fishery because the fishermen fear that the fishery will be shut down."

The key point here is that the Chinook TAC is set by international agreement. The industry, however, is not getting the full benefits of ITQ because of the concern for the weak WCVI stocks and the controls imposed to ensure that only a small quantity of WCVI is taken in the Area F Chinook fishery. It creates a pseudo derby fishery because of uncertainty when the fishery might close.

Participants understand that they have to fish under the WCVI constraint and that they can only catch so much when the WCVI fish are around, with the fishery potentially being closed when the WCVI allowance is reached. The upshot is that fishermen perceive that the best fishing is in June, so most people will want fish then, even with the ITQ system, which creates a derby mentality. There is a strongly held view that timelier DNA testing at sea would help to alleviate this issue by reducing the overall testing time from two weeks to two to three days.

The commercial fishermen object to the fact that the recreational fishery is not treated the same as far as WCVI is concerned. To put this into context, the overall conservation concern for the weak WCVI stocks is expressed through limiting the overall exploitation rate to 10%. Most of the related fishing restrictions are applied on the west coast of Vancouver Island near the spawning grounds through area closures and size limits in the recreational fishery and restricting Area G to limited fishing opportunities in offshore areas in the summer months. The Area F commercial fishery is constrained to a catch not exceeding 3.2% of the returning WCVI stock (the 3.2% is part of the overall 10% limit assigned to the northern troll).

Management Control and Conservation

DFO Managers indicate that the ITQ does give better control because harvesting is spread out over time. With a smaller fleet that can be tracked through validations, there is no danger of exceeding the TAC. This is in contrast to a derby fishery that can catch a lot of fish in a short period of time and can easily exceed the TAC, such that in season control has to be based on fleet size and catch per unit of effort information (hails). Some people express concern over high grading under ITQ. Although the potential is greater, a thorough review was conducted when the derby and ITQ fisheries existed simultaneously and there was no evidence indicating high grading. In 2008, the low quotas made it much less likely.

The better control does come at a cost, aside from the one-time cost of database development, because there is more labour intensive work in the fishery up front than in the derby fishery. There are also ongoing negotiations with license holders and Area F Harvest Committee through the year; conditions of license are more complicated and extensive because quota is identified as condition of license; and quota transfers must be managed. The Area F Resource manager plus an assistant is needed at times to help with the processing of reallocations.

Under the ITQ, the harvest does spread out to a more relaxed pace which can relieve the high pressure on stocks in the early days of a derby fishery, which is a better conservation result.

Improved Industry Viability

Under ITQ there is an economy-wide benefit because there are fewer boats fishing and a reduced cost of harvesting as compared with the derby fishery where because of the race for the fish, there is high overhead (in the form of additional boats fishing) for catching the same amount of fish. However, it must be noted that these gains may have improved industry viability but not necessarily the viability of individual fishermen; the concentration of quota in the hands of a relatively small number fishermen or companies will make it more viable but for a smaller number of people.

From the harvesters' point of view, there are ITQ safety benefits from being able to avoid fishing in rough weather (more of a benefit for small vessels than large ones) and being able generally to fish under less stressful conditions. The quota system also gives the fishermen with quota a greater certainty of actually catching fish, albeit possibly at the cost of acquiring additional quota over their initial allocation to be financially viable as was the case in 2008. For fishermen with a small vessel, limited freezer capacity and a small deck space, ITQ allows for staging the catch so the fish can be processed and kept in top quality. This was not an issue in 2008 because of the small quota but three years ago when there was a much larger quota, it was a factor.

Although fishermen report that the 2008 Chinook price went up to $7.40 per pound, they do not necessarily attribute this to the ITQ system, although improved quality and lower volumes have occurred. Instead, they point out that the quotas in California and Washington were cut back which led to an overall reduction in supply and the resulting price increase.

On the other hand, opponents to the ITQ system point out that for small boats with limited holding capacity, the necessity to land more frequently than larger vessels means they would incur higher catch validation costs. Secondly, the initial ITQ caps the catch level for each vessel, highliners would need to acquire additional quota to maintain their 'normal' catch level, which is an extra cost, and in effect penalizes them for 'being the best'. Thirdly, there is a philosophical objection to the quota becoming, in effect, private property and being traded as private property, and the possible implications of foreign interests buying up quota (although this cannot happen directly since to hold quota you must have a licensed vessel).

Transfers between Commercial Fishers and First Nations

In Area F there have been no transfers directly between commercial licence holders and First Nations yet. However, the licenses held in inventory by DFO for possible transfers do have an indirect impact since they are not fished and thus reduce the actual harvest and proportion of the TAC harvested.

Employment

The slower pace of the fishery under ITQ does potentially allow for reduction of employment. For example, two fishermen will combine their quota on one boat, whereas under a derby the number of fully crewed boats fishing is higher. In 2008 the data show that there was never more than 80 boats fishing at one time out of 120 active licenses.

Under ITQ some operators may have been able to achieve lower costs because they could run with no crew, which they would have hired under derby. However, the cost of quota offsets crew cost savings. For others, ITQ allows them to have a better idea of costs and fishing time, and better working conditions better. Interestingly, one fisherman noted that ITQ had no impact on his

vessel employment because he has a small boat, but that he would take one person less if not for the WCVI induced pseudo derby environment.

Increased Cooperative Approach

There does not seem to be consensus on this. For those that believe there is greater cooperation, the important points are:

- Quota trading is a key part of ITQ and promotes greater cooperation over time.
- ITQ removes or substantially reduces the competitive aspects introduced by the 'race for the fish'. The derby process drove secrecy because fishermen did not want to share information that would help others catch 'their fish'. Now people are more open about where the fish are and willing to help others achieve their quota since each fishermen still has access to his share – presumably this generosity is greater after one's share has been caught.
- The pseudo derby mentality created by the WCVI constraint is a complicating factor.
- The 'cooperation effect' is tempered because processing companies are playing a large role in acquiring quota through the use of quota boats to accumulate quota and redistributing it to 'their' fishermen.

Those sceptical of the 'cooperation effect' point out that:

- Fishermen, by nature, tend to be secretive and do not share information readily on harvesting, although there might be a greater willingness to help boats in trouble.
- Meetings occurred under the derby fishery anyway. Now the AHC is more formal but some doubt there is any increased effectiveness although the consultation process is appreciated.

Responsibility For Control And Monitoring

The increased role for AHC under the ITQ format gives the industry additional responsibility. For example, the members of the AHC actively participate in the design of the ITQ fishery to try to make it work more effectively. They also have improved access to better information from DFO than under the derby fishery. Some participants express the view that the ITQ process increases their sense of ownership of the fishery, although to be successful this would have to apply to all participants not just a select few.

Main Challenges in 2008

The short period of time to get the ITQ fishery up and running because of the late start on approving conditions of license created a real challenge that was ultimately overcome.

For the fishermen the main challenge was slow fishing and a lot of quota around that was not fished. The unplanned extension on the fishery to August 8th meant that some people got to fish and others did not, especially those who had planned their activities based on the initially announced July 31st closure.

Lessons Learned

Aside from the foregoing points, addressing the two to three week time lags inherent in the analysis of the WCVI catch will be important to help reduce the associated pseudo derby fishery issue. Industry participants believe that the answer lies in at sea testing, which it is claimed could reduce the turn around time to two or three days at little or no additional cost. But this view may be misguided, as at sea sampling would come at a substantial increase in cost. For example, according to DFO estimates for one scenario, an industry-funded approach would require a contractor to be hired and flown on a charter flight to a large vessel platform. From there a crew would use a small vessel to sample troll vessels operating in nearby fishing areas. Then a charter flight would be needed to fly the samples to Sandspit to be shipped south. The estimated cost would be in the order of $10,000 every two weeks to complete and there would still be a seven to ten day turn around for the results. Clearly, more discussion is required to resolve this issue.

Unforeseen Impacts

This concerns First Nations' food, social, ceremonial (FSC) and recreational fisheries. The study found no impacts of consequence.

Future Share-Based Fisheries

This covers both demonstration projects as well as a possible permanent share based fishery.

Some fishermen believe that the time has come, or will soon come, when ITQ becomes permanent rather than a demonstration fishery. This view is based on the fact that a number of fishermen have made financial commitments to an ITQ approach by, for example, purchasing a second boat in order to acquire additional quota[3].

However, for Area F, it appears that several issues require resolution before most of the participants would support a shift from demonstration status to a permanent share based fishery:

- Dealing with the WCVI constraint on the operation of the quota fishery, which undermines the goal of economic viability for Area F and tends to create the pseudo derby mentality that undercuts a prime rationale for a quota fishery.
- The large amount of quota held by inactive license holders (that is, the armchair harvesters), which is an on-going irritant even for fishermen that otherwise support the ITQ approach because it grants a benefit to those who do not fish.
- For some fishermen, allocating a fixed share of the Northern AABM Aggregate Abundance Based Management Chinook TAC to the commercial fishery, which they believe is a necessity for them to achieve consistently catches that support their financial stability.

Some people suggest that fishing in other seasons (such as a winter fishery), would help to reduce the WCVI impact by shifting some of the overall catch out of the summer when the WCVI stocks are in greater abundance in the fishing areas.

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[3] Apparently some people believe there was a promise for a three-year demonstration project. This may be the case but it seems clear from the history of the demonstration projects in Area F that the decisions taken to implement each project were made on an annual basis.

To address the armchair fishermen issue, many fishermen believe that there needs to be some sort of deterrent to non-fishing quota holders continuing to hold quota if they do not fish. Ideas differ including a simple buy out of the non-active licenses or a phased reduction of quota that inactive fishermen are allowed to hold (similar to depreciating an asset at a fixed depreciation rate, e.g., 20% per year of the original value).

Some fishermen believe that a canvas of the approximately 120 (out of 284 licenses) who actually fished would prefer to go back to derby, but canvassing the whole set of license holders would yield a pro ITQ vote. This issue goes beyond the scope of this study but deserves some attention.

Overall, even resolving the three issues above, many observers point out that more resources and effort need to be directed into predicting the TAC and bringing greater certainty to fishing season and quota levels if the ITQ fishery is to be successful.

2. AREA A SEINE ITQ FISHERY FOR AREA 4 (SOCKEYE AND PINK SALMON)

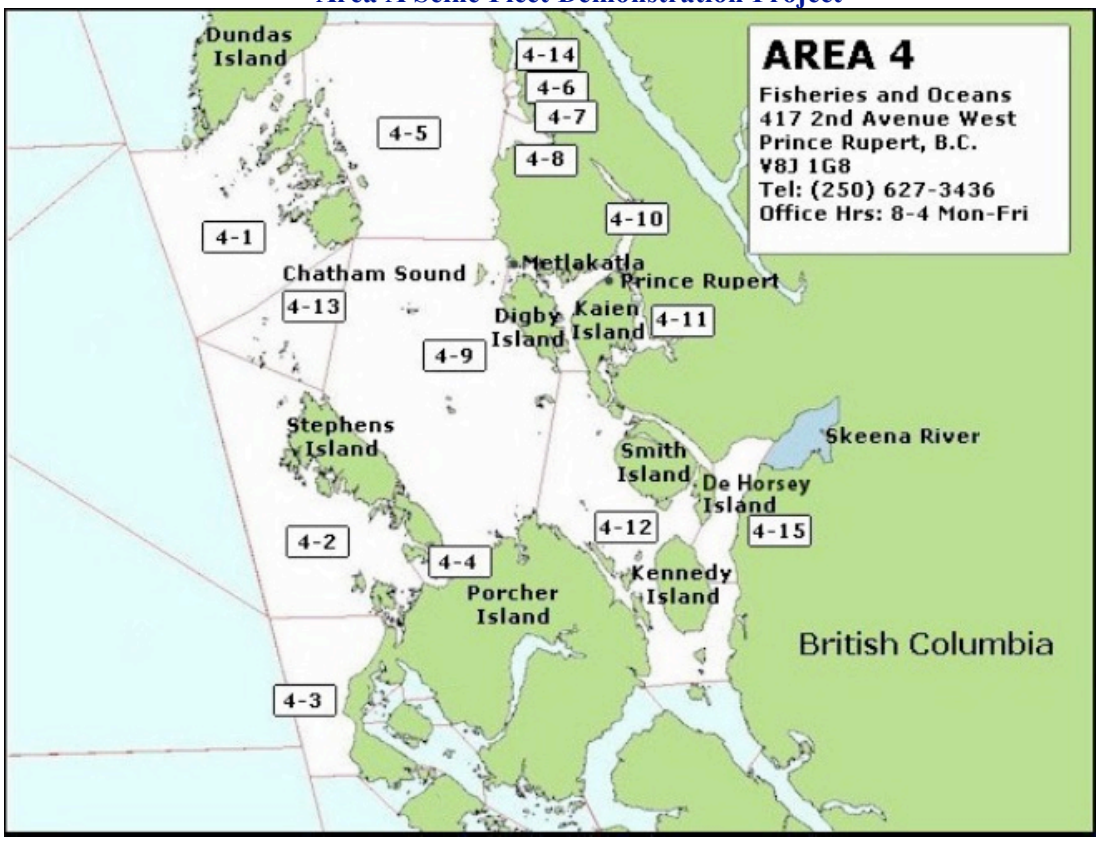
2.1 Background

In response to an invitation from DFO, the Area A Harvest Committee developed a proposal for participation in a Seine ITQ Demonstration Fishery for sockeye and pink salmon. DFO accepted the proposal on the grounds that it would contribute to the Pacific Fisheries Reform vision; it was consistent with objectives of the 2008 Salmon North Integrated Fishery Management Plan and met three conditions to:

- Maintain or improve management control and conservation performance in the fishery.
- Promote the use of clearly defined shares to improve manageability and industry viability.
- Increase the ability of harvesters to work cooperatively to harvest available surpluses and to take on greater responsibility for control and monitoring of their fishery.

Prior to the season, DFO conducted a ballot of the Area 4 seine fleet to determine the level of interest in participating in the proposed demonstration fishery. Of the 73 ballots cast (70% of the fleet), 82% voted in favour of an individual transferable defined share (ITQ) demonstration fishery in 2008 for the Area A seine fleet. Figure 3 shows the Area 4 fishing area; areas 4-5, -8, -9, a portion of -12, -14 and a portion of -15 were open for the seine fleet demonstration project.

Figure 3:
Area A Seine Fleet Demonstration Project



2.2 Project Process and Results

2008 was the first year for the Area A Seine Demonstration Fishery (ITQ) for sockeye and pinks[4]. The initial plan was for a seven-week fishery with a weekly TAC. Based on the actual returns, DFO adjusted the actual season to three weeks. Table 3 summarizes the demonstration seine fishery over the three openings in its three-week season in July and August of 2008[5]. The sockeye quota started at 53,500 in the first opening and was upgraded to 80,250. It was increased again to 96,300 for the second and third openings, and scaled back to its original level, 53,500, in the fourth opening. Sockeye catches totaled 195,938 over the whole season, ranging from a high of 76,349 in the third opening to a low of 24,715 in the second opening. Note that the catches reported are for the fish directly caught by participating seiners as these appears to us to be the most relevant in the context of the demonstration fishery. There were also additional salmon attributed to the seines based on license transferred to the Skeena River Inland Demonstration Fishery. The details of the differences are explained in Appendix C.

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[4] It should be noted that although pinks were allocated, they were actually a by-catch. The target species was sockeye for the entire three fishery season. DFO made the pink allocation to allow the vessels enough of a by-catch to continue to fish for sockeye.

[5] Technically, there were four fishery notices signalling fishery openings. The first two openings were continuous from July 22 to 27. The first notice was July 22 to 25 and the second notice was 25 to 27.

Table 3:
Area A Salmon Demonstration Seine ITQ Fishery
Sockeye and Pinks

Openings	Initial Seine Quota		Upgraded Seine Quota		Final Catch	
	Sockeye	Pinks	Sockeye	Pinks	Sockeye	Pinks
1st – July 22- July 25	53,500	107,000	80,250	160,500	66,569	12,182
2nd – July 25 to 22:00 July 27			96,300	192,600	24,715	5,854
3rd – 06:00 July 29 – 22:00 August 3			96,300	96,300	76,349	42,239
4th – 06:00 August 5 – 22:00 August 6			53,500	53,500	28,305	31,492
Season total			326,350	502,900	195,938	91,767

Source: Fisheries And Oceans Canada, 2008 Post Season Review, North Coast Areas 1-6, Salmon

Table 4 summarizes the quota, fishing activity and catch by week. Of the 107 seine licenses eligible for the fishery, 101 were actually allocated to vessels and the rest were held in the DFO license inventory (licenses bought back under the ATP and the PICFI). Of the active licenses, roughly 40% actually fished during each week: 43, 41 and 40 for weeks one, two and three, respectively. As the allocated quota (sockeye plus pink) declined from 273 thousand in week one to 101 thousand in week three, the percentage caught increased from 35% to 80% over the three weeks. The sockeye quota per license was 900 pieces in weeks one and two, and adjusted to 500 in week three. Except for week three, the sockeye harvest exceeded the pink harvest.

Table 4:
Area A Salmon Demonstration Seine ITQ Fishery

Summary of Fishing Activity by Week						
	Week 1		Week 2		Week 3	
Eligible Licenses	107		107		107	
Potentially Active Vessels^	101		101		101	
Vessels Fishing	43		41		40	
Total Quota	288,902		192,602		107,000	
Allocated Quota*	272,702		181,802		101,000	
Uncaught Quota*	178,532		59,677		21,325	
Quota per vessel (rounded)						
Sockeye	900		900		500	
Pinks	1,800		900		500	
	Sockeye	**Pink**	**Sockeye**	**Pink**	**Sockeye**	**Pink**
Validated Catch	86,868	7,302	80,596	41,529	35,169	44,506
Average	2,020	170	1,966	1,013	879	1,113
Min	537	6	7	29	253	174
Max	8,985	576	7,536	3,804	2,611	3,498
Median	1,914	161	1,777	941	779	958
Range	8,448	570	7,529	3,775	2,358	3,324

Source: Gardner Pinfold based on Fisheries and Oceans data
Note: ^ - Six licenses held in DFO Inventory
* - excludes unassigned quota held for possible use by First Nations

Table 5 summarizes the quota transfer activity in the demonstration fishery. The notable points are that:

- Of the 101 licenses potentially active in the fishery, close to half reallocated their total ITQ (by week – 51 in week one, 47 in week two, 47 in week three).
- About 58% of the potentially active licenses did not harvest any sockeye or pink salmon in 2008.

Table 5:
Area A Salmon Demonstration Seine ITQ Fishery
Quota Transfers and Use

Vessels	Week 1	Week 2	Week 3
Did not fish, did not reallocate Sockeye ITQ	4	4	10
Did not fish, did not reallocate Pink ITQ	9	11	12
Reallocated total ITQ	51	47	47
Engaged in Sockeye/Pink Transfers.	43	43	40
Reallocated total ITQ to another vessel.	51	47	44
Did not harvest Sockeye/Pink salmon in 2008.	57	59	60

Source: DFO Quota Database

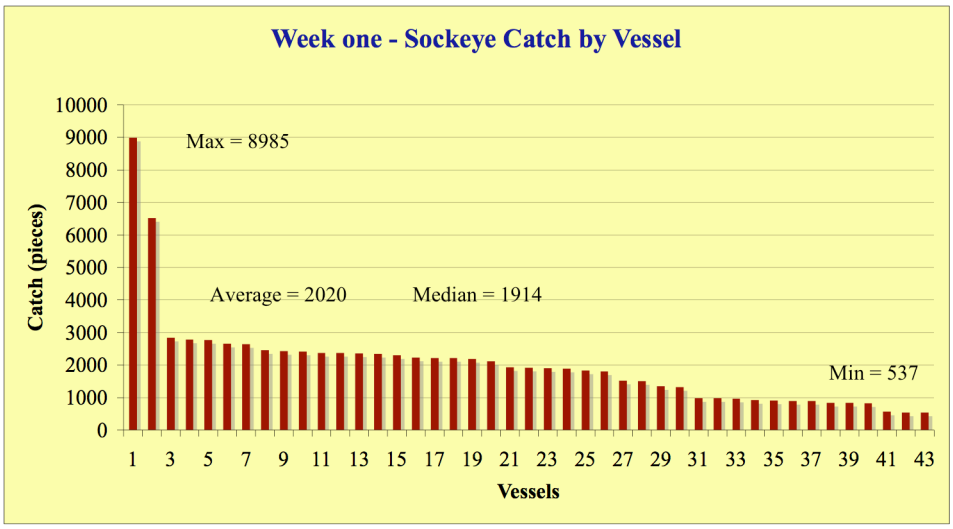
In the three-week 2008 season, 43, 43 and 40 vessels by week validated Sockeye/Pink[6]. Of these, 33, 31 and 26 achieved their Sockeye ITQ, respectively. Figures 4 and 5 show the distribution of sockeye and pink catch for weeks one and three (week two is very similar). Generally, a few vessels achieve catch levels well in excess of the average and the catch is spread more evenly across the rest of the vessels. For sockeye in week one, two vessels account for about 18% of the total catch, and as already noted 33 fulfilled their quota. The pattern is generally similar for sockeye and pinks.

As is evident from the foregoing discussion, the quota transfer activity led to a concentration of fishing in about 40% the active licensed vessels. As with Area F, it is evident that processing companies were active in the quota transfer market in Area A[7]. The companies used a 'quota boat' that leased quota from those fishermen wishing to sell some or all of their quota allocation, and then reallocated this quota to other vessels that supply the company with fish. The companies did this to save them time in re-issuing quota to vessel based on catch. In week three, for example, two vessels account for 80% of the quota transfer (leasing and reallocating). For the companies, interviewees noted that this was an efficient way to achieve increased stability in the flow of raw product reaching their plants.

[6] Note that on a daily basis, the number of vessels fishing ranged from a low of 11 to a high 29, with different vessels fishing on different days.

[7] However in Area F there was a 1,500 piece cap that was meant to limit this activity.

Figure 4:
Week One – Sockeye Catch by Vessel and
Week One – Pink Catch by Vessel



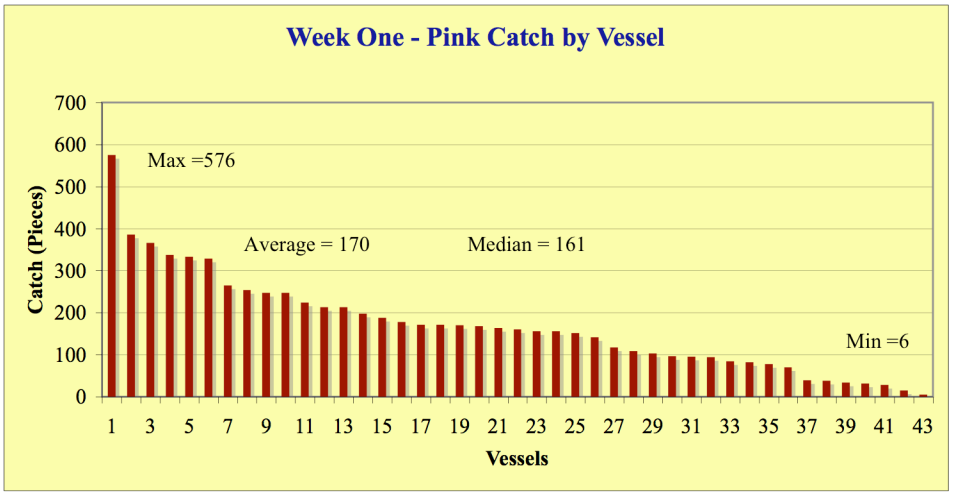
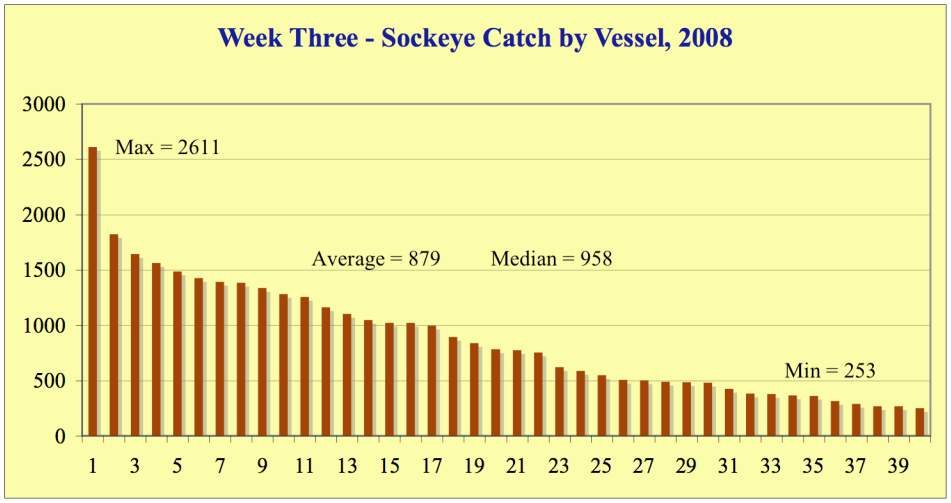
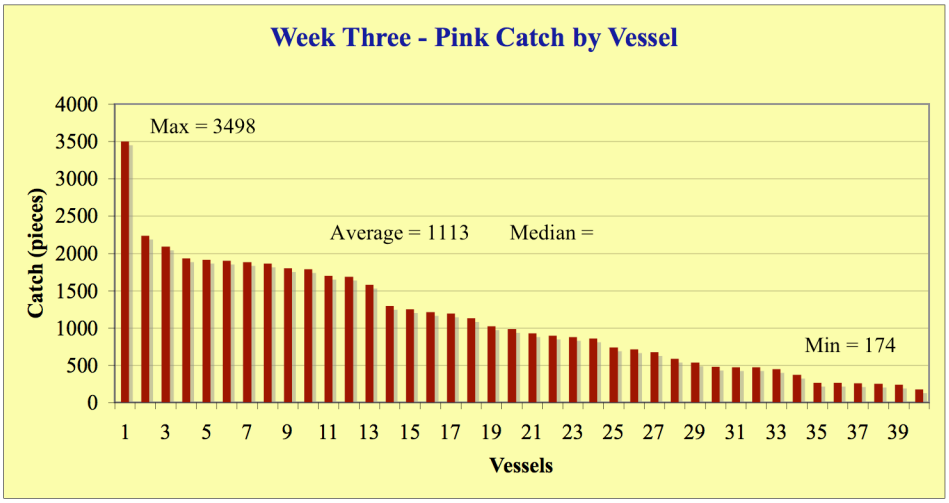


Figure 5:
Week Three - Sockeye Catch by Vessel, 2008 and
Week Three – Pink Catch by Vessel





Management Control and Conservation

From the management perspective, the combination of the same amount of fish, fish prices roughly the same as in the 1970s and higher costs put the viability of the industry in jeopardy. The attraction of ITQ was the belief that it would give better fleet economics, which was of interest to the seine fleet. Also it was felt that it could provide a mechanism to increase First Nations' participation in the commercial fishery. It was felt that this was possible for the Skeena River because DFO has good escapement information and annual escapement targets.

The solution adopted for the Area A Demonstration Fishery was to use a weekly TAC and adjust it according to the catch, that was allocated on equal share quotas, e.g., 900 pieces per license before any transfers in week one). Because this was the first year for Area A, there was a lot more start up work required. Establishing the weekly TAC was challenge, because the system used for the derby fishery – monitor the catch and decide to close when the TAC was reached – would not work. The weekly TAC had to be accurate and maintained, since uncertainty about its duration could induce a pseudo derby mentality.

Under the ITQ system, fisherman paid the dockside validation costs and DFO funded the quota reallocation costs and the creation of the quota database. This required setting up a database with quota information and catch information at a cost of roughly $10,000 and adding some additional occasion staff. The database cost had a one-time set up expense but still requires annual maintenance at a lower rate.

In 2008, the seine fishery increased to six days a week (up from 2-3 days in a derby management). This created monitoring issues because DFO did not have sufficient resources to observe full time and only had minimal observer coverage at the end of the fishery. We understand that placing cameras on seine vessels to monitor the use of the winches for landing the fish on board is under consideration for 2009 – the concern is whether ramping[8] occurs in place of the required brailing[9] approach to land fish from the seine, which is a more selective harvesting method.

From DFO's perspective, dockside monitoring (validation) does yield very good data by the end of the fishery. However, the available sales slip data was already quite good since the seine fleet is largely company owned and operated, and the companies keep good records. So, the validation data did not add much new information in this case and, in the view of some managers, was not timely enough for management purposes. The reason is that for DFO the hail data is the best for management purposes and is used to extend fisheries since it comes in during a fishery. The validation data comes in after the fishery is closed (i.e., there is lag between the time the fish were caught and the time the catch data were available to management). To deal with this, the fishery was planned for a maximum 6-day opening followed by a 1-day closure to ensure catch and allocation data is up to date. Validation data can be used to justify future fisheries in season and is excellent for determining an independently verified estimate of the final catch. The Sales Slip data is redundant if you have validation and is often only used after the season to confirm final catches.

The UFAWU (United Fishermen and Allied Workers' Union) had some concerns about the timing of inter-week transfers and the transfer of quota to the Inland Demonstration fishery as well as the application of the planned 75/25 gill net/seine allocation, all of which appear to be related to protecting the interests of crew on the seine vessels.

Improved Industry Viability

In terms of industry viability, although many but not all participants were pleased with the results of the Area A Demonstration Fishery, it seems fair to conclude that it would be inappropriate to judge the ITQ approach on the basis of 2008 because the runs sizes were low relative to 'normal'. Seiners point out that their quota is 80% pink salmon but with the low pink run in 2008, they were essentially fishing sockeye.

Nevertheless, from the boat owner perspective, a number of benefits were identified:

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[8] This term refers to hauling the seine over the ramp of the vessel and landing all the fish at once rather than using a slower but more selective dip net approach to land the fish in small quantities and reduce substantially the non-target catch mortality.

[9] This refers to the use of a small net for drawing fish from a larger net into a boat.

- ITQ allows fishermen to make better business decisions or deal with mechanical problems on a timely basis without losing access to their quota; for operators with two or more boats, it opened the possibility of transferring quota to a single boat. For example, one company was able to accumulate quota on one boat that did not fish and then reallocate the quota to boats that showed up to fish (less than half their fleet according to our understanding) in what was the optimal allocation for their objectives.

  There was an associated issue regarding whether the cost of additional quota (that is, quota added to the initial quota per license) would be charged to the crew. This led to some uncertainty about what crew would be paid under the quota system but that the Native Brotherhood of B.C. and the UFAWU were ultimately able to negotiate a satisfactory resolution with no crew charges for quota and posted minimum prices for fish to seine crews.

  Some companies claim that they are struggling to get crew and the ITQ does allow them to put people on a boat with chance to make some money because they will actually land some fish.

- On an industry wide basis, by rationalizing fleet size through quota transfers ITQ led to fewer harvesting resources being used and less wear on gear.

Other observations include:

- Some fishermen point out that ITQ does give increased certainty (but not guarantee) of landing fish, which they prefer.
- On the downside, ITQ currently incur the cost of dockside monitoring, but derby fisheries do not, which is seen as inequitable by harvesters.
- Costs were not significantly reduced because the fishery was prolonged (six days per week over three weeks) as a result of the small run and a late start for the Area A fleet.
- Vessel safety was not an issue in 2008 because there were no adverse weather conditions.
- The one-year time frame was insufficient for fishermen to conclude whether the price structure improved (although companies suggest otherwise as noted below).
- Last season there were no other viable fisheries, so all of the fishing effort centred on the Skeena and possible benefits from redirecting fleet activity to other areas or species did not emerge.

Still there are opposing views about the ITQ approach, which are noted under the employment section below.

Benefits to Processors

For the fish processors, there are clear benefits from the ITQ fishery that explains their keen participation in the quota transfer activity.

- Reduction or elimination of peak load issues. The slower, more balanced pace of the ITQ fishery allows processors to schedule the flow of raw product through facilities and use only one delivery station with minimum people engaged. They could avoid peak flows that require scaling up their force for a short period of time or incurring overtime for weekend work.

- Better able to target marketing to niches, get better price. With smaller but more stable quantities of fish, the processors can develop and take advantage of niche markets that fetch better prices. For example, if the processor receives the fish spread out over a period of time, say three weeks with a quota fishery instead of 3 days with a derby style, the marketing staff are able to stabilize markets and guarantee a steady supply of high, quality fresh fish and this can augment the price by as much as $1-2 per pound, part of which will roll back to the fishermen.
- Also, from the company perspective they can deploy their fleet more efficiently, shifting vessels between Area 4 for sockeye and Areas 3 and 6 for pinks.

There is a slight downside in the sense that, according to some processors, landing smaller quantities means that small scale processing operations incapable of handling large volumes of landings, may be able to enter the industry and thus offer more competition to the existing processors.

Transfers between Commercial Fishers and First Nations

The introduction of the seine ITQ demonstration fishery for sockeye and pinks meshed well with the Skeena Inland Demonstration Fishery, which was in existence prior to the Area A Demonstration Fishery. The latter had to lease licenses to conduct its fishery. Aside from the 10 gillnet and two seine licenses transferred by DFO from its ATP/PICFI inventory, the Inland fishery leased three seine licenses from the ITQ fishery (as well as 30 gillnet licenses not part of the ITQ fishery) on a commercial lease basis. The Skeena Fisheries Commission leases licenses from companies (also discussed in more detail in the next chapter). The benefit for DFO is that it does not have to get involved in these transactions and can use the ATP and PICFI licenses with other smaller bands. Furthermore, this process creates an option for commercial processors of not just reallocating quota between boats but also transferring quota upstream to First Nations. In this regard, assigning a catch quantity to a gillnet license presents challenges since, unlike the seine fleet, there is no individual quota allocation.

Employment

It seems clear that overall employment was down as the number of vessels fishing was reduced through quota transfer. Given the relatively low runs, it is of course possible that there would have been employment reductions under the derby fishery as well. Nevertheless, ITQ is a concern for the UFAWU and its objective to maximize crew employment.

The Union's concern extends to the possibly that over time crew earnings would be squeezed or possibly reduced (they cite research on the impact of a quota fishery on the earnings of ground fish trawler crews) under an ITQ regime. The experience in 2008 where there was an attempt to charge to the crew the cost of acquiring additional quota obviously fed this concern, although the issue was ultimately resolved through negotiations with the companies.

Another Union concern is that DFO appears to be consulting only with license holder and quota holders, and not with fishing crews. This is related to their perception that over time ownership of the license will gravitate to non-fishing owners through inheritance and become treated as property. This is of course part of the armchair fishermen issue discussed for Area F.

Increased Cooperative Approach

There does not seem to be consensus on this. For those that believe there is greater cooperation, the important points are:

- Quota trading by its nature promotes greater cooperation over time. However, the fact that companies already own such a large proportion of the seiners and accounted for much of the quota transfer probably mutes this effect.
- ITQ removes or substantially reduces the competitive aspects introduced by the 'race for the fish'. The fact that the companies are using quota transfer to enhance their fleet deployment contributes to reducing the competitive mentality.

Those sceptical of the 'cooperation effect' point out that the kind of people who fished competitively are not the people who do well in cooperative fisheries; it was a competition for them and they are well adjusted to that mode of operation; they are now trying to adjust a different paradigm, and it's a very difficult, slow process.

Responsibility For Control And Monitoring

To the extent there has been increased participation and responsibility for control and monitoring, in 2008, it was largely confined to those participating in the Area Harvest Committee. Furthermore, the companies were already actively involved which probably led to more communication to facilitate the quota transfers. However, participants believe that an increase in broader participation could occur through longer experience with the ITQ approach.

Main Challenges in 2008

The main challenge for DFO was to get the ITQ fishery up and running in a timely manner. As a new type of fishery management for sockeye and pinks in the area, creating the required quota database for managing transfers and matching quota held with reported catch had its own learning curve. The other challenge was moving to a weekly TAC, which placed new demands on DFO's ability to generate accurate forecasts and stay on top on the actual runs and harvest rates.

For the fishermen, the main challenge was getting used to the quota transfer process, although this appears to have been smoothed somewhat by the role played by the processing companies already noted. The uncertainty associated with the length of the season (which turned out to three weeks instead of the originally planned seven weeks) appears to have potential to induce a pseudo derby mentality that would run counter to the intended results sought from an ITQ fishery.

For some, another issue was that with a weekly quota, catching it within the week was a challenge that was heightened when the TAC was increased (week one) but there was no associated increase in time. However, we note that over three quarters of the vessels caught their quota that week.

Lessons Learned

No major lesson learned emerged from the analysis but there are some points worth noting.

- From monitoring and enforcement point of view, the current level of 'at sea' monitoring resources are probably not sufficient to achieve a comfort level with the ramping. As already noted, however, it appears that DFO will attempt to deal with this through use of an on-board video camera system and/or increased observers.
- The monitoring resources issue extends to the six-day fishing per week where the previous norm was two to three days, although it appears this was resolved by the end of the three-week season.
- There is still an on going issue with what is the appropriate timing for both intra-fleet and up river quota transfer. For example, should it be by the start of the current fishing week, during the week but prior to actual fishing, by the end of the current fishing week, beginning of the week following?
- Those opposed to ITQ's may remain opposed even if the fishery operates well possibly because they tend to downplay or ignore the benefits, although it could be a philosophical issue. One example cited was a fisherman who stated that he had more than adequate fishing time. In fact he and his crew had to stop fishing to rest and that he didn't catch his entire IQ even though there was adequate time. Asked if he would have got as much time under a derby fishery, he stated no. Asked if he would have caught as much fish, his answer was no. However, he didn't like ITQ's prior to 2008 and he still didn't like the ITQ.

Unforeseen Impacts

DFO had to modify the FSC communal license to adapt it to the six day a week fishery but otherwise there were no issues inland.

In Area A there were no interactions between the seine and recreational fishery. In the Area A fishery, some FSC gillnetters operate in the same area as the seiners and with the seiners fishing the six days a week under the demonstration project, keeping the two fleets separated geographically and in time becomes more difficult. This did lead to measures to separate the two fleets geographically to minimize if not eliminate the potential for laundering fish from the FSC harvest into the commercial catch (although presumably any fish transferred would count against a vessel's ITQ).

Future Share-Based Fisheries

Generally, in terms of moving things forward, those in favour of the ITQ approach believe that DFO should provide more support and take a leadership role. Given the lack of unanimous views on the merits of ITQ, this may be difficult to do. Aside from this, there are a number of other issues that deserve attention.

Running a good ITQ fishery is conditional on good science and good predictions. Interviewees agree that improvements in these areas would appear to be an important factor in moving forward with a share-based fishery. So for example, allocating more resources and effort into predicting TAC more accurately and setting the share would be prudent.

Although not relevant for seine licenses since they have an associated ITQ, there appears to be an issue regarding how to calculate the number of fish per licence for those gillnet licenses transferred to the Inland Demonstration Fishery (discussed next). Dividing aggregate catch by the (low) number of boats fishing results in a high average that when applied to transferred licenses yield more fish transferred than if the average was calculated based on the total number of licenses. In 2008, DFO changed the method from boats fishing to total licences with the effect that First Nations would receive less fish, a result that could be offset by increasing the number of licenses transferred. It would appear that having this issue resolved prior to the opening of the fishing season would be beneficial to all concerned.

From an enforcement perspective, the increased potential for ramping under ITQ because of the slower pace of the fishery requires increased attention. Although this can be an issue with a derby fishery, it becomes more of an issue under ITQ when the fishery increases from two to three days to six days per week and DFO's monitoring resources cannot cope, as was the case in 2008. We understand that addressing this issue through the use of cameras for fish handling, releases and additional observers is being considered, although there was little evidence of ramping in the 2008 demonstration project.

It is clear that some people believe that bulk of the support for ITQ comes from license holders who do not fish. This is an issue that comes up across the fisheries examined but particularly in Area A and Area F where the "armchair fishermen" issue receives additional attention. Conducting a survey on preference for future ITQ fisheries with results tabulated by those who fish and those do not may help to clarify this issue.

3. SKEENA RIVER INLAND DEMONSTRATION FISHERY (SOCKEYE SALMON)

3.1 Background

After conservation, DFO's priority is to provide for First Nations food, social and ceremonial harvests. Then, where there is a potential for harvestable surpluses of some species, DFO undertook to test new approaches to achieve the Pacific Fisheries Reform vision of increased commercial fisheries opportunities for First Nations in upstream or terminal areas, subject to the identification of a commercial TAC.

To contribute to the Pacific Fisheries Reform vision and PICFI, the Department called for project proposals that support alternative management strategies that:

- Maintain or improve management control and conservation performance in the fishery.
- Promote the use of clearly defined shares to improve manageability and viability.
- Increase the ability of harvesters to work cooperatively to harvest available surpluses and to take on greater responsibility for control and monitoring of their fishery.

Successful proposals had to support the development of a share-based approach to management where all commercial salmon fisheries operate under common and transparent rules. In-river commercial salmon harvests in demonstration fishery projects would be offset by commercial salmon licenses that have been relinquished under DFO's Allocation Transfer Program and the PICFI and have not yet been issued to First Nations as communal licenses.

In 2008 the Skeena Fisheries Commission conducted The Skeena Inland Demonstration Fishery (Sockeye) in the Skeena River.

Demonstration Project Plan

DFO planned for a nine-week demonstration with possible participation in the Terrace area, the mid-river/Hazelton area and the Lake Babine area. Only the Gitxsan First Nation participated in the fishery in 2008 since the Lake Babine First Nation conducted another type of commercial fishery called an Excess Salmon to Spawning Surplus fishery. Therefore, only the elements of the plan that pertain to the mid-river area are relevant to this review because the fishery was centred in the Mid Skeena River in the vicinity of Kitwanga.

DFO based the project design on the sockeye swim time:

- From the commercial fishery to the Terrace area of approximately - one week.
- From the commercial fishery to the mid-river area around Hazelton - two weeks.
- From the commercial fishery to the Babine River weir - three weeks.

(This roughly coincides with the interested First Nation groupings on the Skeena: the Tsimshian at Terrace, the Gitxsan in the mid-river area, and the Lake Babine Nation at the Babine weir.)

Key elements of the Skeen River project included:

- Transferring the catch of a number of commercial gill net or seine licences to the inland portion of the Skeena River through private arrangements between the Gitxsan and the licence holder.
- The temporary contribution of licences from the DFO license inventory.
- Coho, chum, and steelhead were subject to mandatory release. To achieve this the demonstration project used the selective methods that have been developed since the 1990s pilot sales fisheries including beach seine and dip net.
- All inland commercial sockeye and pink salmon to be checked through a compulsory landing station.
- For all appropriate records to be kept for proper monitoring and enforcement.
- No FSC fishing or retention while participating in the Inland demonstration fishery.

The main elements of the planned weekly scenarios for the Demonstration project are as follows.

Week 1

Under the plan, commercial fisheries targeting Skeena sockeye start this week. DFO determines the allowable sockeye harvest rate by entering the number of vessels fishing in Area 4 plus number of licences transferred inland into the Skeena Management Model. They model the catch as if the transferred licences were fishing on the coast. In other words, the fish that would have been caught by the inland licences will be allowed to enter the river, to be available to that fishery on a lagged basis.

Week 2

The plan called for DFO to issue a communal commercial licence to the appropriate First Nation to administrate. This communal commercial licence would be valid for the week with the allowed catch for week two specified on the licence determined as: the average catch in Area 4 of sockeye and pink during the previous week (Week 1) as determined in-season by the commercial fishery manager, times the number of licences that have been transferred to the Terrace area. Since the Gitxsan were the only active First Nation in the Skeena project, this license was not activated.

Week 3

DFO issues a communal commercial licence valid for the year to the Gitxsan Watershed Authority to administrate the Demonstration Project licences in the mid-river area. DFO determines the weekly catch amounts and issues a weekly letter of amendment from the Prince Rupert office to specify the amount of sockeye and pink salmon allowed. DFO calculates the week three amount as the average catch in Area 4 of sockeye and pink in Week 1, times the number of licences that transferred to the mid-river area.

Week 4

DFO calculates the allowable weekly harvest rate as the average catch in Area 4 of sockeye and pink in Week 2, times the number of licences transferred to the mid-river area and track it using the method described above. This amount is valid only for Week 4.

Weeks 5, 6, 7 and 8

The planned approach was similar to what was described above with an appropriate adjustment in the lag between commercial fishing and inland fishing, i.e., the average weekly harvest in commercial week three is the basis for inland quantity in week five, and so on.

Week 9

DFO expected the commercial fishery to be closed and the mid-river Demonstration Project to be complete.

Actual Timing

The commercial fishery in Area 4 lasted just three weeks. The Inland Demonstration Project was conducted from July 28 to August 24.

3.2 Project Process and Results

The Inland Demonstration Fishery proceeded throughout the 2008 Salmon Season directed at harvesting sockeye and pink salmon and targeted at providing an economic opportunity for First Nations residing along the Skeena River. In 2008, the Gitxsan First Nation conducted the fishery on the Mid Skeena River in the vicinity of Kitwanga.

As was the case in previous years, the Tsimshian First Nations elected not to participate in the demonstration fishery because of costs and their limited ability to harvest selectively on the Lower Skeena River, a condition of the fishery.

Table 6 shows the license allocations acquired by the Gitxsan for the 2008 season.

Table 6:
License Transfers to the Inland Demonstration Project

	From Allocation Transfer program	Leased commercially through industry arrangements
From Area C	10 Gill net	30 Gill net*
From Area A	2 Seine	3 Seine

Source: DFO
Note: * - the maximum currently allowed by DFO.

Between July 28 and August 24, 2008, 67,289 sockeye were caught in the Skeena River Inland Demonstration Fishery along the mid-range Skeena River utilizing beach seines. (Of these, 22,774 were caught below Kitwanga River.) The total revenue generated by this catch was almost $424,000,[10] a substantial sum in an area with very few alternative sources of earned income.

The 2008 Demonstration Fishery must be viewed in historical terms. Between 1992 and 2008, there were Excess Salmon to Spawning Requirement (ESSR[11]) fisheries and after 2005 demonstration projects on the Skeena. During this period, harvests totalled almost 3.4 million sockeye and 260,000 pink salmon. On this basis, First Nations like the Gitxsan have considerable experience with in-river fisheries, although the year-to-year supply of fish varies considerably because DFO generally permits ESSR fisheries only when sockeye returns are well above the average[12].

Catch Monitoring and Enforcement

As the Inland Demonstration Plan showed, fishery openings follow the fish up the river if there is a commercial opening and the inland catch is part of the overall commercial TAC. DFO and the Skeena Fisheries Commission (SFC) engage in cooperative management of the Demonstration Project. Both parties seem to agree that the Demonstration Project has improved cooperation between Gitxsan community and local DFO staff. In this regard, the Gitxsan are getting more involved on the management side. They operate only a Nation based fishery and they do not put food fish on sale. They attempt to maintain an orderly fishery through three levels of enforcement, all of which were applied to the Demonstration Fishery:

- Nation level enforcement.

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[10] Reported by Taylor, Greg. G. and Janice L. Dickie, *Recreating Sustainable Sockeye Fisheries In The Skeena Watershed,* Fish First Consulting, Salt Spring Island, B.C. Canada V8K 2J6, undated, circa 2009 and by Greg Taylor, *Recreating Sustainable Fisheries in the Skeena Watershed,* Skeena Wild Conservation Trust, Skeena Watershed Selective, Harvesters Association, Skeena Fisheries Commission, Feb. 2009.

[11] ESSR refers to Excess Salmon to Spawning Requirements, a fishery that occurs when salmon stocks return to a river system after passing through the various fisheries and are at a level in excess of the capacity of the spawning grounds or enhancement facility, usually a hatchery, to receive them. In the Skeena case, ESSR fisheries provide an opportunity for First Nations located upriver of the mixed-stock fishery to selectively harvest surplus enhanced Babine sockeye after all mixed-stock fishing opportunities were exhausted.

[12] Taylor, op.cit.

- Skeena Fish Commission (which through their hereditary chiefs system brings a long-term perspective through its long serving Commissioners who have developed a good understanding of the fishery and managing it).
- Strong relationship with DFO Enforcement in Hazelton (where a considerable number of aboriginal people work which has gone a long way to breaking down the past history of poor relationships).

The overall approach leads to everybody having a good understanding of his or her roles and to identify rogue players. In the Gitxsan view, this approach is bolstered by their experience in developing a lot of good research capacity (and producing results that are expected help to improve management control and conservation) and a well-functioning management structure. They point out that this background has allowed them to develop their approach of fishing to set number over some 20 years and managed to preserve their food fish stocks.

Within the above structure, the Gitxsan, DFO Conservation and Protection and the RCMP jointly monitor the fishery. In 2008, there was one incident reported of wrong species handled by Gitxsan. Overall, the ability to participate in the fishery, exercise local control and generate returns to the local community appears to make it work.

Potential Impacts on Stocks of Concern

The impact of the overall fishery on stocks of concern is an issue for DFO, the SFC and the Gitxsan Watershed Authority. It is a mixed stock fishery in the Kitwanga area. DFO and the SFC are doing the research necessary to create the factual base on which they could change fishing patterns to avoid over fishing specific river based stocks. For 2008, specifically, the recently released report by the SFC[13] addresses the concern that Kitwanga Lake sockeye might be disproportionately harvested in a fishery near the mouth of the Kitwanga River. The SFC collected scale samples from all sockeye taken downstream of the Kitwanga River and examined them for the distinctive Kitwanga Lake scale pattern as well as DNA testing. The observed incidence was 2.2 per thousand, or an estimated 49 Kitwanga sockeye mixed in the 22,774 sockeye taken downstream from Kitwanga. Taking into account run timing and the timing of the fisheries opening, they conclude that the observed and expected values are not significantly different.

Improved Industry Viability

According to informed observers, without the Demonstration Fishery, the Gitxsan would have had a FSC fishery and declining gill net opportunities. Interviewees familiar with the Demonstration Fishery tend to agree with Taylor's observations on its strengths and challenges[14]:

[13] Skeena Fisheries Commission, *The Abundance of Kitwanga Lake Sockeye in the Gitxsan In-River Demonstration Fishery of 2008*, June 2009.

[14] Taylor, op. cit

Strengths

- Excellent quality of fish landed.
- Ability to harvest allocation.
- Consistent access to the fish.
- Very Species Selective.
- Relatively easy logistics.

Challenges

- Mixed stock fishery (as discussed above).
- Access tied to commercial access - as commercial access declines so does Mid-River selective fisheries access.
- Less harvest opportunities upstream of the Kitwanga River Mid-River Selective Beach Seine Fishery.

Employment

Perhaps the biggest benefit of the demonstration project was the employment generated for about 66 people overall, covering fishing crews (3-7 at any one time), monitoring activities and operating the landing site. This short-term economic gain to the Gitxsan First Nation community helped to replace lost economic activities as a result of the downturn in the forest industry which has led to the closure of most mills in their area and low mushroom prices. The Demonstration Fishery put much needed income into the community where the median income in these communities is 36% of the average income in British Columbia, and the employment rate is approximately 50% of the B.C. average (Statistics Canada, 2006).

Increased Cooperative Approach

The Demonstration Project created the opportunity for improved commercial relationships between Gitxsan and the commercial industry. This was achieved through the negotiations to achieve the transfer up river of the commercial licenses required to access the fishery (some license were also acquired from the Departments' licence inventory as already noted).

Impact on DFO and its Managers

The Demonstration Fishery does increase monitoring requirements. However, there were no additional costs to DFO because as noted the Gitxsan have taken on these responsibilities. The SFC participated in weekly conferences calls and sat on other cooperative bodies.

Based on the 2008 demonstration fishery, the Gitxsan are relatively happy with the process and the results. Initially there was some reluctance over paying license rent to acquire quota because of views that they have a traditional right to fish. However, in the end the view changed to an apparent preference to pay license rent because it allows them to participate in an income earning activity in which they have a long history, without creating inherent or traditional rights implications.

Mechanism For The Transfer of Salmon Shares

Did the Demonstration Project provide a mechanism for the transfer of salmon shares to terminal fishing areas, including to First Nations in inland areas? In short, yes, it did. The Gitxsan achieved this by striking a deal with the commercial industry to get a combination of gill net and seine licenses, with (according to our understanding) a profit sharing arrangement (60% to fishers; 40% to license holder). Quota allocations were based on licenses held by DFO and commercial arrangements with industry.

Main Challenges

Aside from the challenges noted above, the main challenge for the Inland Demonstration Fishery in general has been, and continues to be, trying to get the Tsimshian Nation to participate in the lower Skeena part of the planned project. This is mainly because the coastal First Nations are opposed because they feel that the Demonstration Project causes them to lose some of their previous access to the Skeena fishery. They are also concerned about an associated loss of processing jobs in Prince Rupert, which affects First Nations who work there in substantial numbers. With a strong preference for using gill nets, the Tsimshian object to the elimination of this gear as required by the demonstration project rules.

Lessons Learned in 2008

The research revealed no dramatic lessons learned from the 2008 Demonstration Project. However, restricting fishing times below the Kitwanga bridge (mouth of Kitwanga River) did lead to the discovery of other productive fishing areas. DFO and the Gitxsan are working and experimenting on follow up to develop the fishery further in this regard.

Unforeseen Impacts

The research revealed no unforeseen impacts on the FSC and recreational fisheries, or other commercial fleets. Because laundering from FSC to the commercial catch could be an issue, participants must declare whether they are fishing commercial or FSC. Then the approach is to try to keep the two separate in time and use observers to monitor this. Generally there is good cooperation by the Gitxsan on releasing by catch and they police themselves carefully using an internal allocation system.

Observations on the Future

Regarding the implementation of share-based fisheries on a more permanent basis, the 2008 Demonstration Project provided a positive experience for the Gitxsan in terms of its employment and income impact and the opportunity for the Gitxsan to develop further and apply their research and management expertise. Given the nature of the Tsimshian opposition to the Demonstration fishery, it seems fair to conclude that 2008 project did little to change their views.

For future demonstration projects, the review by the DFO and the SFC of the sampling data on the stocks fished may lead to revision of fishing areas. Also, the introduction of the commercial arrangements to transfer quota inland demonstrated that it is possible for DFO to step to the side in these types of quota reallocation in future demonstration projects and still achieve the objective of transferring more fishing opportunities to First Nations.

4. AREA B SEINE AND AREA H TROLL ITQ FISHERIES

4.1 Background

In recent years the Commercial Salmon Advisory Board (CSAB), the provincial Ministry of the Environment and DFO have engaged in the Pacific Fishery Reform process to renew and revive the commercial salmon sector. Representatives of the Harvest Committees for Areas B, D and H met to scope out the possibility of a joint demonstration project to test the desirability of an integrated defined share fishery using ITQ's within and between gear types for 2008. Prior to the season all Area B, D and H licence eligibility holders received a summary of the proposed Southern Salmon Integration project and a ballot asking their preferences regarding an ITQ fishery with transfers between the seine and troll fleet permitted. The ballot returns by Area were:

- **Area B:** 100 of 152, or 66%.
- **Area D:** 215 of 329, or 65%.
- **Area H:** 48 of 86, or 56%.

Area B and Area H voted 91% and over 70%[15], respectively, in favour of ITQ for Fraser River Sockeye and Johnstone Strait Chum. Area D voted 57% against ITQ for Fraser River Sockeye and 66% against for Johnstone Strait Chum. Areas B and H were also strongly in favour of inter-fleet quota transfers: 100% and 91%, respectively for Fraser Sockeye, and 100% and 88% for Johnstone Strait Chum.

On this basis, the AHC worked with DFO to design a Demonstration ITQ fishery for Area B Seine and Area H Troll for Fraser River Sockeye including inter-fleet transfers.

4.2 Project Process and Results

The fishery was less than 1 week long. The fishery did not have a weekly TAC. Instead the ITQ was set as a percentage of the total Canadian commercial TAC, which was identified as 100,000 pieces. The Fraser River sockeye ITQ was set by DFO by dividing the Area B Fraser River sockeye allocation (47.5%) by the total number of licensed vessels for Area B (169) or 0.2811% per licence. This translated into an ITQ of 281 pieces. The Area H Fraser River sockeye ITQ was determined using the same formula, that is, by dividing the Area H Fraser River sockeye allocation (12%) by the total number of licensed vessels for Area H (89) or 0.1348% per licence. This gave an ITQ of 135 pieces.

Fishing activity was as follows

- **Area B:** fishing on July 27 and 28.
- **Area H:** fishing on July 26, 27 and 28.

All landings were reported on July 28 and 29 with the bulk of landings reported on July 29 in both Area B and Area H.

As for quota transfers, 107 reallocations occurred covering 26,293 sockeye. They are broken down as follows:

[15] Split for Area H: 74% in favour for sockeye and 70% in favour for chum.

- 83 seine to seine.
- 2 seine to troll.
- 17 troll to troll.
- 5 from troll to seine.

It is evident that inter-fleet transfers were not a prominent part of the quota transfer activity. It is likely that the newness of the opportunity for seiners and the relatively low TAC were factors.

As is evident from the summary results in Table 7, the low TAC (relative to previous levels) led to a substantial decline in participation. In Area B, of the 169 vessels, 97 were active in the sense that they transferred fish or fished. Of these, 12 vessels bought quota of which nine caught fish. Three vessels that did not acquire additional quota also caught fish, for a total of 12 vessels that caught 12,250 pieces. For Area H Troll, 34 of the 89 vessels transferred quota and/or fished. Eight vessels caught 440 pieces, two of which had purchased additional quota.

Figures 6 and 7 show that half or fewer vessels account most of the catch. For example, in Area B, six of the 12 seiners accounted for 92% of the catch, with two vessels taking about 44%. About half the vessels managed to catch more than their initial ITQ. In Area H four trollers took 75% of the total catch. Even so none of the vessels caught their full ITQ.

Table 7
Summary Result Area B Seine and Area H ITQ Demonstration Fisheries
Fraser River Sockeye Salmon (based on validated catch data)

	Area B Seine	Area H Troll
# of Vessels	169	89
2008 Catch (Pieces)	12,250	440[16]
Quota Overage	0	0
Quota not caught	35,360	11,456
Active Vessels (Transferred Fish or Fished)	97	34
Bought quota - # of vessels	12	8
Sold Quota - # of vessels	83	22
Held Quota (neither bought nor sold quota) - # of vessels	74	59
Caught Fish - # of vessels	12	8
Bought quota and caught fish - # of vessels	9	2

Source: DFO ITQ Database

[16] For completeness, the combined FOS and validated catch is 469 pieces because there were seven vessels that hailed out for the fishery but did not validate their catch, two of which phoned in catch totaling 29 pieces. The other five did not report catching anything (440 validated +29 (FOS)=469). Of the 29 FOS catch, 25 pieces were swept overboard and lost at sea.

Figure 6
Area B Seine Sockeye Demonstration Fishery
Catch by Vessel

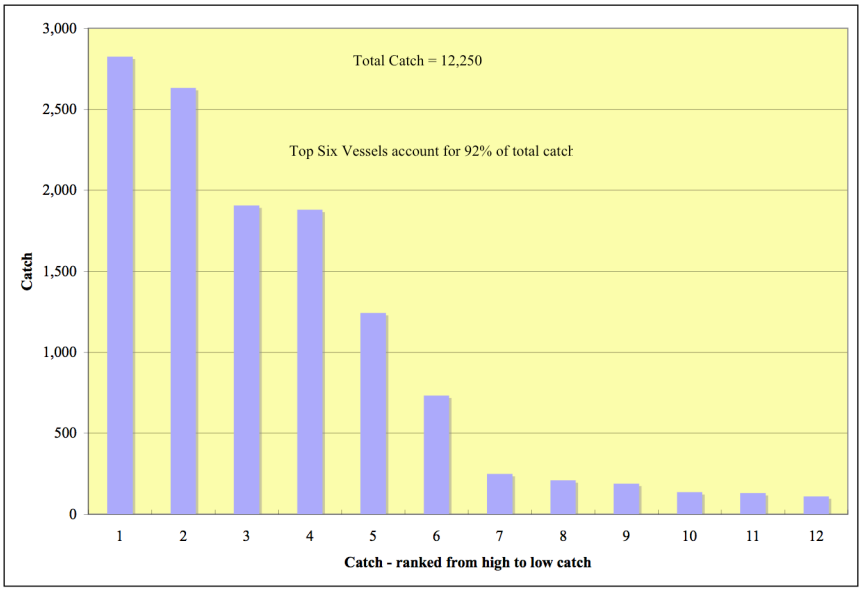
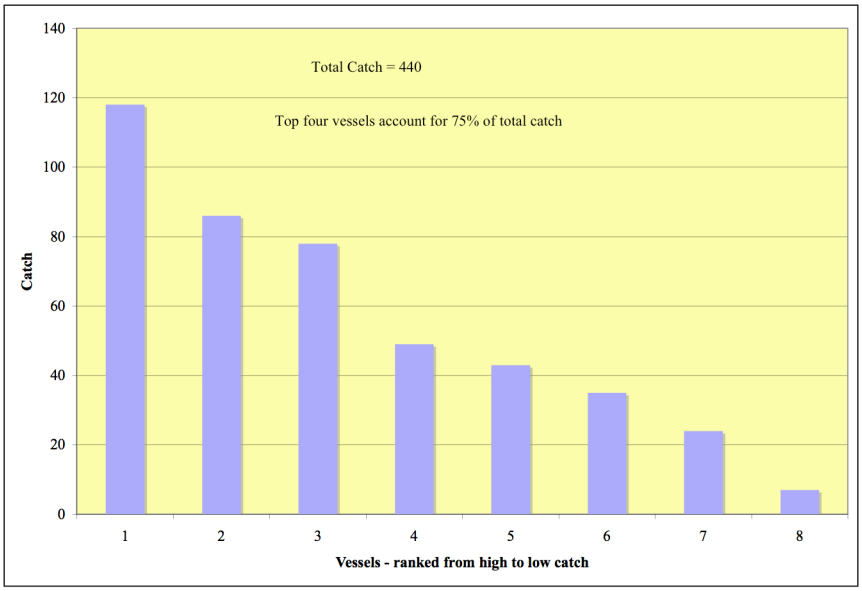


Figure 7
Area H Troll Sockeye Demonstration Fishery
Catch by Vessel



Management Control and Conservation

Conclusions about the affects of the ITQ approach on management control and conservation are limited because concerns about impacts on specific stocks led to a short season. In effect, the 2008 experience was a constrained ITQ fishery whose two-day duration and low TAC did not present time for much evidence to accrue. Even so, there are some useful observations to make.

- From a management perspective, allocating the TAC to each license gave much better management control, especially for a (relatively) small fishery as in 2008. Although DFO did close the fishery early, it was because they were trying reduce the impacts on the late runs where there were conservation concerns.
- Seven vessels failed to validate their catch but this was primarily a misunderstanding about the reporting/validation requirement and was not considered an issue.
- The major issue was the catchability of the quota because the fish were primarily passing around Vancouver Island rather than through Johnstone Strait.
- High grading was really not an issue given the short season, although because of the short season, only tentative conclusions are possible on any size distribution or overage issues. It would require a more 'normal' season.
- Because of the reduced TAC and small run size, the industry suspects that the fishery might not have opened at all if not for the ITQ approach, because the catch outcome is more uncertain under a derby (competitive) fishery. Interestingly, the Area D and Area E competitive gill net fisheries for sockeye remained closed during the season.
- Observers agreed that ITQ should improve on controlling by-catch as opposed to derby and the race for fish because fishing to a number fisherman can avoid the areas with high by-catch especially in a more normal fishery. This could not be observed under the short duration low run 2008 fishery.
- Observers agreed that ITQ should improve on controlling by-catch as opposed to derby and the race for fish because fishing to a number fisherman can avoid the areas with high by-catch especially in a more normal fishery. This could not be observed under the short duration low run 2008 fishery.
- Dockside validation does provide a better record of catch than the phone log book provision. Although, as already noted for Area A, it may not be timely enough to assist with in-season management decisions because of lags between time of catch and time of landing the catch and reporting[17].
- ITQ fisheries present all concerned with greater complexity in the regulatory requirements, at least to start. Since this is partly a learning curve issue, it would likely diminish with more experience and broader use of ITQ.
- Handling quota reallocations does require a quota-catch database (as described in the Area A case) for which there are some one-time development costs and additional effort to meet the timeliness requirements. DFO did not have to hire additional staff to deal with quota transfers in the Sockeye fishery (although one person was hired for the Chum demonstration fishery, which is reported separately). There were no cost implications for other aspects of the monitoring system: overflights are done from a fixed allocation that was allocated across all fisheries; there were no observers for these fleets; and there was chartered patrol vessel but the short season meant nothing changed. An interesting possibility in the future could be a trade off where dockside validation potentially allows for less on-water monitoring. However, measures to ensure release rates of by catch will likely be required.

[17] Note however that in the competitive fisheries in the past, fishermen had to phone in catches as a log book requirement and these data were often incomplete until the fall. DFO expects validation to yield large improvements in the timeliness and accuracy of the data.

Improved Industry Viability

Overall, the short fishery makes it impossible to draw any firm conclusions about the impact of ITQ on industry viability. However, it appears that the reallocation of quota led to fewer boats fishing and reduced cost of fishing on a fleet-wide basis as opposed to a derby style fishery where there would have been a lot of boats fishing for very limited catch but still incurring costs. It is apparent from the distribution of quota and catch by vessel that one seiner accumulated substantial quota in an attempt to make it a viable fishery even with the low TAC and small runs. A return to a fishery with a much larger commercial TAC and ITQs will give a better indication. The situation is similar for other benefits cited for ITQ such as better fleet deployment, plant efficiencies, marketing efficiencies and avoiding heavy weather (which is not normally a significant issue for the Johnstone Strait).

Dockside validation is a cost borne by the fishermen at a cost that is set by the service provider according to the reporting requirements set by DFO. In a low catch fishery, this cost assumes greater importance for fishermen and chips away at viability. Under current circumstances, it will likely be an on-going irritant. We note also that dockside validation is not a money maker for service providers particularly when it is only required for demonstration fisheries providing a small volume of business over a short time periods.

Transfers between Commercial Fishers and First Nations

This was not an issue in 2008 but there is a sense that ITQ would facilitate transfers because each license gets a fixed share of the TAC that could be transferred to First Nations. However, the complicating factor that would need to be addressed is: which stocks would the transfers affect? This is because the First Nations tend to fish at different locations along the Fraser system and the stock impacts would differ according to the stocks present at each fishing area in the Fraser watershed and which First Nations received the reallocation.

Employment

In general, fewer boats fishing means lower employment in the fishery. The two-day 2008 fishery was too short to conclude on whether employment per vessel is affected, although observers believe there was no effect.

Increased Cooperative Approach

The observations made are similar to those from the other demonstration projects:

- Fishermen do have to pay more attention to communicating among themselves about how the fishery is going to run such as the ITQ management system and quota transfers whereas under a derby fishery they just go out and fish. The extent to which this communication is concentrated at the Area Harvest Committee level may be a limiting factor.
- More communication is required between DFO and the fishermen which forces both parties to talk more about management plans and their execution, rather than one-way communication from DFO.
- The ITQ system removes or substantially reduces the competitive aspects introduced by the ‘race for the fish’. The derby process drove secrecy because fishermen did not want share information that would help others.

Responsibility for Control and Monitoring

For some harvesters the ITQ approach increases the sense of ownership of the fishery, which leads to a sense of responsibility for conservation and rebuilding. However to be really effective it would require a sense of ownership on all participants, license holders and non-license holders alike. There appears to be sense that Harvest Committee represents only license holders, which may partly explain the difficulty non-license holder native fishermen are having with the quota approach.

As with the other demonstration projects, the Area B and H Harvest Committees worked with DFO to work out the details of how to structure the demo and fishery management helps to build better relationships.

Main Challenges in 2008

The main challenges came before the season because of the greater complexity of managing an ITQ fishery.

- The additional regulatory requirements under ITQ had to be added to the ITQ license prior to the season. It is expected dealing with the complexity reduce as more ITQ experience accumulates.
- The additional database requirements for ITQ have already been noted. However, the experience gained with an ITQ fishery in Area H in 2006 was very valuable to make the implementation process much smoother. The database contractor was already set up. The main issue was thinking through the inter-fleet transfer process. Nevertheless, the time consuming process to do all the quota transfers remained.

Lessons Learned

Having a full fleet demonstration fishery for both the seine and troll fleets ensured there would not be an issue of ITQ vessels laundering (e.g. transferring) catch to competitive vessels. This is a possibility if one fleet is ITQ and the other is derby (although there could also be a transfer to a gill net boat). Hypothetically, fish could be transferred from an ITQ boat to a derby boat, which may have taken place during the 2006 demonstration fishery, but it does not appear to have been a real issue in 2008.

One of the issues for the Fraser Panel process is how to access a small TAC; the 2008 fishery did show that this was possible, albeit in a very attenuated fishery.

Although the Area H Troll fishery has about three years' experience with ITQ, it was the first year for the Area B seine on sockeye, so there are still learning curve issues about the quota transfer mechanisms, particularly the inter-fleet transfer aspect and how to make it work more efficiently. Resolving this will require more ITQ experience with a more 'normal' sockeye fishery.

There could be a minor issue where a vessel hailed in and had a very small catch or zero catch and then did not get validated to avoid the validation charge[18]. This appears to be a record keeping issue more than accurate catch reporting, and the incentive to not go to validation will

[18] There was some misunderstandings that zero catch did not require validation.

remain under current circumstances. It would be likely to disappear under greater abundance where all vessels catch fish.

The seine fleet was new to the ITQ fishery, so there may have been some confusion over who should be arranging for the dockside monitoring, the Captain or the processing company owner. With so few boats fishing, any lessons learned may not have been widespread.

Unforeseen Impacts

The very short season meant that there were no unforeseen impacts on First Nations FSC. The recreation fishery concerns over the ITQ fishery are recorded separately below.

Future Share-Based Fisheries

Although the low TAC (100,000) in 2008 led to many fishermen not participating, in the future with a higher TAC, facilitating quota transfers through a quota brokerage may be very helpful. We note that there was an attempt to establish such an exchange (http://itq.ca/) that could develop. The experience with quota exchanges in eggs and milk in Canada may be worth exploring in this regard.

Procuring service providers for dockside validation at reasonable cost would address one of the features of the ITQ approach that annoy many, if not most, fishermen. At this point, most service providers are reluctant to deal with validation until ITQ is the established mode for the fishery rather than just a feature of ITQ demonstration fisheries. Rather than an argument for expanding the use of dockside validation, this is simply a recognition of the fact that the unit cost of supplying validation services will be higher at low volumes than high volumes of activity.

If there were larger abundance and a longer, say, three week season, it would be necessary to spread the fishing over all three weeks to prevent intensive fishing in one week that over concentrate catches on particular stocks and not others. The solution would be to use weekly TACs that would in turn create the need to establish specific carry over provisions. Although this has not been tried in the South, the Area A experience would presumably be useful in addressing this issue.

5. AREA H TROLL INDIVIDUAL TRANSFERABLE EFFORT(ITE) FISHERY

5.1 Background

The Johnstone Strait Chum Fishery targets fall run chum stocks that migrate through Johnstone Strait. Most of these fish spawn in Johnstone Strait, Strait of Georgia, and Fraser River areas, though a small component is bound for Washington State systems. The fall chum stocks pass through the Johnstone Strait fishing area from September to November with the peak typically early to mid October. Harvesters include First Nations (FSC fisheries), recreational, and commercial (seine, gill net and troll).

In 2005, in addition to two competitive seine openings, a seine demonstration ITQ fishery also occurred. This demonstration fishery provided some fish harvesters the opportunity to participate in an individual catch target fishery, which took place between the two competitive fishery openings. Fish harvesters had to declare whether they were fishing in the competitive fishery or the demonstration fishery and could not participate in both. The catch target in the demonstration fishery was based on effort and catch in the first competitive opening. There was no demonstration fishery in 2006 and 2007.

In 2007, 15 troll vessels participated in an Individual Transferable Quota Demonstration Fishery. The initial quota was based on a conversion of the ITQ fisheries share of the allowable troll exploitation rate into pieces based on the estimated exploitation rate and catch in the first seine fishery.

The Johnstone Strait Chum Fishery is managed on effort rather than abundance. In 2002, DFO initiated a new strategy for chum management in Johnstone Strait as a result of the variation in chum returns over the years. To ensure sufficient escapement levels and provide more stable fishing opportunities, the new strategy implemented a fixed exploitation rate strategy. The exploitation rate is set at 20% across all harvesters. Of this 20%, 15% is allocated to the commercial sector, and the remaining 5% is set aside to satisfy FSC, recreational, test fish requirements and to provide a buffer to the commercial exploitation.[19]

In May 2008, DFO conducted a poll of Area H licence holders querying their preference regarding an individual transferable defined share demonstration fishery for the 2008 chum season:

- 70% of the respondents voted in favour of the proposal, with 88% of them in favour of allowing for the transfer of shares between and among the seine, gillnet and troll fleets.

The Area H Harvest Committee worked with the DFO resource managers to design a demonstration fishery. The Area B Harvest Committee also participated in the process but ultimately declined to participate because of concerns about how to manage the proposed small time allocations for the seine fleet.

The final 2008 project covered all Area H Troll license holders and was set up for fishing to be managed as an Individual Transferable Boat Day (Effort) Demonstration Fishery.

5.2 Project Process and Results

The essential elements of the 2008 Area H Chum Demonstration Fishery included:

- The fishery was divided into two fishing blocks:
  - **Block One:** September 29 to October 11.
  - **Block Two:** October 14 to 29 initially, and then extended to November 5. No fishing was permitted on October 12 and 13, 2008.
- The troll fishery was also closed during the seine fishery scheduled for Oct. 1 and Oct. 20, 2008. Deepwater Bay (Subarea 13-7) was closed on weekends.

[19] As reported in Fisheries and Oceans Canada, *Pacific Region Integrated Fisheries Management Plan, Salmon*, Southern BC, June 1, 2008 to May 31, 2009

- The total boat day quota was 445 days for the 89 eligible licenses, 267 boat days in Block One and 178 Boat Days in Block Two. Each Area H licence holder was assigned three boat days in Block One and two boat days in Block Two. Boat days could be fished at any time within each block.
- Boat days were transferable within a block but not between blocks and only between other Area H troll vessels. If boat days were not fished, up to one third of the total number held could be carried over from Block One to Block Two. (rounded down to the nearest whole number if required).
- Quota stacking was permitted, up to 12 boat days in Block One and up to 15 Boat days initially in Block Two (which was subsequently increased by seven days to 22 days in total in Block Two).

Quota Transfer

Quota transfers took place in both fishing blocks:

- **Block One:** 25 vessels bought 87 days or about 32% of the available quota[20].
- **Block Two:** 24 vessels bought 77 days or about 43% of available quota.

In addition, those vessels holding unused boat days transferred 38 days from Block One to Block Two (Table 8).

In terms of landings, 42 vessels (47% of the licensed vessels) landed chum, 10,546 pieces in Block One and 10,751 pieces in Block Two.

By way of comparison, apparently under the derby fishery, it would be typical to get 70% of active fishermen participating, which is attributed to the fact that chum are a lower value fish. The low stock level in 2008 and the ability to stack quota from two or three vessels on one vessel appear to be factors in determining the 2008 participation rate. Also, although DFO had used days quota before, but not reallocation between boat and between the two fishing blocks, the transferable days fishery feature of the 2008 fishery was introduced on about one week's notice. One estimate is that about 12 licenses were not used because people did not understand what was happening but that overall total effort dropped only by about two days off from what would have been the 'normal' fishery.

Table 8:
Area H Troll Individual Transferable Effort
Mixed stocks of Johnston Strait Chum

	Catch (pieces)*	Quota (days)	Carry-overs (days)	Days Fished	Days Remaining	% Quota Remaining
Fishing Period 1 (Sept. 29-Oct. 11)	10546	267		168	99	37%
Fishing Period 2 (Oct. 14-Nov. 5)	10751	178	38	160	56	31%
Total	21297	445		328	155	35%

Source: Gardner Pinfold based on DFO data
* Based on phone in data; validated data slightly lower at 20,572

[20] Note that this is the net amount of vessels and quota transferred. The gross amount takes into account some vessels acquiring additional quota, then transferring it off to another vessel.

Figures 8 and 9 show the distribution of effort and catch across the 42 vessels that landed chum.

- The total fishing effort for the season was 328 boat days with an average effort of 7.8 days per vessel. Five vessels fished for 13 or more days, up to one vessel that fished for 19 days.
- The top six vessels accounted for 40% of the total catch of 21,297 pieces. The average catch per vessel was 507 pieces, while the median catch was 366 pieces reflecting the concentration of the catch among the six vessels.

Figure 8:
Area H Johnston Strait Chum Demonstration Fishery
Days Fished by Vessel

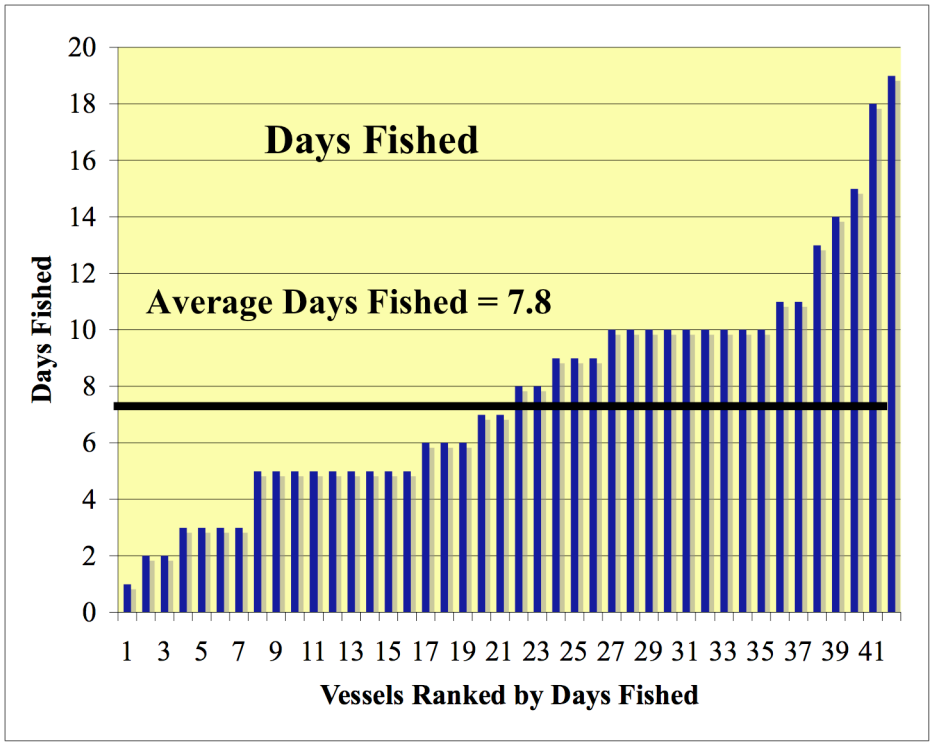
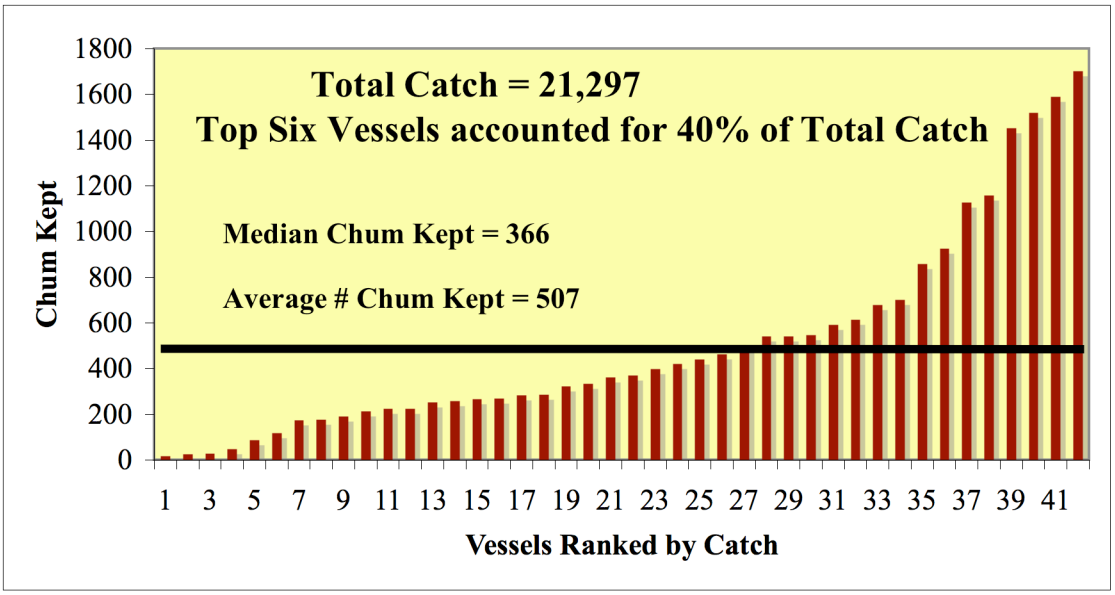


Figure 9
Area H Johnston Strait Chum Demonstration Fishery
Catch by Vessel



Management Control and Conservation

From the management perspective, DFO managers indicate there was little change from previous years. This fishery has been managed on an effort basis with good compliance since 2002 because the tools have not been developed to estimate run size. In 2008, the main differences were the introduction transferability of quota days among the Area H troll fleet and the switch to a 27-day fishery that was extended to 34 days from the two to three week fishery with typically one to three days fishing per week in the past. There were essentially no compliance issues and no issues in terms of conservation performance.

The reporting system was based on self-reporting based on hail in and hail out by telephone, call in catch, overflights, and charter operators that would count vessels and compare vessels names against the Fisheries Operations System (FOS) data, some self-reporting by fishermen to make sure their colleagues were reporting, electronic log books and GPS monitoring system on 12 vessels, as well as catch validation through dockside monitoring. A check of the validation data against the other FOS data revealed no substantial discrepancies; DFO staff was able to reconcile all start and end fishing reports by the end of fishery.

The very nature of a pilot means it has initial set up costs. Extending the fishery from 8 days to 27 days means monitoring over a longer period and there is a need to set up a quota transfer database. DFO did hire an additional person for the quota transactions and amendments. The fact that the Area H troll fleet is fairly small meant that any incremental monitoring costs could be minimized by using concurrent charter boats and over flights that were also monitoring other fleet. In any event, monitoring tailed off as the number of boats slacked off by end of fishery. This could change if the whole Johnston Strait Chum Fishery, including Areas B and D, were run like the Demonstration Project.

Non-retention of chinook, coho and sockeye is a condition of the Johnston Strait Chum Fishery. However, there is a small amount of by-catch in October and early November, so it is not an issue. The coho are largely avoided by opening the fishery only after they pass through.

Improved Industry Viability

There are both positive and negative aspects to this issue. Fishermen that like the Individual Transferrable Effort (ITE) approach offer comments such as:

> 'ITE is a better way of counting – a predictable outcome fishery.'
>
> 'It allowed fishermen to actually fish, and resource managers were able to manage with better information.'

Even fishermen that are essentially opposed to the ITE for chum bought additional quota, they also offer a number of criticisms.

Changes under the ITE that are cited as improving viability include (many of which have already been noted in the other demonstration fisheries):

- Increased opportunity to engage family members in fishing instead of hiring deck hand.
- Greater flexibility to fish when weather and conditions are good and avoid beating up the boat in hard weather.
- Can recover from break downs and not lose their quota days as in the derby fishery, at least before the last couple of days of the season.
- Quota transfer also allow fishermen to send out one boat to catch the quota of two or three license holders and use the same equipment but more efficiently.
- The ITE project allows fishermen to save fuel by fishing only on two blocks rather than three under the previous derby arrangement.

Overall, from an industry wide perspective, the upshot is fewer boats chasing same amount of fish and a lower aggregate cost of fishing.

Major criticisms

- From the fishermen's perspective, the validation charge, which was based on a per day charge that is independent of the quantity of landings, is onerous (particularly when the run is small) because they feel it is expensive and the chum are not high value. Since there was no validation cost in the derby fishery, this cost stands out even more, even though DFO underwrote half the cost for the Chum Demonstration Fishery. From the service supplier point of view, at the small scale of the demonstration fishery validation work is not a money maker even at the rates charged.
- Some observers believe that the cost of the compliance requirement may be discouraging acceptance of share based management and finding a more streamlined and cost effective compliance would be a big step forward. One suggestion is to try tagging as is done in hunting and the sport fishery. Currently there are three layers of fish counting – hails, validation and sales slips, which some believe is a redundancy of counting effort, although there are counterarguments that each layer serves a specific purpose from a management perspective.

- Quota leasing costs become a deadweight cost with little chance of recovery when the run is small and catches are low, especially since catch per quota day is uncertain.
- The conventional argument about safety is that ending the race for the fish under an individual quota system will lead to safer fishing because, for example, heavy weather can avoided. However, some fishermen believe that there will be tendency to substitute quota costs and validation costs for the cost of maintaining gear, safety equipment or possibly sail with a smaller crew. We note that this could be true in the short run but in the long run appears to be self-defeating since it will reduce productivity (more breakdowns) and expose the fishermen to greater safety risk. (If dockside validation becomes more widespread across all fisheries, greater interest by service providers could lead to greater competition and lower fees, which would address one part of this issue.)
- Some people claim there was difficulty for quota buyers to find quota sellers (a point already noted). An operating quota exchange might have helped this situation but attempts to establish did not succeed, perhaps because there was not enough time for people to be aware of it or possibly because fishermen tend to want to deal with people they already know. We note that a substantial amount of quota transfer did take place in any event.

Transfers between Commercial Fishers and First Nations

This was not an issue for the Chum Demonstration Fishery. If such transfers were to come about, there would be an issue of how to convert effort quotas into piece quota that could be transferred to inland First Nations. This issue has not been addressed yet but there appear to be a couple of possibilities that could be explored, both based on a catch per unit effort coefficient. Such a coefficient could be based, for example, on historical catch per unit of effort over some defined period of time, or on the average catch per boat day during part or all of the current fishing season. How to implement such a system successfully would require considerable stakeholder consultation and technical analysis.

Employment

One result of quota transfer is that fishing is concentrated fewer vessels fish. There will be less employment among previously employed crews on vessels no longer fishing. Employment of captains and crew on vessels fishing their quota (initial quota plus acquired quota) will continue. This is a natural result of rationalizing the industry.

At the vessel level, some people believe that fewer crew get employment under ITE because vessel owners try to offset quote cost by reducing other costs including crew costs, possibly by employing family members. Others point out that employment is bound to be down because there are so few fish now and the amount of fishing is down, so the employment opportunities are down anyway and it cannot be attributed just to the ITQs.

Vessel operators also point out that it is very difficult to assemble a crew for a short fishery (3-5 days) and often requires higher rates of pay or other incentives. From this perspective, the argument goes that with a longer fishery as could be available under an ITE fishery it would be possible to offer a longer employment term and get a more traditional crew share rate arrangement.

Increased Cooperative Approach

The features cited in support of increased cooperation with the Chum Demonstration Project are similar to the other projects reviewed:

- It removes or substantially reduces the competitive aspects introduced by the 'race for the fish' that fostered secrecy because fishermen did not want share information that would help others succeed at their expense.
- Operating under an ITQ framework more or less forces fishermen to work together to engage in quota exchange and it increases the amount of communication with DFO, although the latter may be confined mainly to members of the Harvest Committee at this point.
- Cooperation could be improved if there were an effective quota exchange operating that would reduce the transaction costs currently associated with limited information available to buyer and sellers.

The increased cooperation view is not unanimous. Some fishermen do not accept that there has been an increase in cooperation and would continue to deal only with people with they have built a trusted relationship.

Responsibility for Control and Monitoring

By its nature as a Demonstration Project, for the Area H Chum Fishery in 2008 there were new concepts and procedures that had to be worked out. This tended to engage the Harvest Committee in greater collaboration with DFO to design the project and address control and monitoring issues, a process that was enhanced by the Area manager's collaborative style. It remains to be seen if this type of collaboration will gradually spread to the rest of the fleet.

The fact that here was essentially 100% compliance and an element of self-policing aimed at preserving the demonstration project quota days allocation can also be taken as indicators of greater responsibility for control and monitoring.

Main Challenges in 2008

From the fisheries management perspective there were a number of challenges to be addressed the most important of which were:

- Managing this ITE fishery requires a specialized quota database that has all the data for tracking quota days and being able to match it with phoned-in catch data from FOS. This was developed but the real challenge was in figuring out how to use the collected data efficiently and extract meaningful reports for management purposes. Apparently FOS programmers were able to improve at this over the season.
- The challenge of processing quota transfers in a timely manner was met by ultimately putting in place a designated quota officer to deal with quota management.

- The switch to a 27-day (extended to 34 days) fishery, instead of eight days, meant that the ITE fishery was open on weekends. The derby fishery had never been open on the weekend. This presented new management challenges from a number of perspectives: the length of the season stretched monitoring resources; it increased the possibility of conflict with the recreational sector, and it opened the possibility that fishing would occur at the peak of the run. As indicated by previous comments, ways were found to achieve a satisfactory level of monitoring. Closing fishing in known recreational areas, e.g., no fishing below Area 13-7, minimized conflicts with the recreational sector. The fishery was closed on October 12 and 13 to miss the expected peak of the run. These dates were strategically chosen to coincide with the October long weekend, primarily Thanksgiving Monday, which is a peak recreational fishing day.

For fishermen in Area H, coming to grips with mastering quota transfer, which was a challenge for some, and coping with the low run size were the main issues. In the future, the fishery could be closed early if a minimum run size of one million is not attained. The associated uncertainty could create a situation where they buy additional quota that they could not fish because of early closure so they have to swallow the cost of the quota. This is really a hypothetical concern since there was no early closure in 2008.

Lessons Learned

Several results of the ITE Chum Demonstration Fishery indicate that the troll fleet can be managed using a transferable boat days approach:

- The strong compliance results noted previously.
- The flexibility for fishing over longer time and the longer window of opportunity.
- The success of the electronic log book (a computer program which transmits directly to FOS and receives confirmation number) which greatly simplified reporting (based on a sample of 12 boats that were also equipped with GPS tracking capability for the first time as a test of an enhanced auditing method).
- The level of participation in quota transfer and the amount of quota transferred even with the first time growing pains.
- The concentration of fishing effort such that less effort was expended than would have been the case under derby conditions.

Mechanism For The Transfer of Salmon Shares

The 2008 Chum Demonstration Project did not provide much insight into whether an ITE (boat days) based fishery could provide a potential mechanism for the transfer of salmon shares to more terminal fishing areas, including to First Nations in inland areas. The major hurdle is of course being able to translate boat days into a pieces quota that could be transferred. It would be possible to use historical catch per unit effort but since this would be data from a derby style fishery, it's relevance to the ITE fishery is open to question. Another possibility would be to use the actual catch per boat day as a conversion factor. It would appear that further experience with the Project is required to shed light on whether such a transfer mechanism could be developed.

Unforeseen Impacts

The research for this project did not detect any unforeseen impacts on First Nations FSC and recreational fisheries, or other commercial fleets.

Future Share-Based Fisheries

Just as sharing the piece-based quotas with inactive license holders is an on-going issue in the other ocean based demonstration fisheries, so too is sharing boat days with inactive licenses among Area H trollers. Given the concerns and displeasure expressed across the demonstration fisheries about the 'unearned benefit' bestowed on inactive licenses, it seems apparent that this issue will not resolved on its own; it will require some type of action by DFO to change how quotas are distributed to license holders[21]. Concerned fishermen offer a variety of proposals on how to do this, as noted in previous chapters.

Although there seems to be evidence that the 2008 ITE fishery worked well, there remains an unanswered question about whether it would work for larger fleets and/or other gear types. This is particularly pertinent because there is a fairly widely shared view that since the demonstration fisheries appear to be working in Area H as well as the other areas, the approach should be spread more widely across the Coast. This would also help to resolve a concern expressed by some fishermen about nearby fleets with the same gear type derby fishing next to an ITQ fishery. However, doing so would change the ITE (or ITQ for that matter) scale considerably. This could have unknown implications from a monitoring and compliance perspective, which suggests that it would be prudent to move forward in a slow and deliberate manner. It is fair to recall that there remains opposition to the ITQ/ITE approach, as we have noted throughout this report. As well, addressing the allegation that there is stronger support for ITQ among inactive license holders than among active licenses holders should be part of a moving forward strategy.

6. FIRST NATIONS' CONCERNS

The viewpoint of many First Nations on ITQs is set out in a comprehensive report, *Our Place at the Table*[22]. The major recommendation in this report with respect to ITQ fisheries states:

> *A moratorium be placed on the further introduction of individual property rights regimes such as Individual Fishing Quotas unless First Nation interests including allocations in those fisheries are first addressed.*

In other words, the basic position put forward is that further introduction of ITQ programs must stop until First Nation interests are accommodated. Factors cited by the report include:

- Individual transferable quota regimes have been established with little or no consultation with First Nations and often against the wishes of First Nations.
- The Federal and Provincial governments have recognized that these changes have a negative effect on treaties by increasing settlement costs.
- Individual transferable quotas also have other effects, such as reducing employment, increasing the costs to individuals entering the fishery, and corporate concentration.

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[21] It is only fair to note that there is a converse argument: the active licence holders receive a benefit by not having to compete with the full fleet which would be the case in a competitive fishery.

[22] Full citation: *Our place at the table:* First Nations in the B.C. Fishery, A Report by the First National Panel on Fisheries, May 2004.

In general First Nations spokespersons are reluctant to deal with the specifics of ITQ fisheries at the demonstration project level. As one spokesperson put it:

> "Until the First Nations Fisheries Council has the opportunity to work with B.C. First Nations in order to conduct a First Nations-focussed assessment of the proposed move to defined shares in salmon fisheries we will not be participating in any external assessments by DFO or other stakeholders."

From the First Nation's perspective, DFO's move to a share-based system for salmon does not incorporate an economic access component based on rights-based priority access for First Nations. Most B.C. First Nations apparently see this approach as misguided and unworkable. Their view is that they would prefer to see DFO incorporate recognition of a rights-based access to salmon approach into the commercial fishery demonstration projects.

This is the key point because, according to another spokesperson, most First Nations would "assert that this right [referred to in the previous paragraph] is a priority right of a higher order than that granted to other commercial or recreational users who are granted licenses from the crown to fish what Canada likes to call a common property resource." From this point of view, the fish in question, either for food social or ceremonial purposes, or for economic access, are not a part of Canada's property. This right would take precedence even in times of scarcity when other users would face restrictions in their fishing due to low abundance.

Although First Nations have many technical elements related to ITQs that they would wish to examine before there is any further move to ITQs, either on a demonstration or a permanent basis, their first priority would be to resolve the fundamental disconnect between the First Nations and DFO perspective. In essence the First Nations view is that once Canada makes salmon quota the property of existing license-holders, they alienate the rights-holders.

At a more detailed level, First Nations spokespersons raise a number of other points:

- There is talk about moving the commercial fishery into the rivers, which raises a lot of questions about how First Nations will get involved and how will shares be allocated.
- If commercial fishing is shifted into the rivers, a related question is how will ITQs be determined and allocated for terminal fisheries?
- A current problem for some First Nations is that a lot FSC needs are not being met. Consequently, people are asking, why transfer commercial quota using the ITQ?
- For some First Nations, ITQs are perceived as the privatization of the fishery that will put it the hands of a few private owners.
- More generally, it is noted that the acquisition mechanism and transfer are important and not fully understood, so it is difficult to place ITQ in this framework.

The following issues tend to get considered as related to ITQs, although this is not necessarily the case:

- There is a perception that PICFI is really a retirement plan for current commercial fisherman and that it will result in inflated license values. Then First Nations will have to pay the higher values to acquire the licenses.
- For some First Nations, the idea that licenses will be retired and put into license bank is an infringement on existing rights and titles.

7. RECREATIONAL FISHING COMMUNITY CONCERNS

Although the recreational fishing sector does not participate directly in the commercial fishery, since the two sectors fish the same stocks, what happens in one sector can be a concern of the other one. Consequently, it is not surprising that the recreational sector has some concerns about the introduction of the demonstration fisheries in the commercial sector.

Some recreational fishers are philosophically opposed to quasi-private ownership of the fishery resources, as are some commercial fishermen[23]. Leaving this aside, there are a number of other specific concerns.

The Recreational Fishing Community, (at least as represented by the Tidal Fisheries Committee of the BC Wildlife Federation, and members of the Sports Fishing Advisory Board), expresses strong concerns, not about the salmon ITQ demonstration projects themselves, but about the possible implications of the projects for the allocation of a TAC between recreational and the commercial sectors after satisfying First Nations.

They base this concern on their perception of the way the ITQ system for halibut has been implemented[24]. In effect, in their view, the halibut system gives the commercial halibut sector 88% of any TAC as a gift[25], which they suggest the commercial halibut fishery apparently regards as ownership; the remaining 12% is allocated to the recreational fishery. The recreational sector can only increase its allocation by purchasing quota from the commercial sector. The recreational fishing community objects to this on the grounds that the fish stock in the ocean are public property and cannot be 'owned' by a private sector group or individual. They cite Justice Ian Binnie's decision in the Saulnier v. the Royal Bank of Canada case[26] as saying that fish only become private property once they are caught and landed in a boat; in the sea they are a public resource and not subject to private ownership.

Interestingly, in Area F, under the current situation for chinook, the recreational sector allocation is set aside based on expected harvest first and then the commercial sector gets its allocation. Some commercial fishermen believe they should get 100% of the chinook TAC from which the recreational sector would have to acquire a share, presumably by buying quota; in other words, essentially replicating the halibut scheme.

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23 We are setting aside the question of whether the ITQ system implies actual or quasi ownership the fish stocks.

24 See BC Wildlife Federation Fisheries Committee, *Halibut, the Executive Summary,* at http://www.bcwf.bc.ca/committees/fisheries/subcom/tidalwaterfishery/reports/2009_halibut_exe_sum.html

25 For a discussion of the 'gift' versus paying a resource rent fee for a quota allocation, see Daniel W. Bromley, *Abdicating Responsibility: The Deceits of Fisheries Policy,* forthcoming FISHERIES, Vol. 34 (4), 2009.

26 This case dealt with whether a commercial fishing licence could be considered property in bankruptcy proceedings when it had been used to secure financial support from a bank. Justice Binnie ruled it could but also made very clear that such a decision did not reduce the absolute discretion of minister with respect to allocation and that fishermen only had property rights to fish after they were caught.

Another recreational concern is the timing of the seine fishery in the Johnstone Strait. Unlike under a derby style fishery, where the seine fleet could exhaust their quota in a few days, under the quota fishery, the fishing period could extend over a longer period possibly up to three weeks, albeit with fewer vessels participating. The recreational concern is that if seiners are allowed to fish on weekends it creates a conflict with the prime recreational fishing times of Friday evening, Saturday and Sunday. This conflict is intensified in the Johnstone Strait because both fisheries tend to target their effort in the same small area north of Campbell River. The recreational view is that closing the commercial fishery at these times would allow the recreational fishery to take place on the weekends without conflicts with the commercial fishery, as was done in the transferable effort Chum fishery in 2008. They would also like to have a better discussion of specific demonstration fishery projects during the consultation process that would take their concerns into account when fishing times for the seine fleet are set by DFO.

Another concern is the possible impact on the recreational fishery of moving commercial fishing activity to inland areas. In 2008, this was only an issue on the Skeena. This issue would likely gain importance if there were future changes that led to commercial fishing quota moving inland on the Fraser River system. Several small demonstration projects were conduced by First Nations in the Fraser River system in this regard.

The recreational sector also expresses a concern about high grading under an ITQ fishery, particularly when the quota per license is low (as it was in 2008 in Area F) and there is then an increased incentive to maximize the value per fish by retaining only the largest fish. However, other than suspicions based on anecdotal evidence, there was no available proof of high grading.

APPENDIX A: CONTACT LIST

Alphabetical order by surname

Steve	Bergh	Area H Harvest Committee
John	Hughes	Area H Harvest Committee
Alan	Frick	C.B. Island Fisheries Ltd.
David	Barrett	Davlin Pacfic Inc.
Kelly	Binning	Fisheries and Oceans Canada
Randy	Brahniuk	Fisheries and Oceans Canada
Chris	Cue	Canadian Fisheries Company Ltd.
Bill	DeGreef	Area F, Harvest Committee; Pacific Salmon Commission
Lindsey	Doerksen	Area F Harvest Committee
David	Einarson	Fisheries and Oceans Canada
Victor	Fradette	Area F Resource Manager
Andrea	Goruk	Fisheries and Oceans Canada
Steven	Groves	Fisheries and Oceans Canada
Jeff	Grout	Fisheries and Oceans Canada
Terry	Gustafson	Area F Harvest Committee
Don	Heron	Area A/Area B License holder; Area A Harvest Committee
John	Hughes	Area H Harvest Committee/ Area F Harvest Committee
Roger	Kanno	J.O. Thomas and Associates Ltd.
Grand Chief Douglas	Kelly	Co-Chair, First Nations Fisheries Council
Gerry	Kristianson	South Coast Integrated Salmon Harvest Planning Committee
John	Kurtz	Area F, Harvest Committee
Dawn	Mann	Archipelago Marine Resources
Jeremy	Maynard	South Coast Integrated Salmon Harvest Planning Committee
Mabel	Mazurek	Northern Native Fishing Corporation
Brenda	McCorquodale	Executive Director, First Nations Fisheries Council
Brad	Mirau	Aero Trading Company Ltd.
Rob	Morley	Canadian Fisheries Company Ltd.
Dave	Rekdal	Fisheries and Oceans Canada
Bob	Rezansoff	Area A, Area B Harvest Committee
Peter	Sakich	Area H, Harvest Committee
Marcel	Shepert	Executive Director, Fraser River Aboriginal Fisheries Secretariat
Urs	Thomas	Chair, North Coast Sports Fishery Advisory Board
Jennifer	Toole	Archipelago Marine Resources

APPENDIX B: INTERVIEW GUIDE

Review of the 2008 Commercial Salmon Demonstration Fisheries Interview Guide

(Not all questions were necessarily covered in all interviews exactly as written)

1. ***Interview target: DFO Fishery managers***
    a. Did the demonstration project improve management control and conservation performance in the fishery?
    b. In what way?

• Improved management control through the control of catch levels within allowable limits. Timely and accurate collection of catch data provides greater certainty for management decisions.	• DFO Managers

    c. Can you provide some specific examples?
        i. Enforcement
            1. Number of infractions
            2. Compliance levels -
        ii. Catch Monitoring
            1. Validation (% of catch, % of vessels)
            2. Costs –
        iii. Fishery Openings
            1. Number of days
        iv. Catch vs. Allocation (e.g. overage/underage)
            1. For whole Area/GearMin/Max/Average individual vessel catch (
        v. Catch Composition (evidence of selection/discarding)
            1. Size distribution of catch –
        vi. By-catch
            1. Number of releases –
            2. Retained catch of other salmon

• Although it is not expected that new conservation concerns will arise as a result of this approach, measures will be taken to evaluate if high-grading is occurring.	• DFO Managers – was this done? Results?

        vii. Potential Impacts on Stocks of Concern
            1. Quota style
        viii. Licence Activity
            1. Active and inactive participants – changes?
            2. Number of licences with fishing activity

d. Was the 2008 experience substantially different from previous years? To what extent did the 2008 experience depend on or result from the experience gained in the previous demonstration projects?

2. *Interview targets: opinion of DFO managers; sample of salmon harvesters*

a. Do you think the demonstration project improved industry viability compared to what may have occurred without this project?

b. If so, how?

i. Industry rationalization through quota transfer?

• Facilitation of transfers between and within gears as well as transfers between commercial fishers and First Nations.	• DFO Managers -

ii. Reduced operating costs by more efficient fishing? i.e., reduced fishing hours

• Reduction in fishing costs though transferable quotas which could result in exploiting efficiencies of scale as a result of the non-competitive nature of the fishery with defined catch.	• Harvesters

iii. Safer vessel operation?

• Increased security through a fixed percentage of the TAC assigned to each license.	• Harvesters view;
• Improved safety at sea as the necessity to fish or travel in marginal weather conditions is reduced.	• Harvesters view;

iv. Increased revenue from high catches or better prices?

• Increased harvest through “small bite” fisheries when TAC is too small to permit a traditional style fishery.	• DFO Managers; harvesters –
• Increased fishing revenue through a paced fishery that increases the ability to better market and handle product.	• Harvesters; packers

v. Combination of above changes lead to higher rate of profit?

vi. Better distribution of fishing effort (i.e., fewer active fishers who bought additional quota)?

vii. Other?

• Change the competition among fishers from harvest quantity to a greater emphasis on quality and efforts to obtain the greatest return with a known quota.	• Harvesters; Area Harvest Committee;
• Allow for more careful handling and reduced impacts on by-catch species that require release after capture.	• Harvesters; DFO managers

3. ***Interview targets: opinion of DFO managers; sample of salmon harvesters; First Nations reps, processors, service providers as appropriate***
    a. How did the demonstration project affect:
        i. employment on harvesting vessels – number of crew
        ii. participation of fish harvesters (e.g. licence holders and crews),
        iii. First Nations,
        iv. shore workers,
        v. processing or fish handling workers,
        vi. service providers,
        vii. other participants?

4. ***Interview targets: opinion of DFO managers; sample of harvesters***
    a. Do you think the project improved the ability of harvesters to work cooperatively to harvest available surpluses?
        i. Specifically discuss quota sales and purchase
        ii. Evidence of more harmonious industry relations?
        iii. Impact on DFO and its Managers: e.g.,
            1. reduced DFO staff hours to administer ITQ versus derby style fishery;
            2. reduced financial cost of ITQ versus derby style fishery
        iv. Anything else?

    b. Did the project enable and/or encourage harvesters to take on greater responsibility for control and monitoring of their fishery?
        i. Increased participation in meetings?
        ii. In-season changes to management plans reached cooperatively?
        iii. Anything else?

• Demonstration of the benefits of the organization of fishers in representative fisheries associations such as the Gulf Trollers Association through the successful implementation of projects such as this.	• Did this happen? Ask -GTA, -Fishing Vessel Owners' Association (FVOA) and - Area B, Selective Seine Fishery Joint Venture Society of BC
• Further solidification of the co-management relationship with DFO and the licence holders working collaboratively to ensure an orderly harvest of available TAC and to develop a management system that meets the goals and objectives of both.	• DFO Managers; Area Harvest Committees; Gulf Trollers Association
• Encourage increased responsibility and accountability for management of the fishery as impacts are individually vessel based. This system would hold licence holders accountable to their TAC and thus alleviate conservation and allocation concerns. With greater control on catch, the fleet can be managed more effectively within conservation limits and allocation targets.	• DFO Managers view; do harvesters feel this was achieved?

5. ***Interview target: DFO managers***
    a. To what extent did the demonstration project provide a potential mechanism for the transfer of salmon shares to more terminal fishing areas, including to First Nations in inland areas?
    b. Can you give a specific example of how such a mechanism worked, or would work?

6. ***Interview target: DFO managers***
    a. From your perspective, what were the main challenges encountered implementing the 2008 demonstration projects?
    b. Can you identify any key "lessons learned" during the 2008 project(s)?

7. ***Interview target: DFO managers (ask managers to suggest other contacts), Skeena Fisheries Commission, other First Nations***
    a. Did the demonstration fishery project have any unforeseen impacts on First Nations food, social, ceremonial (FSC) and recreational fisheries, or other commercial fleets?

8. ***Interview targets: DFO managers; commercial salmon fishers, service providers***
    a. What advice would you offer to guide future demonstration projects or the implementation of share-based fisheries on a more permanent basis?

APPENDIX C – DIRECT AND ATTRIBUTED SOCKEYE CATCH

The catch data reported in Table 3 refer to fish directly caught by the seine fleet in the demonstration fishery. DFO also attributes additional sockeye catch to the seine fleet based catches made in the Skeena River fishery associated with licenses transferred inland from the DFP license inventory or through commercial transactions. The situation on a weekly basis is as follows.

Week 1 - July 22 – 27 (6 days)

The per vessel quota was 900 sockeye and 1,800 pinks at the end of the week, for 107 vessels, for a total of 96,300 sockeye and 192,600 pinks salmon allocated. In the Area A seine fishery, the direct catch was 91,284 sockeye and 18,036 pink.

Of the sockeye quota, 4,500 pieces (5 seine licences) was set aside for the demo fishery, and 656 sockeye were transferred from commercial quota to the inland fishery. The catch assigned to seines for this allocation was 3,784. Therefore, the attributed total seine sockeye catch for this week was 95,068 (91,284 + 3,784) sockeye.

Week 2 - July 29 – Aug 3 (6 days)

The per vessel quota was 900 sockeye and 900 pink for 107 vessels, for a total of 96,300 sockeye and 96,300 pink salmon allocated. The direct catch in the Area A seine fishery was 76,349 sockeye and 42,239 Pink.

As in week 1, there was 4,500 pieces (5 seine licences) of this quota set-aside for the demonstration fishery and 4,250 sockeye transferred from commercial quota to the inland fishery. The DFO catch assigned to seines was 8,666. So, the attributed total seine sockeye catch for this week was 85,015 (76,349 + 8,666) sockeye.

Week 3 - Aug 5 – 6 (2 days)

The per vessel quota was 500 sockeye for 107 vessels, for a total of 53,500 sockeye. A total of 53,500 pinks were allocated. The direct catch was 28,305 sockeye and 31,492 pinks by Area A seines.

As in the previous weeks, there was 2,500 sockeye (5 seine licences) set aside for the inland fishery plus 4,849 transferred from commercial quota to the inland fishery. The catch assigned to seines from the inland fishery was 4,406 sockeye. So, the attributed total seine catch for this week was 28,305 + 4406 = 32,711 sockeye.

Summary

For 2008, the total quota allocation was 246,100 sockeye. The Area A direct seine catch was 195,938. DFO set aside 5 seine licences set aside for the inland demonstration fishery with a total allocation of 11,500. Total commercial quota transferred to the inland fishery was 9,755 sockeye. So, the inland fishery could have caught 21,255 sockeye from seines. The actual catch that was assigned to seines was 16,856. Note that the inland fishery also caught sockeye gill net transfers. The catch in the inland fishery was assigned to seines and gill nets for purposes of the overall allocative split between these two gear types.