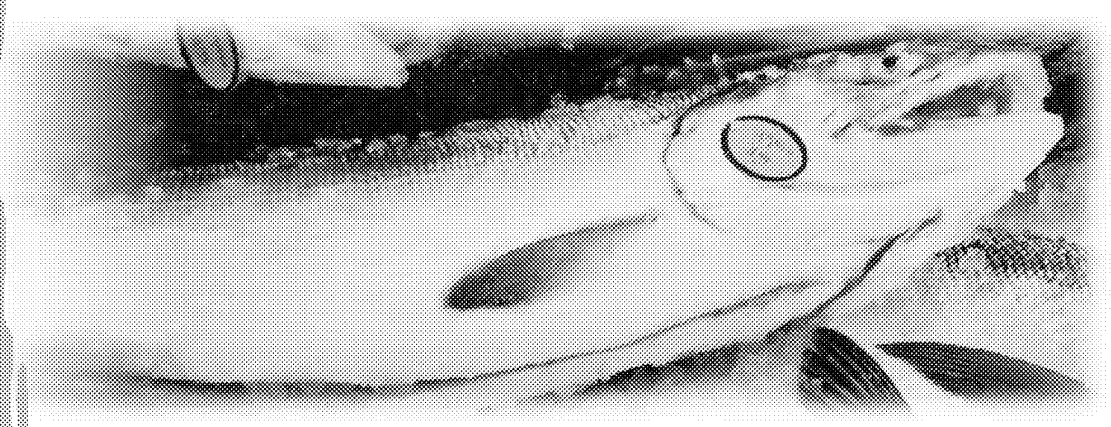

2003 Area H
IQ Demonstration Fishery:
Project Summary and Evaluation

November 2003

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2003 AREA H IQ DEMONSTRATION FISHERY:

PROJECT SUMMARY AND

EVALUATION

Prepared for:

Gulf Troller's Association – Area H
5031 Willis Way
Courtney, BC
V9J 1L7

Prepared by:

Jody Riley
Shawn Stebbins
Archipelago Marine Research Ltd.
525 Head Street
Victoria, BC Canada V9A 5S1
www.archipelago.ca

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Management of Canada's Pacific Salmon fisheries has undergone considerable change in the last decade as a result of new policy frameworks and associated decision-making guidelines. The primary management objective has been identified as conservation of the resource, with sustainable use and improved decision making being two additional key interests (DFO 1998a). Faced with concerns over fleet viability, the Gulf Troller's (Area H) Association approached the Department of Fisheries with a proposal to explore a new management approach for their fishery, the individual quota (IQ) system. They suggested that the IQ system would address the both the Department and fishers' interests. As a result, a pilot study took place during 2002 that was expanded in 2003. The evaluation framework, which outlined the conditions for this study, has been used as the basis for its review. Significant findings include:

- Participants demonstrated the ability to harvest their catch within the allocation provided to them, landing 74.1% of their allocation. Harvested catch was monitored during 100% of the landings, with the remaining TAC updated on a timely basis in the form of a Quota Status Report. Landing data was combined with activity data to provide a more accurate snapshot of Quota fishery activity. Managers were confident with the integrity of the data provided, and as a result, the way the TAC was managed.

- The ability to validate offloads at sea was explored using both Observers and Electronic Monitoring (EM) equipment. The use of Observers is recommended as the most timely and verifiable data source for offload validations.

- Although EM is not appropriate for salmonid species identification, the potential of EM use for At Sea monitoring should continue to be explored and the technology developed.

- Increased reporting by the fishers and the monitoring service provider provided greater confidence in the catch and rate of harvest therefore allowing the Department to provide the quota fleet increased flexibility to harvest their catch.

- The certainty of the Quota fishery allowed the Association to coordinate their deliveries with primarily one buyer in advance of the opening. This was expected to lead to higher prices being received for their product.

- The IQ fishery generated product self-promotion, leading to the development of a branding initiative unique to the Area H fleet in Canada's Pacific Salmon fishery. Individual fish were tagged and traceable to the vessel of origin, promoting individual accountability with each fisher. This is expected to lead to higher prices being received for their product in the future.

Part One of this report provides a brief background on the Pacific Salmon fisheries in British Columbia, including a brief management history and current management objectives. This is followed by the motivation for recommending the IQ approach for management of the Salmon Troll Fishery. Part Two provides a Project Overview, with a summary of both year one and year two of the Area H IQ Demonstration Fishery. Part Three presents the results from the project

and reviews some of the management considerations that are necessary for IQ management to be fully integrated, drawing upon both the data collected in the demonstration fishery, and the experiences of those involved. This leads to a discussion of some of the administrative aspects for fishery management. Finally, in Part Four, future policy development is examined with recommendations for the salmon troll fishery, and Area H management and monitoring specifically.

1.0 INTRODUCTION

1.1 BACKGROUND – B.C. SALMON FISHERIES

During the 1990's, the Pacific salmon fisheries were being managed from crisis to crisis (DFO 1998a), a result of declining stocks, excess fishing effort, and poor returns (Grafton and Nelson 1997). Managers were faced with balancing the management needs of five species of salmonids, multi-country jurisdiction of the same resource, multi-sector competition of three user groups (commercial, recreational and native), and a further multi-gear competition within the commercial sector. These management problems were exacerbated by the decreasing market value of salmon. Since then, a series of discussion papers have established a new policy framework which includes decision making guidelines for DFO management (DFO 1998a, 1998b, 1999a, 1999b, 2000, 2001, 2002a, 2002b). This framework has built upon the jurisdictional setting established in the *Pacific Salmon Treaty* of 1985, industry restructuring and fleet reduction resulting from the *Pacific Salmon Revitalization Strategy* (a.k.a. the "Mifflin Plan", DFO 1996), and the gear allocation guidelines established for the commercial fleet in 1998. The result of these changes has been a fundamental shift in management policies for Canada's Pacific salmon fisheries.

The primary objective in the management of the Pacific Salmon fishery has been identified as conservation of the resource, in particular stocks which are considered at risk. The ability to conserve is based upon the Department's need to accurately estimate the timing, run size and migration routes of the salmon, in order to allow sufficient fish to escape and spawn. Sustainable use and improved decision making are two additional key interests that have been identified by Fisheries and Ocean Canada (DFO).

1.2 WHY IQ FOR THE SALMON TROLL FISHERY

Management difficulties are recognized with the salmon fishery, regardless of the management approach used (Sprout 1997). Complexities associated with resource management include biology, behaviour, habitat sensitivity, uncertainty surrounding climate change, diversity of access to the resource, and diverse societal objectives for the resource (DFO 2003). The current management framework addresses conservation, fleet reduction, jurisdictional allocation, sectoral allocation (commercial, recreational and aboriginal), gear allocation (troll, gillnet, seine) and licence restriction. Now, Area H is ready to re-examine this framework and pursue some of the details inherent to such a multi-faceted management program. A review of the 2002 Fraser River Sockeye Fishery (DFO 2003a) pointed out that meeting all of the objectives simultaneously would be difficult, and as such, greater clarity around management policy and management objectives must be provided, met and supported by strong management planning within Fisheries and Oceans Canada.

In fisheries worldwide, IQ's have proven to be a successful approach to addressing some of the concerns described above. The success of IQs has been attributed to the fact that they shift the focus from regulating the amount of fishing effort, to a system that provides fishers with the rights to access a quantity of fish *before* they are caught. The current management approach,

referred to here as the derby approach, does not allow for ownership of the fish until they are harvested. By providing a *sense* of ownership to an otherwise public resource, the fisher is given the incentive to conserve (Jones and Walker, 1997). In addition, the shifting of access rights can lead to a shifting of costs, as fishers assume greater responsibility for their new rights, effectively increasing individual responsibility, and reducing the need for government subsidies. In essence, IQs will allow the introduction of a direct control to the management framework for harvesting of Pacific Salmon, complementing the indirect controls used both historically and presently.

The idea of Individual Quota management within salmon fisheries has been promoted for more than a decade both locally (Jones and Walker, 1997) and internationally (Mickwitz and Pruuki, 1993). In order for an IQ system to be accepted, it must meet the Department's objectives of conservation and economic viability better than the present system of management (Sprout 1997). Because this management approach should provide fishers with a stake in the fishery, they consequently have the motivation to provide managers with good quality information about the fishery, particularly where conservation is concerned. The incentive to conserve is related to the long term return from the value of the individual quota, much like a savings account.

This project was developed to investigate the merits of Individual Quota management for the salmon troll fishery, and to evaluate this approach within the context of DFO's management objectives. It is an industry-driven initiative, the beginning of which was described by Jones in 1997.

2.0 PROJECT OVERVIEW

2.1 YEAR ONE: 2002 IQ DEMONSTRATION FISHERY

A small scale demonstration Individual Quota (IQ) fishery for the Area H Troll fishery was conducted during the 2002 fishing season. The Area H IQ Demonstration Fishery was developed and implemented by participants of the Area H Gulf Troller's Association with support and direction from the Department of Fisheries and Oceans. Departmental support and participation was subject to the development of an approved evaluation framework (Appendix I) which outlined both the conditions and features for an IQ Demonstration Fishery. From this framework a fishing plan was established and monitoring components designed.

The evaluation framework (Fraser 2002) established a basis for evaluation of the individual quota management approach as a tool for managing the troll fishery. Results generated from the project were to be compared to the regular competitive fishery in order to identify both the advantages and disadvantages of IQ management as they pertain to the salmon troll fishery. Specifically, the following parameters were to be explored:

- Biological Management
- Economic Efficiency or the Financial Viability of Harvesting
- Employment and Safety
- Administration and Enforcement

A key component of the project was the inclusion of independent monitoring of catch and landings. The data required for evaluation of the project was collected by an independent third party to ensure data credibility and reliability. The data collected was meant to address current conservation concerns in the commercial fishery as well as verifying individual quota tracking and evaluation of the IQ management approach.

One of the goals of introducing individual quota management to the troll fishery was to provide vessels with the flexibility to harvest the available catch over the full range of a migration period. Vessels would each be assigned a catch level, the Individual Vessel Quota or IVQ. Conservative quota limits would be determined by DFO and would be based on the number of Area H licences. These IQ's would be adjusted to in-season run sizes. As the season progressed and if run size estimates increased, additional quota would be made available to each participant. In order to avoid the likelihood of over-harvesting, very conservative initial quotas were established to reflect the high level of uncertainty about run size. Specifically, initial quotas were established at 75% of the TAC available based on Fraser sockeye run size prediction. The overall intent was to minimize the chance that fishing at initial quota levels would lead to over-exploitation of the resource even with very poor sockeye returns (Fraser 2003). As the season progressed, quotas were to be adjusted to reflect the actual run size on the basis of in-season estimates. Changes in the IVQ would be communicated from DFO to participants in a timely manner in order to promote optimal harvesting opportunities. Once a vessel reached their catch ceiling, they would be required to cease fishing, but could resume if their IVQ was subsequently increased.

The implementation of this fishing plan was never fully recognized, as the demonstration vessels were unable to secure sufficient fishing time outside of the regular troll openings. The lack of a formal advisory process in the development of the IQ project resulted in communication problems and subsequently confusion of the issues surrounding the fishery (Sporer 2002). As a result, an insufficient amount of data was collected to facilitate the analyses required to evaluate the demonstration fishery. This led to the termination of the IQ project sooner than anticipated. However, a post season evaluation of this pilot study did point to two key challenges facing fisheries management: first, that the nature of the salmon resource makes it difficult to manage regardless of the technique used to do so, and second, that an effective advisory process did not exist, and as such, did not allow for the successful implementation of an IQ pilot study. Essentially, there was no proof that IQ management would not work for a salmon troll fishery, and that the management results of this and previous fishery years supported the view that the current management system is not working (Sporer 2002).

As a sub-project of the demonstration fishery, alternative methods for catch monitoring in the salmon fishery were explored to address the Department's catch monitoring objectives for all Pacific fisheries (DFO 2002b). This included daily reporting by the vessels, at sea electronic monitoring systems, and dockside monitoring of all landings. In particular, electronic monitoring was pursued as a potentially lower-cost, less-intrusive means of collecting at sea information (Riley and Stebbins, 2002).

2.2 YEAR TWO: 2003 IQ DEMONSTRATION FISHERY

Following the completion of the 2002 fishery, and the subsequent recognition that insufficient data was collected to adequately evaluate the IQ fishery, Area H lobbied for a continuation of the study on a larger scale during the 2003 Fraser River Sockeye fishery. Approval for the study was granted by the Department in May 2003, with the 2002 evaluation framework reinstated as the basis for evaluation of the fishery. During project planning, the parameters of biological management, as well as enforcement and administration were chosen as the focus for the second phase of the study. Participants would be asked to provide their opinions through a questionnaire on both these issues and issues surrounding economics and safety; however a full analysis of these latter parameters was deemed to be the subject for a future evaluation.

For the second phase of the study, the IQ Demonstration was expanded to 25 volunteer vessels. Again, the goal was to provide vessels with the flexibility to harvest the available catch over the full range of the migration period within the boundaries of Area H. Vessels would each be assigned an Individual Vessel Quota. Quota limits would be determined by DFO, and again, they would be based on the total number of licenced vessels in the Area H fishery, not just the active licences (*i.e.* Area H allocation / total Area H licences). The remaining licences, whether active or not, were considered part of the derby fleet. Although no individual derby vessel had a quota limit, the derby fleet was fishing towards the balance of the Area H allocation. As in 2002, the initial IVQ allocation was calculated based on 75% of the TAC available based on the Fraser sockeye run size prediction (Fraser 2003). This would increase to 100% when conservation concerns were accounted for and additional harvest would not interfere with these concerns. In addition, these IVQs were subject to in-season run size estimates. The Department invoked an

additional conservation buffer in that the total quota allocated to the IQ fleet was considered as caught prior to the start of the fishery. This approach was meant to improve the decision making by managers by allowing them to focus on other harvesting sectors, and hopefully, increase the flexibility of harvest time for the fishers.

Area H once again elected to further explore monitoring methods that would address the nature of the Strait of Georgia fisheries. Of key interest was the ability to perform offload validations on a packer at sea, as independent validations are a critical component to any IQ fishery. Both an At Sea monitor and an Electronic Monitoring system were deployed to a packer vessel to collect data that would fulfill this requirement.

2.2.1 PROJECT PARTICIPANTS

The Area H IQ Demonstration Fishery was developed and implemented by participants of the Area H Gulf Troller's Association with support and direction from the Department of Fisheries and Oceans. Archipelago Marine Research Ltd. (Archipelago) was contracted to provide the required monitoring services and produce a final report summarizing the project. North Delta Seafoods was contracted to provide packer services. A description of each, as well as their role is provided in the following sections.

Participants of the Area H Gulf Troller's Association

The IQ Demonstration fishery was conducted by 25 volunteer Area H Troll vessels. Mr. Rick Nordstrom, skipper of the F/V Nonsuch II, and the Association's President, assumed the duties of Project Coordinator for Area H. His role was to act as a liaison between the participants, the Department, Archipelago and North Delta Seafoods. He participated in planning meetings, directed monitoring events and took responsibility for the data collection requirements established by the DFO in the evaluation framework.

The ten vessels that participated in 2002 were automatically selected. The remaining 15 vessels were selected from the 39 applicants which responded to an invitation to participate that was posted on the Association's website and in their newsletter. Those vessels meeting the Association's criteria were included in a lottery draw to select the participants. Mr. Ken Erikson (Area H) and Mr. Gord McEachen (DFO) supervised the draw in DFO's Campbell River office. The selected vessels and associated skippers are listed in Appendix III (Table 1).

As part of the 2003 study, Mr. Wes Erikson, the Association's Environment Chair, set up a marketing initiative program to identify the Area H catch as top quality "Wild Salmon". Mr. Erikson researched and designed a product tag which vessels would attach to individual salmon, identifying them as the best that BC has to offer, with each tag individually numbered so that each salmon is traceable to the boat of origin (GTA 2003).

Dale Erikson, an Association member and 2002 participant coordinated the Packer selection process. This included contacting buyers and conveying the Association's IQ initiative in order to solicit their interest in participation. Following packer selection, Mr. Erikson coordinated with the selected buyer and the monitoring company to design an at-sea validation system for the packer.

Department of Fisheries and Oceans

Mr. Gordon Curry, the Project Manager, provided guidance to those participating in the IQ Demonstration fishery. His role included participation in planning meetings, presentation of the program concept to other members of the Department, and clarification of IVQ guiding principles with industry. Mr. Curry's role included approval of the vessel selection process, establishing the Department's data needs (including communicating these to the monitoring service provider), finalizing fishing plans and providing the Scientific Licence (Appendix II).

While the fishery was active, Mr. Curry worked with Industry's Project Coordinator to communicate migration conditions, run sizes, stock concerns and fishing opportunities. When possible, changes to the quota allocations were relayed during these communications. He also ensured that the Department's data concerns were relayed to the participants, ensuring all requirements were met.

Mr. Sandy Fraser developed the evaluation framework in 2002 that was also used in 2003. He has continued to provide advice to the project participants while keeping other members of the Department updated on the progress of this study.

Archipelago Marine Research Ltd.

The program planning process undertaken by Area H included selection of a monitoring service provider. Archipelago Marine Research Ltd. (Archipelago) was contracted by the Association to provide both at sea and dockside monitoring for the demonstration fishery. Both monitoring requirements were to be attained through a combination of Observers and Electronic Monitoring units.

Prior to the fishery, Archipelago's role was to provide both leadership and technical advice in the set up and organization of monitoring services. Archipelago provided a Project Manager, Jody Riley, to coordinate monitoring requirements and ensure timely communication of in-season Quota Status updates. Ms. Riley participated in planning meetings, liased with industry and provided logistical coordination of both dockside and at sea observers. Archipelago also helped to identify fishery data capture approaches needed to acquire the information to support the evaluation plan. During the fishery, one Observer and four Electronic Monitoring systems were deployed aboard Trollers. One Observer and an Electronic Monitoring System were assigned to the fish packer. Finally,

dockside Observers were made available at a number of offload locations on Vancouver Island and the lower Mainland.

In addition to the monitoring requirements, Archipelago was requested to design and implement a project questionnaire to be provided to the participants for project evaluation. Archipelago was also tasked with production of the project summary and evaluation report.

North Delta Seafoods

Mr. Chris Wick of North Delta Seafoods was contracted by the Association to provide a packer for delivery of ice-stored fish during the demonstration fishery. Mr. Wick coordinated with the Association and Archipelago to ensure that monitoring needs would be met aboard his vessel, including hosting both an Electronic Monitoring System and an At-Sea Observer for the duration that the vessel would be operating on the fishing grounds.

3.0 RESULTS AND DISCUSSION

Departmental support of the 2002 pilot project was subject to the development of an approved evaluation framework (Appendix I) which outlined both the conditions and features for an IQ Demonstration Fishery. This framework was carried over to the 2003 project, again guiding details of the fishing plan. The 2003 project focused on two of the four guiding parameters: Biological Management, and Administration and Enforcement (refer to Section 2.0).

3.1 BIOLOGICAL MANAGEMENT

With conservation identified as the Department's primary objective in their new direction towards managing the Pacific Salmon fisheries (DFO 1998a), biological management of the resource is key. With this in mind, management must determine both the total allowable catch (TAC) as well as allocation and control of the catch. Within each allocation, harvesting of the total catch will be determined not only by the management approach (derby vs. IQ) but designs within the approach to address not just landed catch, but total removals from the fishery.

3.1.1 TAC MANAGEMENT

When the Area H fishery commenced on July 30th, Quota vessels were provided with an initial allocation of 971 pieces of sockeye per vessel or a project TAC of 24,275 pieces (Appendix III, Table 2). This figure corresponded to 75% of the allowable harvest established for Area H and allowed the Department to be risk adverse in the management approach at the beginning of the fishery. Following the initial derby opening on July 31st, with quota vessels yet to obtain the project TAC, the allocations were increased to 1291 pieces of sockeye per vessel. This corresponded to 100% of the harvestable run size estimates and equated to a project TAC of 32,275 pieces. The decision to move to 100% of the allowable harvest was made as the derby vessels were already trying to fish for 100% of their share. By allowing the quota vessels the same opportunity, this ensured that the Department was not creating a harvesting disadvantage. Finally, on August 8th, allocations were increased to reflect a run size upgrade, with each vessel given 1354 pieces, or a project TAC of 33,850 pieces. Although the Department could assume that this fish was caught at the start of the fishery and manage from this perspective, the actual catch was factored into the management process. The timeliness, reliability and relatively steady pace of the catch and information aided in keeping the fishery open as long as possible, to target on the abundant stocks within a narrow timing window (Curry 2003).

One of the primary issues outlined in the evaluation framework is the ability to control landings in relation to allowable harvests. Although TAC setting is not directly linked to how managers let fishers exploit their catch (IQ vs. derby), two issues exist: the need to stay within the TAC, and the need to receive reliable and credible information regarding the catch in order to facilitate this process. The Area H Quota vessels successfully stayed below the established project TAC at all times, harvesting only 74.1% of their allocation. Of the 25 participants, catch ranged from 135 to 1376 sockeye, with only two of the participants

exceeding their individual quotas. The two who exceeded their quota did so by very modest numbers (1 and 22 fish respectively), with another two participants harvesting their exact quota. Furthermore, of the 25 participants, 10 were within 10% of their IVQ.

Morgan (1997) points out that regardless of the allocation process chosen, fisheries management agencies employ a considerable amount of time determining the allocation, the process which becomes more focussed in an IQ system as the TAC is more easily conceptualised. Post-season review of the Area H IQ fishery indicated that the pace of the fishery and knowing the catch ceiling moved the focus towards the other fleets ability to harvest and potentially surpass their TAC allocation. The possibility of one or more fleets harvesting beyond their allocation places the Area H IQ and derby fleet at risk of a premature closure. The troll fleet has a relatively slow pace of harvest compared to gillnet or seine fisheries and therefore require sufficient time to reach their allocation. Current Fraser sockeye management has resulted in a narrow window for all commercial fleets to catch their allocation of target stocks. These target stocks are sandwiched between early and late stocks that can only sustain very limited incidental catch, therefore a troll fleet can often have insufficient fishing time to harvest their share. Other species available to Area H may be significantly more conducive to increasing the time available to fish where a manager is confident that there is a catch ceiling and it will not be exceeded (Curry 2003). By increasing the amount of time that participants are allowed to fish, Area H would have greater access to the fish made available to them, and could then move towards catching 100% of their allocation.

3.1.2 CATCH MONITORING

The following sections describe the reporting processes undertaken to document landings, followed by the results generated from this reporting process.

In-season Reporting

The IQ project participants were required to make two types of reports: catch (to DFO) and activity reports (to Archipelago). In order to make their catch reports participants were required to use the salmon fishery call center where operators directly enter daily catch reports from fishers to a DFO database system (the Fishery Operations System or FOS). Data is essentially captured "live" as it is received, and is therefore available for immediate review by management personnel. Fishers are provided with a toll free phone number and, as a condition of licence, it is their responsibility to make daily reports of their catch information to the call center. This is the same reporting process used in the regular fishery.

Some problems encountered with the catch reports submitted to the salmon call center included timeliness of data entry, and the associated perception of non-compliance, as well as data entry errors. These issues can be summarized as:

- **Computing Issues:** Delayed reporting due to software issues, internet connection to the FOS, "freezing" entry screens, unrecognized callers in the database, and computer crashes. These problems resulted in traditional collection of the data using pen and paper, and consequently delayed data entry to the FOS system. In these situations, vessels had made their reports, been issued a confirmation of their report, but were perceived to have missed a call by DFO's Project Manager.

  To address this, the paper records associated with the IQ fishery were reviewed daily, with the information provided directly to DFO's Project Manager by the Project Manager at Archipelago as part of the Quota Status Reports discussed in the following section. This allowed for the Department to receive catch information on a timelier basis than would have been provided using the FOS alone.

- **Zero Catch Issues:** With the IQ system, vessels had increased flexibility with their harvesting times, and could therefore elect not to fish on a daily basis. Daily "breaks" from fishing were not captured in the FOS system as vessels were not required to phone in this type of information. In other words, the daily catch reports did not indicate zero effort and zero catch. In these situations, vessels were perceived by DFO to be fishing and were assumed to be non-compliant as no catch report was made.

  To address this, Archipelago's Project Manager, who was aware of non-fishing days, kept regular communication with the Association's Program Manager, reporting vessel activity as part of the Quota Status Reports discussed in the following section. In the future, this could be addressed by including a non-fishing report in the FOS.

- **Communication Issues:** Skippers encountered difficulties in reaching the call center as well as cost constraints. Poor phone connections from remote locations resulted in participants having to travel to another area in order to call in. This often resulted in delayed reporting where a vessel would phone in multiple days of activity after every few days of fishing.

- **Bycatch Data Issues:** A review of the data indicates that some data entry problems occurred with the bycatch species, each of which has to be independently entered into the FOS. For example, catch reports by the Area H fleet indicate catch of such unlikely species as the Pygmy Shark and Arctic Cisco. These types of problems could have significant impact when reviewing catch rates for Species of Concern such as Inshore Rockfish.

Participants were also asked to make activity reports to Archipelago to indicate their entry and exit from the fishery. Skippers were requested to make two types of activity hails: a "hail out" to indicate that their vessel was heading out to commence fishing, and a "hail in" to indicate that their vessel was finished fishing. This process also facilitated scheduling of offload validations of catch.

A post-season review of the call rates by each sector of the fishery using the FOS data (Appendix III, Table 3a) indicates that the quota fishers had a slightly higher level of compliance (92.4%) than the derby fishers (89.8%) over the course of the fishery. Quota fisher compliance once non-fishing days were taken into account improved to 94.7% of the expected number of calls (Appendix III, Table 3b).

A second key aspect of the calls, is the catch data provided. Call center data was reviewed for catch statistics (Appendix III, Table 4) and did indicate different catch rates between the quota and derby fisheries. These are discussed in further detail in the following section.

Offload Validation and Quota Status Reports (QSRs)

To ensure the Department's need for timely and accurate data was addressed, Offload Validation was required for 100% of the quota landings. Validators relayed the landing data to Archipelago within 24-hours, and from this the Project Manager produced daily Quota Status Reports (QSRs) of vessel landings (Appendix III, Figure 1). The QSRs presented the total IQ holdings available to each vessel, date that landings occurred, the amount of quota delivered each landing, and total amount of quota remaining per vessel. To address some of the timeliness issues observed with the FOS call reports, the QSRs were immediately expanded to include a second report based on the activity reports (hails). This presented the total IQ holdings available to each vessel, FOS call information by date, and the amount of quota remaining based on the vessel's hailed catch. It also indicated those vessels which were not fishing (and therefore no FOS call report would be expected), and those vessels which had hailed but their data was not yet available in the FOS.

Both parts of this Quota Report were delivered to the Department each morning for the entire duration of the fishery. The intent was to provide the most complete set of data available for daily management decisions.

Post-season review indicates that the QSR process was considered extremely successful as it addressed the risk-adverse management surrounding the Late-run sockeye species. Once the fishery began, this information aided in keeping the fishery continuously open, effectively benefiting both the IQ Demonstration and the Derby fishery (Curry 2003). The daily submission of these reports addressed the Department's concerns regarding timeliness; use of an independent party to produce the reports addressed concerns regarding both the reliability and credibility of the data received; and the process itself addressed the need to control landings within the Area H Quota allocation.

Success of the QSR process was a direct result of the offload validations that took place both At Sea and dockside (Appendix III, Table 5). A total of 83 offloads were monitored during the 15 day fishery, aboard two different packers, at six different offload ports, as well as onboard one of the trollers directly. The result of this was daily, verified updates of actual landings, which directly addressed the Department's requirements for timely,

reliable and accurate information on harvest. The administration and enforcement aspects of the validation process are discussed further in Section 3.2.

At Sea Monitoring

To address the assessment of total removals in the fishery, At Sea Monitoring was employed. Although there is currently no effective way to compare selective fishing practices between the quota and derby fisheries, we have reviewed those practices undertaken by the quota fishery. Bycatch handling practices were monitored and reviewed using Electronic Monitoring equipment. Of the 55 fishing days which were monitored using EM equipment, 18.5 days, or 33.6%, of the associated CCTV imagery were reviewed. The remaining video was not viewed due to cost constraints.

Increased survival rates are associated with best handling practices, which requires troll vessels to gently release all bycatch at the waterline. Two key components were assessed: whether the fish was released at the waterline and whether or not a gaff was used to aid in removing the hook from the fish (Appendix III, Table 7). During 2003, for all species, the majority of fish were released above the waterline, a technique not generally associated with best handling practices. This differs from the 2002 project results, where greater care was given to the release of salmonids encountered. The change this year can largely be attributed to the large bycatch encounter rates of pink salmon, an associated market glut, and therefore decreased market value. The hired packer refused to accept pinks, which consequently resulted in the release of an otherwise retainable species. This market-driven behaviour essentially degraded the handling techniques, a result that may not be seen in a full IQ fishery where the fishers can choose their buyers and/or work with alternate buyers interested in other species.

To complement the information collected by the EM systems, the salmon call center data was also examined. The bycatch species encountered were documented by fishers as part of their daily catch reports. A review of the call data (Appendix III, Table 4) indicates different catch rates between the quota and derby fleets. In order to account for differences in fleet size as well as differences in call compliance, catch rates for those calls that were made, were standardized to the sockeye catch. Results indicate that the only notable difference between the quota and derby fleets were coho and rockfish encounters in Area 12. The Quota fleet encountered less coho (1.1 vs. 2.0 per 100 sockeye) and more rockfish (2.3 vs. 1.1 per 100 sockeye). There are a few reasons why this difference may exist including the reporting process itself (*i.e.* mis-reporting by either fleet) and differences in the sub-areas fished by each fleet. Another possibility is that the avoidance of the salmonid species of concern (coho) by the quota fleet may have resulted in encounters of other bycatch species.

3.1.3 PARTICIPANT PERCEPTION

Participants were asked to provide their opinions on issues surrounding the IQ fishery via a questionnaire completed following the end of the fishery (Appendix III). Twenty of the 25 participants responded. With regards to biological management, fishers were asked to address bycatch levels, conservation benefits and improved decision making. For the first, only 65% of the vessels felt that they were able to reduce their bycatch during the pilot fishery. Those vessels unable to address bycatch reduction expressed concern over the levels of pink salmon encountered this season and an inability to harvest them for the purpose of selling them. When questioned regarding conservation, 95% of the respondents felt that IQs could bring conservation benefits and, similarly, 93% identified conservation and sustainability of the resource as an important management goal under the IQ approach. Furthermore, 93% felt that improved decision making ability for the Department would likely result.

3.2 ADMINISTRATION AND ENFORCEMENT

Due to the biological nature of Pacific Salmon, opportunities to harvest are time-limited based on the relatively short duration of the run-size and the relative mixing of target and non-target stocks. The salmon fishery is also faced with uncertainties regarding escapement and in-migration mortalities. Because the appropriate allowable harvest remains unknown until the end of the season this results in the in-season estimates of allowable catch being reviewed frequently over the course of the run. This, combined with the need for more timely and accurate data, result in the need for daily catch reporting. With reporting, comes the associated administration and enforcement needs and costs.

3.2.1 FISHERY MONITORING

One method of acquiring timely, reliable and accurate catch data is via independent fishery monitoring. With the release of the *Pacific Region Fishery Monitoring and Reporting Framework* (DFO 2002b), the requirement for fisheries to include monitoring has been clearly established. In addition, each sector, regardless of the management approach taken will eventually be required to bear the costs associated with monitoring. As such, the monitoring costs associated with implementing an IQ fishery will be difficult to differentiate from those associated with the derby fishery. This is particularly valid as the costs associated with monitoring the quota fishery were borne by the Area H Association, whereas the costs associated with monitoring the derby fishery were borne by the Department.

With the monitoring framework in mind, the demonstration fishery explored some alternative monitoring methods aimed at addressing both the Department's requirements, and participant concerns regarding cost, convenience and privacy. This included the assessment of validation at sea, and the continued exploration of Electronic Monitoring Systems as a cost-reduced alternative to on-board Observers. In addition, participants in the project, as well as other Area H derby members, began collection of salmonid biological samples under the

direction of Mr. Lee Kearey at the DFO. Observers have traditionally collected these samples. The use of vessel skippers to collect samples addresses industry concerns about carrying Observers and the associated costs of doing so, as well as helps to meet DFO objectives of obtaining these samples.

Observations from the demonstration fishery are as follows:

Landing Validations (At Sea and Dockside)

- Validations of landings to packers at sea were explored using both an on-board Observer and an Electronic Monitoring System. Validation using an Observer was considered highly successful with 100% of the 57 packer deliveries monitored. Skippers and Buyers received real-time and independently verified confirmation of their landings and quota status. In turn, the Department received timely confirmation of landings, with information updated on a daily basis (Quota Status Reports). In addition, the Observer was allowed access to the vessel holds, confirming the landings of all species, and documenting the retention of personal use fish. The reporting process itself also proved to be efficient.

  Validation of landings at sea using Electronic Monitoring equipment was exploratory and based on the desire of the Area H Association to test less costly monitoring options. Issues encountered included the inability to identify all species encountered, not all of the landed catch being passed by the monitoring equipment, and an inability to collect reliable counts. The system was unable to address all of these issues, and as such would require further development and modification. Of main concern was species identification of salmonids, which was recognized as a challenge prior to the study, and confirmed as such during the study. Technological capabilities for species identification are currently not available. As a result, the use of an Observer best meets the needs for timely and accurate reporting.

- Validation on land was also considered successful with 100% of the 25 port landings monitored. Participants were asked to provide 24-hour notification of their intent to offload their fish in order to secure a monitor for each event. Offload requests were accommodated with advanced notice ranging from 15 minutes (due to a freezer breakdown) to 48 hours. Offloads took place in 6 different ports on both Vancouver Island and the lower mainland. The same reporting process used on the packer was employed on the dock, giving skippers and buyers real-time and independently verified confirmation of their landings and quota status. In turn, the Department received timely confirmation of landings, with information updated on a daily basis (Quota Status Reports).

- Piece count information was collected from each offload, as this is the current basis of IQ holdings. Weights were also collected, where possible, in order to address concerns of high grading. This is of particular interest for those species which are highly variable in size, and therefore more likely susceptible to high grading (*i.e.* chinook) than those species of a more uniform size (*i.e.* sockeye).

Weights were not collected for all offloads due to the absence of a scale in some locations. Two main issues arose from this process: offloading techniques and the absence of product conversion factors. In order to further facilitate weight distribution comparisons, conversion factors for salmonids need to be developed in order to standardize the weights obtained between product types (i.e. dressed vs. round, head-on vs. head-off) and product storage (i.e. iced vs. freezer). In addition, greater care must be taken during the offload process to separate the product types for each species encountered. For example, although the Observer was able to note the presence of head-off product at the packer offloads, a separate product weight was generally not obtained.

- With regards to the above, data addressing high grading is difficult to assess. In an IQ system, where the catch ceiling is limited, the incentive exists to select the most valuable (larger or higher quality) fish for retention, using these to reach the catch limits, rather than the less valuable (smaller or poor quality) fish which would then be released. In a derby fishery, with no catch ceiling, the catch value is already maximized with each fish brought aboard, and therefore it is less likely that high grading would occur. However, the ratio of #2 (poor quality) fish could be higher in the derby fishery simply due to handling practices as the derby fishers may not have or may not be given the time to optimize their handling techniques. So, although differences in weight distribution could point to high grading, it may not actually be occurring. Length distributions are a second way of addressing high grading, however this would require extensive sampling and was deemed subject for future evaluation.

At Sea Monitoring

- Monitoring at sea was accomplished via one Observer and four Electronic Monitoring Systems. EM units were deployed with the modifications suggested at the end of the 2002 fishery (Riley and Stebbins, 2002). The Observer was assigned to an EM vessel for calibration of the data collected by the EM unit. Again, species identification of salmonids, recognized as a challenge prior to the study, was still not achieved even with the equipment modifications.

  In order to calibrate the results generated by the EM imagery, a comparison of species utilization between the Observer and EM was undertaken. While at sea, the Observer randomly picked fishing events in which the catch and utilization of each hook was documented with specific reference to hook order. This resulted in the documentation of both catch items and empty hooks in sequential order. The process paralleled the EM video review process, the results of which were then aligned with the Observer's to facilitate a comparison. The alignment process used the Observer's results as the benchmark.

Results identify the documentation of utilization as a strength of the EM systems with 98.5% of the hooks containing catch correctly identified for their catch utility (Appendix III, Table 7).

The EM units also showed considerable ability to assess bycatch handling practices for released fish, a view of which is not afforded to an onboard Observer. Results of this comparison were discussed in Section 3.1.2 (Bycatch handling) above.

3.2.2 ENFORCEMENT

The final hypothesis identified in the evaluation plan states that the quality of the information provided during the IQ fishery, as well as the associated enforcement will improve. As discussed earlier, post-season review indicates that the QSR process was considered extremely successful providing managers with daily updates of both catch and effort.

DFO expects that a move to a quota style fishery would focus enforcement effort on the associated catch monitoring and verification processes as there should be less incentive for harvesters to push the limits of time and area. The accuracy of the catch and landing information would be key to the success of this style of management, therefore the participants would need to function under a belief that the fishery was fair for all participants. With an increased sense of ownership in the resource, it is also expected that the participants would take a greater role in monitoring illegal activity (Curry 2003).

In addition to the above, DFO expects that some enforcement effort will be focused on activities surrounding high-grading of catch. In a situation where the vessels perceive a financial gain through high-grading the quota catch, and this activity is deemed illegal, it would be difficult to prove. In most salmon fisheries the size and quality of catch within a species is relatively consistent therefore high-grading would likely be of low concern. An exception to this would be chinook salmon where there can be significant size differences observed between individuals. Further to this concern is not just the size of fish, but the time available for harvest. For example, the sockeye quota fishery almost always has restrictions on the time available to harvest the target species or stock, thus minimizing the opportunity for high-grading. In contrast, chinook salmon can be available throughout the year, and therefore have increased opportunity for high-grading (Curry 2003).

3.2.3 PARTICIPANT PERCEPTION

Again, participants were asked to provide their opinions via the questionnaire completed following the end of the fishery. Five questions addressing fishery monitoring were posed. With regards to monitoring levels there was no clear consensus on what these should be for either the IQ or derby fishery, whether at sea or dockside. An interesting result though, is that despite the fact that At Sea monitoring requirements have been established for the future, 35% of the respondents still felt that the IQ fishery should not be required to carry an Observer. Despite this, the preferable monitoring type is Electronic Monitoring. In addition,

90% of the participants felt that an Industry Association should manage any program funding associated with these costs.

3.3 FINANCIAL VIABILITY OF HARVESTING

One of the leading incentives for IQ management is the potential for economic gain as a result of access and a perceived ownership of the resource. For Area H participants, this ownership directly equates to licence security and hence viability, the latter being the impetus for the IQ initiative. Supplying fishers with an IQ provides the incentive to increase the quality of their catch, keep their costs low, and hence maximize their economic gain, characterized by the relative profits from fishing. Improved financial viability can result from either increased revenue from fishing or decreased costs of fishing.

In most IQ fisheries, the fish being harvested are relatively static, and as a result, fishers can spread out their fishing opportunities, taking time to develop marketing strategies (Jones and Walker 1997). This can then permit them to optimise the quality of the harvest, resulting in a positive impact on prices and hence, the overall revenues in the fishery. Due to the compressed nature of the salmon fishery, Area H participants responded by developing their marketing strategies prior to the opening of the fishery. A key aspect of this strategy was the selection of a packer buyer to participate as a partner in the IQ initiative, and the subsequent coordination of offload events. Because the IQ fishery allowed the participants to expect a fixed number of fish, it gave them the leverage to enter into a marketing agreement based on that number of fish. This was expected to lead to higher prices being received for their product. These types of agreements can only improve with increased licence security.

A further financial benefit of IQs is that they transfer the burden of risk from government to industry (Kerr *et.al.* 2003) as fishers explore initiatives to increase the value of their products. This risk can also be characterized by the shift from fleet reduction (input control) to quota transferability (output control), which is discussed in the Employment and Safety Section (3.3).

3.3.1 PRODUCT BRANDING INITIATIVE

A key issue presented in the evaluation plan is that quota systems will lead to higher quality product and improved product marketing. As part of the long-term vision within Area H, the second phase of the IQ fishery generated a catalyst for product self-promotion in the form of product branding, an initiative unique to the Area H fleet in Canada's Pacific Salmon fisheries. Interested participants were provided with product tags to label each individual fish as a "Wild Salmon" (Appendix III, Figure 2). Inclusion of the Area H web address (www.gulftrollers.com) on each tag directs consumers to the Association's website. Unique tag numbers for each fish further allow the consumer to identify which skipper and vessel are responsible for the product they purchase. An open feedback initiative allows for the consumer to register both their satisfaction as well as their complaints about the fish that they purchased, directly with the Area H Association via their website. This facilitates improved

handling techniques, not only with the fisher, but also with the buyer, and ultimately, creates a value-added product.

The adoption of this product branding process demonstrates the motivation of the Area H participants, created by the implementation of IQs in this pilot fishery, to maximize the value of their product. The fishers are assuming accountability for the quality of their product and want to benefit from this by advertising the conservation and sustainability benefits of their fishery. The individual tag numbers, or product traceability, establishes what is known as a Chain of Custody for each fish, promoting responsibility with not only the fisher, but also the fleet (MSC 2002). Furthermore, product branding is a stepping stone to product certification, or *ecolabelling*, a tool used to complement conventional regulatory and management measures.

3.3.2 PARTICIPANT PERCEPTION

During the project-planning phase for 2003, a full cost analysis comparison between the IQ and derby fishery was determined to be premature in the demonstration process and beyond the scope of this review. Instead, participants were asked to provide their opinions on issues surrounding economics based on their experience so far, with a full analysis for future consideration. Opinions were gathered via the questionnaire completed following the end of the fishery (Appendix III). A series of six questions focused on IQ Economics generated the most decisive results obtained. All of the participants indicated that they feel the IQ management approach is more economically viable than the derby fishery. With regards to cost efficiency, the majority of vessels operated with the same or reduced costs compared to previous years, producing fish that were of the same or increased quality, both of which are trends to be expected from IQ management. Additionally, there was 100% agreement that the project branding initiative would enhance the market value of their product, and that IQs would result in receiving higher prices for their fish in the future.

The certainty of IQ is passed from the fisher to the buyer due to the greater certainty of the supply. The buyer working with Area H chose to participate because he was attracted to the idea of a structured program. As the participants would be working together as a unit, he felt that he had increased access to a volume of fish that could be presold prior to the start of the fishery. This ability to presell the product increases the market potential of the product, and in the future, should increase the price being paid for the fish. Mr. Wick further indicated that he felt the IQ demonstration was a progressive step into the future which addressed the fishing climate participants are currently faced with, and more importantly, that it would provide licence holders with security of access to the fish. With regards to the product branding initiative, Mr. Wick experienced instant benefits in that he could immediately reference an individual product to a particular fisher. He likened the tagging initiative to chain of custody processes established by the Canadian Food Inspection Agency, in which the tags would be the common denominator of the quality assurance process. Finally, Mr. Wick indicated that as Area H participants become more organized, the economic potential would become more evident (Wick 2003).

3.4 EMPLOYMENT AND SAFETY

Other incentives for the implementation of IQ management are improved safety records within the fleet, as well as the potential for stabilization of employment. Increased safety is generally the result of an increased flexibility to choose fishing times. By removing the race-to-fish mentality, fishermen no longer take unnecessary risks to fish or travel during inclement weather in an effort to make the most of the reduced fishing opportunities available (Jones and Walker, 1997). In addition, it produces the option to make multiple deliveries as opposed to overloading a vessel to take advantage of fishery openings. Safety can also improve due to decreased competition, as vessels effectively compete with themselves under IQ.

Employment stability can occur as vessels are provided with greater certainty of access to the resource. This stability can undergo short-term adjustments if transferability is introduced, as fishers may choose to amalgamate or stack multiple licenses and/or quota holdings onto one vessel. This can in fact reduce employment during the immediate time frame following transferability, but will eventually lead to stability for those participants remaining in the fishery (Kerr *et.al.*, 2003). This stability is established through both access to the fish, and longer fishing periods, thus providing a more predictable and viable income for both the skipper and crew.

3.4.1 PARTICIPANT PERCEPTION

As with financial viability, comparison between the IQ and derby fishery was not feasible with regards to employment. The evaluation plan indicates that issues surrounding employment should be addressed if transferability were permitted in the future. As a number of participants expressed the opinion that transferability should be the next step in the execution of the pilot fishery, this issue will certainly become a focus in future phases of the study.

The evaluation plan indicates that issues surrounding safety should be addressed qualitatively, as opposed to being measured. Participant opinion was gathered via the questionnaire (Appendix III). Of the eight management goals skippers were asked to rank according to their importance, increased safety ranked the lowest (74%). This can likely be attributed to the nature of the Area H region, which is the relatively calm, inshore waters of Georgia Strait. In addition, the sockeye migration coincides with the milder summer months, during which weather conditions are least likely to contribute to safety concerns. Safety is not considered to be a major consideration in the implementation of IQ management for this fishery.

4.0 FUTURE MANAGEMENT CONSIDERATIONS

Based on the discussion and results presented, questionnaire feedback, and a post-season meeting with industry, some key issues for future policy development are presented below. They represent topics that should be considered by both government and industry representatives when designing the next phase of the IQ initiative, and are meant to address the primary impetus for the study, fleet viability.

4.1 PROGRAM DESIGN

4.1.1 PARTICIPANT SELECTION

A post-season review of the project indicated that there was significant momentum obtained for a quota fishery during this year's project. This momentum is attributed to increased awareness of the project by the fleet, and efforts to develop this awareness by the Area H Association. Mr. Curry, the Area H manager indicated that once in place for 2003, the project was generating interest with government both regionally and nationally. He further pointed out that unlike the 2002 pilot, industry participants using the derby approach did not register any concerns with the Department.

Associated with this momentum is an increased level of interest by a number of fishers for participation in the IQ project during successive fisheries. This is an important step in the movement towards fleetwide application of the IQ management approach. As such, the participant selection process needs to become more transparent and should be carefully addressed. Some options were discussed by participants and are presented below:

- A large number of the participants were interested in the idea of a tiered approach, where vessels are allowed to choose one of two Options prior to the start of the fishing year. Vessels choosing Option A would fish as part of the Derby fleet and vessels choosing Option B would fish as part of the Quota fleet. Participants felt that this approach would allow IQ to be sold on its own merits, rather than forcing the participants into something that they weren't ready for.

- If the Option route were adopted, a set of regulations that defined each option would have to be developed prior to vessels making their choice. In particular At Sea monitoring and Dockside validation requirements and costs need to be clearly specified for both the IQ and derby fishery so that fishers can make a logical choice between the two options. Although the Department currently incurs the costs for derby monitoring, this will change in the near future, and all fishers will be responsible for their own monitoring costs. If the Department continued to incur the costs for the derby fleet, this would make some of the perceived differences between the fleet actual. In addition, those vessels that continue to choose the derby option will likely benefit from the information gathered via monitoring in the quota fishery.

4.1.2 IQ DETERMINATION

A critical, and potentially controversial process associated with IQ managed fisheries is that of quota determination. In order to facilitate DFO's planning needs, as well as address participant concerns regarding quota allocation, the allocation formula should be based on the number of active vessels instead of the number of vessels licenced. To address this, two alternative scenarios were proposed.

- The first recommendation suggested that two deadlines be built into the planning structure in order to identify the number of active vessels. The first deadline would allow Area H vessels to indicate their intent to fish for the season, and later, the second deadline would have vessels decide whether they will actually fish. Those who fail to meet these deadlines would not be eligible to fish in either the derby or the quota fishery.

- The second proposal suggests that instead of incorporating the deadline structure described above, quota adjustments could be made in-season to change from the total number of Area H licences to the actual number of active Area H vessels. This would still allow vessels to choose either Option A or B, with both Options being adjusted in-season. Decision making criteria regarding this adjustment should be established pre-season.

4.1.3 CATCH MONITORING AND REPORTING RECOMMENDATIONS

As a result of this project review, the following issues need to be reviewed and/or addressed before the quota system can proceed:

- Prior to determining a catch monitoring system which is both appropriate and cost effective for Area H, or any other sector of the fishery, the Department needs to define clear objectives as to what data they want collected, and the level of accuracy required. Monitoring levels need to be set based on the stated objectives of the program in conjunction with analysis that provides guidance on how to achieve these objectives. This is particularly true for monitoring information collected at sea, where each option (Observers vs. Electronic Monitors) provides useful data, but with their own relevant strengths. Only after clearly defining the data collection requirement, can a cost-effective design for monitoring be developed.

- EM systems are not appropriate for monitoring functions requiring a high level of confidence for salmon species identification. They are however capable of non-salmonid bycatch identification, and they do provide good information on species utilization and bycatch handling practices aboard trollers, as well as documentation of vessel location.

- Landing validations should continue with Validators both at sea and dockside as they provide the most timely and reliable data, both for the fisher and the Department.

Success of the validation process directly resulted in the production of daily Quota Status Reports to the Department, a tool considered highly effective for the day-to-day management of a short-term seasonal fishery.

- The salmon fishery in-season reporting system (FOS database) should be reviewed to ensure that timely and accurate data is being collected for both in-season and post-season management.

- Vessels need to demonstrate that high grading is not occurring. In order to facilitate comparisons of landed catch by weight, conversion factors need to be established for all of the various product types produced for each species. In addition, care must be taken during offload events to separate and document each product type delivered for each species. Participants suggested that issues surrounding high grading could be immediately addressed by building mortality rates into the allocation formula. Looking at historical landings to examine the ratios of #1 and #2 fish may be one way of approaching this issue.

4.1.4 QUOTA TRANSFERABILITY

A primary goal of participants in the 2003 demonstration fishery is to see transferability included in subsequent seasons. This would give licence holders flexibility in the planning and execution of their fisheries, increasing economic viability. Participants were interested in discussing transferability at a number of levels. Transferability is seen as a potential mechanism for achieving the full Area H allocation of Fraser sockeye, much of which has been left uncaught in recent years due to conservation-based management actions.

From a DFO perspective, the issue of transferability is one that is controversial and as such will require a clear understanding of the implications of its application at various levels. These levels could be described as the transfer of small amounts of IQ between Area H participants; the transfer of an annual species IQ between eligible vessels; and the harvest of uncaught IQs by another gear (i.e. for the benefit of Area H, its individuals or another fleet). Another fear expressed is the consolidation of commercial access into fewer and fewer hands. The issue of transferability and what may be appropriate in any particular fishery will need to be explored further.

It is likely that introduction of a successful IQ program into the troll sector will naturally generate interest in other sectors. This corresponds to results seen in the New Zealand fisheries, where introduction of the IQ system led to "a ripple effect through other fisheries users. The clarification of rights of one sector soon compelled the examination of the rights and claims of other sectors" (McClurg 1997). Furthermore, Morgan (2001) points out that when managing shared stocks, the organizational structure surrounding policy issues and positions, hence quota setting and monitoring, will determine whether the quota management succeeds or fails.

With this in mind, aspects of quota allocation transferability that should be considered include:

- Determination of the quota unit (pieces vs. weight). The IQ project has employed pieces, however, the introduction of weight may address high grading concerns with other species, (*i.e.* chinook).

- The transferability rules also need to address transfer quantities and scheduling. For example, transferring all or part of the individual allocation, and making transfers pre-season, in-season or post-season.

- Transferability between gear types. Vessels would like the opportunity to transfer part or all of their quota both to and from other gear types. Selectivity and mortality rates associated with each gear type would have to be considered and built either into the allocation formula or transferability process. The current sockeye equivalents could form a basis for this process.

- Maximum holdings or Quota caps need to be considered. Quota caps could potentially be established not just for holdings but for transfers between vessels, between gear types, and if necessary, between sectors. One suggestion is to have a catch ceiling at which transferability would be capped. For example, if the IVQ was set at less than 1000 pieces, then transfers could proceed. If the IVQ was greater than 1000 pieces, then transfers would be restricted. This allows for fleet viability to increase, as participants would then have the choice to participate during years when run sizes were insufficient for each vessel to potentially profit.

- In order to address Departmental concerns with the transferability process, it is recommended that the pre-season planning process identify a point when the catch can be caught via alternative means (*i.e.* when transferability between gear sectors is an option). This will facilitate the decision making in-season and help to focus management energy on other issues.

- The planning process should recognize that transferability may impact a fisher's decision to choose Option A (derby) or Option B (quota). The introduction of transferability may result in no vessels opting out of the fishery.

4.2 THE NEXT STEP

It should be stressed that the IQ choice may not immediately solve all the issues that must be addressed, but it is certainly an appropriate path towards addressing a number of the current management concerns. Even the most successful IQ programs have had to adopt several program adjustments, often on a yearly basis, as both managers and fishers adjust to a new management style (McClurg 1997). In an early review of IQ fisheries by the OECD, Cunningham (1993) advised that one feature of IQ's is "the need to introduce them gradually… attempts to move too fast will lead to implementation problems that become associated with IQ's

and undermine the system". He also pointed out that "the key element underlying the successful introduction of IQs is the cooperation and support of the fishermen".

Finally, there is an array of fishery management systems to choose from, each with their own merits and flaws. In order for IQs to be successful in any fishery, it is important to invest in the system, taking a long-term perspective of the desired outcome. After two years with the IQ demonstration project, it is apparent to all participants that the management of the Area H fishery should be continued using the IQ approach. Management should now focus on fine-tuning the allocation process and implementing transferability, both processes which are key to the successful, eventual implementation of IQ management. Transferability should be initiated between project participants, and eventually should be discussed with other sectors. Otherwise, the Area H fishers will remain a derby fleet.

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LIST OF TABLES

Table 1. Participating Vessels

Vessel	Skipper
Arabella II	Jim Nightingale
Avante	Lorne Thames
B.R.B.	Hamilton Stewart
Canadian Lady	Deane Larson
Carolyn Ann III	Allan Jensen
Carte Blanche	Dane Chauvel
Eden Lake	Gary Purchase
Fancy Free	Mike Cullen
Fearless II	David Boyes
Galiano Queen	Alexander Mcleod
Harmony Isle	Mike Sanderson
Majestic Belle IV	Dale Erikson
Midway Island	Keith Chauvel
Nonsuch II	Rick Nordstrom
Ocean Roamer II	Kevin Erikson
Pacific Clipper	Rick Rebitt
Pacific Titan	Herb van Grootel
Rosalie I	Wes Erikson
Savary Isle	Robert Hokanson
Scania Queen	Cliff Tarnowski
Southeast I	Dean Ellis
Sundown	Bob Cameron
Susie IV	John Wright
Windrift II	Ken Erikson
Wonder III	Corey Erikson

Table 2a. Area H Fishing Effort.

	Quota Fleet	Derby Fleet
Openings	July 30th – August 13th (15 days)	July 31st – August 13th (14 days)
Total number of vessels participating	25	89
Days fished per vessel	4 to 15	1 to 14

Table 2b. Quota Fleet Allocation Timeline

Date	Status	IVQ (pieces)	Fleet Allocation (pieces)	Pieces Caught	Percent of Allocation Caught
July 30th	75% of Area H	971	24,275	2305	9.5%
July 31st	100% of Area H	1291	32,275	4797	14.9%
August 8th	Run upgrade	1354	33,850	15,154	44.8%
August 13th	Closed	1354	33,850	25,071	74.1%

Table 2c. Area H Catch Results for Salmonid Species. Quota results are based on verified landed weights plus salmon call reports. Derby results are based on salmon call reports only.

	Quota Fishers		Derby Fishers		Area H	
	Pieces	Average	Pieces	Average	Pieces	Average
Sockeye	25,071	1003	84,963	955	110,034	965
Pink	37,649	1506	121,180	1362	158,829	1393
Coho	265	10.6	1533	17.2	1798	15.8
Chinook	267	10.7	1088	12.2	1355	11.9
Chum	124	5.0	430	4.8	554	4.9
Grilse	116	4.6	386	4.3	502	4.4

Table 3a. Salmon Call Center call rate comparisons – Post season results.

Date	Quota Calls	Effort	Derby Calls	Effort
7/30	18	18	--	--
7/31	21	20	85	91
8/1	22	23	n/a	n/a
8/2	23	23	81	100
8/3	23	23	82	100
8/4	22	21	32	38
8/5	21	24	73	91
8/6	21	24	79	92
8/7	20	25	77	76
8/8	20	25	73	76
8/9	21	25	70	72
8/10	21	23	73	73
8/11	20	23	68	70
8/12	19	19	68	85
8/13	16	17	67	71
Totals	308	333	931	1037
Percent	**92.4%**		**89.8%**	

Table 3b. Call Rate Comparison as determined through Quota Status and Vessel Hail process.

Date	Quota Calls	Effort
7/30	18	19
7/31	21	21
8/1	22	23
8/2	23	23
8/3	23	24
8/4	22	24
8/5	22	23
8/6	21	22
8/7	19	20
8/8	20	21
8/9	21	22
8/10	21	21
8/11	21	22
8/12	19	21
8/13	13	17
Totals	306	323
Percent	**94.7%**	

Table 4. Catch rate comparisons between the Derby and Quota fishers as reported to the Salmon Fishery Call Center (Salmon Logbook Program FOS data).

		Derby Fishers		Quota Fishers	
		Number of Calls	Catch per 100 Sockeye	Number of Calls	Catch Per 100 Sockeye
Salmonids					
Area 12	Sockeye	543	100.0	169	100.0
	Pink	543	156.6	169	159.4
	Coho	543	2.0	169	1.1
	Chinook	543	1.2	169	1.1
	Chum	543	0.5	169	0.5
	Atlantic	543	0.0	169	0.0
	Grilse	543	0.4	169	0.5
Area 13	Sockeye	199	100.0	15	100.0
	Pink	199	82.3	15	96.5
	Coho	199	1.2	15	0.7
	Chinook	199	1.6	15	1.3
	Chum	199	0.5	15	0.6
	Atlantic	199	0.0	15	0.0
	Grilse	199	0.7	15	0.3
Area 18	Sockeye	3	100.0	1	100.0
	Pink	3	170.0	1	240.0
	Coho	3	0.0	1	0.0
	Chinook	3	0.0	1	0.0
	Chum	3	0.0	1	0.0
	Atlantic	3	0.0	1	0.0
	Grilse	3	0.0	1	0.0
Area 29	Sockeye	3	100.0	1	100.0
	Pink	3	153.3	1	66.7
	Coho	3	13.3	1	0.0
	Chinook	3	106.7	1	0.0
	Chum	3	0.0	1	0.0
	Atlantic	3	0.0	1	0.0
	Grilse	3	53.3	1	133.3
Non-salmonids					
Area 12	Dogfish	94	0.4	58	0.6
	Flatfish	0	0.0	1	0.0
	Lingcod	10	0.0	12	0.1
	Other	1	0.0	3	0.0
	Rockfish	164	1.1	120	2.3
	Roundfish	1	0.0	0	0.0
	Steelhead	0	0.0	8	0.0
Area 13	Dogfish	26	0.4	16	2.7
	Lingcod	10	0.1	8	0.4
	Rockfish	12	0.1	3	0.2
Area 29	Dogfish	6	133.3	2	1000.0
	Roundfish	3	26.7	2	266.7

Table 5. Offload validation results.

Location	Number of Offloads	Offload Hours	Average Offload Time	Pieces Offloaded	Pieces per Hour
At Sea (on troller)	1	1.50	1.50	258	172.0
Packer	57	19.91	0.35	12,774	641.6
Port	25	34.44	1.25	17,711	514.3
Campbell River	2	3.25	1.63	1,619	498.1
Comox	1	1.00	1.00	489	489.0
Kelsey Bay	10	6.02	0.60	2,898	481.4
Port Hardy	6	10.92	1.82	7,294	667.9
Port McNeill	1	4.25	4.25	1,601	376.7
Vancouver	5	9.00	1.80	3,810	423.3
Totals	83	55.85	0.67	30,743	550.5

Table 6. Bycatch handling strategies as observed with Electronic Monitoring equipment.

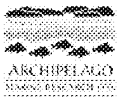
Species	Release Strategies				
	At the Waterline	Above the Waterline	On the Gunnel	With Gaff	Without Gaff
Salmonids	61	2,174	46	1,617	664
Rockfishes	0	49	5	35	19
Roundfish	0	1	1	2	0
Dogfish	0	2	2	4	0
Unidentified Fish	0	3	0	0	3
Totals	**61**	**2,229**	**54**	**1,658**	**686**

Table 7. Hook by hook corroboration of results between the Electronic Monitoring video reviewers Observers for species utilization. Numbers refer to the number of hooks monitored and do no include empty hooks.

	Utility match	No utility match
Salmonids	1146	16
Non-salmonids	23	2
Totals	**1169**	**18**
Percent	**98.5%**	**1.5%**

LIST OF FIGURES

Figure 1a. Example of a Quota Status Report submitted to DFO. Information presented in this reports is based on verified landings*.



Area H Troll IQ Demonstration Fishery

Quota Status Report by Vessel

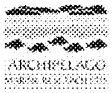
August 8, 2003 @ 0915hrs

Vessel	VRN	Total Available Catch (pieces)	Number of pieces of Sockeye Offloaded**									Total Landed	Remaining Quota
			07/30/03	07/31/03	08/01/03	08/02/03	08/03/03	08/04/03	08/05/03	08/06/03	08/07/03		
Vessel 1	12345	1354										0	1354
Vessel 2	23456	1354			76		106					182	1172
Vessel 3	34567	1354			528		85				301	914	440
Vessel 4	45678	1354					174			98		272	1082
Vessel 5	56789	1354				458						458	896
Vessel 6	67890	1354										0	1354
Vessel 7	78901	1354			453		108				269	830	524
Vessel 8	89012	1354									663	663	691
Vessel 9	90123	1354		103			259				456	818	536
Vessel 10	98765	1354		409			267				124	800	554
Vessel 11	87654	1354										0	1354
Vessel 12	76543	1354		124			138				256	518	836
Vessel 13	65432	1354									143	143	1211
Vessel 14	54321	1354										0	1354
Vessel 15	43210	1354										0	1354
Vessel 16	32109	1354			320		149				337	806	548
Vessel 17	21098	1354										0	1354
Vessel 18	10987	1354		345			222				137	704	650
Vessel 19	11234	1354										0	1354
Vessel 20	22345	1354										0	1354
Vessel 21	33456	1354	101		348		131				184	764	590
Vessel 22	44567	1354						367				367	987
Vessel 23	55678	1354			235		100				169	504	850
Vessel 24	66789	1354		453			318				438	1209	145
V essel 25	77890	1354		237			253				399	889	465
			101	**1671**	**1960**	**458**	**2310**	**367**	**0**	**98**	**3876**	**10841**	**23009**

**Offload numbers are interim and subject to verification

*The data presented in this figure is fictitious due to confidentiality of vessels involved.

Figure 1b. Example of a Quota Status Report submitted to DFO. Information presented in this report is based on both the catch reports made to DFO's salmon call center, and activity reports made to Archipelago*.



Area H Troll IQ Demonstration Fishery

Quota Status Report based on Hail Information by Vessel

August 8, 2003 @ 0915hrs

Vessel	VRN	Hail Out	Total Available Catch (pieces)	Number of pieces of Sockeye Hailed**									Total Caught	Remaining Quota
				07/30/03	07/31/03	08/01/03	08/02/03	08/03/03	08/04/03	08/05/03	08/06/03	08/07/03		
Vessel 1	12345	0025	1354	not fishing	15	54	123	87	99	117	29	2	526	828
Vessel 2	23456	0024	1354	25	45	61	68	47	28	8	35	51	368	986
Vessel 3	34567	0023	1354	127	209		65	70	74		109		654	700
Vessel 4	45678	0022	1354	not fishing	not fishing	59	62	53	27	finished	finished	finished	201	1153
Vessel 5	56789	0021	1354	0	175	242	83	65	45	27	72	45	754	600
Vessel 6	67890	0020	1354	not fishing	not fishing	121	75	69	37	33	not fishing	not fishing	335	1019
Vessel 7	78901	0019	1354	183	129	143	74	58	85	45	67	27	811	543
Vessel 8	89012	0018	1354	125	119	42	59	73	92	58	84	not fishing	652	702
Vessel 9	90123	0017	1354	68	35	88	132	143	85	65	129	73	818	536
Vessel 10	98765	0016	1354	181	209	108	63	92	35	4	51	58	801	553
Vessel 11	87654	0015	1354	199	125	36	57	92	175	27	51	not fishing	762	592
Vessel 12	76543	0014	1354	55	42	78	25	35	82	64	72	35	518	836
Vessel 13	65432	0013	1354	not fishing	not fishing	not fishing	22	29	15	35	34	6	143	1211
Vessel 14	54321	0012	1354	not fishing	10	212	74	135	82	37	95	59	704	650
Vessel 15	43210	0011	1354	212	227	121	106	75	92	43	135	9	1020	334
Vessel 16	32109	0010	1354	127	148	59	68	81	127	35	73	82	800	554
Vessel 17	21098	0009	1354		26	119	75	82		49	168	54	573	781
Vessel 18	10987	0008	1354	138	205	129	53	41		not fishing	82	57	705	649
Vessel 19	11234	0007	1354	not fishing	not fishing	not fishing	not fishing	6	7	not fishing	not fishing	not fishing	13	1341
Vessel 20	22345	0006	1354	256	185	65	87	135	99	102	21	54	1004	**350**
Vessel 21	33456	0005	1354	100	180	153	85		61	47	74	63	763	591
Vessel 22	44567	0004	1354	177	48	105	22	15	not fishing	29	34	19	449	905
Vessel 23	55678	0003	1354	81	77	83	43	57	59	65		39	504	850
Vessel 24	66789	0002	1354	185	274	165	96	53	91	97	95	153	1209	145
V essel 25	77890	0001	1354	157	83	82	95	73	165	72	103	59	889	465
				2426	**2566**	**2325**	**1712**	**1666**	**1662**	**1059**	**1613**	**947**	**15976**	**17874**

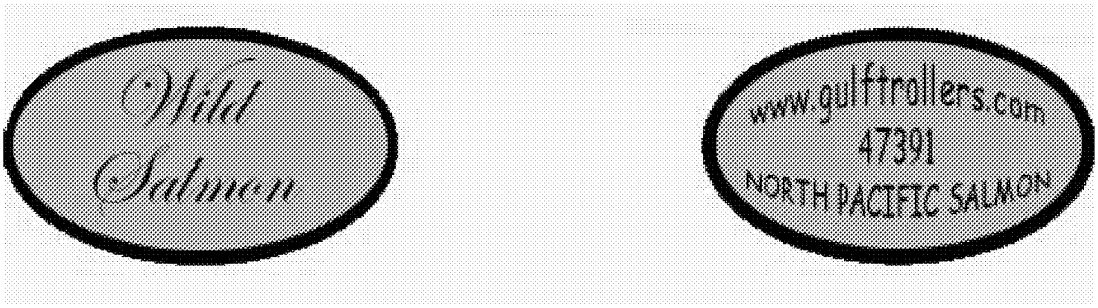
**Hail numbers are derived from FOS system

no FOS catch data

call to FOS - not data entered yet

*The data presented in this figure is fictitious due to confidentiality of vessels involved.

Figure 2. Product Branding tag, front and back.



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APPENDIX I

EVALUATION FRAMEWORK

EVALUATION PLAN

LICENCE AREA "H" INDIVIDUAL QUOTA DEMONSTRATION FISHERY

Background:

At the present time, the Licence Area H (Inside Troll) salmon fishery is managed under a limited entry licensing system with the total harvest indirectly controlled largely through fishing openings and closures. The fishery itself is operated in a competitive "derby" style where all licensed fishers are entitled to fish and to maximise their harvest during the open periods.

In early 2002, members of the Area H Licence Holders Association approached Fisheries and Oceans Canada (DFO) seeking permission to proceed with a demonstration project to test the feasibility and the benefits of changing the management of their fishery to an individual quota system. The quota system would directly control the total harvest by setting limits on the harvest by individual fishers.

A meeting was held on May 6, 2002 between DFO staff, the President of the Area H Association and a number of other Association members who support such a demonstration project. Goals and objectives of the parties in pursuing a demonstration fishery and details of the potential demonstration fishery were discussed. Subsequent to these discussions, DFO formally indicated its willingness to consider a demonstration fishery subject to a number of conditions. One key condition was the development of an approved framework for evaluating the results of the demonstration fishery that is acceptable to both Area H Association and to DFO.

Purpose:

The purpose of this document is to outline a framework and a plan for evaluating an Area H individual quota demonstration fishery. The document identifies four general areas for evaluation and identifies specific hypotheses in each area. Further, the document identifies specific information that will be required to test the hypotheses. Finally, strategies are proposed for gathering the information necessary to test and answer the questions raised.

Evaluation Framework and Evaluation Plan:

This evaluation framework is designed to compare and contrast the two (competitive "derby" and individual quota) management systems in four general areas:

- Biological Management;
- Financial Viability of Harvesting;
- Employment and Safety, and;
- Administration and Enforcement.

It is recognised that any differences between the two management systems in each of these areas may take some time to fully assert themselves. However, the information system needs to be in

place to identify base line performance and to adequately track relative performance in each of these areas over time.

BIOLOGICAL MANAGEMENT:

Total catch in a competitive derby style fishery is indirectly controlled largely through fisheries openings and closures while a quota system relies on direct control of individual catches by fishers. Harvest can exceed planned allowable harvests under both systems but a quota system should be more effective because of its focus on directly controlling output. There may also be potential for improved selective fishing practices under a quota system. Quota skippers may have more ability to avoid areas of higher unintended by-catch incidence because of less concern over the potential impact on their total harvest. In addition, quota fishers may take greater time in handling, reviving and releasing by-catch where this is required by the fishing regulations because of a slower pace of fishing.

On the other hand, literature reviews raise consistent concerns about problems of dumping/high-grading in quota fisheries. This is caused by a natural tendency for harvesters to attempt to maximise the value of their limited catch under a quota system by selecting only the largest or most valuable fish and dumping or otherwise releasing the rest. This incentive structure does not arise in a competitive fishery. If dumping/high-grading is a substantial problem, the calculated harvest may significantly under-estimate the impact of the fishery on the resource. This is a key potential draw back with quota fisheries.

Hypothesis 1: Landings in the quota fishery will be effectively controlled in relation to allowable harvests and selective fishing practices will improve.

Proposed Measures: Landings in the demonstration fishery relative to the total allowable catch in the demonstration fishery.

Evaluation Strategy: Final harvest from dockside monitoring records for the demonstration fishery will be compared to the total quotas assigned in the demonstration fishery. Estimated landings from logbooks and/or sales slips in the competitive fishery in relation to allowable harvests will be used for qualitative comparison. There is no effective way to compare selective fishing practices at this time and this issue is deferred for future consideration.

Hypothesis 2: Dumping/high-grading is a problem in the quota fishery.

Proposed Measures: Average sockeye weight or length distribution, proportion of number 2 grade sockeye and the species mix delivered by vessels in the demonstration fishery subject to on-board observers or video monitoring compared to equivalent information for 1) fish delivered by vessels in the demonstration fishery not subject to on-board observers or video monitoring and 2) fish delivered in the competitive fishery.

Evaluation Strategy: Average sockeye weights or length distribution, proportion of number 2 grade sockeye and species mix from each type of delivery will be randomly sampled. Mean values from the sample sets will then be tested for statistically significant differences. This

analysis will be supplemented through interviews of both fishers and observers to ascertain their subjective views on the likelihood and extent of dumping/high-grading in the fishery.

FINANCIAL VIABILITY OF HARVESTING

Financial viability in harvesting is reflected in the relative profits from fishing. Improved financial viability can result from either increased revenue from fishing or decreased costs of fishing.

In quota fisheries, fishers generally have greater flexibility to choose their time of fishing. This can permit them to smooth production from the fishery, optimise the quality of the harvest, take advantage of market shortfalls and avoid market gluts. All of this can have a positive impact on prices and overall revenues in the fishery. However, given the compressed nature of the salmon fishery, due to the biology of the species, the potential extent of these benefits may be fairly limited.

On the cost side, most analysts emphasise that fishery quota systems create more normal business incentives than in competitive fisheries to minimise costs. Given a fixed output (i.e. the individual quota) fishers can be expected to produce the output using the minimum necessary combination of inputs in terms of time, labour and capital without concern over pre-emption by other fishers with larger vessels or fishing power.

Hypothesis 3: A quota system will lead to higher quality product, improved product marketing and reduced costs of fishing.

Proposed Measures: Prices received by participants in the demonstration fishery compared to prices received by participants in the competitive fishery. Total costs per unit of harvest in the demonstration fishery compared to total costs per unit of harvest in the competitive fishery.

Evaluation Strategy: A revenue and cost tracking and reporting form will be designed pre-season in collaboration with fishers. Participants in the demonstration fishery will be required to track the revenue received and harvesting costs by category (e.g. gear, running, labour and capital costs) throughout the fishing season and provide a final post-season report on their total revenues and harvesting costs. Volunteers from the competitive fishery who are willing to provide equivalent information will be solicited and identified pre-season. Some supplementary interviews with both groups will be required post-season to clarify the information provided and to ascertain views on differences in quality and longer term marketing potential between the two fishery systems.

EMPLOYMENT AND SAFETY

Literature reviews indicate that quota systems often reduce employment in the fishery. However, this largely results from transferability of quotas. When quotas are transferable, fishers may choose to amalgamate or "pyramid" two or more quotas on one vessel in order to reduce both capital and operating costs in their fishing operations. In the demonstration fishery quota transferability is not permitted at this time. On that basis, any employment impacts during

the upcoming season can be assumed negligible. If transferability were permitted in the demonstration fishery at some future time, this issue would need to be addressed.

Literature reviews also indicate that quota systems often positively impact on safety in the fishery. This partly results from the increased flexibility to choose fishing times which permits avoidance of poor or dangerous weather conditions without concern over foregone harvest. In addition, there is less incentive to over-load fishing vessels during open times or to make long or dangerous runs in order to take advantage of fishery openings.

Hypothesis 4: Safety will improve in the quota fishery.

Proposed Measures: None.

Evaluation Strategy: Participants in the demonstration fishery and the identified volunteers from the competitive fishery will be asked to describe and report any "Safety Incidents" they observe. The information provided will be analysed and assessed in narrative form. More concrete information from other fisheries operating under quota systems (e.g. halibut or black cod) may be used to illustrate potential safety benefits. Other information sources (including WCB reports) will be assessed for relevance.

ADMINISTRATION AND ENFORCEMENT

Quota systems generally require more precise and timely monitoring and reporting of the harvest on an individual vessel basis and individual incentives to misreport the harvest are greatly enhanced. There is a potential increase in monitoring costs under a quota system particularly if high grading and dumping of the resource are significant problems.

However, the potential increase in monitoring costs will be difficult to assess at this time. The Department of Fisheries and Oceans is undertaking a fishery monitoring and catch reporting review in all Pacific fisheries. This will potentially increase the future costs of monitoring and reporting in the competitive fishery. At the same time, monitoring costs in the demonstration fishery may not reflect the long-term costs of monitoring under a quota system. Economies of scale are likely if the monitoring system were expanded to the full fishing fleet and the extent of observer coverage will depend upon the potential for dumping and high grading in a quota fishery. More information is needed to address this issue than is available at this time.

Under a quota system and its associated monitoring systems, the information provided by fishers should be more accurate, reliable and timely. Also, fishers collectively have improved incentives to ensure that the reporting system is effective. Self-policing and peer pressure under a quota system can dramatically improve the effectiveness of enforcement efforts. Any additional costs associated with quota fishery monitoring need to be carefully compared to any improvements in the quality of the enforcement and the information provided.

Hypothesis 5: Fishery monitoring costs will increase in a quota fishery.

Proposed Measures: Fishery monitoring costs in a quota style fishery compared to monitoring costs in a competitive fishery.

Evaluation Strategy: Deferred at this time until further information is available on potential monitoring costs in both styles of fishery.

Hypothesis 6: The quality of the information provided and the effectiveness of enforcement will improve in a quota fishery.

Proposed Measures: Timeliness and reliability of harvest data in the demonstration fishery compared to timeliness and reliability of harvest data in the competitive fishery.

Evaluation Strategy: The relative frequency of harvest updates in both fisheries will be documented. Final updates at the end of fishing will be compared to post-season final tallies/estimates of harvest in the two fisheries. This will be supplemented through interviews of fishery managers to ascertain their subjective judgement on the reliability and utility of the information provided throughout the season and their subjective views on enforceability of the two fisheries regimes.

APPENDIX II

SCIENTIFIC LICENCE

Scientific Licence

LICENCE TO FISH FOR EXPERIMENTAL AND SCIENTIFIC PURPOSES

For Canadian Fisheries Waters off the Coast of British Columbia. This licence is issued under the authority of the **Fishery (General) Regulations, Part VII, Fishing for Experimental, Scientific, Educational or Public Display Purposes.**

Part 1

Vessel Name:
Vessel VRN number:
Vessel Master:

Project Manager: Gordon Curry
Address: Fisheries and Oceans Canada (DFO or the Department)
3225 Stephenson Point Road
Nanaimo, B.C. V9T 1K3
Telephone:250-756-7255 Cell: 250-616-9749 Fax: 250-756-7020

Assistant Project Manager: Gerry Kelly
Fisheries and Oceans Canada
60 Front Street
Nanaimo, B.C. V9R 5H7
Telephone: 250-754-0208 Cell: 250-755-9588
Fax:754-0309

On-grounds Project Co-ordinator: Rick Nordstrom
Area H Gulf Trollers Association
Cell Phone: 250-334-7388

Part 2 Description of Project:

1. Overview

The Project is an investigation to explore a new management approach for the Area H troll fleet. Each participating vessel (total of 25) will have an assigned individual vessel quota (IVQ) based on an equal share of the available total allowable catch (TAC) for all Area H troll licenses in 2003. This IVQ will adjust to in-season run size changes. This project will assess the benefits and drawbacks of this style of fishery and management and a final report will be produced including the documentation of the data collected and an analysis of this data. The information generated from this Project may be used in consideration of future fishing and management strategies.

2. Goals & Objectives

To investigate the use of an IVQ system of management, with a portion of the Area H troll fleet, and document the results for future consideration regarding the potential implementation of this form of management in the salmon fishery.

3. Methods

Twenty-five (25) Area H vessels have been selected to participate in this study. Each participating vessel will be limited to a specific IVQ based on an equal percentage share of salmon, equivalent to the average per vessel share in Area H, adjusted in-season. Data will be gathered to assess the potential impacts of the system on biological management, the financial viability of harvesting, employment, safety, administration and enforcement. Data will be gathered through the use of log books, observers, vessel mounted video cameras with data loggers and through interviews/questionnaire. Data gathered from the Project vessels will be compared where possible with information gathered from the Area H open fishery.

4. Evaluation

All relevant data will be recorded and the Proponent will facilitate the analysis of the data and the production of a final report that will be submitted to Fisheries and Oceans Canada in a suitable quality and format.

Part 3 Conditions of Licence:

1. Licensing Requirements:

(a) In addition to being in possession of a valid scientific licence for this fishery the vessel master and vessel participating in this fishery must be in possession of a valid 2003 Salmon Area H licence complete with *Conditions of 2003/2004 Salmon Area H Licence*;
(b) Vessel Masters will be required to follow both the conditions of this scientific licence and the *Conditions of 2003/2004 Salmon Area H Licence*;
(c) The conditions of this scientific licence supersede those in the in the *Conditions of 2003/2004 Salmon Area H Licence* and where there is an inconsistency this scientific licence will take precedence.

2. Species of fish permitted to be taken:

(a) Retention of sockeye salmon and the incidental catch of pink, chum and chinook salmon while targeting sockeye salmon;
(b) The minimum size limit for troll-caught chinook salmon is 62 cm nose-fork length for Areas 12 to 18 and 29;
(c) Non-retention of coho salmon and steelhead.

3. **Quantities of fish permitted to be taken:**

(a) The overall quantity of sockeye salmon permitted to be taken during the fishing permitted under this licence will be limited to 0.006536 of the total Area H TAC of Fraser River sockeye salmon;

(b) At the start of the fishery the quantity of Fraser River sockeye salmon permitted to be taken will be limited to 0.004902 of the total Area H TAC (75%) until the Area H open fishery (non-quota fishery) starts and then the quantity available to the vessel named in this licence will be 0.006536 of the total Area H TAC (100%);

(c) During the fishery authorized by this licence the TAC available to Area H may be adjusted up or down in relation to changes in Fraser River salmon run-size and available TAC and when this occurs, the IVQ available to the vessel named in this licence will be communicated to the Vessel Master by the Project Manager or Assistant Project Manager;

(d) The Vessel Master shall not fish to exceed the Area H IVQ allocation and when notified by the Project Manager or Assistant Project Manager of a change in available IVQ, that results in no further remaining catch to be taken, the vessel named in this licence will immediately stop fishing.

4. **Waters and times in which fishing is permitted:**

(a) Subareas 12-1, 12-3 to 12-4, 13-7 (excluding Deepwater Bay), 13-8, 13-9, 13-27 to 13-32, will be permitted for fishing at the start of this Project as communicated by the Project Manager or Assistant Project Manager approving troll fishing in these areas;

(b) Subareas 12-5, 12-6, 12-8 and 12-9, except for the rockfish conservation closed areas in Section 4.(e), will be permitted for fishing when it has been determined that presence of Nimpkish River sockeye are no longer a concern west of Lewis Point in Johnstone Strait, and the Project Manager or Assistant Project Manager communicate the approval to fish these areas;

(c) Areas 18-1, 18-4, 18-11 and 29-1 to 29-6 are under the control of the Pacific Salmon Commission (PSC), therefore fishing in these areas, except for the rockfish conservation closed areas in Section 4.(e), will be permitted when the PSC approves troll fishing for these areas and this is communicated by the Project Manager or Assistant Project Manager;

(d) And, the same Subareas open to the Area H commercial vessels, not fishing as part of this Project when they are fishing those areas;

(e) Fishing will not be permitted in the areas closed for rockfish conservation as listed in fishery notice *FN0193-Groundfish: Rockfish – Interim Areas of Restricted Fishing for protection of Inshore Rockfish* and as displayed on the maps on the DFO website at: www.pac-mpo.gc.ca or at the nearest Fisheries and Oceans Canada offices, and specifically Numas Island, Weynton Passage, Mayne Island North, South Pender Island, Halibut Bank and Galiano Island North.

5. **Period during which fishing or transporting fish is permitted to be carried out:**

(a) Fishing is permitted to be carried out seven days per week, in the areas and in accordance with the times set out in Section 4, until the individual vessel allocation,

as outlined in Section 3, has been reached or the fishing areas are closed for all commercial Area H trolling.

6. **Gear and Method permitted:**
   (a) Commercial troll gear in accordance with the *Conditions of 2003/2004 Salmon Area H Licence*.

7. **Information that the holder of the licence shall report to the Department prior to the commencement and upon completion of fishing:**
   (a) Prior to the commencement of fishing the Vessel Master must hail-out by phoning Archipelago Marine Resources (AMR) at 1-800-663-7152 between the hours of 0700 and 1700 and provide the vessel name, Vessel Master, fishing start date and area to be fished;
   (b) When the vessel named in this licence has reached its quota or the Vessel Master decides to stop fishing the Vessel Master must hail-in to AMR at 1-800-663-7152 between the hours of 0700 and 1700 and provide the vessel name, VRN number (CFV), Vessel Master, off-load date and time, off-load location, off-loader, buyer, area that was fished, species, product type, and estimated number of pieces.

8. **Requirement for vessel master to report information from sea:**
   (b) Information and reporting in accordance with the *Conditions of 2003/2004 Salmon Area H Licence*.

9. **Records that vessel master shall keep of fishing activity:**
   (a) Records in accordance with the *Conditions of 2003/2004 Salmon Area H Licence*;
   (b) Information and data as directed by the Project Manager.

10. **Verification by an observer or port catch validator of the number, weight and species of any fish caught and retained:**
   (a) The Vessel Master will record the number and species of all salmon caught in the Project fishery and maintain and update that count regularly so as not to exceed the IVQ outlined in Section 3 of this licence;
   (b) An observer or independent port catch validator must be present during any offloading of catch to record the number, weight and species of all salmon delivered;
   (c) If a vessel leaves the Project fishery to fish in another fishery with the intention to re-enter the Project fishery, without offloading the onboard catch, the catch must be verified by an observer or port validator prior to entering another fishery, and verified again by an observer or port validator upon re-entering the Project fishery;
   (d) or, the catch must be offloaded and verified by an observer or port validator prior to entering another fishery.

11. **Time within which findings and data obtained as a result of fishing for experimental or scientific purpose are to be forwarded to the Minister:**
   (a) Findings and data are to be forwarded to the Project Manager as requested and a final report due December 15, 2003.

12. Copies of this licence must be on board the fishing vessel at all times during fishing and transport of catch and the licence must be produced upon request by a fishery officer or guardian.

13. This licence is valid from the date of signature by the licence holder until **August 30, 2003**.

Print Name Signature Date

Issued at Nanaimo, B.C. on July 26, 2003.

On behalf of the Minister of Fisheries and Oceans,

_____
Gordon R. Curry

Cc **DFO C&P District Offices (as required)**
DFO Chief, Enforcement Operations (regarding overflights)
DFO Area Chiefs, C&P
DFO Licensing Unit
DFO Radio Room

APPENDIX III

QUESTIONNAIRE RESULTS

IQ Fishery

1. *Do you consider the 2003 Area H sockeye salmon troll season a success? (Circle the answer of your choice)*

A. Yes	**80%**
B. No	**15%**
No Answer	**5%**

2. *Would you choose IQ over the derby style as a future management approach for Area H? (Circle the answer of your choice)*

A. Yes	**95%**
B. No	**0**
No Answer	**5%**

3. *Based on your experiences in the 2003 IQ demonstration fishery, would you participate in a troll IQ fishery again? (Circle the answer of your choice)*

A. Yes	**90%**
B. No	**0**
No Answer	**10%**

4. *Do you feel that IQ management is a more viable approach to managing the salmon portion of your business? (Circle the answer of your choice)*

A. Yes	**100%**
B. No	**0**

5. *Were you able to travel less during the pilot fishery? (Circle the answer of your choice)*

A. Yes	**65%**
B. No	**30%**
No Answer	**5%**

6. *Were you able to reduce your bycatch levels in the pilot fishery? (Circle the answer of your choice)*

A. Yes	**65%**
B. No	**30%**
No Answer	**5%**

Comments:

Vessel One:

"Due to medical problem of a crew member (fish poisoning) and an equipment failure, I was unable to participate fully in the fishery. There was again as last year little advantage being involved in the IQ experiment. However, I know it has the potential to make the industry more viable. IQ vessels should have been able to fish before and after the opening allotted to us for the experiment to have been meaningful. Our low catch rate would not have had any meaningful impact on endangered stocks. For a true assessment of this concept there must be firmer support for a trial run from DFO management."

Vessel Two:

- Moved out of pinks and possibly less fish potential to avoid bycatch.
- Also stayed off the beach to avoid cod.

Vessel Three:

"The demonstration IQ project was run under essentially the same circumstances as the "derby" fishery. This limited the opportunity to realize the benefits which would normally be available under an IQ fishery (less pressure to harvest as much as possible in a short time period) but did demonstrate the viability of dockside monitoring. In other words, the demonstration IQ project proved that a salmon IQ fishery is operable but did not provide the opportunity to demonstrate the economic benefits that would normally be available under an IQ fishery."

Vessel Five:

"In regards to no. 1 & 3 my answer would have been yes if we were allowed to fish until each vessel had their quota, only 5 vessels out of 25 got their numbers."

Vessel Eight:

"Re: #6, there were so many bloody pinks everywhere, they were the bycatch. Bycatch of other species was negligible and always is, in my experience in the Johnstone Straits. The season was a success in that more trollers are exposed to a new way of fishing and industry support is building."

Vessel Nine:

"Bycatch reduction - quota gave the opportunity to move off marginal fishing / high bycatch."

Vessel Ten:

"I would like to see a fully transferable IQ managed fishery in the future."

Vessel Twelve:

"Re: # 6 Released lots of pink - that was not due to program but selected buyer did not want pinks, otherwise there would not have been a problem."

Vessel Fourteen:

"Both questions 2 & 3 would depend on whether or not the IQ's became transferable. Without the ability to stack and take your IQ anyway you want, IQ could be seen as a poor choice of obtaining my TAC."

Vessel Fifteen:

"6 - Because we were on IVQ we didn't have to chase (sockeye) scores, just fish where you were comfortable in areas of low pink scores."

Vessel Seventeen:

"Feeling sure that we would achieve our share, we moved to an area with less bycatch."

Vessel Eighteen:

"The reason I don't consider the sockeye salmon troll season a success is that I was allocated approximately 1300 sockeye. I started the fishery three and a half days late due to other work constraints. I was able to catch 600 sockeye and was shut down. I feel an IQ fishery requires flexibility in order for the participants to achieve their allocation."

Vessel Nineteen:

"At sea monitoring is workable!"

Fishery Monitoring

7. *Given that both at sea and dockside monitoring will be required in future salmon fisheries, what level of monitoring coverage do you feel is needed for each management style? (Circle the answer of your choice in each column)*

   a. *IQ Fishery*

	At Sea	Dockside
A.	10% **(40%)**	**15%**
B.	25% **(5%)**	**0**
C.	50% **(5%)**	**5%**
D.	100% **(5%)**	**65%**
E.	None **(35%)**	**5%**
	No Answer **(10%)**	**10%**

   b. *Derby Fishery*

	At Sea	Dockside
A.	10% **(40%)**	**20%**
B.	25% **(25%)**	**15%**
C.	50% **(0)**	**0**
D.	100% **(15%)**	**40%**
E.	None **(10%)**	**15%**
	No Answer **(10%)**	**10%**

8. *Under the Pacific Region Fishery Monitoring and Reporting Framework, the DFO indicates that in the future, the cost of monitoring will be the responsibility of the harvesters in all fisheries. Given your experience, who should manage the program funding? (Circle the answer of your choice)*

A. Industry Association	**90%**
B. DFO	**0**
C. Third-party	**5%**
No Answer	**5%**

9. *Given that there are strengths and weaknesses for each, which at sea monitoring type is preferable? (Circle the answer of your choice)*

A. Observer	**5%**
B. Electronic Monitoring	**55%**
C. Both in combination	**10%**
D. Either	**5%**
E. None	**20%**
No Answer	**5%**

Comments:

Vessel One:

"The costs of observer at sea monitoring are too high to be paid by this fishery as it is presently constituted. Our only realistic option is to use electronic monitoring or design a system where no monitoring is necessary. If the objective of monitoring is compliance then one alternative would be very high penalties for non-compliance, especially in regard to an IQ fishery."

Vessel Three:

"Comprehensive dockside monitoring should largely eliminate the need for at sea monitoring (acknowledging that there exists some risk of high grading). As it stands, at sea monitoring is

only effective when the monitor is onboard and does not impact the behavior of those vessels which do not have an at sea monitor. It's obviously impractical and uneconomical to have 100 per cent at sea monitoring, so look to dockside monitoring to fulfill that function. An IQ based on weight rather than pieces might also limit the risk of high grading."

Vessel Four:

"If ITQ's are implemented 100% dockside monitoring will be necessary. I feel that due to the general lack of bycatch in the Area H troll fishery, minimal at sea observer coverage is needed."

Vessel Five:

"In question (a) dockside could mean packers also."

Vessel Eight:

"Re: #7 - The derby fishery will usually be shorter and a 25% level will provide the snapshot needed. The IQ fishery will likely be more protracted but a 25% rate should suffice and might be lowered over time if there were no problems (i.e. low bycatch rates)
Re: #9 - Might need some observer coverage each season just to groundtruth the EM, but a minimal level."

Vessel Twelve:

"There seemed to be a problem with the electronic piece count. I don't think that individual piece count is necessary when average weight could be used to get the number of pieces. This could be worked within a margin of error (+ or -) and balanced against hail-in numbers. If a great discrepancy occurred between count and weight, a formula would be used to average."

Vessel Thirteen:

"Fishermen should be issued gill tags, all fish outside of the checkers must have a tag."

Vessel Fourteen:

"Question 9 - Due to the small size of our vessels, EM is really the only option."

Vessel Seventeen:

"Until cameras are proven, we need a combination of both types of monitoring."

Vessel Eighteen:

"I feel 100% dockside monitoring should be required for all participants. If we have to - an observer would be my choice for at sea monitoring due to the cost of electronic monitoring."

Vessel Nineteen:

"Cameras are unobtrusive and effective. I think they should be required on all salmon vessels, including native food fisheries, to truly get a handle on what everyone is catching."

IQ Economics

10. *After your experience participating in this IQ project, do you think IQ management will be more economically viable for you than the open fishery? (Circle the answer of your choice)*

A. Yes	**100%**
B. No	**0**

11. *How did your operating costs compare (not include monitoring) to previous fishing years? (Circle the answer of your choice)*

A. More Expensive	**5%**
B. Less Expensive	**55%**
C. Same Cost	**35%**
No Answer	**5%**

12. *How did your product quality compare to previous fishing years in the derby openings? (Circle the answer of your choice)*

A. Increased quality	**60%**
B. Decreased quality	**0**
C. Same quality	**40%**

13. *Do you think you received a higher price for your product than the average price paid in the open fishery? (Circle the answer of your choice)*

A. Yes	**30%**
B. No	**35%**
No Answer	**35%**

14. *Do you think you would be able to obtain higher prices in the future for your catch in a quota fishery? (Circle the answer of your choice)*

A. Yes	**100%**
B. No	**0**

15. *Area H is undertaking a tagging project where each fish caught by the IQ fleet will be tagged to identify it as a quality-caught product to indicate that it was caught in a controlled fashion with product quality in mind. Do you feel this will enhance the market value of the product? (Circle the answer of your choice)*

A. Yes	**100%**
B. No	**0**

Comments:

Vessel One:

"Again this was not a particularly good trial of the IQ idea. We were operating under basically the same constraints as the derby fishermen."

Vessel Two:

"In initial years, some of the cost savings aren't realized or utilized and the gulf fishery poses it's own problems to the times allowed, whereas Area F and G has time to save money and strategize, etc."

Vessel Three:

"While I believe that an IQ fishery will prove to be more economic to the license holder, the circumstances around this particular IQ project did not provide the opportunity to demonstrate the economic benefits. In this instance, the IQ participants fished alongside the balance of the Area H fleet without the access advantage that would normally be afforded IQ participants. In a typical IQ fishery, the participants would be provided a comparatively longer period of time in which to access their IQ or respective share of the TAC. The advantages of such a fishery are obvious: harvesting can occur at a more controlled pace providing for a higher quality product to be caught under the safest conditions. Moreover, this will allow for fish to be supplied to the market over a longer period of time thereby reducing the depressing impact on pricing that arises from a "glut" of supply. In previous seasons, a two or so day opening has been followed by a three, four or five day closure, during which the impact of the fishery on the run is assessed. Had the pilot IQ project been run under the same circumstances (in which the IQ participants could fish during that closure given that their collective impact on the fishery is already known), the economic benefits would have been more evident."

Vessel Five:

"As I said before, if ample time was given for all to get their quota, I then would have said the project was a success. Also the fact that our designated buyer did not take all available species (mainly pink salmon), caused a problem for some of us."

Vessel Eight:

"#11 - A long drawn out fishery because of the need to strain a few sox out of swarms of pinks.

#13 - No, because of high packing costs due to not enough boats delivering to the packer."

Vessel Ten:

"I had a deckhand quit in the middle of the fishery. I was able to keep fishing without the other deckhand because I was half done my IQ. I got a very good price for my FAS salmon because me and another boat from the IQ fishery put our fish together and sold based on a container price. This worked out very good for us."

Vessel Twelve:

"This year's project occurred side by side with the derby fishery except for one extra lead day, therefore, the true benefits of an IQ fishery were not realized to its full potential; ie. Long time period to harvest, and slow down catch rate to improve quality. As a result the IQ and derby fishery were much the same."

Vessel Thirteen:

"This year's project occurred side by side with the derby fishery except for one extra lead day, therefore, the true benefits of an IQ fishery were not realized to its full potential; ie. Long time period to harvest, and slow down catch rate to improve quality. As a result the IQ and derby fishery were much the same."

Vessel Fourteen:

"#12 - The tags were a major influence on my quality. Knowing that a fish could be tracked back to me made both myself and crew more quality conscious. Due to the nature of this year's fishery the quota project itself would not have increased my quality.
#11 - Because we are not in a true IQ this is hard to quantify."

Vessel Fifteen:

"11- now a family business (father/son) which keeps 100% net to family."

Vessel Seventeen:

"Guaranteed supply to markets should prove to be more profitable in the future - less fish but a stable supply should benefit an IQ fishery eventually. We are trying to recapture lost markets and competing with a constant supply of fresh farmed fish (year round availability)."

Vessel Eighteen:

"I may still yet receive a higher price than the average price paid in the open fishery. I am waiting for an adjustment. I called N.D.S. today and am waiting to hear from them. I believe this could have been handled better and that we certainly can obtain the best prices available with IQ management."

Vessel Nineteen:

"Fishery was not given enough additional time to make it effective as it should be. Needs time and transferability to make it viable."

IQ Management

16. *If the Area H fishery switched to IQ management, do you think that the controlled harvests under an IQ fishery could bring conservation benefits to salmon management? (Circle the answer of your choice)*

A. Yes	**95%**
B. No	**0**
No Answer	**5%**

17. *Do you feel that the Area H Troll fleet would be more able to access it's portion of the TAC under an IQ management approach? (Circle the answer of your choice)*

A. Yes	**100%**
B. No	**0**

18. *How important to you is each of the following IQ management goals? (Circle one number for each goal).*

	Of little importance				Highly important	Average
A. Increased product quality and value	1 (1)	2 (0)	3 (0)	4 (4)	5 (15)	**4.6**
B. Conservation / Sustainability of the resource	1 (0)	2 (0)	3 (2)	4 (3)	5 (15)	**4.7**
C. Improved ability for decision making by DFO	1 (0)	2 (0)	3 (0)	4 (7)	5 (13)	**4.7**
D. Increased flexibility for harvesting opportunities (fishing times)	1 (0)	2 (0)	3 (0)	4 (3)	5 (17)	**4.9**
E. Reduced costs of fishing	1 (0)	2 (0)	3 (5)	4 (7)	5 (8)	**4.2**
F. Quota allocation security for each participant	1 (0)	2 (0)	3 (0)	4 (0)	5 (20)	**5.0**
G. Increased safety	1 (1)	2 (4)	3 (3)	4 (4)	5 (8)	**3.7**
H. Opportunity for co-management between DFO and Area H	1 (0)	2 (0)	3 (1)	4 (7)	5 (12)	**4.6**

Comments:

Vessel One:

"The ability to have this fishery fit in with other fisheries i.e., not to spend weeks on standby and the ability of this fleet to harvest our TAC with DFO managers not being gun shy and losing fear we will go much over our target cannot but help to improve our fishery."

Vessel Five:

"If this opportunity was given to all licence holders as an option, with guarantee of time to catch your quota for those who choose quota, I would then say the project was a success."

Vessel Eight:

"#17 Yes - perhaps longer window to fish and ability to take the balance with a seine if necessary."

Vessel Twelve:

"In order for the program to work to it's full potential we need transferability of IQ. This would greatly increase cost effectiveness of the whole industry."

Vessel Fifteen:

"F- having an opportunity to get 100% of our quota."

Next, we would like you to provide us with your comments on some of the issues surrounding the study.

19. A) What were the most positive aspects of the IQ fishery for you?

Vessel One:

"One positive aspect was for other salmon fishers not convinced of the idea's validity to see it function and not feel threatened by it. Also, for DFO managers to hopefully start to see the potential for controlling catch rates and to gain confidence so that they can give the idea a proper trial."

Vessel Two:

- The ability to ascertain whether or not you can profit from fishery.
- The marketing aspect.
- Slower paced.

Vessel Three:

"The most positive aspects of the IQ fishery were not able to be demonstrated by this project because of the circumstances under which it was run. This is not to say that the IQ project did not achieve its intended objectives. In fact, it demonstrated that dockside validation, either aboard a packer or at one of a number of coastal centres, is viable and practical. Given that dockside validation is a requirement of an IQ fishery, this was a significant achievement."

Vessel Four:

"- Being able to fish continuously through to the end of the fishery."

Vessel Five:

"The idea of catching a guaranteed number of fish before starting the season."

Vessel Six:

"Being able to have more access to the fishery and a better working relationship with DFO."

Vessel Seven:

"Improved quality and tagging fish."

Vessel Eight:

1. Working towards security of allocations and ability to take our whole allocation.
2. Working towards non-competitive, quality oriented fishery.
3. Lower expenses (in theory).

Vessel Nine:

- Flexibility of time management
- Safety - opportunity to recover from mechanical breakdowns.

Vessel Ten:

"'No stress'. I could look after my fish and stop fishing if I had more then I can freeze which keeps my quality at a #1, which is very important in today's market."

Vessel Eleven:

"All aspects mentioned in the previous pages but most importantly opportunity to fish."

Vessel Twelve:

"We showed that it could work."

Vessel Thirteen:

"- fished alone - should not of had time constraints - but did this year."

Vessel Fourteen:

"The most positive aspect was the change in attitude both within the fleet and DFO management. When we started you coldn't even use the "Q" word, now it is discussed openly and is given a fair hearing."

Vessel Fifteen:

"More fishing time on grounds and keeping cost down."

Vessel Sixteen:

"The most positive aspects of an IQ fishery to me would be having assured fishing time, and an allocated number of fish to harvest."

Vessel Eighteen:

"Security to access my quantity of fish, although this year wasn't what I had hoped for."

Vessel Nineteen:

"We proved that at sea monitoring is possible."

Vessel Twenty:

- Time allotted to catching the fish.
- Quality of product (tagging, etc.).
- Less pressure, transferability in future of quota, etc.

B) What are the most negative aspects of the IQ fishery for you?

Vessel One:

"The negative side of the fishery just completed were that we had all of the constraints of the derby fishery but if one had been lucky and hardworking enough to have been able to get good fishing, one would have had to shut down while the derby fisherman would have been allowed to keep going."

Vessel Two:
"Limits and costs."

Vessel Three:
"In general, the IQ fishery should have few, if any, real disadvantages for me. In this instance, IQ provided a production cap for the IQ participants while the balance of the Area H fleet were not subjected to an individual production cap but were afforded essentially the same access to the fishery. This appears to be largely an academic issue given that very few in either fleet caught the IQ amount."

Vessel Four:
- High costs associated with packer.
- Note - this negative aspect would be reduced or eliminated with more participation.

Vessel Five:
"Not having the option of selling to my regular buyer so I could sell all species available to Area H."

Vessel Six:
"There were none."

Vessel Seven:
- Selling to one company.
- Non transferability.

Vessel Eight:
1. High costs for the pilot due to lack of economics of scale.
2. No transferability.

Vessel Nine:
"Continued dependence on timely run updates by DFO et al."

Vessel Ten:
"None."

Vessel Eleven:
"The non-quota fishermen."

Vessel Twelve:
"Considering the way that the modern sockeye fishing is going with its sophisticated management, there is no other alternative than an IQ fishery. The only negative aspect is that the romance of the troll fishery is gone forever."

Vessel Thirteen:
"Validation."

Vessel Fourteen:

"The vessels which participated were handicapped by largely having to fish with the main fleet with a cap on their ability to retain fish."

Vessel Fifteen:

"Another subject in which fisheries are now having to adjust too!"

Vessel Seventeen:

"The resentment from some of the non-participants in the Area H fishery - animosity on the phone."

Vessel Eighteen:

"Timing this year. We need lots of advance time to plan our fishery - not the derby style of 24 hours or no notice."

Vessel Nineteen:

"Was not given enough additional time beyond derby fishery to be effective without full transferability."

Vessel Twenty:

"Monitoring and the expense of same to run the fishery. With opportunity provided this year may have been able to do better economically in the derby fishery."

20. Why did you participate in this demonstration IQ fishery?

Vessel One:

"The fishery as it is now structured is barely viable and with government demands for cost recovery, etc., will become less so. Secondly, access is also becoming more and more important. Although the halibut and salmon fishery are quite different - what has happened with the halibut and other IQ fisheries holds promise for the salmon fisheries, especially an "artisanal" fishery like salmon trolling where high quality and niche markets have been possible in the past and can be possible again."

Vessel Two:

"I would like to see our management more realistic to the times, and accountable, and believe this system will give us that, creating more access to small bite fisheries thereby increasing our quotas."

Vessel Three:

"The existing "derby" salmon fishery has not proven to be an economic undertaking for most in the industry and I believe that the alternative of running the commercial salmon fishery under a quota regime needed to be explored and evaluated."

Vessel Four:

"I wanted to help prove that at sea validation was viable."

Vessel Five:

"I hope to show that this was a better way to harvest salmon for a troller. If more time had been available to catch our quota, it would have been great."

Vessel Six:

"Because I believe that there is no other way to conduct a fishery and I would like to see this work."

Vessel Seven:

"I believe IQ is best for the future, the only way to improve quality and marketing."

Vessel Eight:

1. I want to move this fishery into the modern era and start making some money.
2. I want to spend a lot less time taking my Area H troll fish so that I can pursue other fishing opportunities.
3. I want the ability to acess all of my Area H allocation.

Vessel Nine:

- There was at least a fighting chance there would be fishing opportunity.
- "put money where mouth is" I believe quota is the way to go.

Vessel Ten:

"I feel it is the only way to properly manage all fishing for future generations."

Vessel Eleven:

"To try to prove that this is the way of the future."

Vessel Twelve:

"I believe in the program and that we need a quota fishery to maintain our stake in the resource. Hopefully the IQ fishery will give us some security of access to the resource in the future."

Vessel Thirteen:

"I want quotas."

Vessel Fourteen:

"I see an IQ as the only fair way to settle the fish component of native land claims. It is needed to be proved out."

Vessel Fifteen:

"For my future, to prove there are new ideas for fishers."

Vessel Sixteen:

"I participated in the fishery to support the IQ system."

Vessel Seventeen:

"Because it is the only road to our future that will enable us to achieve Area H's share of the TAC and secure our access to the resource."

Vessel Eighteen:

"To prove it can be successful. Also, to get away from short notice and short duration openings. Although DFO gave the IQ participants little time outside of the open fishery and the open fishery didn't have a series of openings and closures."

Vessel Nineteen:

"For the future - got to be a better way."

Vessel Twenty:

- I liked working closer with DFO and the problems associated with running this fishery.
- The possibility of transferability of quota in the future.
- Able to plan ahead and work on this type of fishery.

21. We are interested in any other comments you may have concerning your role as a participant in the IQ Demonstration fishery. Please write in the space below any thoughts that you would like to share.

Vessel One:

"My thanks to Rick and others who helped put this thing together.

1. *We spent a lot of time unjamming the gun. Perhaps if we tag in future, participants could buy 2 or more as spares.*
2. *Due to freezer problems, I sold six days before the end in Delta. I do not know if freezer landings were co-ordinated and if they were it would help keep costs down.*
3. *Blake Tipton said he would be selling my fish to InterOcean. Blake was somewhat disparaging about the tags but it would be interesting to get feedback from Lance or others as to what they thought of the idea and the Gulf Troll Identification. Blake was not my intended buyer but my guy was not available on Saturday when my freezer broke down."*

Vessel Two:

"I would like to see this extended into all areas, and have the ability to increase value of licence and catchability profit. By stacking licence, and times matching to make it possible to utilize quota to max benefits. Pink salmon could be utilized properly if time was available. Counting fish is slightly problematic and needs to be addressed as it is slow and fast paced at times. Poundage rather than pieces may be a solution?"

Vessel Three:

"In order for the dockside monitoring to be viable, the dockside monitors need to be available to multiple buyers on the fishing grounds. A "roving" monitor that can be dispatched (on a scheduled basis if necessary) to different buyers and packers will allow IQ participants to freely sell their fish to the buyer of their choice and under open market

and competitive terms rather than to a single monopolistic buyer (as was the case with the demonstration IQ project).”

Vessel Four:

“I feel strongly that in order to survive, the Area H troll fleet should move quickly to Individual Transferable Quotas.”

Vessel Five:

“To make an Individual Quota system work, it must be understood by all fishers that if you're not on a quota, you may have to stop fishing sooner than quota fishers. Only when all people understand the rules the quota system can be made to work. For next year I would like to see DFO offer to all licence holders a set quota. You can choose when you buy your troll licence, and, that they allow all who choose quota to obtain their allowed number of fish. If this doesn't happen then it all becomes another "derby fishery".”

Vessel Six:

“I would like to see transferability.”

Vessel Eight:

“I had a camera aboard for the second year - it needs to turn itself on as I forgot to activate it on a number of occasions (Gurdy Switch?). Eventually I would like to go to ITQ in this fishery so that I would have the option of catching my fish with a seine boat if necessary. A good example of the need for this was this year's fishery where I fell short of my IQ due to an abundance of pinks. With a seine I could have taken my sox and kept the pinks caught at the same time; I'd have made more money and caused no bycatch mortality (I shook most pinks this year).”

Vessel Ten:

“I would like to see this done on a lot larger scale.”

Vessel Twelve:

“I feel the program was a success but it has to be determined what degree of accuracy is required by DFO. The whole electronic thing is costly and subject to misreading, a simple formula of weight divided by average weight would be much cheaper if DFO would work with a margin of error. You're never going to get 100% accuracy, so what is acceptable?”

Vessel Thirteen:

- *Tag the fish then validation can be checking the boat. Each boat gets number of tags (based on) quota.*
- *DFO must become less risk adverse as we can stop quickly and are low impact.*
- *Why are we still using barbless hooks?*
- *Robson Bight boundary does not make sense.*

Vessel Fourteen:

"This fishery needs to go to full transferability with the ability to catch our quota however we see fit. It is the only way to maintain Area "H" allocation and thusly our licence value."

Vessel Fifteen:

- *Packers should be a local buyer; ie. Hub City or others.*
- *More up front fishing time not just one day.*
- *Keep fishers scores out for other fishers (to see/hear) so that everything is up front and honest.*

Vessel Sixteen:

"I would like to see a tag allocation system looked into for validating harvest numbers of each IQ vessel. I believe that electronically coded tags, in the future, could offer much information and make validation cost efficient."

Vessel Seventeen:

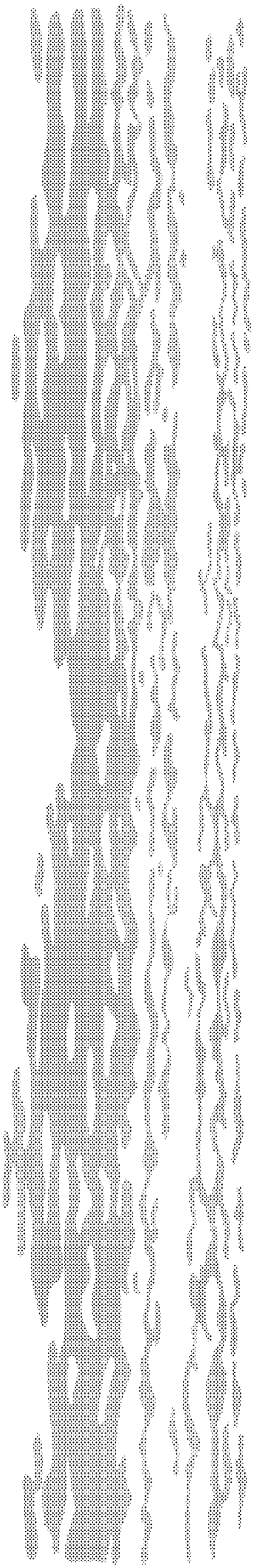
"It was people like Rick Nordstrom and the North Delta crew and packers who helped tremendously in our Demonstration. Also, the DFO staff who took extra time to make sure it went ahead. Considering that we were novices in a new project it went well. Many thanks to Gord Curry who gave up a lot of his summer to ensure that things moved along without too many hitches."

Vessel Eighteen:

"In a true IQ fishery like halibut or blackcod the season is long enough for all harversters to attain their allocation. Trollers are a low impact group catching small quantities of high quality fish. We must be afforded the time to reach our allocation. If this is impossible, we then have to consider other selective fishing methods to achieve our allocation. I believe trolling is the most selective type of fishing. We can release a non-target species with little stress. Our allocation is relatively small, as is our impact. In order to remain viable, we need to catch our allocation. As mentioned, we can get the best available prices through IQ management, but I don't feel our association handled this well. This was our first year and we all are learning."

Vessel Nineteen:

"Let us take our allocation anyway we can. I would contract a seiner along with several other fishermen to make it viable. I would dress and freeze the sockeye and pinks quickly and when the allocation was taken, leave the grounds to minimize cost. The way it is now we cannot get our allocation in the short window of opportunity we are allowed. Usually the fish either don't bite, or are not yet available in the required numbers. The present fishing plan is too inflexible. This year the fish just came in force for the last 1-2 days allowed to us. Things are just too chancy."



Archipelago Marine Research Ltd.
525 Head Street
Victoria, BC
V9A 5S1
Canada

tel: 250.383.4535
fax: 250.383.0103

email: amr@archipelago.ca
web: www.archipelago.ca

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