British Columbia Pink Salmon (*Oncorhynchus gorbuscha*) Seine, Troll and Gillnet Fishery

British Columbia Coastal and Adjacent Canadian Pacific EEZ Waters

PUBLIC CERTIFICATION REPORT

Contract Number: 07-07 BC Salmon
Version: Final Certification Report Version 1

Certificate No.:

Date: July 25, 2011

Client: **Canadian Pacific Sustainability Fisheries Society**

MSC reference standards:

MSC Principles and Criteria for Sustainable Fishing, Nov, 2004.
MSC Accreditation Manual Issue 4,
MSC Fisheries Certification Methodology (FCM) Version 6,
MSC TAB Directives (All)
MSC Chain of Custody Certification Methodology (CoC CM) Version 6.

Accredited Certification Body:
Moody Marine Limited
99 Wyse Road, Suite 815
Dartmouth, Nova Scotia, Canada B3A 4S5

Assessment Team
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Dr. Ray Hilborn, PhD.
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EXECUTIVE SUMMARY

In January 2008, the client, Canadian Pacific Sustainability Fisheries Society, contracted TAVEL Certification to conduct a full fisheries assessment the Marine Stewardship Council Sustainable Fisheries Program on three units of pink salmon and four units of chum salmon in British Columbia. This report provides the results of the assessment of the three pink salmon units of certification including the north and central coast fisheries, the inner south coast fisheries and the Fraser River fisheries. The assessments evaluated a number of gear types, including seine, gillnet, troll, beach seine, fish wheels, weirs, dipnets.

The site visit assessment was conducted by TAVEL Certification (Mr. Steve Devitt) and its' Assessment Team (Dr. Ray Hilborn, Dr. Dana Schmidt and Mr. Karl English). The assessment was conducted using the MSC Principles and Criteria for Sustainable Fishing, Issue 2, November 2002. The MSC Fisheries Certification Methodology (FCM) Version 6, September 2006 was used for all steps of the assessment process. In January 2010 TAVEL Certification was acquired by Moody Marine Ltd, a Moody International company. In recognition of this fact, this Public Certification Draft Report now bears the Moody International company name and was reviewed by the Moody Marine Governing Board in accordance with the Marine Stewardship Council's Fisheries Certification Methodology.

Several information sources informed scoring rationales including: the client submission, available science and management documents, and information and testimony attained during the fishery site visit. The client and Fisheries and Oceans Canada (DFO) prepared an extensive response to the finalize performance indicators drafted to evaluate the fishery. The client submission documents are available on the MSC website (http://www.msc.org/track-a-fishery/in-assessment/pacific/british-columbia-pink-and-chum-salmon/assessment-downloads) and are integral in the presentation of evidence and subsequent scoring of the fishery. Conducted in January 2009 in Vancouver, BC the fishery site visit enabled the assessment team to meet with DFO scientists and managers, the clients; and representatives from environmental/conservation organizations.

Over the course of the assessment, it was clear that the management agency, DFO, has committed significant effort over the last decade to improve the consultative processes and tools used to manage these fisheries. Furthermore, the DFO has greatly improved the transparency of its management processes. Conversely, reduced DFO personnel resources have lead to the degradation of some of the key stock and escapement monitoring activities traditionally undertaken by DFO. These reductions have resulted in lower amounts of stock health benchmark data from the field and subsequently has resulted in lower confidence in the escapement estimates produced by DFO. Establishment of formal limit reference points, or suitable proxies remains a challenge to DFO.

The overall performance of the three pink salmon fisheries units of certification conducted in the BC coastal waters, and adjacent Canadian Pacific waters is identified in the table below. The Assessment Team and Moody Marine Limited's Governing Body

has determined that the fishery be certified under the MSC Sustainable Fishing program as the following performance criteria have been met:

1. Each MSC Principle has an aggregated, weighted score higher than the required score of 80.
2. No individual performance indicator had a score below 60.
3. The client has agreed to improve the fishery performance for the performance indicators which had scores below 80 and above 60.

Final scores allotted to British Columbian pink salmon fisheries and number of conditions issued.

	Unit of Certification Performance					
	North Central Coast Pink Salmon		Inner South Coast Pink Salmon		Fraser Pink Salmon	
MSC Principle	Fishery Performance	Number of Conditions Issued	Fishery Performance	Number of Conditions Issued	Fishery Performance	Number of Conditions Issued
1	80	8	80	9	81	8
2	81	3	85	2	83	2
3	87	8	91	3	90	4

This report provides the details of the certification process that was undertaken for the candidate fisheries to the end of the Final Certification R Public Report phase, however, much of the information referred to in this document is either directly appended to the report or can be downloaded from the MSC website at the following address: http://www.msc.org/track-a-fishery/in-assessment/pacific/british-columbia-pink-and-chum-salmon/assessment-downloads

TABLE OF CONTENTS

Appendices

TABLES

FIGURES

Amendments Issued Since Original Draft

Version	Date	Amendment Description
1	July 28, 2009	First Draft
2	February 3, 2010	Client comment edits
3	September 29, 2010	Peer review edits
4	December 1, 2010	Public Comment Draft Report
5	June 26, 2011	Final Public Report
6	July 25, 2011	Public Certification Report

1. INTRODUCTION

The Marine Stewardship Council (MSC) is a non-profit organization whose mandate is the long-term protection of the world's marine fisheries and the associated ecological components. Through a process of consultation with various stakeholders over a two-year period commencing in 1996, the MSC established its standard for well managed and sustainable fisheries called the "MSC Principles and Criteria for Sustainable Fishing" (MSC P&Cs).

The finalized MSC Fisheries Certification standard was issued in 1998, and has since been used as the basis by which fisheries are evaluated under the MSC program. The fisheries certification methodology (FCM) has since been updated periodically with the current version (FCMv6) issued in September 2006.

The objective of the MSC is to promote fisheries certified as sustainable directly in the marketplace through the use of the MSC Fish-tick eco-label on certified fish products. Ultimately, through educating fish product consumers about the plight of fishing stocks in the world and the MSC Program, it is hoped they will reward sustainable fisheries by choosing those fish products originating from certified sustainable fisheries.

Interested fisheries can submit their candidature to an accredited certification body for comparison against the MSC P&Cs. The comparison is a three part process inclusive of a pre-assessment (data gap analysis of the fishery), a full assessment (measurement of the fishery against the MSC P&Cs) and certification (5 year validity with annual surveillance requirements) for those fisheries that meet the standard. Successfully certified fisheries can claim their fishery is well managed and sustainable through the use of the MSC Fish-tick eco-label on product and marketing materials.

1.1 Unit of Certification

The MSC certification methodology defines a candidate fishery unit of certification as follows "The fishery or fish stock (=biologically distinct unit) combined with the fishing method/gear and practice (=vessel(s) pursuing the fish of that stock)."

For the purposes of MSC certification, the defined units of certification for this project are the fisheries targeting pink salmon in the following geographic areas as described below:

- Fraser River
- Inner South Coast
- North Coast and Central Coast

These fisheries represent the majority of the BC commercial fisheries that harvested pink salmon in recent years. Harvesters are individually identified with a DFO issued Fisher Identification Number (FIN) are required to have valid fishing permits for the statistical areas they fish in. Currently, all legally In this report, each unit of certification has been scored separately.

The specific information related to the candidate units of certification are as follows:

Species: Pink Salmon (*Oncorhynchus gorbuscha)*

Geographic Area: Canadian Pacific EEZ and British Columbia Coastal Waters

Method of Capture: Seine, gillnet, troll, beach seine, fish wheels, weirs, dipnets

Fisheries Considered: Non-First Nation Commercial fisheries, First Nation Excess Salmon to Spawning Requirement fisheries and FN Economic Opportunity fisheries.

Fisheries:

Fraser River Pink - This certification assesses the pink salmon fishery in statistical Area 29, which includes the Fraser River mainstream and Fraser River tributaries below the Mission Bridge. Most pink production occurs in the Lower Fraser from the Fraser Canyon downstream to the outlet, with major populations originating from the Harrison River, the Vedder-Chilliwack watershed, the Fraser Canyon, the Seton-Anderson watershed, the Thompson River, the Upper Fraser mainstream, and the Lower Fraser mainstream.

Inner South Coast Pink Salmon (Excluding Fraser River) - This certification unit assesses the Inner South Coast pink salmon fishery. This profile covers all pink salmon spawning in watersheds in Johnstone Strait and the Strait of Georgia (i.e. statistical areas 11 to 19), except for Fraser River pink salmon. Pink salmon distribution throughout the Inner South Coast can be summarized by statistical area: Area 11 (Northeast Vancouver Island), Areas 12 and 13 (Main inlets, Johnstone Strait, and mid-Vancouver Island), Area 14 (Mid-Vancouver Island), Areas 15 and 16 (Toba Inlet and Jervis Inlet), Area 17, 18, and 19 (No major pink salmon runs originate here, but the Nanaimo River supports a small persistent run of pink salmon), and Area 28 (Fraser approach areas)

North Coast and Central Coast Pink - This certification unit assesses pink salmon spawning in watershed in Areas 1 and 2 (Queen Charlotte Islands), Area 3 to 6 (North Coast), and Areas 7 to 10 (Central Coast).

Management: The British Columbia pink salmon fisheries are managed by the Department of Fisheries and Oceans.

Traceability: All commercial salmon landings are subject to weight verification and the issuance of sales slips which are also forwarded to DFO to use in catch monitoring. Commercial salmon harvesters are also required to maintain accurate logbooks, and conduct frequent phone-ins.

At-Sea Processing: There is no at sea processing in the commercial salmon fishery in British Columbia.

Point of Landing: Product must be landed at designated ports which allow Federal and Provincial compliance and enforcement officers to observe and verify landings.

Figure 1: Management areas defined in the Pacific Region salmon fisheries. Source: DFO, 2008

1.1.1 Point of Entry in Chain of Custody and Eligibility Date

The specific scope of this full certification assessment is the BC pink salmon seine, troll, gillnet and beach seine, fish wheels, weirs, dipnets fisheries in the British Columbia coastal and Canadian Pacific EEZ waters. With exception to a small amount of troll caught salmon that is frozen at sea (bled, dressed and quick frozen), product from the commercial British Columbia salmon fishery is landed and processed in BC coastal ports. Processed fish from the troll sector is also landed in on shore. Only pink salmon caught Canadian waters and landed in BC would be eligible to be sold as MSC certified fish and fish product.

Integrity of the landings for MSC Chain of Custody requirements was only checked to the point of first landing for BC pink salmon landed by legally permitted, salmon fishing vessels with valid salmon licenses where the landings can be monitored in accordance with monitoring requirements.

As required by MSC Policy Advisory 4v2, TAVEL Certification and the British Columbia salmon certification clients have agreed that the eligibility date for this certification will be

July 1st, 2009. All client companies wishing to sell certified product must have a valid Chain of Custody certification audit conducted in accordance with this the MSC Chain of Custody standard, methodology and relevant Policy Advisories and TAB Directives.

1.2 The Clients

The client for this certification is the Canadian Pacific Sustainability Fisheries Society, a group of salmon industry harvesting and processing companies gathered to specifically act as a client for the MSC certification process and to respond to necessary conditions.

1.3 Summary

The certification process and this report is considered stock status and fishery management practices to the end of the 2008 fishing season and includes information updated until December 2008 and as presented in the stock status information provided in Appendix A.

The MSC pre-assessment of the BC salmon seine, troll and gillnet fisheries was completed in April 2001, by Scientific Certification Systems (SCS). The full assessment of the candidate fishery was started in January 2008. There were no site visits conducted as part of the pre-assessment, rather the meetings to further understand the fishery, its management and relevant scientific work were conducted both in person and via teleconference calls. The Assessment Team drafted the Performance Indicators (PIs) for the fishery over the course of the spring of 2008 via electronic correspondence. The basis of the performance indicator drafting was the performance indicators drafted for previous certifications including the BC Sockeye certification PIs, the Alaskan Salmon initial and recertification PIs. The official fishery visit was conducted in January 2009, with meetings taking place in Vancouver, BC. The Public Comment Draft Report was published on December 7, 2010. The assessment was conducted using the MSC Principles and Criteria for Sustainable Fishing, Issue 2, November 2002. The MSC Fisheries Certification Methodology (FCM) Version 6, September 2006 was used for all steps of the assessment process.

The management of Canada's Pacific fisheries resources is clearly divided between federal and provincial authorities. Marine fish typically fall under federal jurisdiction, and freshwater fish under provincial jurisdiction. However, the boundaries for the management of salmonid fisheries are a bit more complex:

- DFO regulates First Nations fisheries, even if they occur in freshwater
- DFO regulates all commercial fisheries in tidal waters
- DFO regulates all sport fisheries in tidal waters, and salmon sport fisheries in freshwater. DFO's regulations for salmon sport fisheries in freshwater are published as a supplement to provincial regulations for all freshwater fisheries.
- Province of British Columbia, under delegated authority from Federal Government, manages the freshwater sport fisheries for steelhead and conducts steelhead stock assessments.

Therefore, the Department of Fisheries and Oceans (DFO) is the ultimate authority with regards to management of the candidate fishery. In British Columbia all salmon fisheries (First Nations, Commercial and Recreational) is conducted within the framework of an inter-annual management cycle. The management cycle includes; a pre-season analysis of potential salmon returns, setting of conservation objectives and annual management objectives, in-season management and post-season review. Salmon fisheries are managed with the objective of reaching escapement targets or harvesting a certain proportion of the returning run.

There are detailed fishery management plans for all salmon fisheries in BC including First Nations, commercial and recreational. These plans describe the policy framework of the fisheries, the objectives of the management plan, decision guidelines and specific management measures as well as the fishing plans for the First nations, commercial and recreational fisheries.

Integrated Fisheries Management Plans (IMP) are a central element of the annual planning cycle for Pacific Salmon. Each IFMP describes management objectives, general decision guidelines, specific fishing plans for each fishery, and a review of the previous season.

DFO produces two IFMPs for sockeye, coho, pink, chum and Chinook salmon:

- The Southern BC Salmon IFMP covers salmon fisheries in tidal and non-tidal waters from Cape Caution south to the BC/Washington border, including the Fraser River watershed
- The Northern BC Salmon IFMP encompasses tidal and non-tidal waters from Cape Caution north to the BC/Alaska boundary. The tidal waters within this area are denoted as Management Areas 1 to 10 inclusive, 101 to 110 inclusive and 130 to 142. For the purposes of this IFMP, non-tidal waters are defined as the watersheds that contain anadromous salmon and flow into Areas 1 to 10 (See Figure 1 for a map of Areas).

The Province of British Columbia has a regulatory role with respect to on-shore processing, and acts in an advisory capacity to DFO in the fishery management process.

The Assessment Team consisted of three expert assessor members and one lead auditor to provide guidance on the certification methodology as required by the MSC FCM. The team members were, in order of MSC Principle, Dr. Ray Hilborn, Dr. Dana Schmidt, and Mr. Karl English, M.Sc. The Lead Auditor for Moody Marine was Mr. Steven Devitt, B.Sc.

The Assessment Team drafted sub-criteria groupings, performance indicators and scoring guideposts which were used to evaluate the performance of the fisheries' conformance to the MSC Principles and Criteria for Sustainable Fishing. Through the prescribed process of public comment, the performance indicators and scoring guidelines (PISGs) were finalized based on comments by the client, the MSC and stakeholders. Stakeholders were contacted personally and/or through the electronic media, and were given the opportunity to make written and oral submissions.

After consideration of all objective evidence presented, the assessment team recommends that the fishery be certified with conditions.

1.4 Strengths and Weaknesses of Client Operation

Strengths

Fisheries and Oceans Canada has committed significant effort over the last decade to improve the consultative processes used to manage these fisheries. Furthermore, the DFO has greatly improved the transparency of its management processes.

Weaknesses

Reduced DFO resources have lead to the degradation of some of the key stock and escapement monitoring activities traditionally undertaken by DFO. These reductions have resulted in a lower amount of stock health benchmark data from the field and subsequently has resulted in lower confidence in the escapement estimates produced by DFO.

Establishment of formal limit reference points, or suitable proxies remains a challenge to DFO.

1.5 Conditions and Recommendations

Conditions, condition intents and suggestions provided by the team can be seen in Section 10 below. Currently for the three units of certification, there is a total of 39 conditions raised against 16 performance indicators which the client addressed through an action plan approved by the assessment team and the certification body. A number of the conditions are common across multiple units of certification and are addressed with common action plans.

Most conditions will require the cooperation of DFO scientific and management department staff. In the instance that the client requested assistance from DFO to conduct specific condition tasks, the certification body has formally confirmed that DFO is prepared to assist and be responsible for those action undertakings.

Now certified, the fishery will be subject to annual surveillance audits. The annual audit has two functions: firstly to assess the implications for the MSC certification of any changes in science or management of the fishery, and secondly, to assess the meeting of conditions of certification. The first audit will review the performance of the fishery and stock health indicators up to the most recent completed assessment cycle and subsequent cycles will review the results for the proceeding annual cycle.

1.6 Salmon Fishery Terminology

Managers and biologist use a wide variety of terms to describe the groups of fish they manage for specific fisheries. It should be noted that there may be some differences between these

generic definitions and the operational language used by the management agencies. For the purpose of this evaluation we will use the following terms and definitions:

Bycatch – the harvest of non-target species or non-target stocks.

Enhanced stocks - stocks of salmon that have been directly augmented using artificial propagation techniques (e.g. hatcheries, in-stream incubators, spawning channels, out-planting)

Escapement – those mature salmon that are not harvested and thus may contribute to the spawning component of the stock.

Fisheries scientists outside the management system – this includes fisheries scientists that are not full-time employees of Fisheries and Oceans Canada but have demonstrated expertise related to the fisheries management or stock assessment issues in question. These could include professional scientists employed in the private sector, universities or other non-governmental organizations.

Harvest – those fish or other species that are caught and killed during a fishery or die as a direct result of fishing activity.

Indicator stock – a salmon stock for which detailed information is collected and used to manage a larger group of salmon stocks or stock management unit.

Limit Reference Point (LRP) - indicates the state of a fishery and/or a resource, which is not considered desirable. Fishery harvests should be stopped before reaching it. If a LRP is inadvertently reached, management action should severely curtail or stop fishery development, as appropriate, and corrective action should be taken. Stock rehabilitation programs should consider an LRP as a very minimum rebuilding target to be reached before the rebuilding measures are relaxed or the fishery is re-opened.

Majority – this could be a simple majority (e.g. >50% of the stocks in a stock management unit) or a numerical majority (e.g. >50% of the fish in a stock management unit or scientists in a region), where the management system has provided acceptable rational for the definition used in their submission for each indicator.

Natural salmon stock – a naturally-spawning stock that includes spawners produced by hatcheries. This terminology is used to distinguish it from a "wild" or native stock that has not been influenced by artificial propagation.

Non-target species – species that are not the focus of the fishery but are caught in a fishery that is attempting to harvest other species.

Non-target stock – a stock of salmon that is not the focus of the fishery but is caught in a fishery that is attempting to harvest other salmon stocks.

Precautionary approach - A set of measures and actions, including future courses of action, which ensures prudent foresight, reduces or avoids risk to the resources, the environment, and

the people, to the extent possible, taking explicitly into account existing uncertainties and the potential consequences of being wrong.

Productivity, related to ecological community or the ecosystem – the rate of biomass production per unit area per unit time.

Productivity, related to salmon – the number of salmon per spawner per unit of time (usually per year). A common measure of productivity for salmon is the number of recruits per spawner, where a fish is classified as a recruit if it survives to be harvested or escapes to a spawning area.

Reference points - A (management) reference point is an estimated value derived from an agreed scientific procedure and an agreed model to which corresponds a state of the resource and of the fishery and which can be used as a guide for fisheries management.

Risk - the possibility of suffering harm or loss; danger; a factor, thing, element, or course involving uncertain danger, a hazard. In decision theory "the degree of probability of loss. A statistical measure representing an average amount of opportunity loss." This terminology is used "when large amounts of information are available on which to base estimates of likelihood, so that accurate statistical probabilities can be formulated"

Risk analysis - Any analysis of unknown chance events for purposes of effecting or evaluating decisions in terms of possible penalties and benefits attending these events. A method for generating different probability distributions with accompanying cost and benefits that may attend different courses of action.

Stock – meaning a group of salmon defined by its species, spawning location or spawning region, and in some cases run timing.

Stock management unit – meaning the stock or group of salmon stocks that are treated as a single unit when setting management goals or making fisheries management decisions.

Target Reference Point (TRP) - corresponds to the state of a fishery and/or a resource, which is considered desirable. Management action, whether during a fishery development or stock rebuilding process, should aim at maintaining the fishery system at its level.

Target species – the species of salmon that a specific fishery is attempting to harvest.

Target stocks – specific salmon stock or stock management unit that a specific fishery is attempting to harvest.

Uncertainty - The condition of being uncertain. Doubt. Something uncertain. In statistics, the estimated amount or percentage by which an observed or calculated value may differ from the true value. The incompleteness of knowledge about the states or processes in nature.

Wild stocks – stocks of salmon that have not been augmented through artificial propagation techniques (e.g. hatcheries, in-stream incubators, spawning channels, hatchery out-planting).

(Adapted from FAO, 1995 The Precautionary Approach To Fisheries and its Implications for Fishery Research, Technology and Management: an updated review by S.M. Garcia, Fishery Resources Division, FAO Fisheries Department.)

2.0 BACKGROUND TO THE REPORT

2.1 Authors and Peer Reviews.

The assessment team consisted of the following four individuals.

Dr. Ray Hilborn, Ph.D. – Ray Hilborn is Professor in the School of Aquatic and Fishery Sciences, University of Washington specializing in natural resource management and conservation. He teaches graduate and undergraduate courses in conservation, fisheries stock assessment and risk analysis and currently serves as an advisor to several international fisheries commissions and agencies. He authored "Quantitative fisheries stock assessment" with Carl Walters in 1992, and "The Ecological Detective: confronting models with data" with Marc Mangel, in 1997. He has received the American Fisheries Societies Award of Excellence and the Volvo Environmental Prize. He is a Fellow of The Royal Society of Canada.

Dr. Dana Schmidt, Ph.D. - Dana Schmidt is a limnologist and quantitative fisheries biologist with 35 years of experience of which 18 were in Alaska and 10 in British Columbia. He is responsible for statistical design and analysis of many of Golder Associates Ltd. western North America fisheries and limnology studies and has directed numerous projects involving environmental assessment and investigations of population dynamics of species that are impacted by development. He spent 16 years with the Alaska Department of Fish and Game conducting fisheries research are Alaska lakes, streams, and marine habitat with much effort directed at numerous sockeye salmon lakes across Alaska. He directed stock assessment programs on all Pacific Salmon species in the westward region of Alaska during his tenure as regional research supervisor on Kodiak Island. He has been a senior reviewer of BC lake fertilization programs targeting kokanee. He has been recognized as the lead author of the "Most Significant Paper" in the North American Journal of Fisheries Management for his research on ecology of Karluk Lake sockeye salmon on Kodiak Island, Alaska and has authored over 50 publications and research reports on environmental impacts on aquatic systems and fisheries management. He has served as an assessment team member for the sockeye salmon component of the MSC BC salmon certification program since 2002.

Mr. Karl English, M.Sc. – Karl English, President of LGL Limited, is a professional fisheries biologist with over 26 years of experience related to Pacific salmon fisheries and stock assessment research. He is responsible for overseeing and guiding LGL's operations across Canada, in the Pacific Northwest, Alaska and Eastern Russia. His fisheries work has included a wide variety of studies conducted throughout BC, the Yukon, Alaska and Washington State. Karl has spent most of his career designing and implementing studies to improve the quality and quantity of information available for the management and assessment of Pacific salmon and steelhead stocks. He has designed catch monitoring programs for commercial, sport and

First Nation fisheries; directed multi-year studies to assess fish distribution, abundance and migration behaviour in coastal waters and large river systems; and provided expert advice to First Nations, industry, NGO's, university researchers and all levels of government. He has served as an assessment team member for the sockeye salmon component of the MSC BC salmon certification program since 2002.

Lead Auditor – Certification Process

Mr. Steven Devitt, B.Sc. – Operations Manager and Lead Auditor for TAVEL Certification Inc from 2000 to 2010. His principle responsibilities include management of the project, verification of proper MSC Fisheries Certification Methodology (FCM) procedural implementation during the full assessment, preparation of report and client contact. Mr. Devitt brings a broad environmental and fisheries background to the project, he is a trained ISO 14000 lead auditor. He also has a strong working knowledge of anthropogenic causes of disturbance to coastal zones.

Peer Reviewers

As required by MSC Fisheries Certification Methodology, version 6, the client reviewed report was peer reviewed by two individuals. Three candidates were proposed in July 2009. After receiving comment from stakeholders regarding the experience of the peer reviewers, Dr. Greg Ruggerone and Dr. Brian Riddell were selected to conduct the peer reviews. Dr. Riddell was selected based on feedback from stakeholders and appointed after approval by the client and MSC. The peer reviewers for this report are as follows, the peer review results can be found in Appendix B of this report:

Dr. Greg Ruggerone, PhD. - Natural Resource Consultants Corp., Seattle, WA. Dr. Ruggerone is Vice President at Natural Resources Consultants and has more than 20 years of research and management experience in Pacific salmon from California to Alaska. He has held positions at the University of Washington, Jones & Stokes Associates, and BioSonics. Dr. Ruggerone has been an assessment team member on 2 MSC assessments of salmon and a peer reviewer for 2 or more MSC reports. . Dr. Ruggerone has conducted applied research in salmonid predator-prey interactions, effects of habitat changes on salmonid production, limnological studies, salmon stock identification techniques, effects of hydropower operations on downstream smolt and upstream adult migrations, forecasting salmon run sizes, and investigations of oil spill effects on anadromous fish populations. Dr. Ruggerone has published more than 50 papers on salmon including studies on marine competition, the potential impacts of climate change on salmon growth and survival, and the abundance of salmon populations in specific areas in Alaska.

Dr. Brian Riddell, PhD. - CEO/ President Pacific Salmon Foundation. Dr. Riddell spent thirty years in public service with Fisheries and Oceans Canada and is now with the Pacific Salmon Foundation. He studied the population genetics and dynamics of Pacific salmon and worked extensively in international fishery issues. The latter particularly included management of Chinook salmon coast wide through the Pacific Salmon Treaty, but also work with the North Pacific Anadromous Fisheries Commission. Dr. Riddell has also worked extensively providing scientific advice on salmon conservation and their use through the Independent Science

Advisory Board in the Columbia Basin and for the Pacific Fisheries Resource Conservation Council in British Columbia.

2.2 Previous Assessments

This is the first full assessment of conformity of the British Columbia pink salmon seine, troll and gillnet fisheries within BC coastal waters and the adjacent Canadian Pacific EEZ to the MSC Principles and Criteria for Sustainable Fishing.

2.3 Field Inspections

In the absence of a site visit during the pre-assessment, findings were based on the review of relevant scientific and technical literature as well as through interviews conducted with key people via teleconference and in person when possible. Interviews were conducted with the clients, representatives from the Department of Fisheries and Oceans, the provincial government, First Nations technical advisors and non-governmental organizations.

Assessment team members completed the review the certification assessment process; current fishery context; and drafted the performance indicators for the fishery during the spring of 2008 via electronic correspondence.

The fishery assessment visit was conducted during the period of January 20-23, 2009 with meetings held in Vancouver, British Columbia. These meetings included discussions with members of the client group, members of the environmental and conservation community, individual processors, stock assessment biologists, resource management staff, and Fisheries and Oceans Canada (DFO) scientific and management staff.

2.4 Consultations

During this assessment, the assessment team received input from two groups of stakeholders during the consultation process. The first group, including the client and Fisheries and Oceans Canada provided specific information about the fishery and its management, science and operations. The client and DFO provided significant information and published the submissions on the MSC website. Submissions can be seen at the following web address: http://www.msc.org/track-a-fishery/in-assessment/pacific/british-columbia-pink-and-chum-salmon/assessment-downloads. The assessment team also met with members of these groups during the fishery assessment site visit.

As part of the MSC defined stakeholder process, the assessment team also met with stakeholders wishing to meet with the team and discuss the fishery management directly. This group included personnel from the British Columbia Ministry of Environment and members of the Marine Conservation Caucus.

The stakeholder meeting attendance list for the fishery assessment visit is displayed in Table 1 below.

During the stakeholder meetings with the MCC, the main topics discussed with the team were:

1. Wild Salmon Policy (WSP)
   Concerns raised about the WSP include: the robustness of the WSP to save fisheries and weak stocks; funding to implement the requirements of the WSP in a timely and meaningful way; the objectives of the WSP particularly as related to biodiversity protection through implementation of limit reference points.

2. Conservation Units (CUs) within the WSP
   CUs are defined and has the team evaluated the health of the CUs, how do pink/ chum CUs match with the define units of certification, level of assessment of pink/ chum populations with the CUs, protection of biodiversity within the CUs.

3. Limit and Target Reference Points
   Concern was raised about the importance of development of LRP/ TRPs, particularly because of the importance of these species in the freshwater habitat.

4. Ecosystem based management objectives
   Concern was noted regarding the importance of these species in the freshwater habitat, specifically in relation to nutrient loading and forage needs of birds and terrestrial animals; is there consideration of contribution of pink and chum salmon on the health of habitat and ecosystem indicators in the freshwater habitat when setting limit and target reference points. DFO needs to implement a clear process of ecosystem based management.

5. Fishery Management
   Members of the MCC have provided input into the development of the South Coast Salmon IFMP and are concerned that their abilities to inform decisions in that process is very low. The Fraser River Sockeye Spawning Initiative was raised as an example of where specific suggestions and concerns were raised and were not fairly reflected in the process., concern raised about harvesters ability to effect this management process, consensus based suggestions into that process do not work well.

Table 1: Stakeholder Meeting Attendance

Date	Activity	Attendees
01/19/09 Monday	09:00 - 16:00 Briefing Meeting PI&SG Weighting Session (Closed to client and stakeholders)	Steve Devitt – TAVEL Karl English – Assessment Team Ray Hilborn - Assessment Team Dana Schmidt - Assessment Team

01/20/09 Tuesday	Assessment Interviews 09:00 - 12:00 - DFO - North Central Coast 13:00 - 16:00 – DFO - West Coast Vancouver Island	Steve Devitt – TAVEL Karl English – Assess Team Ray Hilborn - Assess Team Dana Schmidt - Assess Team Dave Peacock – DFO Diana Dobson – DFO Alistair Thomson - DFO Sandy Argue – BC MoE Christina Burridge – Can. Pacific Sustainability Fisheries Society (CPSFS) Dan Averill – MSC
01/21/09 Wednesday	Assessment Interviews 09:00 - 12:00 DFO - Inner South Coast	Steve Devitt – TAVEL Karl English – Assess Team Ray Hilborn - Assess Team Dana Schmidt - Assess Team Pieter Van Will – DFO Randy Brahniak – DFO Sandy Argue – BC MoE Christina Burridge - CPSFS Dan Averill – MSC
	Stakeholder Interview 13:30 - 15:00 – Marine Conservation Caucus	Steve Devitt – TAVEL Karl English – Assess Team Ray Hilborn - Assess Team Dana Schmidt - Assess Team Jeffery Young – David Suzuki Foundation. Vicky Husband –Watershed Watch Salmon Society (WWSS) Craig Orr - WWSS Aaron Hill - WWSS Greg Knox – Skeena Wild Conservation Trust Dan Averill – MSC
	Stakeholder Interview 15:45 - 16: 30 – British Columbia – Ministry of Environment	Steve Devitt – TAVEL Karl English – Assess Team Ray Hilborn - Assess Team Dana Schmidt - Assess Team Andrew Wilson BC MoE
01/22/09 Thursday	Assessment Interviews 09:00 - 12:00 – DFO Fraser 13:30 - 15:00 – DFO Resource Management	Steve Devitt – TAVEL Karl English – Assess Team Ray Hilborn - Assess Team Dana Schmidt - Assess Team Paul Ryall – DFO Resource Management Sue Grant – DFO Brian Matts – DFO Debra Sneddon - DFO Sheldon Evers – DFO Barbara Mueller - DFO Dan Averill – MSC

01/22/09 Friday	Client Interviews 09:00 - 11:00 –- Canadian Pacific Sustainability Fisheries Society	Steve Devitt – TAVEL Karl English – Assess Team Ray Hilborn - Assess Team Dana Schmidt - Assess Team Christina Burridge - CPSFS Rob Morley – Canadian Fishing Company Greg Taylor – Ocean Fisheries

3.0 FISHERY BACKGROUND INFORMATION

3.1 The Target Species – Pink Salmon (*Oncorhynchus gorbuscha*)

Distribution

Pink salmon, *Oncorhynchus gorbuscha*, are found in streams and rivers from California north to the Mackenzie River, with their principal spawning areas between Puget Sound, Washington, and Bristol Bay, Alaska (ADFG, 2009).

Life History

Adult pink salmon enter spawning streams between late June and mid-October. Different races or runs with differing spawning times frequently occur in adjacent streams or even within the same stream. Most pink salmon spawn closer to the ocean than most other Pacific salmon Species. They are generally not capable of passing waterfalls, cascades, or high-velocity barriers. Shallow riffles where flowing water breaks over coarse gravel or cobble-size rock and the downstream ends of pools are favored spawning areas. The female pink salmon carries 1,500 to 2,000 eggs depending on her size. She digs a nest, or redd, with her tail and releases the eggs into the nest. They are immediately fertilized by one or more males and then covered by further digging action of the female. The process is commonly repeated several times until all the female's eggs have been released. After spawning, both males and females soon die, usually within two weeks (ADFG, 2009).

Sometime during early to mid-winter, eggs hatch. The alevins, or young fry, feed on the attached yolk sac material continuing to grow and develop. In late winter or spring, the fry swim up out of the gravel and migrate downstream into salt water. The emergence and outmigration of fry is heaviest during hours of darkness and usually lasts for several weeks before all the fry have emerged (ADFG, 2009).

Following entry into salt water, the juvenile pink salmon move along the beaches in dense schools near the surface, feeding on plankton, larval fishes, and occasional insects. Predation is heavy on the very small, newly emerged fry, but growth is rapid (ADFG, 2009). Despite their short life span and small size, the migrations of Pink salmon are extensive, covering thousands of kilometers from their home streams. During ocean feeding and maturing, pink salmon are

dispersed throughout the Pacific Ocean from northern California to the Bering Sea. During the fall and winter, pink salmon spend more time in the southern parts of their range (DFO, 2009).

Pink salmon mature in two years which means that odd-year and even-year populations are essentially unrelated. Frequently in a particular stream the other odd-year or even-year cycle will predominate, although in some streams both odd- and even-year pink salmon are about equally abundant. Occasionally cycle dominance will shift, and the previously weak cycle will become most abundant.

Reproduction

Mature pink salmon return to their natal streams in the early fall of the year to spawn. In British Columbia pink salmon spawning occurs between late August and mid-October, with some variation between stocks. The North Coast/Central Coast stock spawns the earliest, between Late August and early September (Spilsted and Pestal, 2008), followed by the mid-September peak in Inner South Coast Pink stocks (Will et al, 2008), and the Fraser River Pink spawn the latest with the peak not occurring until mid-October (Grant and Pestal, 2008).

Generally, pink salmon spawn closer to the ocean than any other pacific salmon species. Shallow riffles where flowing water breaks over coarse gravel or cobble-size rock and the downstream ends of pools are favored spawning areas. Females carrying between 1,500 and 2,000 eggs, depending on body size, enter their natal stream and dig a nest, or redd, with her tail. Eggs are then released into the redd, and immediately fertilized by one or more males. The eggs are then covered by further digging action of the females. The process is commonly repeated several times until all the female's eggs have been released. Shortly after spawning takes place, usually within two weeks, both females and males die (ADFG, 2009).

Eggs are incubated in the steam bed until they hatch mid-winter. Following hatching the young fry swim out of the gravel and migrate downstream into the salt water. The emergence and outmigration of fry is heaviest during the hours of darkness and usually lasts for several weeks before all the fry have emerged (ADFG, 2009).

Mortality

Of particular interest with the pink salmon is the defined life span. Upon emergence from the gravel pink salmon fry swim quickly to sea and grow rapidly as they make extensive feeding migrations. After spending eighteen months in the ocean, maturing fish return to their natal rivers to spawn and die.

In freshwater, aquatic invertebrates, other fishes, especially sculpins, birds and small mammals prey on pink salmon eggs, alevins and fry. In the ocean, other fishes including other Pacific salmon and coastal seabirds prey on pink salmon fry and juveniles. Predators of adults include marine mammals, sharks, other fishes such as Pacific halibut, and humpback whales. On spawning grounds, bears are an important predator of adult pink salmon, wolves, river otters, and bald eagles will also occasional take pre-spawning adults (NMFS, 2009).

Behaviour

The fry of pink salmon in nearshore areas may feed on nyphal and larval insects while in fresh water, but some may not feed at all. When young migrate to the ocean the fed upon copepods, tunicates, with their diet shifting to amphipods, euphausiids and fishes as they grow (Fishbase, 2009). Adults feed on abundant food supplies of plankton, crab larvae, shrimp, squid and small fish, enabling them to grow quickly.

Salmon characteristically stop eating just before they re-enter the freshwater to spawn. From the point of entry into the freshwater until they die after spawning, with exception of steelhead and cutthroat, salmon live only on stored body fats and proteins (DFO, 2009).

Migration

Pink salmon begin their migration downstream almost immediately upon emergence from the gravel, with peak downstream migrations occurring mid-April to May. Pink salmon fry occupy near-shore waters of estuaries and coastal inlets for several weeks to months of time, feeding on zooplankton and epibenthic organisms derived from estuarine and detritus-based food webs. Following their adaptation to marine waters, they rapidly migrate offshore and into the Gulf of Alaska. In their first year in the North Pacific, pink salmon are primarily located along the coast of North America and into the Gulf of Alaska. At sea migrations of pink salmon are quite extensive, covering thousands of kilometers from their home streams (Figure 2). After approximately 18 months at sea Pink salmon return to their natal streams to spawn. In general pink salmon return to BC streams between August and September. There is variation in peak spawning times for each for the stocks under consideration. Fraser River Pink, Inner South Coast Pink and the North Coast/Central Coast pink stocks spawn mid-October, mid-September, and late August to early September respectively (Grant and Pestal, 2008; Will et al., 2008; and Spilsted and Pestal, 2008).

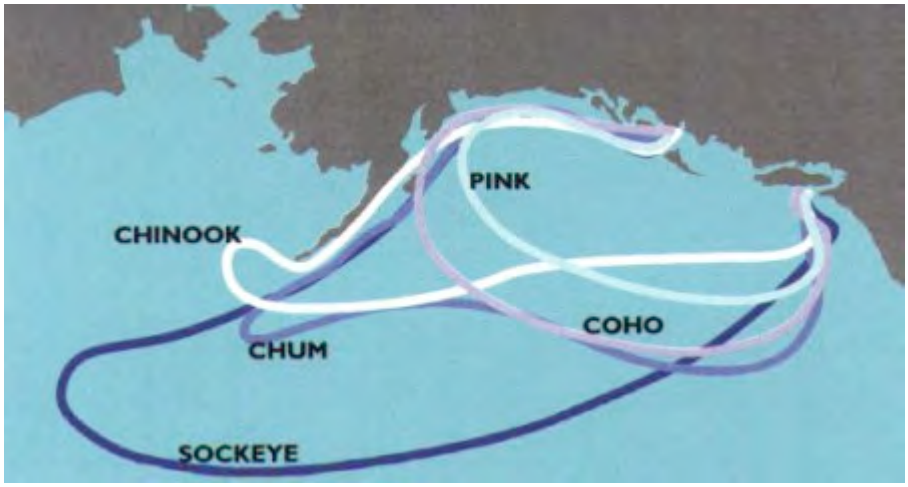


Figure 2: Migration routes of Pacific Salmon. Source (Agriculture and Agri-Food Canada, 2004).

3.2 Candidate Fishery Summaries

The following summaries have been extracted from the certification unit profiles for each of the respective stocks, provided by the client as a component of the client submission.

Fraser River

This profile covers commercial, First Nations and recreational fisheries harvesting odd-year pink salmon in the Lower Fraser and approach areas.

Fraser River stocks are fall-run stocks that migrate in from September to December. Fraser pink are intercepted in commercial fisheries that occur in the Fraser River Panel Area (Areas 121-124 Troll, Area 20 Net, Areas 17-18 and 29 Troll and Area 29 Net) and non-Panel Areas (Areas 1-10 Troll and Net, Areas 11-16 Troll and Net, Areas 124-127 Troll) and Fraser River (Below and above Sawmill Creek).

First Nations harvest local pink stocks in marine areas (Areas 12 to 20 and 121 to 126; Area 29-1- 7) and throughout the Fraser River and its tributaries in food, social and ceremonial (FSC) fisheries and in economic opportunity fisheries. Long-term harvest patterns depend on the local abundance of all salmon species. Annual pink catches depend on in-season assessments of actual stock strength, management measures taken to ensure conservation of individual stocks, and targeted fishing effort by First Nations.

Recreational salmon harvests in tidal waters and freshwater occur throughout the Fraser River watershed. For odd-year runs, pink salmon retention is generally allowed on the Fraser River downstream of the Alexandra Bridge, on the Stave River, Harrison River downstream of Highway No. 7 Bridge, and the Chilliwack River. Effort is concentrated on the Fraser mainstem and the Chilliwack River.

In United States Fisheries, pink are caught commercially in Panel Areas 4B, 5, 6C and 6 & 7 Net, and Washington Troll and in non-Panel Areas Washington, Oregon and California Troll and Alaska Troll and Net, and also in recreational and US Ceremonial Fisheries.

Pink salmon are also caught in test fisheries in Areas 123-127, 16, 20, 29.

This profile covers fisheries on the Fraser and in approach areas in detail. The mixed-stock fisheries in Johnstone Strait and in the Strait of Georgia are covered in the profile for Inner South Coast pink salmon (excluding Fraser).

Inner South Coast

This profile covers fisheries harvesting pink salmon in Johnstone Strait and the Strait of Georgia (statistical areas 11 to 19). Harvesters include First Nations (FSC fisheries), recreational, and commercial (seine, gill net and troll).

Targeted commercial fisheries have occurred terminally in the Mainland Inlets when run size exceeded the escapement targets. No targeted commercial fisheries have taken place here since 1999 due to low abundance.

Inner South Coast pink salmon are also retained in commercial fisheries targeting Fraser River pink salmon on odd-year returns, and other salmon species (mainly Fraser sockeye) in all years, including the Fraser River Panel Area (Areas 121-124 Troll, Area 20 Net, Areas 17-18 and 29 Troll and Area 29 Net) and non-Panel Areas (Areas 1-10 Troll and Net, Areas 11-16 Troll and Net, Areas 124-127 Troll).

First Nations harvest local pink stocks in marine areas (Areas 12 to 20 and 121 to 126; Area 29-1-7) in food, social and ceremonial (FSC) fisheries. Long-term harvest patterns depend on the local abundance of all salmon species. Annual pink catches depend on in-season assessments of actual stock strength, management measures taken to ensure conservation of individual stocks, and targeted fishing effort by First Nations.

Recreational salmon harvests in tidal waters and freshwater occur throughout the Inner South Coast, but harvest relatively few pink salmon. Marine angler effort is spread out throughout Johnstone Strait and the Strait of Georgia, with the majority catch and effort in Johnstone Strait. The only freshwater fishing opportunity for pink salmon is on the Campbell/Quinsam River in Area 13.

In United States Fisheries, pink are caught commercially in Panel Areas 4B, 5, 6C and 6 & 7 Net, and Washington Troll and in non-Panel Areas Washington, Oregon and California Troll and Alaska Troll and Net, and also in recreational and US Ceremonial Fisheries.

Inner South Coast pink salmon are also caught in test fisheries in Areas 123-127, 16, 20, 29.

This profile covers fisheries on the Inner South Coast (i.e. Johnstone Strait and the Strait of Georgia) in detail. The terminal fishery on the Fraser is covered in the 2008 Fraser Pink Salmon Profile.

North Coast and Central Coast

This profile covers fisheries harvesting pink salmon in the Queen Charlotte Islands, the North Coast, and the Central Coast (Statistical areas 1 to 10). Harvesters include First Nations (FSC fisheries), recreational, and commercial (seine, gill net and troll). Major commercial fisheries are:

- Queen Charlotte Islands: Terminal commercial net fisheries may target pink salmon when a surplus abundance has been identified in-season. Generally the required escapement is secured within the streams or behind boundaries near the estuary location before fisheries are allowed to proceed, and fishing locations are usually channels or inlets adjacent to the natal stream of the target stocks.

- North Coast: Mixed-stock commercial fisheries harvest pink salmon, mainly with seine gear, in Area 3 (Nass), Area 4 (Skeena), and Areas 5 and 6 (Hecate Strait). Fisheries in the Dundas Island area and inside to Portland Inlet target returns to the Nass watershed, the Skeena watershed, and Alaska. Fisheries in the Chatham Sound area and at the entrance to the Skeena River target returns to the Skeena watershed. Fisheries in Ogden Channel target local stocks in Area 5.

- Central Coast: Terminal commercial net fisheries may target pink salmon when a surplus abundance has been identified in-season. Generally the required escapement is secured within the streams or behind boundaries near the estuary location before fisheries are allowed to proceed, and fishing locations are usually channels or inlets adjacent to the natal stream of the target stocks. There have been no targeted commercial salmon harvests in Area 9 (Rivers Inlet) or Area 10 (Smith Inlet) since the mid-1990s to protect local salmon populations.

First Nations target local salmon stocks for food, social and ceremonial (FSC) purposes throughout the North and Central Coast, and in the Nisga'a treaty fisheries (Nass River, Area 3). Long-term harvest patterns depend on the local abundance of all salmon species, with effort concentrated in the Nass, Skeena, Kitimat, and Bella Coola systems. Annual pink catches depend on in-season assessments of actual stock strength, management measures taken to ensure conservation of individual stocks, and targeted fishing effort by First Nations.

Recreational salmon harvests in tidal waters and freshwater occur throughout the North & Central coast, but harvest relatively few pink salmon. Marine angler effort is concentrated in Area 1, coastal outside parts of Areas 3 and 4, the Kitimat Arm/Douglas Channel parts of Area 6, outside part of Areas 7 and 8, and Area 9. Freshwater recreational fisheries focus on the Skeena River, the lower Kitimat River, and the Bella Coola River.

3.3 Candidate Fishery

The specific scope of this full certification assessment is the British Columbia seine, troll and gillnet fisheries for pink and chum salmon in the Canadian Pacific EEZ and British Columbia coastal waters supplying their product to the shore side facilities in British Columbia.

The certification client eligible to use this certification is:

CANADIAN PACIFIC SUSTAINABLE FISHERIES SOCIETY
Address: 1100-1200 West 73 Ave
City: Vancouver, BC
Postal Code: V6P 6G5
Country: Canada
Contact: Christina Burridge
Email: cburridge@telus.net

3.4 Historical Management Context

Under the 1867 Fisheries Act, the federal government has sole responsibility for the management of tidal fish harvesting in British Columbia. The underpinnings of Canadian fisheries regulation are licensing restrictions and input controls such as time, area and gear restrictions. DFO first implemented limited entry licencing in 1969 for the BC commercial salmon fishery. Since then, limited entry has been applied to most of the valuable Pacific fisheries (GSGislason & Associates, 2004).

During the mid-to-late 1990s, some BC salmon stock declined and consequently, commercial salmon catches, prices and landed value also declined as a result of management changes. In

response, the federal government rationalized the salmon fishery, first in 1996 through the so-called "Mifflin Plan", and then in 1998 with the Pacific Fisheries Adjustment Restructuring Program. The Mifflin Plan implemented area and gear licensing for the salmon fleet (2 areas for seine, 3 for gillnet, 3 for troll) and allowed stacking of more than one licence onto a single vessel. A key part of the federal government initiatives in 1996 and 1998 was the purchase or retirement, on a voluntary basis of commercial salmon licenses. The $280 million buyback program resulted in a substantial decline in fishing vessels and licenses. The number of commercial salmon licences in BC halved from approximately 4,400 to 2,200 between 1995 and 2000 (GSGislason & Associates, 2004).

Another substantial change in the fisheries during the 1992 was the announcement of the Aboriginal Fisheries Strategy, which resulted from the Supreme Court of Canada's 1990 Sparrow decision which clarified the aboriginal right to fish for food, social and ceremonial purposes. Under the AFS, DFO entered into agreements with aboriginal groups to address: joint management including regulation of fishing surveillance and catch monitoring, financial contribution to cover infrastructure and training costs, and specific salmon allocations of two types (GSGislason & Associates, 2004).

The two types of salmon allocations were the communal "F" category licence and the Pilot Sales Program (PSP). Communal "F" category licences were licences that were purchases by the federal government from existing fishing participants and transferred to First Nations or aboriginal organizations as communal licences which were to be fished under the same rules as the regular commercial fishery. These licences still exist in the fishery today (GSGislason & Associates, 2004).

One component of the Aboriginal Fisheries Strategy in British Columbia was the Pilot Sales Program (PSP) whereby certain First Nation Bands could sell fish caught under an Aboriginal Communal Fisheries Licence Regulation licence. The PSP was introduced in 1992 to serve a number of objectives. First, it was implemented to provide guidance on the design and conduct of Aboriginal in-river commercial fisheries in advance of treaties, and to assist in building First Nation capacity to take on increased fishery management responsibility. Second, they were intended to reduce conflict with First Nation communities over illegal sale of fish taken in the FSC fishery, and provide economic benefits to First Nations. The program also intended to introduce improved catch monitoring programs and thus lead to better control of harvesting.

The legality of the PSP was challenged a number of times by commercial harvesters who engaged in protest fisheries and were subsequently prosecuted. Those prosecutions ended with a Supreme Court of Canada ruling in *R. v. Kapp (2008)*, that upheld the validity of the AFS and PSP.

The 1999 development of "An Allocation Policy for Pacific Salmon" confirmed the precedence of conservation and described allocation principles for allocating among the commercial, recreational and aboriginal fisheries after conservation requirements have been met. The policy states that 95% of the combined commercial and recreational and sockeye, pink and chum quotas are to be allocated to the commercial sector. Of the commercial allocation 40% is allocated to the seine fleet, and 38% and 22% are allocated to the gillnet and troll fisheries respectively (Pestal, Spilsted and Dobson, 2009).

The Pacific Fisheries Reform, announced by DFO in April 2005, describes a policy framework for improving the economic viability of commercial fisheries, and for addressing First Nations aspirations with respect to FSC fisheries, commercial access and involvement in management. The Pacific Fisheries Reform is central to ensuring well integrated, sustainable fisheries for all species. Goals of the Reform included post treaty fisheries that are resilient to variation in both nature and markets, and greater stakeholder involvement in planning and management processes (Pestal *et al*, 2008).

Given that Pacific salmon are migratory, and that some salmon produce by each country are caught by fishermen in the other country, known as interception, cooperation between Canada and the US is integral in the management of salmon resources. In 1985 the Unites States and Canada agreed to cooperate in the management, research and enhancement of Pacific salmon stocks of mutual concern by ratifying the Pacific Salmon Treaty. The Treaty commits both nations to carry out salmon fisheries and enhancement programs so as to: prevent overfishing and provide for optimum production, and to ensure that both countries receive benefits equal to the production of salmon originating in their waters. Since 1985 two significant revisions to the Pacific Salmon Treaty have occurred, 1999 and 2009. Key elements introduced in 1999 included the creation of the Transboundary Panel and Committee on Scientific Cooperation; the inclusion of habitat provisions in the Treaty; a move from fisheries based on negotiated catch ceilings to abundance based management fisheries; and the establishment of the Northern and Southern Restoration and Enhancement Funds. The 2008 revision represents a major step forward in science-based conservation and sustainable harvest sharing of salmon resources between Canada and the US (DFO 2008 a,b).

3.5. The Fishery Area of Operation

The pink salmon fishery in British Columbia is conducted both in the provincial coastal waters and adjacent Canadian Pacific EEZ. Harvest of pink salmon generally occurs in July and August in British Columbia. Coastal and marine areas of British Columbia have been divided into areas which define where particular gear types can be utilized. See Figures 3-5 below.

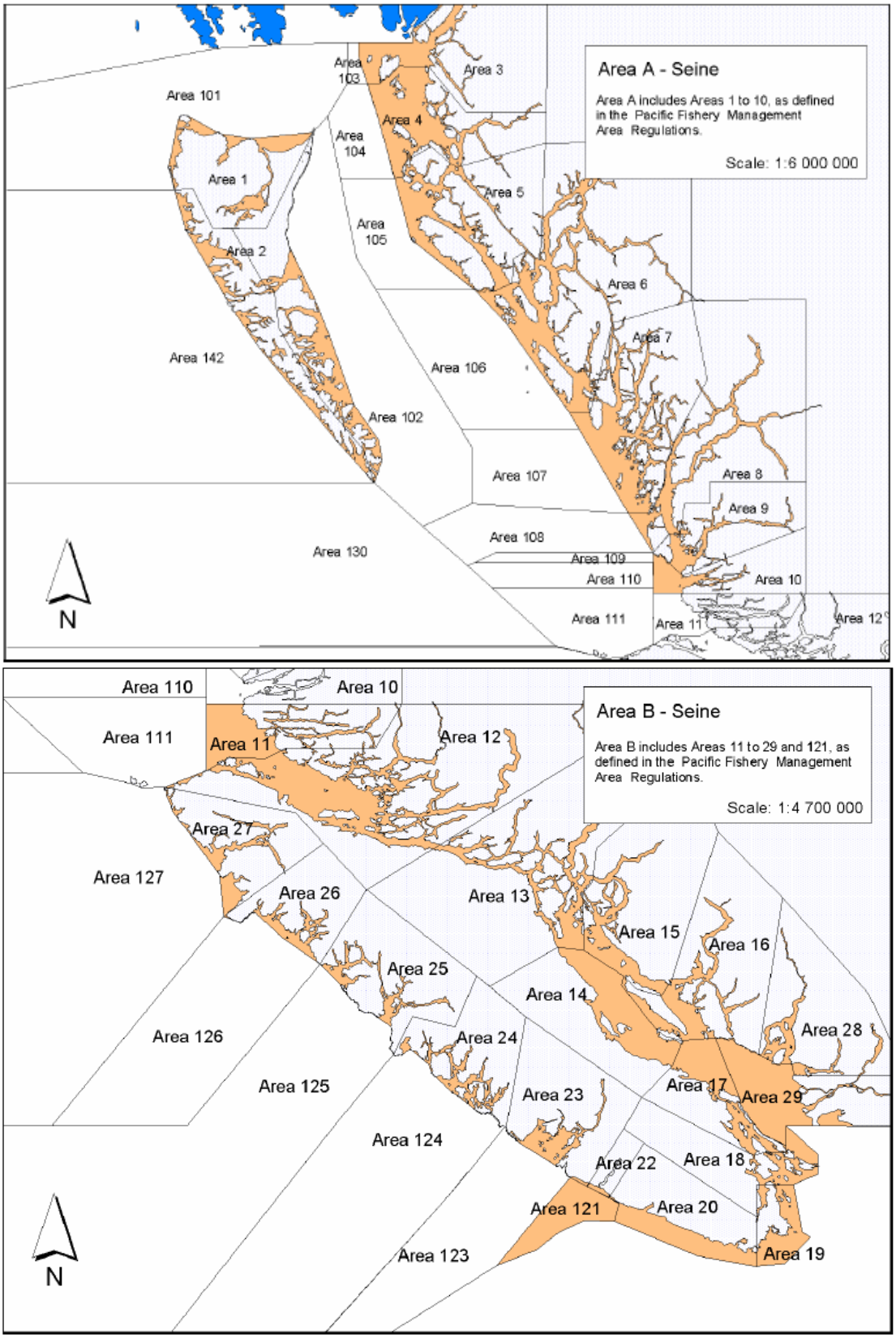
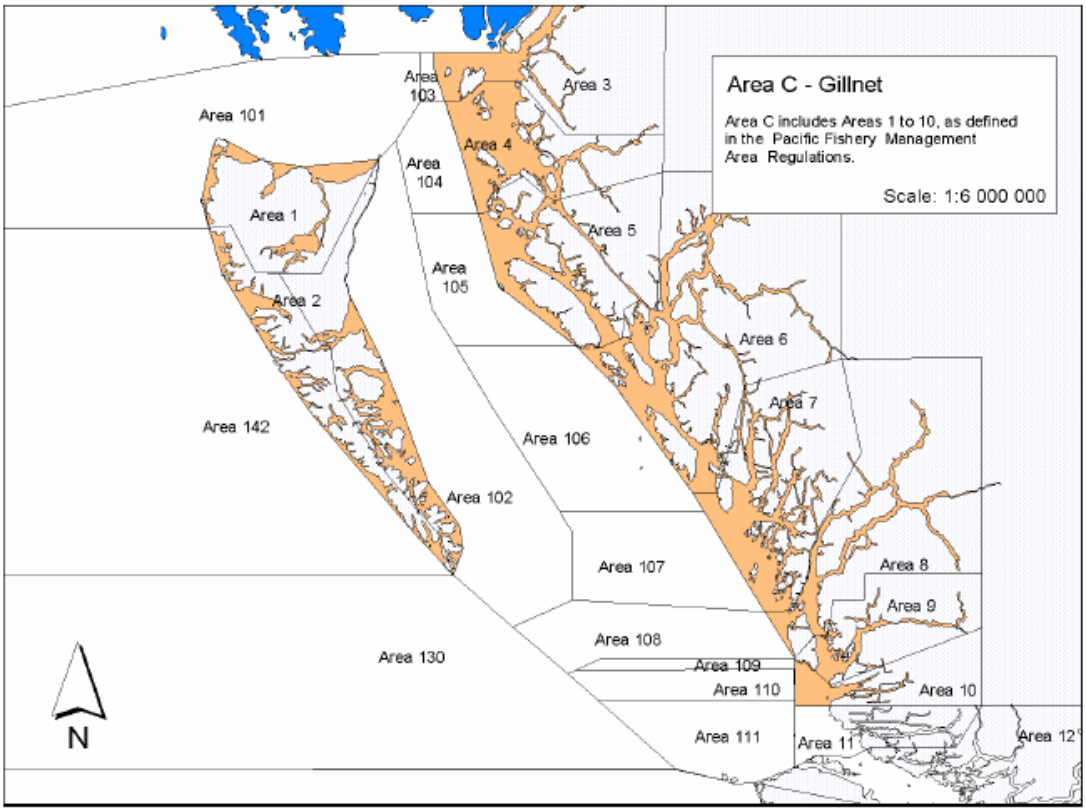


Figure 3: North (top) and South (bottom) salmon seine fishing locations.


Area C - Gillnet
Area C includes Areas 1 to 10, as defined in the Pacific Fishery Management Area Regulations.
Scale: 1:6 000 000
Area 101
Area 103
Area 3
Area 4
Area 104
Area 1
Area 5
Area 105
Area 2
Area 6
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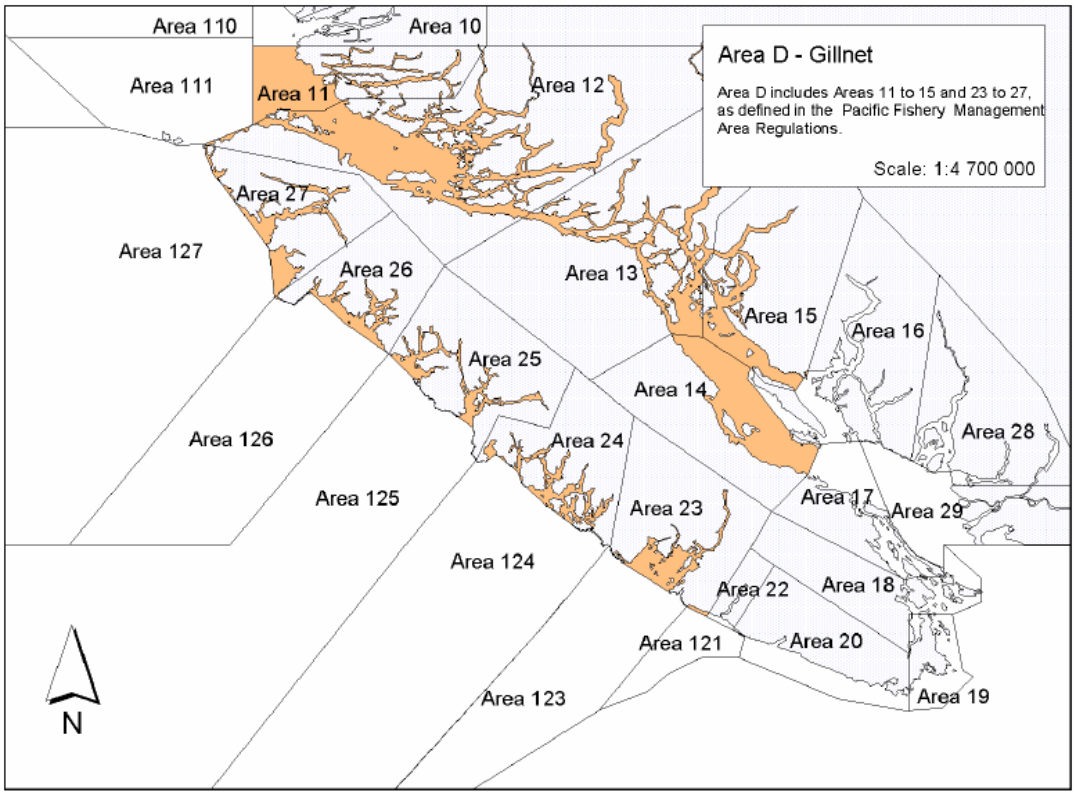
Area D - Gillnet
Area D includes Areas 11 to 15 and 23 to 27, as defined in the Pacific Fishery Management Area Regulations.
Scale: 1:4 700 000
Area 110
Area 10
Area 111
Area 11
Area 12
Area 27
Area 127
Area 26
Area 13
Area 15
Area 16
Area 25
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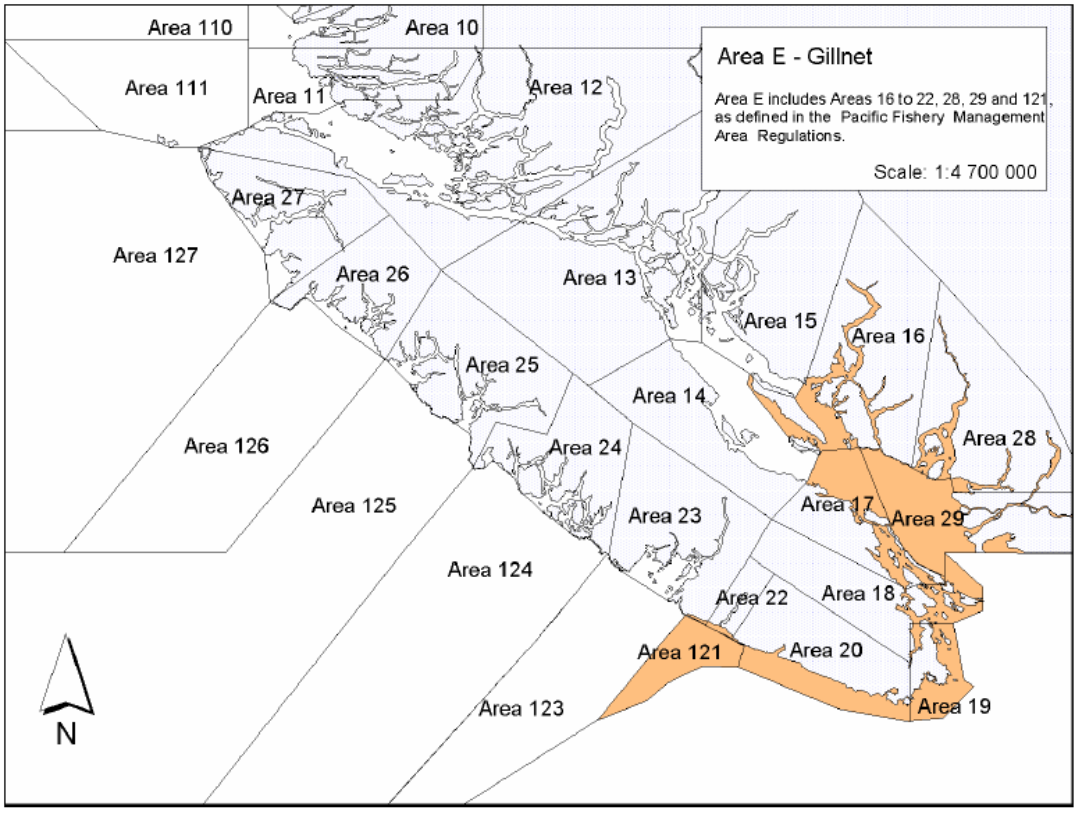
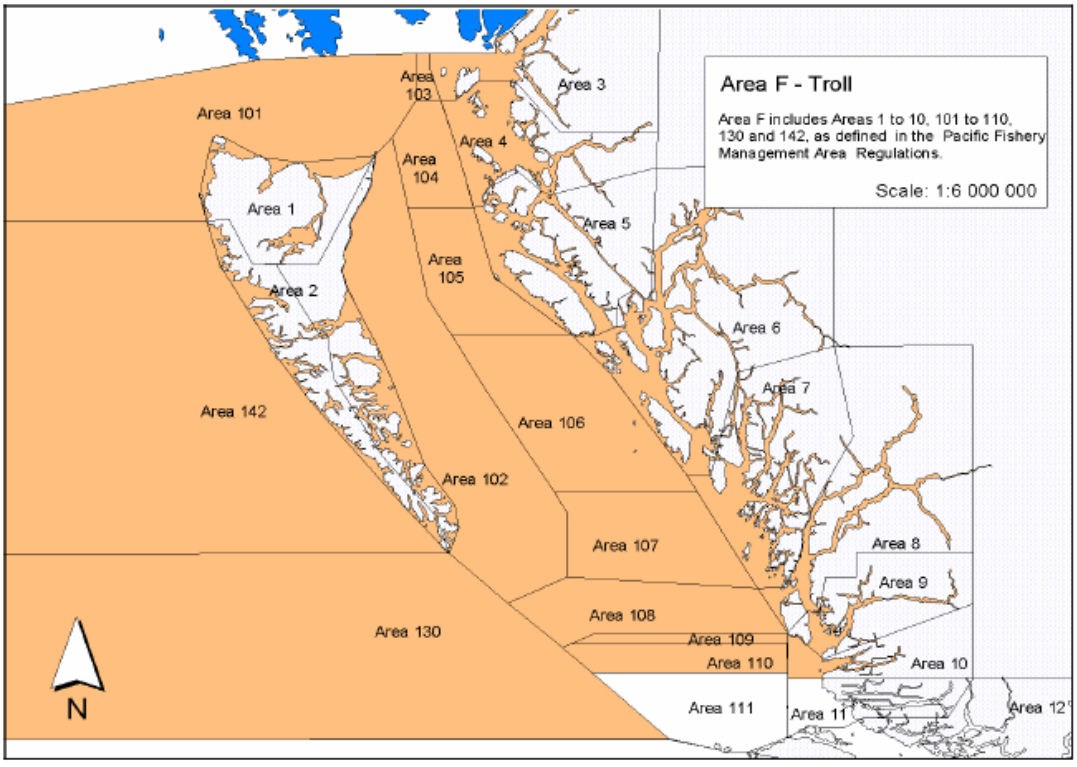


Figure 4: North (top) and South (bottom two) salmon gillnet fishing areas.



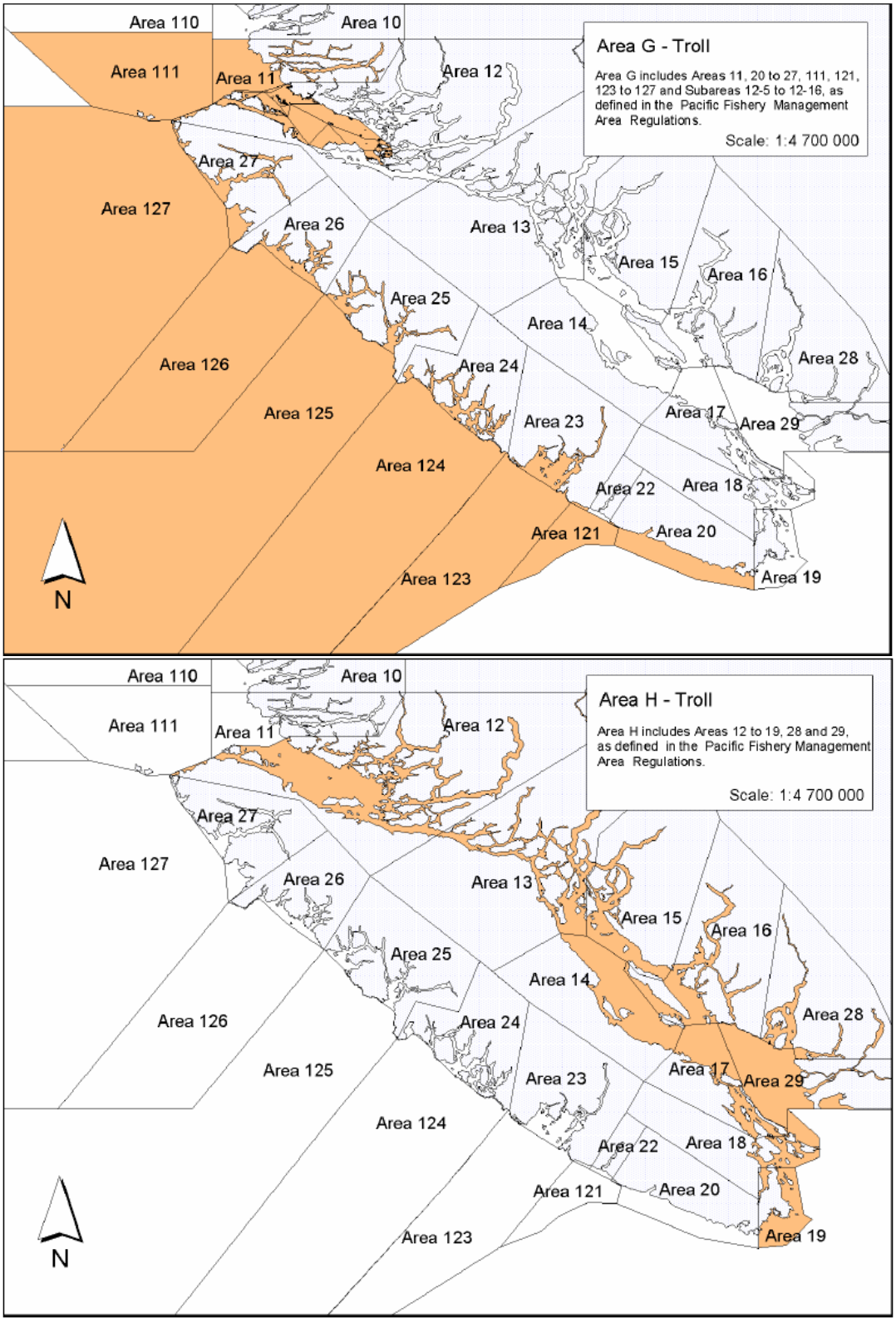


Figure 5: North (top) and South (bottom two) salmon troll locations.

3.6 Fleet, gear and harvest controls

Licences within the commercial BC pink and chum fishery are issued for three gear types: seine, gillnet and troll.

Trollers employ hooks and lines which are suspended from large poles extending from the fishing vessel. Altering the type and arrangement of lures used on lines allows various species to be targeted. Trollers catch approximately 25 per cent of the commercial harvest.

Seine nets are set from fishing boats with the assistance of a small skiff. Nets are set in a circle around aggregations of fish. The bottom edges of the net are then drawn together into a "purse" to prevent escape of the fish. Seiners take approximately 50 per cent of the commercial catch.

Salmon gill nets are rectangular nets that hang in the water and are set from either the stern or bow of the vessel. Altering mesh size and the way in which nets are suspended in the water allows nets to target selectively on certain species and sizes of fish. Gill netters generally fish near coastal rivers and inlets, taking about 25 per cent of the commercial catch.

Licence conditions and commercial fishing plans lay out allowable gear characteristics such as hook styles, mesh size, net dimensions and the methods by which gear may be used (e.g. set times for nets, mandatory brailing and sorting of fish). On the North Coast, the commercial net fishery is open in defined terminal areas of various systems, notably the Skeena/Nass systems and the Bella Coola/Atnarko. Openings could occur anywhere inside the surf line depending on local stock strength.

British Columbia Pink Salmon Management Measures

Annual management objectives applicable to the British Columbia salmon fisheries are outlined in Salmon Integrated Fisheries Management Plans. There are separate IFMPs for the North and South salmon fisheries however primary management measures are the same. The Salmon IFMP for the south addresses fisheries in tidal and non-tidal waters from Cape Caution south to the BC/Washington border, including the Fraser River watershed. The northern salmon IFMP encompasses tidal and non-tidal waters from Cape Caution north to the B.C./Alaska boundary. Tidal waters in this area is denoted as Management Areas 1 to 10 inclusive, 101-110 inclusive and 130 and 142, non-tidal waters are those watersheds which contain anadromous salmon and flow into Areas 1 to 10. Current Salmon IFMPs cover the management period of June 1, 2008 to May 31, 2009. Management Plans incorporate the results of consultation and input from the Integrated Harvest Planning committee, First Nations, recreational and commercial advisors and environmental non-government organizations.

Key management measures utilized in British Columbia salmon fisheries include:

- Limited entry. In order to participate in the commercial salmon harvest in British Columbia, harvesters are required to have a valid licence and Fisheries Identification

Number (FIN). Licences are issued annually and valid from April 1 to March 31 of the following year. The FIN allows for fast, easy and reliable on-grounds identification of fish harvesters for data collection, fisheries management and enforcement purposes.

- Catch reporting and monitoring. For all commercial fisheries there is a mandatory log-book and phone in program in place.
- Catch retention regulations. In order to protect species that may be caught incidentally to the fishery there are regulations regarding the retention of catch. For example, there is non-retention of steelhead in all commercial fisheries. There are additional measures in place which are gear specific regulating the retention of some species.
- Gear restrictions. Within the candidate fishery there are management measures in place regarding gear configuration, retrieval times and fishing times (i.e. net fishing in on the north and central coast, is normally restricted to daylight hours).
- Measures to reduce incidental harvest and by-catch. Guidelines attempt to limit impacts on non-target species through gillnet mesh restrictions, time and area restrictions and seine brailing, sorting and release guidelines to limit impacts on sockeye, coho, Chinook and steelhead stocks.
- Area and time closures. Seasons are defined by DFO in the salmon fishery. Additionally there are fishing closures in areas with persistent conservation concerns.

British Columbia pink and chum salmon fisheries are currently planned and implemented using four types of management reference points (Pestal et al., 2008) which are applied at the stock level:

- Escapement goals – generally based on experience and judgment (e.g. past escapements, habitat capacity). Annual fishing plans, covering all harvests, are designed to achieve escapement targets with an acceptable risk tolerance.
- Exploitation rate ceilings – in place to support recovery efforts. This includes any incidental harvest or by-catch in fisheries targeting other stocks and species, and fisheries are shaped to balance economic constraints on fisheries targeting other stocks against cumulative fishing impacts on the stock of concern. For example, the Canadian fishery exploitation rate for the Interior Fraser coho is limited to 3%.
- Fixed harvest rates – for several mixed-stock fisheries to minimize long-term impacts on component stocks. For example, Johnstone Strait mixed-stock chum fisheries are constrained to 20% while terminal fisheries harvest local abundances where they exceed the escapement goals.
- Allocation targets – describe either a target amount (FSC fisheries), a target opportunity (recreational fishery), or a target share (commercial gear types). Allocation targets are generally defined by species, not by stock, but in practical implementation allocations tend to be area-specific.

The Wild Salmon Policy introduced two additional management reference points, which are currently under development (Pestal et al., 2008):

- Lower benchmarks intended to delineate an undesirable level of abundance within a Conservation Unit, but with a substantial buffer above the level that would cause it to be considered at risk of extinction under the Species at Risk Act

- Upper benchmarks intended to identify whether CU abundance is sufficient to provide maximum levels of catch, on average

3.7 Catch

Wild salmon harvest has been the mainstay of the British Columbia commercial capture fishery for over a century. Five Pacific salmon species comprise the commercial harvest: sockeye, pink, chum, Chinook and coho. In 2007 the total wild salmon harvest was 20,100 tonnes, down 17% from the year before, see Figure 6. Of this, Pink salmon made up over half of the total wild salmon harvest in 2007, at 11,200 tonnes (British Columbia, 2008).

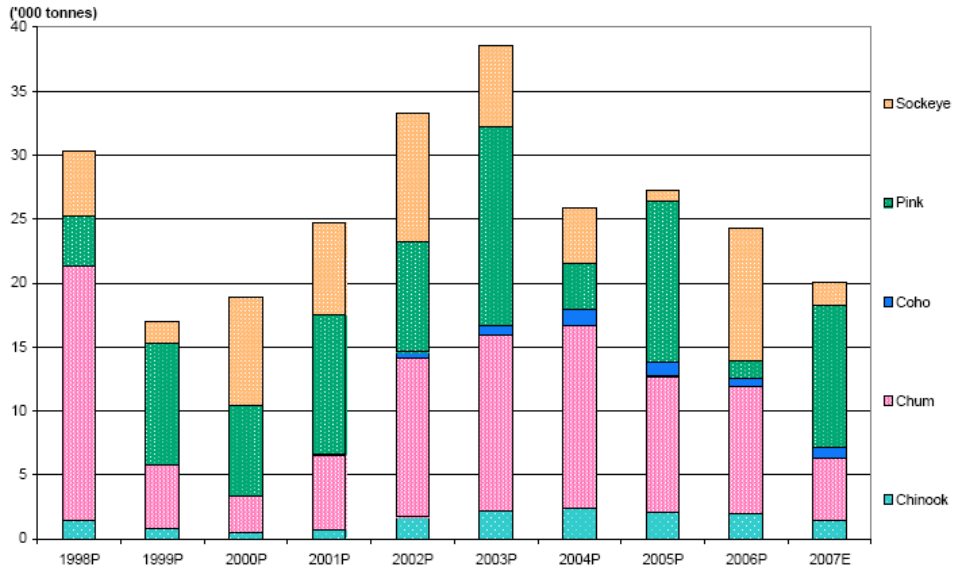


Figure 6: British Columbia Capture Salmon Landings by Species 1998-2007

Given the two year life cycle of pink salmon, landings fluctuate on a bi-annual basis. However, it should be noted that total landings, across all gear sectors, in peak years have declined since a peak in 2003 (see Figure 8). As illustrated in Figure 7, seine caught pink salmon dominate pink salmon landings in the commercial fishery, followed by gillnet and minimum landings from the troll fishery.

Reported landings of pink salmon by gear sector indicated that with respect to the gillnet sector landings have only been above the average landings between 2000 and 2009, in 2003 and 2000, see Table 2. Regarding commercial seine fleet, landings have been above average in 2001-2003 inclusively and in 2005 and 2007. Troll landings have been below the 9 year average since 2004, but were above average in 2000, 2001, 2003, and 2004.

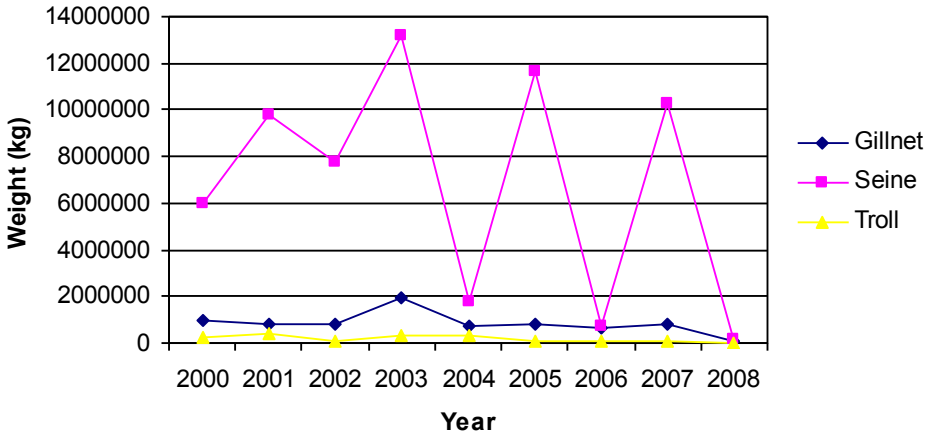


Figure 7: Pink salmon landings (kg) in British Columbia by gear type, 2000-2008.
Source: DFO website

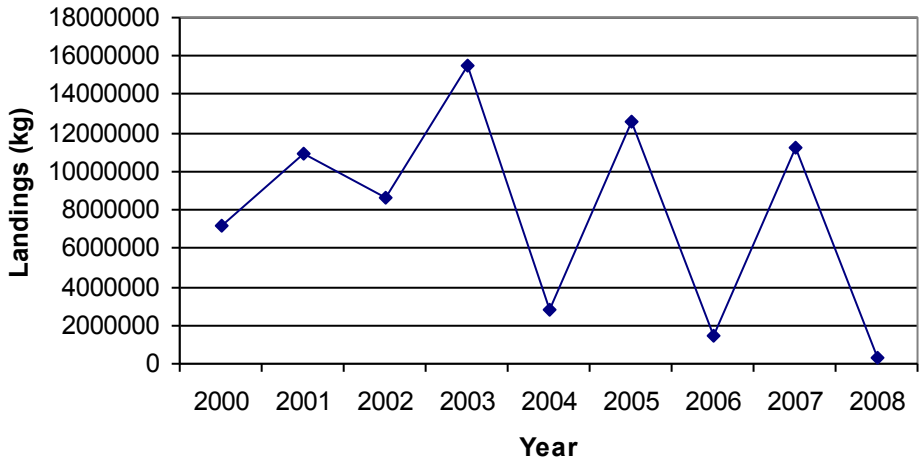


Figure 8: Total British Columbia pink salmon commercial landings (kg) by all gear types, 2000-2008. Source: DFO website.

Table 2: Total commercial landings (kg) for gear type (gillnet, seine, and troll) and total commercial landings of pink salmon in British Columbia, 2000-2008. Source: DFO website.

	Gillnet Landings (kg)	Seine Landings (kg)	Troll Landings (kg)	Total Landings (kg)
2000	971263	6017963	231378	7220604
2001	776386	9779938	415305	10971629
2002	797197	7747578	64491	8609266
2003	1904680	13223588	327578	15455846
2004	700000	1809000	311000	2820000
2005	804953	11688695	94407	12588055
2006	608211	748317	74754	1431282
2007	811540	10282616	102502	11196658
2008	115288	185093	32148	332529
Total (kg)	7489518	61482788	1653563	70625869
Average (kg/yr)	832168.6667	6831420.889	183729.2222	7847318.778

3.8 Bycatch

Within the British Columbia pink salmon fisheries, bycatch composition and quantity may vary between gear types. However, common to all gear types is the incidental catch of other salmon species including: chum, coho, Chinook, sockeye and steelhead trout. The gillnet fishery has also been identified as bycatching seabirds incidentally, including the marbled murrelet which is designated as threatened under SARA.

The Salmon Fishery Management Plans in place in the candidate fishery recognize the mixed species nature of salmon harvest. Under the Plans for the north and south salmon there are prohibitions on the retention of some species, including a restriction on the retention of steelhead trout by all commercial fisheries. The South Coast Salmon FMP state that Chinook and coho salmon in most southern BC commercial fisheries, with the exception to some Area E (Fraser River) and Area G (WCVI) fisheries as well as some terminal opportunities where excess is identified, is prohibited (DFO, 2008a).

The North Salmon FMP outlines the management measures in place regarding non-retention, based on area and gear type. The retention of coho, chum, Chinook and sockeye salmon varies among areas and by gear types, as outlined in section 7.6.1 in the 2008 North Coast Salmon FMP. It should be noted that in the seine fisheries, chum retention may be allowed only in certain areas and certain times, depending on stock strength. Chum non-retention may be implemented in season in the gill net fisheries and there is a non-retention of chum in the troll fishery (DFO, 2008b).

For salmon troll fisheries, only, any vessels wishing to retain lingcod, may do so given they have sufficient quota and that their fish is validated through the established dockside

monitoring program. When retaining lingcod the following requirements are in place: vessel must have sufficient IVQ, transportation requirements, hail in and hail out requirements, specific locations and times at which landing of fish is permitted, and landing requirements (landing of any fish species is not permitted unless designated observer is present to authorize the commencement of weight verification). If greater than 500 pounds of lingcod is retained per trip, the vessel is also subject to new electronic monitoring requirements (DFO 2008 a,b).

Additionally, salmon troll vessels are currently permitted to retain 20 rockfish per day, with exception to yelloweye, quillback, china, tiger, and copper, as by catch to salmon fishing (DFO, 2008a,b).

3.9 Interactions with Protected, Endangered, Threatened Species

Commercial chum and pink salmon fisheries in British Columbia interact with several populations in which there are concerns about status. The Inner Fraser population of coho salmon (*O kisutch*), Cultus Lake and Sakinaw populations of sockeye (*O. nerka*), and the Okanagan population of Chinook salmon (*O. tshawytscha*) have been designated as at risk by COSEWIC. All populations, under COSEWIC are considered endangered, with exception to the Chinook in the Okanagan population which are considered threatened.

While the COSEWIC listing is not legally binding, and the species have not yet been listed under the Species at Risk Act, there are measures implemented in the fishery which aid in minimizing the impact on these populations.

4.0 MANAGEMENT SYSTEM

4.1 Management System and Objectives

Management of the fishery is the responsibility of the Department of Fisheries and Oceans Canada. Management measures for the BC salmon fisheries are detailed in the two Integrated Fisheries Management Plans for Salmon; Southern BC Salmon Integrated Fishery Management Plan and the Northern BC Salmon Integrated Fishery Management Plan. The Southern BC FMP covers tidal and non-tidal waters from Cape Caution south to The B.C/Washington border, including the Fraser River watershed. The Northern BC salmon FMP covers recreational and commercial fisheries directed toward Pacific salmon in the north and central coast areas of BC, encompassing tidal and non-tidal waters from Cape Caution north to the B.C/Alaska boundary. Salmon species covered by the FMPs include sockeye, coho, pink, chum, and Chinook.

The salmon fishery is a limited entry licence fishery, with commercial salmon fishing authorized by issuance of a category "A" (vessel based commercial), "N" (party based) or "F" (communal commercial) licence. All salmon licence eligibilities must be applied for annually by the renewal date and the applicable fee paid in order to maintain eligibility. In 1996, permanent gear choice, area selection and licence stacking were introduced. For permanent gear choice, each salmon licence eligibility is restricted to one of seine, gillnet or troll fishing. Area selection meant that vessel owners/licence eligibility holders selected one area to fish for a period of 4 years, the coast was divided into 2 areas for seine gear, 3 for gillnet and 3 troll areas (see Figures 3-5). In 2000, the department reaffirmed its commitment to area licencing as long term feature of commercial salmon management. Harvesters are permitted to stack licence, and a request may be made for an area change at the time of submission of application for licence stacking (DFO, 2008c)

4.2 Management Plan

The current Integrated Fisheries Management Plan (IFMP) for Pacific salmon species pertains to salmon harvest taking place between Jun 1, 2008 and May 31, 2009. The IFMP addresses First Nations, recreational and commercial fisheries in British Columbia. As noted previously there are separate plans for the Northern and Southern coasts. The IFMPs incorporates the results of consultations and input from the Integrated Harvest Planning Committee, south coast First Nations, and south coast recreational and commercial advisors (DFO, 2008 a,b).

Pacific salmon fisheries are managed in a regular annual cycle of pre-season planning, in-season implementation and post season review, with the IFMPs as central elements of the annual planning cycle. Each IFMP describes the management objectives, general decision guidelines, specific fishing plans for each fishery and a review of the previous season. The plans also include detailed annual fishing plans for each sector and areas, which are developed based on the management strategies, long-term trends, and pre-season expectations (e.g. brood year escapements, patterns in survival, abundance forecasts) (Pestal *et al* 2008).

The IFMP lists the conditions under which fishing will be conducted. Fishing regulations for the salmon fishery in British Columbia include: non-retention of species of concern, catch monitoring, coded wire tag (CWT) sampling of troll catch, licence conditions, season and area closures, and gear restrictions. The plan includes compliance objects and overall conservation and protection program priorities. In the IFMP DFO commits to continual consultation with First Nations, recreational and commercial fish harvesters to co-ordinate fishing activities. Consultations with these groups also occurs as updated forecast information becomes available or when observed in-season returns are not covered by the decision guideline (DFO, 2008 a,b).

New management changes for the 2008/2009 include the development of an improved catch monitoring regime, implementation of the Pacific Integrated Commercial Fisheries Initiative (PICFI) which is aimed at achieving environmentally sustainable and economically viable commercial fisheries, where conservation is the first priority and First Nations' aspirations to be more involved are supported, Area Harvest Committees will continue to explore innovative ways to access TAC more efficiently, to increase market value of product, or TAC that may be unavailable due to the conservation concerns, or to access TAC that a full fleet fishery is unable to access. The Department is implementing additional measures to reduce harvest impacts, measures are required for commercial, recreational, and First Nation fisheries to halt the decline of early timed Chinook. Also, additional actions in 2008 include the requirement to ensure that the exploitation rate does not exceed 10% for the WCVI Chinook stocks. Actions that will be considered to achieve this include; time and area restrictions in northern and WCVI troll fisheries, for First Nations, opportunities in most terminal areas will be similar to 2007 and for recreational fish harvesters, additional restrictions in WCVI fisheries (DFO, 2008 a,b).

In order to effectively manage salmon stocks, a series of policies and regulations have been adopted to address biological uncertainty, legal requirement and the sharing of resources. Policies related to the management of fisheries is guided by a range of considerations that include legislated mandated, judicial guidance and international and domestic commitments that promote biodiversity and a precautionary, ecosystem approach to the management of marine resources. These policies continue to guide salmon management. Policy frameworks considered within the salmon fishery include; Canada's Policy for Conservation of Wild Pacific Salmon (WSP), An Allocation Policy for Pacific Salmon, Pacific Fisheries Reform, A Policy for Selective Fishing, A Framework for Improved Decision Making in the Pacific Salmon Fishery, the Integrated Harvest Planning Committee, and Pacific Region Fishery Monitoring and Reporting Framework.

5.0 STOCK HEALTH EVALUATION

5.1 Stock Health Monitoring

The following was taken from DFO, 2008c, unless otherwise noted.

Stock assessment for B.C. pink salmon are based on catch data from test, commercial and First Nations fisheries, biological samples for age composition and genetic stock identification, mark-recovery program fin clips, and escapement estimates from wild and enhanced systems.

Data collected pre-season, in-season and post season are crucial to the stock assessment process. The PSARC Salmon Sub-Committee, comprised mainly of DFO scientists, with participation from fisheries managers, academics, First Nations, stakeholder, and the general public, is the primary body providing pre-season scientific advice for the development of management plans for Pacific Salmon. The sub-committee provides advice on the forecasts of returns to specific systems for the upcoming season as well as management advice based on more extensive scientific reviews of the status of selected salmon stocks.

Pre-season forecasts of returns are based on biological and/or statistically based models. Models vary between different stocks or stock groupings depending on the life history and production patterns of that stock and the data available. Typical variables examined include: historic trends in escapements and total returns, returns of sibling age classes, and returns and escapement of brood (parental) year. In addition to short term forecasts, stock status reports are also produced by the sub-committee. Stock status reports focus on long term trend in the status of a given stock, its current status, and the extent of conservation measures required to maintain stock viability for the future.

In-season activities that contribute to stock status monitoring for salmon include stock re-forecasting, catch monitoring, and escapement surveys. As salmon begin returning to spawn each year, DFO engages in a process of in-season "re-forecasting", adjusting the pre-season run size based on actual observations of salmon abundance. Re-forecasting is conducted on a regular basis using a variety of analytical models, and information from several sources including catch rates in test and commercial fisheries, other harvest information and escapement surveys. In mixed stock fisheries, DNA analysis, scale analysis, coded wire tags from hatchery produced fish and other tagging programs are used to differentiate stocks.

Catch monitoring programs in place in the recreational, First Nations and commercial fisheries, and are a crucial piece of stock assessment process. In the commercial fishery harvesters are required to fill out logbooks, conduct frequent phone-ins reporting weekly harvest, and landing slips are mandatory. In addition in some instances independent observers may be required to verify catch data to managers. Within the recreational sector, catch is monitored through creel surveys, vessel counts, logbook programs. Harvest by First Nations is monitored and sampled and regular reports are produced. Mandatory landing programs are in place for First Nations economic opportunity fisheries.

A third component of in-season monitoring is escapement surveys conducted by DFO and its partners. Escapement surveys determine salmon escapement, the number of salmon that reach the spawning grounds after "escaping" the fisheries. In determining the number of escapes, techniques including counting fences, visual surveys, and mark recapture are used.

At the end of the salmon harvest and spawning season, actual escapement is compared with pre-season targets to evaluate the effectiveness of management measures. Escapement data are used in the development of subsequent years' forecasts and escapement goals and in tracking long term trends in survival and productivity.

5.2 Current Stock Status

Fraser River, North Coast and Central Coast, and the Inner south coast populations of pink salmon are all considered healthy enough not to warrant legislated levels of protections, and are not considered to be immediately threatened. These populations have remained strong in recent years despite the low marine productivity that has affected other species and populations of Pacific salmon (Grant and Pestal, 2008; Will et al, 2008; Spilsted and Pestal, 2008). In fact, the Fraser pink returns have almost quadrupled from historical averages (Grant and Pestal, 2008).

The DFO Certification Unit Profiles (CUPs) for North Coast and Central Coast, and Inner South Coast pink salmon fisheries all indicate that "Formal Limit Reference Points (LRP) or Target Reference Points (TRP) have not yet been developed" for these fisheries but operational Management Escapement Goals (MEG) have been identified for each of the management areas and major systems within each management area. Each of these CUPs provide the following explanation of the basis for these MEGs:

> "These operational equivalents were developed by interviewing DFO managers, biologists and contract field enumeration staff who had considerable years of local knowledge of particular streams and corresponding escapements of salmonids. The MEG represent the best estimate by these local experts and are used in a non-technical way as the operational equivalent for long-term benchmarks reflecting highly productive stocks (i.e. high sustainable yields)."

For Fraser pink salmon, the MEG has been set at 6,000,000.

The annual salmon outlook report defines stocks of concerns as those stocks that are "25% of target or declining rapidly". Therefore, the interim LRPs for pink salmon stocks were set at 25% of the MEGs and the interim TRPs for pink salmon were set equal to the MEGs.

The CUPs also provide summaries stock status and trends for each of the major management areas. These summaries were the source of the information on escapement trends provided below.

5.2.1 North and Central Coast

Figure 1 to Figure 11in Appendix A show trends in total observed escapement for Statistical Areas 1-10 for even-year pink salmon stocks. Note that survey coverage fluctuates across years, and comparisons of annual estimates must be approached with caution. Section 4.3 of the DFO Conservation Unit Profiles (available at http://www.msc.org/track-a-fishery/in-assessment/pacific/british-columbia-pink-and-chum-salmon/assessment-downloads) briefly describes how the observed escapements presented in these figures were adjusted to reconstruct run size and calculate harvest rates. English et al. (2006) describe the methods in more detail.

- Queen Charlotte Islands (Area 1, 2E and 2W): Even-year escapements have been consistently above the 25% of MEG line from 1985-2002 for 1, 2E and 2W pink salmon stocks (Figures 1-3). Escapement estimates for each area declined to below the 25% line in 2004 and 2006 and no fisheries were permitted to target these stocks in these years.

- North Coast (Areas 3 to 6): Reconstructed escapement estimates for Area 3 have been highly variable, but consistently above the 25% line, since 1980 (Figure 4). Escapement estimates for Area 4 were below the 25% line in 2006 and 2008 and close to the 25% line from 1998-2002 (Figure 5). Area 5 and 6 escapements have been above the 25% line since 1980 but very close to the 25% line in 2006-08 (Figures 6 and 7).

- Central Coast (Areas 7-10): Escapements estimates for Areas 7 and 8 have been consistently above the 25% line from 1986-2004 and Area 8 escapements have exceeded the MEG in 7 of these 10 even year returns (Figures 8 and 9). Reconstructed escapements for Areas 9 and 10 peaked at 3 times the MEG level in 2002. Area 9 escapements dropped substantially after 2002 and the 2006 and 2008 estimates were below the 25% line (Figure 10). Escapements to Area 10 pinks streams after 2002 are uncertain due to very low survey effort (Figure 11). No salmon fisheries have been permitted in Area 9 or 10 since 1998.

Figure 12 to Figure 19 in Appendix A show trends in total observed escapement for Statistical Area 3-10 for odd-year pink salmon stocks.

- Queen Charlotte Islands: Odd-year returns to QCI streams are very small relative to even-year returns and are generally not monitored.

- North Coast: Reconstructed escapement estimates for Area 3 in odd-years are slightly larger than those for even years and have been consistently close to or above the MEG, since 1981 (Figure 12). Escapement estimates for Area 4 have been close to or above the MEG in 8 of the last 10 years (Figure 13). Area 5 and 6 escapements in odd-years have been above the 25% line since 1981 and substantially above their MEGs since 2001 (Figures 14 and 15).

- Central Coast: Odd-year pink escapements estimates for Areas 7 and 8 have been consistently above the 25% line since 1981-2004 and Area 8 escapements have exceeded the MEG in 7 of these 10 odd-year returns (Figures 16 and 17). Reconstructed escapements for Areas 9 peaked at almost 5 times the MEG level in

2001. For most of the period between 1981 and 1999, Area 9 escapements were below the 25% line (Figure 18). Escapements to Area 10 pinks streams after 2002 are uncertain due to very low survey effort (Figure 19). As indicated above, no salmon fisheries have been permitted in Area 9 or 10 since 1998.

In summary, the above information show that, for the majority of North and Central coast target stocks, pink salmon escapements have been above their interim LRP (25% of MEG) for most years since 1980. There are a few management areas (Areas 2W, 4, 7 and 10 for even-year returns) that have dropped below the 25% line in the last two of the most recent 5 years. In three of these instances (Area 2W, 7 and 10), estimated harvest rates have been very low (<10%) and no fisheries were permitted to target these pink stocks in these years.

5.2.2 Inner South Coast Pink

Figures 20-25 in Appendix A show even-year pink salmon escapement trends for each of the Inner South Coast management areas (excluding Fraser River stocks):

- Upper Vancouver Island stocks were below the 25% line since 1988, except 2002 (Figure 20).
- Escapements to Johnstone Strait stocks have been above the 25% line every year since 1996 and above the MEG in three of these years (Figure 21).
- Mid-Vancouver Island stocks have been declining from their peak in 1990 and have been below 25% line in two of the last 3 even-year returns (Figure 22).
- Kingcome Inlet escapements also peaked in 1990 and have been highly variable since then, dipping below the 25% line in 2008 (Figure 23).
- Bond/Knight escapements peaked in 2000 and have been at or below the 25% line in 3 of the last 5 even-year returns (Figure 24).
- Loughborough to Bute escapements also peaked in 2000 and declined to levels below the 25% line in 2002 and 2004 (Figure 25).

In summary, the above escapement trends for even-year returns indicate that, for the majority of the Inner South Coast management areas, pink salmon escapements have been above their interim LRP (25% of MEG) for at least 3 of the 5 most recent odd-year returns. Only one of the Inner South Coast management areas (Upper Vancouver Island) has been near or below the 25% line for the past 5 years and estimated harvest rates for this area have been consistently less than 10% in these years.

Figures 26-35 in Appendix A show odd-year pink salmon escapement trends for each of the Inner South Coast management areas (excluding Fraser River stocks):

- Upper Vancouver Island stocks were consistently below the 25% line from 1987-2001 but exceeded the 25% level in each of the most recent 3 years (Figure 26).
- Escapements to Johnstone Strait stocks were close to or below the 25% line from 1995-2003 but exceeded the MEG substantially in 2007 (Figure 27).
- Mid-Vancouver Island stocks have been consistently above the 25% line since 1997 but only exceed the MEG once (in 2001, Figure 28).

- Kingcome Inlet escapements in odd-years have been substantially below the 25% line since 1991 (Figure 29).
- Bond/Knight escapements peaked in 2001 and have been above the 25% line in 4 of the last 5 even-year returns (Figure 30).
- Loughborough to Bute escapements in odd-years have been substantially below the 25% line since 1993 (Figure 31).
- Toba Inlet escapements in odd-years have been below the 25% line since 1991 (Figure 32).
- Jervis Inlet escapements in odd-years have been consistently below the 25% line since 1965 (Figure 33).
- Escapements to Burrard Inlet stocks have been above the 25% line in 4 of the last 5 odd-year returns that were assessed (Figure 34).
- The status of Howe Sound pink salmon stocks is currently unknown because of the lack of data since 1993 (Figure 35).

In summary, the above escapement trends for odd-year returns indicate that, for 5 of the 9 Inner South Coast management areas, pink salmon escapements have been above their interim LRP (25% of MEG) for at least 3 of the 5 most recent odd-year returns. Four of the management areas (Kingcome, Loughborough-Bute, Toba and Jervis) have been consistently below their 25% lines for the past 10 odd-year returns. Harvest rates estimates for these areas were low (<10%) in 2005 and 2007, however, the roughly 40% harvest rate in 2003 for three of these areas indicates that fisheries were a significant factor in the failure to meet the interim LRPs for these areas in that year.

5.2.3 Fraser Pink

The total escapement estimate for Fraser River pink stocks has been consistently above the 6,000,000 MEG line for odd-year returns since 2001 and above the 25% MEG line since 1977. Reductions in fishing pressure in the mid-1990's has resulted in estimated escapements exceeding 20 M pink in 2001 and 2003 (Figure 36). Even-year returns of pink salmon to the Fraser River are very small and thus not targeted by any fisheries. Consequently, DFO has not conducted surveys to estimate escapement for Fraser pink in even-years.

6.0 MSC PRINCIPLES AND CRITERIA FOR SUSTAINABLE FISHING

At the centre of the MSC is a set of *Principles and Criteria for Sustainable Fishing* which is used as a standard in a third party, independent and voluntary certification programme. These were developed by means of an extensive, international consultative process through which the views of stakeholders in fisheries were gathered.

PRINCIPLE 1

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery [1]:

Intent:

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

Criteria:

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

PRINCIPLE 2:

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

Intent:

[1] The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations

The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

Criteria:

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.

2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimizes mortality of, or injuries to endangered, threatened or protected species.

3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

PRINCIPLE 3:

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

Intent:

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

A. Management System Criteria:

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process;

3. be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings;

4. observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability;

5. incorporates an appropriate mechanism for the resolution of disputes arising within the system[2];

6. provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing;

7. act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty;

8. incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion;

9. require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted;

10. specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:

    a) setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;
    b) identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
    c) providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;

    d) mechanisms in place to limit or close fisheries when designated catch limits are reached;
    e) establishing no-take zones where appropriate;

11. contain appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

[2] Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

B. Operational Criteria

The fishing operation shall:

12. make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive;

13. implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;

14. not use destructive fishing practices such as fishing with poisons or explosives;

15. minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.;

16. be conducted in compliance with the fishery management system and all legal and administrative requirements; and

17. assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

7.0 FISHERY EVALUATION PROCESS

7.1 Certification Process

Pre-Assessment

The pre-assessment evaluation of the British Columbia commercial salmon fisheries, as required by the MSC program, was conducted by Scientific Certification Systems (SCS) in April 2001. After review of the pre-assessment, the candidate fishery entered full assessment in January 2008. All aspects of the full assessment process were carried out under the management of TAVEL Certification Inc., an accredited MSC certification body, and in direct accordance with MSC requirements (MSC Fisheries Certification Methodology Version 6).

Full Certification Process

In order to ensure a thorough and robust assessment process, and a process in which all interested stakeholders could participate, TAVEL used a number of different tactics to identify stakeholders and encourage their participation including direct email contact to known stakeholder NGOs, standard MSC announcement of the fisheries proceeding to full assessment, posting on fishery related list servers and announcement through fishery industry news services.

As required by MSC methodology, TAVEL Certification provided opportunities for input at all mandated stages of the assessment process. The general steps followed were:

Team Selection

At this first step of the assessment process, TAVEL issued advisories through direct email, listing on email listservers, and posting on select web sites requesting comment on the nominations of persons capable of providing the expertise needed in the assessment. A final team of 3 scientists was chosen to serve as assessment team members. Team members include Dr. Ray Hilborn (Principle 1), Dr. Dana Schmidt (Principle 2), and Mr. Karl English, M.Sc. (Principle 3).

Setting Performance Indicators and Scoring Guideposts

As required by the MSC assessment process, the assessment team drafted a set of performance indicators and scoring guideposts (PISGs) to correspond to the MSC Principles and Criteria. Through a series of electronic communications during the spring of 2008, the team drafted the PISGs using the MSC standard (Principles and Criteria for Sustainable Fishing). Performance Indicators and Scoring Guideposts for this fishery were adopted from PISGs already used for assessing British Columbia sockeye salmon and in the Alaska salmon recertification.

These were posted for the required 30 day comment period May 23, 2008 to allow stakeholders to provide comments on the performance indicators. TAVEL specifically requested comments

from the environmental and conservation stakeholder community as well as from the client and management agency.

PISGs for the BC salmon fisheries were finalized on November 28, 2008 and posted to the MSC website on December 3, 2008. The client submitted written information to the assessment team illustrating the fishery's compliance with the required performance indicators in late May, 2008. To accomplish this activity, the clients contracted a group of consultant to aid in the preparation of that submission. The client provided most of the information needed prior to the actual interviewing process. However, additional information was provided during the assessment and report preparation phases.

As required by MSC methodology, the team met prior to the fishery visit meetings to conduct a meeting to weight the performance indicators.

Meetings with industry, managers, and stakeholders

The client and DFO prepared extensive information submissions for all units of certification under assessment. As agreed with the client the information submissions were submitted to the MSC for posting on the MSC website, which can be seen at http://www.msc.org/track-a-fishery/in-assessment/pacific/british-columbia-pink-and-chum-salmon/assessment-downloads). TAVEL Certification planned for and conducted meetings with stakeholders, industry, fishery managers, and fishery scientists as required. The meetings were held in Vancouver, British Columbia, between January 20 and 23, 2009.

Scoring fishery

The assessment team scored the fishery using the required MSC methodology and without input from the client group or stakeholders. The initial scoring session was conducted Vancouver, BC on January 23 - 24, 2009. There were subsequent scoring discussions held amongst the certification team members after the client provided additional information for some performance indicators. The team met in June 2009 to conduct a final scoring session based on follow up information provided by the client and DFO.

Drafting report

The assessment team in collaboration with the TAVEL lead auditor, drafted the report in accordance with MSC required process.

Selection of peer reviewers

As required, TAVEL released an announcement of potential peer reviewers soliciting comment from stakeholders on the merit of the selected reviewers.

Public Comment Periods on Report

The MSC requirements are that the draft report be made available for public comment for a period of no less than 30 days. Under the MSC Certification Methodology (version 6,

September 2006) there is a formal requirement that the public comment period be held after the peer review process. The Public Comment Draft Report was posted on the MSC website on December 7, 2010 and was left open for public comment until January 20, 2011. Comments received on the Draft Certification Report were considered by the assessment team and the report was amended accordingly prior to posting the Final Determination Report.

Final Determination Report

Moody Marine and the assessment team responded to the stakeholder comments received during the Public Comment period and conducted the necessary internal due diligence requirements as specified by the MSC Fishery Certification Methodology. The Moody Marine Governing Board considered and reviewed the assessment report, the reports of the Peer Reviewers, and all stakeholder comments. The Governing Body accepted the report and on June 29 determined that the British Columbia Pink Salmon fisheries should be certified in accordance with the MSC standard. The Final Determination Report was posted to the public domain on July 1st to begin the mandatory 15 working day objection notification period.

Objection Period

The 15 day objection period closed on July 22, 2011 with no objections received. Following the close of the objection period, this Public Certification Report and associated fishery certificates were prepared for client approval and posting on the MSC website

7.2 Other Fisheries in the Area

The west coast waters of Canada are biologically complex, productive areas and as such, there is a complex multitude of diverse fisheries for groundfish, pelagic and invertebrate species in the area of certification. Fisheries in the area of operation are conducted using a variety of gear types, in addition to those used in the candidate fishery, longline, trawl pot and trap fisheries are conducted in the waters of British Columbia and the Canadian Pacific EEZ. While the majority of fisheries are managed solely by DFO, there are several fisheries (including hake) which are managed in cooperation with the United States, given the highly migratory nature of the stocks between the two nations. The MSC process considers other fisheries conducted in an area of a candidate fishery primarily to understand the complexity and interdependence of the various commercial and non-target species, the implications of the coinciding management activities and the potential for interactions between various fisheries.

As of November 2010, the BC Sockeye salmon fisheries, Canadian Pacific hake fishery, the Canadian Pacific halibut, BC North Pacific albacore tuna and the Canadian sablefish fisheries are certified to the MSC Standard. On-going MSC evaluations for British Columbia spiny dogfish, and BC chum salmon continue. All within the Canadian west coast EEZ and/ or the direct area of operation of the candidate pink salmon fisheries.

8.0 FISHERY PERFORMANCE

8.1 Interpretation of the MSC Standard

The MSC Principles and Criteria provide the overall requirements necessary for certifying that a fishery meets the Marine Stewardship Council's environmental standard for being well-managed and sustainable.

The certification methodology adopted by the MSC involves the application and interpretation of the Principles and Criteria to the specific fishery undergoing assessment. This is necessary, as the precise assessment of a fishery will vary with the nature of the species, capture method used etc.

Accordingly, in order to carry out the assessment, the assessment team for the British Columbia pink salmon fisheries have developed a structured hierarchy of 'Performance Indicators' and 'Scoring Guideposts', based on the MSC Principles and Criteria. Performance indicators represent separate areas of important information (e.g. Indicator 1.1.1.3 requires a information on the geographic range of harvest for each stock, 1.1.2.1 requires information on fishing related mortality and so on). These indicators therefore provide a detailed framework of performance attributes necessary to meet the MSC Criteria in the same way as the Criteria provide the factors necessary to meet each Principle.

Individual 'Scoring Guideposts' (60, 80 and 100) are identified for each of the forty-nine performance indicators. It is at this level that the performance of the fishery is measured. It is important to note that the absolute numeric values assigned to each of these guideposts are not intended to reflect any type of percentile scoring system but were established by the MSC to help the assessment teams facilitate weighting and combining different performance indicators.

8.2 Scoring Methodology

For each Performance Indicator, the fishery's management characteristics are compared with the requirements of the pre-specified attributes for each of three Scoring Guideposts (60, 80, 100) to establish a score. A performance score of at least 60 but less than 80 is intended to reflect 'a pass with condition', a score of 80 but less than 100 represents 'pass without condition', while a 100 score reflects 'perfect performance.' In order for a fishery to be certified it must accomplish three things:

- Achieve a score of 60 or greater for every performance indicator
- Each MSC Principle must achieve an aggregated score of 80, or pass without conditions.
- A contractual commitment to performance improvement for each indicator that has a score less than 80.

In fisheries where any given indicator scores below 60, a fishery cannot pass the evaluation process and be awarded certification until the performance issue (s) identified can be scored above 80 by the certification body and its expert evaluation team.

The evaluation framework described above is referred to as the fishery assessment tree. It represents a hierarchical application of the Principles and Criteria. The 60, 80, 100 scoring guideposts used to evaluate a fishery's performance for an indicator are meant to be hierarchical in that to meet a particular score, the scoring guideposts of all lower scores should also have been met.

For any given MSC criterion, sub-criteria and performance indicators are identified as appropriate to the nature of the fishery. All sub-criteria and indicators are weighted indicating their relative importance in setting the overall scores for the fishery.

The fisheries certification methods are provided in great detail through documents that can be downloaded from the MSC website (www.msc.org). At present, the Fisheries Certification Methodology is in its 6th version, issued September 2006.

8.3 Submission of Data on the Fishery

The MSC certification process is similar to other certification schemes in that the client must provide objective evidence of their compliance with the standard. What is unique about the MSC certification process over a vast number of other certification schemes is the requirement of the independent certification assessors to analyze and evaluate the objective evidence and confirm that the evidence proves that the fishery performance merits a specific score.

As such, clients of the certification process are required to submit evidence to prove that they meet the standard in all areas of the fishery from the status of stocks, to ecosystem impacts, through management processes and procedures. This evidence may take many different forms including internationally peer-reviewed literature, grey literature, working documents of the scientific and management authorities, policy documents, observations on the part of the assessment team, observations and fact presented in written or oral form from direct and indirect stakeholders, etc.

Under the MSC program, it is the responsibility of certification applicants to provide the objective evidence required by the assessment team. It is also the responsibility of the applicants to ensure that the assessment team has access to any and all scientists, managers, and fishers that the assessment team identifies as necessary to interview in its effort to properly understand the functions associated with the management of the fishery. Last, it is the responsibility of the assessment team to make contact with stakeholders that are known to be interested, or actively engaged in issues associated with fisheries in the same geographic location.

With aid from the Fisheries and Oceans scientific and management personnel, the British Columbia Pink fishery clients and their contractors provided very detailed submissions to support their application for certification. The documents included a BC Pink and Chum Management Summary document, individual Certification Unit Profiles for all units of pink salmon certification, and responses to performance indicators for each unit of certification. The client and DFO also assisted the assessment team in organizing the fishery assessment

visit and arranging meetings with all necessary harvesters, processors, scientists, managers and enforcement officials.

8.4 Performance Evaluations

After completing information reviews and interviews, the assessment team is responsible to use all the information gathered to assess the performance of the fishery. This is done by assigning numerical scores between 0 and 100, using increments of 5 for each performance indicator. The team uses the scoring guideposts to benchmark the performance of the fishery. To practically accomplish the scoring process in a standardize manner between certification bodies, the MSC requires that a decision support software tool, called Expert Choice be used to calculate the scores. A full description of the AHP process can be found on the MSC web site (www.msc.org). In essence, the process requires that all team members work together to discuss and evaluate the information they have received for a given performance indicator and come to a consensus decision on weights and scores. Using the software, scores and weights are then combined to get overall scores for each of the three MSC Principles.

As previously mentioned, each certified fishery must have an aggregated weighted score of 80 or above on each of the three MSC Principles. Individual performance indicators receiving a score of less than 80 must have a 'Condition' established that when met, would bring the fishery's performance for that indicator up to the 80 score representing a well-managed fishery.

9.0 TRACKING, TRACING FISH AND FISH PRODUCTS

The specific scope of this full certification assessment is the BC pink salmon seine, troll, gillnet and beach seine, fish wheels, weirs, dipnets fisheries in the British Columbia coastal and Canadian Pacific EEZ waters. With exception to a small amount of troll-caught salmon that is frozen at sea (bled, dressed and quick frozen), product from the commercial British Columbia salmon fishery is landed and processed in BC coastal ports. Processed fish from the troll sector is also landed in on shore. Only pink salmon caught Canadian waters and landed in BC would be eligible to be sold as MSC certified fish and fish product.

Moody Marine and the British Columbia salmon certification clients have agreed that the eligibility date for this certification will be July 1st, 2009. All client companies wishing to sell certified product must have a valid Chain of Custody certification audit conducted in accordance with this the MSC Chain of Custody standard, methodology and relevant Policy Advisories and TAB Directives.

Integrity of the landings for MSC Chain of Custody requirements was only checked to the point of first landing for BC pink salmon landed by legally permitted, salmon fishing vessels with valid salmon licenses where the landings can be monitored in accordance with monitoring requirements.

MSC Chain of Custody requirements were only checked as far as product being landed by legally permitted, salmon fishing vessels with valid fishing licenses where the landings can be monitored in accordance with dockside monitoring requirements. In this fishery, harvesters target returning pink salmon but often encounter other salmon species in their catch including chum and sockeye salmon, steelhead trout and less frequently, Chinook or coho salmon. These six related species are very different in appearance, with pink salmon being different in both physical shape and coloration. There is low risk of certified pink salmon being confused with other salmon bycatch species and being inadvertently sold as MSC certified fish.

In order for subsequent links in the distribution chain to be able to use the MSC logo, pink salmon product must enter into a separate chain of custody certification from the point of landing forward. The subsequent links must be able to prove that they can track the pink salmon product back to the permitted vessels which landed the product or to the primary processing facility which initially received the product.

Traceability within the Fishery

In the British Columbia commercial salmon fisheries, conditions of licence require licence holders to report all fish caught whether landed or discarded and specify the catch reporting details applicable to each gear type. Log-books, frequent phone-ins, and sales slips are mandatory for all commercial salmon fisheries. Commercial salmon landings are verified and reported on sales slips which are then submitted to DFO and contribute to catch monitoring. The mandatory phone in program requires individual fishers to phone in weekly to repot commercial catch. Log-books used in the fishery record location, time, catch (retained and discarded), and length of fishing set.

10.0 CERTIFICATION RECOMMENDATION

The overall performance of the three pink salmon fisheries units of certification conducted in the BC coastal waters, and adjacent Canadian Pacific waters is identified in Table 3 below. The Assessment Team has recommended and the Moody Marine Governing Body has determined that the fisheries be Certified in accordance with the MSC Sustainable Fishing program as the following performance criteria have been met:

4. Each MSC Principle has an aggregated, weighted score higher than the required score of 80.
5. No individual performance indicator had a score below 60.
6. The client has agreed to improve the fishery performance for the performance indicators with scores below 80 and above 60.

Table 3: Final scores allotted to British Columbian pink salmon fisheries and number of conditions issued.

	Unit of Certification Performance					
	North Central Coast Pink Salmon		Inner South Coast Pink Salmon		Fraser Pink Salmon	
MSC Principle	Fishery Performance	Number of Conditions Issued	Fishery Performance	Number of Conditions Issued	Fishery Performance	Number of Conditions Issued
1	80	8	80	8	81	7
2	81	3	87	1	83	2
3	85	8	92	3	90	4

10.1 Conditions

The fishery attained scores below 80 for the following performance indicators. The client has agreed to improve the performance of these indicators by undertaking the actions identified below each condition in sections 10.2, 10.3 and 10.4. The full client action plan submission can be seen in Appendix C of this report.

The objective of the client action plan is to ensure that the performance of a particular aspect of the fishery management system, as evaluated by the performance indicators and the 80 scoring guideposts for which the candidate fishery is deemed deficient as demonstrated by scores below 80, is improved during the five year certification validity and within the time frame identified by the assessment team.

Ultimately, under normal circumstances, the fishery certification client agrees to undertake these actions. In the instance that the client has attained the support of the management or scientific agency to undertake the actions, the certification body is required to confirm that there are sufficient resources allotted to complete the necessary work. In the instance that the certification body determines that sufficient resources are not available, the certifier is

responsible to withhold certification until such assurances are provided by the responsible agency.

10.2 Principle 1 Conditions

Condition 1-1

Performance Indicator 1.1.2.1	**Scoring Guidepost 80**
Estimates exist of the removals for each stock unit.	• Catch estimates are available for all target stocks harvested in the fishery. • Catch estimates are available for non-target stocks where the catch of the non-target stock may represent a significant component of the harvest of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years.
Condition 1-1: For all pink salmon units of certifications (UoC) - The reliability of the catch estimates derived from the catch monitoring systems shall be evaluated by the second surveillance audit and the client or management agency shall commit to conducting similar catch monitoring reporting evaluations at a period of not more than every 5 years in order to meet the performance requirement identified by the third scoring element in the 80 scoring guidepost. The management agency must implement catch monitoring systems that will produce scientifically defensible estimates of catch for non target stocks and species in Area 3-6 pink salmon fisheries by the second surveillance audit. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest.	
Proposed Client Action Plan Under DFO's Pacific Integrated Commercial Fisheries Initiative (PICFI) the Enhanced Accountability element has provided further focus and resources to develop and implement a framework to improve the monitoring and catch reporting in Pacific fisheries. Under this framework fisheries information requirements are categorized as requiring low, moderate or enhanced levels of information according to consistent criteria, largely based on evaluating risk to conservation. The current and desired monitoring levels for all Pacific salmon fisheries are currently being evaluated utilizing this consistent framework and a report being prepared for release. This strategy calls for subsequent updates of the regional evaluation of all salmon fishery monitoring programs every two years. DFO will report on the current program to monitor the catch and associated by-catch in Area 3-6 pink fisheries. The utility of this bycatch data for stock assessment of management applications will be evaluated and be the basis for determining the adequacy of the bycatch	

monitoring programs.

The Skeena Model was developed in the 1990's as a joint effort between MOE and DFO to estimate harvest impacts on steelhead. The 3 recent CSAP papers on Nass sockeye, Skeena chum and Nass chum all provided accepted recommendations to review and expand the Skeena model, and to develop an equivalent for the Nass. These models will be the basis for evaluating bycatch harvest impacts for Nass and Skeena sockeye and pink fisheries. Review and expansion of the Skeena model and the creation of an equivalent version for the Nass will be developed over the next two years.

Condition 1-2

Performance Indicator 1.1.2.2	**Scoring Guidepost 80**
Estimates exist of the spawning escapement for each stock unit.	• Estimates are available for the annual escapement of each target stock harvested in the fishery. • Fishery independent indicators of abundance are available for the non-target species harvested in the fishery. • In season indicators of escapement are available for the target stocks and are used to regulate the fishery.
Condition 1-2: For all pink salmon UoCs - An escapement monitoring program that is adequate to estimate the status of target stocks harvested in the NCCC, ISC and Fraser pink salmon fisheries must be implemented within two year. Fishery independent indicators of abundance for non-target species harvested in these fisheries (e.g. improved escapement monitoring for lower Skeena chum) must be available for each year and area where fisheries are permitted to target pink salmon. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. A publically available, externally reviewed report on escapement monitoring programs should be available for review within 2 years.	
Proposed Client Action Plan The current assessment framework for inner south coast pink stocks relies heavily of visual surveys in a variety of key indicator stocks. In recent years the focus in regards to the mainland inlet pink returns of Statistical area 12 have increased and the level of assessment activity has improved relative to historic coverage. Majority of the fisheries directly targeting these stocks are typically terminal in nature and the management is driven by the escapement program providing information relative to the Management Escapement Goal (MEG) that is in place for that specific system. Since 2001 there has not been a system wide escapement monitoring program undertaken for	

Fraser River pink salmon. The system-wide survey was discontinued in 2001 given large returns, heavily curtailed fisheries, and the balance of assessment priorities on the Fraser across all salmon species.

Through 2003, the final estimate of total Fraser River pink salmon abundance is based upon in-season estimates as determined by test fisheries and commercial fishery data. Since 2003 the spawning escapement has been estimated as the total return minus total catch. We think this is low risk for the following reasons:

- in-season test fisheries exists to estimate Fraser Pink run size;
- system estimates of Fraser pink juvenile abundance are conducted annually as an index of spawning escapement;
- the estimated run size in the last decade has been well above the escapement goal of 6 million (see Figure I in DFO 2008 report on Fraser River pink salmon Certification unit profile); and
- directed Fraser pink fisheries are limited by co-migrating stocks of concerns (i.e. Fraser Sockeye Late Run and Interior Fraser Coho); exploitation rates have dropped below 10% in recent years (see Table 4 & Figure 1 in DFO 2008 report on Fraser River pink salmon Certification unit profile) due to these constraints on pink fisheries.

A report outlining the rationale for the pink salmon escapement monitoring will be developed and it will include how it meets the management needs for NCCC, Inner South Coast Pink and Fraser River pink salmon stocks in relation to the level of harvest by second surveillance audit. The DFO report for pink salmon escapement monitoring will include a clear description of how the escapement estimates for NCCC, Fraser and ISC pink salmon are derived.

Condition 1-3

Performance Indicator 1.1.2.3	**Scoring Guidepost 80**
The age and size of catch and escapement have been considered, especially for the target stocks.	• Periodic monitoring programs collect data on the age and size of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks. • There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.
Condition 1-3: For all pink salmon UoCs - By the second surveillance audit, the client or management agency must meet the requirements of the 80 scoring guideposts. This shall include scientific analysis supporting justification of the existing sampling program. **Team Suggestion** The team envisions an evaluation of the issues where size monitoring might be important, for instance declining average size affecting average egg production and	

changing spawner recruit relationships, and evaluation of the extent to which the existing opportunistic sampling would capture that.
Proposed Client Action Plan Sampling in the test fisheries is specifically designed to attempt to capture the stock structure of the pink salmon populations moving through Skeena River, Johnstone Strait and the Fraser River at any given time. These test fisheries have been designed to not only provide information on abundance but frequently collect data on stock composition and size distribution. The visual nature of escapement programs does not lend themselves to direct sampling. We rely heavily on fence programs such as the Keogh River and hatchery programs such as those on the Quinsam River to provide indications of trends in size distribution over time for these pink stocks. Baseline collections for pink system specific DNA is conducted based on the requirement to fulfill the total South Coast. Additional details and justification of the sampling program will be provided by the second surveillance audit..

Condition 1-3a

Performance Indicator 1.1.2.4	**Scoring Guidepost 80**
The information collected from catch monitoring and stock assessment programs is used to compute productivity estimates for the target stocks and management guidelines for both target and non-target stocks.	• There is adequate information to identify the harvest limitations and production strategies required to maintain the high productivity of the target stocks. • There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks. • The harvest limitations for target stocks take into consideration the impacts on non-target stocks and the uncertainty of the productivity for these stocks.
Condition 1-3a: For NCCC and ISC pink salmon UoCs - By the third surveillance audit, for the NCCC and ISC UoCs, the client or management agency must document that they have sufficient information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks. The management agency must indicate how the impacts on non-target stocks, and the uncertainty surrounding the productivity of these stocks, are taken into account when planning pink fisheries, by the second surveillance audit.	

Proposed Client Action Plan

DFO has ongoing assessment initiatives to derive benchmarks and evaluate escapement goals. These initiatives include evaluations of the relative productivity of stocks.

By the third surveillance audit a report detailing that there is sufficient information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks and the uncertainty surrounding the productivity of these stocks, are taken into account when planning pink fisheries will be provided. BY the second surveillance audit a report will be provide that documents how when planning pink salmon fisheries the uncertainty in non-target stock productivity is taken into account.

Condition 1-4

Performance Indicator 1.1.3.1	**Scoring Guidepost 80**
Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.	• There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries. • There is no significant scientific disagreement regarding the LRP's used by the management agency to formulate management decision for the fishery.

Condition 1-4. For all pink salmon UoCs. - By the second surveillance audit, the client or management agency must formally establish target and limit reference points for the appropriate assessment units within each unit of certification through a scientific process, and this process must be peer-reviewed through PSARC to ensure scientific agreement regarding the LRPs chosen to formulate management decisions for the fisheries.

Proposed Client Action Plan

There are several conditions common to all four fishery units that require definition of reference points. The MSC Evaluation Team conditions 1-4, 1-5, 1-6 and 1-7 all make reference to defining either target reference points (TRPs) or Limit Reference Points (LRPs). To be clear when TRPs and LRPs are requested by the MSC Evaluation Team, DFOs response will be to define lower and upper benchmarks for conservation units.[1]

Upper and lower benchmarks as defined in the Wild Salmon Policy (2005) delimit red, amber, and green status zones for fish populations (and may also be used to delimit habitat and ecosystem status zones). The benchmark between amber and green zones identifies whether harvests are less than or greater than the level expected to provide the maximum sustainable catch of the Conservation Unit (CU). CUs in the amber zone are at a low risk of extinction, but there is lost production. CUs in the green zone are biologically

secure. Social and economic considerations will tend to be the primary drivers for management of the CUs in the green zone, though ecosystem or other non- consumptive use values could also be considered.

It is the intent of the Wild Salmon Policy to initiate management actions before the lower benchmark is reached and the extent of the actions will likely increase the closer CU is to the lower benchmark. While there are a number of definitions for management reference points the paper "A Harvest Strategy Compliant with the Precautionary Approach. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2006/023" provides an explaination of how the precautionary approach would be implemented and definition of management reference points.

The following table describes milestones for implementing Strategy 1 of the WSP. DFO will provide a progress report on Strategy I implementation to the MSC certifying body by late 2010.

Action	Description	Timeline
Identify Conservation Units	Paper defining conservation units regionally for all salmon species based on biological criteria (Holtby and Ciruna, 2007)	Paper reviewed and approved by PSARC, published 2008
Develop standardized assessment criteria	Paper defining general methodology for determining reference points for salmon populations and assessment criteria (Holt et aI., *in prep)* Workshop to facilitate application of methods in Holt et al.	PSARC Workshop, January 2009 Finalized methodology: October, 2009
Define lower benchmarks for each target stock (CU)	Apply criteria and methods of Holt et al. *(in prep)* to specific CUs.	by second surveillance audit
Define Upper benchmarks for each target stock (CU) and corresponding harvest strategy	Recognizing Target Benchmarks inherently involve trade-offs, determine Target Benchmarks through participatory decision-making (co-management) – see below.	by second surveillance audit

Condition 1-5

Performance Indicator 1.1.3.2	**Scoring Guidepost 80**
Target Reference Points (TRPs) or operational equivalent have been set.	• There is no significant scientific disagreement regarding the TRP's used by the management agency to formulate management decision for the fishery. • The TRP's for the target stocks take into account variability in the productivity of

	each component of the target stock and the productivity of non-target stocks.
Condition 1-5: For all pink salmon UoCs. Condition 1-4, set for PI 1.1.3.1, will also respond to this condition.	
Proposed Client Action Plan See proposed client action plan for condition 1-4 above.	

Condition 1-6

Performance Indicator 1.2.1	**Scoring Guidepost 80**
There is a well-defined and effective strategy, and a specific recovery plan in place, to promote recovery of the target stock within reasonable time frames.	• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 3 reproductive cycles. • Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.
Condition 1-6: For all pink salmon UoCs. - To achieve a score of 80 over the five year period of the certification, the client or management agency must develop and implement (in the event of severe depletion) recovery plans to facilitate the recovery of depleted stocks to the MEG within three cycles given average rate of productivity. It is recognized that if stocks encounter a series of poor productivity years, even with little, if any, exploitation stocks may not recover in three cycles. The recovery plans must be defined to allow the stocks to recover more than 150% of the defined limit reference point prior to allowing any fishery to target the depleted stocks and the stock should be expected to recover to the MEG under the rebuilding plan. A recovery plan template must be developed and submitted for review and approval by the second annual surveillance audit. **Team Suggestion**: The team suggests that the management agency formally adopt a harvest strategy and provide the scientific evidence to show that this strategy would lead to rebuilding above the 150% LRP mark. The team does not have an expectation that specific "rebuilding plans" for each stock be established however, the Team does expect that scientific review would examine the stocks which have been consistently well below the Limit and make specific comment and evaluation on what measures are necessary to rebuild them.	
Proposed Client Action Plan The newly standardized MSC assessment trees (2008) provide much needed guidance regarding the assessment of species fished as stock complexes, such as Pacific salmon. Specifically, species fished as stock complexes "may be considered analogous to multi-target species considered under the guidance of performance indicator 2.3.1." This	

distinction is important because it allows for a pragmatic approach to the central problem of weak stock management, recognizing that factors other than harvest may cause a stock to decline. A non-target stock within the fishery may be below the point at which recruitment is impaired. *The critical factor for certification is whether or not the fishery is 'hindering' recovery of the stock.*

Our WSP prescribes a systematic approach to salmon management, essentially moving DFO from a reactive to a pro-active approach for maintaining the biodiversity of salmon populations within Canada.

To ensure that fisheries have acceptable harvest limits on non-target stocks and that the management system allows for rebuilding of depleted non-target stocks, DFO will:

- Implement 'Strategy 1' of the WSP: Define lower and upper benchmarks for non-target stocks (CUs) and monitor their status. The objective for fishery management shall be to maintain CUs above their lower benchmarks unless otherwise determined by the Minister. Not meeting this objective would occur only in exceptional circumstances where management actions are assessed to be ineffective, or the social and economic costs will be extreme (p.29 WSP).
- Implement 'Strategy 4' of the WSP: Create a regional framework for integrated planning that will be used to articulate salmon management choices that consider social, economic and biological consequences. Consensus based advisory processes will be used to assist in defining these trade-offs and also to assist in developing strategic plans for the management of salmon conservation units; including harvest strategies designed to maintain the biodiversity of stocks within the CU.
- Benchmarks will be used to guide management response. For example, if a CU is below its lower benchmark and in the 'Red Zone' this will trigger consideration for ways to protect the fish, increase their abundance and reduce the risk for loss. Biological considerations will be the primary consideration for CU below the lower benchmark and in the 'Red Zone'. Page 17 of the WSP identifies additional guidance on how response would be taken for CU between the lower and higher benchmark.
- Implement Strategy 5 of the WSP. Review annual performance against measurable objectives, particularly with regards to stock status and rebuilding objectives.

Specifically, DFO will also define lower benchmarks or their equivalent for NCCC, ISC and Fraser River, pink salmon CUs. A rebuilding plan consistent with the WSP will have been developed and implementation initiated within 2 years for stocks harvested in fisheries targeting NCCC, ISC, and Fraser River pink salmon that are below their lower benchmarks. On the Skeena and Nass Rivers the proposed rebuilding plan will include measures to rebuild chum salmon stocks that are below their lower benchmark contingent upon determining whether harvest pressure is found to have a significant risk for chum rebuilding. The rebuilding plan will include a stated objective and rebuilding target and timeline for rebuilding. This rebuilding plan will demonstrate how the fisheries management strategy will assist in ensuring rebuilding objectives are met. Fishery

actions may only be one component of a rebuilding plan and could include enhancement, habitat and other measures to enable rebuilding objectives being met. It must recognize though, that there will be instances that rebuilding is not possible even where the appropriate management actions are implemented. Rebuilding may not be possible due to a variety of events that are beyond our control (e.g. low marine survival, habitat changes, environmental conditions, etc.)

The following table describes milestones for implementing elements of the WSP required to meet the Rebuilding Plan Conditions of Principle 1 and Principle 2 conditions for MSC certification of BC pink fisheries.

Action	Description	Timeline
Define lower benchmarks for each target stock (CU)	Apply criteria and methods of Holt et al. *(in prep)* to specific CUs.	by second surveillance audit
Develop fishery-specific integrated management plans.	Initiate planning processes to develop integrated management plans for salmon CUs that will: - Define lower benchmarks for target and non-target stocks - Define precautionary harvest strategies and decision rules - Determine rebuilding strategies - Define performance measures	NCCC (complete by second surveillance audit) ISC (complete by second surveillance audit)) Fraser River Pink (complete by second surveillance audit))
Implement Annual Performance review	Annually review and report on performance of fishery and management system against defined performance measures for salmon conservation.	Starting third surveillance audit .

Condition 1-7

Performance Indicator 1.2.2	**Scoring Guidepost 80**
Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points (or equivalents) for the target stocks.	• There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.

	• Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.
Condition 1-7: For all pink salmon UoCs. By the second annual surveillance audit, the client or management agency must attain general agreement that the methods of estimating escapement and exploitation rates for all target stocks are scientifically defensible and the management agency must formally establish the LRPs, as required under condition 1-3. The status of each target stock should be reviewed, and where the stock is approaching the defined LRP, the exploitation rate on the stock should be estimated. The management agency must report what actions have been taken to reduce fishing as the target stocks approach the LRP and must demonstrate that fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years.	
Proposed Client Action Plan See proposed client action plan for condition 1-4 above	

10.3 Principle 2 Conditions

Condition 2-1

Performance Indicator 2.1.1	**Scoring Guidepost 80**
The management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-target species are identified.	• A monitoring program exists that provides estimates of bycatch. • In known problem areas of high bycatch, there is an ongoing monitoring program.
Condition 2-1. For the NCC and Fraser pink salmon UoCs. Certification of North-Central Coast and Fraser pink fisheries will be conditional until reliable estimates of non-target species bycatch are obtained annually in North-Central Coast and in the Fraser River pink salmon fisheries. The certification of these fisheries requires the successful completion of a bycatch monitoring program that meets the requirements of the scoring elements under the 80SG scoring guidepost by the second annual surveillance audit. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. The client or management agency shall present a publically available report on bycatch estimation by the second surveillance audit**.**	
Proposed Client Action Plan	

See proposed client action plan for condition 1-1 above

Condition 2-2

Performance Indicator 2.1.3	**Scoring Guidepost 80**
Research efforts are ongoing to identify new problems and define the magnitude of existing problems, and fisheries managers have a process to incorporate this understanding into their management decisions	• There is ongoing research of previously identified problems areas to determine if bycatch reduction measures are effective. • When new problems are identified, the management plans require a new monitoring program be instituted to determine the effectiveness of bycatch reduction measures. • The management plan allows for between season assessment and institution of new controls on the fishery or stakeholder consultation following the identification of bycatch problems or ecosystem related impacts.
Condition 2-2 – For NCCC pink salmon UoC. See Condition 2-1 which will be applied to address performance improvement requirements for this indicator for the North Central Coast UoC. Results to be provided by the second surveillance audit.	
Proposed Client Action Plan See proposed client action plan for condition 1-1 above.	

Condition 2-3

Performance Indicator 2.3.1	**Scoring Guidepost 80**
Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points)	• The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs. • Objectives for recovery consider historic stock abundance information. • The management system ensures that the fishery is executed such that recovery of depleted non-target stocks is highly likely to occur in a reasonable time period. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner

	whether recovery is occurring. • Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans. • The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks.
Condition 2-3 For all pink salmon UoCs. Certification of the pink fisheries requires development of recovery plans for all non-target stocks that are consistently below the LRP. Implicit in this condition is that all non-target stocks have LRP's developed. The proposed recovery plans, including a commitment to stock monitoring and assessment must be developed and implemented by the second surveillance audit. These recovery plans must meet the requirements of the scoring elements under the 80SG scoring guidepost.	
Proposed Client Action Plan See proposed client action plan for condition 1-6 above.	

10.4 Principle 3 Conditions

Conditions 3-1, 3-2, 3-3

Performance Indicator 3.1.1	**Scoring Guidepost 80**
The management system has a clear and defensible set of objectives for the harvest and escapement for target species and accounts for the non-target species captured in association with, or as a consequence of, fishing for target species	• Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors. • Harvest controls are precise and effective for major target stocks or target species in the fishery. • The management system provides estimates for all major catches, landings, and bycatch.

Condition 3-1 For all pink salmon UoCs - Certification of all pink fisheries will be conditional until management objectives, (e.g. maximum harvest rates, escapement goals, LRPs) are clearly defined for most of the target pink stocks harvested in these fisheries. Objectives will be provided to the Certification Body by the second surveillance audit.

Condition 3-2. For NCCC pink salmon UoC. - Certification of North-Central Coast pink salmon fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for North-Central Coast pink salmon fisheries. Bycatch estimates will be reported to the certification body by the first surveillance audit.

Condition 3-3. For Fraser pink salmon UoC. - Certification of Fraser pink salmon fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for Fraser pink salmon fisheries bycatch estimates will be reported to the certification body by the first surveillance audit.

Proposed Client Action Plan

In Response to Condition 3-1, see proposed client action plan for Condition 1-4 above.

Condition 3-2

A report will be provided to the certifier on by-catch estimates for NCCC.

Condition 3-3

Programs are in place to estimate the number of sturgeon and steelhead encountered in

fisheries directed at Fraser River pink salmon. A mandatory release requirement for both of these species is in effect, therefore, estimates of releases are currently based on unverified reports of releases from fishery participants To satisfy this condition DFO will develop a program to estimate the impact of Fraser River pink fisheries on steelhead and sturgeon. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed by the first surveillance audit.

Condition 3-4

Performance Indicator 3.1.5	**Scoring Guidepost 80**
Management response to new information on the fishery and the fish populations is timely and adaptive.	• The management system provides a mechanism for responding to unexpected changes in the fishery. • When new information or findings support altering the management and conservation programs, adjustments are made within 12 months of obtaining the new information.
Condition 3-4 – For the NCC pink salmon UoC. - By the second surveillance audit, DFO must document how it has responded to management and conservation concerns such as estimation of bycatch and development of recovery plans for Area 3 to 6 chum stocks. DFO should provide evidence that they have established an effective process for responding to new information and making necessary changes within 12 months of the information becoming available.	
Proposed Client Action Plan See proposed client action plan for condition 1-6 above.	

Condition 3-5

Performance Indicator 3.1.8	**Scoring Guidepost 80**
The management system provides for socioeconomic incentives for sustainable fishing.	• The management system regularly considers the use of social and economic incentives to the stakeholders in the fishery, which are designed to facilitate the development of fishing gear and practices that can lead to sustainable fishing. • The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates.

	• Evidence demonstrates that the stakeholders in the fishery have used such incentives • The management system attempts to understand the impact of their management decisions on social and economic factors affecting the major stakeholders in the fishery and takes action to lessen the major impacts on stakeholders.
Condition 3-5 - For NCC pink salmon UoC. Certification of North-Central Coast pink fisheries will be conditional until DFO provides evidence that DFO has implemented programs in the North-Central coast that create incentives for harvesters not to exceed target catches in pink fisheries and that these incentives are working. If DFO has evidence of implementing these types of fisheries in the past, this evidence should be provided within 1 year. Evidence of new incentives or initiatives implemented on the North-Central coast should be provided within 2 years	
Proposed Client Action Plan DFO has been experimenting with new approaches to manage fisheries more efficiently. To contribute to the Pacific Fisheries Reform vision demonstration fishery proposals have been solicited that: • Maintains or improves management control and conservation performance in the fishery; • Promotes the use of clearly defined shares to improve manageability and industry viability; and • Increases the ability of harvesters to work cooperatively to harvest available surpluses and to take on greater responsibility for control and monitoring of their fishery. If there are pink fisheries that exceed target catches a report on these programs as they pertain to the North-Central coast fisheries will be developed.	

Condition 3-6

Performance Indicator 3.2.1	**Scoring Guidepost 80**
The research plan covers the scope of the fishery, includes all target species, accounts for the non-target species captured in association with, or as a consequence of fishing for target species, and considers the impact of fishing on the ecosystem and socioeconomic factors affected by the management program.	• The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species. • The research plan addresses concerns related to the impact of the fishery on the ecosystem.

	• The research plan addresses socioeconomic issues that result from the implementation of management. • The research plan is responsive to changes in the fishery. • Funding is adequate to support short-term research needs. • There is progress in understanding the impact of the fishery on target and non-target species. • Research results are utilized in forming management strategies. • Research is reviewed by PSARC or PSC, or other appropriate and technically qualified entities.
Condition 3-6 – For all pink salmon UoCs. - Certification of all pink fisheries will be conditional until DFO develops a research plan for pink fisheries which incorporates the existing elements under 80SG and addresses impacts of the fishery on the ecosystem, socioeconomic issues that result from management decisions and is responsive to changes in the fishery. The research plan must also include an evaluation of alternative management approaches to reduce bycatch or determine the survival rate of discarded non-target species for non-retention fisheries. For example: the research and assessment plans should describe how Fraser pink salmon escapement estimates will be derived in the future when harvesting pressure increases. This research plan must be provided to certification body by the second surveillance audit.	
Proposed Client Action Plan The requirement to include ecosystem values and objectives in planning process is an element of the WSP. Over the next two-three years, DFO will be implementing the revised format for Integrated Fisheries Management Plans (IFMPs). The revised IFMP template is much more fishery specific and requires elements not included in past IFMPs, such as stock status, a socio-economic overview and summary of management issues. Implementation of the new IFMP template will require many of the gaps identified in the conditions to be addressed. To addresses the need to include other objectives (ecosystem, socio-economic) in the planning process and assess performance against these objectives, we will need to re- align our current reporting and/or re-allocate research resources. DFO has developed a Resource Assessment Framework (RAF) for Fraser River sockeye (PSARC review in May 2008) to help guide assessment priorities based on the biological status and knowledge gaps for each CU. Over the next year DFO will be developing a comprehensive salmon RAF. The RAF will serve as a template for all salmon research and stock assessment planning in the Pacific	

Region.

Condition 3-6a

Performance Indicator 3.4.2.1	**Scoring Guidepost 80**
The management system includes compliance provisions.	• The management system includes compliance provisions that are effective for the fisheries. • Infractions, which result in adverse impacts on the status of the stocks or on the ecosystem, are rare.
Condition 3-6a – For the NCC pink salmon UoC. - For the NCCC, to meet the requirements of the first 80 scoring guidepost DFO must document and implement changes to the existing compliance provisions in order to increase the level effectiveness of the current program to reduce non compliance with fishery regulations and Conditions of License. A report must be provided to the certification body by the second surveillance audit detailing changes and effectiveness.	
Proposed Client Action Plan A report will be completed and provided by the second surveillance audit documenting any modifications undertaken to improve compliance with fishery regulations.	

Condition 3-7

Performance Indicator 3.5.2	**Scoring Guidepost 80**
There is an effective and timely system for external review of the management system.	• The management system provides for a review of management performance by one or more independent experts at least once every five years. • The format and standards of the review are established within the management system. • Review results are made available to the public.
Condition 3-7 – For all pink salmon UoCs. – Certification of all pink fisheries will be conditional until an external review of pink salmon fisheries management performance is completed and there is commitment to conducting a similar review at least once every five years. The results of the first external review will be provided to the certification body by the second surveillance audit.	
Proposed Client Action Plan	

External reviews are conducted on an annual basis through the department's Integrated Harvest Planning Committee. This Committee is comprised of representatives from First Nations, and commercial, recreational and environmental organizations. The Terms of Reference for this Committee require a post-season evaluation be conducted and reported on an annual basis.

In addition, the client agrees to contract a recognized salmon fisheries management expert who will provide a report on pink salmon fisheries management performance. The report will focus on providing an assessment of management performance in meeting stated objectives and will highlight areas or issues of concern and possible opportunities for improved management performance. This contracted expert will provide a presentation on the report to the IHPC during the IHPCs post-season evaluation process.

Performance Indicator 3.7.1	**Scoring Guidepost 80**
Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch.	• Through educational programs for members of the fishing industry and other relevant stakeholders, the management system discourages the use of gear types and fishing practices that result in high catches of non-target species or undersized individuals of target species, and encourages them to avoid fishing in areas identified to have high concentrations of non-target species or undersized individuals of target species. • Taking into consideration natural variability in population abundance, there is evidence that the capture and discard of non-target species or undersized individuals of target species is trending downward, or is at a level of exploitation that has been determined by management to be acceptable. • Fishers generally conduct their fishing activity in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.
Condition 3-7a – For the NCC pink salmon UoC. - For the NCCC, to meet the requirements of the second and third 80 scoring guidepost, the fishery in Area 3 to 6 must demonstrate that there have been measures taken to ensure that fishing activity is conducted in a manner that is consistent with the goal of reducing the catch (mortality) of non-target species of conservation concern. DFO must provide clear evidence of either a downward trend in the capture and	

discard of non-target species in the Area 3 and 4 net fisheries or that exploitation level of those species has been determined by management to be acceptable. This evidence shall be provided by the second annual surveillance audit.
Proposed Client Action Plan See proposed client action plan for condition 1-1 above

Condition 3-8, 3-9

Performance Indicator 3.7.4	**Scoring Guidepost 80**
The management system solicits the cooperation of the fishing industry and other relevant stakeholders in the collection of data on the catch and discard of non-target species and undersized individuals of target species.	• Sufficient numbers of fish harvesters and processors comply with requests for data on catches and discards of non-target species and undersized individuals of target species to ensure that reliable estimates of total catches and discards for the fishery can be obtained.
Condition 3-8. For NCCC pink salmon UoC. Same as Condition 3-2. Certification of North-Central Coast pink fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for North-Central Coast pink fisheries. To be provide by the first annual surveillance audit **Condition 3-9.** For Fraser Pink Salmon UoC. - Same as Condition 3-3. Certification of Fraser pink fisheries will be conditional until scientifically defensible annual estimates of non-target species bycatch are obtained for Fraser pink fisheries. To be provide by the first annual surveillance audit.	
Proposed Client Action Plan In response to Condition 3-8, see proposed client action plan for Condition 3-2 above. In response to Condition 3-9, see proposed client action plan for Condition 3-3 above.	

11 ASSESSMENT RESULTS

Tables 4, 5 and 6 provide the scoring summary for each MSC Principle. Table 7, starting on page 43, is a tabular explanation of the assessment team's evaluation of the information it received and the team's interpretation of the information as it pertains to the fishery's compliance with the MSC Principles and Criteria.

Table 4: MSC Principle 1 Scoring Summary

Summary for BC Pink Salmon Unit of Certification			Pink Salmon Units of Certification							
		Weighting	NCCC Pink	Weighted Scores		ISC Pink	Weighted Scores		Fraser Pink	Weighted Scores
PRINCIPLE 1 - Fishery Management for Target Populations		0.333		**80**			**80**			**81**
Criterion 1.1 - Maintain high productivity of target population & associated ecosystem		0.794		**81**			**81**			**82**
Subcriterion 1.1.1 - Stock units		0.400		**95**			**95**			**97**
Indicator 1.1.1.1	Stock management units defined	0.464	100			100			100	
Indicator 1.1.1.2	Scientific agreement on units	0.284	100			100			100	
Indicator 1.1.1.3	Geographic distribution known	0.158	80			80			80	
Indicator 1.1.1.4	Indicator Stocks	0.094	85			80			na	
Indicator 1.1.1.5	Enhanced Stocks	na	na			na			na	
Subcriterion 1.1.2 - Monitoring and assessment		0.400		**72**			**73**			**74**
Indicator 1.1.2.1	Reliable estimates of removals	0.274	73			77			77	
Indicator 1.1.2.2	Reliable estimates of escapement	0.369	70			70			70	
Indicator 1.1.2.3	Information on fish age and size	0.112	70			70			70	
Indicator 1.1.2.4	Productivity estimates	0.246	73			73			80	
Subcriterion 1.1.3 - Management goals		0.200		**70**			**70**			**70**
Indicator 1.1.3.1	Limit reference points	0.667	70			70			70	
Indicator 1.1.3.2	Target reference points	0.333	70			70			70	
Criterion 1.2 - Fishery allows for the recovery of depleted stocks (Target Stocks)		0.136		**70**			**70**			**70**
Indicator 1.2.1	Well-defined and effective strategy	0.500	70			70			70	
Indicator 1.2.2	Stocks not depleted and harvest rates are sustainable	0.500	70			70			70	
Criterion 1.3 - Fishing does not impair reproductive capacity		0.070		**93**			**93**			**93**
Indicator 1.3.1	Age, sex and genetic structure are monitored	1.000	93			93			93	

Table 5: MSC Principle 2 Scoring Summary

Summary for BC Pink Salmon Unit of Certification			Pink Salmon Units of Certification							
		Weighting	NCCC Pink	Weighted Scores		ISC Pink	Weighted Scores		Fraser Pink	Weighted Scores
PRINCIPLE 2 - Ecosystem and Non-Target Populations		0.333		**81**			**87**			**83**
Criterion 2.1 - Maintain natural functional relationships among species		0.500		**84**			**92**			**88**
Indicator 2.1.1	Impacts on ecosystem processes can be identified	0.286	70			90			75	
Indicator 2.1.2	Provisions to reduce ecosystem impacts	0.143	92			92			92	
Indicator 2.1.3	Sufficient research on ecosystem impacts	0.143	77			95			95	
Indicator 2.1.4	Escapement goals address ecosystem needs	0.143	95			95			95	
Indicator 2.1.5	Research on effects of non-fishing activities	0.286	90			90			90	
Criterion 2.2 - Fishery minimizes impacts on endangered, threatened or protected speci		0.250		**93**			**93**			**93**
Indicator 2.2.1	Information on biological diversity used by managers	1.000	93			93			93	
Criterion 2.3 - Fishery allows for the recovery of depleted stocks (Non-target Stocks)		0.250		**63**			**70**			**63**
Indicator 2.3.1	Provide for recovery of non-target stocks	1.000	63			70			63	

Table 6: MSC Principle 3 Scoring Summary

Summary for BC Pink Salmon Unit of Certification			Pink Salmon Units of Certification					
		Weighting	NCCC Pink	Weighted Scores	ISC Pink	Weighted Scores	Fraser Pink	Weighted Scores
PRINCIPLE 3 - Management and Operational Framework		0.333		**87**		**91**		**90**
Management Framework								
Criterion 3.1 - Management system consistent with MSC principles and criteria		0.327		**85**		**90**		**90**
Indicator 3.1.1	Clear and defensible set of objectives	0.125	70		72		70	
Indicator 3.1.2	Periodic assessment of biological status	0.125	90		90		90	
Indicator 3.1.3	Identify the impact of fishing on the ecosystem	0.125	95		95		95	
Indicator 3.1.4	Uses best information and precautionary approach	0.125	90		90		90	
Indicator 3.1.5	Responses to new information are timely and adaptive	0.125	75		95		95	
Indicator 3.1.6	Responsive to social and economic impact of fishery	0.125	95		95		95	
Indicator 3.1.7	Useful and relevant information to decision makers	0.125	92		92		92	
Indicator 3.1.8	Socioeconomic incentives for sustainable fishing	0.125	70		94		94	
Indicator 3.1.9	Hatchery Managment Issues	na	na		na		na	
Criterion 3.2 - Framework for research pertinent to management		0.100		**79**		**79**		**79**
Indicator 3.2.1	Research plan for target and non-target species	0.667	73		73		73	
Indicator 3.2.2	Research is timely, available and reviewed	0.333	90		90		90	
Criterion 3.3 - Transparency in operations and consultation process		0.041		**100**		**100**		**100**
Indicator 3.3.1	Open consultations process	1.000	100		100		100	

Table 6: MSC Principle 3 Scoring Summary cont…

Summary for BC Pink Salmon Unit of Certification			Pink Salmon Units of Certification					
		Weighting	NCCC Pink	Weighted Scores	ISC Pink	Weighted Scores	Fraser Pink	Weighted Scores
Criterion 3.4 - Measure to control levels of harvest		0.179		**85**		**92**		**92**
Subcriterion 3.4.1 - Catch and exploitation levels		0.500						
Indicator 3.4.1.1	Firshery control systems including no-take zones	0.500	96		96		96	
Indicator 3.4.1.2	Measures to restore depleted fish populations	0.500	80		80		80	
Subcriterion 3.4.2 - Ensure that conservation objectives are met.		0.500						
Indicator 3.4.2.1	Compliance provisions (effective enforcement)	0.500	75		100		100	
Indicator 3.4.2.2	Monitoring provisions	0.500	90		90		90	
Criterion 3. 5 - Regular and timely review of management system		0.152		**88**		**88**		**88**
Indicator 3.5.1	Internal review	0.316	100		100		100	
Indicator 3.5.2	External review	0.258	70		70		70	
Indicator 3.5.3	Recommendations from reviews incorporated	0.284	85		85		85	
Indicator 3.5.4	Mechanism for resolving disputes	0.142	97		97		97	
Criterion 3.6 - Compliance with legal and administrative requirements		0.124		**100**		**100**		**100**
Indicator 3.6.1	Compliance with international agreements	0.250	100		100		100	
Indicator 3.6.2	Compliance with domestic laws and regulations	0.375	100		100		100	
Indicator 3.6.3	Observes legal and customary (First Nation) rights	0.375	100		100		100	
Fisheries Operational Framework								
Criterion 3.7 - Ecosystem sensitive gear and fishing practices		0.077		**83**		**97**		**87**
Indicator 3.7.1	Avoid catch and minimize mortality of non-target species	0.277	73		100		90	
Indicator 3.7.2	No distructive fishing practices	0.139	100		100		100	
Indicator 3.7.3	Minimize operational waste	0.128	100		100		100	
Indicator 3.7.4	Cooperation of fishers	0.328	70		90		70	
Indicator 3.7.5	Fishing methods minimize impacts on habitat	0.128	100		100		97	

Table 7: MSC Principle 1: Individual Performance Indicator Scoring Summary (NCCC)

Summary for BC Pink Salmon Units of Certification		Salm			Criteria @ 60					Criteria @ 80						Criteria @ 100				
		Weighting	NCCC Pink	Weighted Scores	1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 1 - Fishery Management for Target Populations		0.333		**80**																
Criterion 1.1 - Maintain high productivity of target population & associated ecosystem		0.794		**81**																
Subcriterion 1.1.1 - Stock units		0.400		**95**																
Indicator 1.1.1.1	Stock management units defined	0.464	100				X	X	X			X	X	X	X			X	X	X
Indicator 1.1.1.2	Scientific agreement on units	0.284	100			X	X	X	X			X	X	X	X				X	X
Indicator 1.1.1.3	Geographic distribution known	0.158	80			X	X	X	X				X	X	X			X	X	X
Indicator 1.1.1.4	Indicator Stocks	0.094	85				X	X	X			X	X	X	X					X
Indicator 1.1.1.5	Enhanced Stocks	na	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subcriterion 1.1.2 - Monitoring and assessment		0.400		**72**																
Indicator 1.1.2.1	Reliable estimates of removals	0.274	73					X	X		P	P	X	X	X				X	X
Indicator 1.1.2.2	Reliable estimates of escapement	0.369	70				X	X	X	P	P	P	X	X	X	P		X	X	X
Indicator 1.1.2.3	Information on fish age and size	0.112	70			X	X	X	X			X	X	X	X		X	X	X	X
Indicator 1.1.2.4	Productivity estimates	0.246	73				X	X	X				X	X	X			X	X	X
Subcriterion 1.1.3 - Management goals		0.200		**70**																
Indicator 1.1.3.1	Limit reference points	0.667	70			X	X	X	X			X	X	X	X				X	X
Indicator 1.1.3.2	Target reference points	0.333	70					X	X			X	X	X	X				X	X
Criterion 1.2 - Fishery allows for the recovery of depleted		0.136		**70**																
Indicator 1.2.1	Well-defined and effective strategy	0.500	70				X	X	X	P	P	X	X	X	X				X	X
Indicator 1.2.2	Stocks not depleted and harvest rates are sustainable	0.500	70				X	X	X	P	P	X	X	X	X			X	X	X
Criterion 1.3 - Fishing does not impair reproductive capacity		0.070		**93**																
Indicator 1.3.1	Age, sex and genetic structure are monitored	1.000	93					X	X				X	X	X				X	X

Table 7 cont: MSC Principle 1: Individual Performance Indicator Scoring Summary (ISC)

Summary for BC Pink Salmon Units of Certification		Weighting	ISC Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 1 - Fishery Management for Target Populations		0.333		**80**																
Criterion 1.1 - Maintain high productivity of target population & associated ecosystem		0.794		**81**																
Subcriterion 1.1.1 - Stock units		0.400		**95**																
Indicator 1.1.1.1	Stock management units defined	0.464	100				X	X	X			X	X	X	X			X	X	X
Indicator 1.1.1.2	Scientific agreement on units	0.284	100			X	X	X	X			X	X	X	X				X	X
Indicator 1.1.1.3	Geographic distribution known	0.158	80			X	X	X	X				X	X	X			X	X	X
Indicator 1.1.1.4	Indicator Stocks	0.094	80				X	X	X			X	X	X	X					X
Indicator 1.1.1.5	Enhanced Stocks	na	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subcriterion 1.1.2 - Monitoring and assessment		0.400		**73**																
Indicator 1.1.2.1	Reliable estimates of removals	0.274	77					X	X			P	X	X	X				X	X
Indicator 1.1.2.2	Reliable estimates of escapement	0.369	70				X	X	X	P	P	P	X	X	X			X	X	X
Indicator 1.1.2.3	Information on fish age and size	0.112	70			X	X	X	X			X	X	X	X		X	X	X	X
Indicator 1.1.2.4	Productivity estimates	0.246	73				X	X	X				X	X	X			X	X	X
Subcriterion 1.1.3 - Management goals		0.200		**70**																
Indicator 1.1.3.1	Limit reference points	0.667	70			X	X	X	X			X	X	X	X				X	X
Indicator 1.1.3.2	Target reference points	0.333	70					X	X			X	X	X	X				X	X
Criterion 1.2 - Fishery allows for the recovery of depleted		0.136		**70**																
Indicator 1.2.1	Well-defined and effective strategy	0.500	70				X	X	X	P	P	X	X	X	X				X	X
Indicator 1.2.2	Stocks not depleted and harvest rates are sustainable	0.500	70				X	X	X	P	P	X	X	X	X			X	X	X
Criterion 1.3 - Fishing does not impair reproductive capacity		0.070		**93**																
Indicator 1.3.1	Age, sex and genetic structure are monitored	1.000	93					X	X				X	X	X				X	X

Table 7 cont: MSC Principle 1: Individual Performance Indicator Scoring Summary (Fraser)

Summary for BC Pink Salmon Units of Certification		Weighting	Fraser Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 1 - Fishery Management for Target Populations		0.333		**81**																
Criterion 1.1 - Maintain high productivity of target population & associated ecosystem		0.794		**82**																
Subcriterion 1.1.1 - Stock units		0.400		**97**																
Indicator 1.1.1.1	Stock management units defined	0.464	100				X	X	X			X	X	X	X			X	X	X
Indicator 1.1.1.2	Scientific agreement on units	0.284	100			X	X	X	X			X	X	X	X				X	X
Indicator 1.1.1.3	Geographic distribution known	0.158	80			X	X	X	X				X	X	X			X	X	X
Indicator 1.1.1.4	Indicator Stocks	0.094	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Indicator 1.1.1.5	Enhanced Stocks	na	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subcriterion 1.1.2 - Monitoring and assessment		0.400		**74**																
Indicator 1.1.2.1	Reliable estimates of removals	0.274	77					X	X			P	X	X	X				X	X
Indicator 1.1.2.2	Reliable estimates of escapement	0.369	70				X	X	X	P	P	P	X	X	X			X	X	X
Indicator 1.1.2.3	Information on fish age and size	0.112	70			X	X	X	X			X	X	X	X		X	X	X	X
Indicator 1.1.2.4	Productivity estimates	0.246	80				X	X	X				X	X	X			X	X	X
Subcriterion 1.1.3 - Management goals		0.200		**70**																
Indicator 1.1.3.1	Limit reference points	0.667	70			X	X	X	X			X	X	X	X				X	X
Indicator 1.1.3.2	Target reference points	0.333	70					X	X			X	X	X	X				X	X
Criterion 1.2 - Fishery allows for the recovery of depleted		0.136		**70**																
Indicator 1.2.1	Well-defined and effective strategy	0.500	70				X	X	X	P	P	X	X	X	X				X	X
Indicator 1.2.2	Stocks not depleted and harvest rates are sustainable	0.500	70				X	X	X	P	P	X	X	X	X			X	X	X
Criterion 1.3 - Fishing does not impair reproductive capacity		0.070		**93**																
Indicator 1.3.1	Age, sex and genetic structure are monitored	1.000	93					X	X				X	X	X				X	X

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Table 8: MSC Principle 1: Individual Performance Indicator Scoring

MSC Principle 1	**A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.**		
Intent	*The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favor of short-term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.* It is recognized that environmental conditions will occasionally cause even well managed stocks to decrease to low abundance and the intent is that the management system will facilitate rapid recovery of such stocks.		
Weight	**33**	**Score**	**NCCC Pink: 80** **Inner SC Pink: 80** **Fraser Pink: 81**

1.1 - MSC Criterion 1	**The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.**		
Intent	Our interpretation of MSC Criterion 1: The performance indicators listed under Criteria 1 focused on the adequacy of the information used to manage the fisheries and stocks. For our assessment, we have organized the performance indicators into the three sub-criteria: 1) the definition of the stock units for each fishery; 2 the information available on the harvests, escapement, biological characteristic, and productivity; and 3) the management goals for each stock unit. As in the evaluations of other fisheries, the effect of the fishery on the associated ecological community will be primarily dealt with under Principle 2. However, the 100% level for indicators related to management goals under Principle 1 cannot be achieved unless information is collected on the associated ecological community and used in setting management goals.		
Weight	**79.4**	**Score**	**NCCC Pink: 81** **Inner SC Pink: 81** **Fraser Pink: 82**

1.1.1 TAVEL Sub-Criterion	Scientifically defensible stock units have been defined and the geographic distribution of these stocks is known.		
Intent	The intention of this sub-criterion is to evaluate whether the definition of the stock units are clear and appropriate for each species harvested in the fishery.		
Weight	**40**	**Score**	

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

1.1.1.1	The stock units are well defined for the purposes of conservation, fisheries management and stock assessment.	• The majority of stock units are defined • The rational for the majority of stock units for the target species is clear with regard to conservation, fisheries management and stock assessment requirements.	• The stock units are well defined and include details on the major component stocks. • The rational for each stock unit for the target species is clear with regard to conservation, fisheries management and stock assessment requirements.	• There is an unambiguous description of each stock unit, including: its geographic location, run timing, details of all the component stocks, and rational for its definition. • The rational for each stock unit is clear with regard to conservation, fisheries management and stock assessment requirements.
Weight		**46.4**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.2.2 describes the different biological units of Pacific salmon and how they are used in the management system.
- CUP 2.1.1 provides details about the stock units in each area.

The Wild Salmon Policy (DFO 2005) formally expresses many years of conceptual and practical development in the department's management of Pacific salmon. It serves as a crucial platform for launching and coordinating comprehensive planning processes for the long-term conservation and sustainability of wild Pacific salmon.

Holtby and Ciruna (2007) developed a comprehensive approach for identifying conservation units of anadromous Pacific salmon, based on a combination of the ecological context, the life history of each population, and genetic population structure. They chose to map out Joint Adaptive Zones (JAZ) based on a combination of freshwater characteristics and marine characteristics. Within each JAZ, species were further divided into conservation units based on differences in life history, spawning time, and other ecological characteristics.

Scoring Rationale: The definition of conservation units for each certification unit as provided in the DFO Management Summary (MS) Section 2.2.2 and detailed stock unit definition information provide in the Certification Unit Profiles (CUP) provides clear and unambiguous definitions of the stock units. The procedures and resulting definitions have been peer reviewed through PSARC, as described in the MS Section 2.2.2 and 4.3.5.1. Therefore, all criteria at the 60, 80 and 100 guideposts have been met for all pink salmon fisheries.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

1.1.1.2	There is general scientific agreement that the stock units are appropriate.	• There is general agreement among regional fisheries scientists within the management agency that the majority of stock units are appropriate for target species.	• There is general agreement among regional fisheries scientist within the management agency that the stock units are appropriate for target species • There is no significant scientific disagreement regarding the stock units used by the management agency to formulate management decision for the fishery.	• The stock units for target species have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advise Review Committee (PSARC) or the appropriate Pacific Salmon Commission (PSC) technical committee • There is general agreement among regional fisheries scientist outside the management agency that the stock units are appropriate. • There is general scientific agreement regarding the stock units for non-target species.
Weight		**28.4**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.2.2 describes the different biological units of Pacific salmon and how they are used in the management system.
- CUP 2.1.1 provides details about the stock units in each area for each unit of certification

Extensive research has been completed to identify the population structures of BC pink salmon. The analyses were peer reviewed and accepted through the PSARC process, which includes scientists for outside the management agency:

- Beacham et al. (1985), Beacham et al (1988), and other genetic studies since then have confirmed the reproductive isolation of odd-year and even-year broodlines.
- Beacham et al. (1988) identified a northern regional group of odd-year pink salmon.
- Riddell (2004) describes spawning populations of pink salmon of the north and central coast.
- Holtby and Ciruna (2007) document the multi-criteria approach used to delineate conservation units under the Wild Salmon Policy. Their Appendix 8 lists the consultations conducted to develop the initial list of conservation units. Up-to-date materials for continuing public consultations on the definition of conservation units for BC pink salmon are available at

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/wsp/CUs_e.htm

Scoring Rationale: All criteria at the 100 SG were met, the client submission clearly demonstrated that a rigorous process has been used to establish the CUs under the WSP. The stock units for target stocks have been reviewed through PSARC and the review involved outside scientists. Conservation units for all Pacific salmon species have been identified and this covers the definition of stock units for non-target species. The Holtby and Ciruna document describes the stock units for the major salmon species, thus indicating general scientific agreement on stock units for non target salmon species. Therefore, all criteria at the 60, 80 and 100 guideposts have been met for all pink salmon fisheries.

1.1.1.3	The geographic range for harvest of each stock unit in the fishery is known.	• The information available on the geographic range for harvests of target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock unit.	• The geographic range for harvests of target stocks is defined. • The information on the geographic range of harvests of target stocks is sufficient to prevent the over harvesting of these stocks. • The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks.	• The geographic range for harvests of each stock unit in the fishery is estimated and documented each year. • The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.
Intent		*The intent is to confirm the geographical range (i.e. location) of fisheries which impact target stocks within stock units.*		
Weight		**15.8**	**Score**	**NCCC Pink: 80** **Inner SC Pink: 80** **Fraser Pink: 80**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- CUP 2.1.2 for each unit of certification describes stock characteristics, including marine distribution.
- CUP 2.3 for each UOC describes the fisheries intercepting each stock unit.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

North and central coast pinks are harvested in terminal fisheries. The fisheries usually target returning stock near or adjacent to their rivers of origin. It assumed these terminal fisheries account for all or a significant portion of the total exploitation of these populations. As the fish are not marked there are no data regarding high seas interceptions. While pink are a far north migrating species, in other jurisdictions as well as Canada, north and central coast pink are generally not targeted in offshore feeding grounds.

Mainland Inlets terminal pink fisheries (Areas 12 and 13) are harvested in terminal areas in years of large abundance and provide opportunities for all three commercial gear types, although seines catch the majority of fish. Fleet size during these commercial fisheries is highly variable and depends on other fisheries occurring during the same time period (e.g. Fraser River sockeye fisheries) as well as market prices. Over-flights are used to assist in estimating abundance in the terminal areas, as well as provide in-season river escapement estimates. Targeted commercial fisheries have occurred terminally in the Mainland Inlets when run size exceeded the escapement targets. No targeted commercial fisheries have taken place here since 2001 due to low abundance. Commercial fisheries targeting other pink salmon stocks or other salmon species are modified to reduce interceptions of Mainland Inlet pink salmon when poor returns are expected. For example, fisheries are limited to below Lewis Point from late July to mid-August, extending a boundary closure already in place to protect Nimpkish sockeye until the end of July. This measure protects the early portion of the Mainland Inlet pink run, which includes the Ahnuhati River, Kaweiken River, and other systems experiences recent periods of low abundance. Another example is the ribbon boundary in effect for Fraser sockeye and pink fisheries on the mainland side of Johnstone Strait from the end of July to the end of August (Table 7 in Inner South Coast CUP document).

Interceptions of Inner South Coast (non-Fraser) pink salmon in other salmon fisheries are determined by the year-to-year patterns in abundance and effort distribution in those fisheries, particularly in Queen Charlotte Strait and the Johnstone Strait mixed-stock fisheries (Areas 12 and 13). In general, interception patterns differ between odd-year runs with large pink salmon returns to the Fraser, and even-year runs without a Fraser component.

Historically Fraser River pink salmon have been harvested primarily by purse seine vessels operating in Area 12-13, 16 and 20 (up to 8.5 million in 1983). In addition a troll fleet operated in Area 121-127 and to a lesser extent in Areas 11-13, 16 and 29 (as high as 3 million in 1981). Smaller quantities of pink salmon were harvested by gillnet vessels in Areas 11-13, 16, 20 and 20 (<700,000 in 1971). Fraser River pinks have also been harvested in the United States Panel Area waters (Washington State Management Areas 4B, 5, 6 6C, 7 and 7A) consistent with the Pacific Salmon Treaty and managed by the Fraser River Panel.

Scoring Rationale: Most of the pink fisheries in B.C. are managed on the basis of terminal stocks in an inlet or bay. Thus pink salmon in B.C. primarily are managed on a finer scale than the conservation units and the terminal nature of most of the fisheries assures the conservation units will be monitored.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Following from the DFO discussion paper Pacific Region Fishery Monitoring and Reporting Framework,[3] mandatory logbooks, frequent phone-in, and sales slip programs are in place for all commercial fisheries.[4] Harvesters must report all catch, retained and released, including by-catch of other species of fish, seabirds, and other non-target species.

Data are entered into the regional Fishery Operating System (FOS) database. A variety of reports derived from these data can be accessed at the following web site. http://www-sci.pac.dfo-mpo.gc.ca/sa/Commercial/default_e.htm

In addition, real-time monitoring is in place where necessary. For example, coho in the north and central coast are being managed to an exploitation rate ceiling. Coho are actively managed during all net fisheries, with coho retention initially not allowed in gillnet and seine fisheries. Fishery managers monitor the encounter rates on a weekly basis and will allow retention of coho if abundance warrants.

Therefore, geographic range for harvest of target stocks is known and the first scoring element of the 80 SG is met, this information is sufficient to prevent over harvesting of these stocks, and the information available is sufficient to prevent the over harvesting of non-target pink stocks as required by the second and third scoring elements of the 80 SG.

The terminal nature of the pink fisheries meets the 80 scoring criteria, while the lack of any annual or in-season stock identification means that none of the 100 scoring guideposts are met. The major exception to the terminal fisheries are a range of fisheries in the south coast targeting Fraser River pinks in odd years. Genetic stock id has been used to identify the Fraser contribution in these mixed stock fisheries. All three units of certification were awarded a score of 80.

1.1.1.4	Where indicator stocks are used as the primary source of information for making management decisions on a larger group of stocks in a region, the status of the indicator stocks reflects the status of other stocks within the management unit.	• There is limited scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery. • There is a scientific basis for the indicator stocks used in the	• There is general agreement among regional fisheries scientists within the management agency that the status of indicator stocks reflects the status of other stocks within the management unit. • There is no significant scientific disagreement regarding the indicator stocks used by the	• The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region. • The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by the PSARC or the appropriate PSC

[3] Pacific Region Fishery Monitoring and Reporting Framework, January 2002. http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/fisheriesmgmt/reportingframework/monitoringpaper_e.pdf

[4] See sample logbook: IFMP 2003, Appendix 3.
For more information on the log-book program, see: 2007 South Coast Salmon IFMP, Section 7.5.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

		management of the fishery.	management agency to formulate management decisions for the fishery.	technical committee. • There is general agreement among regional fisheries scientists outside the management agency that the indicator stocks are appropriate. • The relationships between indicator stocks and stocks of interest are assessed every three to five years.
Weight		**9.4**	**Score**	**NCCC Pink: 85** **Inner SC Pink: 80** **Fraser Pink: NA**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- Where applicable, each CUP 2.1.1.4 describes the use of indicator stocks.
- CUP 4.2 for each UOC describes escapement monitoring in each area.

Commercial fisheries targeting north and central coast pink salmon generally rely on indicator stocks to locally identify surplus abundance in-season. Indicator stocks tend to be more intensively surveyed and provide more accurate estimates of local abundance than the visual surveys used for the majority of pink salmon spawning streams. English et al. (2006) list the indicator stocks and survey methods. A number of these streams will likely never have a directed fishery but are important as indicators of streams with similar run size, timing and productivity. Intensive monitoring with counting fences occurs on the Tlell and Copper rivers (Area 2 East), the Kincolith River (Area 3) as well as the Babine and Kitwanga rivers (Area 4). A counting tower has been in use on the Atnarko River (Area 8) since 1971. Section 4.2.2.3 of the *Certification Unit Profile* describes each of these counting facilities and links to annual date summaries.

In addition to intensive surveys of these indicator steams, escapement estimates in each statistical area are compiled for fairly stable sets of index streams and a variable set of additional streams. Section 4.1 summarizes assessment coverage for north and central coast pink salmon while Section 4.3 briefly describes how observed escapements are adjusted to reconstruct run size and calculate harvest rates.

Consistent monitoring programs for pink salmon escapement have been in place for 35 systems on the Inner South Coast, with the majority of these enumerated systems in the Mainland Inlets and Johnstone Strait. These range from historically abundant and productive stocks such as the Glendale and Kakweiken populations to historically small stocks such as Lull Creek and Viner Bay Creek**.** Bi-weekly stock-assessment bulletins for Mainland Inlet pink salmon are available at http://www-

ops2.pac.dfompo.gc.ca/xnet/content/salmon/sc%20stad/bulletins.htm#Area_12_MainlandInlet_Pink. In addition to intensive surveys in these indicator systems, escapement estimates in each statistical area are compiled for fairly stable set of index streams and a variable set of additional streams.

Indicator stocks are not used for management of pink salmon in the Fraser River watershed.

Scoring Rationale: The use of indicator stocks for managing Pacific salmon is widely accepted. The Core Stock review (English et al, 2006) identifies the indicator stocks for North and Central Coast pink salmon fishery and each of the CUPs provides similar information for the other fisheries. The assessment team recognizes that some of the ISC CUs are only monitored by indicator streams which are enhanced and that there is disagreement about this approach by external salmon scientists, primarily because the current approach does not monitor the change in wild salmon population health in some streams.

For the NCCC, the assessment team considers that the 80 scoring guideposts are met, but only the 3rd 100 scoring guidepost is met, leading to a score of 85 for that certification unit. During the Public Comment Draft Report comment period, evidence for disagreement about monitoring within some of the ISC conservation units as required by the second 80 scoring guidepost was provided by stakeholders. Under DFO's Wild Salmon Policy, the health of wild salmon populations must be assessed separately from enhanced populations within each CU.

The team was concerned that the correlation between indicator stocks and conservation units does not appear to have been validated, and the relationship between the indicator stocks and conservation units has not been periodically assessed. In many cases the number of indicator stocks is relatively small and may not adequately reflect the changes in diversity at scales smaller than the CUs and this is reflected in the failure to meet most of the 100% scoring guideposts.

During preparation of its Corrective Action Plan, DFO subsequently provided feedback as follows:

> Table 1 from the certification unit profile provided a breakdown of systems along with those with hatchery supplementation. Mid Vancouver Island assessment area contains the most enhanced systems. Mid Vancouver Island is a component of the Strait of Georgia Conservation Unit. There is however other assessment areas within the Strait of Georgia CU that are monitored for escapement and are not enhanced (Table 1). The majority of the other assessment areas within the ISC pink aggregate have systems which are monitored for escapement that have little to no hatchery supplementation to the production. There is only one operational spawning channel, Glendale Creek, within the ISC pink area that contributes to the production of that system. There are other unmanned spawning channels but they do not contribute to the productivity of the pink populations as they were ineffective after construction or no longer operable due to maintenance issues.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Table 1. Population Structure of Inner South Coast pink salmon

Bold font indicates systems which are currently surveyed for escapement estimates. A complete list of sites for each Conservation Unit (CU) is available at http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/wsp/CUs_e.htm. *Underlined italic font with an asterisk** marks systems with active hatchery enhancement. Methods for identifying CUs are documented in Holtby and Ciruna (2007). Note that pink salmon CUs distinguish between even-year returns and odd-year returns.

Conservation Units		Stat Area	Assessment Area	Spawning Sites (Note: some sites only have even or odd-year runs)
Even	Odd			
Southern Fjords	Southern Fjords[2]	11	Seymour Inlet	Eva Creek, Driftwood Creek, Pack Lake Creek, Rainbow Creek, Seymour River, Waump Creek
		12	Loughborough to Bute	Blind Creek, Boughey Creek, Fulmore River, Robbers Knob Creek
			Bond to Knight	**Ahnuhati River**, **Ahta River**, Ahta Valley Creek, Call Creek, **Gilford Creek**, **Glendale Creek**, Hoeya Sound Creek, **Kakweiken River**, Kamano Bay Creek, Klinaklini River[2], **Kwalate Creek**, **Lull Creek**, Maple Creek, Matsui Creek, McAlister Creek, Port Harvey Lagoon Creeks, Potts Lagoon Creek, Protection Point Creek, Sallie Creek, Shoal Harbour Creek, Sim River, **Viner Sound Creek**
	East VI - JS		Johnstone Strait	**Adam River**, Charles Creek, Eve River, Hyde Creek, *Kokish River**, Mills Creek, Naka Creek, **Nimpkish River**, Stranby River, Thiemer Creek, **Tsitika River,** Tuna River
	HKRSBCD[1]		Kingcome Inlet	Bughouse Creek, Carriden Creek, Charles Creek, Cohoe Creek, **Embley Creek**, Hauskin Creek, Health Lagoon Creek, Jennis Bay Creek, **Kingcome River**, Mackenzie River, Nimmo Creek, Scott Cove Creek, Simoom Sound Creek, **Wakeman River,** Waldon Creek
	Nahwitti		Upper Vancouver Island	***Cluxewe River***, **Keogh River**, Nahwitti River, ***Quatse River***, Shushartie River, Songhees Creek, Stranby River, Tsulquate River
S. Fjords & Georgia Strait	Southern Fjords[2]	13	Loughborough to Bute	**Apple River**, Cameleon Harbour Creek, Clear Creek, Cumsack Creek[2], Drew Creek, Fanny Bay Creek, Frazer Creek, Frederick Arm Creek, George Creek, Granite Bay Creek, **Grassy Creek**, **Gray Creek**, Hemming Bay Creek, Heydon Creek, Homathko River[2], Hyacinthe Creek, Kanish Creek, Knox Bay Creek, Open Bay Creek, **Orford River**, **Phillips River**, Quatam River, **Read Creek**, Southgate River, St. Aubyn Creek, Stafford River, Teaquahan River, Thurston Bay Creek, **Wortley Creek**
	East VI–JS & GS		Johnstone Strait	**Amor de Cosmos Creek**, **Menzies Creek**, **Mohun Creek**, **Quatam River**, **Salmon River**, White River
Georgia Strait	Georgia Strait	13	Mid-Vancouver Island	***Campbell River***, ***Quinsam River****, Simms Creek, Pye Creek
		14	Mid-Vancouver Island	Brooklyn Creek, ***Englishman River***, French Creek, Headquarters Creek, **Little Qualicum River**, Millard Creek, Morrison Creek, *Nile Creek**, ***Oyster River***, ***Puntledge River****, **Qualicum River**, Trent River, Tsable River, ***Tsolum River****, Wilfred Creek

		15	Toba Inlet	Brem River, Brem River Tributary, Forbes Bay Creek, Klite River, Okeover Creek, Theodosia River, Toba River
			Jervis Inlet	**Lang Creek**, **Sliammon Creek,** Whittall Creek
		16	Jervis Inlet	Angus Creek, Brittain River, Carlson Creek, *Chapman Creek**, Deserted River, Gray Creek, **Sechelt Creek**, Shannon Creek, Skwawka River, Tzoonie River, Vancouver River
		17		Holland Creek, *Nanaimo River**
		29	Boundary Bay	*Nicomekl River**
	East Howe Sound / Burrard Inlet	28	Squamish – Howe Sound	Cheakamus River, Elaho River, Mamquam River, Stawamus River, Squamish River
			Burrard Inlet – Indian Arm	Lynn Creek, MacKay Creek, *Seymour River**, Capilano River (Brothers Creek), and Indian River

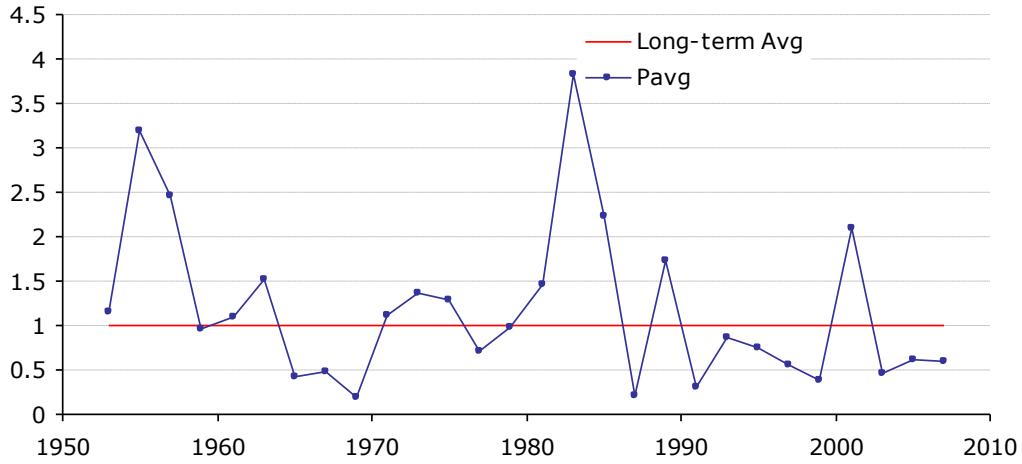
[1] Homathko-Klinaklini-Rivers-Smith-Bella Coola Dean

Figure 1 and 2 below provide a comparison in the abundance index over time for the Bond-Knight assessment area not including Glendale (A) and including Glendale (B) for both odd and even years. It is apparent that Glendale is not a major driver to the trend in this index over the entire time series. If it was deemed that Glendale was considered enhanced based on the channel production, to overlying abundance trend would be very similar if it was not included.

For the Upper Vancouver Island assessment unit, the Odd year trend (Fig 3 A and B below) is definitely sensitive to the enhanced system that in recent years have made up a good portion of the systems surveyed (2 of the 3 systems). With the enhanced systems removed the general trend tends to agree except for the most recent cycle years where the enhanced systems seem to have out performed the non hatchery systems. The Even year trend (Fig 4 A and B) it doesn't appear that the hatchery supplemented system affect the index of abundance.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

A.



B.

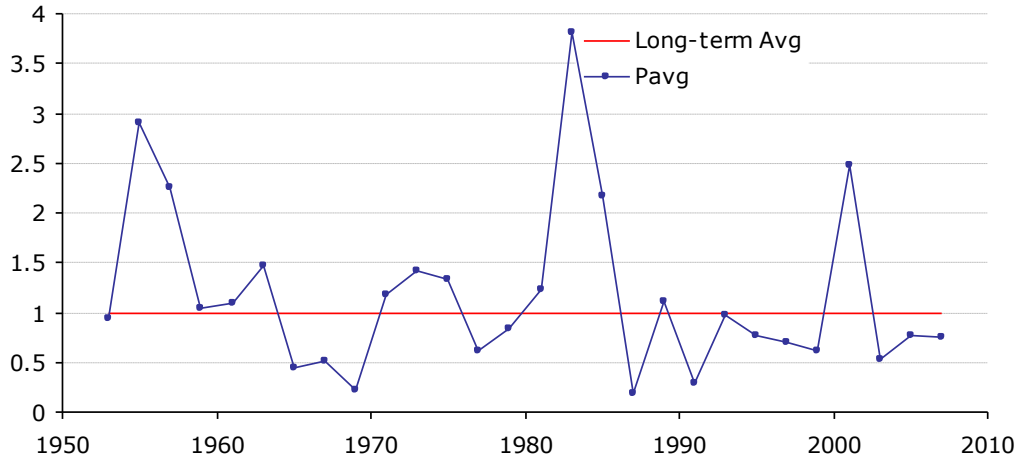
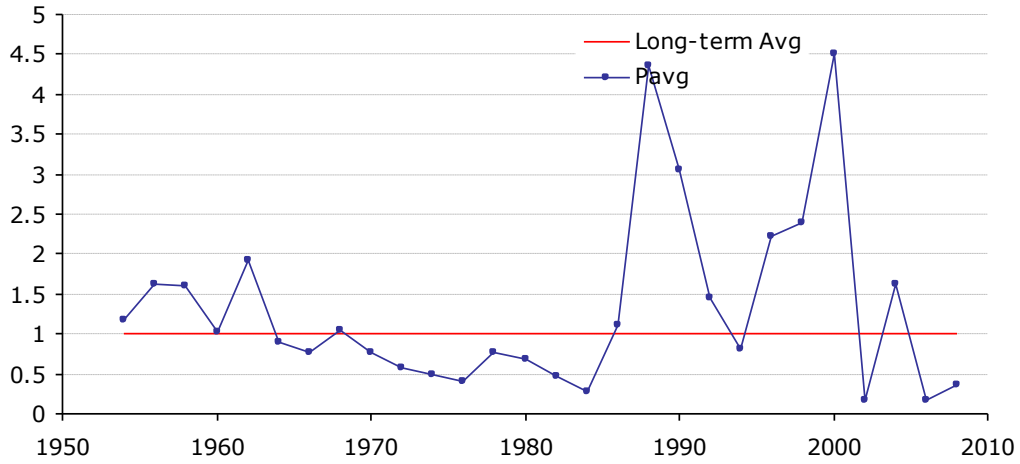


Figure 1. **Trend summary for the Bond to Knight management area – Odd years.** The Average Index Escapement corrects for year-to-year differences in survey coverage and high variability in abundance across systems. A=Glendale Creek removed from index, B=Glendale included in the index.

A.



B.

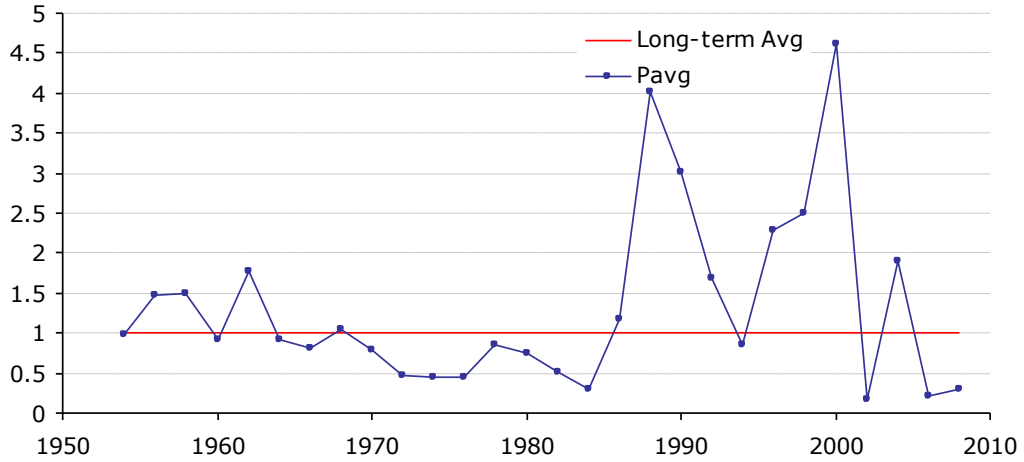
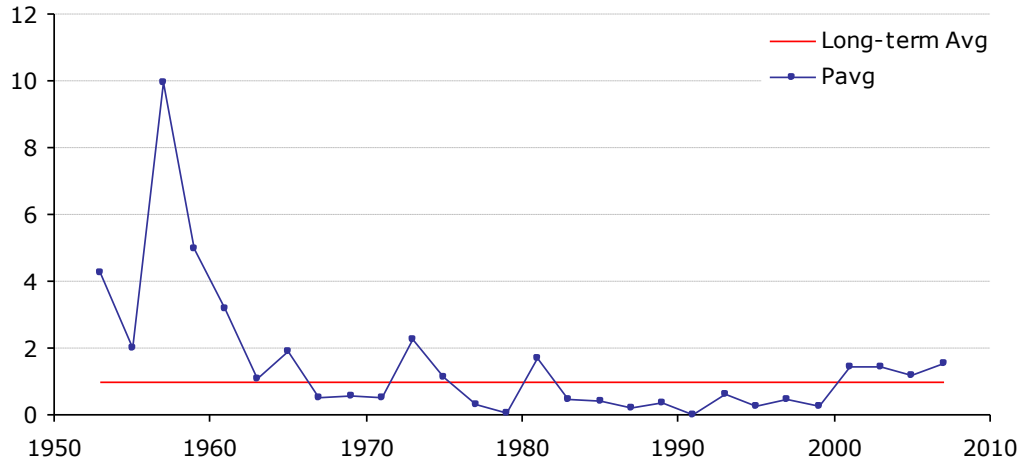


Figure 2. **Trend summary for the Bond to Knight management area –Even years.** The Average Index Escapement corrects for year-to-year differences in survey coverage and high variability in abundance across systems. A=Glendale Creek removed from index, B=Glendale included in the index.

A.



B.

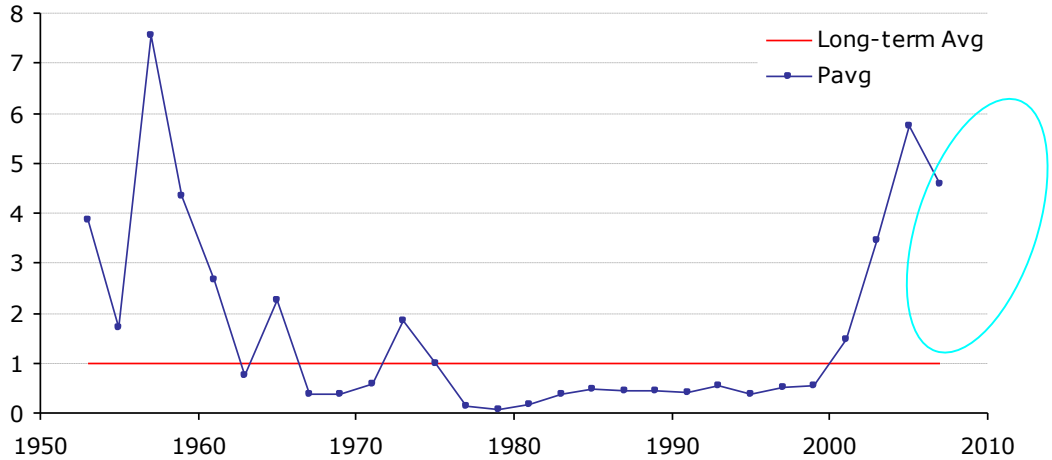
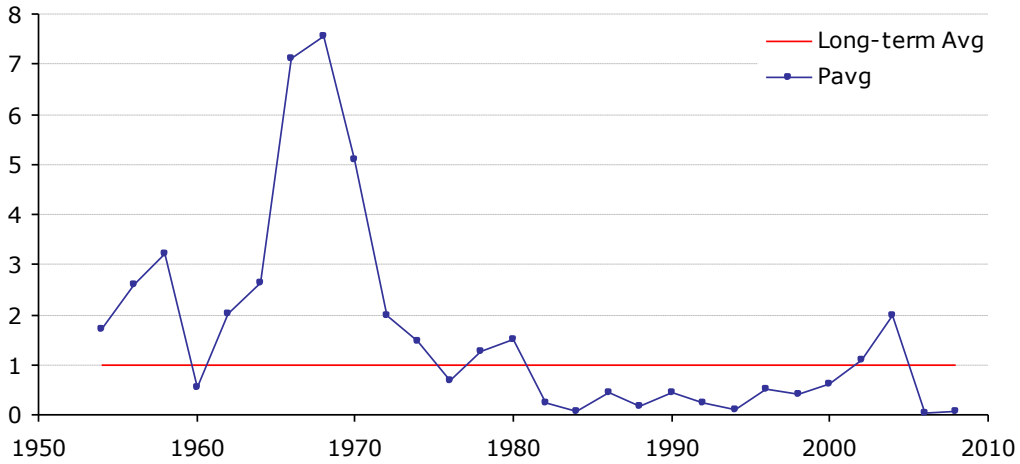


Figure 3. **Trend summary for the Upper Vancouver Island management area –Odd years.** The Average Index Escapement corrects for year-to-year differences in survey coverage and high variability in abundance across systems. A=Hatchery Systems removed from index, B=Hatchery systems included in the index.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

A.



B.

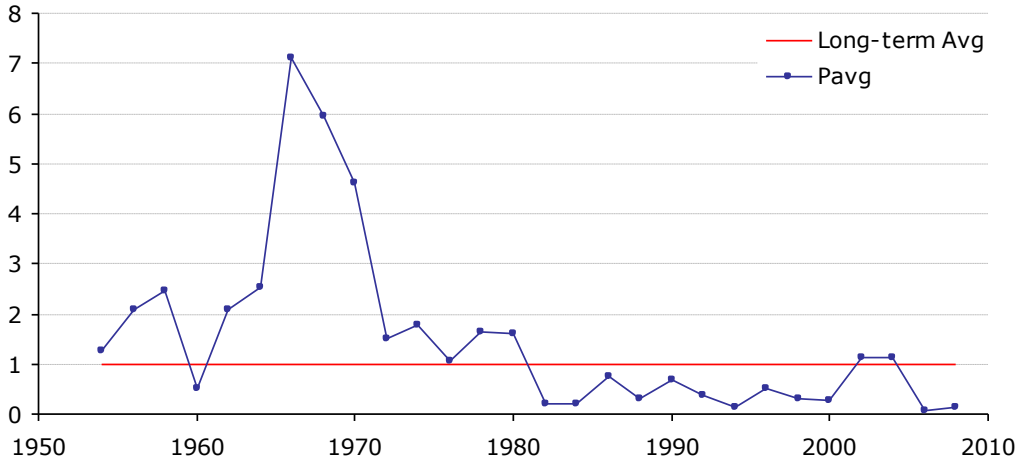


Figure 4. **Trend summary for the Upper Vancouver Island management area –Even years.** The Average Index Escapement corrects for year-to-year differences in survey coverage and high variability in abundance across systems. A=Hatchery Systems removed from index, B=Hatchery systems included in the index.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

The team is satisfied that the DFO analysis has addressed the concerns regarding the validation of indicator streams and relationship between the indicator stocks and conservation units has been addressed. As such, a score of 80 has been awarded to the ISC UoC.

The client submission indicated that indicator stocks are not used for management of the Fraser River pink salmon fishery. The Fraser is treated as a single stock and so it scored as not applicable (NA).

1.1.1.5	Where stock units are composed of significant numbers of fish from enhancement activities, the management system provides for identification of the enhanced fish and their harvest without adversely impacting the diversity, ecological function or viability of wild stocks.	• There is general scientific agreement within the management agency regarding the impacts of enhanced fish on the resultant harvest rates or escapements of wild (un-enhanced) fish stocks. • Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of wild (un-enhanced) stocks within each stock unit.	• In fisheries where both enhanced and wild (un-enhanced) stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the wild (un-enhanced) stocks, and there is sufficient information on stock composition (i.e. hatchery and natural fish) to determine whether those goals are met. • There are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the wild (un-enhanced) fish stocks.	• Fisheries targeting enhanced stocks are geographically removed from wild (un-enhanced) stocks and separate terminal harvest areas are established for these fisheries. • Times and areas have been identified where the majority of enhanced fish migrate through the general fishery. • There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the targets and naturally enhanced component of the run and these data are used in regulation of the fishery.
Weight		**NA**	**Score**	**NCCC Pink: NA** **Inner SC Pink: NA** **Fraser Pink: NA**

Client: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions for each UOC provide evidence specific to this performance indicator.

- MS 2.4.2 describes monitoring and assessment of BC pink and chum, with a specific section for monitoring enhanced fish.
- MS 2.5.2 outlines the general decision guidelines for pink and chum fisheries, including the approach to fisheries that target enhanced fish.

- MS 3.2.5 provides a regional overview of salmon enhancement and restoration activities.
- CUP 2.2 summarizes enhancement efforts in each area.
- CUP 3.2 explains the harvest strategy in each area.
- CUP 3.3 provides the details for each commercial fishery.
- CUP 4.6 describes how stock composition is analyzed in each area.

North and Central Coast Pink CUP

There is no hatchery or managed channel production of pinks from North Coast facilities. Atnarko channel, though not managed, is kept open for pink salmon spawning. The habitat was also modified to support rearing opportunities for other species.[5]

Inner South Coast CUP

Pink salmon enhancement on the Inner South Coast has focused on restoring depressed runs and stabilizing local recreational fishing opportunities. Commercial fisheries do not specifically target enhanced pink salmon runs in terminal areas, but do harvest them as part of the mixed stock fisheries throughout Johnstone Strait and the Strait of Georgia.

Specific details on each of the enhancement facilities involved with pink salmon (eg Quinsam, Puntledge, Glendale, etc) can be reviewed in the annual south coast IFMP or in *2008 Certification Unit Profile for Inner South Coast Pink* Salmon by Van Will, Pieter, Brahniuk, Randy and Pestal, Gottfried.

Fraser River CUP

Currently Fraser River pink salmon populations do not have significant fishing pressures due to conservation measures implemented to protect co-migrating salmon stocks of concern (i.e. Late Run Fraser, Sakinaw and Cultus sockeye, Interior Fraser coho and Interior Fraser steelhead) during the pink migration periods. Pink populations in the Fraser watershed area abundant and do not require any significant enhancement to maintain population abundance for conservation, ecosystem function, habitat capacity or harvesting. Enhancement activities focus on supplementation and contribute less than 5% of the total Fraser River pink salmon production.

Scoring Rationale: The team determined that none of the pink salmon enhancement activities were deemed significant therefore, this performance indicator was not scored.

[5] 2007 North Coast IFMP page 92

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

1.1.2 TAVEL Sub-Criterion	The monitoring and assessment of fisheries and stocks is adequate for fisheries managers to maintain the high productivity of the target stocks and associated ecological community relative to its potential productivity.		
Intent	The foundation for the management of most salmon fisheries is information on fishery harvest and escapements. Long-term (>10 yrs) monitoring of specific stocks is generally required to compute estimates of productivity. For some target species, additional information on fish size and age is required. The relative importance of each type of information will vary across fisheries and the species harvested.		
Weight	**40**	**Score**	

1.1.2.1	Estimates exist of the removals for each stock unit.	• Catch estimates for the majority of target stocks are available. • Catch estimates are available for non-target stocks where the catch of the non-target stocks may represent a significant component of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years.	• Catch estimates are available for all target stocks harvested in the fishery. • Catch estimates are available for non-target stocks where the catch of the non-target stock may represent a significant component of the harvest of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years.	• Catch estimates are available for all fisheries in Canadian waters that harvest the target and non-target stocks harvested in the fishery being evaluated. • Mortality rates are available for the fish released or discarded during the fishery. • Catch estimates are available for fisheries outside Canadian waters that harvest the stocks that are the target of the fishery being evaluated.
Weight		**27.4**	**Score**	**NCCC Pink: 73** **Inner SC Pink: 77** **Fraser Pink: 77**

Client: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.4.2 describes monitoring and assessment of BC pink and chum, with specific sections on monitoring catch and escapement.
- MS 2.4.3 outlines how catch and escapement data are compiled, maintained, and publicly released.
- CUP 4 describes the assessment framework in each area (catch, escapement, exploitation rates).
- CUP 5 reviews the current status of stock units, including trends in escapement, catch, and exploitation rate.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Catch Monitoring

Catch estimates are available for all target stocks harvested in the fishery. Non-target stocks do not represent a significant component of the stock.

Ocean and terminal fisheries are monitored to estimate both catch and effort. Fisheries may also be sampled to determine the stock and age composition of the catch, either directly from boats in the fishery or from combined catch at processing plants. . All commercial harvesters of marine species are licensed under regulations of the Canada Fisheries Act. Commercial harvesters are required as a condition of license to hail-in catches after the fishery closes.

Commercial gillnet, seine and troll catch data is collected through a comprehensive monitoring and reporting framework:

- Daily harvest logs documenting date, location, species encounters, species kept, and species released are completed by each fishery participant. This data is collated and accessible at the regional level. Appendix 9 of the 2008 *Integrated Fisheries Management Plan for Salmon* includes sample logbook pages for each licence area.
- Weekly phone-in of in-season harvest information by all fishery participants is collated and accessed at the regional level.
- Daily inspections by enforcement patrol staff surveying harvest information and monitoring compliance to all fishery restrictions and management guidelines (e.g. use of revival boxes when mandatory). This data is recorded in the fishery managers *Record of Management Strategies* (RMS).
- Sales slip data encompassing information such as catch by species, statistical area of catch, date of catch, and gear type is generated as each fishery participant lands catch. The data is available at the regional level through database queries.
- On-ground charter patrol hails are used for real-time management of most fisheries (e.g. Area 6 hails are received at 2pm. Based on this information, an additional day of fishing may or may not be implemented).

Commercial hail-in data are verified occasionally by on-water inspections of catch by Fishery Officers, dock-side monitoring and auditing of sales slip data. Nearly all commercial harvesters submit catch information to DFO.

Commercial catch and effort data are entered into the regional Fishery Operating System (FOS) database. A variety of reports derived from these data can be accessed at the Regional Data Services web site.[6]

Accuracy of catch reporting (i.e. as assessed through the hail-in/logbook program) is determined through a number of mechanisms. These include:

[6] http://www-sci.pac.dfo-mpo.gc.ca/sa/Commercial/default_e.htm

- Observer programs;
- Charter Patrols;
- Compliance Patrols;
- PAL Surveillance Over-flights;
- Dockside sampling or monitoring;
- Processing plant sampling or monitoring.

Estimates of stock composition are required to identify the presence of weaker stocks in a fishing area. Stock composition of Inner South Coast pink salmon catches is estimated in two steps:

1. Identify the contribution of non-Fraser pink salmon originating from the Inner South Coast.
2. Assign parts of the non-Fraser catch to management areas based on their proportion of escapement, with some adjustments based on fishing locations relative to migration pathways.

For odd-year returns, the first uses Genetic Stock Identification (GSI). GSI analyzes tissue samples collected from pink salmon caught in mixed-stock fisheries to estimate the contribution of Fraser River pink salmon (White 1996). Canada South Coast (non-Fraser) and Washington pink salmon stocks are also often present in the stock contribution estimates, although generally in lower proportions than Fraser stocks. GSI sampling is conducted in odd-year Canadian (south of Cape Caution) and Washington pink salmon fisheries. From 1989 to 2005 protein electrophoretic analysis of alloyzmes was employed and starting in 2007 microsatellite DNA analysis has been conducted. GSI estimates indicate that the contribution of Fraser River pink salmon to fisheries occurring in Johnstone Strait, the west coast of Vancouver Island, Salmon Banks and Point Roberts (U.S. Areas 7 and 7A respectively) often exceeds 80% during the peak marine migration of Fraser pinks from mid-August to early September.

Scoring Rationale: The team is satisfied that there are accurate, mandatory catch reporting mechanisms that meet the 60 scoring guideposts and provide estimates of catch for target and non-target stocks. All certification units meet the first 80 scoring guidepost, there are catch estimates for all target stocks harvested in the fishery. The score for NCCC second 80 scoring guidepost was reduced as a result of further considerations which resulted from stakeholder submissions during the PCDR review phase. The second scoring guidepost was revised to indicate only being partially met and the score changed from 77 to 73. The basis of changing the score was the uncertainty about the confidence of the non-target stock reporting of discards, as evidenced in information provided in DFO post season reports and J.O. Thomas (2010) review of Skeena (NCCC) observer program. All pink fisheries were given a partial score for the third criteria at the 80 guidepost because there is no program of systematic review of the effectiveness of the catch monitoring system to ensure accurate catch reporting, this resulted in scores of 77 for ISC and Fraser. None of the 100 scoring guideposts were considered to have been partially or fully met.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Revised Condition 1-1: For all pink salmon units of certifications (UoC) - The reliability of the catch estimates derived from the catch monitoring systems shall be evaluated by the second surveillance audit and the client or management agency shall commit to conducting similar catch monitoring reporting evaluations at a period of not more than every 5 years in order to meet the performance requirement identified by the third scoring element in the 80 scoring guidepost. The management agency must implement catch monitoring systems that will produce scientifically defensible estimates of catch for non target stocks and species in Area 3-6 pink salmon fisheries by the second surveillance audit. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest.

1.1.2.2	Estimates exist of the spawning escapement for each stock unit.	• Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation. • Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.	• Estimates are available for the annual escapement of each target stock harvested in the fishery. • Fishery independent indicators of abundance are available for the non-target species harvested in the fishery. • In season indicators of escapement are available for the target stocks and are used to regulate the fishery.	• Estimates are available for the annual escapement for each stock unit harvested in the fishery. • In season indicators of escapement are available for all stock units (e.g. target stocks and non-target stocks) and are used to regulate the fishery.
Weight		**36.9**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

Client Submission:
The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- CUP 4 describes the assessment framework in each area (catch, escapement, exploitation rates).
- CUP 5 reviews the current status of stock units, including trends in escapement, catch, and exploitation rate.

North and Central Coast Escapement

North and Central Coast pink salmon escapement is monitored in-season by charter patrol boats and by stream walks in representative streams (English et al. 2006). Stream inspections are conducted annually by DFO staff, contracted charter patrols, First Nations assessment staff, and various nongovernmental community groups. Information for a small number of streams is obtained from either over-flights or fence programs. Daily inspection data from escapement surveys is recorded in a database program used by field staff. The annual estimates of total returns to streams are calculated using an 'area-under-the-curve' calculation. All assumptions within this calculation are documented within the database. Escapement data are fully documented and publicly available (DFO 2008a)

Key streams for salmon monitoring were chosen using the following criteria (English et al. 2006):

- High potential to obtain reliable stream counts (e.g. water clarity, accessibility, flow rates)
- Similarity to other streams in terms of geographic area, genetics, migration timing, and similar vulnerability to fishing effort.
- Equal coverage of large, medium or small-size streams.
- Sufficient coverage identified as important to commercial and First Nation interests.

Pink salmon assessment information for large river systems is recorded using a tributary stream hierarchy system which follows the BC Provincial stream naming and numbering system. Large river systems may have several orders of tributary levels found within a watershed. Large rivers with tributary stream data include the Nass (Area 3), Khutzeymateen (Area 3), Kitsault (Area 3), Skeena (Area 4), Kitimat (Area 6), Kemano (Area 6) and Bella Coola (Area 8) watersheds. Tables 7 and 8 of English et al. (2006) include a detailed summary of escapement survey coverage by statistical area. specifically, they recommend that "*As indicated above, annual surveys are recommended for all pink index streams because of the need to track even and odd cycles separately. Visual surveys conducted 3-4 times per year and AUC estimation procedures are recommended for all pink salmon index streams. In total, 26 index streams are monitored using aerial survey techniques (19 by fixed-wing and 7 by helicopter), 126 index streams in even years and 102 in odd years should be assessed using ground-based surveys."* Implementation of the stock assessment framework has been consistent since 2004 (Table 8). Almost 2,500 stream inspections were conducted over a 4 year period, with a total of 424 streams surveyed at least once, and key streams surveyed multiple times each year.

In addition DFO develops *Annual Field Assessment Plans* for north and central coast salmon based on the recommendations in English et al. (2006), and tracks annual performance relative to the recommended coverage in *Annual Stream Inspection Logs*. Actual survey coverage each year is influenced by local conditions and regional budget priorities. *Annual Field Assessment Plans* and *Stream Inspection Logs* are available upon request from the North Coast DFO office in Prince Rupert.

Inner South Coast Escapement

In most cases, escapement estimates for Inner South Coast pink salmon are derived through visual observations (aerial and foot inspections) typically resulting in a peak count or Area-under-the-curve estimate based on several visits. The extended survey life (the time that an individual animal can be observed in the survey area) of pinks in the area (20-40 days) suggest that these counts provide a reasonable index of abundance. However the accuracy and precision of the counts is unknown through most of the data set and is suspected to be poor. The reliability of these estimates improves as the season progresses and fish begin to move from the holding pools out onto the spawning grounds.

Systems with regular escapement surveys are known.

Test Fisheries
Test fisheries apply a standardized fishing procedure using a commercial vessel contracted by DFO. The purpose is to develop abundance indices and collect additional information, such as run timing, stock composition, and fish condition. Inner South Coast pink salmon are caught in purse seine test fisheries in Areas 12 and 13 (Johnstone
Strait) and Area 20 (Juan de Fuca). Methods and results are documented in the annual reports of the Fraser River Panel, available at http://www.psc.org/publications_annual_fraserreport.htm.

In odd years, these test fisheries collect information about run timing, stock composition, morphometrics, and abundance for pink salmon migrating through Johnstone Strait, but predominantly focus on Fraser stocks.

In even years, these test fisheries only record pink salmon catch-per-effort, and do not cover the full extent of pink salmon migration timing. Year-to-date- test fishing summaries are available at http://www.psc.org/info_testfishing_summaries.htm, and daily test fishing reports are available at http://www.psc.org/info_testfishing_collections.htm.

Assessment Fisheries
Assessment fisheries are regular commercial fisheries, but with a strict effort limitation (e.g. number of vessels, short opening). The purpose is to collect abundance information and provide low-impact fisheries. Assessment fisheries may be implemented in terminal areas where local surplus abundance of pink salmon is expected (e.g. if pre-season expectations point to a surplus abundance of Mainland Inlet pinks).

Intensive Enumeration Programs
Salmon counting fences are used throughout the Inner South Coast. The following intensive enumeration facilities currently collect pink data:

- Adult counting fence on Keogh River focusing on pink and coho. The fence provides an abundance index for Upper Vancouver Island pink stocks, and serves a rough proxy for overall trends in Inner South Coast pink abundance.
- DIDSON on Glendale mainstem to calibrate over flight visual estimates since 2006.
- Fishway counter on Embley Creek to improve escapement estimates for Kingcome Inlet since 2007.

In-season escapement data are collected for all stock units and used to regulate the fishery

For even years, pink salmon caught in Areas 11 to 19 are assumed to primarily originate within the Inner South Coast. Exploitation rates are

estimated by accounting for the origin of the catch in each fishing area and the observed total escapement into each management area.

Fraser River Escapement

Early observations of pink escapement were conducted for much of the last century by enforcement officers (Farwell et al. 1987). Adult tributary escapement estimates, using mark- recapture surveys, were compiled for the odd-year run from 1957 to 1991. A streamlined approach was implemented from 1993 to 2001, using a mark-recapture sampling in the lower river to develop an escapement estimate for the entire Fraser system. A fry enumeration program at Mission has been conducted from 1962 to present and is currently used to estimate total Fraser River pink escapement. These changes in survey coverage are reflected in the escapement summary in the *Certification Unit Profile*, and are consistent with the increasing abundance and changing harvest patterns over the same period.

In 1993, concerns regarding reduced project funding, a forecast record escapement, and the optimal allocation of sampling effort across salmon species prompted the first major review of the Fraser River pink escapement estimation system in over 30 years (Cass and Whitehouse MS 1993). This review resulted in two fundamental changes to the Fraser River pink escapement estimation system:

- the termination of all stock-specific tributary mark-recapture studies; and
- The implementation of a system capture-live recapture program in the lower Fraser River with the objective of estimating system-wide escapement with 95% confidence limits of +/- 25%.

These changes were implemented from 1993 to 2001. Fraser pink salmon were captured at Duncan Bar near Mission, tagged and released. Tagging started as pinks first enter the river and continued daily (8 hrs/day) for the duration of the run. A second capture site was located 22 km upstream from Mission at Strawberry Island where samples of pink salmon were captured, assessed for marks, and released alive. Sampling at Strawberry Island was conducted over a 24 hour period, starting on the same date and extending several days past the last day of tagging at Duncan Bar. Both capture sites are below spawning areas and above the major commercial net fisheries. The system-wide survey was discontinued in 2001, given large returns, heavily curtailed fisheries, and assessment priorities on the Fraser across all salmon species.

In 1961 personnel from the DFO and the PSC developed a field program to capture seaward-migrating Pacific salmon fry in the Fraser River at Mission, B.C. The purpose of the program was to yield an annual index of migrating chum and pink salmon fry in the Fraser River. The sampling location is approximately 1400 feet upstream from the C.P. Railway bridge at Mission, B.C. Sampling occurs from early March to late May (depending on catch and spring freshet). Sampling gear includes two traps attached to either side of a 33 foot gill net boat; a mobile trap (4-foot by 4-foot inclined plane trap which samples the surface 40 inches of the water column) and a vertical trap (consists of a surface trap (similar to the mobile) and a movable vertical section (fyke net) which can be positioned to any depth to 12 feet). Sampling occurs every second day, with the sampling period alternating between 8 and 24 hours. Traps are set for a 15 minute sampling period with the vertical trap operating sequentially at 6, 9 and 12 foot depths. The boat is maneuvered to sample sequentially at three stations across the width of the river. The catch for each set is identified, counted and released. Twenty-five pink fry are sampled and preserved in formalin every 8 hour shift. Catches are stratified by depth, gear type and sample period. Average catches are generated and scaled by time and discharge to calculate daily (24 hour) abundance estimates. Estimates are calculated for each sampling day and interpolated for non-sampling days.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

The PSC is exploring pink salmon DNA baselines to assign returns to different stocks and develop a cost effective method to apportion historical returns-by-system in the Fraser watershed.

Scoring Rationale: The escapement monitoring system relies primarily on stream inspections, augmented in some places with weirs. As a general concern, the number of streams visited and the frequency of visits has been declining due to budgetary limitations, and there is no documentation of what level of coverage (% of streams, number of visits) is adequate.

All certification units meet the 60 scoring guideposts. The assessment team was aware that a number of indicator streams were not enumerated each year. However, it is unclear what number and at what frequency indicator streams are being monitored in NCCC. Using assessment data received from DFO, the assessment team evaluated the NCCC indicator streams that have been monitored in recent years. The analysis confirms the number of indicator streams surveyed in 2005 or 2007 for odd years and 2006 or 2008 for even years versus the total number of indictor streams identified. The coverage of indicator streams based on the team's analysis was 78% for even years and 83% for odd years but the coverage for the two major Skeena pink CUs is poor (42% even, 66% odd). It should be noted that these analyses are just the indicator streams (i.e. not all pink stream). The number of indicator streams in these 2009 tables for NCCC is larger than the number identified in the 2006 Core Stock Assessment Review.

All units of certification score 70 for this performance indicator. The rationale for partial score for the first 80 scoring guidepost is the poor monitoring coverage of escapement in the Skeena area pink salmon CUs. The second 80 scoring guidepost for the NCCC is only awarded partial value because of the poor monitoring coverage of Skeena chum CUs and the third 80 SG get a partial score because test fisheries only provide useful in-season information for some of the target stocks. For similar reasons, including significant gaps in the escapement data for pink salmon stocks harvested in ISC and Fraser fisheries, these fisheries only partially met the criteria at the 80 guidepost and did not pass any of the criteria at the 100 guidepost.

Revised Condition 1-2: For all pink salmon UoCs - An escapement monitoring program that is adequate to estimate the status of target stocks harvested in the NCCC, ISC and Fraser pink salmon fisheries must be implemented within two year. Fishery independent indicators of abundance for non-target species harvested in these fisheries (e.g. improved escapement monitoring for lower Skeena chum) must be available for each year and area where fisheries are permitted to target pink salmon. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. A publically available, externally reviewed report on escapement monitoring programs should be available for review by the second surveillance audit.

1.1.2.3	The age and size of catch and escapement have been	• The information on age and size of catch and escapement is	• Periodic monitoring programs collect data on the age and size	• Annual monitoring programs collect data on the age and size of

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
	considered, especially for the target stocks.	adequate, where there is general scientific agreement that these data are important to assess the status of the stocks or adjust fisheries management decisions. *[For example: information on the age distribution of pink salmon harvests would not be considered important for stock assessment or fisheries management decisions where as age information would be important for the assessment and management related to most chinook and sockeye fisheries. Monitoring programs should be in place to detect changes in the size of the fish harvested for each salmon species.]*	of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks. • There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.	the catch and escapement for target and non-target stocks where there is a clear scientific basis for collecting these data.
Weight		**11.2**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

Client Submission:
The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.5.2 outlines the general decision guidelines for pink and chum fisheries and illustrates how annual fisheries respond to available information.
- MS 3.2.3 outlines research priorities and summarizes some research efforts directly relevant to the management of salmon fisheries (e.g. enumeration methods, stock identification).
- MS 3.3 summarizes DFO's approach to integrated management and lists on-going initiatives.
- MS 4.2.1.1 describes how the annual planning cycle for BC salmon fisheries uses collaborative planning and public review to identify

emerging concerns and develop management responses.

- CUP 3.2 explains the harvest strategy in each area.
- CUP 3.3 provides the details for each commercial fishery.
- CUP 5 reviews the current status of stock units, including trends in escapement, catch, exploitation rate, and size.
- CUP 6 describes the resulting conservation and recovery efforts.

All Submissions

In that pink salmon have a definitive two year age class structure, the need to collect age class data is mute. However, in commercial fisheries size of catch information is collected through the Sales Slip program and periodically through fishery observer programs. By-catch of non-target stocks and species is generally very low relative to target catch due to restricted harvest opportunities related to other stocks of concern. However, information regarding catch and size of by-catch is collected periodically through fishery observer sampling.

Scoring Rationale: Age monitoring is of no concern for pink salmon because all fish return at 2 years of age. The size sampling program is largely opportunistic and does not appear to be designed or evaluated. The opportunistic sampling program in test fisheries, for example, is sufficient to pass each certification unit at 60, and the sampling programs meet the first 80 criteria. However the lack of documented scientific design for the programs means that no certification units pass the second 80 criteria.

Condition 1-3: For all pink salmon UoCs - By the second surveillance audit, the client or management agency must meet the requirements of the 80 scoring guideposts. This shall include scientific analysis supporting justification of the existing sampling program.

Team Suggestion The team envisions an evaluation of the issues where size monitoring might be important, for instance declining average size affecting average egg production and changing spawner recruit relationships, and evaluation of the extent to which the existing opportunistic sampling would capture that.

1.1.2.4	The information collected from catch monitoring and stock assessment programs is used to compute productivity estimates for the target stocks and management guidelines for both target and non-target stocks.	• The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks. • The relative productivity of	• There is adequate information to identify the harvest limitations and production strategies required to maintain the high productivity of the target stocks. • There is adequate information to estimate the relative	• Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known. • Risk assessment has been

		the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.	productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks. • The harvest limitations for target stocks take into consideration the impacts on non-target stocks and the uncertainty of the productivity for these stocks.	conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for both the target and non-target stocks.
Weight		**24.6**	**Score**	**NCCC Pink: 73** **Inner SC Pink: 73** **Fraser Pink: 80**

Client Submission:

The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.5.2 outlines the general decision guidelines for pink and chum fisheries and illustrates how annual fisheries respond to available information.
- MS 3.2.3 outlines research priorities and summarizes some research efforts directly relevant to the management of salmon fisheries (e.g. enumeration methods, stock identification).
- MS 3.3 summarizes DFO's approach to integrated management and lists on-going initiatives.
- MS 4.2.1.1 describes how the annual planning cycle for BC salmon fisheries uses collaborative planning and public review to identify emerging concerns and develop management responses.
- CUP 3.2 explains the harvest strategy in each area, and CUP 3.3 provides the details for each commercial fishery. CUP 5 reviews the current status of stock units, including trends in escapement, catch, exploitation rate, and size. CUP 6 describes the resulting conservation and recovery efforts.

North and Central Coast

Annual escapement is the main performance measure for statistical areas, and for the index streams within each area. Formal Limit Reference Points (LRP) or Target Reference Points (TRP) have not yet been developed for BC pink stocks. However, operational *Management Escapement Goals* (MEG) have been identified for many individual streams with regular observations of spawning pink and aggregated for

statistical areas or major watersheds. These operational equivalents were developed by interviewing DFO managers, biologists and contract field enumeration staff who had considerable years of local knowledge of particular streams and corresponding escapements of salmonids. The MEG represents the best estimate by these local experts and are used in a non-technical way as the operational equivalent for long-term benchmarks reflecting highly productive stocks (i.e. high sustainable yields). The *Certification Unit Profiles* list escapement targets for major systems in each area.

Performance relative to genetic diversity objectives is measured in terms of the distribution across spawning sites in the CU, as well as the proportion of returns from wild and enhanced populations.

Estimates of stock composition are required to identify the presence of weaker stocks in a fishing area. Stock composition of Inner South Coast pink salmon catches is estimated in two steps:

1. Identify the contribution of non-Fraser pink salmon originating from the Inner South Coast.
2. Assign parts of the non-Fraser catch to management areas based on their proportion of escapement, with some adjustments based on fishing locations relative to migration pathways.

Inner South Coast

For odd-year returns, the first uses Genetic Stock Identification (GSI). GSI analyzes tissue samples collected from pink salmon caught in mixed-stock fisheries to estimate the contribution of Fraser River pink salmon (White 1996). Canada South Coast (non-Fraser) and Washington pink salmon stocks are also often present in the stock contribution estimates, although generally in lower proportions than Fraser stocks. GSI sampling is conducted in odd-year Canadian (south of Cape Caution) and Washington pink salmon fisheries. From 1989 to 2005 protein electrophoretic analysis of alloyzmes was employed and starting in 2007 microsatellite DNA analysis has been conducted. GSI estimates indicate that the contribution of Fraser River pink salmon to fisheries occurring in Johnstone Strait, the west coast of Vancouver Island, Salmon Banks and Point Roberts (U.S. Areas 7 and 7A respectively) often exceeds 80% during the peak marine migration of Fraser pinks from mid-August to early September.

For even years, pink salmon caught in Areas 11 to 19 are assumed to primarily originate within the Inner South Coast. Exploitation rates are estimated by accounting for the origin of the catch in each fishing area and the observed total escapement into each management area.

Fraser River Submission

Fraser River pink salmon catches are assessed every other year when odd-year runs return to the Fraser River. Escapement is not currently monitored but a system-wide fry program is in place to assess the relative pink salmon production in the Fraser watershed. Abundance of Fraser pink salmon is then estimated based on in-season cat-per-unit effort estimated from in-river test fisheries and their relationship to the

past escapement time series. This assessment approach is commensurate with recent large abundances and the extremely limited fisheries due to conservation measures for co-migrating stocks mentioned earlier. In-season assessment for Fraser pink salmon is linked to Fraser sockeye assessment and coordinated through the Pacific Salmon Commission (e.g. test fisheries).

Currently Fraser River pink salmon populations do not have significant fishing pressures due to conservation measures implemented to protect co-migrating salmon stocks of concern (i.e. Late Run Fraser, Sakinaw and Cultus sockeye, Interior Fraser coho and Interior Fraser steelhead) during the pink migration periods. In that Sakinaw and Cultus sockeye, as well as Interior Fraser coho, stock abundances have been reviewed by COSIWIC, the levels of harvest for co-migrating pink stocks are commensurate with the productivity rates for rebuilding these stocks of concern.

Decision guidelines for all BC pink and chum fisheries have some basic elements in common:

- Low-impact fisheries are generally implemented before fisheries having a higher impact. This is particularly so at low run sizes or at the start of the run when the run sizes are uncertain or when stocks of concern have peaked but continue to migrate through an area.
- Terminal fisheries are managed in-season based on estimated surplus to the escapement goal, with a precautionary buffer applied in both the abundance estimate and the timing of the fishery. Generally the required escapement is secured within the stream(s) and/or behind boundaries near the estuary location(s) before fisheries are allowed to proceed.
- Pre-season fishing plans use available data from previous years to anticipate stock levels returning in any given year. These pre-season plans are established through consultation with Departmental managers, biologists and scientists as well as industry and First Nations representatives. Fisheries commence each year using the established pre-season plan. As in-season catch and escapement data become available through the season, fishing plans are adjusted on a daily or weekly basis to reflect this 'real-time' data.
- Stock recovery strategies are reflected in the decision guidelines. These take the form of reduced harvests at low abundance of target stocks and selective fishing measures to reduce impacts on non-target stocks or species. In-season information may not provide a clear-cut indication of run status. In this case, management actions use a precautionary approach on stocks of concern.
- If stocks of concern cannot be monitored or selectively protected, broader area and time closures are specified pre-season.

Scoring Rational: The MEG's combine with the in-season regulation to restrict harvest so that MEGs are obtained is a system that will assure stocks maintain any potential productivity. While there is little formal analysis of spawner-recruit data, the high variability in pink salmon rates of return will generally mean that there is a considerable range of stock sizes that assure productivity. Escapement targets should be robust to environmentally induced changes in survival (productivity) and given the diversity of pink salmon streams and the high natural variability it would appear that the method used to establish MEGs is as good a system as practical.

All certification units meet the 60 scoring criteria and the Fraser also meets the 80 scoring criteria.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

The Assessment Team agrees that there are not productivity estimates which are reliable for chum salmon. Available information is not adequate to estimate the productivity of the chum stocks harvested in NCCC pink fisheries. Area 4 does not have adequate escapement monitoring for chum, Area 3 is only marginally better. All fisheries in Area 3 and 4 have mixed stock separation issues due to significant numbers of AK fish caught in the marine fishery.

In the ISC, DFO is able to conduct reconstruction which will separate out Fraser chum from other chum stock, but this method is unable to separate the smaller inside chum stocks. The Assessment Team is suggesting the second 80 scoring guidepost is not met for the NCC and ISC, thus both receive scores of 73.

New Condition 1-3a: For NCCC and ISC pink salmon UoCs - By the third surveillance audit, for the NCCC and ISC UoCs, the client or management agency must document that they have sufficient information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks. The management agency must indicate how the impacts on non-target stocks, and the uncertainty surrounding the productivity of these stocks, are taken into account when planning pink fisheries, by the second surveillance audit.

Team Suggestion: A stock identification sampling program could be particularly helpful in NCCC fisheries which are constrained by either stocks of concern or high numbers of fish destined to Alaskan waters.

1.1.3 TAVEL Sub-Criterion	Management goals have been set and are appropriate to protect the stocks from decline to their Limit Reference Point or operationally equivalent undesirable low level of abundance.		
Weight	**20**	**Score**	

1.1.3.1	Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.	• There is general agreement among regional fisheries scientist within the management agency that the LRP's or equivalent are appropriate to achieve the management goals for target stocks.	• There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries. • There is no significant scientific disagreement regarding the LRP's used by the management agency to formulate management decision for the	• The Limit Reference Point for target stocks have been reviewed and found to be scientifically defensible and appropriate by the PSARC or the appropriate PSC technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the LRP's are appropriate.

			fishery.	• There is general scientific agreement regarding the LRP's for non-target species.
Intent		The Limit Reference Point (LRP) or operational equivalent set by the management agency has been defined above as "the state of a fishery and/or a resource, which is not considered desirable. Fishery harvests should be stopped before reaching it. If a LRP is inadvertently reached, management action should severely curtail or stop the fishery, as appropriate, and corrective action should be taken. Stock rehabilitation programs should consider an LRP as a very minimum rebuilding target to be reached before the rebuilding measures are relaxed or the fishery is re-opened."		
Weight		**66.7**	**Score**	**NCCC Pink: 70 Inner SC Pink: 70 Fraser Pink: 70**

Client Submission:
The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.3 provides a comprehensive inventory of goals and targets for BC pink and chum, including an explanation of management reference points currently in place, and formal benchmarks under development as part of the Wild Salmon Policy implementation.
- CUP 2.4 lists specific objectives and management reference points for each stock unit.

North and Central Coast Submission
Annual escapement is the main performance measure for statistical areas, and for the index streams within each area. Formal Limit Reference Points (LRP) or Target Reference Points (TRP) have not yet been developed for BC pink stocks. However, operational *Management Escapement Goals* (MEG) have been identified for many individual streams with regular observations of spawning pink and aggregated for statistical areas or major watersheds. These operational equivalents were developed by interviewing DFO managers, biologists and contract field enumeration staff who had considerable years of local knowledge of particular streams and corresponding escapements of salmonids. The MEG represent the best estimate by these local experts and are used in a non-technical way as the operational equivalent for long-term benchmarks reflecting highly productive stocks (i.e. high sustainable yields). The *Certification Unit Profiles* list escapement targets for major systems in each area.
Performance relative to genetic diversity objectives is measured in terms of the distribution across spawning sites in the CU, as well as the proportion of returns from wild and enhanced populations.

Inner South Coast Submission
Pink production is generally quite variable. Productivity of Inner South Coast pink salmon groupings has been average to below average in

recent years, most likely related to lower than normal marine survival rates. Long-term production objectives for Inner South Coast pink salmon have been captured in operational escapement goals for each of the management areas, and for the pink salmon streams within each area. Note that the goals are the same for even and odd year returns, but not all systems have established runs on both cycle lines. Comparing recent escapement observations to the operational targets:

- *Even years:* Recent average escapement is near or above the long-term escapement goal (> 2/3 of target) for Johnstone Strait and Bond to Knight, and below the long-term goal (>1/3) for mid-Vancouver Island, Kingcome Inlet, and Loughborough to Bute. Recent average escapement to Upper Vancouver Island is about 10% of the long-term escapement goal. Overall, average total escapement has been about half of the total escapement goal for the Inner South Coast.
- *Odd-years:* Returns for have been substantially lower on odd-year returns for Upper Vancouver Island, Johnstone Strait, Kingcome Inlet, Loughborough to Bute (i.e. "even-year dominant systems, where escapement goals apply only to even year returns). Escapements for Mid-Vancouver Island, Bond to Knight, and Burrard Inlet have been near or at the long-term escapement goal (> 2/3 of target). Recent escapements for Toba Inlet and Jervis Inlet both fall far below the long-term goal, but the trends differ. No recent pink salmon escapement estimates are available for Howe Sound.

Overall, average total escapement has been about a quarter of the total escapement goal for the Inner South Coast.

Fraser River Submission

Fraser River pink salmon catches are assessed every other year when odd-year runs return. Escapement is not currently monitored but a system-wide fry program is in place to assess the relative pink salmon production in the Fraser. Abundance of Fraser pink salmon is then estimated based on in-season catch-per-unit-effort estimated from in-river test fisheries and their relationship to the past escapement time series. This assessment approach is commensurate with recent large abundances and the extremely limited fisheries due to conservation measures for co-migrating stocks (i.e. late run sockeye, Cultus sockeye, Interior Fraser coho and Interior Fraser steelhead). In-season assessment for Fraser pink salmon is liked to Fraser sockeye assessment and coordinated through the Pacific Salmon Commission (e.g. test fisheries).

Formal Limit Reference Points (LRP) or Target Reference Points (TRP) have not yet been developed for BC pink stocks. However, operational *Management Escapement Goals* (MEG) have been identified for many individual streams with regular observations of spawning pink and aggregated for statistical areas or major watersheds. These operational equivalents were developed by interviewing DFO managers, biologists and contract field enumeration staff who had considerable years of local knowledge of particular streams and corresponding escapements of salmonids. The MEG represent the best estimate by these local experts and are used in a non-technical way as the operational equivalent for long-term benchmarks reflecting highly productive stocks (i.e. high sustainable yields). The *Certification Unit Profiles* list escapement targets for major systems in each area.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

An operational Management Escapement Goals for Fraser River pink salmon has been set at 6 million spawners.

Performance relative to genetic diversity objectives is measured in terms of the distribution across spawning sites in the CU, as well as the proportion of returns from wild and enhanced populations.

Scoring Rationale: Our interpretation of the existing BC pink management system in the context of the MSC target and limit criteria is that the management escapement goal is the target, and 25% of the MEG is the effective limit. The text of the outlook document indicates that management actions around the target and 25% of the target act much as other fisheries do with respect to targets and limits. This interpretation was confirmed by DFO staff. Thus the managers and biologists have agreed on MEG's and thus LRPs. There is some scientific basis for both the MEG's as escapement levels that have produced sustainable production and the LRPs at 25% are justifiable based upon general salmon biology. Thus the LRP's meet the first 80 scoring guidepost. However, it is not accurate to say that there is no scientific disagreement about the levels chosen for LRPs and thus the certification units fail to meet the 2nd 80 scoring guidepost. None of the 100 SG elements are met.

Condition 1-4: For all pink salmon UoCs. - By the second surveillance audit, the client or management agency must formally establish target and limit reference points for the appropriate assessment units within each unit of certification through a scientific process, and this process must be peer-reviewed through PSARC to ensure scientific agreement regarding the LRPs chosen to formulate management decisions for the fisheries.

1.1.3.2	Target Reference Points (TRPs) or operational equivalent have been set.	• There is general agreement among fisheries scientist within the management agency that the TRP's are appropriate for the target stocks. • Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed. • The management agency has taken into account the relative productivity of the non-target stocks when setting the TRP's	• There is no significant scientific disagreement regarding the TRP's used by the management agency to formulate management decision for the fishery. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.	• The Target Reference Point (TRP) for target stocks have been reviewed and found to be defensible and appropriate by the PSARC or the appropriate PSC technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the TRP's are appropriate. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

		for the majority of target stocks.		
Intent		The Target Reference Point (TRP) or operational equivalent set by the management agency has been defined above as "the state of a fishery and/or a resource, which is considered desirable. Management action, whether during a fishery development or stock rebuilding process, should aim at maintaining the fishery system at its level."		
Weight		**33.3**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

Client Submission:

The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.3 provides a comprehensive inventory of goals and targets for BC pink and chum, including an explanation of management reference points currently in place, and formal benchmarks under development as part of the Wild Salmon Policy implementation.

- CUP 2.4 lists specific objectives and management reference points for each stock unit.

North and Central Coast Submission (similar to all submissions)

Annual escapement is the main performance measure for statistical areas, and for the index streams within each area. Formal Limit Reference Points (LRP) or Target Reference Points (TRP) have not yet been developed for north and central coast pink stocks. However, operational *Management Escapement Goals* (MEG) have been identified for each of the streams with regular observations of spawning pink salmon and aggregated for statistical areas. These operational equivalents were developed by interviewing DFO managers, biologists and contract field enumeration staff who had considerable years of local knowledge of particular streams and corresponding escapements of salmonids. The MEG represent the best estimate by these local experts and are used in a non-technical way as the operational equivalent for long-term benchmarks reflecting highly productive stocks (i.e. high sustainable yields). The 2008 Certification Unit Profile (Table 5) lists aggregate MEG for Areas 1 to 10 (Note: these are simply the sum of all MEG identified for an area). Table 6, in the same report, lists individual MEGs for major pink systems.

Performance relative to genetic diversity objectives is measured in terms of the distribution across spawning sites in the CU, as well as the proportion of returns from wild and enhanced populations.

Post-season performance reviews are compiled annually. These reviews report catch and escapement statistics and describe whether or not the fishery met objectives. Post-season reviews are included in the annual *Integrated Fisheries Management Plans*. Detailed post-season

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

review materials for 2007 are available at http://www.pac.dfo-mpo.gc.ca/northcoast/postseasonreview/default.htm.

Scoring Rationale: Within the DFO Pacific system the MEGs are the operational equivalent of TRPs but these have not been formally reviewed either internally or externally. All certification units pass at 60 and meet the first scoring criterion for 80, but do not meet the second 80 scoring criterion.

Condition 1-5: For all pink salmon UoCs. Condition 1-4, set for PI 1.1.3.1, will also respond to this condition.

1.2 - MSC Criterion 2	**Where the exploited populations are depleted, the fisheries will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.**
Scoring Intent	The MSC Technical Advisory Board directs that this Criterion is only **Score**d in the instance that the candidate fishery stock is determined to be in a depleted state hence a recovery plan is already in action. The decision whether the fishery is in a depleted state will be made at the beginning of the Fishery Assessment process.
Team Intent	*Our interpretation of MSC Criterion 1.2: This criterion refers to "populations" where our indicators and evaluation criteria refer to stocks or stock units. The evaluation under this criterion will assess the degree to which the management strategy is designed to keep targeted stocks from becoming depleted, and to promote recovery if they become depleted. Note that this has already been partially assessed under Subcriterion 1.1.3.*

Weight	**13.6**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

1.2.1	There is a well-defined and effective strategy, and a specific recovery plan in place, to promote recovery of the target stock within reasonable time frames.	• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 5 reproductive cycles • Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks.	• In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 3 reproductive cycles. • Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.	• There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery. • Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks. • The management agency does not use artificial propagation as a substitute for maintaining or recovering wild stocks.
Weight		**50**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

Client Submission:
The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 3.2.1 summarizes the processes for identifying species at risk and developing recovery plans. This covers all Canadian wildlife species.
- MS 3.2.2 describes the development and implementation of the *Wild Salmon Policy*, which focused on conservation and recovery planning for functionally distinct group of wild Pacific Salmon, called *Conservation Units*.
- MS 3.4 includes an inventory of major conservation and recovery efforts, including links to completed recovery plans.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).

- CUP 3.3 for each fishery contains decision guidelines which outline how fisheries adapt to variations in abundance
- CUP 6 highlights specific conservation measures in each area.

The fundamental conservation objectives for Pacific salmon contained in national legislation and regional policies can be summarized as follows:

- Maintain healthy and diverse populations by conserving functionally distinct groups of salmon, called *Conservation Units*.

- Protect the integrity of each conservation unit by ensuring sufficient escapement for component populations.
- Monitor the status of conservation units relative to formal benchmarks for conservation and long term production.

The Department manages fisheries with the objective of ensuring that stocks are returning at sustainable levels. When returns decline below sustainable levels, management actions are taken which may include reducing the impact of fisheries on specific stocks, strategic enhancement, and habitat restoration.

Commercial fisheries targeting other pink salmon stocks (i.e. Fraser pinks) or other salmon species (i.e. Fraser sockeye) are modified to reduce interceptions of Mainland Inlet pink salmon when poor returns are expected. For example, fisheries are limited to below Lewis Point from late July to mid-August, extending a boundary closure already in place to protect Nimpkish sockeye. This measure protects the early portion of the Mainland Inlet pink run, which includes the Ahnuhati River, Kaweiken River, and other systems with recent periods of low abundance.

Localized conservation measures for pink salmon stocks are typically in the form of area and timing closures (as listed in Table 7).

Scoring Rationale This criterion is only applicable when stocks have been depleted. On the assumption that some stocks within each certification unit have experienced depletion in the last 10 years, we have scored MSC Criteria 1.2 for all certification units.

The management system focused on the MEG provides the basic system, and as seen in the outlook document cited earlier, fisheries are reduced when stocks fall below MEGs and dramatically reduced when the fall well below MEGs. The team has accepted that a system built around an escapement target has a natural rebuilding plan. Thus all certification units pass at 60. None fully meet the 80 criteria because the recovery strategy is not well formulated and described. In practice, it appears that the strategy is generally preventing stocks from severe depletion. The third scoring criterion of the 100 SG has also been met as there is no evidence of significant pink salmon enhancement to substitute wild stocks.

Condition 1-6: For all pink salmon UoCs. - To achieve a score of 80 over the five year period of the certification, the client or management agency must develop and implement (in the event of severe depletion) recovery plans to facilitate the recovery of depleted stocks to the MEG within three cycles given average rate of productivity. It is recognized that if stocks encounter a series of poor productivity years, even with little, if any, exploitation stocks may not recover in three cycles. The recovery plans must be defined to allow the stocks to recover more than 150% of the defined limit reference point prior to allowing any fishery to target the depleted stocks and the stock should be expected to recover to the MEG under the rebuilding plan. A recovery plan template must be developed and submitted for review and approval by the second annual surveillance audit.

Team Suggestion: The team suggests that the management agency formally adopt a harvest strategy and provide the scientific evidence to

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

show that this strategy would lead to rebuilding above the 150% LRP mark. The team does not have an expectation that specific "rebuilding plans" for each stock be established however, the Team does expect that scientific review would examine the stocks which have been consistently well below the Limit and make specific comment and evaluation on what measures are necessary to rebuild them.

1.2.2	Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points (or equivalents) for the target stocks.	• There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible. • Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.	• There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible. • Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.	• There is general agreement among regional fisheries scientist outside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible. • Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.
Weight		**50**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

Client: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Chapter 5 of each unit profile describes the status of target stocks in each area.

North Central and Central Coast Submission

Currently, North & Central Coast pink salmon populations are healthy enough not to warrant a legislated level of protection and the overall persistence of North Coast and Central Coast pink salmon populations is not immediately threatened. However, if any of the conservation units declined to a point where their persistence was threatened, Canada's Species at Risk Act (SARA) provides a legislative and policy framework for recovery.

Returns and escapements have been highly variable, and annual management responds to observed abundance. No persistent conservation concerns have been identified. One potential emerging concern, however, are the recent low returns on the Kitimat River. The proposed strategy is non-retention in the recreational fishery on the Kitimat, accompanied by a commercial fishing closure for 2010, when the current brood returns.

Inner South Coast Submission
Pink salmon returns to the Inner South Coast are variable for the total aggregate (Figure 1 in CUP), and highly variable for individual management areas (Figure 2 to Figure 17 in CUP) Aggregate pink salmon escapement declined substantially in 2001 and 2002 (i.e. on returns from the 1999 and 2000 brood years). The decline has since continued for even-year runs, but reversed for odd-year runs.

The major factor contributing to low production in recent years is low marine productivity. Even with low productivity, the persistence of Conservation Units for Inner South Coast pink salmon (Table 1) is not immediately threatened. However, if any of the conservation units declined to a point where its persistence was threatened, the *Species at Risk Act* (SARA) provides a legislative and policy framework for recovery. The recent returns to the Mainland Inlets (Kingcome Inlet, Bond to Knight Inlets, Loughborough to Bute Inlets) are well below the historic average, however have recently shown signs of improvement.

Fraser River Submission
Currently, Fraser pink populations are healthy enough not to warrant a legislated level of protection. Fraser pink returns have almost quadrupled from historical average (Table 3 in CUP). Fraser pink populations have remained strong in recent years despite the low marine productivity that has affected other species and populations of Pacific salmon. If the conservation unit in the Fraser watershed did decline to a point where its persistence was threatened, the Canada Species at Risk Act (SARA) provides a legislative and policy framework for recovery.

Productivity of the Fraser pink conservation unit has been below average in recent years (2001 to 2007), evidence for a downturn in productivity that most other Pacific Salmon stocks have experienced. Productivity on average has decreased from 3.7 recruits/spawner (1959-1999) to 0.99 recruits/spawner (2001-2005). Marine conditions were particularly poor in 2005 resulting in relatively poor survivals for other species and populations of salmon that migrated to the ocean in 2005. Productivity should improve in future return years given improving ocean conditions observed in 2007.

Scoring Rationale: Information on stock status for the three units of certification can be found in Section 5 above and trend summary graphs are located in Appendix A. Data from the indicator stream assessment programs in all certification units indicate that the escapement and exploitation rate estimation methodologies are scientifically defensible for the majority of target pink stocks.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

The majority of North and Central coast target stocks, pink salmon escapements have been above their interim LRP (25% of MEG) for most years since 1980. There are a few management areas (Areas 2W, 4, 7 and 10 for even-year returns) that have dropped below the 25% line in the last two of the most recent 5 years. In three of these instances (Area 2W, 7 and 10), estimated harvest rates have been very low (<10%) and no fisheries were permitted to target these pink stocks in these years.

Inner South Coast management areas, pink salmon escapements have been above their interim LRP (25% of MEG) for at least 3 of the 5 most recent odd-year returns. Only one of the Inner South Coast management areas (Upper Vancouver Island) has been near or below the 25% line for the past 5 years and estimated harvest rates for this area have been consistently less than 10% in these years.

Escapement trends for odd-year returns indicate that, for 5 of the 9 Inner South Coast management areas, pink salmon escapements have been above their interim LRP (25% of MEG) for at least 3 of the 5 most recent odd-year returns. Four of the management areas (Kingcome, Loughborough-Bute, Toba and Jervis) have been consistently below their 25% lines for the past 10 odd-year returns. Harvest rates estimates for these areas were low (<10%) in 2005 and 2007, however, the roughly 40% harvest rate in 2003 for three of these areas indicates that fisheries were a significant factor in the failure to meet the interim LRPs for these areas in that year

The total escapement estimate for Fraser River pink stocks has been consistently above the 6,000,000 MEG line for odd-year returns since 2001 and above the 25% MEG line since 1977. Reductions in fishing pressure in the mid-1990's has resulted in estimated escapements exceeding 20 M pink in 2001 and 2003 (Figure 36). Even-year returns of pink salmon to the Fraser River are very small and thus not targeted by any fisheries. Consequently, DFO has not conducted surveys to estimate escapement for Fraser pink in even-years.

Management actions have clearly reduced fishing effort as LRPs are approached, thus 60 scoring guideposts are met. However in each certification unit there are questions about individual stocks which results in the first and second scoring elements of the 80SG only being partially met.

Condition 1-7: For all pink salmon UoCs. By the second annual surveillance audit, the client or management agency must attain general agreement that the methods of estimating escapement and exploitation rates for all target stocks are scientifically defensible and the management agency must formally establish the LRPs, as required under condition 1-3. The status of each target stock should be reviewed, and where the stock is approaching the defined LRP, the exploitation rate on the stock should be estimated. The management agency must report what actions have been taken to reduce fishing as the target stocks approach the LRP and must demonstrate that fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

1.3 - MSC Criterion 3	**Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.**
Intent	Our interpretation of MSC Criterion 1.3: The effects of fishing on the "reproductive capacity" of the target stocks have already been partially assessed under criterion 1.1 and 1.2. Criterion 1.3 considers specific concerns about impacts of fishing on age, size, sex and genetic structure of (target) stocks. Because genetic structure is very difficult to determine in most exploited fish stocks, impacts on component stocks (i.e. the stocks that comprise a stock unit) are used as a proxy at the 80 scoring level. Also included in this indicator is an assessment of the management agency's ability to identify and manage the potential impact of enhanced stocks on wild stocks.

Weight	**7**	**Score**	**NCCC Pink: 93** **Inner SC Pink: 93** **Fraser Pink: 93**

1.3.1	Information on biological characteristics such as the age, size, sex and genetic structure of the target stocks is considered prior to making management decisions and management actions are consistent with maintaining healthy age, size, sex and genetic structure of the target stocks.	• The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks. • Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks. • The management system includes provisions to minimize the major adverse impacts for the majority of un-enhanced stocks that may be due to the enhancement of other stocks.	• The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks. • Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks. • The management system includes provisions to minimize any adverse impacts to the genetic structure of un-enhanced stocks that may be due to the enhancement of other stocks.	• There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks. • Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks. • Enhanced fish are identified and managed as separate target stocks.

Weight	**100**	**Score**	**NCCC Pink: 93** **Inner SC Pink: 93**

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

			Fraser Pink: 93

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 3.2.2.4 summarizes the comprehensive approach developed for identifying conservation units of the five Pacific salmon species under federal responsibility, based on a combination of the ecological context, the life history of each population, and genetic population structure.
- Table 1 of each unit profile compares the conservation units to management areas, and lists the component populations.
- CUP 2.1 describes the stocks units and population characteristics for pink and chum salmon in each area.

DFO's Wild Salmon Policy (WSP) requires identification of Conservation Units (CUs) for salmon. In the policy, a CU is defined as "a group of wild salmon sufficiently isolated from other groups that, if extirpated, is very unlikely to recolonize naturally within an acceptable timeframe" (DFO 2005). The CU is the scale at which the DFO aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. It is also the scale at which depleted species may be legislatively protected (e.g. through the Canada Species at Risk Act, SARA). It is similar in concept to an Evolutionary Significant Unit (ESU), although not the same.

The WSP identifies three elements for this strategy:

- Identify CUs.
- Develop criteria to assess CUs and identify benchmarks to represent biological status.
- Monitor and assess status of CUs.

A comprehensive approach for identifying conservation units of the five Pacific salmon species under federal responsibility has been developed, based on a combination of the ecological context, the life history of each population, and genetic population structure. *Conservation Units for Pacific Salmon under the Wild Salmon Policy* by Holtby and Ciruna (CSAS Research Document 2007/070) documents all the details. Briefly, CU definitions are based on following considerations in sequence:

- Map out *Joint Adaptive Zones* (JAZ) based on a combination of freshwater characteristics and marine characteristics.
- Within each JAZ, species were further divided into conservation units based on differences in life history, spawning time, and other ecological characteristics.

The approach was reviewed by the *Pacific Science Advice Review Committee* (Section 4.3.5.1) and the resulting CUs in BC for each species continue to be reviewed in public consultation. Appendix 8 of Holtby and Ciruna (2007) summarizes the CU consultations up to 2007. The CU portal at http://www.comm.pac.dfo-mpo.gc.ca/pages/consultations/wsp/CUs_e.htm outlines the on-going consultation process and includes a complete and up-to-date list of sites for all CUs.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Section 2.1.1 of each *Certification Unit Profile* (CUP) describes the management aggregates and conservation units in each area. Table 1 of each CUP matches management areas and spawning sites against the conservation units.

Scoring Rationale: The long experience with Pacific salmon in B.C. and elsewhere suggest that the major threats to genetic and sex structure of pink salmon populations would come from either highly selective fishing practice or interaction between wild and hatchery fish. We expect sex specific selective pressure would not have long term consequences unless the fishery was highly selective of females and the actual escapement was dominated by males. The majority of fish are captured by purse seine which is not a sex selective gear.

The major area of potential concern is therefore associated with hatchery impacts on wild stocks and for pink salmon the scale of enhancement is very small compared to wild production. We did not feel that the knowledge of the effects of fishing on biological characteristics or the impacts of these changes on the reproductive capacity of the target stocks was comprehensive, thus all units failed to meet the first 100 scoring guidepost.

Table 9: MSC Principle 2: Individual Performance Indicator Scoring Summary (NCCC)

Summary for BC Pink Salmon Units of Certification		Weighting	NCCC Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 2 - Ecosystem and Non-Target Populations		0.333		**81**																
Criterion 2.1 - Maintain natural functional relationships among species		0.500		**84**																
Indicator 2.1.1	Impacts on ecosystem processes can be identified	0.286	70			X	X	X	X			X	X	X	X				X	X
Indicator 2.1.2	Provisions to reduce ecosystem impacts	0.143	92				X	X	X				X	X	X					
Indicator 2.1.3	Sufficient research on ecosystem impacts	0.143	77					X	X	P			X	X	X					X
Indicator 2.1.4	Escapement goals address ecosystem needs	0.143	95			X	X	X	X			X	X	X	X	P		X	X	X
Indicator 2.1.5	Research on effects of non-fishing activities	0.286	90					X	X				X	X	X	P	P	P	X	X
Criterion 2.2 - Fishery minimizes impacts on endangered, threatened or protected species		0.250		**93**																
Indicator 2.2.1	Information on biological diversity used by managers	1.000	93					X	X				X	X	X			P		X
Criterion 2.3 - Fishery allows for the recovery of depleted stocks (Non-target Stocks)		0.250		**63**																
Indicator 2.3.1	Provide for recovery of non-target stocks	1.000	63					X	X				P					P		

Table 9 cont: MSC Principle 2: Individual Performance Indicator Scoring Summary (ISC)

Summary for BC Pink Salmon Units of Certification		Weighting	ISC Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 2 - Ecosystem and Non-Target Populations		0.333		**87**																
Criterion 2.1 - Maintain natural functional relationships among species		0.500		**92**																
Indicator 2.1.1	Impacts on ecosystem processes can be identified	0.286	90			X	X	X	X			X	X	X	X				X	X
Indicator 2.1.2	Provisions to reduce ecosystem impacts	0.143	92				X	X	X				X	X	X					
Indicator 2.1.3	Sufficient research on ecosystem impacts	0.143	95					X	X				X	X	X					X
Indicator 2.1.4	Escapement goals address ecosystem needs	0.143	95			X	X	X	X			X	X	X	X	P		X	X	X
Indicator 2.1.5	Research on effects of non-fishing activities	0.286	90					X	X				X	X	X	P	P	P	X	X
Criterion 2.2 - Fishery minimizes impacts on endangered, threatened or protected species		0.250		**93**																
Indicator 2.2.1	Information on biological diversity used by managers	1.000	93					X	X				X	X	X			P		X
Criterion 2.3 - Fishery allows for the recovery of depleted stocks (Non-target Stocks)		0.250		**70**																
Indicator 2.3.1	Provide for recovery of non-target stocks	1.000	70					X	X			P	P					P		

Table 9 cont: MSC Principle 2: Individual Performance Indicator Scoring Summary (Fraser)

Summary for BC Pink Salmon Units of Certification		Weighting	Fraser Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 2 - Ecosystem and Non-Target Populations		0.333		**83**																
Criterion 2.1 - Maintain natural functional relationships among species		0.500		**88**																
Indicator 2.1.1	Impacts on ecosystem processes can be identified	0.286	75			X	X	X	X		P	X	X	X	X				X	X
Indicator 2.1.2	Provisions to reduce ecosystem impacts	0.143	92				X	X	X				X	X	X					
Indicator 2.1.3	Sufficient research on ecosystem impacts	0.143	95					X	X				X	X	X					X
Indicator 2.1.4	Escapement goals address ecosystem needs	0.143	95			X	X	X	X			X	X	X	X	P		X	X	X
Indicator 2.1.5	Research on effects of non-fishing activities	0.286	90					X	X				X	X	X	P	P	P	X	X
Criterion 2.2 - Fishery minimizes impacts on endangered, threatened or protected species		0.250		**93**																
Indicator 2.2.1	Information on biological diversity used by managers	1.000	93					X	X				X	X	X			P		X
Criterion 2.3 - Fishery allows for the recovery of depleted stocks (Non-target Stocks)		0.250		**63**																
Indicator 2.3.1	Provide for recovery of non-target stocks	1.000	63					X	X				P					P		

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Table 10: MSC Principle 2: Individual Performance Indicator Scoring

MSC Principle 2	**Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.**
MSC Intent *Team Intent*	*The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.* The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem. The criteria and indicators developed are limited to the impacts of fishing operations and the response and effectiveness of the regulatory system to impacts external to the commercial fishing operations, such as other harvests, climate change, and habitat degradation. We acknowledge that forces other than commercial fishing may result in a fishery being unsustainable, and that these may be anthropogenic or natural forces. This certification process addresses the impact of commercial fishing on the harvested stocks and the ecosystem, and the response of fishers and managers to changes in external environmental factors.

Weight	**33**	**Score**	**NCCC Pink: 81** **Inner SC Pink: 87** **Fraser Pink: 83**

MSC Criterion 2.1	**The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to tropic cascades or ecosystem state changes.**
Intent	The performance indicators listed under Criteria 1 evaluate impacts on marine systems (bycatch and biomass removal) and on freshwater systems (adequacy of escapements in maintaining the ecosystem and integrity of watersheds). These indicators are: 1) the adequacy of management plans, data collection and monitoring of directed marine fisheries on by-catch; 2) the adequacy of escapement objectives to address the freshwater ecosystem concerns. The degree to which the information is collected in the management of the fisheries under Principle 1 will apply for determining if this criterion is adequately addressed and will influence the evaluation scores.

Weight	**50**	**Score**	**NCCC Pink: 84** **Inner SC Pink: 92** **Fraser Pink: 88**

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
2.1.1	The management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-target species are identified.	• Data on bycatch in the majority of the fisheries are available to determine impacts on non-target species.	• A monitoring program exists that provides estimates of bycatch. • In known problem areas of high bycatch, there is an ongoing monitoring program.	• A monitoring program exists that provides estimates of bycatch that meet statistical criteria acceptable to external reviewers. • All historic monitoring data is readily available to stakeholder groups and external reviewers. • Quantities of gear lost are recorded, and the impacts of lost gear on target and non-target species have been researched and accurate projections of impacts have been completed.
Intent	The intent of this measure is to ensure that the management plans for the fisheries require collection of adequate data to address direct impacts of fishing on non-target species		
Weight	**28.6**	**Score**	**NCCC Pink: 70 Inner SC Pink: 90 Fraser Pink: 75**

Client Submission BC pink and chum fisheries are subject to extensive monitoring, assessment, and reporting requirements for target and non-target species.

- MS 1.2.7.4 briefly describes the selective fishing policy.
- MS 3.2.4 recounts the development and implementation of selective fishing measures in BC salmon fisheries, and includes links to mortality studies from different fisheries.
- MS 1.2.9 describes collaborative initiatives related to the changing structure of Pacific salmon fisheries, which include strong elements of enhanced monitoring and reporting.
- MS 2.4 describes the current monitoring and assessment approach, and more specifically;
- MS 2.4.2.5 discusses catch monitoring programs in the different fisheries, including provisions for reporting any harvest of non-target species.
- MS 2.5.4.3 describes measures that have been implemented to control incidental harvest of non-target stocks and by-catch of non-target species.
- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for selective fishing and by-catch reporting.
- MS 3.4 includes an inventory of major conservation and recovery efforts, including measures to reduce by-catch of particular stocks or species of concern.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).

- Decision guidelines for each fishery in CUP 3.3 outline measures to reduce by-catch of non- target species.
- CUP 6 highlights specific conservation measures in each area.

In January 2001, the Department released *A Policy for Selective Fishing in Canada's Pacific Fisheries*. The policy lays out the department's objectives and principles for selective fishing as part of a long-term strategy for conservation and sustainable use. The policy outlines the responsibilities of harvesters for continuous development and implementation of new selective techniques and practices. The policy was based on the results of the intensive 4-year *Selective Fisheries Program* (Section 3.2.4.2), in which DFO researchers and harvester groups experimented with a variety of methods to reduce the impact of fisheries on non-target species, with a number of measures reaching implementation in fisheries. The policy defines selective fishing *a*s the ability to *" avoid non-target fish, invertebrates, seabirds, and marine mammals or, if encountered, to release them alive and unharmed"*.

The *Selective Fishing Policy* clearly identifies the need for continuous improvement of gear and practices, and establishes strong incentives by linking that continuous improvement to future fishing opportunities. The policy lists an overarching objective and five principles. The full text of the *Selective Fishing Policy* is available at *www.dfo-mpo.gc.ca/Library/252358.pdf*.

The objective is to ensure that selective fishing technology and practices are adopted where appropriate in all fisheries in the Pacific Region, and that there are continuing improvements in harvesting gear and related practices. Selective fishing is a requisite element of conservation-based fisheries. In meeting conservation objectives, fishing opportunities and resource allocations will be shaped by the ability of all harvesters – First Nations, commercial and recreational anglers – to fish selectively.

Implementation of the *Selective Fishing Policy* focuses on two priorities:

- Avoidance of non-target species is the best possible option in selective fishing. Test harvests on stock abundance, timing, and migration routes can supply valuable data to help develop fishing strategies that avoid non-target species or stocks of concern. Licensed harvesters can also play a role by informing the Department if stocks of concern are encountered. This may require improved communications and a shift in the practices of licensed harvesters who may be accustomed to keeping such information confidential.
- The next best option involves releasing non-target fish, invertebrates, seabirds, and marine mammals encountered (and captured) alive and unharmed, or in the best possible condition, to maximize survival. Fish released that would not likely survive long enough to reproduce should be counted as mortalities, along with all retained fish. Fisheries and Oceans Canada is interested in developing ways of estimating spawning success of released fish.

Section 2.5.4 of the Management Summary describes general conservation measures in BC pink and chum fisheries. Section 3.2.4 of the Management Summary recounts the development and implementation of selective fishing measures in BC salmon fisheries.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Scoring Rationale: Based on the client submittal, there are extensive monitoring programs and reporting requirements, by log books, for all of the fisheries. Consequently all three fisheries passed the one 60 scoring guidepost. ISC was deemed to have passed both 80 scoring guideposts. Under the 100 scoring guideposts, the first was not met. All catch data is readily available and summarized for stakeholder groups and external reviewers, therefore the second 100 SG scoring element was met. Gear loss was not considered relevant for pink fisheries as it has not been an issue identified to date, we have considered it not to be applicable and have not used this criteria in assigning scores.

The team was of the opinion that the Area 3 and 4 North Coast Pink salmon fishery did not have a scientifically defensible monitoring program for non-target bycatch, particularly steelhead and chum salmon. The definition of bycatch is the harvest of non-target species or stocks. The Team's opinion is that the data do not include statistics for non-target species which are released as part of the condition of license. Where logbooks are required, the rigor and verification of commercial catch data is limited with test fisheries or other observer programs essential to provide reliable estimates of fish caught and discarded. The second 80 SGs was considered met, hence a score of 70 was awarded.

Similarly, although the Fraser pink salmon fishery has a monitoring program, the Team's opinion is that the reliability of non target (particularly steelhead and white sturgeon) bycatch recording is questionable and assigned the score of 75 based on a partial score for the first 80 SG and a full score for the second 80 SG.

Revised Condition 2-1. For the NCC and Fraser pink salmon UoCs. Certification of North-Central Coast and Fraser pink fisheries will be conditional until reliable estimates of non-target species bycatch are obtained annually in North-Central Coast and in the Fraser River pink salmon fisheries. The certification of these fisheries requires the successful completion of a bycatch monitoring program that meets the requirements of the scoring elements under the 80SG scoring guidepost by the second annual surveillance audit. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. The client or management agency shall present a publically available report on bycatch estimation by the second surveillance audit.

2.1.2	The management system includes measures to reduce marine ecosystem impacts	• The management system does include measures to reduce marine ecosystem impacts to achieve management objectives. • The management system has a history of responding to bycatch mortality problems and has procedures that are	• The effect of the fishery on the marine ecosystem has been addressed by the management system. • Where problems are identified, fisheries managers make adjustments to reduce impacts on non-target species. • Where conflicts exist between	• A risk assessment of bycatch concerns has been conducted as part of developing the management plan. • The effect of the fishery on the marine ecosystem has been explicitly addressed in the management plan. • Research has been conducted on

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
		followed to limit bycatch.	the harvest of fish and ecosystem concerns based on their removal, the balance achieved has been made known to stakeholders through publicly available information sources.	marine piscivores that utilize the target species to ensure that commercial harvests do not present significant risks to the populations of these piscivores. • Where conflicts exist between the harvest of fish and ecosystem concerns based on their removal, the balance achieved has been the subject of an open review by stakeholders. • This information is presented in documents that are made available to stakeholders.
Intent	For salmon fisheries, the primary concerns related to marine ecosystem impacts are related to the bycatch of non-salmon species and the removal of large numbers of the target salmon species.		
Weight	**14.3**	**Score**	**NCCC Pink: 92 Inner SC Pink: 92 Fraser Pink: 92**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- BC pink and chum fisheries are continuously adapted to reduce marine ecosystem impacts.
- MS 3.3 describes integrated management projects, and;
- MS 3.2.3.7 summarizes research into Pacific salmon and their ecosystem.
- MS 2.5.4.4 outlines measures and initiatives in place to control marine ecosystem impacts.

- CUP 5 includes details about stock status and key indicators related to ecosystem impacts (e.g. long-term trends in abundance, exploitation rate, and stock composition)

Also refer to relevant sections for MSC Indicator 2.1.1

Where conflicts exist between the harvest of fish and ecosystem concerns based on their removal from the food web, the balance achieved has

been the subject of an open review by stakeholders. The process used to achieve this is to include management options in draft IFMPs that are available for review by stakeholders and the public. DFO conducts and participates in extensive research into BC's marine and freshwater ecosystems, and leads integrated management initiatives throughout the province. Examples include:

- Comprehensive regional approach to integrated management
- Marine Protected Areas and other spatially persistent fishery closures
- Pacific North Coast Integrated Management Area (PNCIMA), which has incorporated previous work on the Central Coast Integrated Management Area (CCIM)
- The Strait of Georgia Ecosystem Research Initiative
- Barkley Sound / Alberni Inlet WSP Pilot
- Consideration of salmon as a forage species for marine mammals

Sections 3.3 and 3.4 of the Management Summary include more details about these ecosystem research initiatives and integrated management projects.

Scoring Rationale: Pink salmon fisheries are highly focused in space/ time and do not have a reputation for impacting marine mammals or seabird bycatch. Historical log book data have not identified problems on ecosystem impacts. The primary impact would be the fisheries competition for adult salmon with piscivorous marine mammals that are competing for the same resources. In their client submission, DFO provided response regarding the actions taken and research on marine ecosystem impacts related to these fisheries. The first and second scoring elements of the 60SG guidepost were met and the material provided suggested a robust process to address these impacts if problems do arise (80SG scoring elements one, two, and three) so the 80 SG was judged to have been met. Under the 100 SG scoring criteria, there has been no risk assessment nor has the impact of the pink salmon fishery on the marine ecosystem been explicitly addressed in the fisheries management plan as required under the first and second scoring elements (bullets one and two). The remaining three scoring elements were considered to be met as the process is available, along with monitoring data if marine ecosystem issues arise in the future. As three of five scoring elements were met under the 100SG, a score of 92 was assigned for all of the pink fisheries.

2.1.3	Research efforts are ongoing to identify new problems and define the magnitude of existing problems, and fisheries managers have a process to incorporate this understanding into their management decisions.	• The management agency collects or plans to collect data on bycatch problems or ecosystem concerns. • There are procedures established to incorporate any knowledge obtained about bycatch problems into management actions.	• There is ongoing research of previously identified problems areas to determine if bycatch reduction measures are effective. • When new problems are identified, the management plans require a new monitoring program be instituted to determine the effectiveness of bycatch reduction	• There is detailed knowledge of the relationship between the fishery and the marine ecosystem impacts or ongoing research is attempting to identify if such problems exist. • The management agency has a proven history of incorporating new research findings into management plans. • The management agency has a proven

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

		• The management agency responds to data provided on bycatch problems by entities outside of their agency.	measures. • The management plan allows for between season assessment and institution of new controls on the fishery or stakeholder consultation following the identification of bycatch problems or ecosystem related impacts.	history of closing fisheries when bycatch mortality problems arise. • The management agency has supported the development of more selective fishing practices.
Intent		The intent of this measure is to ensure that a research program has been established to evaluate historic and new data to identify future problems. It is also necessary to have an established management process that will ensure research conclusions can quickly be transparently incorporated into future management activities associated with prosecuting the fishery.		
Weight		**14.3**	**Score**	**NCCC Pink: 77** **Inner SC Pink: 95** **Fraser Pink: 95**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- Refer to MSC Indicator 3.1.5 for an overview management responses to new information.
- Refer to MSC Indicator 3.2.1 and 3.2.2 for information about research and assessment programs.
- MS 3.2.3 summarizes salmon research priorities, describes the 5- year research agenda, and includes links to relevant research organized by topic area (e.g. salmon and their ecosystem).
- MSC Indicator 3.4.2.1 for the process of identifying conservation concerns and developing recovery initiatives.
- Good illustrations of collaborative research and implementation are the Selective Fisheries Program (MS 3.2.4), the Wild Salmon Policy (MS 3.2.2), recovery strategies for endangered or threatened species listed under the Species at Risk Act (MS 3.4), and integrated management initiatives, which support research into large-scale, long-term impacts of human activities in marine and coastal ecosystems (MS 3.3).

BC pink and chum fisheries are managed to address time- and area-specific concerns over incidental harvests and by-catch through restrictions on location, timing, gear, and retention for net and troll fisheries.

- MS 3.4 includes a comprehensive inventory of conservation objectives and resulting recovery initiatives.
- MS 2.5.4 summarizes specific conservation measures implemented in pink and chum fisheries.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

DFO Science Branch is undertaking a comprehensive review of its operations and priorities to address the increasing requirement for integrated information to incorporate broader ecosystem considerations into the conservation, and management of fisheries resources. Under the *Science Renewal* initiative DFO developed a 5-year research agenda highlighting 10 departmental research priorities:

- Fish population and community productivity
- Habitat and population linkages
- Climate Change / Variability
- Ecosystem Assessment and Management Strategies
- Aquatic Invasive Species
- Aquatic Animal Health
- Sustainability of Aquaculture
- Ecosystem Effects of Energy Production
- Operational Oceanography
- Emerging and Enabling Technologies for Regulatory and Policy Responsibilities

The complete research agenda, including specific areas for research under each of these priorities, is available at http://www.dfo-mpo.gc.ca/science/publications/fiveyear-quinquennal/index-eng.htm

Regional research plans are developed collaboratively by Science staff, stock assessment staff, and fishery management staff. Section 4.3.5.1 describes the internal review process. General subject areas of Pacific salmon research in recent years include:

- Methods for identifying distinct conservation units of salmon and evaluating their status (Section 3.2.2)
- Methods for selective harvest in BC salmon fisheries (Section 3.2.4)
- Salmon stock identification methods and genetic baseline sampling (Section 3.2.3.4)
- Evaluating stock status (Section 3.2.3.5)
- Enumeration Methods (Section 3.2.3.6)
- Methods for incorporating environmental information into salmon management and adapting to climate change (Section 3.2.3.7)

Scoring Rationale: The agency has a very lengthy history and reputation as a research organization that have addressed ecosystem related problems related to salmon fisheries. DFO has a history and procedures as identified in their submittal of collecting data on bycatch, incorporating this information into management actions and responding to data provided outside of their agency. Consequently all of the 60 scoring guideposts were judged to have been met.

The identification of new problems, such as the coho fishery, have resulted in major changes and responses in management and there are active ongoing between-season processes addressing new findings and altering fisheries management plans, hence all of the 80 scoring guideposts were met except for the NCC area 4 pink salmon fishery where there is limited evidence of a successful monitoring program and associated bycatch control program.. The partial score under the first 80 scoring guidepost resulted in the North Central Coast pink fishery

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

receiving a score of 77.

At the 100 guidepost, there does not appear to be a detailed understanding or ongoing research on the impacts of the fishery on marine ecosystem impacts, although this is driven by lack of any apparent problem or viable hypotheses where ecosystem impacts are considered to be likely. The agency has a history of actions related to new information, including mandating selective fisheries and fisheries closures, resulting in the last three of the four elements at the 100 scoring guidepost being met with a resulting score of 95 for the other two pink salmon fisheries.

Condition 2-2 -. For NCCC pink salmon UoC. See Condition 2-1 which will be applied to address performance improvement requirements for this indicator for the North Central Coast UoC. Results to be provided by the second surveillance audit.

2.1.4	The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.	• The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.	• Ongoing research is supported to determine the impacts of carcass on freshwater ecosystem processes and identify any tradeoffs between harvests and freshwater ecosystem concerns. • The management system provides for the communication of research results to managers so that the results can be used in the development of escapement goals for meeting freshwater ecosystem needs.	• There is research to determine tradeoffs of fish harvests with ecosystem concerns such as providing for sustainable populations of dependent components of the aquatic ecosystem. • Results and conclusions from research are made available to stakeholders.
Intent		The intent of this is to encourage the collection of information and data that can be used to address freshwater ecosystem concerns. It is our intent that future reviews of Pacific Salmon certification demonstrate that the information developed from these research programs on ecosystem requirements, such as aquatic system nutrient requirements and piscivore food requirements are incorporated into the management system.		
Weight		**14.3**	**Score**	**NCCC Pink: 95** **Inner SC Pink: 95** **Fraser Pink: 95**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- Refer to MSC Indicator 3.1.5 for an overview management responses to new information.
- Refer to MSC Indicator 3.2.1 and 3.2.2 for information about research and assessment programs.
- MS 3.2.3 summarizes salmon research priorities, describes the 5- year research agenda, and includes links to relevant research organized by topic area (e.g. salmon and their ecosystem).
- Refer to MSC Indicator 3.4.2.1 for the process of identifying conservation concerns and developing recovery initiatives.
- Good illustrations of collaborative research and implementation are the Selective Fisheries Program (MS 3.2.4), the Wild Salmon Policy (MS 3.2.2), recovery strategies for endangered or threatened species listed under the Species at Risk Act (MS 3.4), and integrated management initiatives, which support research into large-scale, long-term impacts of human activities in marine and coastal ecosystems (MS 3.3).

BC pink and chum fisheries are managed to address time- and area-specific concerns over incidental harvests and by-catch through restrictions on location, timing, gear, and retention for net and troll fisheries.

- MS 3.4 includes a comprehensive inventory of conservation objectives and resulting recovery initiatives.
- MS 2.5.4 summarizes specific conservation measures implemented in pink and chum fisheries.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).

DFO has conducted studies on the impacts of salmon carcasses on stream productivity and nutrient budgets in freshwater ecosystems. These studies examine the impact of salmon-derived nutrients on the terrestrial ecosystem, including icon species such as bears, and the role that icon species play in the transfer of nutrients to the terrestrial ecosystem.[7] Further studies that track salmon nutrients into higher trophic levels are in progress.[8] The Salmon and Freshwater Ecosystems Division of Science Branch is specifically tasked with this work.[9] The results of these studies are communicated either in peer reviewed journals or in research papers reviewed through the PSARC process.

Articles have been written in other jurisdictions (e.g. Alaska). Proceedings of symposium on this subject, held in Eugene Oregon in 2001, are available[10].

DFO's Wild Salmon Policy (WSP) explicitly acknowledges the role that salmon play in freshwater ecosystems:

[7] Johnston, N.T., E.A. MacIsaac, P.J. Tschaplinski, and K.J. Hall. 2004. Effects of the abundance of spawning sockeye salmon *(Oncorhynchus nerka)* on nutrients and algal biomass in forested streams. Can J Fish Aquatic Sci. In Press

[8] MacIsaac, Erland. Fisheries & Oceans Canada, Salmon and Freshwater Ecosystems, pers comm.

[9] http://www-sci.pac.dfo-mpo.gc.ca/mehsd/publ/pubs2001-2005_e.htm

[10] Ken Shortreed, Fisheries and Oceans Canada, pers. com.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

"Pacific salmon play important roles in marine, freshwater, and terrestrial ecosystems. There is ample scientific evidence demonstrating that nutrients derived from salmon carcasses are important to freshwater and riparian ecosystems."

One objective of the policy is to incorporate these values into salmon management plans. To that end, research being conducted by the Salmon and Freshwater Ecosystems Division related to ecosystem function and the monitoring and assessment of freshwater ecosystem status. Results of this work shall be incorporated into broader, more 'ecosystem-based' salmon management plans over the next several years.

Scoring Rationale:

DFO has conducted research on ecosystem needs of salmon escapement, such as use of salmon runs by bears and nutrient loading related to salmon carcasses. In general with pink salmon fisheries, these needs are provided if sufficient fish escape to provide for recruitment for the next generation of salmon. There is continual research on this subject and ongoing research results are continually being brought into the management system. Consequently the 60 and 80 scoring guideposts are met. Although there is research ongoing, the tradeoffs for meeting ecosystem needs for pink fisheries has not explicitly been expressed in the research so a partial credit is given for bullet one under the 100 scoring guidepost and full credit for bullet two for a score of 95.

2.1.5	The management system supports research efforts to understand human caused impacts on the environment caused by non-fishing activities (e.g., aquaculture, climate change, water removal, water quality, timber harvests, agriculture, etc.) ;the effect of these impacts on salmon production and incorporates this information into harvest management plans and escapement goals.	• There is some information on the effects of human caused environmental impacts on natural salmon productivity and capacity and the general magnitude of impacts is known. • Management attempts to minimize or mitigate impacts of some human caused impacts on the environment. • Non-fishing related human caused impacts on the environment are considered when developing harvest plans and escapement goals, if necessary.	• Management has some research to evaluate effects of major environmental impacts on natural salmon productivity and capacity, though quantitative estimates not always available. • Management has track record for attempting to minimize or mitigate impacts of human caused environmental impacts. • Results and conclusions from research are made available to stakeholders and there are on-going efforts to incorporate this information when developing harvest plans and escapement goals, if necessary.	• Management has research program to evaluate effects of human impacts on the environment, including cumulative effects of smaller impacts, on natural salmon productivity and capacity. • Management has a track record for implementing research findings to minimize or mitigate impacts of human caused environmental change. • Results and conclusions from research are made available to stakeholders and findings of lost production are used to re-evaluate harvest plans and escapement goals, if necessary.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Intent	The intent of this indicator is to encourage the collection of data in freshwater, estuarine and the marine environment that can be used to evaluate changes in salmon survival and the capacity of the habitat to support salmon so that changes in harvests or escapement goals can be made, if necessary, to sustain natural populations.		
Weight	**28.6**	**Score**	**NCCC Pink: 90** **Inner SC Pink: 90** **Fraser Pink: 90**

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- Refer to MSC Indicator 3.1.5 for an overview management responses to new information.
- Refer to MSC Indicator 3.2.1 and 3.2.2 for information about research and assessment programs. In particular, MS 3.2.3 summarizes salmon research priorities, describes the 5- year research agenda, and includes links to relevant research organized by topic area (e.g. salmon and their ecosystem).
- Refer to MSC Indicator 3.4.2.1 for the process of identifying conservation concerns and developing recovery initiatives.
- Good illustrations of collaborative research and implementation are the Selective Fisheries Program (MS 3.2.4), the Wild Salmon Policy (MS 3.2.2), recovery strategies for endangered or threatened species listed under the Species at Risk Act (MS 3.4), and integrated management initiatives, which support research into large-scale, long-term impacts of human activities in marine and coastal ecosystems (MS 3.3).

BC pink and chum fisheries are managed to address time- and area-specific concerns over incidental harvests and by-catch through restrictions on location, timing, gear, and retention for net and troll fisheries.
- MS 3.4 includes a comprehensive inventory of conservation objectives and resulting recovery initiatives.
- MS 2.5.4 summarizes specific conservation measures implemented in pink and chum fisheries.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).

Marine survival rates of salmon species is associated with changes in ocean productivity which drive factors determining salmon survival, such as the availability of prey to juvenile salmon or density of predators. These changes are usually related to large scale and often cyclic climatic events such as El Ninos and La Ninas. However, there is major concern about the long-term effects of non-cyclic climate change (i.e. global warming) on salmon populations.

Marine survival rates are directly measured for indicator stocks with coded wire tags. Although pink stocks are typically not marked, general marine survival rate trends for coho and chinook indicator stocks are often well correlated with neighboring pink stocks. In combination with other oceanographic data collected by DFO Science, these data are integral part of production forecasts. Annual production (or survival rate)

forecasts are used to modify harvests.

At a more general level, DFO's Wild Salmon Policy identifies the need for studying the effects of climate change and integrating the collected information into the annual salmon management processes:[11]

> "Information on climate and marine conditions will continue to be provided through DFO's State of the Ocean reports, and will be linked with assessments of the marine survival of Pacific salmon."[12]

Climate change effects on freshwater ecosystems will be assessed as part of a broader ecosystem monitoring program.[13] Standards and monitoring programs are being developed by the Salmon and Freshwater Ecosystems Division of Science Branch. However, the development of escapement benchmarks and management plans that consider ecosystem impacts and change will also being informed by the general scientific literature.

Impacts of aquaculture are addressed through the *Canadian Environmental Assessment Act* (CEAA), which screens marine fish farm sites for a broad range of environmental effects.[14] The CEAA screening examines the potential environmental effects of the project, judges the effectiveness of mitigation measures and assesses any residual effects on the environment. A screening for a fish farm sire encompasses all the potential effects on the natural environment, including the impacts of disease and parasite transfers, escapes, waste discharges, and impacts to wildlife. The CEAA screening also considers the cumulative effects of other projects in the same area and only those projects that are unlikely to cause significant adverse environmental effects (post mitigation) are allowed to proceed.

Scoring Rationale: As pink salmon fisheries are based on in-season assessments and abundance, the fishery is adjusted to accommodate decreased runs from all causes, including those related to habitat destruction, global warming, or fish farming. There are ongoing research programs to help define these and other causes for fisheries declines and there is an active program in DFO for reducing and mitigating man-made impacts on the freshwater and marine environments. This is manifest in the Fisheries Act and the recent Wild Salmon Policy.

In December 2010, the management and regulation of aquaculture in British Columbia was transferred from provincial jurisdiction to federal authority in Fisheries and Oceans Canada. This will involve development and implementation of the new Pacific Aquaculture Regulations (see http://canadagazette.gc.ca/rp-pr/p2/2010/2010-12-08/html/sor-dors270-eng.html), development of the licensing requirements for aquaculture operations and implementation of regulatory requirements through the conditions of license for aquaculture operations (see http://www.pac.dfo-mpo.gc.ca/aquaculture/licence-permis/docs/licence-cond-permis-mar-eng.pdf).

The Province of British Columbia, through the Department of Aquaculture reported on the required aquaculture operation monitoring. Historical monitoring information can be seen at http://www.al.gov.bc.ca/ahc/fish_health/index.htm. The responsibility for salmon farm monitoring now

[11] Canada's Policy for Conservation of Wild Pacific Salmon. 2005. Fisheries and Oceans Canada. Action step 3.1, page 23.
[12] Ibid, Action Step 3.2.
[13] Ibid, Action Step 3.1
[14] Canada's Policy for Conservation of Wild Pacific Salmon. 2005. Fisheries and Oceans Canada. Page 31.

rests with DFO, monitoring results are to be made available at the following website, http://www.pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/lice-pou-eng.htm.

With regards to current and on-going research, DFO has made compendiums of current research on a number of aquaculture topics available. The "State of Knowledge" documents provide a summary of various topics related to aquaculture can be found on the following webpage: http://www.dfo-mpo.gc.ca/science/enviro/aquaculture/index-eng.htm.

The conditions of license include active monitoring and reporting of all disease based mortality following standard scientific protocols for sampling and extensive specific monitoring plans for sea lice. This information will be available in the future in an open public website. Protocols for treatment of infected fish, including culling, are clearly defined. Following and enforcing these protocols, coupled with the general ongoing research on disease transfer from fish farms to wild stocks that has been supported by DFO is in the team's opinion, sufficient to reduce the risk to wild salmon stocks from these activities.

Studies of wild stocks that migrate in the vicinity of fish farms for fish diseases would not likely provide definitive evidence of the cause of the disease, as diseases occur in wild salmon independent of fish farm activities. These types of studies would be warranted where such stocks are in decline and the decline is highly correlated with the disease rates that are observed in fish farms. There are numerous investigations globally that have undergone peer review and are currently underway that examine this phenomenon and are likely to continue and have been supported by DFO. Prevention of diseases in fish farms is the most cost effective measure and the documentation that DFO has provided ensures both stock status (in most cases) of potentially affected stocks is being monitored and that the potential for diseases and parasites that can be transferred from fish farms to wild stocks is being investigated where risks are high, as has been documented in the material provided at the above web sites.

There is research available, including information in the State of Knowledge documents, which responds to the requirements of the first scoring issue under the 80 guidepost. The response observed by both the Province and DFO to the sea lice issues indicates that they have a track record of responding to such issues that threaten wild stocks in a timely and comprehensive manner. Clearly DFO has a past track record and continue to minimize or mitigate human caused environmental impacts as required in the second 80 scoring guidepost and as demonstrated by permitting projects for development in fish habitat areas which are undertaken routinely. The monitoring requirements specified in the salmon farm conditions of license provide the department with necessary information to attempt to minimize impacts on passing wild pink salmon stocks. DFO makes information available for on-going and completed research projects, either directly to the public or through the internal peer review (PSARC) or external peer review (published scientific literature).

Consequently, the team is satisfied that all of the criteria under the 60 and 80 criteria have been met. At the 100 scoring guidepost, there is partial addressing of the overall impact of human environmental reduced changes but the understanding of cumulative long-term, large scale development on the future of salmon fisheries is limited and the ability of the management agency to address those changes to truly limit fisheries reductions in heavily developed or populated areas is difficult to address or answer. Although the results from research are readily available, with pink fisheries there appears to be limited formal adjustment of harvest plans or escapement goals based on this information alone. Therefore the team assigned a partial score for all of the bullets under the 100 guidepost resulting in a score of 90 for all units of certification.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

2.2 - MSC Criterion 2-2	**The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels, and avoids or minimizes mortality of, or injuries to endangered, threatened, or protected species.**
Intent	This criterion focuses on direct impact of the fishery on non-target species and the adequacy of fisheries management for the target species to ensure significant sub-components of the target species are adequately protected such that they contribute to the genetic diversity of the target population. The impacted species of concern include icon species, such as marine mammals, bears, coastal wolves, and eagles. We also address the issue of harvests of fish stocks that have been created or enhanced through fisheries enhancement activities, such as fish hatcheries and spawning channels. Our concern is that the production or harvest of enhanced stocks does not affect the sustainability of natural spawning stocks by adversely impacting the genetic structure of the wild fish.

Weight	**25**	**Score**	**NCCC Pink: 93 Inner SC Pink: 93 Fraser Pink: 93**

2.2.1	The management of the fishery includes provisions for integrating and synthesizing new scientific information on biological diversity at the genetic, species or population level of all species harvested in the fishery and impacts on endangered, threatened, protected or icon species.	• Efforts are being made to assess the impacts of the fishery on the biodiversity of the endangered, threatened, and protected or icon species. • The impact of the fishery on endangered, threatened, and protected or icon species is identified and is considered in the management of fisheries. • There are provisions in the management system to reduce the impacts of the fishery on the biodiversity of the endangered, threatened, and protected or icon species.	• The fishery has been monitored and the stock composition is assessed with a special effort to determine presence of rare, endangered, protected, or icon species. • The management agency has a history of incorporating new research into management as new research data on impacts of fisheries on biodiversity become available. • The fisheries management system includes provisions for harvest reduction when biodiversity concerns are identified for target or non-target species.	• A risk assessment has been conducted, based on current knowledge of direct and incidental mortalities from the fishery, to ensure the fishery does not pose a significant threat to the biodiversity of the target or non-target species. • Stock composition including enhanced component, is known within Fishery Management Units with the likelihood of harvest of endangered, threatened, protected, or icon species has been estimated. • Time and area of migrations of weak year classes, sub-stock or population components are known. • The management system contains provisions to reduce harvests based on biodiversity concerns of affected endangered, threatened, protected

				or icon species, or weak year classes, of stocks, including the enhanced components, of the targeted species.
Weight		**100**	**Score**	**NCCC Pink: 93** **Inner SC Pink: 93** **Fraser Pink: 93**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

BC pink and chum fisheries are managed based a comprehensive suite of objectives, including the conservation of biological diversity.

- Refer to MSC Indicator 3.1.1 for a detailed inventory of objectives.

- The legal basis for conserving biological diversity in Canada is the Species at Risk Act (MS 1.1.2.4)

- The policy framework for conserving the biological diversity of wild salmon is mapped out in the Wild Salmon Policy (MS 3.2.2)

- MS 1.2.7.4 briefly describes the selective fishing policy.
- MS 3.2.4 recounts the development and implementation of selective fishing measures in BC salmon fisheries, and includes links to mortality studies from different fisheries.
- MS 1.2.9 describes collaborative initiatives related to the changing structure of Pacific salmon fisheries, which include strong elements of enhanced monitoring and reporting.
- MS 2.4 describes the current monitoring and assessment approach, and more specifically,
- MS 2.4.2.5 discusses catch monitoring programs in the different fisheries, including provisions for reporting any harvest of non-target species.
- MS 2.5.4.3 describes measures that have been implemented to control incidental harvest of non-target stocks and by-catch of non-target species.
- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for selective fishing and by-catch reporting.
- MS 3.4 includes an inventory of major conservation and recovery efforts, including measures to reduce by-catch of particular stocks or species of concern (i.e. marine species listed as threatened or endangered under the Species at Risk Act).
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).
- Decision guidelines for each fishery in CUP 3.3 outline measures to reduce by-catch of non- target species.
- CUP 6 highlights specific conservation measures in each area.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

A complete, accurate and verifiable fishery monitoring and catch reporting program is required to successfully balance conservation with the objectives of optimal harvest levels. Across all fisheries, strategies are being developed to improve catch monitoring programs by identifying standards that must be achieved as well as clarifying roles and responsibilities of the Department and harvesters. The standards focus on data collected to estimate catches, releases, and essential biological data, such as CWT sampling, for stock assessments and fishery evaluations. As well, new technologies are being used to facilitate the timely submission of data directly into centralized DFO databases (Section 1.2.9.4).

Current fishery monitoring programs including non-target species are listed in the annual *Integrated Fisheries Management Plans* (IFMP) , described in Section 4.2.1.2. A detailed description of catch monitoring programs in each area is included in the appropriate *Certification Unit Profile*.

Larger FSC fisheries (e.g. at Nitinat) are monitored and sampled by either First Nation fishery or DFO staff. Smaller fisheries are generally not monitored, although as a condition of their communal licences First Nation bands are required to report catch.

Recreational fisheries are monitored through creel surveys. Creel surveyors gather catch-per-unit-effort data and take biological samples from boat landing sites. These data are augmented by logbook and manifest records of catch and effort submitted by lodges operating guided trips. Effort is determined through periodic surveys of fishing areas. These data are compiled and analyzed to produce catch and effort statistics by area and species.

Commercial fishery monitoring programs for target and non-target species are obligatory as a condition of license in all fisheries (Section 2.5.3). Incremental development and implementation of commercial monitoring standards is built into the demonstration fisheries and pilot projects under the *Pacific Integrated Commercial Fisheries Initiative* (Section 1.2.9.2). Specific monitoring and reporting requirements include:

- Conditions of licence require licence holders to report all fish caught whether landed or discarded and specify the catch reporting details applicable to each gear type. Log-books, frequent phone-ins, and sales slips are mandatory for all commercial salmon fisheries. Harvesters can be charged if they fail to comply with correct use of the logbook. All interceptions must be recorded, whether they are retained, released, or discarded. This includes details for encounters of non-target species. For example, salmon gill net harvesters are required to separately record any interception of all species of salmon including steelhead and Atlantics, dog fish, sturgeon, birds, mackerel, lingcod, halibut, rockfish, and marine mammals. Sample logbook pages are included in Appendix 9 of the 2008 salmon IFMPs. Conditions of Licence are outlined in Section 2.5.3.4.
- Observer reporting is currently not mandatory in commercial fisheries specifically targeting pink or chum salmon, but there is a provision in the licence conditions for each commercial vessel to accept observers on board if requested by DFO.
- Phone-in requirement for all license holders participating in commercial salmon fisheries is in place.
- There are provisions for self-reporting and observer reporting. For example, fishery notices include additional reminders for voluntary reporting of sea turtle sightings.

- In addition to log books, sales slips, and phone-in programs, real-time monitoring is in place where necessary.
- In order to properly account for the full impact of fishing on chinook and coho stocks, the PST specifies that all parties develop programs to monitor all sources of fishing related mortality on chinook and coho. Catch monitoring programs are being modified to include estimates of encounters of all legal and sub-legal chinook and coho, as well as other salmon species, in all fisheries.
- DFO charter patrols monitor commercial net fisheries. Daily information is passed along to the local fishery manager including catch estimates by species, fleet size, and distribution as well as any problems identified with respect to compliance of fishery restrictions. For North Coast and Central Coast fisheries, this information is compiled in each manager's *Record of Management Strategies* (RMS) report.
- Independent observers from environmental organizations have recently begun monitoring by-catch in some salmon fisheries as part of collaborative initiatives. A sample report from the Fraser River chum fishery is available at http://www.watershed-watch.org/news/item.html?nid=157.

Currently, bycatch problems are identified and monitored through annual stock assessment and catch monitoring programs. Stock assessment programs directed at salmon and other species monitor and report on stock status, including identifying factors affecting production or mortality. Because harvesters are required as a condition of license to report all catch, including by-catch and discards, fishery impacts are usually identifiable in at least a gross sense.

Section 4 of the annual IFMP identifies non-target stocks of concern and measures, including harvest reductions, in place to protect them.[15] Time and area closures as well as selective fishing techniques used to protect specific non-target populations or species of concern are described.

DFO's response to the anomalous timing of late run Fraser River sockeye is an example of how new research data on impacts of fisheries on biodiversity are incorporated into management as they become available. Anomalous timing of late run sockeye has been the subject of research since 2001.[16] DFO spent $1.0 million in 2002 and $700,000 in 2003 for research on this issue and to incorporate the results into management plans.[17]

Any direct impact of human-caused environmental damage on pink productivity is hard to document. Much "environmental noise" is common to pink productivity and isolating a specific cause has proven problematic. Even though cause and effect is difficult, especially for pink and chum salmon, DFO has often reacted to these types of issues very carefully. For example sockeye salmon in Rivers Inlet have declined dramatically to the point that no fishing is possible. Unsure of the cause, DFO elected to forgo pink fisheries due to the uncertainly of the problem affecting sockeye. In recent years this amounts to almost a million pinks in forgone catch. DFO has a proven track record of implementing 'weak stock' management for salmon conservation.

[15] DFO. 2008 SC Salmon IFMP. Section 4, pages 22-29.
[16] Pacific Salmon Commission, www.psc.org/Pubs/LateRun/ExecutiveSummaries.pdf.
[17] Paul Ryall, Fisheries and Oceans Canada, pers comm.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Scoring Rationale: Pink fisheries have been examined in the conservation stock units for management under the Wild Salmon Policy for aggregations that can be identified to maintain the genetic integrity of the fisheries. Specific research and management actions are designed to identify threats to biodiversity of the target fisheries or of the non-targeted depleted subcomponents of these fisheries. In general, these management units for monitoring and adjusting terminal fisheries are below the Conservation Unit level. The fisheries have minimal icon or endangered species bycatch so it is unlikely that these fisheries will be impacting endangered or icon species although improved monitoring of white sturgeon and steelhead bycatch in selected areas needs to be implemented. Consequently, all scoring elements at the 60 and 80 SGs have been assessed as being met. At the 100 SG, there has not been a formal risk assessment (criterion one) nor are the migration and timing of substocks (criterion 3) well known; so partial credit only is given to this third criterion. There is a general understanding of stock composition and of the likelihood of encountering endangered or other highly protected or icon species and the management system contains provisions to address problems of harvesting these protected components should they arrive. Consequently a score of 93 was established based on partial credit on the third scoring element and full credit on the second and fourth scoring elements at the 100 scoring guidepost.

2.3 - MSC Criterion 2-3	**Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.**		
MSC Scoring Intent	The MSC Technical Advisory Board directs that this Criterion is only Scored in the instance that non target species are determined to be in a depleted state hence a recovery plan is already in action. The decision whether the non target species are in a depleted state will be made at the beginning of the Fishery Assessment process.		
Team Intent	Are reductions in fish abundance caused by human activity, unrelated to the directed harvest, considered in the management plan and in the establishment of escapement goals? If so, is the management system sufficiently robust to accommodate the long term recovery of depleted populations and ensure that directed or by-catch harvests, including harvests on enhanced fisheries, do not present significant risks to the long term sustainability of these populations.		
Weight	**25**	**Score**	**NCCC Pink: 63** **Inner SC Pink: 70** **Fraser Pink: 63**

2.3.1	Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points)	• The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks. • The management system	• The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs. • Objectives for recovery consider historic stock abundance information.	• The management plans and escapement goals have been shown to have a high degree of certainty of achieving a long-term recovery of depleted non-target stocks using risk analysis. • Historic data have been thoroughly examined to ensure fisheries restoration

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
	ensures that the fishery is executed such that the recovery of depleted non-target stocks is likely to occur in a reasonable time period. • The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks.	• The management system ensures that the fishery is executed such that recovery of depleted non-target stocks is highly likely to occur in a reasonable time period. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner whether recovery is occurring. • Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans. • The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks.	objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the "moving baseline" syndrome. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner whether recovery is occurring. • Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the PSARC or the appropriate PSC technical committee. • The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks.
Weight	**100**	**Score**	**NCCC Pink: 63** **Inner SC Pink: 70** **Fraser Pink: 63**

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- The legal basis for conserving biological diversity in Canada is the Species at Risk Act (MS 1.1.2.4)
- The policy framework for conserving the biological diversity of wild salmon is mapped out in the Wild Salmon Policy (MS 3.2.2)
- MS 1.2.7.4 briefly describes the selective fishing policy.

- MS 3.2.4 recounts the development and implementation of selective fishing measures in BC salmon fisheries, and includes links to mortality studies from different fisheries.
- MS 1.2.9 describes collaborative initiatives related to the changing structure of Pacific salmon fisheries, which include strong elements of enhanced monitoring and reporting.
- MS 2.4 describes the current monitoring and assessment approach, and more specifically,
- MS 2.4.2.5 discusses catch monitoring programs in the different fisheries, including provisions for reporting any harvest of non-target species.
- MS 2.5.4.3 describes measures that have been implemented to control incidental harvest of non-target stocks and by-catch of non-target species.
- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for selective fishing and by-catch reporting.
- MS 3.4 includes an inventory of major conservation and recovery efforts, including measures to reduce by-catch of particular stocks or species of concern (i.e. marine species listed as threatened or endangered under the Species at Risk Act).
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).
- Decision guidelines for each fishery in CUP 3.3 outline measures to reduce by-catch of non- target species. CUP 6 highlights specific conservation measures in each area.

In pink fisheries, the major biodiversity issues relate to the bycatch of non-target salmonids. DFO has a proven track record of implementing 'weak stock' management for salmon conservation. Over the last decade, the harvest rate of mixed stock fisheries has been significantly reduced in order to conserve stocks of concern. For example:

- In 2001, impacts on Interior Fraser coho were limited to a maximum of 3% Canadian exploitation rate. Since then, this limit has been maintained to allow rebuilding, even in years when the stock was well above the provisional LRP. A recovery plan is in place for Interior Fraser River coho.
- Mixed-stock fisheries targeting productive Fraser River sockeye populations are managed to avoid stocks of concern, including but not limited to Sakinaw and Cultus Lake sockeye. For these two populations, the maximum allowable exploitation rates have been set in recent years of 12 and 20%, respectively. Recovery plans are in place for both these sockeye stocks.
- Chinook fisheries coast-wide are managed to limit impacts on low-status WCVI chinook. The maximum allowable exploitation rate in Canadian fisheries is maintained between 10 to 15%. Measures include weekly monitoring of the catch composition of the Northern Troll fishery through DNA analysis, resulting in closures of the fishery with remaining TAC in years when the interception rate of WCVI chinook was too high. Also, there are significant time-area closures off the WCVI for sport and commercial fisheries during periods

when WCVI chinook is prevalent.

- Similarly, fisheries are managed to avoid lower Strait of Georgia (LGS) chinook stocks. There have been two management strategies in effect to protect LGS chinook. Up until 2007 catch composition of the WCVI troll was monitored with a ceiling placed on the encounters of Cowichan coded wire tags. When the ceiling was reached the troll fishery is closed. In 2008 an alternative management strategy was introduced to protect LGS chinook. Under this strategy the overall WCVI harvest rate was reduced by 20%.
- In 2008, chinook fisheries were managed to avoid early timed and spring/summer Fraser chinook stocks due to poor recruitment from the 2005 sea-entry year. Again, time and area closures were implemented during periods when these stocks were vulnerable to mixed-stock commercial and sport fisheries.
- Also in 2008, the maximum allowable exploitation rate on Skeena sockeye in Canada was limited to a ceiling of 30%.
- The 2008 Pacific Salmon Treaty (PST) recently negotiated between Canada and the USA resulted in further harvest reductions in Canadian 'AABM' fishing areas to reduce interception of low status US-origin chinook stocks.

Implementation of DFO's Wild Salmon Policy will result in more formal articulation of objectives for target and non-target stocks, including development of reference points. The Wild Salmon Policy essential moves DFO from a reactive to a pro-active approach for maintaining the biodiversity of salmon populations within Canada and ensuring that fisheries have acceptable harvest limits on non-target stocks.

Any non-target species listed under Canada's Species at Risk Act are subject to legislative requirements including development of a recovery plan and also elimination or reduction of bycatch of that species (i.e. so the fishery is not impeding recovery). There are currently no listed or icon species that are regularly caught in the NCCC pink fisheries.

Scoring Rationale: The state of many of the chum fisheries in British Columbia has been in decline and there are conservation issues with a variety of other species such as the late Fraser sockeye, (including Cultus sockeye), Sakinaw sockeye, interior Fraser coho, steelhead, WCVI Chinook, Lower Georgia Strait chinook, and coho.

The current non-target chum stocks of the North Coast are of concern and directed fisheries have been terminated. This criteria requires a significant investment by the management agency to enable the recovery of depleted non-targeted fish stocks to the LRP's. Although the management system has provisions for recovery of the stocks through the Wild Salmon Policy and passes the 60SG scoring elements, the more stringent provisions of the scoring elements of 80SG and 100SG have not been met based on information provided.

The client submittal lacks evidence of recovery plans for depleted species that have been identified by DFO as impacted by the pink fisheries in the various districts. Specifically, the management system lacks elements of a recovery plan such as; the objectives for recovery consider historic stock abundance information, and analysis to ensure that the fishery is executed such that recovery of depleted non-target stocks is highly likely to occur in a reasonable time period. Also lacking is assurances that would be contained in a recovery plan that monitoring and

assessment programs have been established to determine, with a high degree of confidence and in a timely manner that recovery is occurring. A recovery plan is specifically needed for the Skeena and the Nass for chum recovery.

The Inner South Coast chum fisheries were given partial credit due to low exploitation rates having been established. All of the fisheries have been given partial credit for existing monitoring programs but we note the trend of monitoring has been consistently downward over the past decade. All of the other scoring elements refer to recovery plans that are non-existent for most of the stocks that are well below the LRP's for non target stocks that are intercepted in the pink fisheries.

An additional pink salmon fishery issue that has received a lot of attention is the impact of salmon farming and associated sea lice on the pink salmon stocks of the Broughton Archipelago in the Inner South Coast (Krkosek et al. 2007). Although the targeted pink fishery has not been linked to the decline of stocks in these areas, the submittal by DFO does not address what, if any, management activities and regulatory functions associated with managing the fishery are planned although there have been low exploitation rates on these stocks as previously mentioned. We acknowledge that even the status of the stocks has been debated (Riddell et al 2008; Krkosek et al. 2008), however, as part of providing a response to the following condition, DFO should explain what the current status of these stocks are including determining if they are a targeted or non-targeted stock, and if they are below the LRP, they should be subject to a recovery plan.

Consequently continued certification requires development of recovery plans that meet the scoring evaluation criteria listed under the 80 SG. Scoring elements 1,2,4 and 5 of the 80 SG were not met because of the absence of a management plan; the third scoring element was partially met because of the existence of escapement surveys and other stock assessment programs as address under the 80SG.

Condition 2-3 For all pink salmon UoCs. Certification of the pink fisheries requires development of recovery plans for all non-target stocks that are consistently below the LRP. Implicit in this condition is that all non-target stocks have LRP's developed. The proposed recovery plans, including a commitment to stock monitoring and assessment must be developed and implemented by the second surveillance audit. These recovery plans must meet the requirements of the scoring elements under the 80SG scoring guidepost.

Table 11: MSC Principle 3: Individual Performance Indicator Scoring Summary (NCCC)

Summary for BC Pink Salmon Units of Certification		Weighting	NCCC Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 3 - Management and Operational Framework		0.333		**87**																
Management Framework																				
Criterion 3.1 - Management system consistent with MSC principles and criteria		0.327		**85**																
Indicator 3.1.1	Clear and defensible set of objectives	0.125	70					X	X	P	P	P	P	X	X					
Indicator 3.1.2	Periodic assessment of biological status	0.125	90					X	X				X	X	X			P	X	X
Indicator 3.1.3	Identify the impact of fishing on the ecosystem	0.125	95			X	X	X	X			X	X	X	X	P			P	X
Indicator 3.1.4	Uses best information and precautionary approach	0.125	90				X	X	X					X	X					X
Indicator 3.1.5	Responses to new information are timely and adaptive	0.125	75			X	X	X	X		P	X	X	X	X		P	X	X	X
Indicator 3.1.6	Responsive to social and economic impact of fishery	0.125	95						X					X	X					X
Indicator 3.1.7	Useful and relevant information to decision makers	0.125	92				X	X	X			X	X	X	X				X	X
Indicator 3.1.8	Socioeconomic incentives for sustainable fishing	0.125	70				X	X	X					X	X		P	P	P	
Indicator 3.1.9	Hatchery Managment Issues	na	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Criterion 3.2 - Framework for research pertinent to management		0.100		**79**																
Indicator 3.2.1	Research plan for target and non-target species (**80 & 100 SGs have 7 scoring elements each)	0.667	73				X	X	X											
					X	X	X	X	X			X	X	X				X	X	X
Indicator 3.2.2	Research is timely, available and reviewed	0.333	90					X	X				X	X	X					X
Criterion 3.3 - Transparency in operations and consultation process		0.041		**100**																
Indicator 3.3.1	Open consultations process	1.000	100			X	X	X	X				X	X	X					X
Criterion 3.4 - Measure to control levels of harvest		0.179		**85**																
Subcriterion 3.4.1 - Catch and exploitation levels		0.500																		
Indicator 3.4.1.1	Firshery control systems including no-take zones	0.500	96				X	X	X					X	X					
Indicator 3.4.1.2	Measures to restore depleted fish populations	0.500	80			X	X	X	X			X	X	X	X			X	X	X
Subcriterion 3.4.2 - Ensure that conservation objectives are met.		0.500																		
Indicator 3.4.2.1	Compliance provisions (effective enforcement)	0.500	75			X	X	X	X	P		X	X	X	X		P	P		X
Indicator 3.4.2.2	Monitoring provisions	0.500	90			X	X	X	X			X	X	X	X	P	P	P	X	X
Criterion 3. 5 - Regular and timely review of management system		0.152		**88**																
Indicator 3.5.1	Internal review	0.316	100			X	X	X	X			X	X	X	X			X	X	X
Indicator 3.5.2	External review	0.258	70			X	X	X	X		P		X	X	X				X	X
Indicator 3.5.3	Recommendations from reviews incorporated	0.284	85			X	X	X	X		X	X	X	X	X		P	X	X	X
Indicator 3.5.4	Mechanism for resolving disputes	0.142	97			X	X	X	X				X	X	X			P	X	X
Criterion 3.6 - Compliance with legal and administrative		0.124		**100**																
Indicator 3.6.1	Compliance with international agreements	0.250	100			X	X	X	X				X	X	X				X	X
Indicator 3.6.2	Compliance with domestic laws and regulations	0.375	100			X	X	X	X		X	X	X	X	X		X	X	X	X
Indicator 3.6.3	Observes legal and customary (First Nation) rights	0.375	100			X	X	X	X		X	X	X	X	X		X	X	X	X
Fisheries Operational Framework																				
Criterion 3.7 - Ecosystem sensitive gear and fishing practices		0.077		**83**																
Indicator 3.7.1	Avoid catch and minimize mortality of non-target species	0.277	73			X	X	X	X		P	P	X	X	X			P	X	X
Indicator 3.7.2	No distructive fishing practices	0.139	100			X	X	X	X		X	X	X	X	X			X	X	X
Indicator 3.7.3	Minimize operational waste	0.128	100			X	X	X	X		X	X	X	X	X				X	X
Indicator 3.7.4	Cooperation of fishers	0.328	70			X	X	X	X	P	X	X	X	X	X			X	X	X
Indicator 3.7.5	Fishing methods minimize impacts on habitat	0.128	100			X	X	X	X			X	X	X	X				X	X

Table 11 cont: MSC Principle 3: Individual Performance Indicator Scoring Summary (ISC)

Summary for BC Pink Salmon Units of Certification		Weighting	ISC Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 3 - Management and Operational Framework		0.333		91																
Management Framework																				
Criterion 3.1 - Management system consistent with MSC principles and criteria		0.327		90																
Indicator 3.1.1	Clear and defensible set of objectives	0.125	72					X	X	P	P	P		X	X					
Indicator 3.1.2	Periodic assessment of biological status	0.125	90					X	X				X	X	X			P	X	X
Indicator 3.1.3	Identify the impact of fishing on the ecosystem	0.125	95			X	X	X	X			X	X	X	X	P			P	X
Indicator 3.1.4	Uses best information and precautionary approach	0.125	90				X	X	X					X	X					X
Indicator 3.1.5	Responses to new information are timely and adaptive	0.125	95			X	X	X	X			X	X	X	X		P	X	X	X
Indicator 3.1.6	Responsive to social and economic impact of fishery	0.125	95						X					X	X					X
Indicator 3.1.7	Useful and relevant information to decision makers	0.125	92				X	X	X			X	X	X	X				X	X
Indicator 3.1.8	Socioeconomic incentives for sustainable fishing	0.125	94				X	X	X					X	X		P	P	P	
Indicator 3.1.9	Hatchery Managment Issues	na	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Criterion 3.2 - Framework for research pertinent to management		0.100		79																
Indicator 3.2.1	Research plan for target and non-target species	0.667	73				X	X	X											
	(**80 & 100 SGs have 7 scoring elements each)				X	X	X	X	X			X	X	X				X	X	X
Indicator 3.2.2	Research is timely, available and reviewed	0.333	90					X	X				X	X	X					X
Criterion 3.3 - Transparency in operations and consultation process		0.041		100																
Indicator 3.3.1	Open consultations process	1.000	100	91.5		X	X	X	X				X	X	X					X
Criterion 3.4 - Measure to control levels of harvest		0.179		92																
Subcriterion 3.4.1 - Catch and exploitation levels		0.500																		
Indicator 3.4.1.1	Firshery control systems including no-take zones	0.500	96				X	X	X					X	X					
Indicator 3.4.1.2	Measures to restore depleted fish populations	0.500	80			X	X	X	X			X	X	X	X			X	X	X
Subcriterion 3.4.2 - Ensure that conservation objectives are met.		0.500																		
Indicator 3.4.2.1	Compliance provisions (effective enforcement)	0.500	100			X	X	X	X			X	X	X	X					X
Indicator 3.4.2.2	Monitoring provisions	0.500	90			X	X	X	X			X	X	X	X	P	P	P	X	X
Criterion 3. 5 - Regular and timely review of management system		0.152		88																
Indicator 3.5.1	Internal review	0.316	100			X	X	X	X			X	X	X	X			X	X	X
Indicator 3.5.2	External review	0.258	70			X	X	X	X		P		X	X	X				X	X
Indicator 3.5.3	Recommendations from reviews incorporated	0.284	85			X	X	X	X		X	X	X	X	X		P	X	X	X
Indicator 3.5.4	Mechanism for resolving disputes	0.142	97			X	X	X	X				X	X	X			P	X	X
Criterion 3.6 - Compliance with legal and administrative		0.124		100																
Indicator 3.6.1	Compliance with international agreements	0.250	100			X	X	X	X				X	X	X				X	X
Indicator 3.6.2	Compliance with domestic laws and regulations	0.375	100			X	X	X	X		X	X	X	X	X		X	X	X	X
Indicator 3.6.3	Observes legal and customary (First Nation) rights	0.375	100			X	X	X	X		X	X	X	X	X		X	X	X	X
Fisheries Operational Framework																				
Criterion 3.7 - Ecosystem sensitive gear and fishing practices		0.077		97																
Indicator 3.7.1	Avoid catch and minimize mortality of non-target species	0.277	100			X	X	X	X				X	X	X				X	X
Indicator 3.7.2	No distructive fishing practices	0.139	100			X	X	X	X		X	X	X	X	X			X	X	X
Indicator 3.7.3	Minimize operational waste	0.128	100			X	X	X	X		X	X	X	X	X				X	X
Indicator 3.7.4	Cooperation of fishers	0.328	90			X	X	X	X		X	X	X	X	X			X	X	X
Indicator 3.7.5	Fishing methods minimize impacts on habitat	0.128	100			X	X	X	X			X	X	X	X				X	X

Table 11cont: MSC Principle 3: Individual Performance Indicator Scoring Summary (Fraser)

Summary for BC Pink Salmon Units of Certification		Weighting	Fraser Pink	Weighted Scores	Criteria @ 60					Criteria @ 80						Criteria @ 100				
					1	2	3	4	5	1	2	3	4	5	6	1	2	3	4	5
PRINCIPLE 3 - Management and Operational Framework		0.333		**90**																
Management Framework																				
Criterion 3.1 - Management system consistent with MSC principles and criteria		0.327		**90**																
Indicator 3.1.1	Clear and defensible set of objectives	0.125	70					X	X	P	P	P	P	X	X					
Indicator 3.1.2	Periodic assessment of biological status	0.125	90					X	X				X	X	X			P	X	X
Indicator 3.1.3	Identify the impact of fishing on the ecosystem	0.125	95			X	X	X	X			X	X	X	X	P			P	X
Indicator 3.1.4	Uses best information and precautionary approach	0.125	90				X	X	X					X	X					X
Indicator 3.1.5	Responses to new information are timely and adaptive	0.125	95			X	X	X	X			X	X	X	X		P	X	X	X
Indicator 3.1.6	Responsive to social and economic impact of fishery	0.125	95						X					X	X					X
Indicator 3.1.7	Useful and relevant information to decision makers	0.125	92				X	X	X			X	X	X	X				X	X
Indicator 3.1.8	Socioeconomic incentives for sustainable fishing	0.125	94				X	X	X					X	X		P	P	P	
Indicator 3.1.9	Hatchery Managment Issues	na	na		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Criterion 3.2 - Framework for research pertinent to management		0.100		**79**																
Indicator 3.2.1	Research plan for target and non-target species	0.667	73				X	X	X											
	(**80 & 100 SGs have 7 scoring elements each)				X	X	X	X	X			X	X	X				X	X	X
Indicator 3.2.2	Research is timely, available and reviewed	0.333	90					X	X				X	X	X					X
Criterion 3.3 - Transparency in operations and consultation process		0.041		**100**																
Indicator 3.3.1	Open consultations process	1.000	100			X	X	X	X				X	X	X					X
Criterion 3.4 - Measure to control levels of harvest		0.179		**92**																
Subcriterion 3.4.1 - Catch and exploitation levels		0.500																		
Indicator 3.4.1.1	Firshery control systems including no-take zones	0.500	96				X	X	X					X	X					
Indicator 3.4.1.2	Measures to restore depleted fish populations	0.500	80			X	X	X	X			X	X	X	X			X	X	X
Subcriterion 3.4.2 - Ensure that conservation objectives are met.		0.500																		
Indicator 3.4.2.1	Compliance provisions (effective enforcement)	0.500	100			X	X	X	X			X	X	X	X					X
Indicator 3.4.2.2	Monitoring provisions	0.500	90			X	X	X	X			X	X	X	X	P	P	P	X	X
Criterion 3. 5 - Regular and timely review of management system		0.152		**88**																
Indicator 3.5.1	Internal review	0.316	100			X	X	X	X			X	X	X	X			X	X	X
Indicator 3.5.2	External review	0.258	70			X	X	X	X		P		X	X	X				X	X
Indicator 3.5.3	Recommendations from reviews incorporated	0.284	85			X	X	X	X		X	X	X	X	X		P	X	X	X
Indicator 3.5.4	Mechanism for resolving disputes	0.142	97			X	X	X	X				X	X	X			P	X	X
Criterion 3.6 - Compliance with legal and administrative		0.124		**100**																
Indicator 3.6.1	Compliance with international agreements	0.250	100			X	X	X	X				X	X	X				X	X
Indicator 3.6.2	Compliance with domestic laws and regulations	0.375	100			X	X	X	X		X	X	X	X	X		X	X	X	X
Indicator 3.6.3	Observes legal and customary (First Nation) rights	0.375	100			X	X	X	X		X	X	X	X	X		X	X	X	X
Fisheries Operational Framework																				
Criterion 3.7 - Ecosystem sensitive gear and fishing practices		0.077		**87**																
Indicator 3.7.1	Avoid catch and minimize mortality of non-target species	0.277	90			X	X	X	X				X	X	X			P	X	X
Indicator 3.7.2	No distructive fishing practices	0.139	100			X	X	X	X		X	X	X	X	X			X	X	X
Indicator 3.7.3	Minimize operational waste	0.128	100			X	X	X	X		X	X	X	X	X				X	X
Indicator 3.7.4	Cooperation of fishers	0.328	70			X	X	X	X	P	X	X	X	X	X			X	X	X
Indicator 3.7.5	Fishing methods minimize impacts on habitat	0.128	97			X	X	X	X			X	X	X	X	P			X	X

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Table 12: MSC Principle 3: Individual Performance Indicator Scoring

MSC Principle 3	**The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.**		
MSC Scoring Intent	MSC Intent: The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.		
Intent	For the purposes of this section, the management system is defined to mean all public sector entities with responsibility for managing salmon in British Columbia, including Fisheries and Oceans Canada (DFO), the Pacific Salmon Treaty (PST), and Pacific Salmon Commission (PSC), in addition to scientific assessment groups such as PSARC (PSARC) and other governmental entities that provide advice to mangers. Some indicators under Principle 3 appear to overlap with indicators under Principles 1 and 2, however, Principles 1 and 2 are concerned with the outcomes of a management system respecting the fact that the resources are maintained at the desired levels of abundance, while Principle 3 is concerned with evaluating whether all of the processes for reaching management objectives are in place.		
Weight	**33.3**	**Score**	**NCCC Pink: 88** **Inner SC Pink: 91** **Fraser Pink: 90**

Management System Criteria	
3.1 – MSC P3 Criterion 1	**The management system has a strategy for management that clearly defines long-term objectives for managing the impact of fishing on target species, non-target species and the ecosystem; the objectives are consistent with a well- managed fishery and MSC principles and criteria; and the management strategy includes provision for the effective implementation of measures to attain these objectives.**
Intent	The objective regarding this criterion dealing with Management Systems is to compare the Fisheries and Oceans Canada management system for British Columbia salmon, as detailed in the Integrated Fisheries Management Plan for British Columbia Salmon, and elsewhere, with the standards for a well-managed fishery as defined in the MSC Principles and Criteria for Sustainable Fishing. Particularly important is whether the management system has clearly defined objectives and goals that incorporate currently evolving standards for responsible fisheries management with respect to conservation of the species, regard for the ecosystem to which they belong, transparency of the management process and recognition of the impact of the fishery on social, cultural and economic issues.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

	Throughout this section the term "impact on the ecosystem" is taken to mean the degree to which fishing alters the ecosystem relative to its non-fished state.

3.1.1	The management system has a clear and defensible set of objectives for the harvest and escapement for target species and accounts for the non-target species captured in association with, or as a consequence of, fishing for target species.	• Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks. • Harvest controls are effective for the majority of the fisheries on target stocks. • The management system provides for the estimation of catch, landing, and bycatch for the majority of the fisheries.	• Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors. • Harvest controls are precise and effective for major target stocks or target species in the fishery. • The management system provides estimates for all major catches, landings, and bycatch.	• Management objectives are clearly defined for all of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are precisely set for each target stock unit in the fishery, as qualified by relevant environmental factors. • Target Reference Points and Limit Reference Points are clearly defined and documented for each target stock unit in the fishery. • Harvest controls are effective with respect to the attainment of management objectives for each target stock unit in the fishery. • The management system provides estimates for all catches, landings and bycatch.
Weight		**12.5**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 72** **Fraser Pink: 70**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

BC pink and chum are managed in a comprehensive legal and policy setting that identifies broad long-term objectives as well as specific annual objectives for each stock and fishery.

- MS 1.1 summarizes the legal context for Pacific salmon fisheries, including the Fisheries Act, the Oceans Act, and the Species at Risk Act. The provisions of these acts establish clear objectives for the conservation and sustainable harvest of BC pink and chum salmon.

- MS 1.2 reviews policy developments for Pacific salmon fisheries over the last 15 years, including the Wild Salmon Policy, the Allocation Policy, and the Selective Fishing Policy. Specific examples and links to additional information are included throughout.
- MS 1.3 includes an overview of social and economic objectives, how they are incorporated into fisheries management (e.g. allocation), and how they are considered in on-going policy initiatives (e.g. Wild Salmon Policy, Pacific Integrated Commercial Fisheries Initiative).
- MS 2.3 includes an inventory of general goals and targets, a summary of long-term objectives derived from the legal and policy context summarized in MS 1.1 and MS 1.2, as well as a discussion of different reference points in place and under development for Pacific Salmon.
- Decision Guidelines have been developed for pink and chum fisheries, and are publicly reviewed each year as part of the Integrated Fisheries Management Plan (MS 4.2.1.2).
- MS 2.5.2 summarizes general decision guidelines, and
- CUP 3.3 includes detailed decision guidelines for each fishery.

BC pink and chum fisheries are managed to address time- and area-specific concerns over incidental harvests and by-catch through restrictions on location, timing, gear, and retention for net and troll fisheries.

- MS 3.4 includes a comprehensive inventory of conservation objectives and resulting recovery initiatives.
- MS 2.5.4 summarizes specific conservation measures implemented in pink and chum fisheries.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).
- CUP 2.4 describes conservation and management objectives for each area, and briefly introduces the main performance measures used for planning, implementation, and review.
- CUP 3.3 contains a detailed description of each fishery, including management reference points (i.e. escapement targets, exploitation rate limits).

Long Term Objectives

The long-term objectives contained in the above laws and policies are summarized in the following excerpts from the 2007 *Integrated Fisheries Management Plan* for salmon:

- *Conservation Objectives*: Conservation of Pacific salmon is the primary objective and takes precedence in managing the resource. DFO manages fisheries with the objective of ensuring that salmon stocks return at sustainable levels. When returns decline below sustainable

levels, management actions are taken which may include reducing targeted and incidental harvest of specific stocks, strategic enhancement, and habitat restoration. The objective of implementing conservation measures in particular fisheries is to reduce the impact of harvest and increase the level of escapement to the stock of concern. These conservation measures shape all Pacific Region fisheries, as illustrated by the overview of recovery initiatives in Section 3.4 and the inventory of conservation measures applied in BC salmon fisheries in Appendix 1.

- *First Nations Objectives:* The objective is to manage fisheries to ensure that, subject to conservation needs, first priority is accorded to First Nations for opportunities to harvest fish for FSC purposes and any treaty obligations. Feedback from consultation sessions is relied on to measure the performance of providing first priority to First Nations for opportunities to catch fish for FSC purposes and any treaty obligations.
- *Recreational and Commercial Fisheries Objectives*: The objective is to manage fisheries for sustainable benefits consistent with the *Wild Salmon Policy* (Section 3.2.2). A primary objective in the recreational fishery is maintaining the expectation and opportunity to catch fish in a stable manner. In the commercial fishery, the objective is to improve the economic performance of fisheries so that they can reach their full potential, to provide certainty to participants, and to optimize harvest opportunities. However, stocks of concern constrain opportunities in many areas resulting in less than optimal opportunities. Both fisheries are increased where possible in accordance with allocation policies.

Reference Points

BC pink and chum fisheries are currently planned and implemented using 4 types of management reference points:

- *Escapement goals* are in place for target stocks. Pink and chum escapement goals have been generally based on experience and judgment (e.g. past escapements, habitat capacity). The *Certification Unit Profiles* list escapement goals for each of the actively managed pink and chum stocks. For example, management escapement goals have been set for all streams identified in the *North and Central Coast Core Stock Assessment Program for Salmon* by English, Spilsted, and Peacock (2006). Annual fishing plans, covering all harvests, are designed to achieve escapement targets with an acceptable risk tolerance.
- *Exploitation rate ceilings* are in place for many stocks of concern to support recovery efforts. This includes any incidental harvest or by-catch in fisheries targeting other stocks and species, and fisheries are shaped to balance economic constraints on fisheries targeting other stocks against cumulative fishing impacts on the stock of concern. For example, the Canadian fishery exploitation rate for Interior Fraser coho is limited to 3% (Section 3.4.2.1).
- *Fixed harvest rates* are in place for several mixed-stock fisheries to minimize long-term impacts on component stocks. For example, Johnstone Strait mixed-stock chum fisheries are constrained to 20%, while terminal fisheries harvest local abundances where they exceed the escapement goals.
- *Allocation targets* describe either a target amount (FSC fisheries), a target opportunity (recreational fishery), or a target share (commercial gear types). Allocation targets are generally defined by species, not by stock, but in practical implementation allocations tend to be area-specific. Section 1.3.2 describes the allocation principles.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

DFO incorporates escapement goals into annual planning and implementation as follows:

- Fisheries are designed to achieve escapement goals, and any excess abundance becomes available for terminal harvests for ESSR fisheries if there are no other constraints, such as by-catch concerns.
- Escapement goals are intended to ensure future production, not identify the minimum abundance that is likely to persist over time. Accordingly, occasional shortfalls should not pose serious risks of extirpation, especially if the escapement goals are set for components of a larger conservation unit.
- Any consistent shortfall from the escapement goals triggers corrective actions to build stocks back up to the target abundance (Section 3.4.2) The Wild Salmon Policy (Section 3.2.2) introduced two additional reference points, which are currently under development:
- *Lower benchmarks* intended to delineate an undesirable level of abundance, but with a substantial buffer above the level that would cause it to be considered at risk of extinction under the *Species at Risk Act*.
- *Upper benchmarks* intended to identify whether abundance is sufficient to provide maximum levels of catch, on average.

Lower and upper benchmarks under the WSP will be identified for conservation units (CU) rather than the stock groupings currently used for fisheries management (Section 2.2.2).

Scoring Rationale:
The lack of clearly defined LRPs for most target stocks harvested in pink fisheries resulted in the partial scoring of three of the four criteria at the 80 scoring guidepost level for all pink fisheries. North-Central Coast and Fraser pink fisheries also received partial rating for the forth criteria at the 80 scoring guidepost level because estimates of bycatch for Skeena steelhead and chum and Fraser steelhead and sturgeon are lacking for these fisheries. The ISC received full credit for the fourth 80 SG criteria.

Condition 3-1 For all pink salmon UoCs - Certification of all pink fisheries will be conditional until management objectives, (e.g. maximum harvest rates, escapement goals, LRPs) are clearly defined for most of the target pink stocks harvested in these fisheries. Objectives will be provided to the Certification Body by the second surveillance audit.

Condition 3-2. For NCCC pink salmon UoC. - Certification of North-Central Coast pink salmon fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for North-Central Coast pink salmon fisheries. Bycatch estimates will be reported to the certification body by the first surveillance audit.

Condition 3-3. For Fraser pink salmon UoC. - Certification of Fraser pink salmon fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for Fraser pink salmon fisheries bycatch estimates will be reported to the certification body by the first surveillance audit.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.1.2	The management system provides for periodic assessment of the biological status of the target species and the impact of fishing.	• Assessments or updates of the status of the stocks for the majority of the target species are made for major fishing regions within the fishery. • Results of assessment or updates of the status of the stocks are made available to stakeholders. • Technical analysis and methodologies used for the assessments are published or distributed to stakeholders.	• Assessments or updates of the status of the stocks for the major target stock units are made on a periodic basis, dependent upon the level of exploitation. • Results of assessment and updates of the status of the stocks are made available to stakeholders in a timely fashion. • Reports on the methodologies used for the assessments are published in non-peer reviewed reports, and PSARC or the appropriate PSC committee reviews the technical analyses for the assessments.	• There is an annual assessment or update of the status of stocks for each major target stock unit in the fishery. • When results of the assessments or updates indicate that there has been a substantial change in the status of the stocks, this new information is made available to stakeholders in conjunction with the implementation of changes to management measures. • Reports on the methodologies used for the assessments are published on a regular basis in peer-reviewed journals and PSARC, and/or the appropriate PSC committee regularly reviews the technical analyses for the assessments.
Weight		**12.5**	**Score**	**NCCC Pink: 90** **Inner SC Pink: 90** **Fraser Pink: 90**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

BC pink are assessed annually. Assessment information is publicly distributed and incorporated into the annual planning cycle.

- MS 2.4.1 outlines the stock assessment program for Pacific salmon and provides an overview of different publications (e.g. Science Advisory Reports, Stock Status Reports, info bulletins)
- MS 2.4.2 summarizes monitoring and assessment activities for BC pink and chum salmon (e.g. escapement surveys, test fisheries, catch monitoring). MS 2.7 summarizes DFO's toolkit for monitoring and assessment.
- MS 3.2.3.5 lists available stock status reports for BC pink and chum salmon.
- An extensive network of processes is in place to assess the status of BC pink and chum stocks, including the annual post-season review (MSC 4.2.1.1) and formal external reviews (MS 4.3.5)
- CUP 4 details the assessment programs for each area.
- CUP 5 describes the status of target stocks in each area.

Escapement of the major target stocks is monitored annually.

Stock status and fishery impacts are reported in annual post-season reviews produced for Southern BC and the Pacific Salmon Commission.[18] These reviews are made available to stakeholders in January, as fishery planning for the year begins.

Forecasts of pink production are made annually to inform harvest planning. Forecast methodologies are approved by PSARC and are published and publicly available through the Canadian Science Advice Secretariat (CSAS).[19]

Periodically, detailed stock assessment research papers are reviewed through PSARC and published by CSAS.

Stock Assessment Program

Organization

Fisheries and Oceans Canada Science Directorate includes the *Stock Assessment Division* and the *Pacific Scientific Advice Review Committee* (PSARC). PSARC serves as an efficient peer-review process for stock assessment work (e.g. survey methodology, stock status reports). Section 4.3.5 describes PSARC and other review processes.

A summary of stock assessment activities, with links to data bulletins is available at http://wwwops2. pac.dfo-mpo.gc.ca/xnet/content/salmon/stock.htm.

Note that assessment activities described in the sections below may also be organized and implemented through DFO's Fisheries Management Branch (e.g. test fisheries on the Lower Fraser).

Types of Data Collection Activities

DFO has established an extensive monitoring and assessment structure for Pacific salmon and the fisheries targeting them. Data collection activities can be grouped into 3 categories:

- ***Stock assessment***: collects abundance data, escapement data, and biological data needed to manage stocks and monitor their status. (Section 2.4.2).
- ***Research***: collects data to address fundamental knowledge gaps and improve our understanding of BC fish stocks and their ecosystem (Section 3.2.2.5).

[18] Available at: http://www.psc.org/publications_tech_techcommitteereport.htm#TCFR
[19] www.dfo-mpo.gc.ca/csas/

- ***Fishery monitoring and reporting****:* collects information about harvesters, fishery openings, and catch (Section 2.4.2.5)

This information is collected through a combination of:

- Fishery-independent data collection (i.e. does not require a fishery opening). This includes departmental escapement surveys (e.g. mark-recapture programs, overflights), test fisheries, and tagging programs.
- Collaborative data collection in commercial fisheries. This includes reporting provisions identified in the licence conditions, assessment fisheries, charter patrols, observers, and dock-side monitoring.
- Collaborative data collection through co-management and capacity building arrangements. This includes joint escapement surveys, fishwheels, and aboriginal guardians.
- Information exchange between DFO, other agencies, and stakeholders though an extensive network of collaborative, advisory, and consultative processes (Section 4).

Section 2.7 of the Management Summary Submission summarizes DFO's toolkit for assessment, monitoring, and enforcement.

Publications

DFO publicly distributes all stock assessment information as it becomes available, and regularly provides peer-reviewed analyses of the available data:

- Test fishing data is published on-line daily (Section 2.4.2.2).

Scoring Rationale: DFOs periodic assessment efforts were found to be sufficient to pass all criteria at the 60 and 80 scoring guideposts. At the 100SG, the first criteria was not met because stock status assessment are not conducted annually; the second scoring element was met because assessment results are provided to stakeholders when they become available; and the third criteria was partially met because reports on methodologies are rarely published in peer-reviewed journals or PSC technical reports.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.1.3	The management system includes a mechanism to identify and manage the impact of fishing on the ecosystem.	• The management system takes measures to control the impacts of the fishery on the ecosystem in the majority of cases where impacts have been verified.	• The management system includes mechanisms to identify and evaluate the impact of fishing on the ecosystem. • Control mechanisms are used to minimize impacts of fishing on the ecosystem.	• Monitoring systems are in place to detect the impact of fishing on the ecosystem. • Where potential impacts of fishing on the ecosystem have been identified, the management system has clear and well-defined objectives for evaluating and managing the impact of the fishery on the ecosystem. • Control mechanisms are used to minimize impacts of fishing on the ecosystem. • There is sufficient evidence to indicate that when used, control mechanisms are adequate for meeting the management objectives.
Weight		**12.5**	**Score**	**NCCC Pink: 95** **Inner SC Pink: 95** **Fraser Pink: 95**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Canada's Oceans Strategy sets out the policy direction for the management of estuarine coastal and marine ecosystems in Canada. The *Fisheries Act* is the primary legislative basis for fisheries management in Canada and authorizes the Minister of Fisheries and Oceans to make decisions about the conservation and management of fisheries resources and habitat. These combined with several BC Provincial government Acts provide the mechanism to identify and manage the impact of fishing on the ecosystem.

In addition to the research programs, integrated management initiatives, and impact-reduction measures listed for MSC Indicator 2.1.2 above, the management system includes an extensive network of collaborative and consultative processes, described below under MSC Indicator 3.3.1, which is used to bring any ecosystem-related concerns into annual fisheries planning, policy implementation, and the development of research priorities, as described below under MSC Indicator 3.2.1.

For salmon fisheries, the major ecosystem impacts relate to bycatch of non-target stocks or species and, potentially, the role of salmon as a forage species.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Mechanisms to identify and evaluate the impact of bycatch are described in Indicators 1.1.2.1 and 2.1.1 above.
Mechanisms used to minimize the impact of bycatch in fisheries are described in Indicator 2.1.1 and 2.3.1 above.
In addition to current practices, policies such as the Wild Salmon Policy and those being developed under the National Sustainability Framework are designed to move fishery management in Canada towards an 'ecosystem approach'. Details are described in Indicator 2.1.3 and 2.1.4.

Scoring Rationale: All scoring elements at the 60 and 80 SGs were met because the mechanisms used to identify and evaluate the impacts of fishing on the ecosystem include both stakeholder review of fishing plans and impacts through the IFMP process and ongoing research. In general, the methods used by commercial fishers to harvest pink salmon in commercial fisheries generally have minimal impact on the ecosystem and control mechanisms are in place to remove fishing gear that is lost, discarded or deployed in times or areas where fisheries are closed. Furthermore, DFO officers and fishery guardians routinely retrieve lost fishing gear identified by members of the communities where found. The first and last scoring elements under the 100 SG were only partially met because current monitoring systems (IFMP process and fisheries officer patrols) are only partially adequate to detect the impact of fishing on the ecosystem. The evidence of the application of control mechanism to minimize the impact of fishing on the ecosystem are adequate (e.g. short nets, short sets, recovery boxes, coloured floats).

3.1.4	When dealing with uncertainty, the management system provides for utilizing the best scientific information available to manage the fishery, while employing a precautionary approach.	• The management system for the majority of newly developing fisheries is consistent with a precautionary approach. • The management system considers the effect of implementation uncertainty on the effectiveness of the majority of the proposed management actions.	• The management system provides for some assessment of the level of uncertainty in the information collected for management and establishes management controls which take into account these uncertainties, using the best available scientific information and a precautionary approach. • In situations when precautionary measures are necessary to manage the fishery, the management system calls for increasing research efforts in order to fill data and information gaps. • In most cases where there are newly developing fisheries, the management system implements controls on the development of the fishery that are precautionary in	• The management system provides for the routine assessment of the level of uncertainty in the information collected for management and establishes management controls to address these uncertainties using the best available scientific information and a precautionary approach. • The management system implements research efforts to address data gaps. • For newly developing fisheries for which there is very limited data and information, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system always quantitatively evaluates the effect of

			nature. • The management system considers the effect of implementation uncertainty on the effectiveness of most of the proposed management actions.	implementation uncertainty (the tendency for actual harvest rates or escapements to differ from those intended by the management regulations) on the effectiveness of the proposed management actions.
Intent	Uncertainty always exists in estimates of the status of a stock, and technically it is not generally possible to determine the accuracy of the assessments. This uncertainty results from sampling and measurement error, limited understanding of the biology of the fish being modeled, error in model assumptions, and an inability to model all of the important processes that affect the dynamics of the stock. It can also arise as a result of changing fishing technology. However, some idea of the uncertainty can be detected or measured through sampling theory, by lack of fit of the model being used, or by sensitivity analysis.			
Weight	**12.5**		**Score**	**NCCC Pink: 90** **Inner SC Pink: 90** **Fraser Pink: 90**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Fisheries and Oceans Canada has formally adopted the precautionary approach to fisheries management, and the federal government has established a more general framework for applying precaution in science-based decision making.

- The management system operates under a comprehensive legal and policy framework (MS 1.1 and 1.2) that explicitly mandates a precautionary approach to dealing with uncertainty (e.g. Species at Risk Act, Wild Salmon Policy)
- MS 1.2.2.2 briefly describes the on-going development of a formal policy framework for incorporating the precautionary approach into fisheries management.
- MS 1.2.2.3 retraces research and policy development related to DFO's implementation of the precautionary approach, and lists examples of precautionary practices.
- CUP 3.3 contains a detailed description of each fishery, including decision guidelines that explain anticipated responses to different possible scenarios and the use of in-season information.

More broadly speaking, Canada is a signatory to the UN Fisheries Agreement, which articulates a 'Precautionary Approach Capture Fisheries and Species Introductions" (FAO 1996). The federal government of Canada applies the precautionary approach in situations when a decision must be

made about a risk of serious or irreversible harm and where there is scientific uncertainty.[20] This principle is outlined by the Privy Council Office's "Framework for the Application of Precaution in Science-based Decision Making About Risk".[21]

DFO's Wild Salmon Policy (WSP) is consistent with the Precautionary Approach. It requires a risk-based framework for decision making based on sound scientific information. It also requires mechanisms for re-evaluation, performance review and public transparency. Strategies identified under the WSP to achieve these objectives include: standardizing assessment and monitoring of salmon populations and stock status; monitoring habitat status; including of ecosystem values and monitoring in salmon management and integrated strategic planning.

The WSP is currently being implemented. Work already completed includes definition of conservation units (CUs) and the identification of standardized monitoring criteria and benchmarks (PSARC workshop, January 2009). Work in progress includes development of standardized habitat and ecosystem indicators. As well, integrated strategic planning processes are underway in the Fraser and Skeena watersheds. A planning pilot will begin in Barkley Sound (Area, 23 WCVI) starting January, 2009. The objective of these planning processes is to develop strategic plans for CUs and groups of CUs that will identify long-term biological goals, recommended management actions to protect and restore populations and establish timelines and priorities for action.

In addition, DFO has a New/Emerging Fisheries Policy that lays out requirements and procedures for developing new fisheries under a precautionary approach.

Scoring Rationale: All criteria at the 60 and 80 guideposts were met because the management of pink fisheries generally recognizes the uncertainty in the available data, use the best scientific information available and is consistent with a precautionary approach. The first and fourth criteria at the 100 SG were not met because assessments of uncertainty in catch and escapement estimates are not routine and the management system does not always evaluate the effect of implementation uncertainty (i.e. the tendency for actual harvest rates or escapements to differ from those intended by the management regulations) on proposed management actions.

[20] A Canadian Perspective on the Precautionary Approach/Principle, http://www.ec.gc.ca/econom/pamphlet_e.htm.
Government of Canada, A Framework for the Application of Precaution in Science-Based Decision Making About Risk.
http://www.bcp.gc.ca/docs/information/Publications/precaution/Precaution_e.pdf
[21] See www.pcobcp.gc.ca/docs/Publications/precaution/precaution_e.pdf

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.1.5	Management response to new information on the fishery and the fish populations is timely and adaptive.	• For the majority of cases there are provisions for making timely adjustments to the management program, and when they are made the lag time is not so great as to result in the adjustments being ineffectual.	• The management system provides a mechanism for responding to unexpected changes in the fishery. • When new information or findings support altering the management and conservation programs, adjustments are made within 12 months of obtaining the new information.	• The management system provides a mechanism for rapid adjustments to be made to its management programs. • When new information or findings support altering the management and conservation programs (such as stock recovery plans), there is evidence to demonstrate that such adjustments are made within 6 months of obtaining the new information.
Intent		The management system should be timely and adaptive i.e., new information used by the management system to initiate new management measures or to update and/or improve current management measures in a timely fashion, because characteristics of the fishery can change and/or the natural system can show reduced or increased productivity over time.		
Weight		**12.5**	**Score**	**NCCC Pink: 75** **Inner SC Pink: 95** **Fraser Pink: 95**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Management of BC pink and chum fisheries responds to in-season information (e.g. test fishery results), annual post-season reviews (e.g. escapement relative to target), and long-term patterns (e.g. recovery initiatives):

- MS 4.2.1.1 describes the annual planning cycle.
- MS 2.5.2 outlines the general decision guidelines for pink and chum fisheries and illustrates how annual fisheries respond to available information.
- CUP 3.2 explains the harvest strategy in each area, and
- CUP 3.3 provides the details for each commercial fishery and identifies specific pre-season and in-season information used for decision making.

Refer to MSC Indicator 3.4.1.2 below for additional details

Pacific salmon fisheries are managed in a regular annual cycle of pre-season planning, in-season implementation, and post-season review.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Each phase of this cycle incorporates extensive levels of public participation:

- Pre-season planning centers on the development and broad public review of *Integrated Fisheries Management Plans* (MS Section 4.2.1.2). These management plans include general decision guidelines for each fishery (MS Section 2.5.2), expectations for the upcoming year, anticipated fishing plans, and a detailed review of the previous year.
- In-season management is subject to rapidly changing, uncertain information. The department works with stakeholder representatives to develop appropriate responses to these changing circumstances, adhering to the general decision guidelines and annual fishing plans documented in the IFMP except in very unusual circumstances.
- Post-season review meetings in the Fall provide a broad public forum to share information about the stocks and fisheries, to review management actions, and to identify opportunities for future improvements. The review process seamlessly moves into pre-season planning, and culminates in the draft IFMP for the next year. DFO distributes comprehensive information about each fishing season as part of the post-season review. Pre-season forecasts and plans are compared with in-season estimates of run-size, management actions, and final catches and escapements

Status of target stocks and trends in the fishery are monitored and reported on an annual basis. This information forms the basis of scientific advice that is incorporated into IFMP's through the annual plenary process. This plenary process involves extensive consultation with stakeholders, ranging from license specific harvest associations to the Integrated Harvest Planning Committee (IHPC). Annual post-season reports review the performance of the fishery relative to pre-season objectives set out in the IFMP. Harvest guidelines or constraints within the IFMP are adjusted according to the current status of target and non-target stocks or species intercepted in the fishery. If the fishery did not meet the management objectives from the previous year, fishery regulations are adjusted for the coming year.

In addition, data gathered from stock assessment and catch monitoring programs are used to adjust salmon fisheries 'in-season' to ensure conservation objectives are met.

Scoring Rationale:

The in-season monitoring systems for pink were found to be adequate for all fisheries to meet the single scoring criteria at the 60 SG and the first criteria at the 80SG. The NCCC pink fishery only partially met the second criteria at the 80 SG because management adjustments clearly needed for the conservation of Area 3 and 4 chum salmon were not implemented within 12 months of the information being available. The second criteria at the 100 SG was partially met for all fisheries because some, but not all, adjustments are made within 6 months.

Condition 3-4 - For the NCC pink salmon UoC. - By the second surveillance audit, DFO must document how it has responded to management and conservation concerns such as estimation of bycatch and development of recovery plans for Area 3 to 6 chum stocks. DFO should provide evidence that they have established an effective process for responding to new information and making necessary changes within 12 months of the information becoming available.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.1.6	The management system provides a process for considering the social and economic impacts of the fishery.	• The management system more often than not considers the views, customs, and interests of indigenous peoples who depend on fishing for a livelihood or food. • More often than not the management system considers the impact of the fishery on coastal communities that are closely tied to the fishery. • For the majority of the fisheries there are no subsidies that threaten sustainable fishing. • More often than not, the input of stakeholders is sought by the management system.	• The management system regularly undertakes to consider the views, customs and interests of indigenous peoples whose livelihood or food are dependent on the fishery. • The management system regularly takes into consideration the impact of the fishery on coastal communities that are closely tied to the fishery. • There are no subsidies to the fishing industry that would lead to unsustainable fishing or ecosystem degradation. • The management system regularly undertakes measures to understand the socioeconomic impacts resulting from the management of the fishery.	• There exists a formal and well-defined process to consider, over the short and long term, the views, customs, and interests of indigenous peoples who depend on fishing for their food or livelihood. • There is a formal and well-defined process to consider, over the short and long term, the impact of the fishery on coastal communities that are closely tied to the fishery. • There are no direct subsidies to the fishing industry. • The management system regularly seeks and considers input from stakeholders in an effort to understand and address socioeconomic issues related to the fishery.
Weight	**12.5**	**Score**	**NCCC Pink: 95** **Inner SC Pink: 95** **Fraser Pink: 95**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Extensive collaboration and public participation ensure that social and economic considerations are brought into annual and long-term planning processes.

- MS 1.3 includes an overview of social and economic objectives, how they are incorporated into fisheries management (e.g. allocation), and how they are considered in on-going policy initiatives (e.g. Wild Salmon Policy, Pacific Integrated Commercial Fisheries Initiative).
- MS 4.2 outlines the departmental support structures for enabling participation.
- MS 4.3 describes the different types of participatory processes, with and inventory of examples for each, explains the departmental

approach to major policy initiatives, and summarizes procedures for internal and external review.

The following sections are taken from the Management Summary Submission, all references within specify sections found within that document.

1.3.1 Social and Economic Considerations in Current Policy Initiatives

1.3.1.1 Balancing Biological, Social, and Economic Considerations

Biological objectives of conservation and recovery are the main policy drivers in Pacific Salmon management. The relevant laws and policies are outlined above, and the initiatives designed to achieve them are described in Section 3.

However, in the practical setting of salmon fisheries these biological objectives are balanced with social and economic objectives. The primary mechanism for sharing the social and economic benefits of Pacific salmon is through formalized allocations (Section 1.3.2). In addition, all of the major policy initiatives have strong social and economic components, and an extensive network of advisory and consultative forums has been established to bring diverse views into the process of planning and implementing fisheries (Section 4).

1.3.1.2 Incorporating Social and Economic Considerations

Fisheries managers receive advice on socio-economic values and issues formally though established advisory and consultative processes (Section 4) and informally through direct interaction with harvesters and other interested groups. For example, the Canadian Section of the Fraser Panel (Section 1.1.4.4) is comprised of members of the commercial, recreational and First Nations fishing community who identify socio-economic issues to be considered in the management of the fishery. In addition, representatives of the Province of B.C. raise socio-economic issues that have been identified by the industry and communities.

Fisheries and Oceans Canada also employs formal analyses of social and economic impacts in the implementation of conservation and recovery policies. Recent examples include:

- *Species at Risk Act:* Implementation of the act includes a formal evaluation of economic impacts associated with listing a species under *SARA.* Section 1.1.2.4 describes the act. Section 3.4 lists assessments and recovery efforts for species listed as threatened or endangered under Schedule 1 of SARA.
- *Wild Salmon Policy:* The policy outlines an integrated planning process for bringing cultural, social and economic values into the conservation and sustainable management of Pacific salmon. DFO is working with First Nations, partners and stakeholders on shaping the necessary collaborative processes. Section 3.3.2.5 describes an implementation pilot for Barkley Sound. A central element of the policy are benchmarks to be defined for each Conservation Unit (CU). The emphasis of the benchmarks shifts from conservation (lower

benchmark) to long-term benefits (upper benchmark) as CU status improves. Section 3.2.2 describes the policy, its development, and its on-going implementation including the CU benchmarks.

- *Selective Fishing and Effort Reduction*: In 1998, when selective fishing was introduced into the salmon fishery to protect threatened stocks of coho, considerable effort was expended to assess the socio-economic impacts of the proposed changes. A contract was let solely for the purpose of assessing the socio-economic impacts of the proposed fishing plan. $200 million was subsequently spent on licence retirements. Section 2.5.3.4 includes an overview of commercial licencing, and Section 1.2.6 summarizes the restructuring program.

4.3.1 Network of Participatory Processes

A comprehensive network of planning and advisory processes has evolved to deal with BC salmon, their ecosystem, and the fisheries targeting them. Processes with public participation operate at different scales of geographic reach and participation:

- *Major policy consultations* are usually region-wide efforts involving fisheries managers, scientists, and stakeholders over several years (Section 4.3.2.1).
- *Community Dialogues* are coordinated through the Consultation Secretariat and bring information about regional DFO initiatives to local communities. Discussions range from broad policy feedback to the specifics of local implementation (Section 4.3.2.2).
- *Local Integrated Advisory and Planning Processes*, such as community roundtables, emphasize structured and on-going collaboration on local operational details (e.g. selective fishing measures, water use). DFO actively participates in most local processes dealing with fisheries issues and provides funding support for many of them (Section 4.3.3.1).
- *Regional Integrated Advisory and Planning Processes* are generally set up to tackle specific issues on a larger geographic scale, such as enhancement strategies (Section 4.3.3.2).
- *Consultation and Collaboration with First Nations* takes place locally, in technical forums, and through formal bilateral consultation (Section 4.3.4.1).
- *Harvester Advisory Processes* include commercial representative groups for each gear type and licence area, as well as the Sport Fishing Advisory Board, its sub-committees, and its community based advisory committees (Section 4.3.4.2).
- *Collaborative Agreements* are used to implement formal co-management arrangements with a clearly specified group of representatives. A recent court decision regarding DFO's Use-of-Fish policies has triggered a transition in funding approaches for work under collaborative agreements. (Section 4.3.4.4).
- Joint federal-provincial and international decision processes (e.g. Fraser River panel of the Pacific Salmon Commission) typically include representatives from regional stakeholder organizations (Sections 1.1.3.1 and 1.1.4.4).

The *Consultation Secretariat* (Section 4.2.2.2) maintains an up-to-date inventory of consultation mechanisms, which is available upon request. The *Consultation Secretariat* was formed in January 2001 to develop and implement a long-term strategy to ensure that consultations with First

Nations, stakeholders, and the public are well-documented, avoid unnecessary duplication, and are conducted in a transparent manner, including providing feedback on why decisions are made[22]. The secretariat has developed a *Code of Conduct for Participation in Fisheries and Oceans Canada, Pacific Region Consultations* and maintains an inventory of current consultation processes and records of consultations.

Canada has a legal obligation to consult with First Nations and extensive consultations occur between DFO and First Nations bands on an annual basis to determine their harvest requirements and fishery plans.

DFO meets with regularly with individual bands, tribal councils, and regional representatives to discuss policy initiatives, conservation measures, and fishing plans. The department also supports meetings at the watershed level attended by representatives of bands and tribal councils to review broad policy approaches and other initiatives. Consultation with First Nations is integrated into the annual planning cycle for Pacific salmon, First Nations representatives also participate in most of the local and regional integrated planning processes (previous section), and in the harvester advisory processes (next section). In addition to these annual planning consultations, DFO implements and supports comprehensive programs that are designed to increase First Nation's participation in resource management.

There are a number of initiatives that DFO has supported and/or developed to support integration of socioeconomic factors in resource management and integrated planning. Examples include:

- DFO has supported the development of the West Coast Aquatic Management Board (AMB). The purpose of the ABMB is to provide "a forum for the coastal communities and other persons and bodies affected by aquatic resource management to participate more fully with governments in all aspects of the integrated management of aquatic resources in the management area."[23]
- There are localized planning committees through which representatives of municipal and provincial and First Nation governments and other stakeholders provide information regarding socioeconomic impacts of the fishery. Examples include the Area 23 Harvest Committee; Cowichan Round Table and Skeena Watershed Committee.
- The Oceans Program supports integrated planning for marine areas, including factors that affect fisheries or fish habitat. The Oceans Actions Plan describes a framework for sustainable development and oceans management.[24]

The development of new policies, such as the Wild Salmon Policy, is subject to extensive consultation. Annual management plans (IFMPs) are developed through an extensive advisory process. During these consultations and through these advisory processes, stakeholders have the opportunity to provide input on the socioeconomic impact of DFO policies and regulations. Their input is used to develop policies and regulations and modify management plans.

There are no subsidies to the fishing industry that would lead to unsustainable fishing or ecosystem degradation. One objective of Pacific

[22] http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/default_e.htm
[23] For more information see: http://www.westcoastaquatic.ca/about.htm
[24] The recently released Oceans Action Plan serves as the overarching umbrella for coordinating and implementing oceans activities, and as the framework to develop and manage our oceans in a sustainable manner.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Fisheries Reform (PICFI, 2005) described above is to address restructuring of the salmon fleet to make it more economically viable.

Scoring Rationale: There are extensive consultation and participatory processes implemented by DFO for both the commercial and First Nation fishery participants. The information provided by DFO for the management of pink fisheries was sufficient to meet all the scoring criteria at the 60 and 80 SGs. The third criteria at the 100 guidepost was not met because the existence of extensive employment insurance (EI) benefits for fishers that achieve sales of more than the defined annual limit, are eligible for benefits, which is clearly a direct subsidy to the fishing industry.

3.1.7	The management system provides decision makers with useful and relevant information and advice for managing the fishery.	• The majority of management decisions rely on data, useful and relevant information, or advice provided through the management system. • Risk assessments are considered in formulating important management decisions.	• The management system provides managers with a range of alternatives for management. • Management decisions consistently rely on useful and relevant information provided within the system and there is not a record of decisions going against the information provided.	• The management system provides decision makers with a range of alternatives for achieving the objectives of management, including risk assessments for each alternative. • All management decisions are based on useful and relevant information and advice that is provided through the management system. • The management system, whenever possible, provides information to decision makers within a time frame that permits management controls to be determined before they need to be taken.
Weight		**12.5**	**Score**	**NCCC Pink: 92** **Inner SC Pink: 92** **Fraser Pink: 92**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Management of BC pink and chum fisheries draws on many sources of information and advice:

An extensive information base has been developed through on-going stock assessment, research, and fishery monitoring. Refer to relevant

sections above for MSC Indicator 2.1.1 and 2.1.2 for details about the monitoring and assessment framework. Refer to MSC Indicator 3.2.1 and 3.2.2 for details about the research program and current priorities.

Scientific advice is formally developed and publicly released through the Pacific Science Advice Review Committee, which serves as one of several internal review processes (MS 4.3.5.1).

An extensive network of processes is in place to compile advice on BC pink and chum fisheries, including:

- a public review of the annual Integrated Fisheries Management Plan (MS 4.2.1.2),
- annual post-season reviews (MSC 4.2.1.1),
- internal and external reviews (MS 4.3.5), and;
- the other processes describes in MS 4.

- MS 2.5.2 outlines the general decision guidelines for pink and chum fisheries and illustrates how annual fisheries respond to available information.
- CUP 3.2 explains the harvest strategy in each area.
- CUP 3.3 provides the details for each commercial fishery and identifies specific pre-season and in-season information used for decision making.

Decision guidelines in the IFMP describe anticipated management actions under plausible scenarios given production expectations and in-season assessment. They are fishery specific, depending on the nature of the fishery and stock assessment and catch monitoring data available. Management guidelines are informed by relevant departmental policies, scientific advice, consultation with harvesters and other stakeholders, and the experience of fishery managers. They are updated annually and are publicly reviewed prior to the fishing season through annual planning processes.

Scoring Rationale: The information provided by DFO for the management of pink fisheries was sufficient to meet all the criteria at the 60 and 80 SGs. The first criterion at the 100 SG was not met because risk assessments are not provided for each potential management alternative for achieving the management objectives.

3.1.8	The management system provides for socioeconomic incentives for sustainable fishing.	• The management system provides for the use of social or economic incentives to ensure sustainable fishing. • The management system	• The management system regularly considers the use of social and economic incentives to the stakeholders in the fishery, which are designed to facilitate the	• The management system has formal procedure for providing social and economic incentives to stakeholders in the fishery to develop and utilize sustainable fishing practices,

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
		attempts to understand the impact of its decisions on social and economic factors affecting the stakeholders in the fishery and is responsive to requests to reduce these impacts.	development of fishing gear and practices that can lead to sustainable fishing. • The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates. • Evidence demonstrates that the stakeholders in the fishery have used such incentives. • The management system attempts to understand the impact of their management decisions on social and economic factors affecting the major stakeholders in the fishery and takes action to lessen the major impacts on stakeholders.	particularly the development of selective fishing gear and practices that lead to improved conservation. • The management system creates strong incentives for harvesters to not exceed target catches or exploitation rates • The stakeholders in the fishery regularly avail themselves of the opportunity to utilize these incentives. • Evidence provided by the management system demonstrates that such incentives have contributed to improved conservation. • The management system continually attempts to understand the impact of their decisions on social and economic factors affecting the stakeholders in the fishery and regularly takes action to mitigate the impacts on stakeholders.
Weight	**12.5**	**Score**	**NCCC Pink: 70 Inner SC Pink: 94 Fraser Pink: 94**

Client Submission:

The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

The management system creates strong incentives for participation in sustainable fishing initiatives:

- MS 1.2.9 describes incentives for participating in enhanced accountability initiatives based on the expectation of more reliable fishing

opportunities (e.g. fixed share of TAC). MS 1.2.9.5 summarizes pilot projects.
- MS 3.4 includes a comprehensive inventory of conservation initiatives in the Pacific Region, and
- Appendix 1 lists specific conservation measures implemented in salmon fisheries by gear- type and statistical area. These precedents establish a strong incentive for collaborative improvement of strategies for selective fishing and effort control (Section 3.2.4).
- One outcome of the Selective Fisheries Program (MS 3.2.4.2) is a momentum of close collaboration between the department and harvesters on selective fishing issues, with clear incentives for on-going improvement. This momentum is reflected in on-going collaborative projects and the Codes of Conduct developed by the commercial and recreational sectors (see Sections 3.2.4.3 and 3.2.4.4)
- MS 2.6.1 explains that incentives are an important element of DFO's compliance strategy, supplemented by extensive monitoring and enforcement programs. Specific examples of compliance incentives are included in Sections 2.5.4, 3.2.4, and 3.4.

The *Pacific Integrated Commercial Fisheries Initiative* (PICFI) is a 5-year initiative announced in July 2007. PICFI builds on work done so far under *Pacific Fisheries Reform* and subsequent discussions in the different collaborative, advisory, and consultation processes (Section 4). The full press release is available at http://www.dfo-mpo.gc.ca/media/npress-communique/2007/hq-ac38-eng.htm. Up-to-date information on PICFI and its implementation can be found at http://www.pac.dfo-mpo.gc.ca/fm-gp/picfi-ipcip/index-eng.htm.

PICFI encompasses work on four distinct elements:
- Enhanced Accountability Measures covering catch monitoring, traceability, and compliance.
- Acquiring Commercial Fisheries Access for First Nations. This is a significant supplement to the Allocation Transfer Program (Section 1.2.4.3)
- Capacity Building for managing fisheries, accessing fishing opportunities, and developing technical support.
- Co-management, among First Nations, and among all harvesters.

PICFI is designed around social and economic incentives for participation in the process, particularly increased reliability of allocations as a mechanism for increased accountability in monitoring and compliance. The process emphasizes clear business plans for future fisheries and encourages local cooperation (e.g. among First Nations, across harvest sectors).

2.6.1 Incentives and the National Compliance Framework
DFO uses a full spectrum of complementary compliance mechanisms to achieve conservation and sustainability objectives. These mechanisms can be broadly categorized into incentives, and the application of principles, tools and approaches forming a comprehensive national Compliance
Framework.

2.6.1.1 Incentives

Incentives are used to increase compliance and collaboration in the long-term. For example, commercial openings in low abundance years are

tied to proven selective fishing methods and a demonstrated ability to control effort within a fleet. Several on-going policy initiatives include provisions for improved monitoring and effort control, but these are balanced against increased efficiency, predictability, and stability of harvests.

A good illustration of compliance incentives in the management system are collaborative projects related to the *Selective Fishing Program* (Section 3.2.4). Priority access is given to those who have demonstrated the ability to meet or exceed selective fishing standards. DFO encourages the incorporation of selective fishing experiments into regular fisheries, where appropriate, to realize cost savings.

Another good illustration of compliance incentives in the management system are the initiatives related to *Pacific Fisheries Reform* and the *Pacific Integrated Commercial Fisheries Initiative* (Section 1.2.9). For example, there are three different types of incentives built into the development of improved monitoring standards:
- *Risk matrix:* Fisheries will be categorized based on the status of target stocks and gear/effort/harvest. Each category will then be linked to a required level of monitoring. Harvester groups have to balance access to marginal opportunities and the structure of their fishery against the associated increase in monitoring requirements.
- *Predictability and Stability:* Clearly defined shares reduce the "race to fish" and improve the implementation of selective fishing technologies.
- *Harvester involvement:* Harvesters are closely involved in developing and testing the operational details of the *Enhanced Accountability* measures and *Monitoring Standards.* Pilot projects help refine the logistics of the program, build a momentum of support within the fleets, and enhance compliance through peer-pressure. Specific examples of compliance incentives are included in Sections 1.2.9, 2.5.4, 3.2.4, and 3.4.

Scoring Rationale: Evidence provided for some socioeconomic incentives for sustainable fishing was sufficient for all pink fisheries to pass the criteria at the 60 SG and the first and last criteria at the 80 and 100 guideposts.

The Inner South Coast and Fraser pink fisheries passed all criteria at the 80 SG due to the recent implementation of small bite fisheries. The NCCC pink fisheries did not pass the second and third criteria at the 80 SG because no evidence of small bite fisheries or similar incentives to encourage harvesters not to exceed target catches or exploitation rates was provided.

Condition 3-5 - For NCC pink salmon UoC. Certification of North-Central Coast pink fisheries will be conditional until DFO provides evidence that DFO has implemented programs in the North-Central coast that create incentives for harvesters not to exceed target catches in pink fisheries and that these incentives are working. If DFO has evidence of implementing these types of fisheries in the past, this evidence should be provided within 1 year. Evidence of new incentives or initiatives implemented on the North-Central coast should be provided by the second surveillance audit.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.1.9	The hatcheries are subjected to regulations that ensure harvest management practices and protocols that sustain the genetic structure and productivity of the natural spawning population are followed and there is coordination between hatchery programs from different agencies/operators.	• The management agency regulates the hatchery programs so that the hatchery related harvest management practices and protocols do not have substantial negative effects on the genetic structure and productivity of the natural stocks. • The management agencies can determine hatchery contribution from the majority of production with coded-wire-tags (CWTs) other suitable marks, or other scientifically defensible methods, such that the proportion of hatchery produced fish can be (estimated in the catch and escapement.	• The management agencies have an agreement that establishes harvest management practices and protocols for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks. • The hatcheries mark a sufficient proportion of production with coded-wire-tags (CWTs) or use other suitable methods such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be estimated.	• The management agencies have a peer reviewed written plan that establishes harvest management practices and protocols for all hatchery programs with respect to practices that sustain the genetic structure and productivity of the natural stocks. • The hatcheries mark all production with coded-wire-tags (CWTs) or other suitable methods such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be computed.
Weight		**na**	**Score**	**NCCC Pink: na** **Inner SC Pink: na** **Fraser Pink: na**

Client Submission:

The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Pink hatchery programs currently exist for Inside pink fisheries and marking programs are believed to be sufficient for management fisheries that target these enhanced stocks. There is currently no hatchery production of pink salmon harvested in the NCCC and Fraser fisheries, so this indicator was not scored for these fisheries.

Hatchery programs for BC pink salmon are fully coordinated through DFO, in a combination of federally-operated facilities and volunteer-run community facilities. Provincial hatcheries raise different species, and in the few cases where federally operated hatcheries raise species under provincial jurisdiction are jointly managed under close collaboration:

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

MS 2.2.3 summarizes fisheries targeting BC pink and chum, and identifies those fisheries that target hatchery fish.

MS 3.2.5 describes the regional approach to salmon enhancement and restoration, provides a brief history of the Salmon Enhancement Program (SEP), and includes an inventory of current enhancement and restoration activities for BC pink and chum. Links to up-to-date release information are included for each facility.

MS 4.3.3.2 introduces the Salmon Enhancement and Habitat Advisory Board (SEHAB) and links to additional information.

CUP 2.2 describes pink and chum enhancement activities in each area. CUP 3 describes the specific harvest strategies in place for those fisheries that target hatchery fish.

All hatchery production is regulated by the Salmon Enhancement Program (SEP). Formal practices and protocols are in place to sustain the genetic structure and productivity of natural populations. These protocols are described in the SEP guidelines for enhancement[25]. Regional DFO staff coordinate all hatchery programs and production targets are developed annually through a consultative process and described in the IFMP.

Scoring Rationale:
The team's assessment is that hatchery production of pink salmon are currently an insignificant component BC salmon fisheries, therefore this indicator was not scored for the pink UOCs.

3.2 – MSC P3 Criterion 2	**The management system provides for a framework for research, the results of which are pertinent to achieving the objectives of management.**
Intent	Under this criterion we are interested in evaluating whether there is a research component to the management system that is sufficiently broad in scope to include all target species and other components of the ecosystem that may be impacted by fishing, and which provides for the acquisition of information and data to support scientifically- sound management actions, and whether the research is timely, open to review by peers and stakeholders in general, and is adequately funded.

[25] Operational Guidelines for Pacific Salmon Hatcheries (DFO, 2005)

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.2.1	The research plan covers the scope of the fishery, includes all target species, accounts for the non-target species captured in association with, or as a consequence of fishing for target species, and considers the impact of fishing on the ecosystem and socioeconomic factors affected by the management program.	• Research provides for the collection of catch statistical and biological data for the target species. • There has been useful research on the impact of fishing on target and non-target species taken in the fishery, and on the ecosystem in general.	• The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species. • The research plan addresses concerns related to the impact of the fishery on the ecosystem. • The research plan addresses socioeconomic issues that result from the implementation of management. • The research plan is responsive to changes in the fishery. • Funding is adequate to support short-term research needs. • There is progress in understanding the impact of the fishery on target and non-target species. • Research results are utilized in forming management strategies. • Research is reviewed by PSARC or PSC, or other appropriate and technically qualified entities.	• The management system incorporates a research component that considers relevant data and information needs for formulating management strategies for all target species, and also information leading to an understanding of the dynamics of the ecosystem including data on the catch, landings and discards of non-target species. • The framework for research includes investigations dealing with socioeconomic impacts of the fishery. • The research plan responds in a timely fashion to unexpected changes in the fishery. • Funding is secure and sufficient to meet long-term research needs. • There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general. • Research results form the basis for formulating management strategies and decisions. • Research is regularly published in peer review journals and/or is reviewed by PSARC or the PSC.
Weight	**66.7**	**Score**	**NCCC Pink: 73** **Inner SC Pink: 73** **Fraser Pink: 73**

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Client: DFO has established an extensive monitoring and assessment structure for Pacific salmon and the fisheries targeting them. The management system publicly shares data and research as they become available, typically working closely with external reviewers and stakeholders.

- MS 2.4.1 outlines the stock assessment program for Pacific salmon with links to different publications (e.g. Science Advisory Reports, Stock Status Reports, information bulletins).
- MS 2.4.1.2 describes the different types of data collection activities (stock assessment, research, fishery monitoring).
- MS 2.4.2 summarizes monitoring and assessment activities for BC pink and chum salmon (e.g. escapement surveys, test fisheries, catch monitoring), with links to on-line data sources which are frequently updated during each fishing season.
  MS 2.4.3 describes how escapement and catch data are collected, managed, and publicly released.
- MS 3.2.3 summarizes salmon research priorities, describes the 5-year research agenda, and includes links to relevant research papers organized by topic area (e.g. enumeration methods, stock identification).
- MS 3.3.1.4 links to on-line information resources.
- On-going research is shared with participants in collaborative and consultative processes that contribute to the annual planning cycle (MS 4.2.1.1) and documented in the Integrated Fisheries Management Plan (MS 4.2.1.2).

Also refer to relevant sections for MSC Indicator 2.1.1 and 2.1.2 for details about the monitoring and assessment framework.

- CUP 4 describes the assessment framework in each area (catch, escapement, exploitation rates).
- CUP 5 reviews the current status of stock units, including trends in escapement, catch, and exploitation rate.

DFO Science Branch is undertaking a comprehensive review of its operations and priorities to address the increasing requirement for integrated information to incorporate broader ecosystem considerations into the conservation and management of fisheries resources. DFO launched the national *Science Renewal* initiative in 2005, which developed a 5-year research agenda highlighting 10 departmental research priorities. The complete research agenda, including specific areas for research under each of these priorities, is available at: http://www.dfo-mpo.gc.ca/science/research/research_agenda_e.htm.

The research activities of the Department's Science branch are summarized in scientific papers that are peer reviewed through the *Pacific Scientific Advice Review Committee*. The advice is then publicly released brought into the appropriate advisory and consultative processes. Published science advice is available at: http://www.dfo-mpo.gc.ca/csas/csas/Publications/Pub_Index_e.htm

The Pacific Scientific Advice Review Committee (PSARC) is the Pacific Regional body responsible for review and evaluation of all scientific information on the status of living aquatic resources, their ecosystems, and on biological aspects of stock management. PSARC advises the Resource Management Executive Committee (RMEC) on Fisheries and Oceans Canada and other bodies on stock and habitat status and

potential biological consequences of fisheries management actions and natural events. PSARC issues Stock Status Reports (SSRs) and Habitat Status Reports (HSRs). These reports are public documents that summarize, in lay terms, scientific information and fisheries information on major commercially-harvested species and their aquatic habitats.

Additional information and PSARC reports are available at: www.pac.dfo-mpo.gc.ca/sci/english/psarc

Regular funding is available for research. With DFO's stock assessment division, the current budget for monitoring and assessment research on all species of salmon is $14 million. DFO annual reviewing its salmon stock assessment and monitoring programs, and funding requirements. Additional resources have been allocated to deal with specific issues such as late-run sockeye research.g

Scoring Rationale: Current research is adequate to meet the criteria at the 60 guidepost and 5 of the 8 criteria at the 80 guidepost. Three of the 80 guidepost criteria including scoring elements 3, 4, 5, were not passed because the research plan does not address impacts of the fishery on the ecosystem, socioeconomic issues that result from management decisions and has not been responsive to changes in the fishery.

Condition 3-6 - For all pink salmon UoCs. - Certification of all pink fisheries will be conditional until DFO develops a research plan for pink fisheries which incorporates the existing elements under 80SG and addresses impacts of the fishery on the ecosystem, socioeconomic issues that result from management decisions and is responsive to changes in the fishery. The research plan must also include an evaluation of alternative management approaches to reduce bycatch or determine the survival rate of discarded non-target species for non-retention fisheries. For example: the research and assessment plans should describe how Fraser pink salmon escapement estimates will be derived in the future when harvesting pressure increases. This research plan must be provided to certification body by the second surveillance audit.

3.2.2	Research results are available in a timely fashion to interested parties, and there is a mechanism for periodic review of the content, scope and results of the research plan	• While there are no formal arrangements for stakeholder research review, such reviews are held on a periodic basis for the majority of the research plans and/or results. • While there are no formal arrangements for peer review of ongoing research, such reviews are periodically conducted for the majority of ongoing research plans and/or results. • The majority of research results	• The management system provides for periodic reviews by stakeholders in the fishery, of the content and scope of research, including funding requirements. • There are periodic peer reviews of ongoing research. • Inputs from these reviews are used by the management system to modify research plans. • Research results are available to interested parties on a regular basis.	• There is a formal and codified arrangement for annual stakeholder review of the content and scope of research plans and results, including matters related to its funding, which is open and transparent. • There is a formal and codified arrangement for peer review of ongoing research • The management system regularly incorporates into the research plan recommendations emanating from these reviews.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

		are available to interested parties.		• Research results are made available to all interested stakeholders on a regular basis and in a timely manner.
Weight		**33.3**	**Score**	**NCCC Pink: 90** **Inner SC Pink: 90** **Fraser Pink: 90**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

The PSARC, PSC and IFMP processes provide the mechanism for periodic review of the content, scope and results of the research related to pink fisheries and stocks.

DFO has established an extensive monitoring and assessment structure for Pacific salmon and the fisheries targeting them. The management system publicly shares data and research as they become available, typically working closely with external reviewers and stakeholders.

- MS 2.4.1 outlines the stock assessment program for Pacific salmon with links to different publications (e.g. Science Advisory Reports, Stock Status Reports, information bulletins).
- MS 2.4.1.2 describes the different types of data collection activities (stock assessment, research, fishery monitoring).

- MS 2.4.2 summarizes monitoring and assessment activities for BC pink and pink salmon (e.g. escapement surveys, test fisheries, catch monitoring), with links to on-line data sources which are frequently updated during each fishing season.
- MS 2.4.3 describes how escapement and catch data are collected, managed, and publicly released.
- MS 3.2.3 summarizes salmon research priorities, describes the 5-year research agenda, and includes links to relevant research papers organized by topic area (e.g. enumeration methods, stock identification).
- MS 3.3.1.4 links to on-line information resources.
- On-going research is shared with participants in collaborative and consultative processes that contribute to the annual planning cycle (MS 4.2.1.1) and documented in the Integrated
- Fisheries Management Plan (MS 4.2.1.2).
- Also refer to relevant sections for MSC Indicator 2.1.1 and 2.1.2 for details about the monitoring and assessment framework.
- CUP 4 describes the assessment framework in each area (catch, escapement, exploitation rates).
- CUP 5 reviews the current status of stock units, including trends in escapement, catch, and exploitation rate.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Unlike the fishing plan, there is no explicit review of the research plan; rather the research plan is developed collaboratively by Chiefs of Stock Assessment, Core Stock Assessment, and Fishery Management staff.

Advice from external and internal reviews is implicitly incorporated but not expressly reported on.

A description of PSARC, steps in the PSARC Review Process, organizational structure, meeting schedule and PSARC documents are described in full at the following web site: http://www.pac.dfo-mpo.gc.ca/sci/psarc/whatis_e.htm.

PSARC research documents that have been through the process described at the web site above are available at the following web site: http://www.pac.dfo-mpo.gc.ca/sci/psarc/ResDocs/diadrom_02_e.htm.

Research documents are peer reviewed by individuals that are both internal and external to the management system. Forecasts of run timing, spread, and diversion rate are developed pre-season. The methods have been approved by PSARC. Annual forecasts using PSARC-approved methodologies are scrutinized by PSARC but are not sent out for assessment by external reviewers.

Scoring Rationale: The team's assumption is that they are evaluating the applied research that is directly related to management decisions associated with the fishery (i.e. reliability of catch and escapement estimates, spawning goals, harvest rate analysis, migration rates, etc.) The information provided by DFO for the management of pink fisheries was sufficient to meet all the criteria at the 60 and 80 guideposts. The first and third criteria at the 100 guidepost were not met because there is no formal and codified annual stakeholder review of the research plans.

3.3 - MSC P3 Criterion 3	**The management system allows for transparency with respect to its operational details, including a consultative process that provides for the incorporation of information and data from stakeholders in the fishery related to matters of a social, cultural, economic and scientific nature.**
Intent	The objective here is to evaluate whether the management system is open and transparent with respect to all interested parties and whether the views of stakeholders are considered in formulating management strategies.

3.3.1	Provides for a consultative process that is open to all interested and affected stakeholders, which allows for their input on a regular basis into the management process.	• The majority of interested and affected stakeholders are provided with a forum for input into the formulation of management plans and measures.	• The management system provides for the regular participation of most interested and affected stakeholders on matters of a social, cultural, economic and scientific nature.	• The management system provides a formal arrangement for the direct participation of all interested and affected stakeholders from both the public and private sectors, on matters of a social, cultural,

			• The management system generally provides notice of meetings at which there can be stakeholder participation. • The management system does not usually exclude involvement of any interested and affected stakeholder. • The views of most interested and affected stakeholders are regularly considered in the formulation of management strategies.	economic and scientific nature. • The management system provides timely, advanced notice of meetings at which there can be stakeholder participation. • The management system does not exclude any interested and affected stakeholder from the consultative process. • The management system addresses the interests of all interested and affected stakeholders.
Weight		**100**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

DFO has an extensive fisheries management consultation process.

A comprehensive network of processes for collaboration, consultation, and public participation has been established for BC salmon fisheries.

- MS 4.2 outlines the departmental support structures for enabling participation.
- MS 4.3 describes the different types of participatory processes, with an inventory of examples for each, explains the departmental approach to major policy initiatives, and summarizes procedures for internal and external review.

DFO is committed to consult all interested stakeholders, providing harvesters, environmental groups, and the general public opportunities to provide constructive feedback to the department and to take into consideration any feedback received.

Post-season review meetings provide a broad public forum to share information about the stocks and fisheries, to review management actions, and to identify opportunities for future improvements.

DFO has a legal obligation to consult First Nations prior to taking any management action that could affect aboriginal rights. The procedural requirements for meeting that obligation continue to evolve.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

The *Consultation Secretaria*t was formed in January 2001 to develop and implement a long term strategy to ensure that consultations with stakeholders, First Nations, and the public are well-documented, avoid unnecessary duplication, and are conducted in a transparent manner, including providing feedback on why decisions are made.

- Information about the secretariat and major on-going consultation initiatives is available at: http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/consult_e.htm
- Detailed information about on-going participatory processes, including membership lists, terms of reference, and meeting records, is available at http://www-ops2.pac.dfompo.gc.ca/xnet/content/consultations/salmon/default_e.htm

Most of DFO's public engagement takes the form of *advisory processes* that serve as a structured, coordinated forum for formally providing recommendations to the department. DFO then considers all recommendations in balance with departmental policies and practices before making decisions. DFO has compiled extensive guidance for participatory processes.

For major initiatives, such as the *Wild Salmon Policy*, DFO incorporates a strong element of public participation into each step of development and implementation, including public review of draft policies and public distribution all received feedback. The typical sequence is:

- Public release of discussion documents. Scientific experts from outside DFO are often engaged in the development of the discussion document. The discussion document is made available in hardcopy in departmental offices and in electronic version on the Web.
- A series of meetings with First Nations, harvester representatives, and environmental groups, as well as public meetings to compile feedback on the discussion document. These consultations are usually integrated into the on-going participatory processes described in the next sections. There is opportunity to provide feedback in person at public meetings or electronically.
- Public release of proposed policy and implementation plan
- Another round of consultation meetings
- Public release of final policy and implementation plan
- On-going public participation in developing operational details (e.g. identifying conservation units under the *Wild Salmon Policy*). The timeframe for this process can range from one year to several years. The objective is to consult as widely as possible. Throughout the consultation process, DFO reviews comments and explains to stakeholders how key issues are addressed in subsequent revisions of policies and implementation plans.

A comprehensive network of planning and advisory processes has evolved to deal with BC salmon, their ecosystem, and the fisheries targeting them. Processes with public participation operate at different scales of geographic reach and participation:

- *Major policy consultations* are usually region-wide efforts involving fisheries managers, scientists, and stakeholders over several years.
- *Community Dialogues* are coordinated through the Consultation Secretariat and bring information about regional DFO initiatives to local

communities.

- *Local Integrated Advisory and Planning Processes*, such as community roundtables, emphasize structured and on-going collaboration on local operational details (e.g. selective fishing measures, water use).
- *Regional Integrated Advisory and Planning Processes* are generally set up to tackle specific issues on a larger geographic scale, such as enhancement strategies.
- *Consultation and Collaboration with First Nations* takes place locally, in technical forums, and through formal bilateral consultation.
- *Harvester Advisory Processes* include commercial representative groups for each gear type and licence area, as well as the Sport Fishing Advisory Board, its sub-committees, and its community-based advisory committees.
- *Collaborative Agreements* are used to implement formal co-management arrangements with a clearly specified group of representatives.
- Joint Federal-provincial and international decision processes (e.g. Fraser River panel of the Pacific Salmon Commission) typically include representatives from regional stakeholder organizations.

The *Consultation Secretariat* maintains an inventory of consultation mechanisms, which is available upon request.

DFO hosts a series of annual advisory meetings with representative groups from each fishing sector, gear type, and area. These meetings are a key component of the annual planning cycle for salmon fisheries. Pre-season these meetings serve as DFO's main forum for compiling stakeholder recommendations, and post-season DFO uses the opportunity to explain how those recommendations were considered.

The *Improved Decision Making* initiative included a thorough review of public participation processes in the Pacific Region. One of the key recommendations resulting from that review was to streamline consultation efforts and establish a more formal and coordinated hierarchy of processes for interacting with harvesters. Implementation of these recommendations has progressed steadily since the initiative concluded in 2001.

Collaboration and consultation with commercial harvesters includes the following processes:

- *Area Harvester Committees* (AHC) from each commercial licence area review local gear-specific issues and provide recommendations to regional representatives.
- The *Commercial Salmon Advisory Board* (CSAB) includes representatives from each AHC, as well as other industry representatives. A membership list, terms of reference, and meeting records since 2004 are available at: http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/consultations/salmon/CSAB/default_e.htm
- The *Pacific Region Licence Appeal Board* (PRLAB) was established in 1979 as an arms-length body to review appeals regarding licensing decisions by DFO. The PRLAB provides written recommendations to the Minister of Fisheries and Oceans who makes the final decision. Information about the appeal board, including terms of reference are available at

http://www.pac.dfompo.gc.ca/ops/fm/Licensing/prlab/prlabguide_e.htm

- The *Licence Retirement Selection Committee* consists of representatives from Aboriginal groups and representatives from the commercial fishing industry. The committee reviews all licences under consideration for retirement and recommends to DFO which licence retirement proposals should be accepted. Licence retirements are a key component of the *Allocation Transfer Program* and the *Pacific Fisheries Adjustment and Restructuring* initiative.
- The *Responsible Fishing Board* oversees compliance with Code of Conduct for Responsible Fisheries

The Consultation Secretariat announces future and present consultations on its website, including a calendar of all planned consultations for the year.[26]

DFO started hosting annual community dialogues in 2004. The meetings are organized by the consultation secretariat and are open to all community members. Community dialogues do not focus on specific fisheries management issues, but rather deal with broad-scale regional initiatives and complement other advisory processes by providing opportunities for multi-interest groups to discuss issues relevant to their communities, and to do so closer to where people live. Annual topics for dialogues are selected by DFO's *Regional Management Committee* based on regional priority initiatives. Summary reports are compiled for each year's meeting series. [27]

DFO is committed to setting up and maintaining processes that will move the emphasis of the management system away from dispute resolution and towards participatory planning that pre-empts disputes. Participatory processes require motivated and capable participants to succeed, and DFO leads several ongoing initiatives designed to building citizens capacity to contribute. For example, all major initiatives related to First Nations' fisheries access have a strong component of capacity building. This includes the *Aboriginal Fisheries Strategy*, the *Pacific Integrated Fisheries Initiative*, and *Aboriginal Aquatic Resource and Oceans Management*. Similar efforts for integrating harvesters and environmental groups in decision processes have been in place for decades, and were formalized in response to the recommendations produced by the *Improved Decision Making* (IDM) initiative under the *New Directions* policy umbrella in 2001. More broadly, DFO implements community stewardship programs and funds independent processes such as the Pacific Salmon Foundation.

While the final authority remains with the Minister of Fisheries and Oceans, the department strives to maintain constructive participatory processes by documenting all feedback received from stakeholders and formally explaining the rationale for decisions made based on the balance between feedback received and departmental policies and mandates.

Scoring Rationale: We found that DFO's consultation process met all the criteria at the 60, 80 and 100 guideposts.

[26] http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/consult_e.htm
[27] For details on past Community Dialogues, visit the Consultation Secretariat website: http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/consult_e.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.4 - MSC P3 Criterion 4	**The management system implements measures to control levels of exploitation in the fishery.**

3.4.1 TAVEL Sub-Criterion	**The management system has provisions for controlling levels of exploitation to achieve the escapement and/or harvest rate goals for target stocks, and for the setting of harvest limits for non-target species, when there is information indicating such limits are necessary.**
Intent	Under this sub-criterion the issue of whether the management system provides for mechanisms such as closed areas, no take zones, and closed dates and times for placing controls on fisheries to ensure that objectives related to exploitation levels and escapement are achieved is evaluated.

3.4.1.1	Utilizes methods to limit or close fisheries in order to achieve harvest and/or escapement goals, including the establishment of closed areas, no-take zones, and closed dates and times when appropriate.	• Harvest rates and/or escapement goals for the majority of the target stocks are effective in halting declines in stock abundance caused by the fishery. • Established harvest and/or escapement goals for target stocks consider the impact of the fishery on the majority of the non-target species, and on the ecosystem generally.	• Harvest rates and/or escapement levels designed to achieve target goals are regularly implemented. • The management system provides for the establishment of closed areas, no-take zones and closed dates and times. • Controls are set to maintain or restore target species to high productivity levels, and in a manner that does not contribute significantly to ecosystem degradation. • Measures that limit harvest rates and set escapement goals are implemented when necessary.	• The management system provides a formal and codified system to achieve harvest and/or escapement goals for target stock units and, as appropriate, non-target species of fish. • The management system provides a formal and codified mechanism for establishing closed areas, no-take zones, and closed dates and times for any areas of the fishery. • Management sets exploitation and escapement levels designed to maintain the target stock units at levels of abundance that can sustain high productivity. • There is no evidence provided by the management system to indicate that, as a result of fishing, target stock units are in serious decline or degradation of the ecosystem is occurring. • Measures are currently implemented to achieve these

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

				objectives.
Weight		**50**	**Score**	**NCCC Pink: 96** **Inner SC Pink: 96** **Fraser Pink: 96**

Client: BC pink and chum fisheries are managed to address time- and area-specific concerns over incidental harvests and by-catch through restrictions on location, timing, gear, and retention for net and troll fisheries

- MS 1.2.9 describes on-going initiatives related to the changing structure of Pacific salmon fisheries, including licence retirement and enhanced monitoring.
- MS 2.4 describes the current monitoring and assessment approach, and more specifically.
- MS 2.4.2.5 discusses catch monitoring programs in the different fisheries, including provisions for reporting any harvest of non-target species.
- MS 2.5.3 summarizes the access controls in place for each harvest sector, including the strict licencing requirements for commercial salmon fisheries.
- MS 2.5.4 outlines the general approach to conservation and recovery in BC salmon fisheries, and describes measures in place to control total removals of target stocks, incidental harvests of non-target stocks, by-catch of non-target species, and ecosystem impacts.
- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for harvest targets, selective fishing, and by-catch reporting.
- MS 3.3.2.1 describes marine protected areas and other spatially persistent fishery closures.
- MS 3.4 includes an inventory of conservation objectives and resulting recovery initiatives.
- Appendix 1 lists specific management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).
- CUP 2.4 describes conservation and management objectives for each area, and briefly introduces the main performance measures used for planning, implementation, and review.
- CUP 3.3 contains a detailed description of each fishery, including management reference points (i.e. escapement targets, exploitation rate limits).

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Scoring Rationale: All pink fisheries passed the 60 and 80 guidepost because: 1) fisheries managers have generally been able to achieve the target goals; 2) there is a clear legal process defined which ensures that all fisheries and areas remain closed until there is a specific variation order which opens an area fishery (gear specific) for a specific time or until a specific decision guideline is met; and 3) access controls, primarily through the license conditions and in-season Variation Orders limit harvest rates as necessary in order to achieve escapement goals.

At the 100 SG, the lack of a formal and codified system to achieve management goals resulted in all fisheries not passing the first criteria at the 100 guidepost.

3.4.1.2	Provides for restoring depleted target species to specified levels within specified time frames.	• The management system includes measures for restoring the majority of depleted populations of target stock to the TRP or equivalent high level of abundance.	• The management system includes measures, which are adequate to restore depleted populations of target stock to the TRP or equivalent high level of abundance as qualified by relevant environmental factors. • A time schedule for restoration, which considers environmental variability, is determined by the management system.	• The management system has a formal and codified mechanism, which is adequate for restoring depleted target stocks to the TRP or equivalent high level of abundance, as qualified by relevant environmental factors. • The mechanism includes strict guidelines for restoring these depleted populations within a certain time frame are formalized by the management system.
Weight		**50**	**Score**	**NCCC Pink: 80** **Inner SC Pink: 80** **Fraser Pink: 80**

Client: A formal public process is used to identify species at risk and develop recovery strategies within a specified time frame. Decision guidelines are in place to respond to changing abundance levels by adjusting fisheries.

- MS 1.1.2.4 describes the Species at Risk Act.
- MS 3.2.1 outlines the recovery planning process.
- MS 2.5.2 outlines the general decision guidelines for pink and chum fisheries and illustrates how annual fisheries respond to available information, such as variable in-season estimates of abundance.
- MS 2.5.4 outlines the general approach to conservation and recovery in BC salmon fisheries, and describes measures in place to

control total removals of target stocks, incidental harvests of non-target stocks, by-catch of non-target species, and ecosystem impacts.

- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for harvest targets, selective fishing, and by-catch reporting.
- MS 3.4 includes an inventory of conservation objectives and resulting recovery initiatives, including the development of recovery strategies for threatened or endangered species listed under the Species at Risk Act.
- MS 4.2.1.1 describes how the annual planning cycle for BC salmon fisheries uses collaborative planning and public review to identify emerging concerns and develop management responses.
- Appendix 1 lists specific management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).
- CUP 3.2 explains the harvest strategy in each area, and
- CUP 3.3 provides the details for each commercial fishery.
- CUP 5 reviews the current status of stock units, including trends in escapement, catch, exploitation rate, and size.
- CUP 6 describes the resulting conservation and recovery efforts.

Benchmarks and management plans that are currently being developed under the Wild Salmon Policy will implicitly incorporate consideration of 'reasonable' recovery times when developing management actions – i.e. when a target stock is below the TRP.

Scoring Rationale: All pink fisheries passed the criteria at the 60 and 80 guidepost because the management procedures appear to be adequate for the majority of target pink stocks. The criteria at the 100 guidepost could not be assessed as passed because no examples of restoring depleted target stocks to the TRP or equivalent high level of abundance were provided by the management agency.

3.4.2 TAVEL Sub-Criterion	**The management system incorporates measures to ensure that its objectives regarding the conservation of the stocks under its purview and the impact of the fishery on the ecosystem are carried out.**
Intent	Two major issues are dealt with under this topic. One examines whether the management system includes provisions to determine whether there is adequate enforcement of the measures established for achieving the objectives of management. In these evaluations, compliance is considered to be the result of adequate enforcement mechanisms by the management system and education with respect to providing clear and timely information to the fishing industry regarding such measures. The other examines whether the management system includes adequate monitoring of the fishery so as to evaluate the performance of the fishery with regard to the policies and objectives of management.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.4.2.1	The management system includes compliance provisions.	• The management system includes compliance provisions that are effective for the majority of the fisheries.	• The management system includes compliance provisions that are effective for the fisheries. • Infractions, which result in adverse impacts on the status of the stocks or on the ecosystem, are rare.	• The management system provides for a formal arrangement, such as a compliance committee or a staff review team on compliance, to review the effectiveness of enforcement. • Education and enforcement procedures are implemented and applicable rules are consistently applied. • Enforcement actions are effective in achieving the objectives of management. • There are no infractions being consistently committed in the fishery.
Weight		**50**	**Score**	**NCCC Pink: 75** **Inner SC Pink: 100** **Fraser Pink: 100**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for harvest targets, selective fishing, and by-catch reporting.
- Also refer to the relevant sections for MSC Indicator 3.1.8.

The Conservation & Protection (C&P) Directorate conducts an Evaluation of Enforcement and Compliance annually as part of the department's post-season review and evaluation of the fishery.[28]

At the end of each season, statistics are compiled on the numbers of checks conducted from various platforms (at-sea, vehicle, and foot) and the number of charges resulting from these checks. Using this information, staff can evaluate whether enforcement priorities were met and whether various enforcement activities were effective. Overall compliance rates for each area and fishery are calculated to identify priority

[28] http://www.pac.dfo-mpo.gc.ca/ops/Cp/evaluation_e.htm

areas for enforcement in subsequent seasons.

Post-season review meetings with C&P and resource management staff are held annually. From these sessions, staff identifies key enforcement issues and recommend strategies for addressing these issues.

DFO's *Conservation & Protection Directorate* (C&P) monitors fishing activities and enforces regulations under the mandate of the *Fisheries Act*. C&P currently deploys 170 Fisheries Officers plus Marine Enforcement Officers and Aboriginal Fishery Guardians. General information about C&P is available on their website, as is an overview of C&P activities, and a guide to typical enforcement responses.[29]

Observers conduct on-board or dockside monitoring and are typically funded by DFO. They focus on monitoring by-catch and compliance with fishing regulations, but also collect information for stock assessment (e.g. species mix, size, age, condition, scales, tags). Observers record and report any violations, but do not have a mandate for legal enforcement. There are no formal guidelines in place to indicate the number of observers; rather the level of observer coverage depends on the severity of the conservation issue and varies from one year to the next. Observer deployment focuses on areas with high-priority by-catch reduction regulations, but most fisheries have some coverage in most years. Licence conditions include a provision that commercial fishing vessels must take an observer on board when requested to do so by DFO.

- If there is no conservation issue, the level of observers is low (0 to 2 in each of the fisheries).
- If there is potential to have an impact on stocks or species of concern, the number of observers can increase to 6 to 10 per fishery (with 30-100 vessels operating in the fishery).
- During experiential pilot projects observer coverage is usually high (up to 100% of the vessels would carry an observer).

Charter Patrols employed under a vessel charter contract are designated as "fishery inspectors". Their primary duty is to monitor compliance with conditions and regulations (e.g. area, time). Charter Patrols, just as observers, record and report any violations, but do not have the legal mandate to enforce. Charter patrols also collect biological information (e.g. stream surveys, anecdotal abundance information) and facilitate communication between the department and the fleet (collect catch reports disseminate closures notices). Most BC salmon fisheries have charter patrols.

Recent charges and convictions are publicly announced, and an archive of charges and convictions back to 1994 is available.[30]

Scoring Rationale: All pink fisheries passed the 60 and ISC and Fraser passed the 80 and first scoring criteria at the 100 guidepost. There is evidence of compliance concerns with regarding to the reporting of steelhead catch in Area 3 and 4 fisheries, ramping for seine vessels and the use of revival boxes. Rules are appropriate but evidence from the C&P reports indicates inadequate resources to enforce selective fishing rules. There is clear evidence in the C&P reports of similar violations year on year, suggesting that sanctions are not effective enough. There is also evidence that harvest management rules for Area 3 and 4 pink fisheries have not been consistently applied and enforcement actions have

[29] http://www.pac.dfo-mpo.gc.ca/ops/CP/default_e.htm
[30] http://www.dfo-mpo.gc.ca/media/charges_e.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

not been effective in some years (e.g. 2006). The assessment team suggests that first 80 scoring guidepost for the NCCC is only partially met and score awarded is 75. .

New Condition 3-6a – For the NCC pink salmon UoC. - For the NCCC, to meet the requirements of the first 80 scoring guidepost DFO must document and implement changes to the existing compliance provisions in order to increase the level effectiveness of the current program to reduce non compliance with fishery regulations and Conditions of License. A report must be provided to the certification body by the second surveillance audit detailing changes and effectiveness.

3.4.2.2	The management system includes monitoring provisions.	• The management system includes provisions for a monitoring program to evaluate the performance of the majority of the fisheries against its policies and objectives.	• The management system incorporates an effective monitoring program, which evaluates the performance of the fishery relative to management goals and policies. • Monitoring is broad in scope, and results are available to the majority of the stakeholders.	• The management system incorporates a formal, effective program for monitoring the fishery, which fully evaluates the performance in terms of whether the regulations are resulting in the intended harvest rates and/or escapements, and achievement of objectives regarding impacts on the ecosystem caused by the fishery. • Monitoring is comprehensive, and includes all relevant components of the fishery • Results are reported widely on a regular and timely basis.
Weight		**50**	**Score**	**NCCC Pink: 90** **Inner SC Pink: 90** **Fraser Pink: 90**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 2.4.1 outlines the stock assessment program for Pacific salmon and provides an overview of different publications (e.g. Science Advisory Reports, Stock Status Reports, information bulletins)
- MS 2.4.2 summarizes monitoring and assessment activities for BC pink and chum salmon (e.g. escapement surveys, test fisheries, catch monitoring).

- MS 2.7 summarizes DFO's toolkit for monitoring and assessment.
- MS 3.2.3.5 lists available stock status reports for BC pink and chum salmon.

- An extensive network of processes is in place to assess the status of BC pink and chum stocks, including the annual post-season review (MS 4.2.1.1) and formal external reviews (MS 4.3.5).

- CUP 4 details the assessment programs for each area.
- CUP 5 describes the status of target stocks in each area.

Management objectives for pink fisheries are articulated each year in the annual IFMP.[31] The performance of the fishery is assessed through catch, escapement and regulatory compliance monitoring programs. Fishery performance relative to pre-season objectives is reported in annual post-season reviews that are publicly available.

Catch Monitoring

Catch monitoring programs are discussed in MSC performance indicators 1.1.2.1 and 2.1.1 above.

Escapement Monitoring

Escapement monitoring programs are discussed in MSC performance indicators 1.1.2.2.

Regulatory Compliance Monitoring

Fishery Officers are responsible for compliance monitoring. Their monitoring activities are designed to ensure compliance with legislation, policies and fishing plans for the conservation and sustainable use of the resource. Fishery Officers have access to catch monitoring (Fishery Operations System) and compliance monitoring (Departmental Violations System) databases.

Scoring Rationale: The DFO submission provide sufficient evidence of monitoring systems to pass the 60 and 80 guidepost criteria for all pink fisheries. The lack of a comprehensive stock status report, clearly define management goals, and estimates of harvest rates prior to the MSC submissions was clear evidence that the criteria at the 100 guidepost are only partially met for all pink fisheries.

[31] 2008 Northern BC Salmon IFMP, Section 4.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.5 - MSC P3 Criterion 5	**The management system provides for regular and timely review and evaluation of its performance, and for appropriate adjustments based on the findings of these reviews and evaluations that are consistent with the objectives of the program.**
Intent	The objective under this criterion is to evaluate whether the management system has an effective mechanism for reviewing performance vis-à-vis the objectives and policies of the management programs. An effective mechanism would include both internal and external reviews, and, when appropriate, the recommendations from the reviews would be incorporated into the management of the fishery. Also, the issue of whether the management system provides a mechanism for resolving disputes emanating from such reviews, or any other sources, is evaluated. .

3.5.1	There is an effective and timely system for internal review of the management system.	• The management system provides for internal review of its performance, and when available, review results are made available to the majority of interested stakeholders.	• The management system includes provision for an internal review that is conducted periodically as the need arises. • The results of the review are made available to interested stakeholders.	• The management system provides for continuing internal review that is broad in scope, effective, and timely. • The review process and results are made available to all stakeholders.
Weight		**31.6**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

A comprehensive network of processes for collaboration, consultation, and public participation has been established for BC salmon fisheries.

- MS 4.2 outlines the departmental support structures for enabling participation.
- This includes the annual planning cycle (MS 4.2.1.1),
- the use of draft Integrated Fisheries Management Plans (MS 4.2.1.2) to solicit public feedback on proposed conservation measures, harvest strategies, and fishing plans, and formal dispute resolution mechanisms (MS 4.2.2.4)

- MS 4.3 describes the different types of participatory processes, with an inventory of examples for each.
- This covers the departmental approach to major policy initiatives (MS 4.3.2.1),
- procedures for internal and external review (MS 4.3.5), including the Regional Management Committee, the Stock Assessment Coordinating Committee, the Pacific Science Advice Review Committee, the Pacific Fisheries and Resource Conservation Council, the Committee on the Status of Endangered Wildlife in Canada, and the federal auditor general

Post season reviews are undertaken on a broad spectrum of fisheries. Preseason forecasts and plans are compared with in-season estimates of run size, management actions and final catches and escapements. Implementation issues are also identified. Internal post season reviews are undertaken and written up by the local manager with input from the local Chief of Resource Management and Regional Resource Manager – Salmon. These documents are released prior to the post season review meetings with First Nations and stakeholders.

Each Party to the PSC (Canada and the United States) is required to provide a post season report for all fisheries before the January Post Season Review meeting of the PSC. This report is included in the PSC Annual report.[32]

Internal post season reviews by the local manager are released prior to the post season review meetings with First Nations and stakeholders. The PSC Post Season Review is included in the PSC Annual report.[33]

Scoring Rationale: DFO's internal review process is sufficient to pass all the criteria for this indicator. There is a defined and transparent internal review process for both the fishery management and fishery science activities conducted by the agency. Results of internal reviews of the pink salmon fisheries are available from the agency and are published on the agency website.

[32] http://www.psc.org/publications_annual_pscreport.htm
[33] http://www.psc.org/publications_annual_pscreport.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.5.2	There is an effective and timely system for external review of the management system.	• The management system is open to external review at least once every 10 years.	• The management system provides for a review of management performance by one or more independent experts at least once every five years. • The format and standards of the review are established within the management system. • Review results are made available to the public.	• The management system provides for one or more independent experts to review at least bi-annually all of the important components of management performance. • The format and standards of the review are established with input from outside the management system. • Provision is made for making public the review results.
Weight		**25.8**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 70** **Fraser Pink: 70**

Client Submission: A comprehensive network of processes for collaboration, consultation, and public participation has been established for BC salmon fisheries.

- MS 4.2 outlines the departmental support structures for enabling participation.
- MS 4.2.1. includes the annual planning cycle,
- MS 4.2.1.2 describes the use of draft Integrated Fisheries Management Plans to solicit public feedback on proposed conservation measures, harvest strategies, and fishing plans, and
- MS 4.2.2.4 describes formal dispute resolution mechanisms.
- MS 4.3 describes the different types of participatory processes, with an inventory of examples for each.
- This covers the departmental approach to major policy initiatives (MS 4.3.2.1), as well as
- procedures for internal and external review (MS 4.3.5), including the Regional Management Committee, the Stock Assessment Coordinating Committee, the Pacific Science Advice Review Committee, the Pacific Fisheries and Resource Conservation Council, the Committee on the Status of Endangered Wildlife in Canada, and the federal auditor general.

External reviews of the management system are conducted by government and stakeholder groups. The department is committed to an annual external advisory process with stakeholders and First Nations.

Here are several examples of external review processes:

1. Conservation Council

2. Auditor-General of Canada.
3. Program evaluations mandated by the federal government.
4. Parliamentary Standing Committee on Fisheries and Oceans.
5. Stakeholder and First Nations consultative procedures that provide external review.[34]

The response to Indicator 3.4.2.2 mentions reviews by the Pacific Fisheries Resource Conservation Council and the Auditor-General of Canada. The latest *Policy and Standards for Evaluation* (April 1, 2001) are available at the following web site: http://www.tbs-sct.gc.ca/eval/common/policies-politiques_e.asp

Among other things, they require each federal government department to have a senior head of evaluation, an evaluation committee and an evaluation plan. See the *Policy Requirements* section at the following web site: http://www.tbs-sct.gc.ca/pubs_pol/dcgpubs/tbm_161/ep-pe_e.asp

Following are examples of evaluations that have been completed under Fisheries and Oceans Canada's Evaluation Plan.

- Terms of Reference were completed in 2003 for evaluations of the Selective Fisheries Program and the Resource Rebuilding component of the Pacific Fisheries Adjustment and Restructuring Program.
- The fleet component of PFAR was evaluated in 2001.
- DFO's Response to the Recommendations of the Fraser River Sockeye Public Review Board was evaluated in 1995/96.
- The (then) pilot IQ programs for halibut and sablefish were evaluated in 1992.
- DFO Resource Management was evaluated in 1991/92.

DFO evaluations of the Pacific fishery management system would include external reviewers (i.e. they would be included among the individuals and organizations canvassed during the conduct of an evaluation). The Pacific fishery management system is open to external review in that (1) it would be so reviewed by means of an Evaluation and a number of these that have been performed in the past decade are cited, and (2) an external agency such as the Pacific Fisheries Resource Conservation Council or the Auditor-General of Canada can conduct such external reviews when they choose

Scoring Rationale: All pink fisheries passed the 60 guidepost because the management system is "open to external review". However, none of the pink fisheries passed the first criteria at the 80 guidepost and only partially passed the second criteria at the 80 guidepost because the external review processes described in the DFO submission (PFRCC, COSEWIC, Auditor General of Canada) have not been specifically or consistently engaged in the review of pink salmon fisheries, and certainly not once every 5 years.

[34] See response to Indicator 3.3.1 for detailed description of stakeholder and First Nations consultative procedures that provide external review.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Condition 3-7 – For all pink salmon UoCs. – Certification of all pink fisheries will be conditional until an external review of pink salmon fisheries management performance is completed and there is commitment to conducting a similar review at least once every five years. The results of the first external review will be provided to the certification body by the second surveillance audit.

3.5.3	There is a mechanism for incorporating into the management system recommendations resulting from the review process.	• Recommendations from internal and external reviews are considered by the management agency and an explanation is provided for the actions or lack of action associated with the majority of these recommendations.	• The recommendations from internal and external reviews are usually, but not always, used to make changes to the management system.	• The recommendations from internal and external reviews are always acted upon and, where appropriate, incorporated into the management system. • The management system provides for a report to all interested stakeholders describing how it acted on the recommendations of these reviews.
Weight		**28.4**	**Score**	**NCCC Pink: 85** **Inner SC Pink: 85** **Fraser Pink: 85**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

Recommendations from internal and external reviews are acted upon and incorporated into the management process when appropriate. A recent example is the steps taken to date by DFO responding to the 2002 Review of the Fraser River sockeye fishery. These steps include a report documenting DFO's response to each recommendation in the 2002 Post-Season review.[35]

DFO has a series of annual advisory meetings with stakeholder representative groups (See Indicator 3.3.1) that facilitate incorporation of stakeholder recommendations. In commercial fishery advisory meetings, Licence Area breakout sessions are held in which issues are tabled and recommendations prepared and submitted for incorporation into the annual IFMP[36]. Similar advisory processes are conducted with other stakeholder groups.

Through the development of the annual IFMP, recommendations from internal DFO review processes are incorporated into the management

[35] Bert Ionson, Fisheries and Oceans Canada, pers comm.
[36] Licence Area Breakout Session Issues/Recommendations Document, SCSA Meeting Dec 11-12, 2003

system (See Indicator 3.5.1).

The post-season review and the development of the IFMP pre-season, and associated consultations, are the mechanisms by which recommendations resulting from review processes are incorporated into the management system.

Recommendations from internal and external reviews are acted upon and incorporated into the management process when appropriate. A recent example is the steps taken to date by DFO responding to the 2002 Review of the Fraser River sockeye fishery. These steps include a report documenting DFO's response to each recommendation in the 2002 Post-Season review

Scoring Rationale: All pink fisheries passed the 60 and 80 guideposts because recommendations from reviews are considered by the management agency and generally incorporated into the decision making process. The second criteria at the 100 guidepost was only partially met because recommendations are not always acted upon (e.g. acting on the recommendations provided in the Skeena Independent Science Review Panel report and the DFO approved Core Stock Assessment Program review) and explanations of what DFO has done or not done regarding these recommendations are not always provided.

3.5.4	There is an appropriate mechanism for resolving disputes.	• There is a mechanism for resolving disputes that is provided for by the management system.	• The management system has a dispute-resolution process for resolving significant disputes. • The dispute resolution mechanism is available for use by affected parties, but is not routinely used. • The dispute resolution mechanism does not discriminate against any disputing party.	• The management system has a formal and codified mechanisms for resolution of disputes arising as a result of the fishery. • Affected parties routinely use the dispute resolution mechanism. • The dispute resolution mechanism is unbiased and fair respecting all disputing parties.
Weight		**14.2**	**Score**	**NCCC Pink: 97** **Inner SC Pink: 97** **Fraser Pink: 97**

Client Submission: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

MS 4.2.2.4 describes the process used to resolve disputes at both the regional and international level.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Scoring Rationale: DFO's dispute resolution process is sufficient to pass all the criteria at the 60 and 80 guideposts and the first two criteria at the 100 guidepost. The third criteria at the 100 guidepost was only partially passed because the final decision authority remains with the Minister of Fisheries and Oceans and thus dispute resolution process is not unbiased and fair in all circumstances.

3.6 – MSC P3 Criterion 6	**The management system provides for the operation of the fishery to be in compliance with all relevant legal and administrative requirements.**
Intent	In this section we attempt to evaluate the management system with regard to whether it manages the fishery in a manner that is consistent with Canada's commitments under relevant international treaties and agreements, and with domestic laws and regulations that pertain to the fishery. In this context we also evaluate whether the management system is in conformity with the legal and customary rights of First Nations peoples, as established by treaties with those peoples, the Canadian Constitution, and other applicable instruments.

3.6.1	The fishery is not operated in a unilateral manner in contravention to international agreements.	• The management system is in compliance with the majority of international treaty recommendations dealing with the fishery.	• The management system does not willingly act in contravention to any international treaty obligations pertaining to the fishery. • The management system does not knowingly undertake unilateral exemption from any treaty obligation pertaining to the fishery. • Evidence indicates any inadvertent action with regard to the contravention of any international treaty obligations by the management system is rare.	• When the stocks of fish under the authority of the management system are also under the authority of an international treaty to which the Government of Canada is a party, treaty obligations are respected, and actions by the management system are coordinated with the recommendations of the treaty organization. • All measures taken within the management system are in compliance with relevant international treaty obligations. • The management system does not undertake unilateral exemption from any treaty obligation pertaining to the fishery.

Intent		For the purposes of this Indicator, only treaties and conventions which the government of Canada has signed, ratified or otherwise is a High Contracting Party to, shall apply.		
Weight		**25**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client: MS 1.1.4 summarizes international agreements considered for this indicator, and describes how they are being implemented in Canadian salmon fisheries. For example:

The Coastal Fisheries Protection Act (MS 1.1.2.6) and the Pacific Salmon Treaty (MS 1.1.4.4) are legal instruments for ensuring consistency with the UN Convention on the Law of the Sea (MS 1.1.4.1).

The Species at Risk Act (MS 1.1.2.4), the Oceans Act (MS 1.1.2.3) , and the Wild Salmon Policy (MS 3.2.2) are domestic instruments that reflect the provisions of the UN Convention

On Biological Diversity. Implementation examples are included in MS 3.2.2.3, MS 3.3, and MS 3.4. Specific fisheries measures taken to address incidental harvest and by-catch are listed by area in Appendix 1.

MS 1.1.4.4 outlines the annual implementation of the Pacific Salmon Treaty, and links to annual reports that review each fishing season.

International Treaties and conventions considered include:

- UN Convention on the Law of the Sea;
- Convention on Biological Diversity;
- The Pacific Salmon Treaty.

Canada is a signatory to the *UN Convention on the Law of the Sea*. The Agreement relating to Part XI of the Convention and the *Agreement for the Implementation of the Convention* relate to the conservation and management of straddling fish stocks and highly migratory fish stocks.[37] Canada operates in accordance with all aspects of the *Convention on the Law of the Sea*. Specific legal instruments and initiatives for ensuring

[37] www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf
http://www.un.org/Depts/los/convention_agreements/texts/fish_stocks_agreement/CONF164_37.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

consistency with UNCLOS are:

- The Coastal Fisheries Protection Act (CFPA) is the legislative means for controlling foreign fishing vessel access to, and activities in, Canadian fisheries waters (Exclusive Economic Zone — EEZ) and ports. As reflected in the CFPA, the general rule is that foreign fishing vessels are prohibited from entering Canadian fisheries waters for any purpose unless authorized to do so under the Act, the regulations, or other law or treaty. The CFPA, implementation policy, and related regulations were amended in 2003.[38]
- Pacific Salmon Treaty requires the conduct of fisheries so as to provide for optimum production and equitable harvest of salmon stocks between the USA and Canada. If Canada were not operating in accordance with t he Pacific Salmon Treaty, there would be allegations from the United States. There have been disagreements between the Parties from time to time, but these are dealt with through the Commission and its panels.

Scoring Rationale: No issues have been raised with regard to DFO's compliance with international agreements affecting BC pink fisheries, therefore, BC commercial pink fisheries pass all the criteria for this indicator.

3.6.2	The fishery is carried out in a manner consistent with all relevant domestic laws and regulations relevant to the fishery	• The management system conducts periodic assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have not identified any violations that would result in failure to achieve the objectives of the management plan.	• The management system conducts at least bi-annual assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have confirmed that none of the violations that have occurred would result in failure to achieve the objectives of the management plan.	• The management system conducts annual assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have confirmed full compliance with these laws and regulations.
Weight		**37.5**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

[38] http://canadagazette.gc.ca/partI/2003/20031025/html/regle14-e.html

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Client: BC pink and chum fisheries are conducted under comprehensive federal and provincial laws, with extensive compliance monitoring and enforcement:

- MS 1.1.2 summarizes relevant federal legislation and regulations.
- MS 1.1.3 summarizes relevant provincial legislation.
- MS 2.6 describes the range of compliance mechanisms in place for BC salmon fisheries, lists current enforcement priorities, and links to annual compliance summaries.

Full texts of acts and regulations governing Pacific salmon management are available at the following website: http://www.dfo-mpo.gc.ca/communic/policy/dnload_e.htm

DFO's Conservation & Protection Directorate (C&P) monitors fishing activities and enforces relevant regulations and laws under the mandate of the *Fisheries Act*. C&P currently deploys 170 Fisheries Officers plus Marine Enforcement Officers and Aboriginal Fishery Guardians. General information about C&P is available on their website, as is an overview of C&P activities, and a guide to typical enforcement responses.[39]

Compliance rates are tracked real-time through the Departmental Violation System (DVS).

Fishery Officer activities for are planned through Fisheries Enforcement Activity System (FEATS), which enables effective prioritization of enforcement activities given management objectives.

Scoring Rationale: No issues have been raised with regard to DFO's compliance with domestic laws and regulations affecting BC pink fisheries, therefore, BC commercial pink fisheries pass all the criteria for this indicator.

3.6.3	The management system exists within an appropriate and effective legal and/or customary framework which ensures that it observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood.	• The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	• The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	• The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

[39] http://www.pac.dfo-mpo.gc.ca/ops/CP/default_e.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Intent	*At the request of the client, DFO and the MSC, the assessment team agrees to adopt the wording of this performance element from the Fisheries Assessment Methodology (FAM), released in July 2008. The team's intention is to interpret this performance indicator based on the performance elements and definitions identified in the FAM document. .*		
Weight	**37.5**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client: The exact scope and practical implementation of aboriginal rights is not fully defined for Canadian fisheries, and DFO is negotiating with First Nations through the treaty process to define those rights. Different aspects of Aboriginal rights have been addressed in court decisions, but uncertainty still remains about the exact interpretation of these rights within the complex operational setting of salmon fisheries. There are five distinct elements of First Nations rights in BC salmon fisheries:

Court decisions that evaluate past management decisions and clarify the context for future management decisions. MS 1.1.5 establishes the legal setting for FN access to fishing opportunities, explains the evolving nature of these rights and their interpretation in specific cases, reviews pertinent case law, explains the different types of FN fisheries (FSC, Economic Opportunity, treaty), and summarizes policy development for aboriginal fisheries.

Established allocation priority of communal First Nation fisheries for Food, Social, and Ceremonial (FSC) purposes. MS 1.3 explains how social and economic considerations (including FN allocations) are incorporated in major on-going initiatives, and details the allocation approach.

Policies and departmental initiatives to implement the provisions of the first three elements. These include multi-year initiatives focused on First Nations, such as the Aboriginal Fisheries Strategy (AFS), as well as broader processes, such as Pacific Fisheries Reform (PFR). MS 1.2.4 retraces the development and implementation of AFS. MS 1.2.6 to 1.2.9 describe the policy and implementation initiatives that are reshaping Pacific Fisheries and FN participation in those fisheries.

Consultative and advisory processes to incorporate the first four elements into fisheries management. MS 4 describes DFO's approach to consultation and public participation, with specific sections on explaining the different definitions of consultation, describing bilateral consultation with First Nations, and summarizing the various processes in which First Nations participate.

Planning and implementation of fisheries. MS 2.2.3 explains how the different fisheries fit together (FSC, ESSR, commercial, Recreational). MS 2.5 explains how annual fishing plans are developed, lists general guidelines for all pink and chum fisheries, and describes how access is controlled in the different fisheries (including FSC fisheries). Section 2.7 summarizes how DFO and First Nations collaborate on assessment, monitoring, and enforcement.

These five elements complement each other to form a comprehensive, evolving whole, and have to be evaluated as such.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Scoring Rationale: The management system for BC pink fisheries includes mechanisms to observe First Nation's legal and customary rights related to pink fisheries. Therefore, the criteria at the 60 and 80 guideposts were met. The single criteria at the 100 guidepost was met because we are not aware of any are instances where First Nations have identified deficiencies in the current commitments from BC and Canada regarding First Nations fishing for food or livelihood related to the pink salmon fishery.

3.7 – MSC Criterion 7	**Fishing operations make use of gear and fishing practices that limit ecosystem impacts.**
Intent	The intention regarding this criterion relating to fishery operations is to evaluate the degree to which the management system is capable of implementing responsible fishing practices. The understanding here regarding responsible fishing practices refers to the criteria defined in the MSC, Principle 3.B., Operational Criteria 12-17, and with those sections of the FAO Code of Conduct for Responsible fishing dealing with the conduct of fishing practices by the fishing industry.

3.7.1	Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch.	• The majority of fisheries are conducted in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.	• Through educational programs for members of the fishing industry and other relevant stakeholders, the management system discourages the use of gear types and fishing practices that result in high catches of non-target species or undersized individuals of target species, and encourages them to avoid fishing in areas identified to have high concentrations of non-target species or undersized individuals of target species. • Taking into consideration natural variability in population abundance, there is evidence that the capture and discard of non-target species or undersized individuals of target species is trending downward, or is at a level of exploitation that has been determined by management	• There are requirements in the management system to reduce the capture of non-target species, which include: ○ Controlling the use of gear types and fishing practices that result in significant catches of non-target species or undersized individuals of target species, and/or ○ Implementing closed seasons and no-fishing zones during times and in areas where the probability of making significant catches of non-target species or undersized individuals of target species is high, and ○ Holding education programs for the fishing industry and other relevant stakeholders to make them aware of the benefits of using fishing techniques and gear

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
		to be acceptable. • Fishers generally conduct their fishing activity in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.	that minimize the catch of non-target species or undersized individuals of target species. • Taking into consideration natural variability in population abundance and the possibility of declining abundance resulting from heavy exploitation, the management system can demonstrate the effective use of these methods by fishers by the existence of downward trends in the catches of non-target species. • The management system creates incentives to decrease the catch of non-target species (e.g. by providing more fishing time for vessels achieving certain standards for reducing such catches).
Weight	**27.7**	**Score**	**NCCC Pink: 73** **Inner SC Pink: 100** **Fraser Pink: 90**

Client: BC pink and chum fisheries have been substantially modified to reduce by-catch of non-target species:

- MS 1.2.7.4 briefly describes the selective fishing policy.
- MS 3.2.4 recounts the development and implementation of selective fishing measures in BC salmon fisheries, and includes links to mortality studies from different fisheries.
- MS 1.2.9 describes collaborative initiatives related to the changing structure of Pacific salmon fisheries, which include reduction of by-catch mortality.
- MS 2.4 describes the current monitoring and assessment approach, and more specifically,
- MS 2.4.2.5 discusses catch monitoring programs in the different fisheries, including provisions for reporting any harvest of non-target species.
- MS 2.5.4.3 describes measures that have been implemented to control incidental harvest of non-target stocks and by-catch of non-target species.
- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for selective fishing and by-catch

reporting.

- MS 3.4 includes an inventory of major conservation and recovery efforts, including measures to reduce by-catch of particular stocks or species of concern.
- Appendix 1 lists management actions designed to achieve conservation objectives (e.g. to reduce coho by-catch).
- Decision guidelines for each fishery in CUP 3.3 outline measures to reduce by-catch of non- target species.
- CUP 6 highlights highlights specific conservation measures in each area.

In January 2001, the Department released *A Policy for Selective Fishing in Canada's Pacific Fisheries*. Under the Department's selective fishing initiative, harvester groups have experimented with a variety of methods to reduce the impact of fisheries on non-target species, with a number of measures reaching implementation in fisheries.

The Selective Fisheries Program included an education, training and communications components. The final report of the program is available at the following web site: http://www-comm.pac.dfo-mpo.gc.ca/publications/SFFinalReport_e.pdf

The annual salmon IFMP includes:

- Conservation objectives for non-target stocks.
- Use of selective fishing gear and methods, and development of the Canadian Code of Conduct for Responsible Fishing Operations.
- Gear restrictions to help avoid stocks of concern and non-target stocks/species or release them with minimal harm (e.g. revival tanks, gillnet construction and selective fishing).

In addition, management objectives for catch of non-target stocks and species are reflected in the *Conditions of Licence* for each of the licence areas. Revival tanks conforming to the conditions of licence are required for all vessels participating in commercial salmon fisheries. All prohibited species captured incidentally must be revived in the revival tank and released, or released directly to the water in a manner that causes the least harm[40].

See also responses to Indicators 3.4.1.2 and 3.4.2.1.

Scoring Rationale: The information provide was sufficient for all pink fisheries to pass the scoring criteria at the 60 and for the ISC and Fraser to pass the 80 SG. Fraser pink fisheries did not pass the second criteria at the 100 guidepost and partially passed the third criteria because estimates of bycatch for Skeena steelhead and Fraser steelhead and sturgeon are lacking for these fisheries. For the NCC, the assessment team agrees with stakeholders that there are documented concerns regarding some Area 3 and 4 commercial net fishers that conduct their

[40] Conditions of 2003/2004 Salmon Area B Licence, part 2, section 1 (no page numbers in Licence Conditions).

fishing activity in a manner that is not consistent with the goal of reducing the catch (mortality) of non-target species. Also, DFO has not been able to provide evidence that selective fishing or other initiatives have resulted in a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries. Therefore, the second and third scoring guideposts of the 80 SG are only partially met and the score has been revised to 73.

Condition 3-7a – For the NCC pink salmon UoC. - For the NCCC, to meet the requirements of the second and third 80 scoring guidepost, the fishery in Area 3 to 6 must demonstrate that there have been measures taken to ensure that fishing activity is conducted in a manner that is consistent with the goal of reducing the catch (mortality) of non-target species of conservation concern. DFO must provide clear evidence of either a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries or that exploitation level of those species has been determined by management to be acceptable. This evidence shall be provided by the second annual surveillance audit.

3.7.2	Prohibits the use destructive fishing practices, such as poisons and explosives.	• The management system prohibits or discourages the use of destructive fishing practices.	• The management system can demonstrate that destructive fishing practices, such as poisons or explosives, are not currently being used in the fishery.	• The management system prohibits fishing practices that utilize poisons or explosives, or other such devices that damage or destroy physical, chemical, and/or biological features or characteristics of the areas where such practices are prosecuted. • Evidence can be provided by the management system that such destructive practices are not currently being employed in the fishery.
Weight		**13.9**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 100**

Client: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- The Fisheries Act (MS 1.1.2.2) prohibits any use of explosives (Section 28) or deleterious substances (Section 34) in water frequented by fish.
- MS 3.3.1.3 includes an overview of the permit process for developments that affect fish habitat.

The type, size, and quantity of permitted fishing equipment that is specified in the Conditions of Licence (MS 2.5.3). Neither explosives nor

poisons are included in the list of permitted gear and equipment.

- MS 2.5.3.1 links to guidelines for the use of explosives in or near Canadian fisheries waters.
- MS 2.6 explains the mechanisms in place to monitor and enforce compliance with requirements for non-destructive fishing methods.

The *Fisheries Act* prohibits the use of explosives (section 28) or deleterious substances (Section 34).[41] Furthermore, the type, size and quantity of fishing gear and equipment that is permitted to be used and the manner in which it may be used are specified in the Conditions of Licence. Neither explosives nor poisons are included in the list of permitted gear and equipment.

Recent charges and convictions are publicly announced, and an archive of charges and convictions back to 1994 is available.[42] There are no recent cases of explosives or poisons used in this fishery, despite regular monitoring by on board observers, charter patrols, and fisheries officers.[43]

Scoring Rationale: The fishing practices for BC salmon fisheries do not include any destructive fishing practices, therefore, pink fisheries passed all the criteria associated with this indicator.

3.7.3	Minimizes operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.	• There is a program to reduce operational waste.	• The management system has a program that sets guidelines for reducing operational waste. • The management system encourages the fishing industry and other relevant stakeholders to promote programs for the proper handling of catch.	• The management system has a formal program to reduce operational waste in the fishery, with the long-term goal of eliminating such waste. • The program is effective, as reflected by reduced incidents of operational waste. • The management system has a formal program in which they work with the fishing industry and other relevant stakeholders to promote the proper handling of catch.

[41] http://laws.justice.gc.ca/en/f-14/59326.html
[42] http://www.dfo-mpo.gc.ca/media/charges_e.htm
[43] http://www.pac.dfo-mpo.gc.ca/ops/CP/default_e.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Weight	12.8	Score	NCCC Pink: 100 Inner SC Pink: 100 Fraser Pink: 100

Client: The following sections of the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) submissions provide evidence specific to this performance indicator.

- MS 3.2.4.4 outlines impact reduction measures, including the Canadian Code of Conduct for Responsible Fishing Operations.

The Canadian commercial fishing sector has developed its own *Canadian Code of Conduct for Responsible Fishing Operations*.[44] Over 80 percent of Canada's fishing organizations have signed on and ratified the Code that is overseen by a Responsible Fishing Board. Commitments include:

- Principle 6: "Reduce waste and adverse impacts on the freshwater and marine ecosystems and habitats…"
- Guideline 1.2: "Practice environmentally sound waste management in all aspects of harvesting operations."
- Guideline 2.6: "Employ fishing practices that minimize the risk of gear loss."
- Guideline 2.7: "Establish jointly with regulatory agencies protocols for the marking, retrieving and reporting of lost gear."
- Guideline 2.8: "Make every reasonable effort to retrieve lost fishing gear, reporting all lost gear."
- Guideline 5.7: " Cooperate with appropriate regulatory authorities to establish sound waste management policies and procedures:

As well, as part of the licensing scheme, vessels are inspected to ensure, among other things, that operational waste is not released into holding areas. Similarly, inspection programs are in place in fish plants to ensure that operational waste is minimized and disposed of properly.

The BC Institute of Technology (BCIT) in partnership with the Provincial Ministry of Agriculture, Fisheries and Food, runs voluntary fish handling/freezing workshops to promote proper fish handling and food safety. The BC Salmon Marketing council prepares and distributes materials on fish handling and quality to educate its members.

Commercial fishing licence conditions include provisions for minimizing operational waste. Vessels are inspected to ensure, among other things, that operational waste is not released into holding areas. Similar inspection programs are in place in fish plants to ensure that operational waste is minimized and disposed of properly.

[44] http://www.dfo-mpo.gc.ca/media/back-fiche/2003/hq-ac26b-eng.htm
http://www.fisheriescouncil.ca/pdf/FCCFishingOperations6.pdf
http://www.dfo-mpo.gc.ca/communic/fish_man/code/cccrfo-cccppr_e.htm

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

Scoring Rationale: No issues related to operational waste have been identified regarding pink fisheries. Therefore, pink fisheries passed all the criteria associated with this indicator.

3.7.4	The management system solicits the cooperation of the fishing industry and other relevant stakeholders in the collection of data on the catch and discard of non-target species and undersized individuals of target species.	• Catch and discard data provided by the fishing industry and other relevant stakeholders are sufficient to manage the harvests from the majority of the non-target species and undersized individuals from the majority of the target species.	• Sufficient numbers of fish harvesters and processors comply with requests for data on catches and discards of non-target species and undersized individuals of target species to ensure that reliable estimates of total catches and discards for the fishery can be obtained.	• The majority of fish harvesters and processors are in compliance with management requests for the collection of data on catches and discards of non-target species and undersized individuals of target species. • Continued improvement in the quality and quantity of catch and discard data is evident.
Weight		**32.8**	**Score**	**NCCC Pink: 70** **Inner SC Pink: 90** **Fraser Pink: 70**

Client: DFO has established an extensive monitoring and assessment structure for Pacific salmon and the fisheries targeting them.

- MS 1.2.9 describes on-going initiatives related to the changing structure of Pacific fisheries, which emphasise enhanced monitoring and improved collaboration. The section discusses incentives for collaboration and lists pilot projects.
- MS 2.4.1.2 explains how collaborative programs complement DFO-led, fishery-independent data collection efforts.
- MS 2.4.2.5 outlines fishery monitoring and catch reporting programs in place for pink and chum fisheries.
- MS 2.7 summarizes DFO's toolkit for monitoring and assessment, including collaborative programs such assessment fisheries
- MS 4.3.4.4 describes formal collaborative arrangements, which includes arrangements for catch monitoring (e.g. charter patrols) and stock assessment (e.g. test fisheries).
- MS 3.2.4 summarizes the Selective Fishing Program and includes examples of on-going implementation. MS 2.5.4.3 describes measures in place to reduce incidental harvest and by-catch. Many of these were developed in close cooperation with stakeholders.

- CUP 4.2.4 describes details of the catch monitoring program in each area.

Catch reporting for target and non-target species are obligatory in all commercial fisheries. Following from the DFO discussion paper Pacific Region Fishery Monitoring and Reporting Framework,[45] mandatory logbooks, frequent phone-in, and sales slip programs are in place for all commercial fisheries.[46] Data on other species of fish, seabirds, and other non-target species, either retained or released, must be recorded. Compliance rates for catch reporting by harvesters are monitoring and reported for each fishery. When compliance rates

New frameworks for catch monitoring and reporting are also being addressed through the PICFI program currently underway and described above (fishery restructuring). Their success depends on cooperation of and assistance from the commercial fishing industry. The industry is brought into the process for developing new standards through extensive consultation processes that are described in Indicator 3.3.1.

Scoring Rationale: The information provided for Inner SC pink fisheries did not identify any bycatch issues for these fisheries. North-Central Coast and Fraser pink fisheries received a partial rating for the sole criteria at the 80 scoring guidepost because estimates of bycatch for Skeena steelhead and Fraser steelhead and sturgeon are lacking for these fisheries. As stated previously for Indicator 3.1.1. No evidence of the quality and quantity of catch and discard data has been provided.

Condition 3-8. For NCCC pink salmon UoC. Same as Condition 3-2. Certification of North-Central Coast pink fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for North-Central Coast pink fisheries. To be provide by the first annual surveillance audit

Condition 3-9. For Fraser Pink Salmon UoC. - Same as Condition 3-3. Certification of Fraser pink fisheries will be conditional until scientifically defensible annual estimates of non-target species bycatch are obtained for Fraser pink fisheries. To be provide by the first annual surveillance audit.

[45] Pacific Region Fishery Monitoring and Reporting Framework, January 2002. http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/fisheriesmgmt/reportingframework/monitoringpaper_e.pdf

[46] See sample logbook: IFMP 2003, Appendix 3.
For more information on the log-book program, see: 2007 South Coast Salmon IFMP, Section 7.5.

PERFORMANCE INDICATOR	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100

3.7.5	Implements fishing methods that minimize adverse impacts on habitat, especially in critical zones.	• The management system has a program for assessing the impact of the fishery on habitat, and for making fishers aware of suitable fishing gear and practices that are known to reduce adverse impacts on habitat.	• The management system undertakes measures to identify and document the impact of the fishery on habitat and to set guidelines for reducing habitat impacts. • Fish harvesters are encouraged to follow the guidelines for reducing habitat impacts.	• The management system has a formal program to identify and document the impact of the fishery on habitat, and implements measures to restrict gear and fishing practices that have been shown to adversely affect habitat. • The crews of fishing vessels comply with such measures and thereby avoid damaging the habitat. • There is no evidence of continued impacts of fishing on habitat.
Weight		**12.8**	**Score**	**NCCC Pink: 100** **Inner SC Pink: 100** **Fraser Pink: 97**

Client: Commercial salmon fisheries in BC use gill net, seine, or troll gear. Neither of these gear types has been associated with habitat impacts. More generally, a range of measures and initiatives are in place to reduce any impacts of fishing activity:

- MS 2.5.4.4 describes measures to reduce potential marine ecosystem impacts of salmon fisheries.
- MS 3.2.4.4 summarizes impact reduction measures developed under the Selective Fisheries Program, as well as the Canadian Code of Conduct for Responsible Fishing Operations.
- MS 3.3.2.1 lists marine protected areas and other spatially persistent fishing closures.
- Appendix 2 illustrates the fine spatial resolution of critical area protection with a list of salmon fishing closures in Johnstone Strait (Areas 12 and 13).

For commercial salmon fisheries, there is no serious concern regarding impacts of the fishery on habitat given the type of gear that is used and the style and location of fishing. Commercial gillnets fish in the upper 10 meters of the ocean. Seine nets and troll gear types are not effective when in contact with the ocean floor.

Scoring Rationale: Most fishing practices used in BC pink salmon fisheries are believed to have minimal impacts on fish habitat. However, concerns have been raise regarding the potential impact of Fraser River beach seine fisheries on sturgeon spawning and rearing habitat in the

gravel reach. Therefore, all the NCCC and Inner SC pink fisheries passed all the criteria associated with this indicator, and Fraser pink salmon fisheries partially passed the first criteria at the 100 guidepost.

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Appendix A: Pink Salmon Stock Health Trend Summaries for North and Central Coast, Inner South Coast and Fraser River Units of Certification.

North and Central Coast Pink Salmon – Even Years

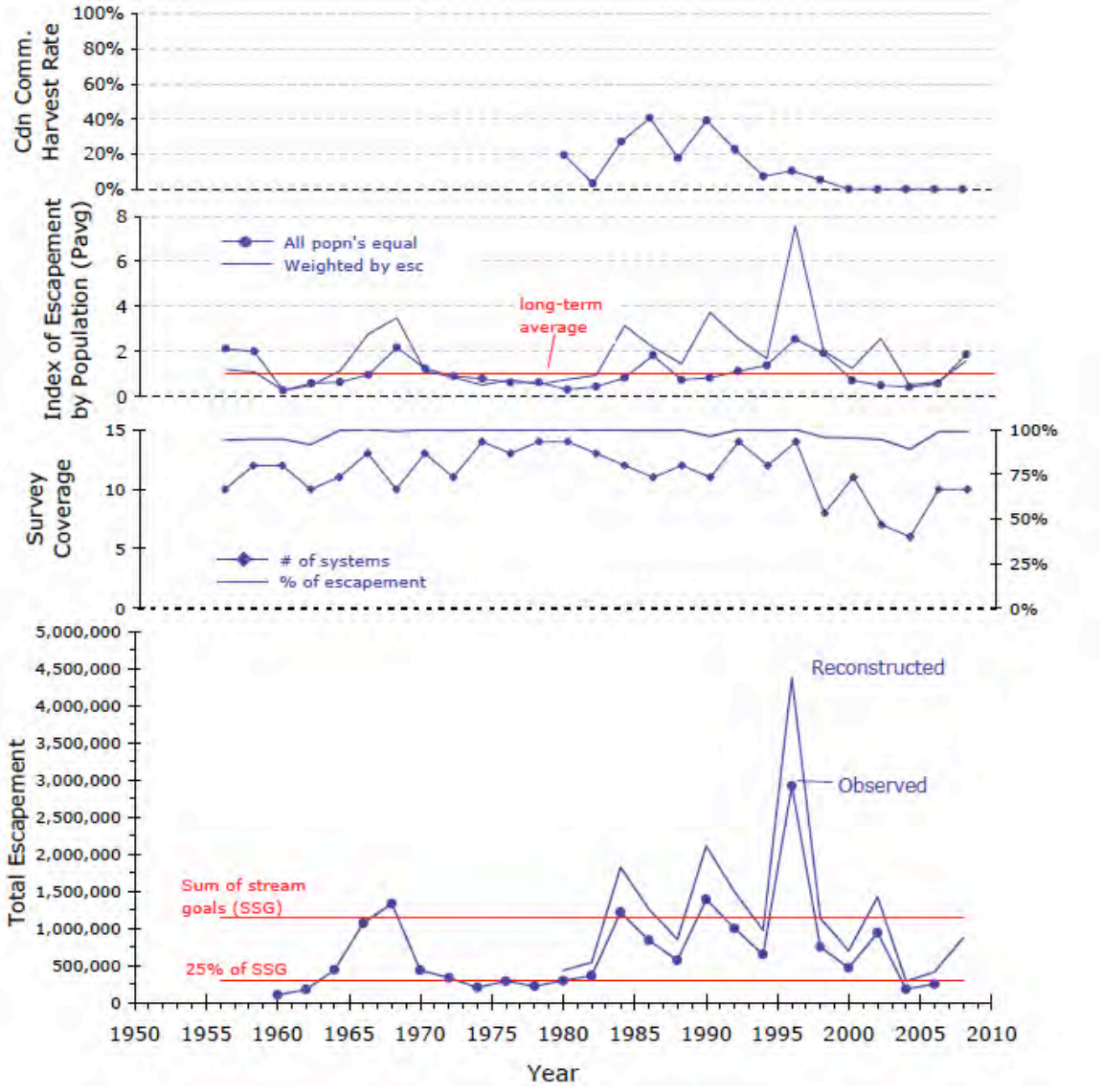

Figure 1. Trend summary for North & Central Coast pink salmon - Area 1 Even

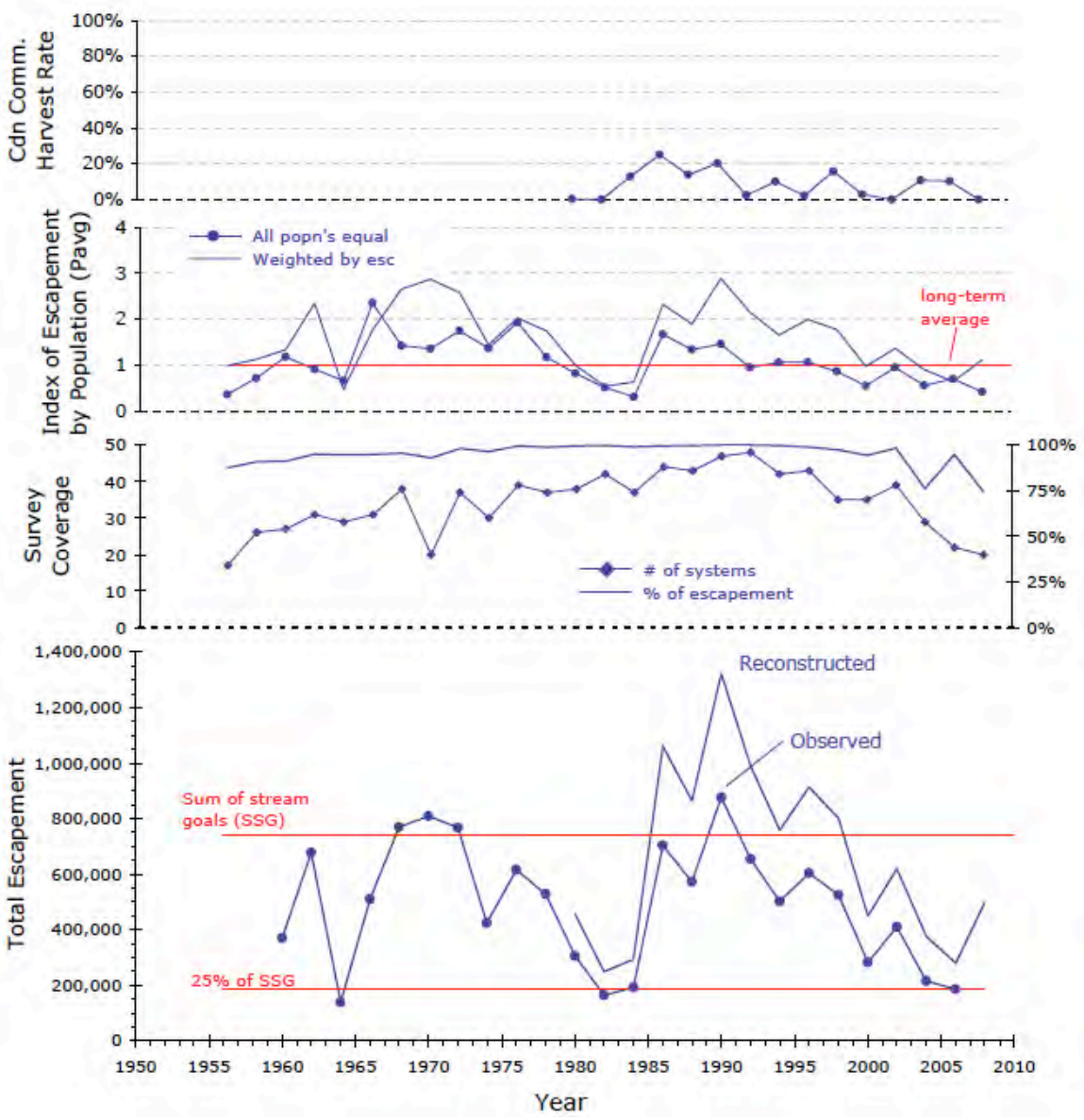

Figure 2. Trend summary for North & Central Coast pink salmon - Area 2E Even

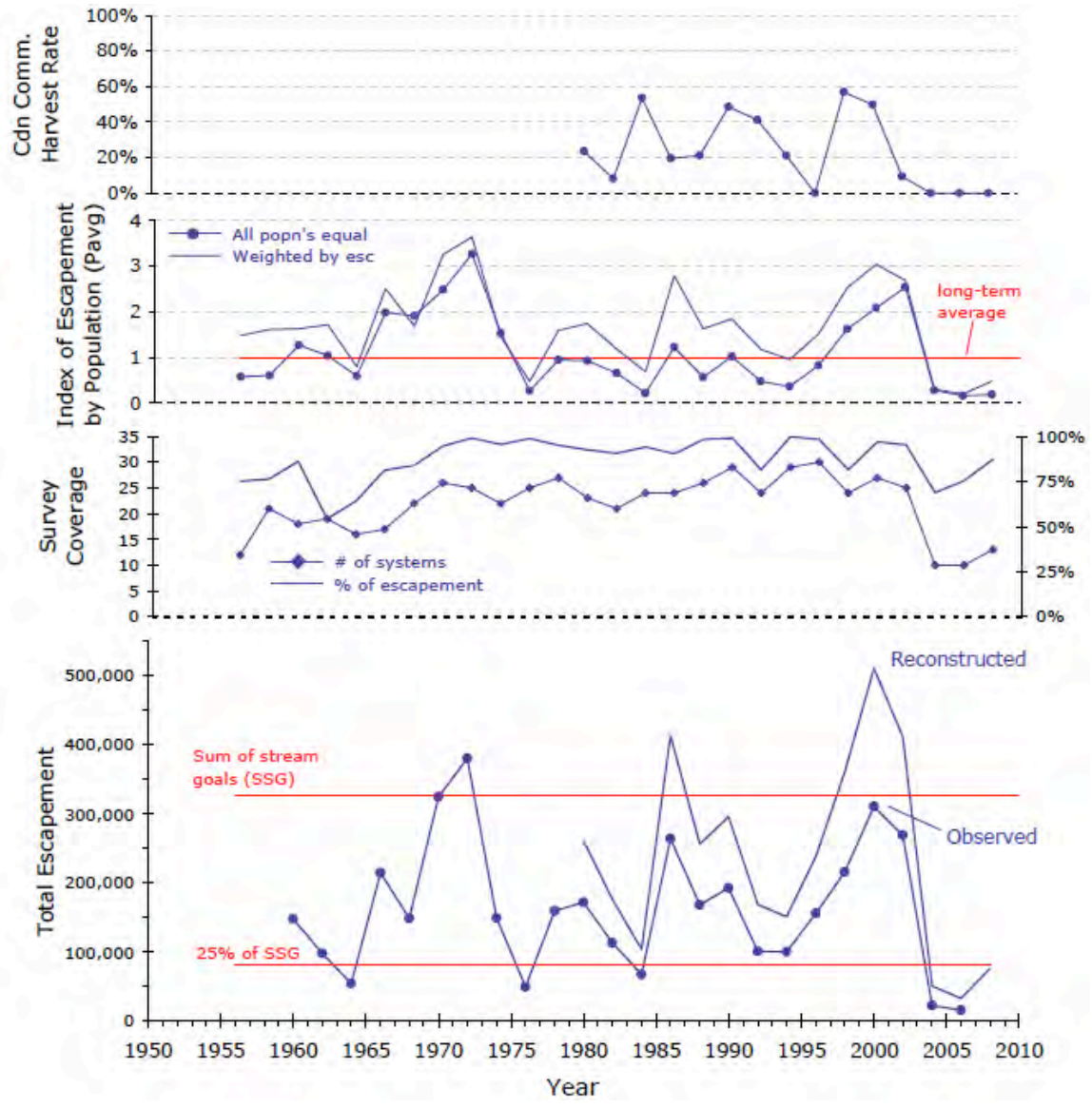

Figure 3. Trend summary for North & Central Coast pink salmon - Area 2W Even

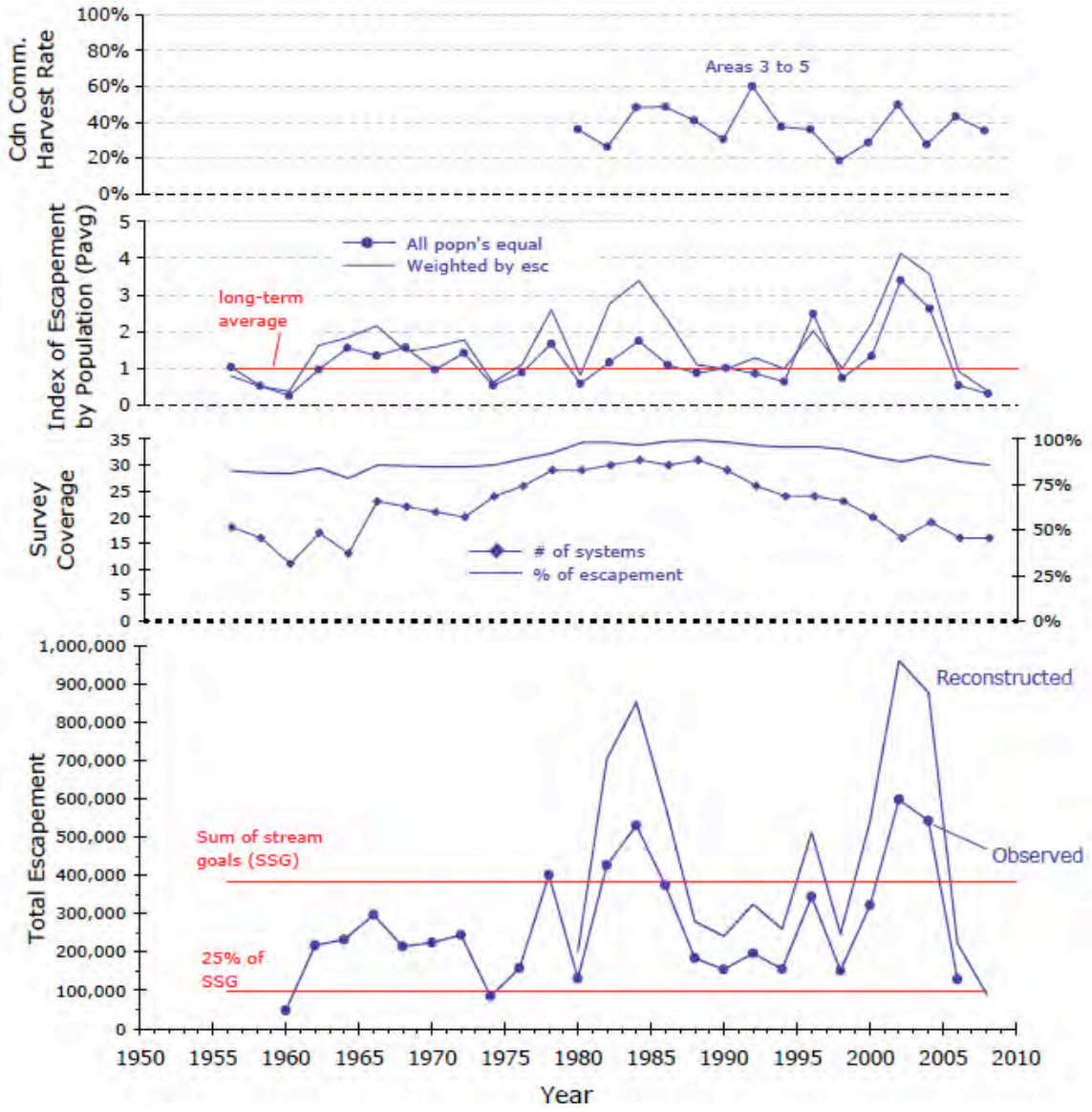

Figure 4. Trend summary for North & Central Coast pink salmon - Area 3 Even

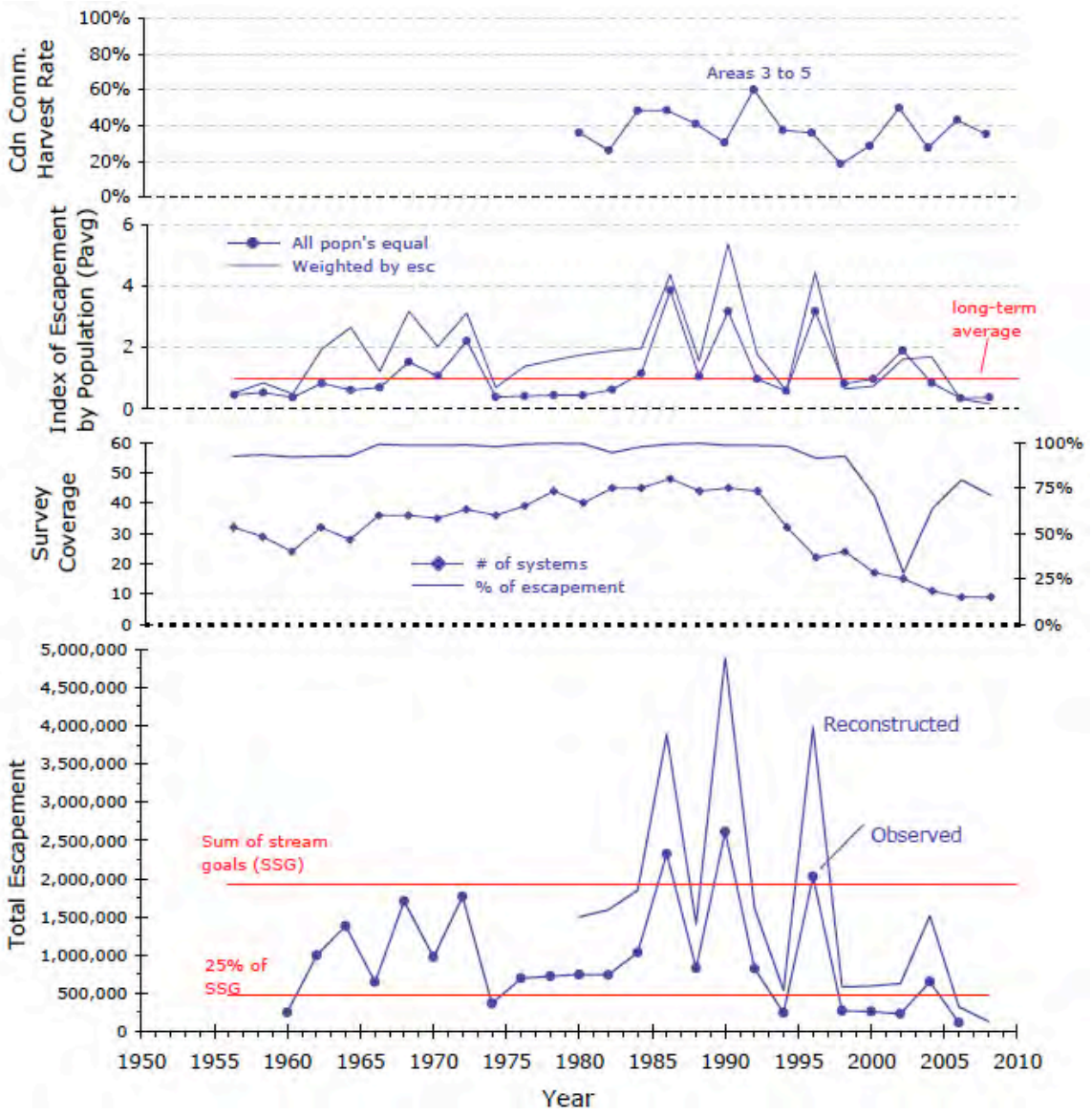

Figure 5. Trend summary for North & Central Coast pink salmon - Area 4 Even

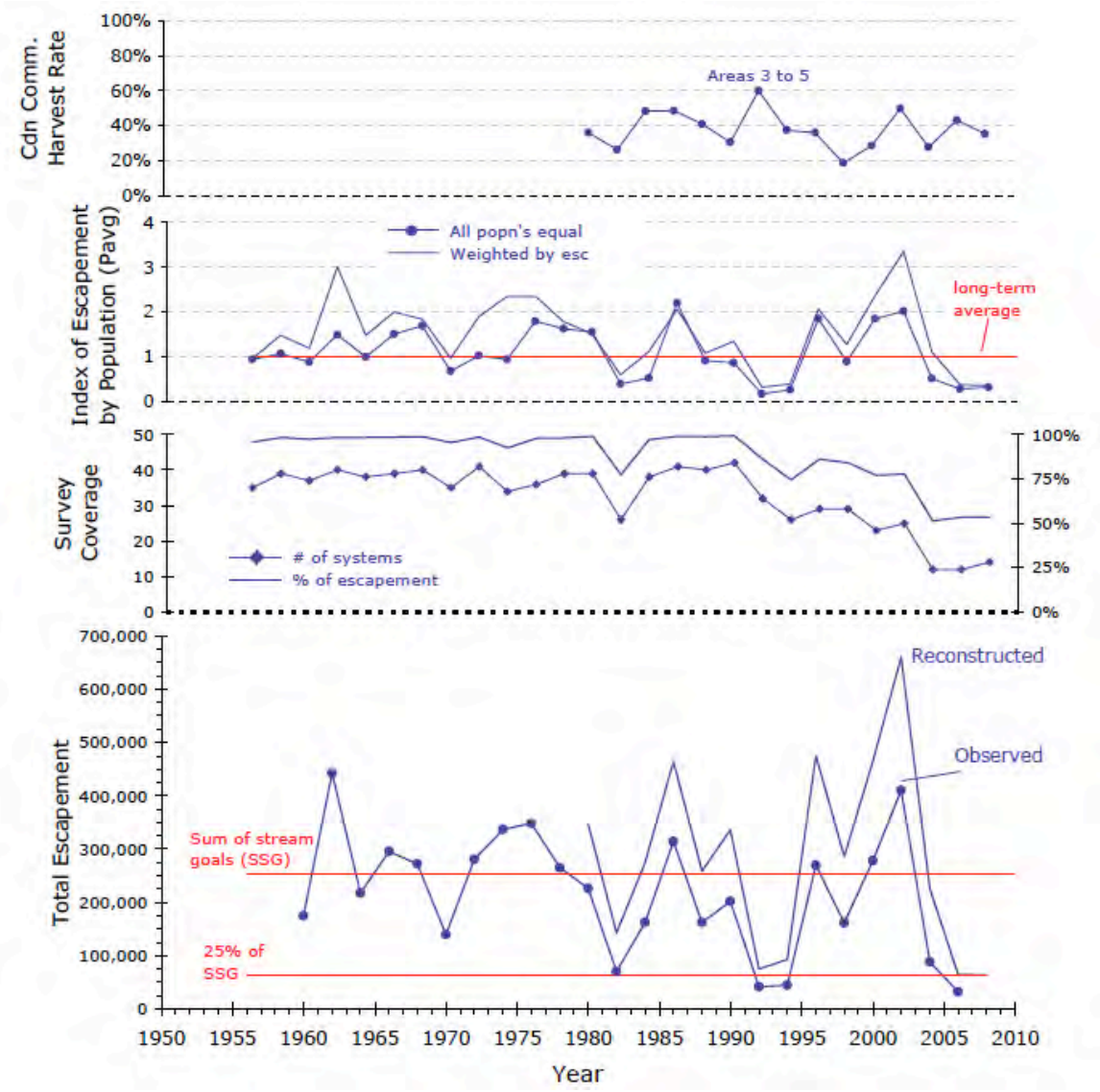

Figure 6. Trend summary for North & Central Coast pink salmon - Area 5 Even

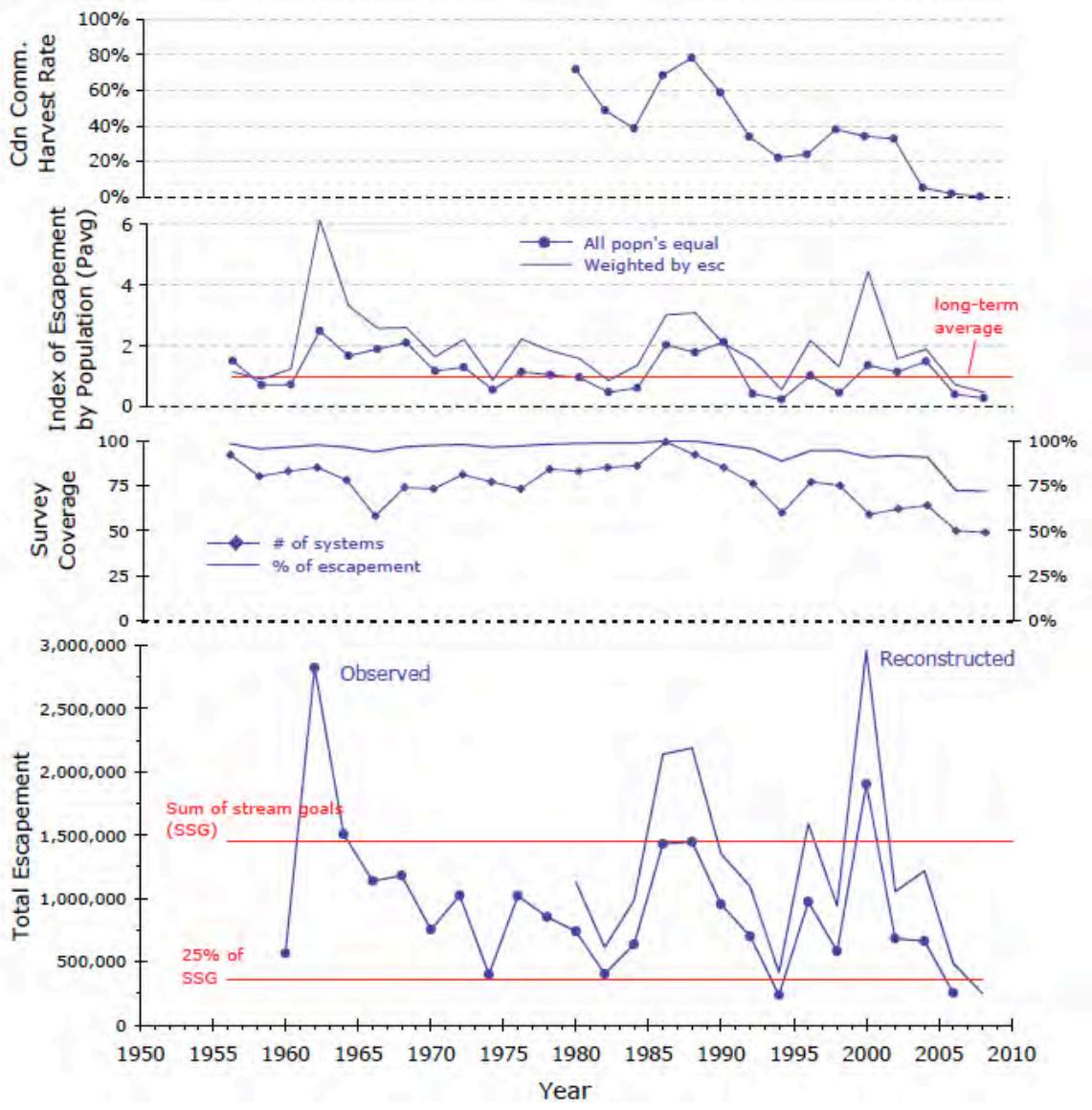

Figure 7. Trend summary for North & Central Coast pink salmon - Area 6 Even

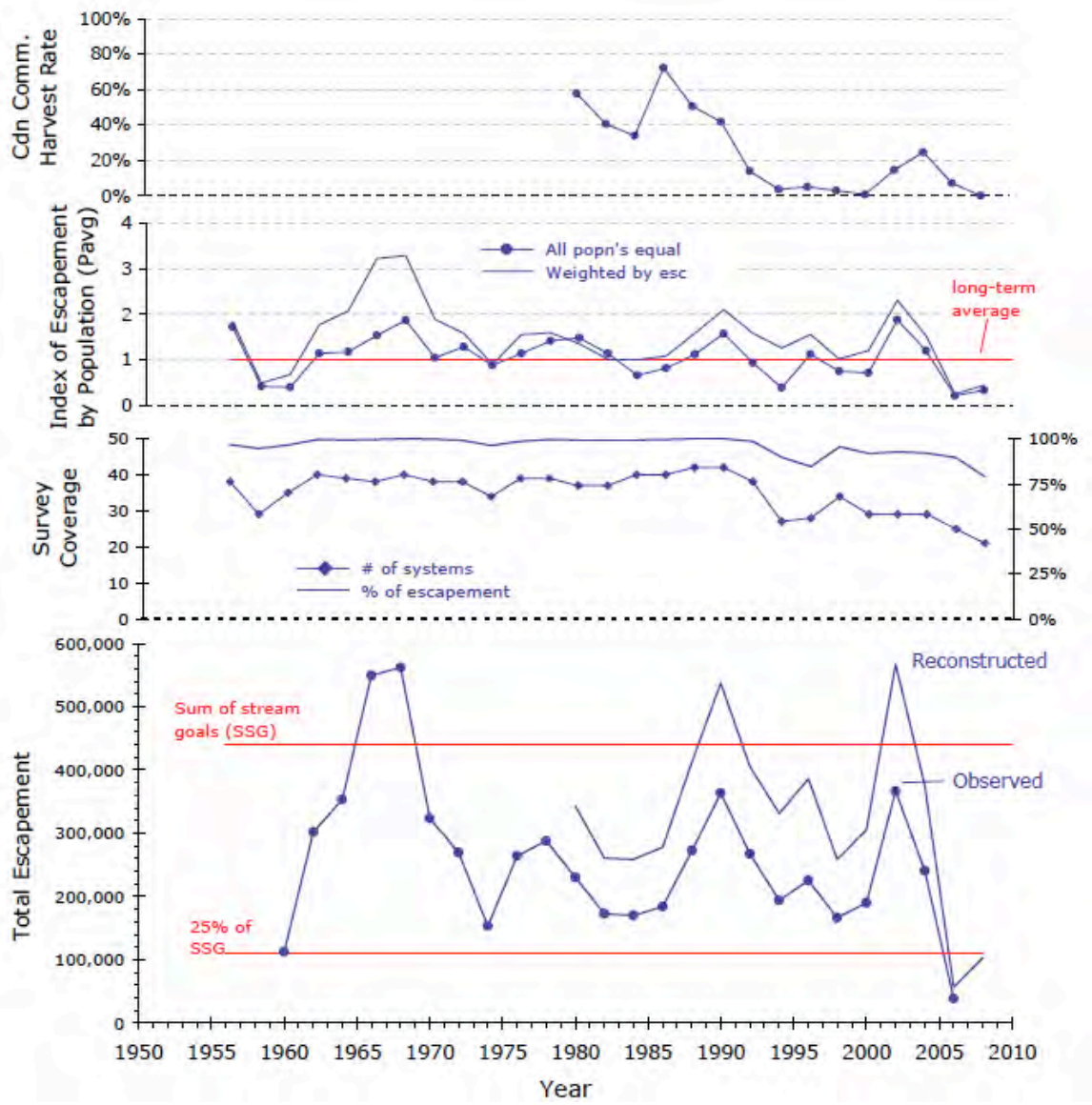

Figure 8. Trend summary for North & Central Coast pink salmon - Area 7 Even

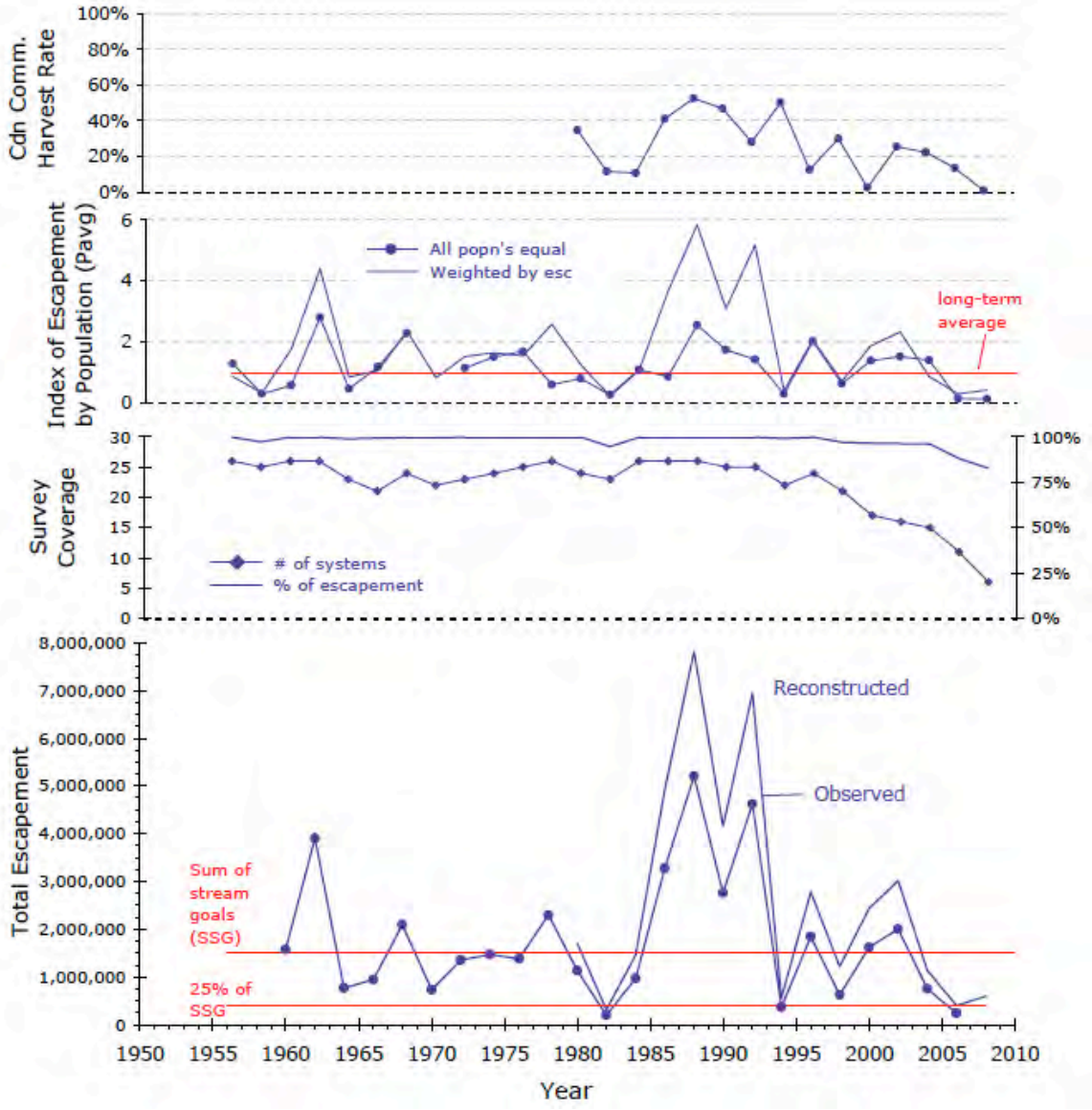

Figure 9. Trend summary for North & Central Coast pink salmon - Area 8 Even

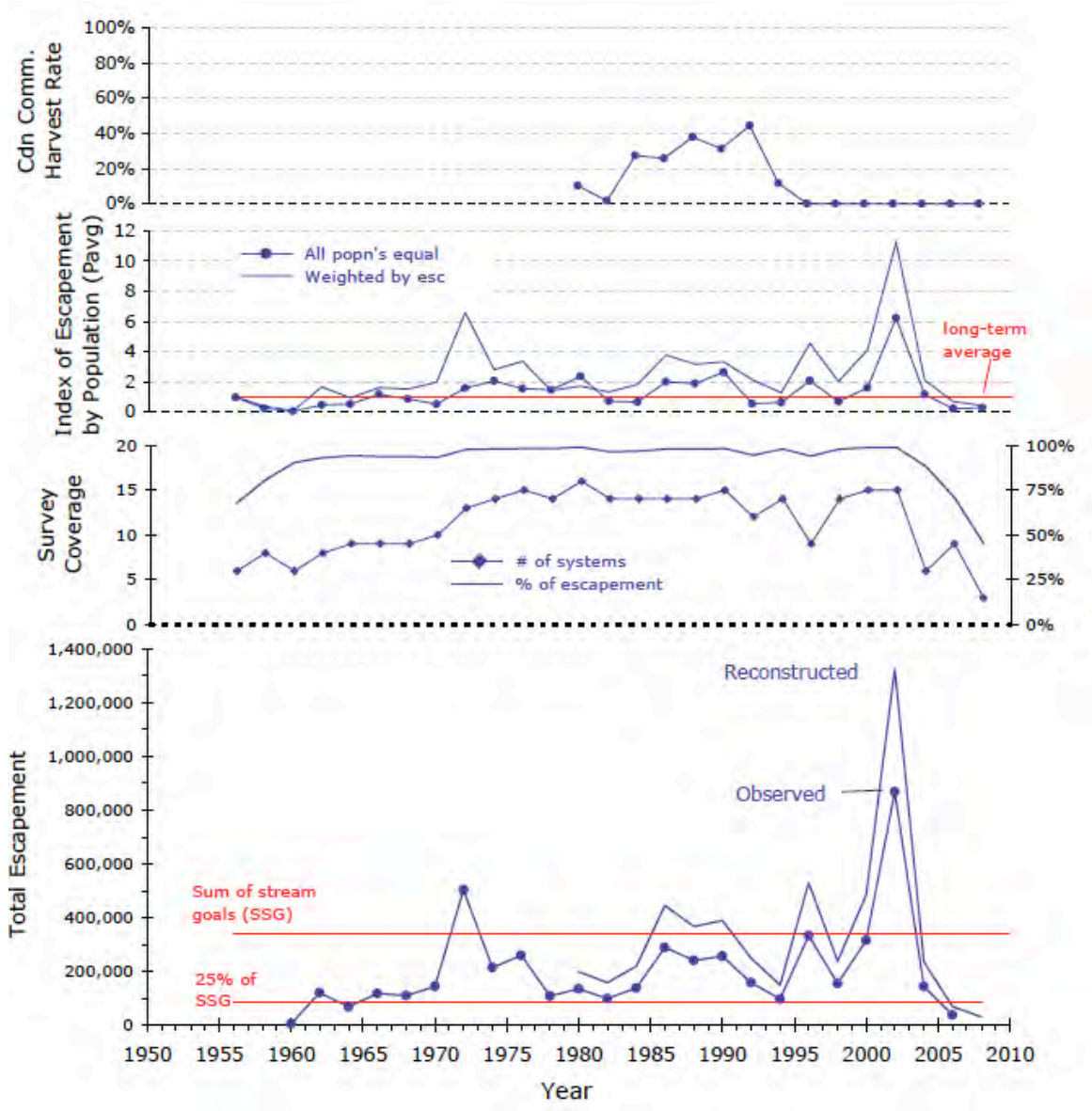

Figure 10. Trend summary for North & Central Coast pink salmon - Area 9 Even

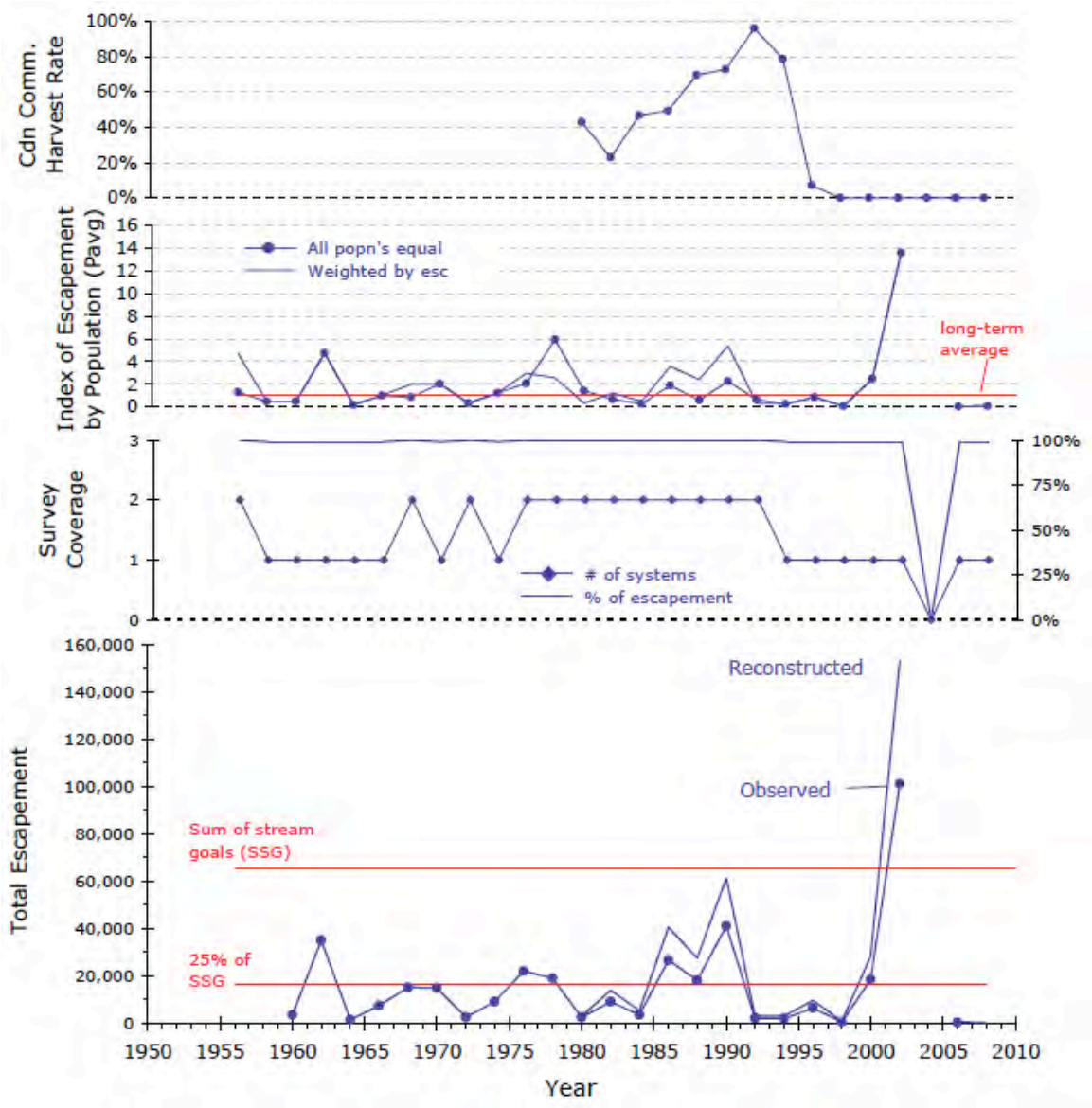

Figure 11. Trend summary for North & Central Coast pink salmon - Area 10 Even

North and Central Coast Pink Salmon – Odd Years

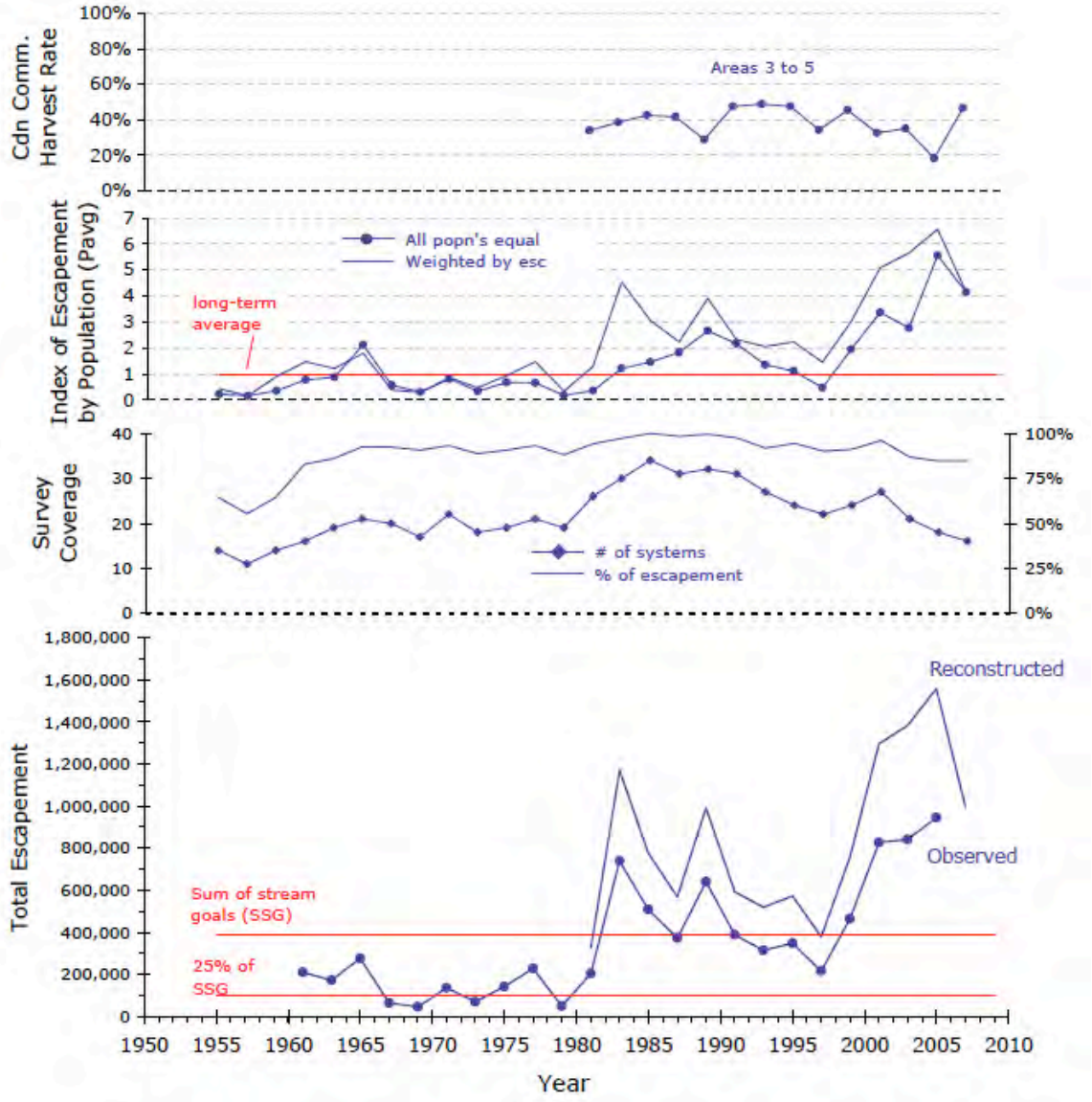

Figure 12. Trend summary for North & Central Coast pink salmon - Area 3 Odd

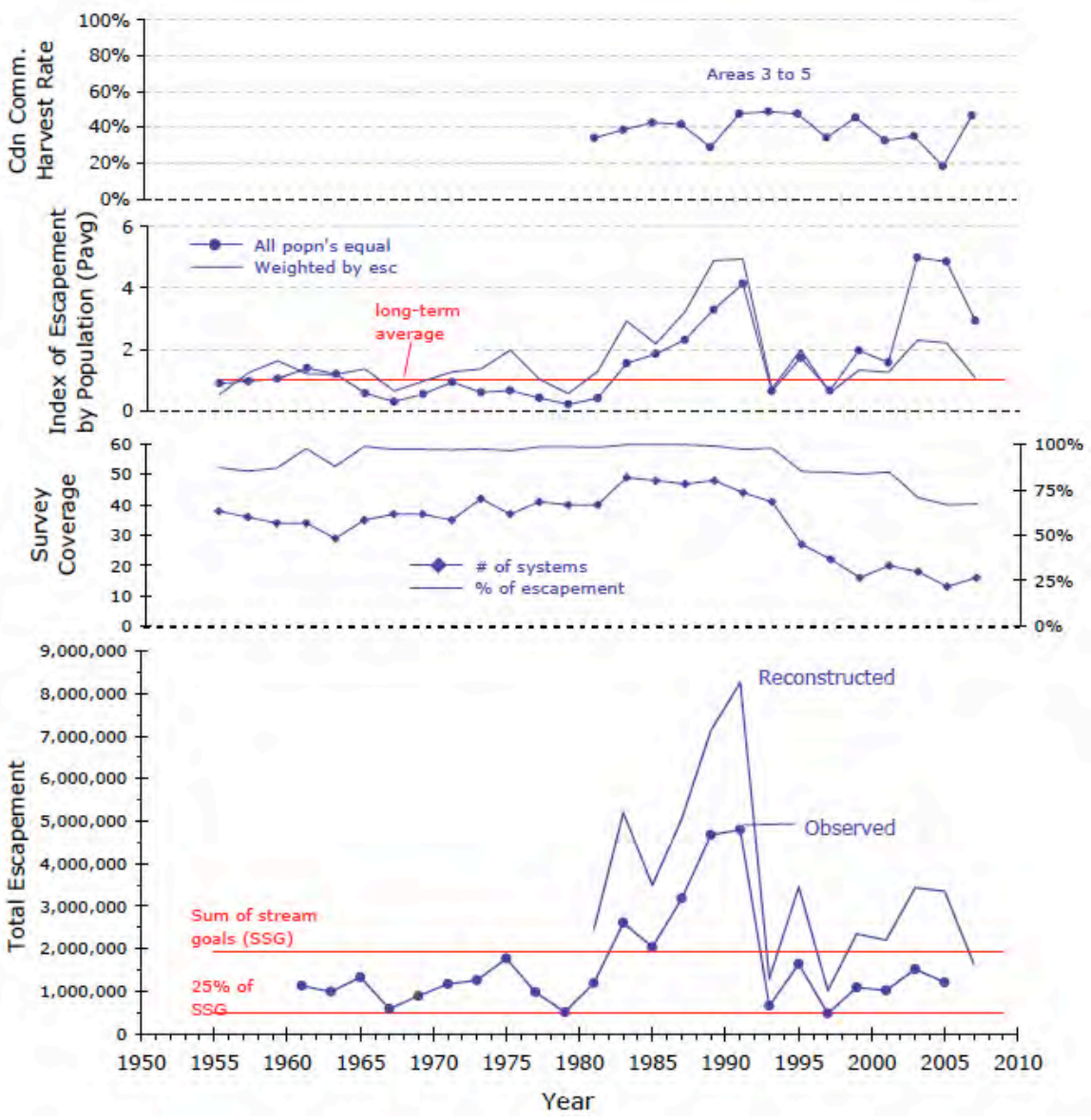

Figure 13. Trend summary for North & Central Coast pink salmon - Area 4 Odd

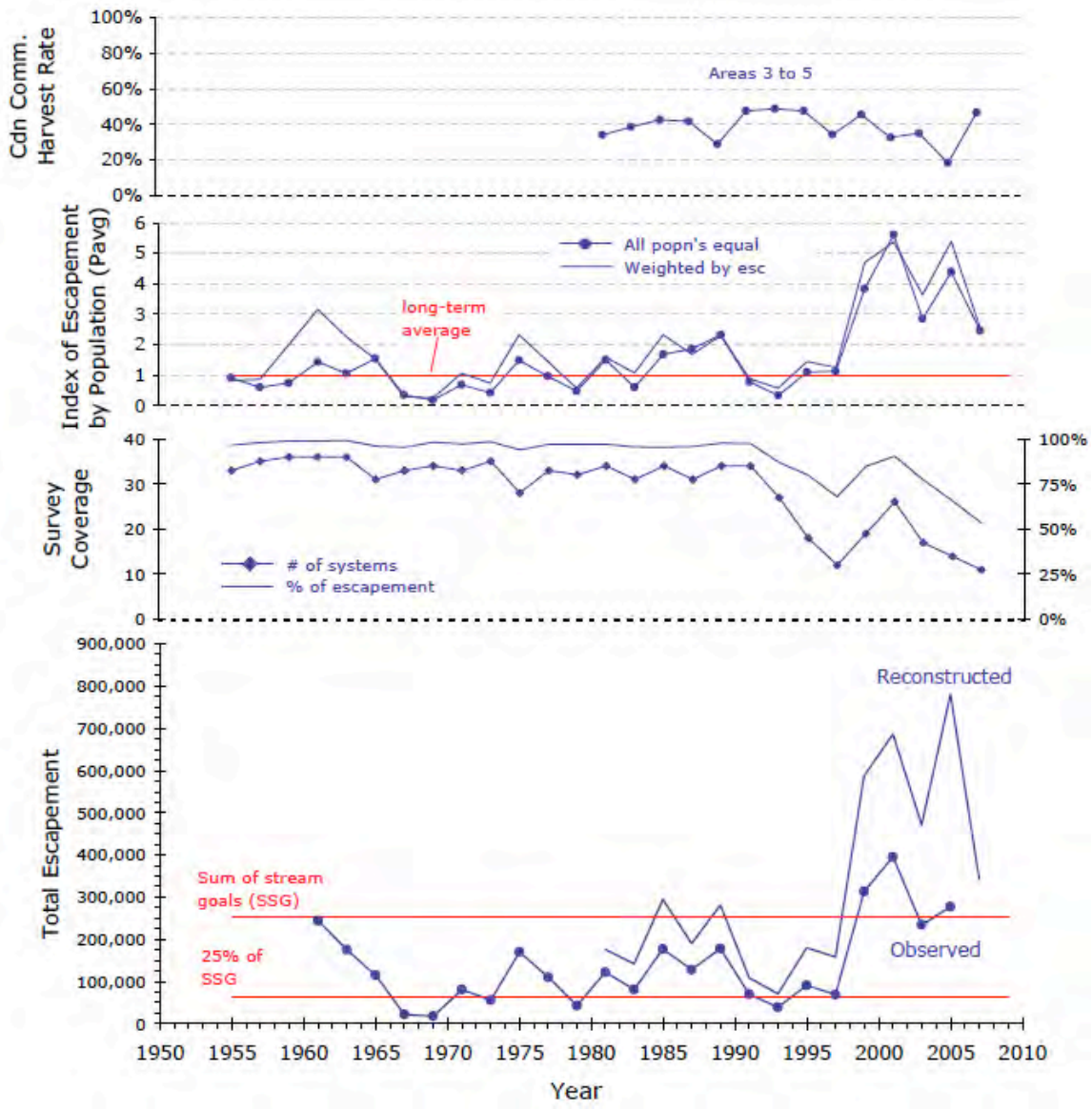

Figure 14. Trend summary for North & Central Coast pink salmon - Area 5 Odd

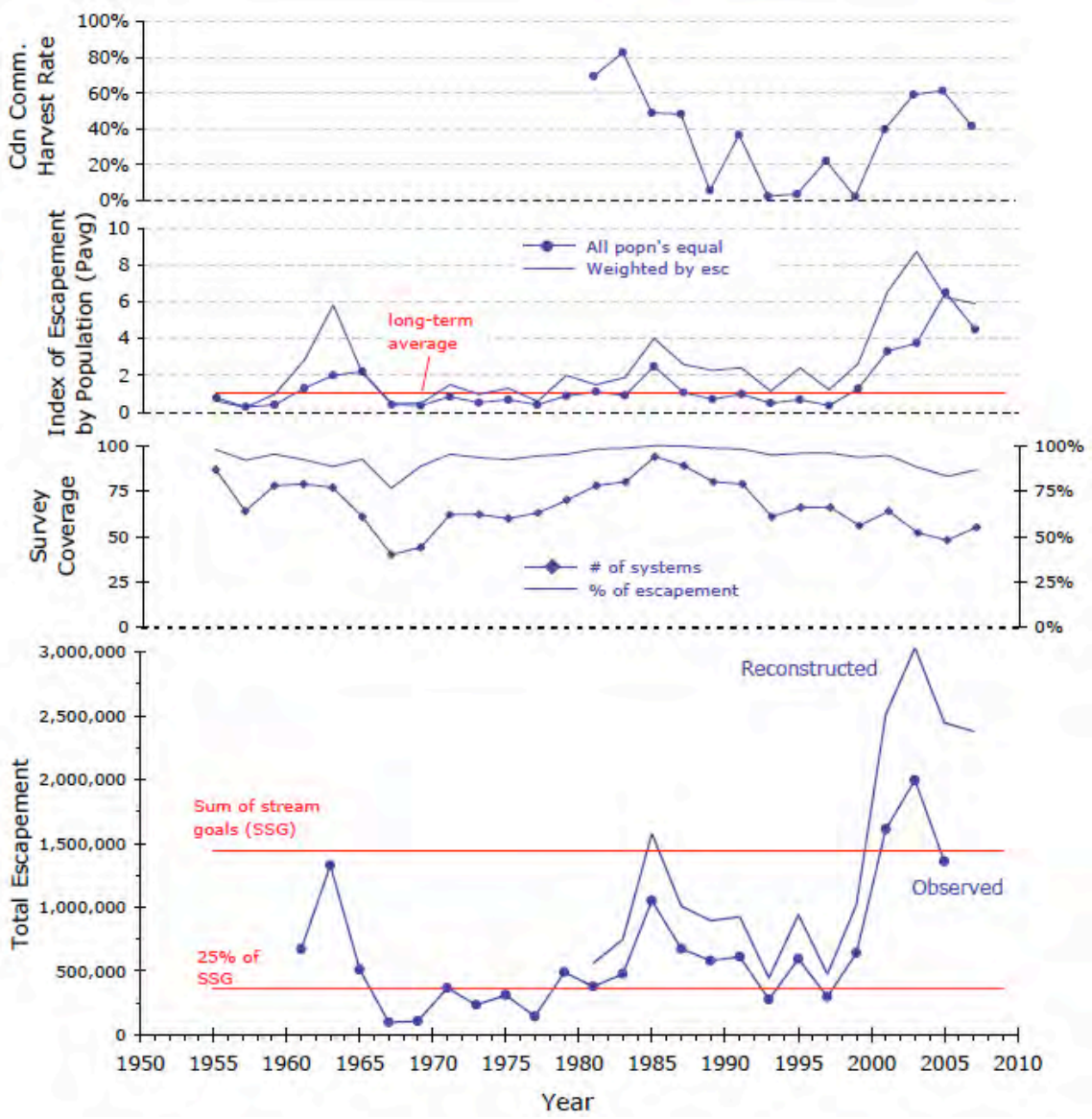

Figure 15. Trend summary for North & Central Coast pink salmon - Area 6 Odd

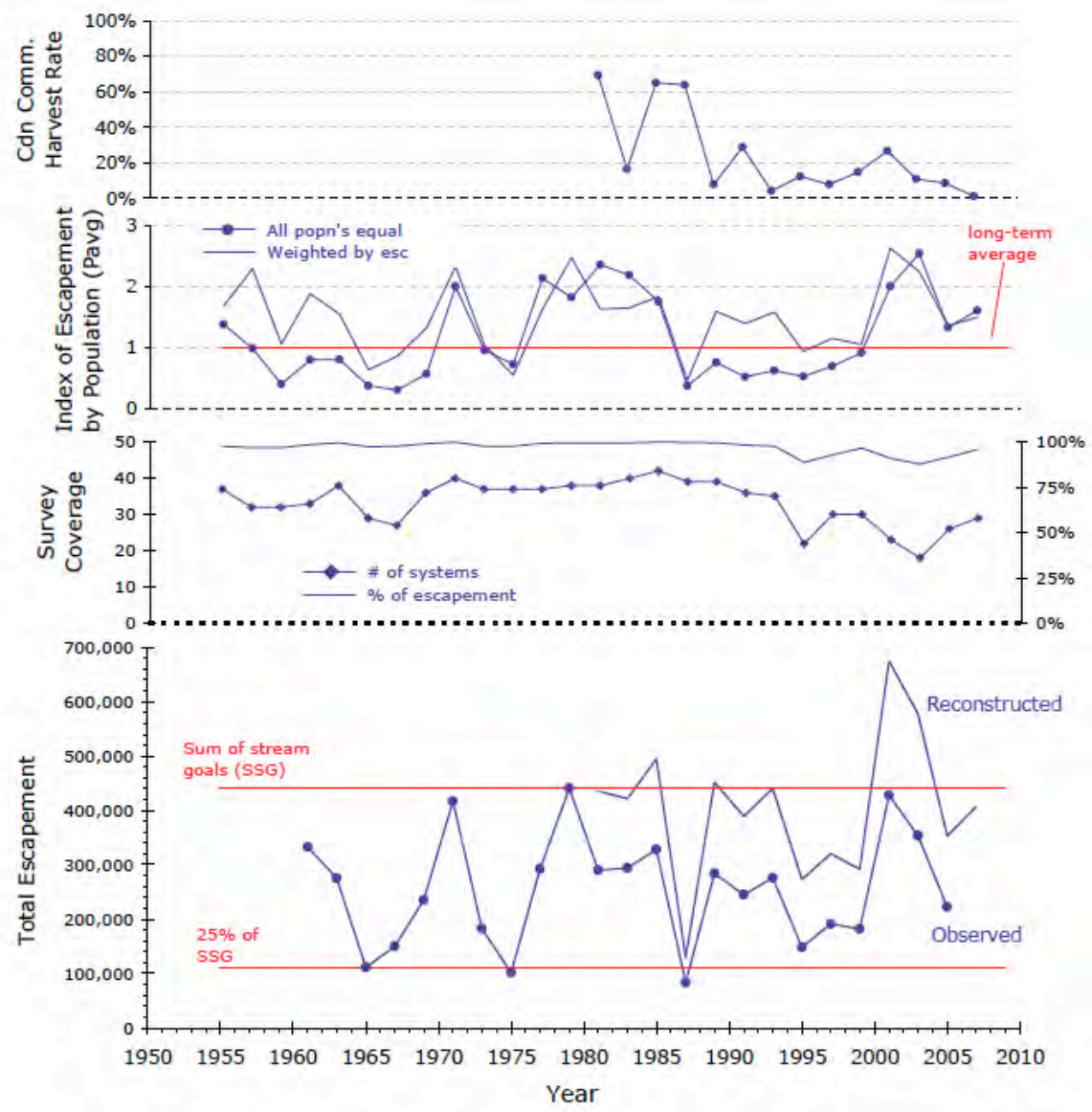

Figure 16. Trend summary for North & Central Coast pink salmon - Area 7 Odd

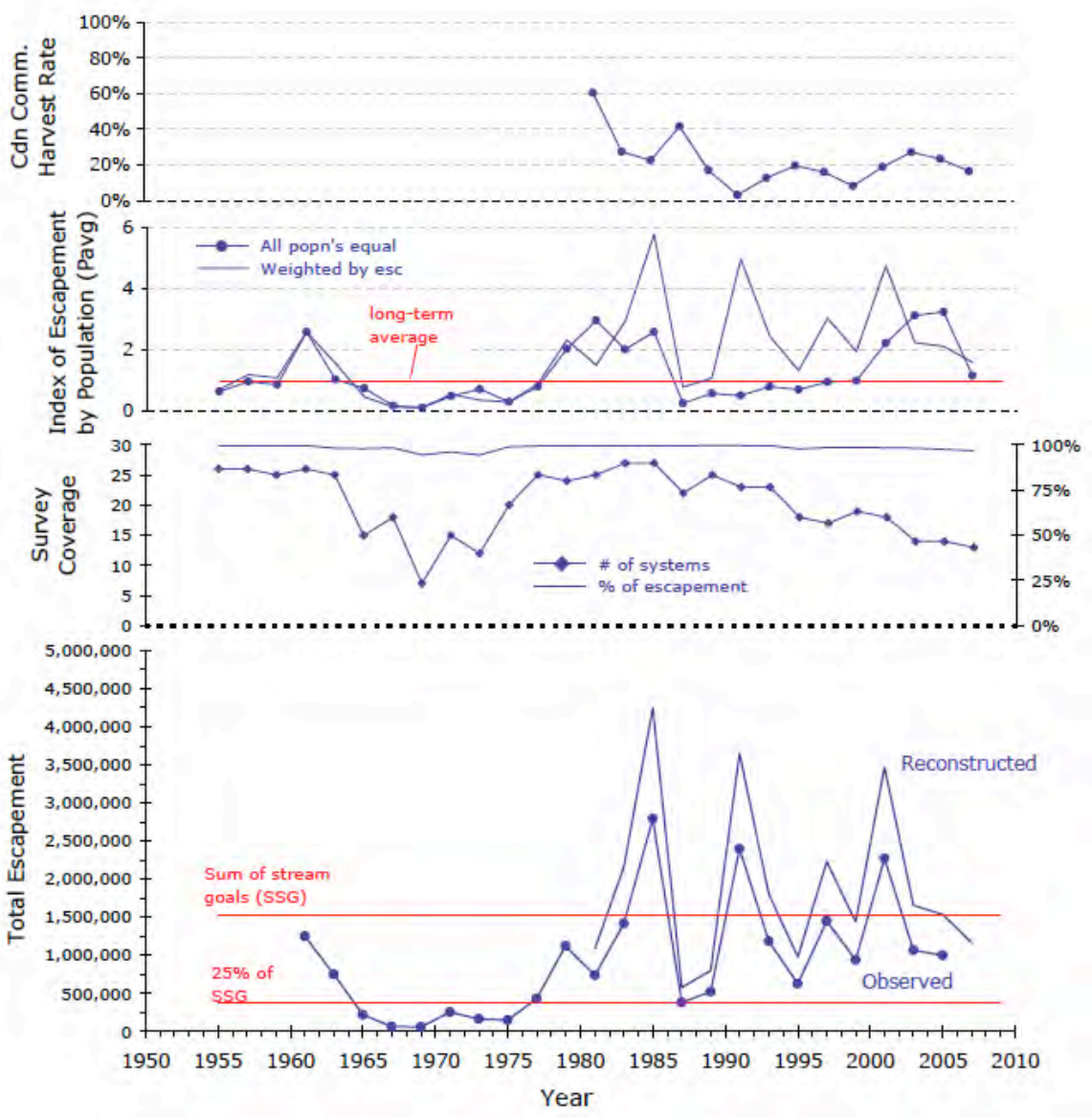

Figure 17. Trend summary for North & Central Coast pink salmon - Area 8 Odd

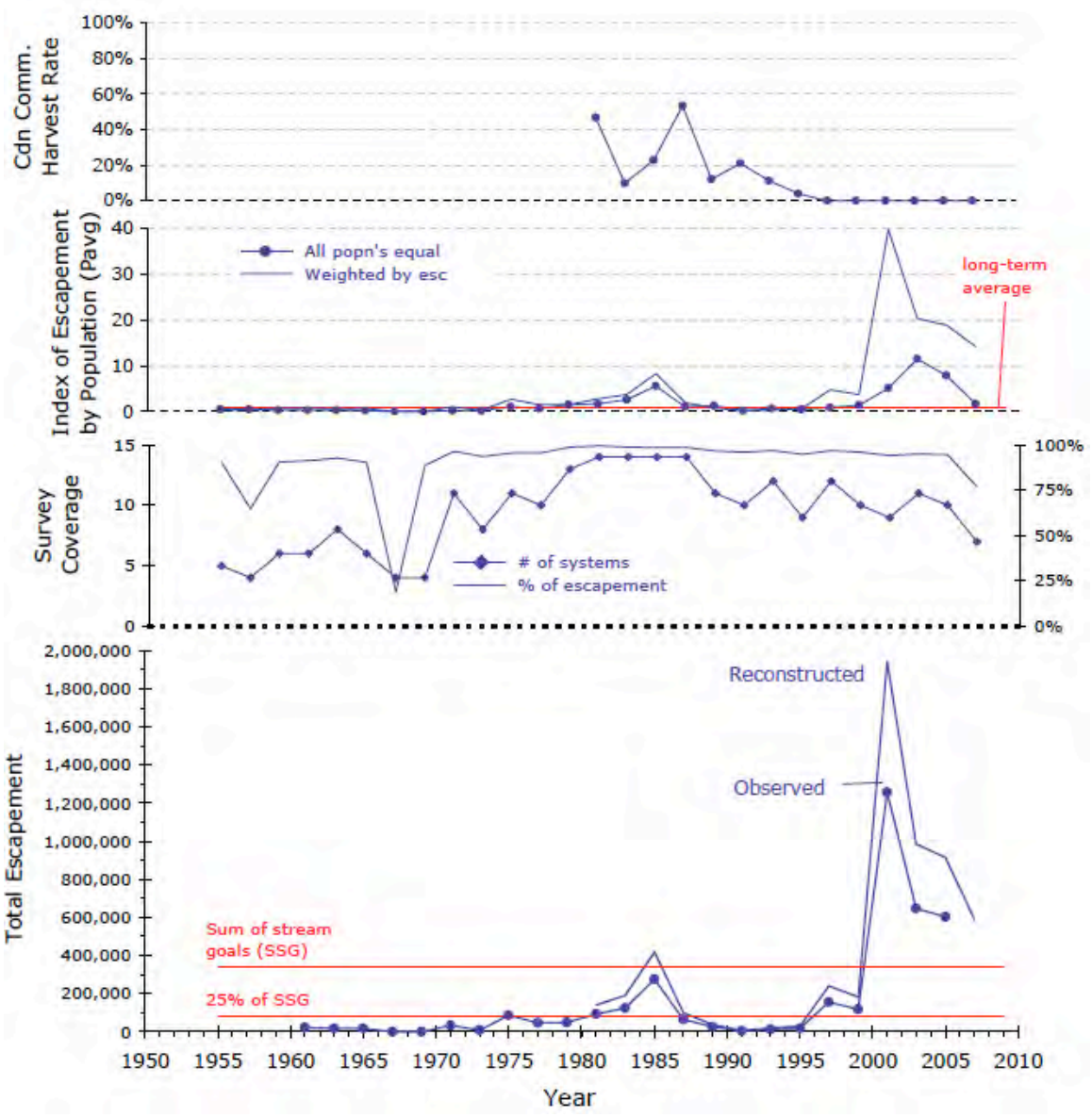

Figure 18. Trend summary for North & Central Coast pink salmon - Area 9 Odd

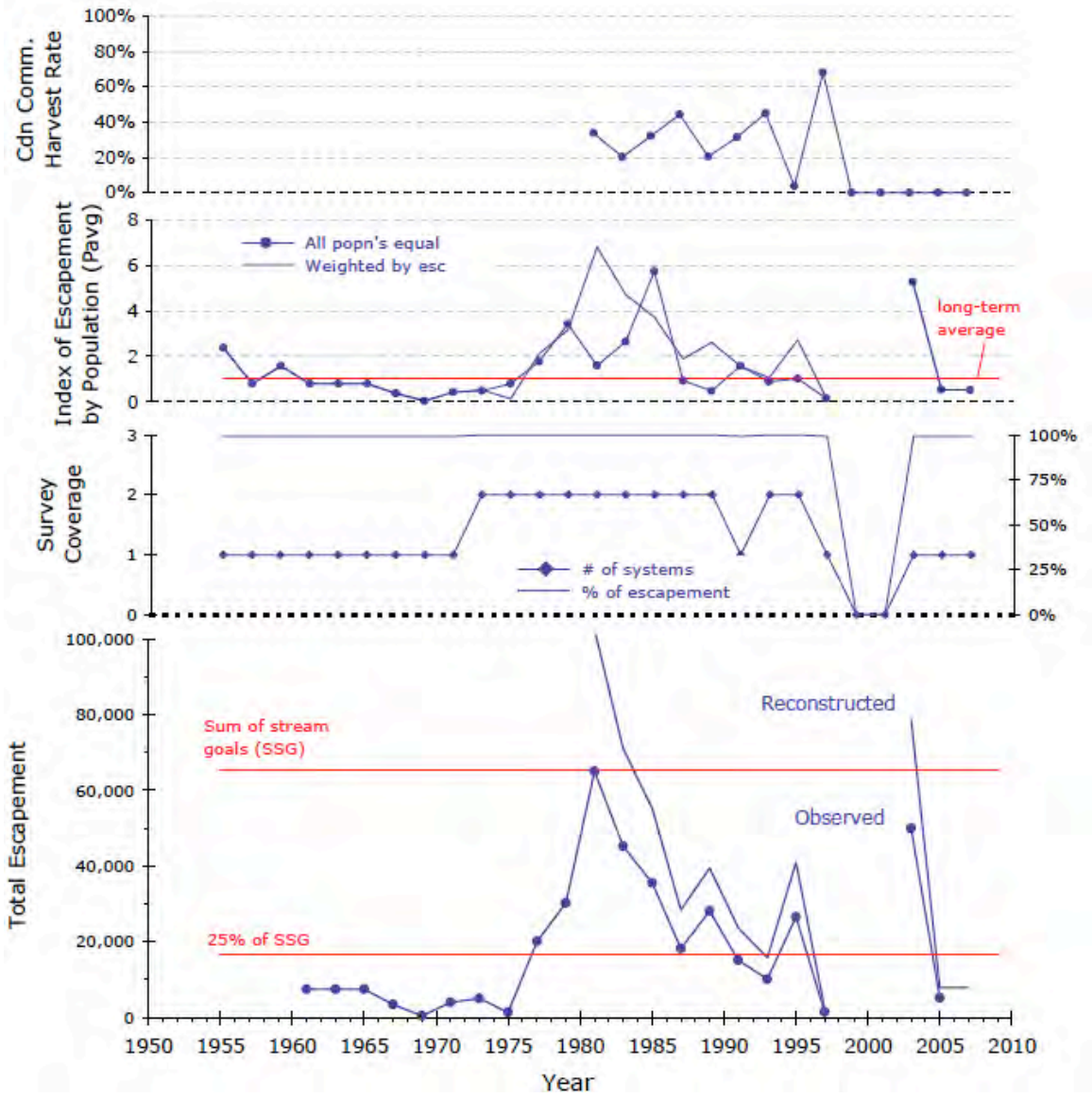

Figure 19. Trend summary for North & Central Coast pink salmon - Area 10 Odd

Inner South Coast Pink Salmon – Even Years

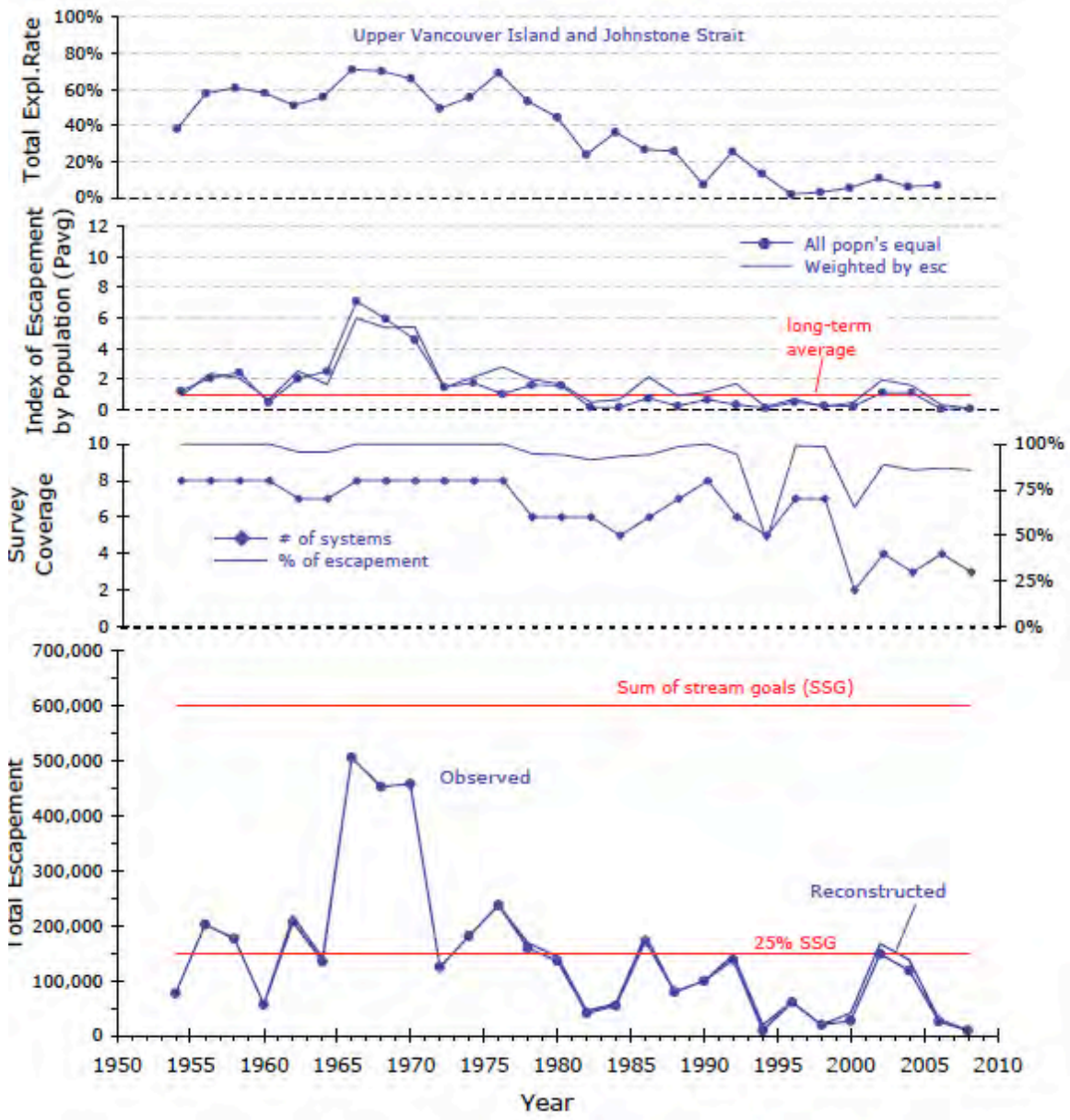

Figure 20. Trend summary for Inner South Coast pink salmon – Upper Vancouver Island Even

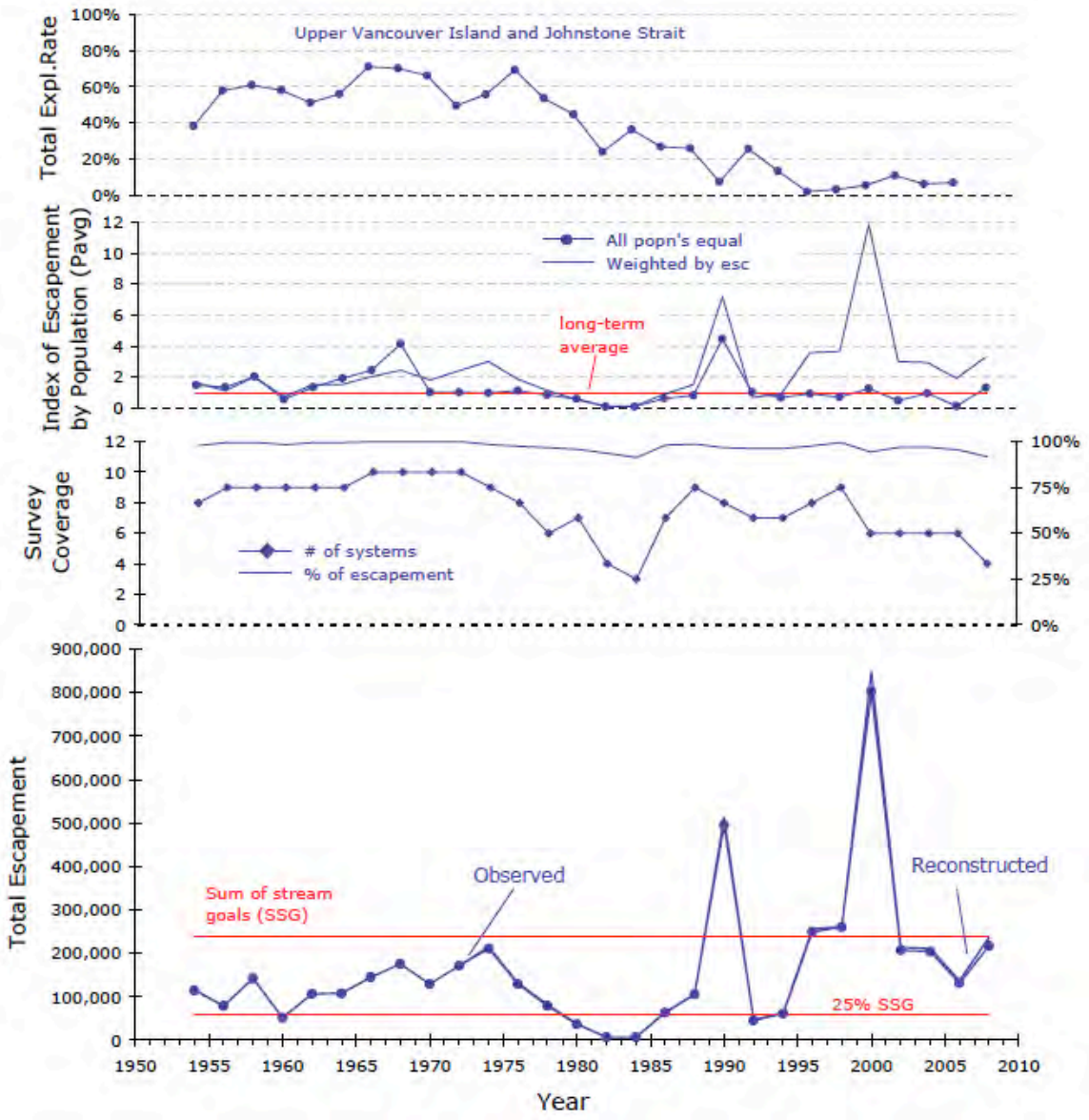

Figure 21. Trend summary for Inner South Coast pink salmon – Johnstone Strait Even

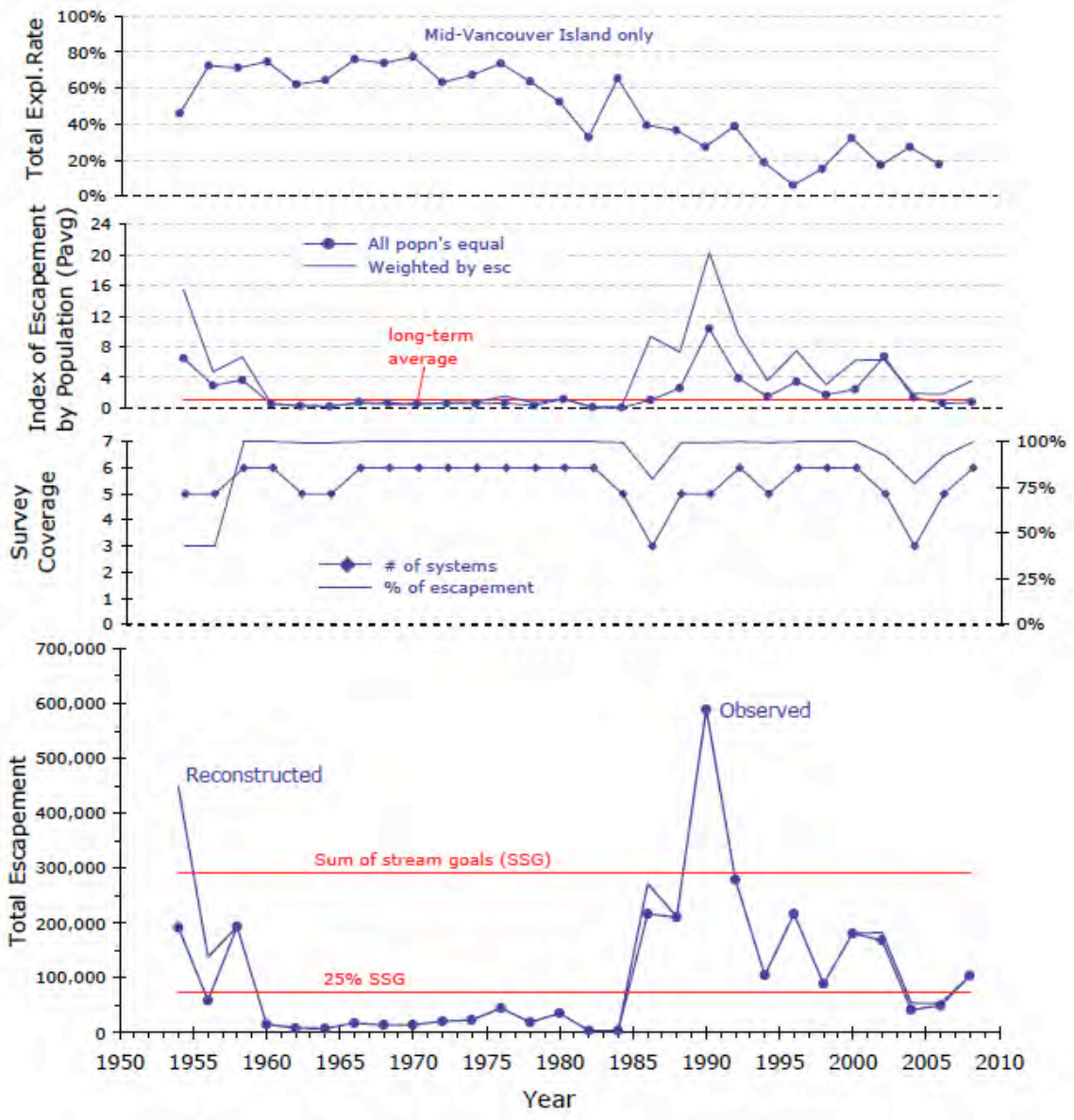

Figure 22. Trend summary for Inner South Coast pink salmon – Mid Vancouver Even

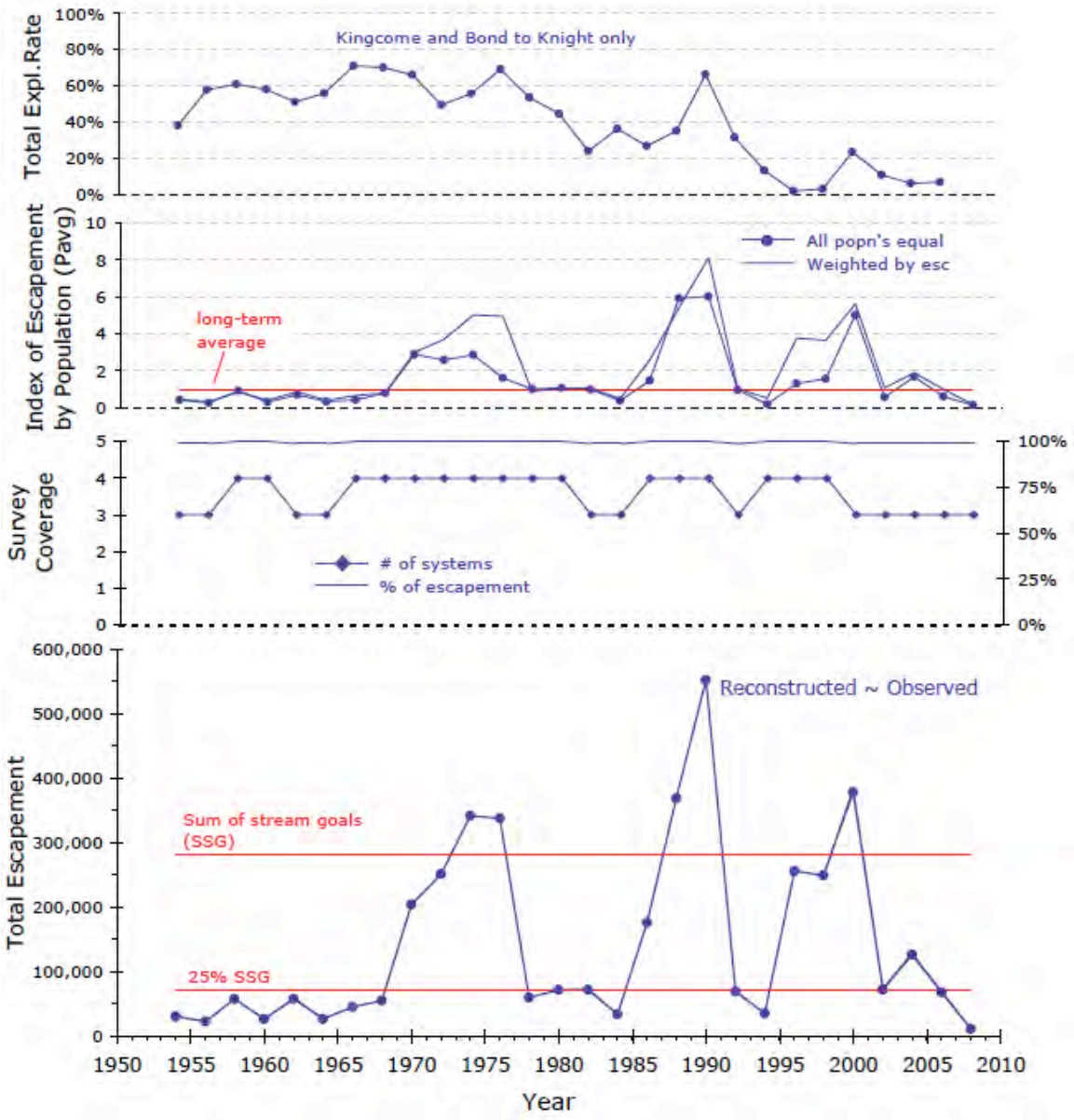

Figure 23. Trend summary for Inner South Coast pink salmon – Kingcome Even

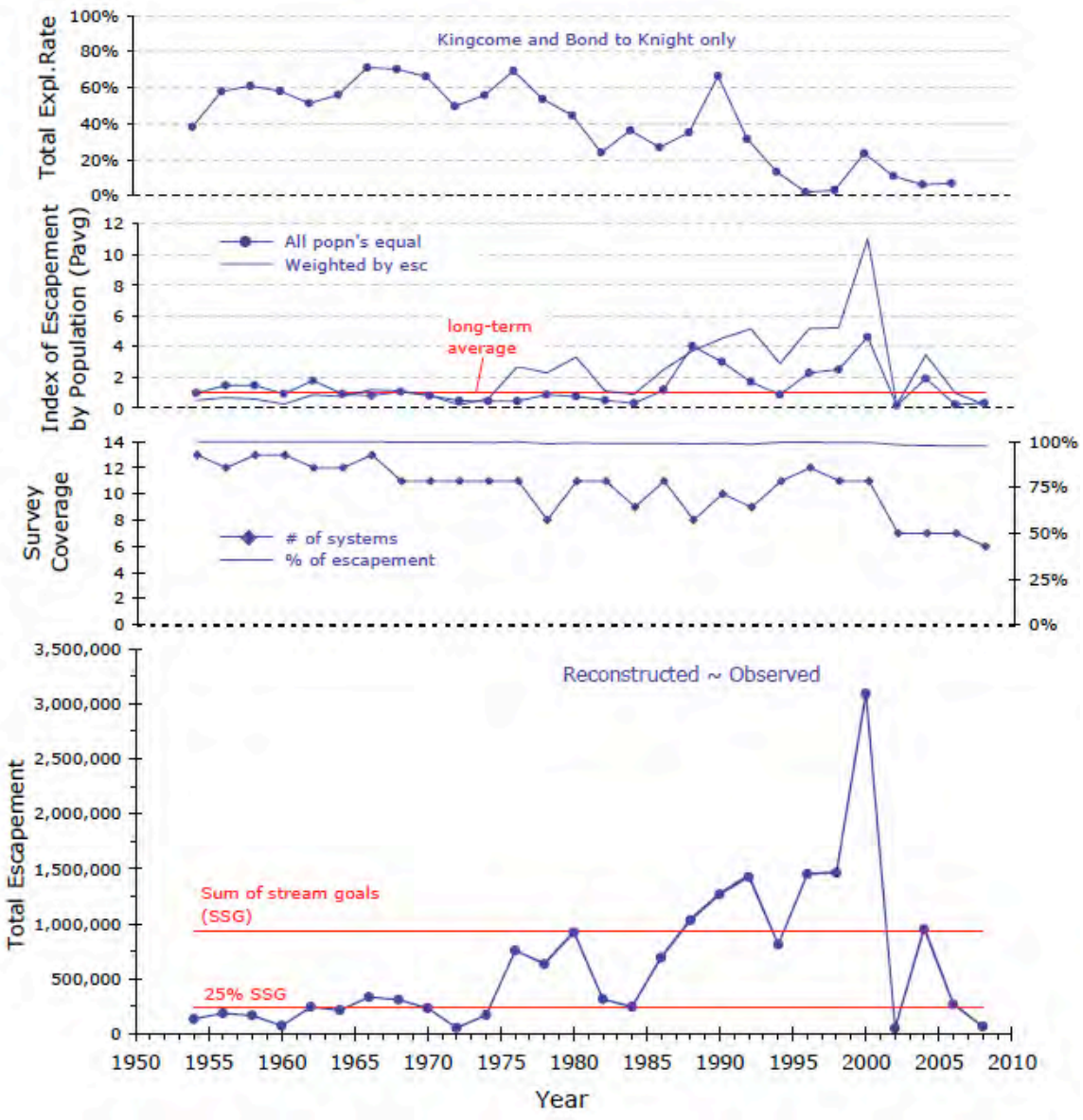

Figure 24. Trend summary for Inner South Coast pink salmon – Bond to Knight Even

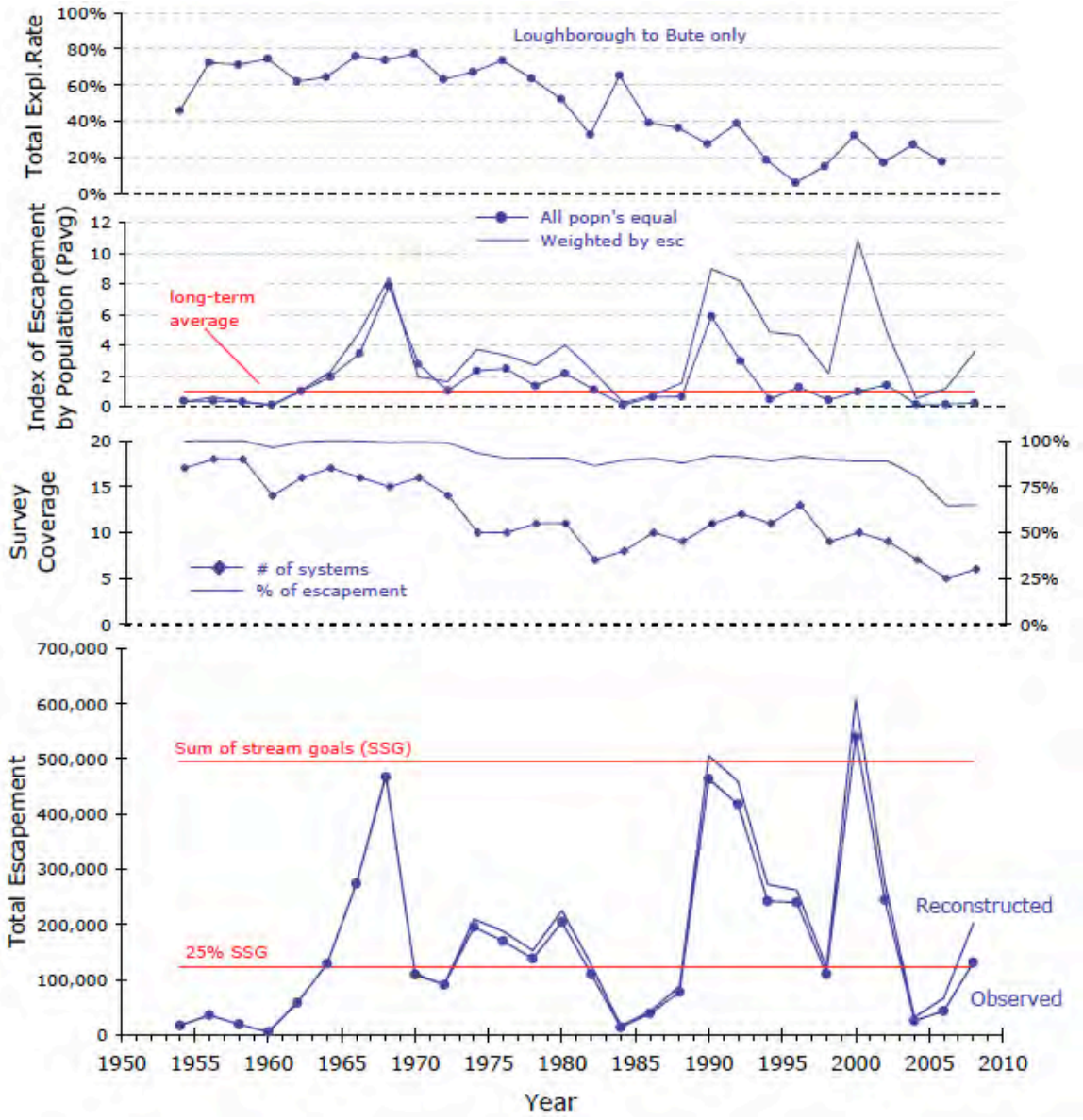

Figure 25. Trend summary for Inner South Coast pink salmon – Loughborough to Bute Even

Inner South Coast Pink Salmon – Odd Years

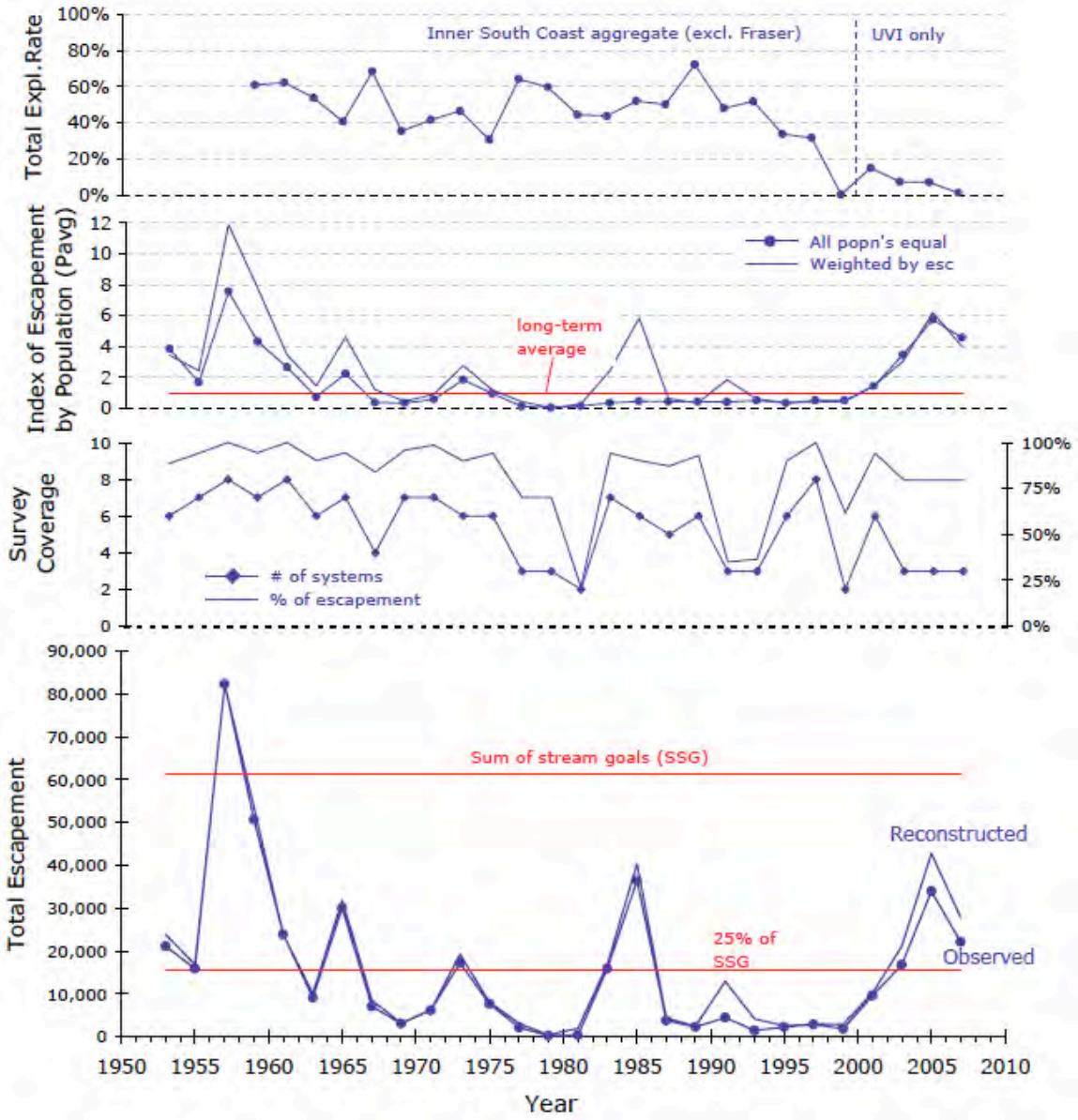

Figure 26. Trend summary for Inner South Coast pink salmon – Upper Vancouver Island Odd

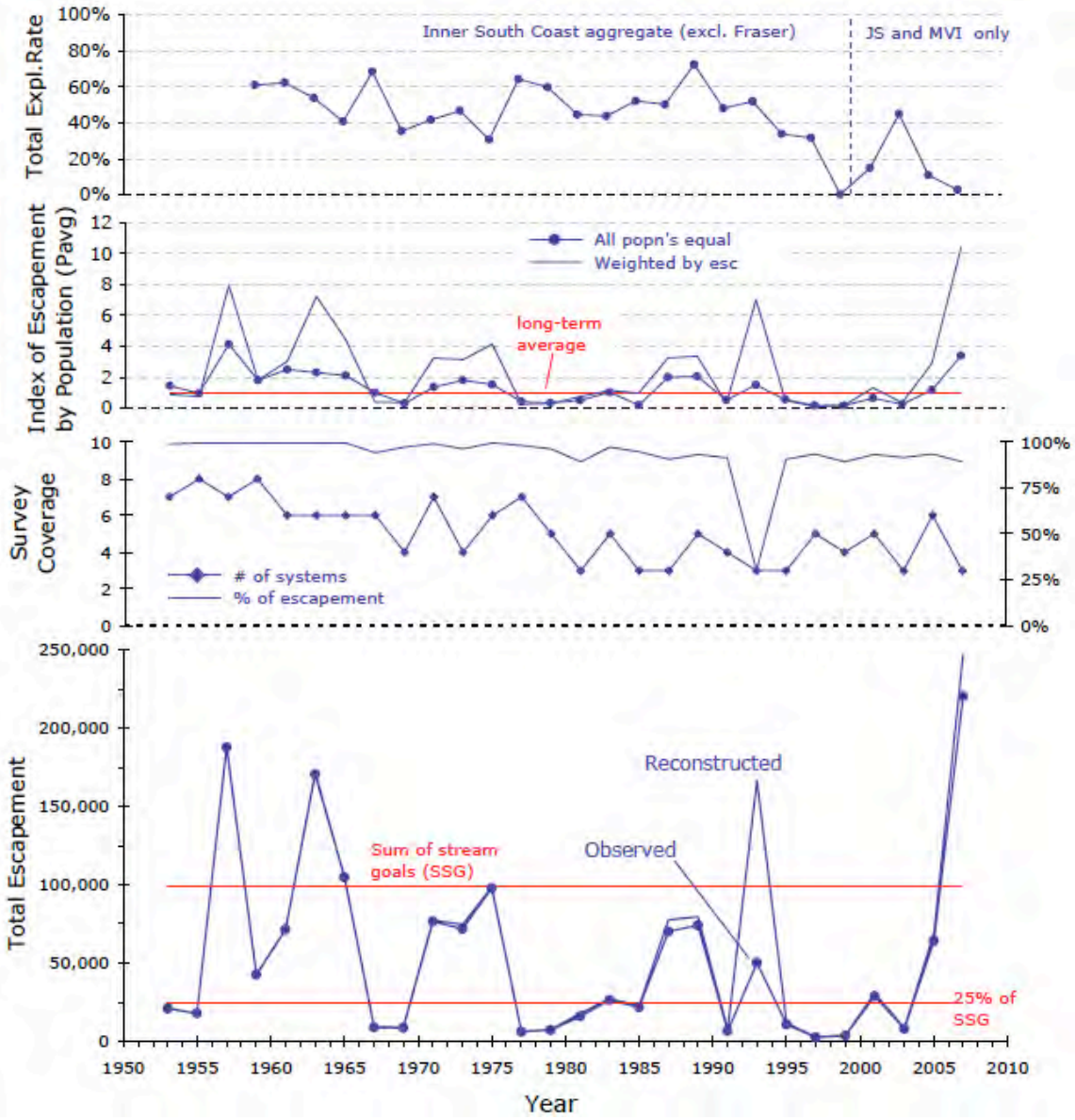

Figure 27. Trend summary for Inner South Coast pink salmon – Johnstone Odd

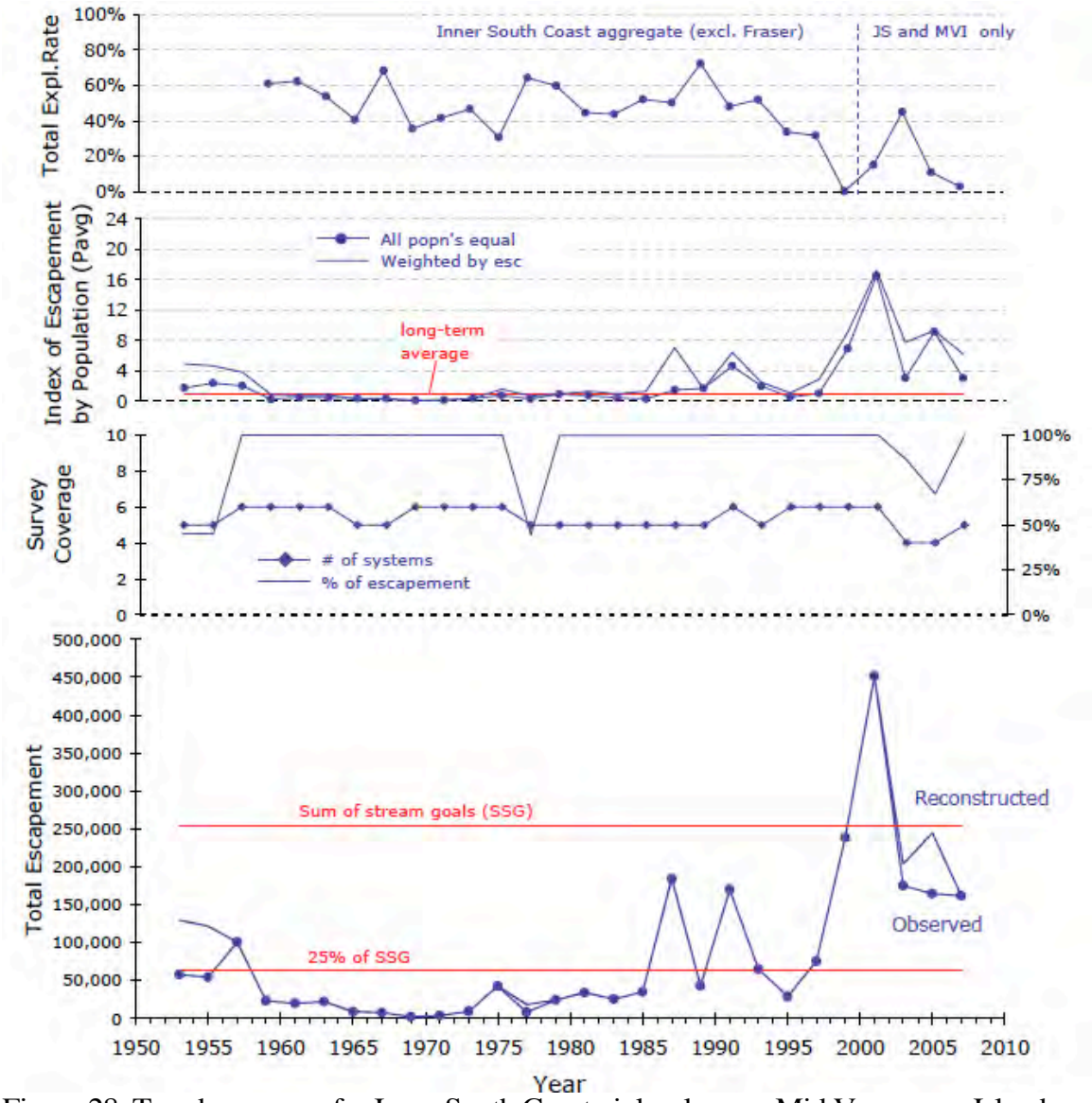

Figure 28. Trend summary for Inner South Coast pink salmon – Mid Vancouver Island Odd

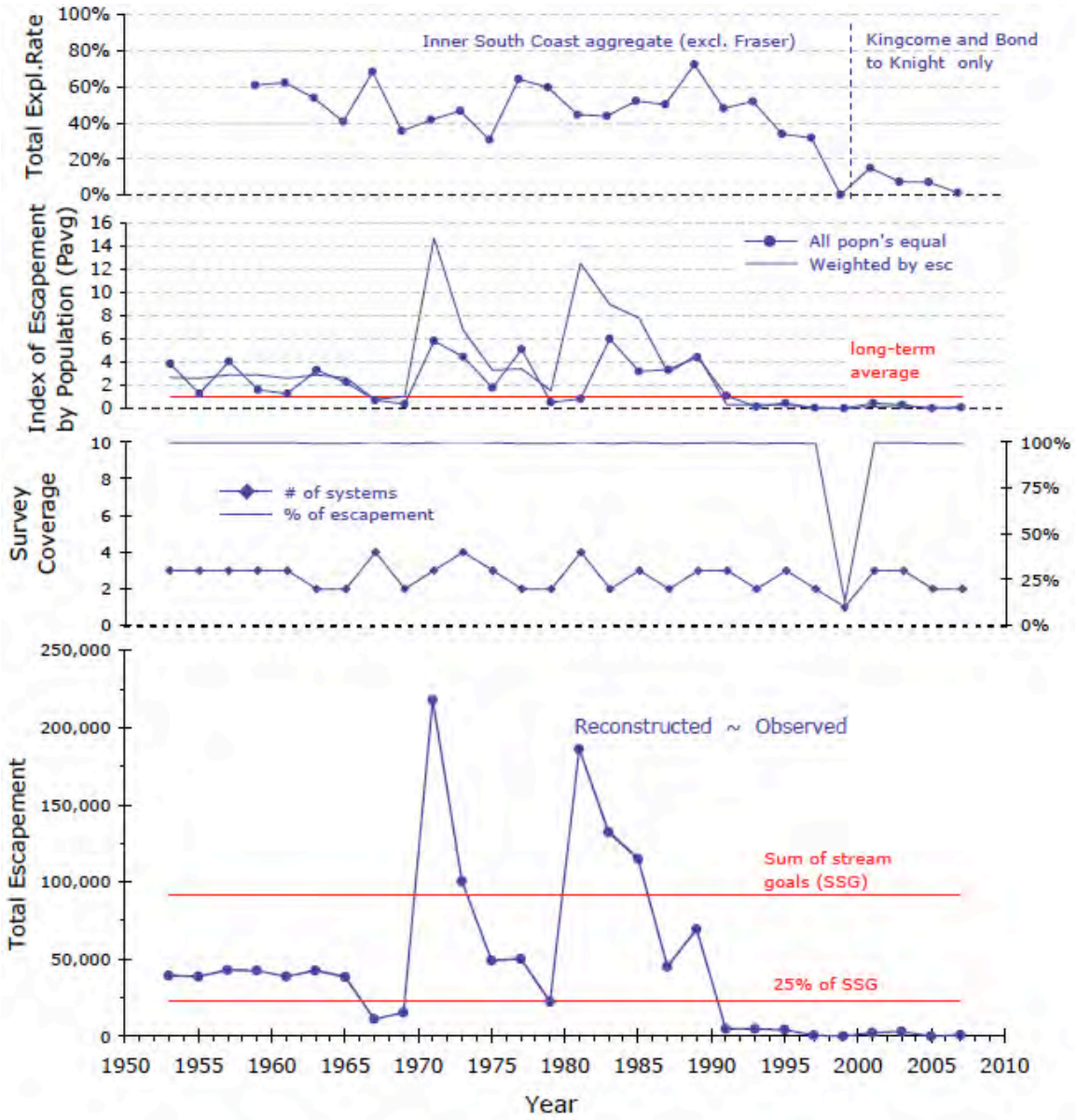

Figure 29. Trend summary for Inner South Coast pink salmon – Kingcome Odd

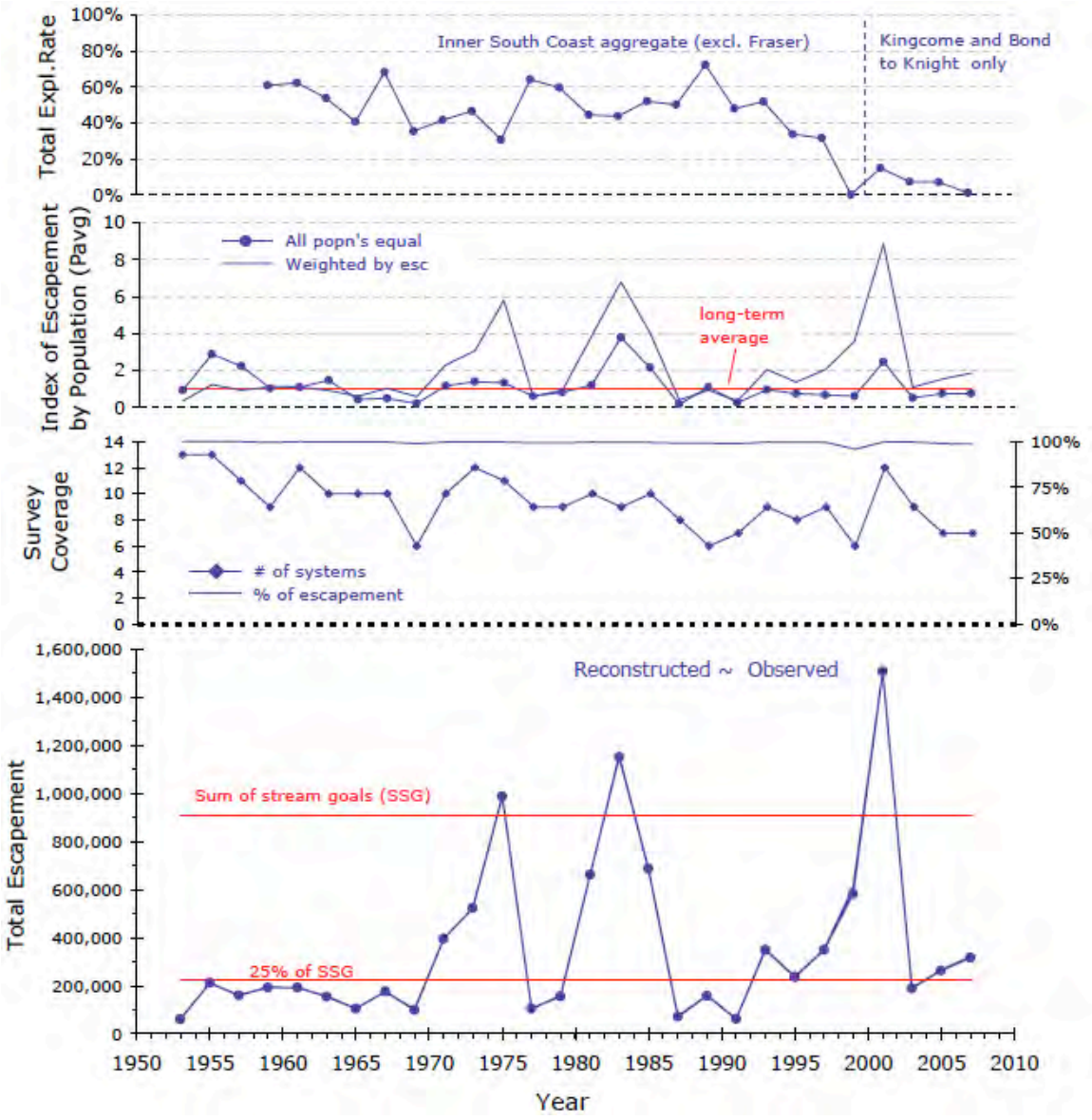

Figure 30. Trend summary for Inner South Coast pink salmon – Bond to Knight Odd

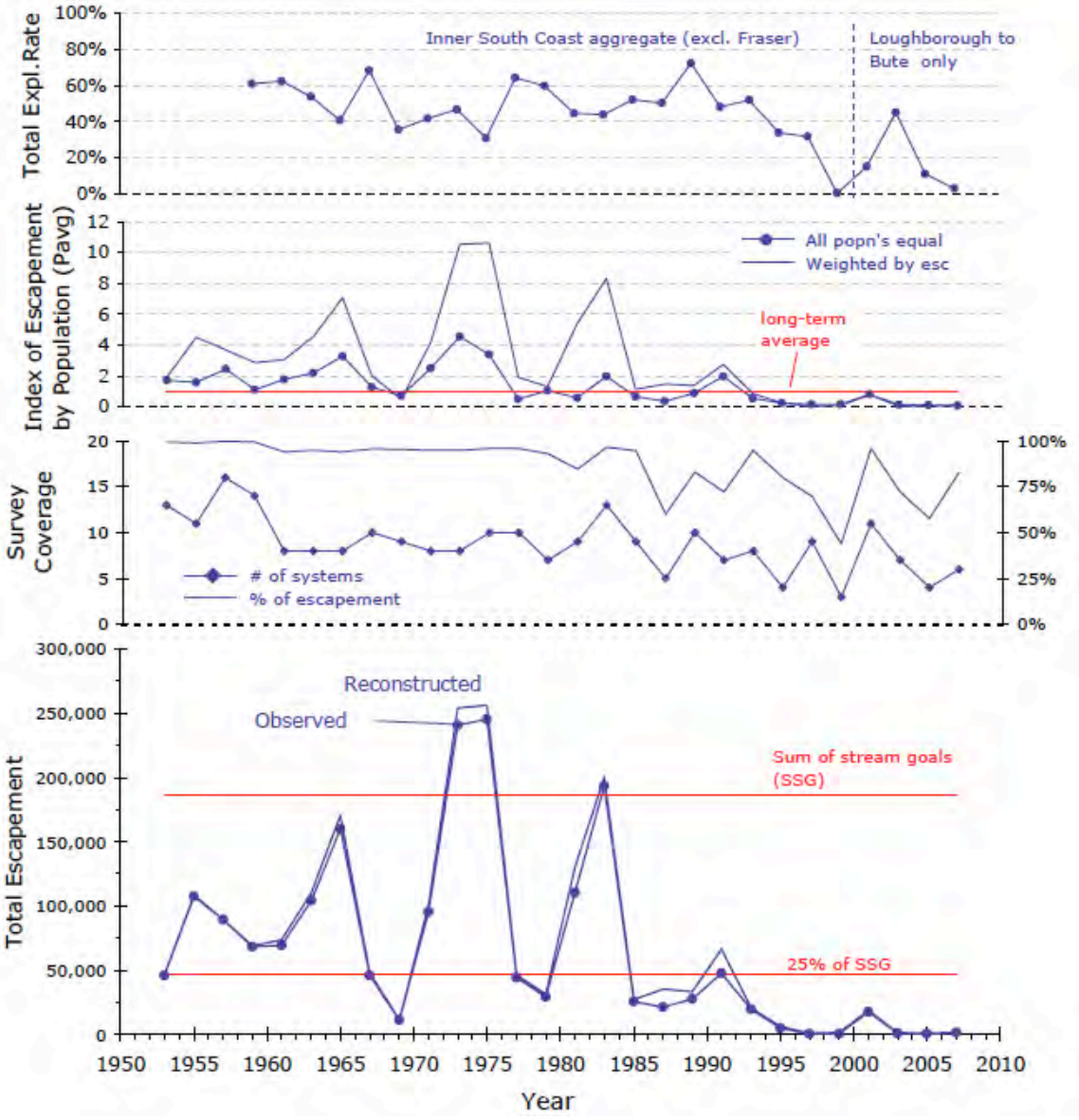

Figure 31. Trend summary for Inner South Coast pink salmon – Loughborough to Bute Odd

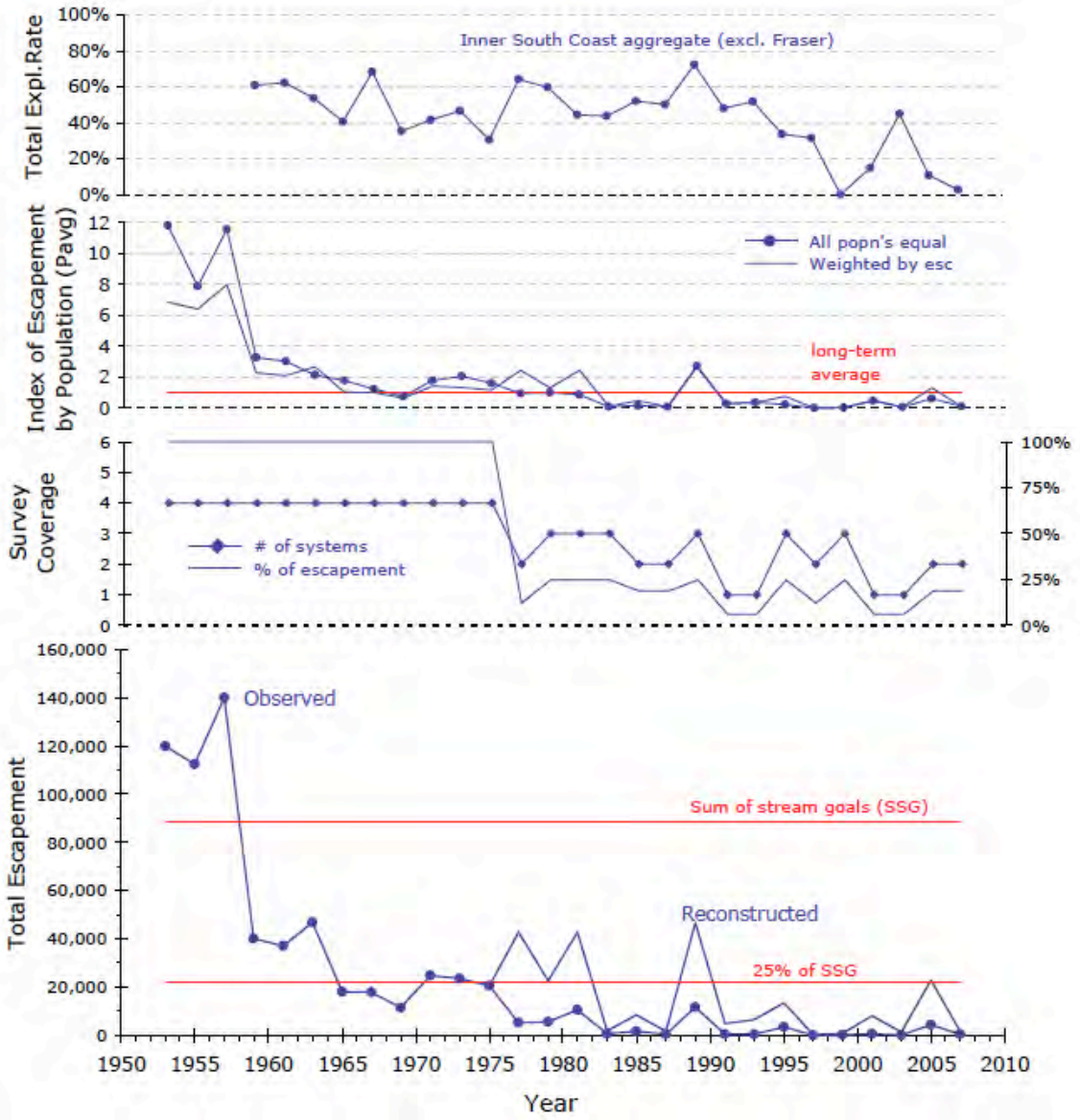

Figure 32. Trend summary for Inner South Coast pink salmon – Toba Inlet Odd

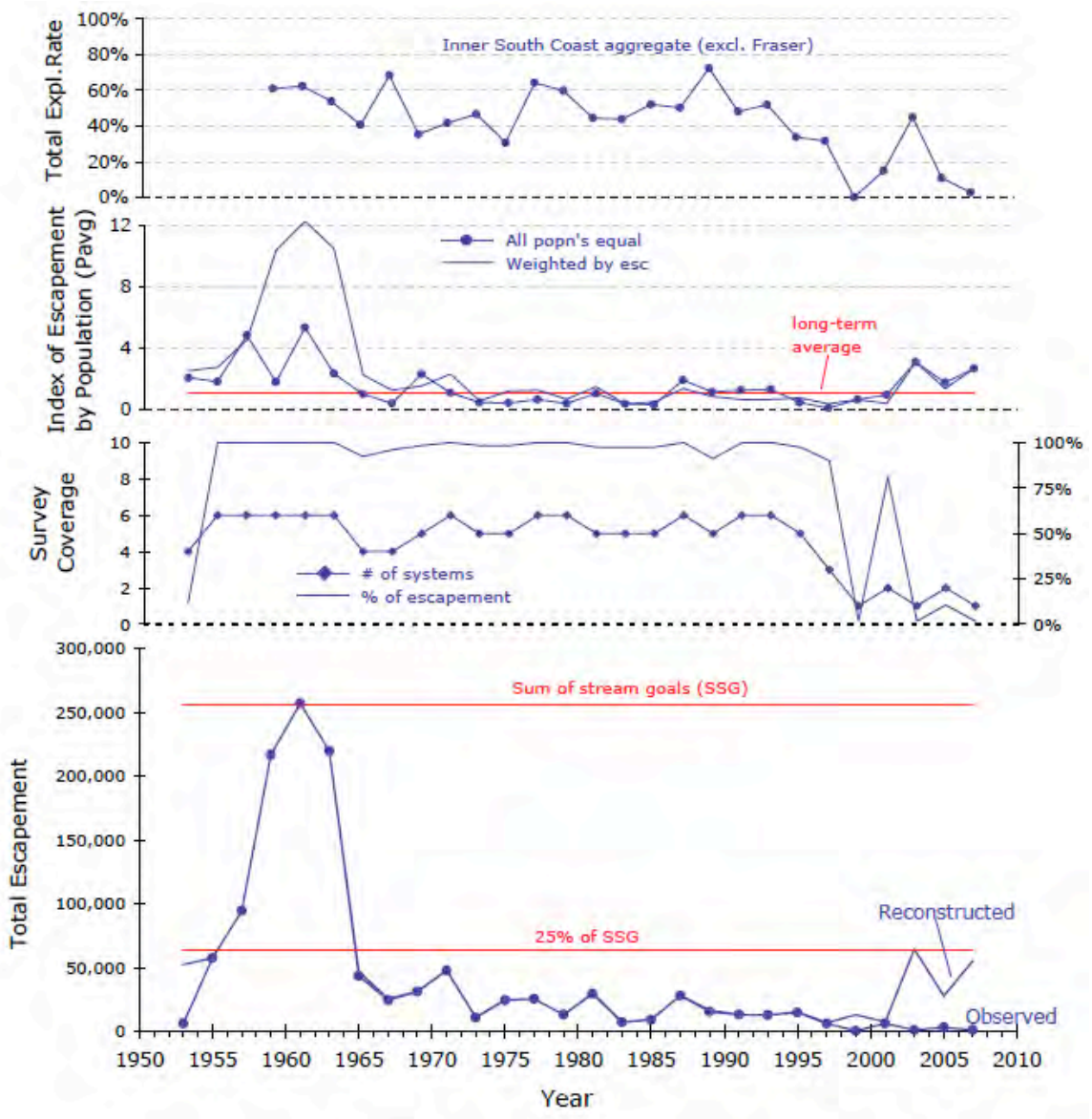

Figure 33. Trend summary for Inner South Coast pink salmon – Jervis Inlet Odd

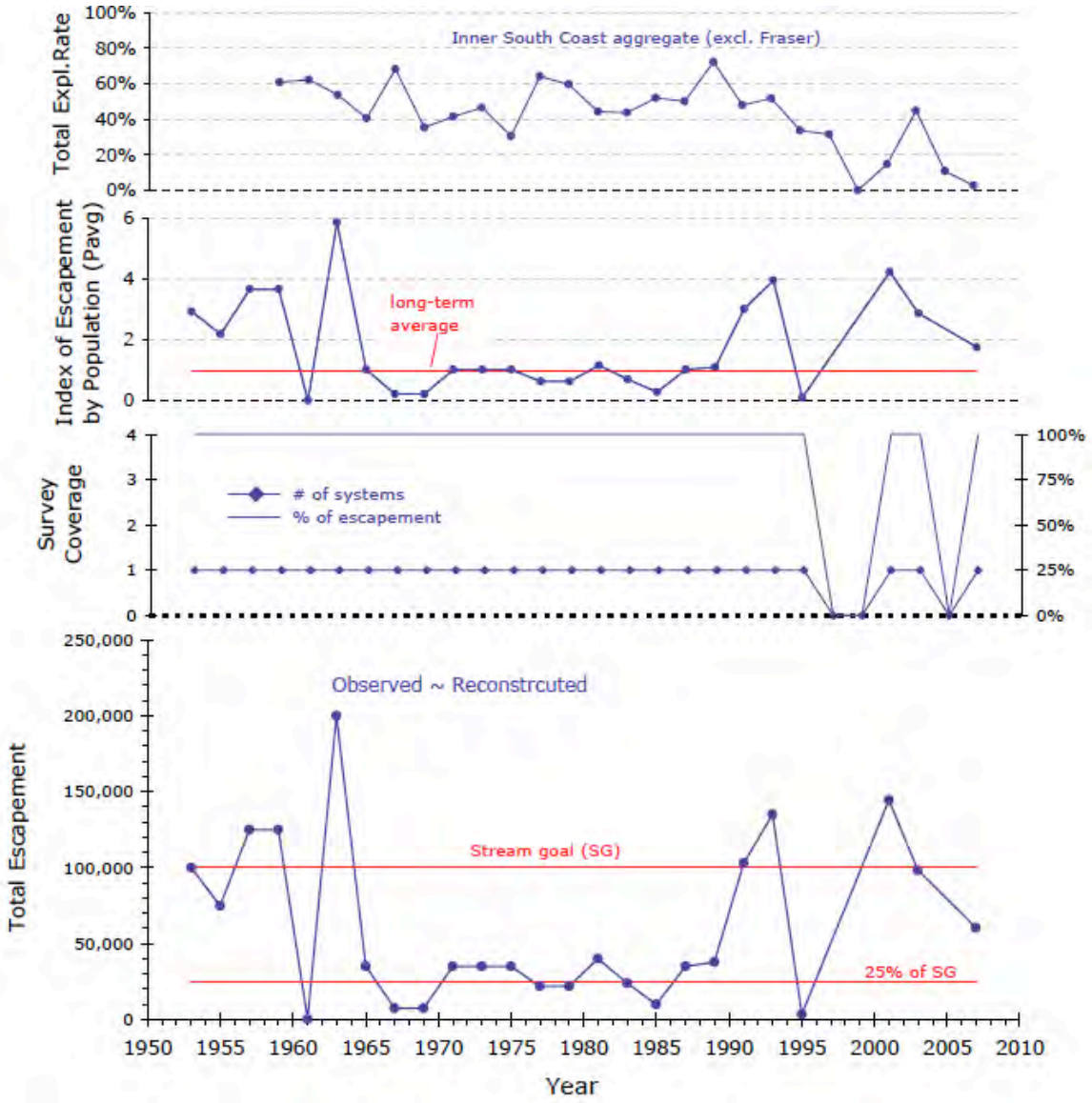

Figure 34. Trend summary for Inner South Coast pink salmon – Burrard Inlet Odd

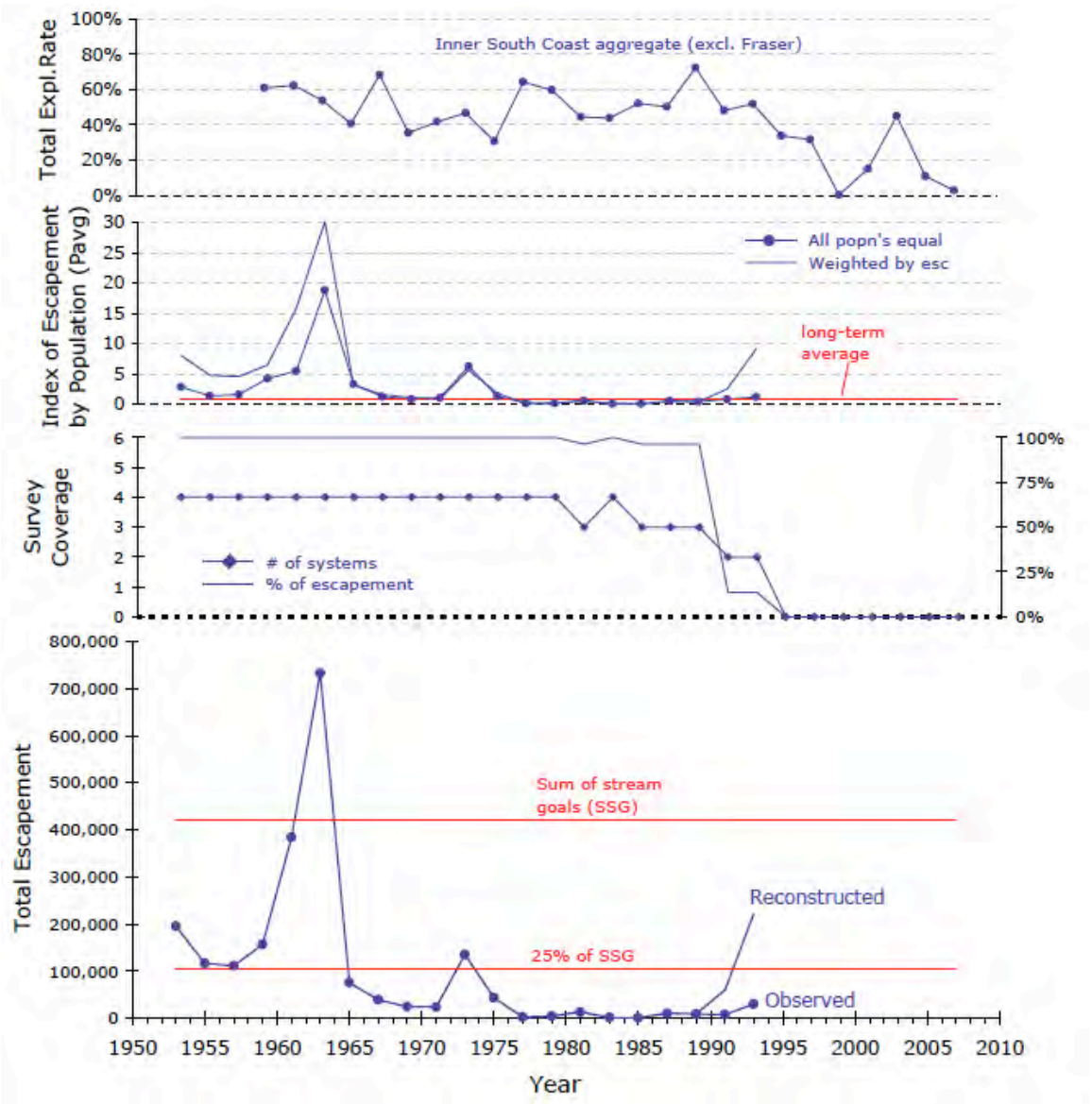

Figure 35. Trend summary for Inner South Coast pink salmon – Howe Sound Odd

Fraser Pink Salmon

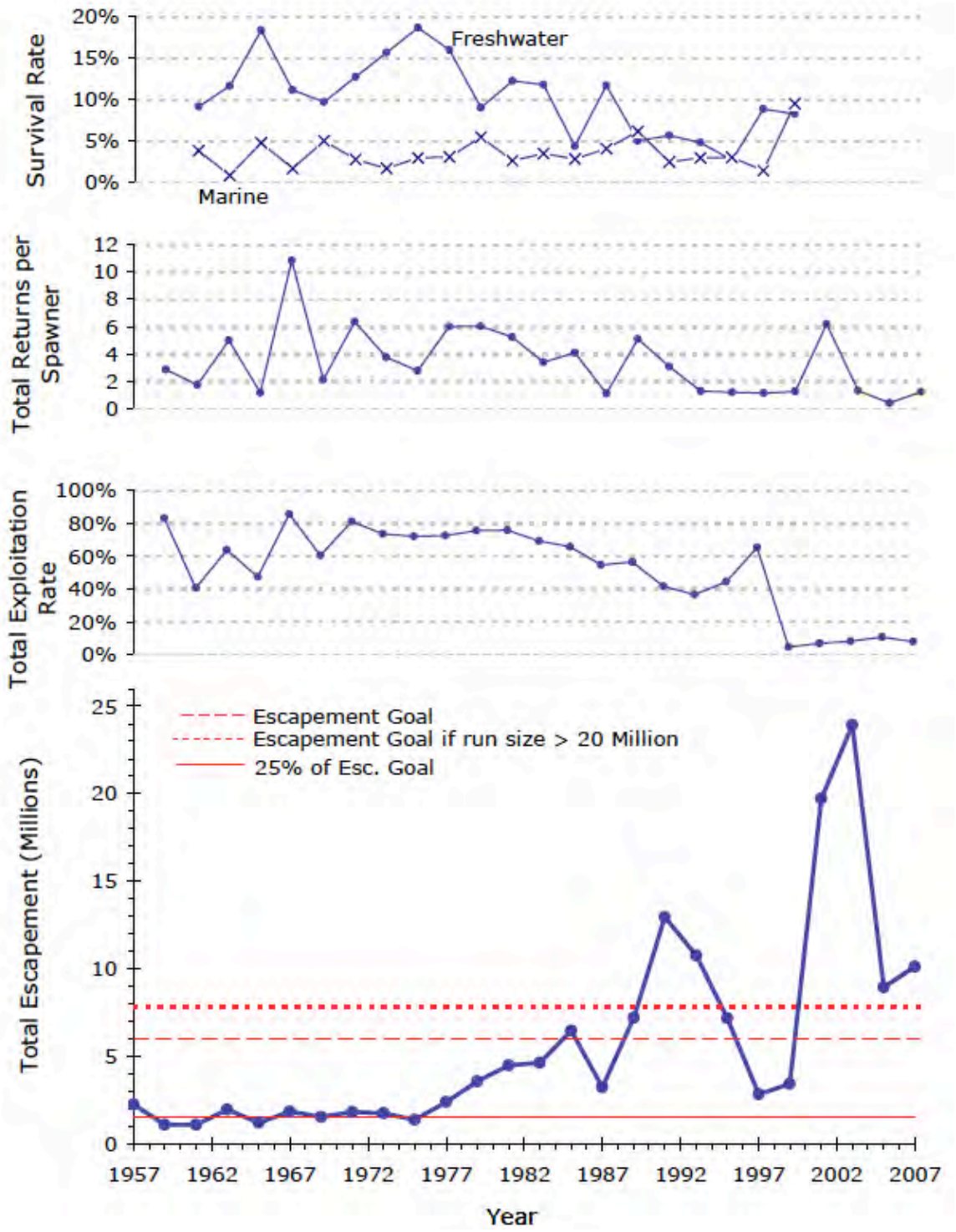

Figure 36. Trend summary for Fraser pink salmon

Appendix B – Stakeholder Meeting Summaries

BC Pink and Chum Salmon Site Visit – North and Central Coast
January 20, 2009 – 0900 – 1200pm
Department of Fisheries and Oceans – Diana Dobson, Alistair Thomson, Dave Peacock. Client – Christina Burridge. BCMOE – Sandy Argue

DFO presents overview of information provided in the Conservation Unit Profile (CUP) submission document and respond specific questions

Fisheries Overview

- Approximately 20 pink and 20 chum fishery openings conducted in the NCCC
- Charts provided to augment the information provided on enhancement and monitoring activities
- There are no outside mixed interception fisheries since the late 1980s
- Queen Charlotte Islands (QCI) terminal inlet fisheries conducted in specific locations
- Hatchery operation at Pallant Creek
    - Joint Haida/ DFO funded project
    - 10 million eggs is the target, not enough collection in 2008
    - There was an ocean regime shift in the late 1970s which affected the Pallant returns, 0.4% smolt return

Escapement monitoring

- Escapement monitoring, use charge patrols on the water and the fishing grounds
- Acknowledgement that there has been an erosion of assessment capacity in the last 10 years
- For pink and chums, escapement goals were generated by fisheries officers in the 1980s
- Goal was to match data of the highest peak escapement on record
- Escapement counts are generated usually by 1 – 3 steam walks per season and aerial overflights in some areas.
- Escapement calculated primarily by "Area under curve" (AUC)
- Description of the general escapement monitoring can be found in the Management Summary doc provided to the team.
- In QCI – escapement is considered to be both the Target Reference point (TRP) and the Limit Reference Points – there is no formal definition of biologically based TRP/ LRPs, DFO is using a proxy
- There is detailed data on the dates streams are monitored and the numbers enumerated

Review of information presented in the NCCC Pink and Chum CUPs

- Smiths Inlet – (in Area 10) spawning channel for chum, mainly a sockeye concern
    - No targeted chum fishery in Smiths to protect local salmon populations
- River Inlet - was significant sockeye production area – 800 – 1 million fish, consistent fisheries for 120 years, stopped for the last 10 years due to low variable production
    - Chums and pink are fluctuate significantly.
    - Monitoring reduced when no chance of harvest
    - Significant aerial survey issues

- Area 8 – Bella Coola – significant chum – 8 million eggs, contributes 100 – 200K fish
    - Seine only fishery now, use CPUE as a proxy for abundance
    - Dean River steelhead have been a concern , there is a spawning channel for chums, there is in-season documentation back to 1980s. See the Record of Management Strategy (RMS)
    - 2 day of fishing in 2008
    - All vessels are now using weedlines in Dean Inlet to assist with steelhead bycatch.

- Area 7 Fisheries
    - 1 day fishery opening, speak with Dan Wagner about how seine fisheries are opened
    - Seals considered to be an important issue in recent years, issues with seals in nets 3 -4 times over a 5 year period in the Skeena fishery, significantly higher in the Rivers Inlet area

- Area 6 Fisheries
    - Significant challenges
    - Reduction of wild chum, confounded by the Kitimat hatchery program
    - Good pink fisheries, primarily seine
    - 2 – 4 million fish, chum is a bycatch
    - Managers actively manage the fishery to try to keep chum bycatch under control
    - No directed chum fishery
    - Enhanced fish are not market (terminal remote area)
    - Enhanced chums interfering with pink fishery, may have to release 500 chums in 2000 pinks
- Kitimat hatchery is managed by SEP branch of DFO
    - Monitoring done using $P_{Max}/P_{Average}$ Index to produce absolute numbers
    - More of a stock status
    - Long standing patrols on 30 – 40 streams

- Challenges – Wild Salmon Policy (WSP) requires identification of CUs using bio-geostatistical approach, challenging to match the enumerations with CUs

- Skeena and Nass
    - No target fishery for Chum on Skeena
    - Nass – no targeted chum fishery for 20 years
    - No chum retained in any fishery in Area 3 & 4

- Area 4 – Enumeration problems
    - Spawning areas and sloughs are problematic for chum enumeration
    - Kitwanga/ Terrace – areas need attention

- Area 3 – Enumeration on the Nass is problematic for streams
    - Not doing CORE stock recommendations in Area 3 & 4
    - Area 3 should be attainable
    - Area 4 – CORE list is problematic

- Utility of targets

  - Area 3 & 4 – Escapement is fluctuating around low levels, not declining but very low
  - Possibly not meeting the escapement targets for chum in either area
  - Need to test changing the fishery impacts
  - Alaskan problem – AK fisheries - 25 – 30% exploitation on Nass and 10 -15% on Skeena returns, possibly even higher for some stocks.

- Directed Chum Fisheries
  - Area 1 and 2 – modest chum fisheries
  - Area 6 - Interior hatchery fishery, outside fishery not directed on interior stocks
  - Area 7 – Clean up fishery on chum
  - Area 8 – active fishery
  - Area 9 and 10 – modest chum fishery

- Compliance
  - Better compliance in the seine fleet than the gillnet fleet in Area 3 and 4
  - Area 8 compliance and enforcement. 95% staffing level in NCCC
  - Aggressive observation of the fisheries
  - Extensive report prepared on the Skeena Nass in 2008
  - C&P on the water – Coast Guard and charter patrols
  - Gillnet – some significant challenges, trying to get fleet to adopt short (20 min) sets and larger mesh sizes

- LRP
  - Rivers Smiths Pilot project
  - Skeena – commitment for LRP development
  - LRP development will be easier for data rich species (e.g. sockeye), and less so for pink/chum

  MML Response: This information provided summary of the DFO written submission on this Unit of Certification and informed the team in scoring the fishery.

BC Pink and Chum Salmon Site Visit – West Coast Vancouver Island
January 20, 2009 – 1300 – 1600pm
Department of Fisheries and Oceans – Diana Dobson, Alistair Thomson, Dave Peacock. Client – Christina Burridge. BCMOE – Sandy Argue

DFO presents overview of information provided in the West Coast Vancouver Island (WCVI) Chum Conservation Unit Profile (CUP) submission document and respond specific questions

<u>This discussion pertains only to chum salmon, there are no pink salmon MSC candidate fisheries.</u>

- Fisheries Overview

  - WCVI covers Salmon Fishing Areas 21 – 27
  - Area 21 – Nitinat Hatchery fishery – can be a larger fishery
  - Area 23 – 8 boats

  - Area 24 – 4 boats
  - Area 25 – 8 boats

- Nitinat – provisional LRP/ TPRs
  - LRP- 225
  - TRP – 350
  - Pre-season planning
    - Test boat – subjective measurement of escapement
    - Collect sounding – set locations, CPUE, count at the mouth of the lake
    - Conducts 2 weekly assessments, Sunday/ Wednesday – average of 350 – 400 K

- Conuma – Nootka Fishery
  - Open access fishery
  - Targeting a 20% fixed harvest rate
  - 1-2day opening on migrating stock.
- Tlupana Inlet – fishery not conducted most frequently
  - Dropping chum production – 4.5 million years ago, now down to 1.2 million
  - 30% harvest rate
- Clayoquot Sound – Limited effort assessment fisheries since 2007
  - 2008 – 4 days fishing in all areas
  - 2 days in Clayoquot sound.

- Assessment and monitoring
  - Charter patrols
  - AUC is completed in January following the season
  - No AUC in season assessment

- Nitinat Hatchery – all production is marked with thermal marks
  - Steelhead bycatch in the Nitinat hatchery fishery
  - Also, some wild chum bycatch as well

Restrictions
- Area 24 – Chinook is non-retention
- No processors provide tenders on WCVI
- Buyers in Gol River, Tofino, Esperanza Fishery

Escapement Surveys
- 18 AUC estimates, sampled 6 -7 times
- Snorkel surveys in two areas
- Mostly charter
- Currently – use a fixed harvest rate strategy of 20% in the fishery management
- FN reporting in some areas is uncertain
- Harvesters supposed to report by hail, maintain a log-book, limited dockside inspections by C&P officers

MEGs
- Currently defined by whole stat area
- Don't usually use escapement goals, except Nitinat

- Are usually using a 20% fixed harvest rate.

Bycatch

- Steelhead in some fisheries
    - Supposed to be using weedlines, going to smaller mesh

Pink Salmon CU – WCVI

- Status – no current recovery of the WC pink stock
- Very low catch, no directed fishery
- Commercial bycatch reporting is required for pinks

Other Bycatch

- Marine mammals
    - Sea lion and sea otter populations are growing on WCVI
    - Harbour seals also increasing in numbers
- Some marbled murrlet catch

Compliance

- Area 23 – North
    - High compliance of data phone-in
    - Within 24 hours ~60% calls received
    - Within 72 hours >95% of phone-ins received
    - Less net violations/ closed area (fishing over the line) violations
    - Net violations are primarily due to mesh size and net length

- Area E/D – seine fleet
    - Terrible at phoning in
    - Vessel master supposed to phone in catches
    - Are monitored at dockside

2007 – Nitinat –escapement was 170,000

- Forecast was for 700K
- 1st escapement - ~ 75K by Oct 7 – 8
- 180K taken, fishery did not meet the MEG

Management Response to 2007 fishery

- More systematic reporting of test fish numbers
- Decision rules for fishery opening

Area E – Gillnets access to chum, also bycatching Fraser steelhead

FN – FSC access was reported to not be an issue for chum

- Catch reporting is a condition of license for communal licenses
- Currently, 5 FNs have treaty resolution in place or forthcoming

MML Response: This information provided summary of the DFO written submission on this Unit of Certification and informed the team in scoring the fishery.

BC Pink and Chum Salmon Site Visit – Inner South Coast, Johnson Strait
January 21, 2009 – 0900 – 1200pm
Department of Fisheries and Oceans – Pieter Van Will, Randy Brahniak. Client – Christina Burridge. BCMOE – Sandy Argue

Pink Salmon - Management Cycle

- Status Outlook – performance and expected returns
  - No formal predictions, subjective, based on past performance for the cycle and what is known about current ocean conditions
  - Based on escapement from previous years in the cycle
- Escapement plans are developed
  - System – large production run monitoring
  - Some smaller run monitoring
  - Primarily larger runs are monitored
- Escapement
  - Visually derived, stream walked, aerial overflight
  - Keogh Fence – no calibration, focuses on adult returns
  - Other intensive – Broughton – not quite implements
  - Cowchin – enumerate chum and Chinook
  - No overflights, visually not possible, sedimentation in the water, can't see fish
  - Glendale – Didsen counter – pink counters –
    - Calibrating overflights, 2 years of data
- Most assessment is visually based
  - Strived for multiple visits each season
  - Work on AUC estimates
  - Peak time targeting of pinks
- Escapement – work closely with Charter patrol, FN and community groups
- Not significant funding of assessment program

Inner South Coast

- Areas 6 – 10, Area 12 – see Figure 7 & 8
- Majority of systems constitute main production
- Visits – Larger systems – 5 – 6 times per season
  - Smaller systems – 1- 3 times per season
  - Look at the live to dead distribution\
  - Sometimes 20 – 40 deep in stream

- Glendale - significant bear predation and removals
- In the Approaches – historically, fish holding in inlets, fish going into the stream
- Dolphin occasionally in Bond Sound (Area 12)
- 2007 – AUC – 15000, Didsen – 15 – 17000
- Information – In season updates
  - Updated weekly on the DFO extranet
  - Mainland inlet systems
- Table 2 – sum of all observations, no adjustments
- Time trend of escapement data

Pinks

- See Figures 1 and 2,

- Escapement Plan
    - Most system is terminally developed
    - Enumeration early in run timing
- No directed commercial pink fisheries since 2001
- Some FN & recreational
- No fisheries predicted based on pre-season, all based on in-season assessment
- Some test fisheries used in JS/ISC
- Only targeted stock would be in Area 12 (Loughborough/ Bute – showing increase in productivity)
- Fish farms are located in the Mid-Vancouver in Bond to Knight
- Burrard/ Howe Sound – low enumeration collection/ non existent data

- MEGs
    - Conservative targets - highest most repeatable escapement
    - MEGs are significant
    - Currently, no plans to revisit the MEGs, there will adjustment as required by implementation of the WSP
- MEG – do not start fishery until escapement required is met
- Difference between even and odd years is maintained
- Currently development of methodologies to adopt or modify MEGs based on habitat considerations
- Is there stock/ recruit work being done to determine productivity?
    - Some work, however not completed

- Fraser directed pink fisheries are all in early September
- No fisheries above Lovis Point
  Major systems in Area 12 – frequency of visits has increased, smaller systems monitoring had been reduced

Chum Monitoring

- Fraser production – comes from the Harrison
- MEGs – seen as TRPs
- MEG vs escapement for individual systems/ terminal fisheries
- Areas 16 – 19 – See the IFMP
- Area 16 – In season assessment
- Escapement goal in river/ outside, assessment is confirming what the escapement is.
- See the RMS

Fish Farms

- Map of active farms in the Broughton area is available
- Has been use of “Slice” in treating sea lice
- Monitoring done by the BC MOE – Agriculture Department
- BC Pacific Salmon Forum completed a report which recommended a co-ordinated area management plan

Bycatch monitoring

- Monitoring requirements for observers are variable dependent upon the objective

- DFO currently trying to standardize observer coverage/ training

Compliance and Enforcement

- Priorities are established in the IFMP
  - Include catch reporting – phone in & logbooks
  - Selective fishing methods
  - Bycatch non retention – also verified at the plants
- In General terms – compliance is good
- First Nation issues – some FN have aquaculture interest (salmon?)
- Not for pinks
- Broughton – stock status vis-a-vis relation to fish farms
- Cowichan/ Saamich FN- concern on FSC harvest opportunities, primarily in relation to sockeye
- Chum – mid Vancouver – See IFMP for list of hatcheries.

Marine Mammals

- Seals – Georgia Basin – increasing in numbers, at historical highs
- Puntledge – seals targeting Chinook, interaction with gill nets
- Orcas – studies ongoing on feed, which is primarily Chinook
  - Declining Chinook levels/ contamination affecting the local Southern Resident Population
- Birds – Murrlets are being monitored by Environment Canada, particular area of concern is Roller Bay in Area 11

MML Response: This information provided summary of the DFO written submission on this Unit of Certification and informed the team in scoring the fishery.

BC Pink and Chum Salmon Site Visit – Fraser River
January 22, 2009 – 0900 – 1200pm
Department of Fisheries and Oceans –Paul Ryall, Sue Grant, Brian Matts, Debra Sneddon, Sheldon Evers, Barbara Mueller, Diana Dobson.
Client – Christina Burridge. BCMOE – Sandy Argue

Pink Salmon fishery in Fraser in poor shape

- Economics ($0.10/ #)
- Late run sockeye with stocks of concern reduce fishery opportunities
- Pink migration on the Fraser is late (starts in Sept) and also co-migrate with late coho

- Sto:lo have had pink be arriving beach seines in the past
- Port Mann, Sawmill Creek – FN is interested in a Economic Opportunity (EO) fishery
- Monitors on every crew, count the retained vs released fish
- Main value is in the roe, which is ripe when the fish arrive in the spawning area around Mission

Stock Definition

- All Fraser pinks are considered 1 CU
- CU definitions are based on 3 pillars
    - Joint adaptive zones
    - Habitat/ life history/ genetics
        - Genetics – all fish above Hells Gate are considered to be recolonized fish after the slide
- 1957 – 1991 – tributary escapement data
- 1993 – 2001 – 1 estimate for whole Fraser based on mark/ recapture work
- 2001 – no escapement measurement done, due to costs and low fishery harvests
- 1962 – 2008 Mission downstream fry program – test fishing, AUC

Current monitoring

- Test fishing in season
- Fry out migration monitoring

Methodology
Pacific Salmon Commission – come up with a methodology better estimate escapement (Jim Gable/ Mike Lapoint)

- Escapement estimate currently not sufficient to manage the fishery
- Current pink abundance – exceeded historical trends
    - If a shift to open fishery – would need to re-evaluate
    - Given low fishing pressure, there may be some pressure to open the fishery
- For the foreseeable future, expected that constraints raised by Interior coho and steelhead, as well as Cultus sockeye, will keep the fishery for pinks at very low levels
- As well, an allocation agreement would need to be negotiated with 17 – 19 of the 25 FN groups
- Need to find a more selective means to open Area E fishery, the would provide in-season run size information to feed into escapement goals for the Fraser
- Would use PSC to provide in-season abundance and outgoing fry migration

Test fisheries & Monitoring

- Need methodology for the Fraser to estimate escapement/ abundance from the test fisheries
- Cottonwook – Drift Gill net test fishery
- Warnick – Gillnet/ sonar test fishery
- Mission – concerns about saturation issue in Didson sonar

MML Response: This information provided summary of the DFO written submission on this Unit of Certification and informed the team in scoring the fishery.

BC Pink and Chum Salmon Site Visit – Province of British Columbia
January 21, 2009 – 1545 - 1630pm
BCMOE – Andrew Wilson (by teleconference)

- Not aware of the client submission documents, SD to forward.
- Dean Channel Steelhead (terminal fishery)
    - Province not currently concerned about the Dean Channel fishery
    - Fishing pattern has been changed to not impact steelhead to the same degree
- Nitinat Fishery
    - DFO addressed changes in the net fishery
- Fraser River – Steelhead and sturgeon still concerns
- Area E Chum fishery – is a work in progress, trying to come up with a suitable management strategy.
- Fraser River management has been problematic.
    - BC MOE developed a model to understand steelhead, PSARC did a review
    - Came up with appropriate mangeement objectives for steelhead on the Fraser
    - Run timing for Fraser Steelhead was the key, need to protect 80% of the steelhead run with 90% certainty.
    - 2008 – there was a 1 day opening for chum for gillnetters in Area E
- FN Beach seine fisheries are still operated, they are quite selective for releasing non-target species with least harm
- Rob Bison of MOE Kamploops may have further information
- Estimated abundance for Fraser Steelhead is problematic
- White sturgeon – has been a slight improvement in reporting,
- Is the province satisfied on reporting from DFO
- Sea lion predation on Fraser sturgeon is a problem.

MML Response: This information provided context of concerns of the Province of British Columbia and informed the team in scoring the fishery. All significant issues raised here were considered in relevant performance indicators.

BC Pink and Chum Salmon Site Visit – Marine Conservation Caucus Stakeholders
January 21, 2009 – 1330 - 1530pm

Attendees: Aaron Hill, Watershed Watch Salmon Society; Vicky Husband, Watershed Watch Salmon Society; Greg Knox, Skeena Wild Conservation Trust; Craig Orr, WWSS; Jeffry Young, David Suzuki Foundation; Ken Wilson; Dan Averill, MSC; Assessment Team Members

Main conservation concerns

- Adaptive capacity, conservation units
- Important to review Trevor Ward paper on adaptive capacity.

- Concerns about Wild Salmon Policy (WSP)
  - Will WSP save fisheries from extinction
  - Will current weak stocks be saved by WSP implementation
  - Funding levels for WSP are insufficient
  - DFO made a political commitment to implement
  - WSP Objectives – biodiversity protection, which requires the need for clearly defined Limit Reference Points (LRPs).
  - Concerns about the defined Conservation Units as per the WSP versus their overlap with the units of certification for these fisheries.
- There needs to be consideration of the pink and chum salmon contributions on habitat
- The team should closely examine the assessment and monitoring requirements for pink and chum.
- Bycatch of sockeye, coho and Chinook in the various fisheries is of concern, some pink fisheries are prosecuted to target important bycatch
- Unclear how DFO is measuring the impact of the Fraser Pink fishery on sockeye
- No LRPs or TRPs identified for either pink or chum fisheries
- Concerned about the level of assessment in the CUs, insufficient to ensure biodiversity protection of the CUs.
- In some areas, where formerly 50 streams were assessed, now only 12 are assessed
- The assessment should consider both the habitat and ecosystem indicators in both the marine and the freshwater systems
- For the Chum enhancement, key question and concern is how does the department monitor both the enhanced and wild portions of the stocks.
- The team should review the Holt et al paper on impacts of salmon enhancement
- Broughton pink salmon populations are of concern, there should be a requirement to move the farms in the Strait to south of the Archipelago.
- Concern about the lowest return on records in one stream in the area
- There is not necessary resolution on the stream assessments to determine the impact and changes caused by the interactions with the salmon farms
- Stock composition in the commercial fisheries are problematic as well
- Ecosystem based management objectives need to be established for these stocks and particularly, need to consider nutrient loading and forage needs in the watersheds.
- Concern that pink fisheries are acting as a primary bycatch fishery for other species, particularly chum

Consultation

- MCC provided clear, technically based input into development of the IFMP
- MCC felt that their ability to make constructive, consensus based suggestions into that process is very low

- The integrated harvest planning committee (IHPC) participate in the Fraser Panel for pink and sockeye. MCC's ability to make effective input into the Fraser Panel process is not possible due to the industry focus of the panel.
- MCC members have participated in the Fraser River Integrated Sockeye Spawning Initiative (FRISSI) process. The opinion of the group is that the stock recruitment assessment process is not valid.
- MCC indicate that DFO do not take valid ENGO concerns into consider in the FRISSI process and there is a high level of frustration on the part of MCC membership.

MML Response: This information provided context of concerns of the Province of British Columbia and informed the team in scoring the fishery. All significant issues raised here were considered in relevant performance indicators.

Appendix C – Peer Reviewer Comments and Responses

Technical Review of MSC submission on: British Columbia Pink salmon

Seine, Troll, and Gillnet Fishery.

Draft: PEER Review Draft, Feb. 11, 2010

Submitted by: Peer Reviewer 1 (May 11, 2010)

Comments on Section 11, Assessment Results

Note that the summary of the assessment contained in Table 3 (page 48) is not consistent with the number of conditions included in Table 5 (page 63).

MML: This has been corrected.

Since the essence of the evaluation is contained in Section 11 including the scoring for each criterion, I have chosen to focus on the evaluations reported in Section 11. There are editorial comments appropriate in the first ten sections of this report that will follow in e-mail but have no influence on these technical review comments.

Principle 1 (beginning on page 66)

Indicator 1.1.1.1 Stock management units defined & Indicator 1.1.1.2 scientific agreement

I **agree** with the comments and evaluation of these indicators. These indicators were assessed against the definition of a Conservation Unit (CU) described within Canada's Wild Salmon Policy (WSP, published June 2005) and the methodology of defining the CU's published by Holtby and Ciruna (2007). This research paper underwent extensive peer review and received full scientific support. The CUs defined by this method are the geographic and genetic standard for implementation of the WSP and to be applied to Canadian fisheries on Pacific salmon.

Indicator 1.1.1.3 Geographic range for harvest is known

I **agree** given the location of Canadian commercial fisheries on pink salmon. These fisheries are largely terminal as described for NCC fisheries or are on known migration approaches through Juan de Fuca Strait and Johnstone Strait for ISC and Fraser pink salmon. The weakest state of knowledge for this indicator is likely the Even-year ISC pink salmon as the allocation of catch to stocks is based on run reconstruction. Attribution of catches is based on terminal runs for each stock contributing to those fisheries, and estimates of migration timing and paths determined by past tagging research and current sampling using Genetic Stock Identification tools.

On page 70, 3rd paragraph ("Interceptions of inner South Coast ..."): I do not understand these comments.

MML: The paragraph has been edited to clarify that catch of Inner South Coast pinks in other fisheries will be dependent on the abundance of those fish in proportion to other fish captured in other fisheries, such as the Queen Charlotte Strait and Johnstone Strait mixed fisheries.

Indicator 1.1.1.4 Representativeness of indicator stocks

While I **generally agree** with the assessment, the client submission text is not very descriptive. For NCC pinks, I support the statement but the numbers of indicator stocks are certainly minimal for the complexity of this group of pink salmon and their geographic range (see PFRCC 2004). The use of very few indicators places the diversity amongst streams at risk but is to be protected under the WSP. Concern for the diversity of pink salmon populations has been formally published by Price et al (2008).

MML: The scoring rationale for this indicator has been changed as follows, with the addition of the bolded text.

> "The use of indicator stocks for managing Pacific salmon is widely accepted. The Core Stock review (English et al, 2006) identifies the indicator stocks for North and Central Coast pink salmon fishery and each of the CUPs provides similar information for the other fisheries. The 80 scoring guideposts are met, but only the 3rd 100 scoring guidepost is met, leading to a score of 85 for each certification unit. The correlation between indicator stocks and conservation units does not appear to have been validated; the choice of indicator stocks does not appear to have been reviewed by PSARC, and the relationship between the indicator stocks and conservation units has not been periodically assessed. **In many cases the number of indicator stocks is relatively small and may not adequately reflect the changes in diversity at scales smaller than the CUs and this is reflected in the failure to meet most of the 100% scoring guideposts."**

The ISC use of indicators is similar to NCC but the description in this text (page 72) is focused on Area 12 streams focused on recent concerns about salmon farming, sea lice, and wild salmon. Reference is made to Glendale and Kakweiken rivers but the extensive enhancement in these two rivers is not stated. There is no reference to the numerous streams along the east coast of Vancouver Island including a counting fence (indicator) at Keogh River.

Indicator streams are not used in the Fraser River as this unit is assessed as one production unit. I **disagree** with the assessment teams comments (page 73) regarding use of DNA analyses and de facto identification of "the most abundant stocks within the Fraser pink salmon CU". The component spawning units within the Fraser pink salmon CU are not identifiable (not reliably) and it is unnecessary as total production is assessed. I recommend removing the assessment score for Fraser pink salmon and assigning NA as done in Indicator 1.1.1.5.

MML: After further reflection, the team agrees with the Peer Reviewer and the score of 85 has been changed to NA (not applicable). The scoring rationale for the Fraser Pink UOC has been changed to the following:

The client submission indicated that indicator stocks are not used for management of the Fraser River pink salmon fishery. The Fraser is treated as a single stock and so it scored as a NA.

Indicator 1.1.1.5 Enhanced stocks

I **agree** with this assessment and the exclusion of enhanced stocks from this assessment. There are issues associated with the lack of maintenance of unmanned production channels and recent release of pink salmon from net pens but these issues are very minor components of pink production in BC.

Indicator 1.1.2.1 Reliable estimates of removals

I **agree** with the assessment but the text should be clarified. The use of "non-target stocks" within this indicator is confusing. My understanding of non-target within Principle 1 (page 66) is limited to other pink salmon populations/stocks and not other species or ecological impacts. Non-target issues may only be relevant in NCC and ISC under this understanding; and reference to NCC Area 3&4 steelhead issues would not be relevant to this indicator and should be moved to a later assessment under Principle 2.

MML: Reference to the NCC Area 3 & 4 steelhead catch has been removed from the scoring rationale.

A strange omission in consideration of catch reporting is the absence of any comment on the Sales Slip reporting systems that has been the backbone of DFO's accounting for many years. Pink salmon catch is largely determined by weight of landings at a packer or plant, and sampling for average weight of pink salmon in the landed catch. Why was this excluded from discussion?

MML: The client submission was reviewed and additional information was added to the client submission section under this PI, including information about the sales slip system and data generated from that process.

Further, a concern for incidental mortality (not really non-target) is the unaccounted loss of small pink salmon in seine nets when harvesting sockeye or chum salmon, and during directed pink salmon fisheries. Small meshed pink salmon in seines can be numerous but are not accounted for in any assessment comments.

MML: After consideration of the Peer Reviewer's comments, the Team has included the following (in bold) to the end in condition 1-1. **Catch estimates shall include estimates of incidental mortality of small pink salmon in seine nets during sockeye, chum and pink fisheries.**

I agree that Condition 1-1 is appropriate and I believe it is achievable, but reference to Area 3 & 4 impacts on steelhead should be moved to a more appropriate indicator. It would be considered within any consideration of catch monitoring but will add to confusion in consideration of this indicator.

MML: As stated above, reference to Area 3 & 4 steelhead has been removed from this PI scoring rationale.

Indicator 1.1.2.2 Reliable estimates of spawning escapements

Huge topic and I **generally agree with the assessment and the condition**. For clarification, I found the comments on ISC pink to be misleading. For example, bullet 2 (page 80) addresses fry enumeration, NOT adults; and the bullets pertaining to Glendale and Embley are very recent developments that would have to be maintained in order to support this assessment.

> **MML:** Fry enumeration bullet has been removed, although the Glendale and Embley bullets are recent, they are still pertinent and have been left in. Ongoing performance of those initiatives will be evaluated through the surveillance audit process.

The discussion of stock composition work seems misplaced as this is not an escapement monitoring program. It does clearly have a role related to assessments of harvest rates or stock productivity, but not spawning escapement. Again there is no reference to any streams along the east coast of Vancouver Island (may not have been included by the client?).

> **MML:** The stock composition discussion paragraph has been placed into the client submission for PI 1.1.2.1 and has been removed from the Client submission info for PI 1.1.2.2.

The discussion of changes to the Fraser River pink escapement programs accurately captures this history but does not relate the role of the pink fry enumeration to examination of recent year spawning escapements. I believe that this association of fry back to adults is very coarse and is not a reliable measure of adult escapement in the previous fall.

> **MML:** Reference to fry enumeration has been removed.

Condition 1-2: I support this condition and it is appropriate to relate the intensity of spawning escapement enumeration programs to management tools and the "level of harvest" (presumably this really means rate of harvest). However, an escapement monitoring process is required by the WSP for each pink salmon CU (for production and diversity of spawning populations); and I would suggest is a necessary requirement to demonstrate sustainable fishing. The monitoring program submitted by DFO must be responsive to changes in fishing intensity. If harvest rates increase from the current low rates (and presumably this is the intent if certification was given), then escapement monitoring must occur at a higher level also.

> **MML:** We agree that the escapement monitoring program should be consistent and concurrent with the level of fishing effort. As there is no specific scoring issue related to responsiveness to fishing intensity, we will monitor the outcome of the condition by confirming that the program designed is able to respond to the three scoring guideposts identified under the 80 SG.

Indicator 1.1.2.3 Information on fish age and size

I **agree** with the assessment comments and with the condition. In meeting the condition, DFO should include consideration of average size over time by CU and sex. The inclusion of more strata will affect sample sizes and likely where sampling should occur. Meeting these requirements is certainly achievable.

Indicator 1.1.2.4 Productivity estimates

I find the Client submission and evaluation team comments poorly written for this indicator and **I recommend that the team re-assess this indicator**.

For NCC pink salmon, the discussion of MEG seems irrelevant to consideration of pink productivity. MEG may be a useful precautionary means to manage fisheries, but the text needs to refer to the criteria for this indicator (productivity rate of the species). It is also unclear why MEG would "reflect(ing) highly productive stocks" ...and if so, is this even desirable?

For ISC pink salmon (page 86), the text only discusses Genetic Stock Identification. This is obviously not sufficient to estimate productivity and needs to be more fully developed. The discussion would also have to address spawning escapement and run reconstruction methods in order to use GSI for any consideration of productivity.

For Fraser pink salmon, the comments are again not relevant to estimation of productivity.

While the scoring rationale is likely in the correct range, I am confused why the historical work to define productivity of BC's pink salmon was not included by the client or assessment team. There are historical records (estimates) for productivity of Fraser, Bella Coola, and Skeena pink salmon production. **I am also concerned that no condition was attached to this key indicator. Given the limited coverage of indicator stocks for escapement monitoring, it seems appropriate to consider a few quantitative indicator streams/stocks within BC coastal ecosystems.** Without this system, it will not be possible to monitor changes in productivity over time and particularly within the context of future climate change. This suggestion would seem increasing important if future harvest rates were to increase if MSC certification was accomplished. **I recommend reconsideration of a condition for this indicator**.

> **MML:** The Team's perspective on this indicator is that the management guidelines need to assure the stock is in the realm of MSY and productivity in the case of salmon would refer to potential sustainable yield. For stocks largely managed by harvest rates, productivity rate would be important, but for salmon, managed on escapements, the key problem is identifying the target escapement. The client submission describes how the management escapement goals (MEGs) were derived, and we said in our scoring that we agreed the approach was sufficient to meet the 80% SG. It is true that the current level of analysis and monitoring won't track climate change impacts on productivity, but so long as the managers still meet the escapement goals, the management system would be robust to the changes in climate. Of course it is possible that the escapement goals themselves should change with climate, but that is difficult for even the best managed stocks.

The team has suggested the following amendment to the scoring rationale below (in bold):

> The MEG's combine with the in-season regulation to restrict harvest so that MEGs are obtained is a system that will assure stocks maintain any potential productivity. While there is little formal analysis of spawner-recruit data, the high variability in pink salmon rates of return will generally mean that there is a considerable range of stock sizes that assure productivity. **Escapement targets should be robust to environmentally induced changes in survival (productivity) and given the diversity of pink salmon streams and the high natural variability it would appear that the method used to establish MEGs is as good a system as practical.** Where non-target stocks are captured exploitation rates are kept low to reduce impact. All certification units meet the 60 and 80 scoring criteria, but none meet the 100 criteria.

Indicator 1.1.3.1 Limit Reference points

While I **agree** with the scoring, I would suggest that the assessment team's Scoring Rationale is a creative discussion of the present management goals for pink salmon. Condition 1-4 will require a more complete consideration by DFO (very quickly). *I note though that within the WSP, the LRP must consider production levels and diversity of spawning population within a CU*.

Again, the discussion of ISC pink does not address the issue within this criterion. If there is nothing submitted that is applicable, I suggest that the team state very clearly that the submission was inadequate and not summarize inappropriate material.

> **MML:** Source documentation was verified and the appropriate paragraph referring to the setting of MEGs has replaced the original paragraph from the Client Draft Report.

Indicator 1.1.3.2 Target Reference points

My comments are the same as for Indicator 1.1.3.1. Completing these two conditions within two years will be very challenging for DFO given the state of the work through the past five years.

> **MML:** Same action as PI 1.1.3.1.

Indicator 1.2.1 Well defined and effective strategies

I **agree** with the overall intent of this indicator but suggest that the scores are low relative to others unless there is a specific example of the need for a recovery plan. Many of the other discussions acknowledge that DFO is responsive to decreases in production and to protecting spawning populations, but this score suggests something less for depressed populations. The condition is consistent with the stated requirements within the WSP and the need to describe recovery plans for any CU that is approaching the lower benchmark. **I also agree with the Team Suggestion (page 95) but note two issues:**

i) The WSP requires plans for a CU, not necessarily for component populations within it. However, in some larger CU's as with pink salmon, it would be

expected that recovery plans would be an appropriate management action if geographic portions of a CU become depressed or some habitat impact requires mitigation etc. The WSP does not require this but it would clearly be consistent with the requirement to protect diversity within the CU.

MML: It is important to note that the various pink salmon fisheries are managed at a finer level than the CU. It is expected that recovery plans would be appropriately based on the current level of management.

ii) I am concerned with the requirement to recover production within three cycles (6 years for pinks). This may simply be unattained due to environmental conditions. I would r**ecommend** the emphasis be placed on development of a plan and an associated set of fishery management actions that would be expected to provide recovery (i.e., exceed the lower benchmark with a high degree of confidence) given various assumptions about present and future productivity.

MML: The Team has suggested the following modifications to Condition 1-6 (in bold) and note that the condition specifies 150% of LRP before any targeted fishing is allowed, but the stock is still expected to recover to the MEG.

To achieve a score of 80 over the five year period of the certification, the client and DFO must develop and implement (in the event of severe depletion) recovery plans to facilitate the recovery of depleted stocks **to the MEG** within three cycles **given average rate of productivity. It is recognized that if stocks encounter a series of poor productivity years, even with little, if any, exploitation stocks may not recover in three cycles.** The recovery plans must be defined to allow the stocks to recover more than 150% of the defined limit reference point prior to allowing any fishery to target the depleted stocks **and the stock should be expected to recover to the MEG under the rebuilding plan**. A recovery plan template must be developed and submitted for review and approval within 2 years.

Indicator 1.2.2 Stocks not depleted and harvest rates are sustainable

Given the higher scores for catch estimation and spawning escapement coverage, I presume that the score for this indicator is driven by the lack of reference points and the department's ability to estimate exploitation rates for indicator populations. I note though my comments on the indicator for productivity estimates (indicator 1.1.2.4). The condition stated for this indicator would essentially be a statement of a management framework for pink salmon, and would be required to achieve agreement on the reference points. Unfortunately, the text for this indicator again does not seem to address the criteria stated.

While I agree that management responses have recently been appropriate when abundances decline, I expect that you would not see "general agreement" that methods are scientifically defensible. However, they have apparently been adequate to determine poor returns and to adjust fisheries as appropriate ... this is certainly the key issue.

I would note that MSC certification should not rely on SARA without resolution of how Designated Units would be associated with Conservation Units under the WSP. The

WSP was developed with the intention of requiring management response in a CU before relying on SARA to protect the resource.

Much of what is included in Condition 1-7 has been addressed by previous conditions. *However, to justify the estimation of an exploitation rate, I see little alternative than to address my comments under Indicator 1.1.2.4 Productivity.*

> **MML –** The actual escapement methods are covered in earlier indicators, so the text of both the clients and our scoring reflects the status of the stocks relative to reference points and the response of the agency to changes in abundance. As per the requirements of MSC Fisheries Certification Methodologies, the team is required to formulate conditions which will require the client (working with the agency) to meet the requirements of the 80 scoring guideposts. In condition 1-7 we specifically ask for calculation and defense of methods estimating escapement, catch and harvest rate which would provide the basis of understanding productivity.

Indicator 1.3.1 Age, sex, and genetic structure are monitored

The score for this indicator are overly generous since monitoring for these effects is not routinely conducted. This issue deserves more attention in a management framework. However, the score on this indicator is of no consequence (assuming it exceeds 80) since the weight associated with Criterion 1.3 is only 0.07.

Principle 2 (beginning on page 101)

Indicator 2.1.1 Direct impacts on non-target species are identified

I **agree** with the team's assessment as extensive monitoring and reporting has been implemented over the past decade. I did not understand a statement in the Scoring Rationale: "The team's opinion is that the data do not include statistics for non-target species which are released as part of the condition of license." If this is a generic statement, it is not apparent why the condition only refers to Area 4 pink fisheries since their comment seems much broader. The team should clarify their concern so appropriate actions can be taken. Further, Condition 2-1 notes Area 4 pink fisheries, but several other comments in the report refer to Area 3 and 4 pink fisheries. Is the Condition specific to only Area 4?

> **MML:** The text for the condition has been modified to include Area 3.

Indicator 2.1.2 Measures to reduce marine ecosystem impacts

I agree and have no added comments. The evaluators' response is clearly true given the very low harvest rates in recent pink fisheries but these concerns should be recognized if harvest rates increase following certification.

Indicator 2.1.3 Sufficient research on ecosystem impacts

In general I **agree** with the team's assessment but I would suggest that the scores of 95 overstate the confidence for this indicator. There is actually very little consideration/attention to "identify new problems" ... even with obvious concerns for future climate change and potential changes to ecological interactions. *Since condition 2-2 seems to simply restate Condition 2-1, I see little need for this condition*. The evaluation team should consider if the condition 2-2 accurately states their concern ... otherwise as drafted it seems redundant.

MML: The Team disagrees with the statement that "there is actually very little attention *to identify new problems.* The issues on sea lice and the general response to significant changes in marine survival, seem to indicate the department is doing very well with its existing resources to identify new problems as they arise. The submittal by DFO provided information that addresses the latter 3 of the 100 scoring guideposts, and with the exception on the NCCC pink fishery, the 80 level bullets are addressed.

Condition 2-2, the guidepost states" There is ongoing research of previously identified problems areas to determine if bycatch reduction measures are effective." Condition 2-1 responds to the PI 2.1.1 - 80 scoring guidepost which states" A monitoring program exists that provides estimates of bycatch."

Although similar, condition 2-1 requires the presence of a credible data collection system, the second condition requires the collection of the data and analysis to determine if actions are effective. The requirement of condition 2-1 is required to meet the PI 2.1.3 - 80 guidepost is correct as stated, even though it is redundant. The same information is needed to address both issues.

Indicator 2.1.4 Escapement goals address ecosystem needs

I **disagree** with the scores for this indicator as they are unreasonably high. With current harvest rates, the ecosystem provisions in this indicator have likely been met, but direct research on this topic does not merit these scores. This issue has seldom been considered in establishing escapement goals and the fact that the intention is meet if sufficient recruitment is provided does not seem an appropriate response to the criterion. However, considerations would certainly exceed the 60 SG and the WSP Strategy 3 will certainly improve consideration of related issues. The issue is now openly recognized and was a strong requirement for inclusion while conducting public consultations for the WSP.

The appropriate condition for addressing this indicator would be completion of the Department's ecosystem indicators required to implement Strategy 3 of the WSP.

MML: The team has reviewed DFO's submittal and the scores provided are consistent with the information provided and the scoring guideposts. The reviewer indicates that this information is seldom considered in establishing escapement goals, yet the cited references have provided the basis for understanding nutrient additions. Pink salmon, in particular, are usually managed to provide for spawning ground saturation that insures sustainable harvests, in addition to sustainable escapement. Because of the inherent brood year interactions with some off years runs being nonexistent, it is difficult to understand what further research or consideration could be given, beyond what is currently available. If sufficient escapement is provided that meets near MSY returns, despite predation, the ecosystem concerns should be met.

Indicator 2.1.5 Research on effects of non-fishing activities

I **agree** with this assessment. Research responses to these issues have been stronger than related to Indicator 2.1.4; but, the last paragraph of the Client Submission does not address this criterion ... unless you can demonstrate research in support of development of the assessment guidelines. Significant research has been directed to the salmon farming and wild salmon issues (particularly related to ISC pink salmon); and was included in this text. More research can always be called for, but the Department has a long history of research in salmon fisheries and populations.

Indicator 2.2.1 Information on biological diversity used by managers

While the Client Submission to this indicator is extensive, I would suggest that the essence of a response comes down to the implementation of the WSP and DFO's response to the salmon farming debate (everything else pales in comparison). With regard to pink salmon fisheries, the indicator issue would be the establishment of evaluation criteria for protection the spatial diversity of spawning populations within a CU (currently in publication). The WSP does still require completion of implementation but the policy is clearly a very strong statement of concern for biodiversity. Regarding the salmon farming concerns, management plans developed by DFO and the BC Pacific Salmon Forum have controlled sea lice incidence on wild juvenile salmon in the Broughton Archipelago in the recent few years, but that control is achieved through the use of a chemical (Slice). Its use obviously introduces a new research question on the ecological effect of the chemical.

Consideration of biodiversity issues within fisheries has been a major improvement in recent years. *I would fully support a score of 80 for this indicator but do not see any basis for increase due to inclusion of "enhanced components" in the criteria*. The review has already established that enhanced production of pink salmon is not important to commercial pink fisheries in BC (scored an NA under indicator 1.1.1.5).

> **MML:** The reviewer appears to be making comment on the appropriateness of the second scoring guidepost of the 100 SG, which includes a reference to knowledge of the enhance component in stock composition. The reviewer's opinion is that the fishery does not merit additional score on the basis of inclusion of information about the enhanced production. The Team is of the opinion that the 80 and 100 guideposts are fully explained and whether "enhanced components" are included, is not a factor as indicated by the reviewer so why would their inclusion affect the score. The other bullets are met as described with exceptions noted in the scoring. The team does not agree that the score is too high

Indicator 2.3.1 Provide for recovery of non-target stocks

The scoring criteria and scope of this question are substantial; but relative to scores for other indicators, *I would suggest that these scores are very conservative*. I would also score ISC fisheries less than the other two, not greater. There has been significant discussion in NCC to management impacts on non-target stocks (i.e., the steelhead harvest agreements) and significant changes in fishing for Fraser pink salmon. Concerns

for the numerous smaller pink populations that compose the ISC resource should be greater than for NCC and Fraser.

> **MML:** The issue of this indicator is the lack of recovery plans which nullify positive scores for 4 of the 6 indicators. The team determined these could not be met without a recovery plan, given the language of the bullet, hence the scores were low for all. The issue is the addressing of nontarget stocks, which for the most part are not pink salmon. Without definition from DFO of the numerous smaller pink salmon populations of the ISC, as target or non target, whether this criteria is applicable is unknown, but is part of the conditions 2-3. Consequently lowering the score for the ISC, based on pink salmon, when they may not be considered under this criteria, does not seem prudent. Regardless, the status needs to be addressed under condition 2-3. Therefore, the rationale stated for the scores seems to be consistent with the scores for the two bullets where partial scores were given.

Condition 2-3 seems unreasonably restrictive given the low harvest rate in BC pink fisheries at this time. The condition essentially requires development of the limit reference point (lower benchmark) for all non-target stocks/species affected by pink fisheries; and allows two years to complete this. The concern is understandable, but could be more reasonably stated and be dependent upon the harvest rates planned in future fisheries. **The assessment team might consider a harvest rate limit above which DFO would be required to meet Condition 2-3 before exceeding that limit.**

> **MML:** MSC Fisheries Certification Procedure requires that Certification Bodies prescribe conditions which require the client to meet the performance requirements of the 80 scoring guideposts. As such, this condition restates the language of PI 2.3.1 and the 80 scoring guideposts which the fishery did not meet. The criteria require recovery plans for depleted non target stocks that are below the LRP's and are not conditional based on what the harvest rates are or are going to be in the future. Having a recovery plan is not dependent upon current harvest rates, but is likely that maintaining low harvest rates would be the key recovery strategy.

Principle 3 (beginning on page 124)

Since Principle 3 refers more to management process, my comments are more limited.

Indicator 3.1.1 Clear objectives

Given the developing implementation of the WSP, this assessment is reasonable, if not a bit conservative. Many of the information requirements needed to develop these objectives have been commented on in previous indicators.

Conditions 3-1, 3-2, and 3-3 follow logically from the previous indicators and criteria but I note two differences in the latter two conditions:

1) Condition 3-2 and 3-3 are now on-going conditions until "reliable estimates of bycatch are obtained annual", and

2) "Bycatch estimates will be reported to the certification body within one year."

The combination of (1) and (2) needs clarification of what is actually expected. Previous conditions have provided quite tight timeframes for reporting on non-target species impacts but these conditions could be read to only require reporting of bycatch within one year after the fishery? Further, how long would the condition apply once "reliable estimates" are provided? The reader should not have to interpret the requirement of these conditions.

> **MML**: The condition requires that "reliable estimates of bycatch are obtained annually", if certified, this requirement would be confirmed each year during the surveillance audit process.

Indicator 3.1.2 Periodic assessments of biological status

I **agree** with this assessment and note that periodic assessments should be improved within the WSP and the use of consultations through PSARC and the Integrated Harvest Planning Committees.

3.1.3 Identify the impact of fishing on the ecosystem

I **agree** with the scoring rationale, and the most obvious impacts are on non-target stocks/species that have been addressed by previous indicators.

3.1.4 Uses best information and precautionary approach

While current harvest rates for pink salmon fisheries are very conservative, I am concerned that the assessment score of 90 seems liberal given the extent of uncertainty in assessments and adult returns. The extent of uncertainty in management could have been more fully investigated using historical relations to assess uncertainty in management control. Pink salmon fisheries are managed based on in-season assessments and control of fishing effort and catch. These methods have been consistently applied for many years. The stated intent of this indicator notes the ability to assess uncertainty ... but no effort to quantify this was addressed by the clients.

Reference to DFO's New/Emerging Fisheries Policy does not seem relevant to BC Pink salmon fisheries.

I would recommend that the **assessment team re-consider their score of this indicator** and a potential condition related to how DFO would incorporate uncertainty into in-season management and assessment of stock status. The risks associated with uncertainty, and the need for mitigation, should be considered within the context of the harvest rate applied in fisheries. The WSP does consider this but leaves open how it would be accounted for.

> **MML:** All of the 80 level SGs were passed as written. Uncertainty in the pink salmon abundance estimates is recognized and not a critical issue as long as harvest rates remain low (i.e. in the 10-20% range).

Indicator 3.1.5 Responses to new information are timely and adaptive

I **agree** with the evaluation of this indicator but would suggest a re-consideration of the NCC score of 75 compared to the others at 95. The management process for pink fisheries are responsive to new information in-season. Net fishery management is based on in-season assessment (test fisheries) and the manager's response.

The reduction of NCC score from 95 to 75 and the associated Condition are attributed to the one example of Area 3 and 4 chums rebuilding and the lack of a timely response. While the Condition can likely be met, I see little basis for this requirement due to a single example when the fisheries in the NCC area are much more diverse in other areas of NCC. Is there evidence that concerns for chum salmon and their harvest in NCC pink fisheries are more common than just in Areas 3 and 4, or is this condition due to the team's local knowledge of this one issue?

> **MML**: NCC was given a partial score for one of the indicators at the 80 level because the Area 3 and 4 fisheries are significant fisheries in the NCC and they do not meet this scoring guidepost. Other components of the NCC pink fisheries met the 80 SGs. Thus, the team is of the opinion that the proposed score is appropriate.

Indicator 3.1.6 Responsive to social and economic impact of the fishery

... **Agreed**, no other comment

Indicator 3.1.7 Useful and relevant information to decision makers

I am very uncertain of the value of this indicator as expressed. DFO has a long history of in-season management of net fisheries and interface with the industry; no one knowingly provides useless, irrelevant advice! What is the real question behind this indicator? Are you asking if decision makers actually accept and use the advice?

Regarding the assessment, what is the evidence to accept 60 SG (second bullet) related to the use of risk assessments? Managers do likely make these judgments regularly but was there evidence of risk assessments in the submissions from the client? If so, why reject the first bullet under 100 SG ... only difference seems to the existence of alternatives?

There are many levels of information transfer implied in this indicator, I am uncertain what to assess and will leave this to the assessment team.

> **MML –** The team agrees that this indicator may be perceived of marginal value but it was included (as it was in both the BC Sockeye and Alaska Salmon assessments) and therefore it was evaluated . At the 60 level, risk assessments just need to be considered. At the 100 level they need to be conducted for each management alternative. These are very different requirements, and the team is of the opinion that the scores awarded were merited.

Indicator 3.1.8 Socioeconomic incentives for sustainable fishing

Incentives have been increasingly provided recently and likely will provide greater gains in the future. I have no additional comments on the scores or Condition 3-5.

Indicator 3.1.9 Hatchery management issues

I **agree** with the NA assessment, with the exception that the increasing use of pink salmon net pens in ISC must be considered within these hatchery guidelines.

Indicator 3.2.1 Research plan for target and non-target species

After considerable thought, I believe that this is an **appropriate evaluation and that Condition 3-6** is justified. There should be no misunderstanding on the $$ resources for pink salmon assessment and research (e.g., 80 SG, "Funding is adequate to support short-term research needs". Funds for annual pink assessments, particularly any quantitative assessments, are woefully inadequate but special (ad hoc) resources have been found for short-term issues such as the sea lice and pink salmon issue. The last paragraph of the Client Statement is irrelevant to pink salmon assessment and research ... and misleading.

The Condition 3-6 statement is adequate. **The plan to be developed should very clearly differentiate monitoring, assessment, and research** (e.g., research is not about providing catch data as implied in the 60 SG for this indicator!

Indicator 3.2.2 Research is timely, available and reviewed

The intent of these criteria is uncertain to me. The material presented in the Client Statement is relevant to annual monitoring results and stock assessments but **infrequently** to actual research. Research programs are not required to have peer review while on-going but are subjected to peer review during the reporting and advisory steps. These issues need to be clearly differentiated in the response to Condition 3-6. However, since there is extensive consultation of annual monitoring and assessment results, I understand the basis of the team's score of 90 ... however; the appropriateness of this score depends on how research is intended to be used in this indicator.

The important result from this indicator though is the completion of Condition 3-6. Any other change, such as the indicator scores, will be inconsequential since the weighting of criteria 3.2 (0.10) makes the overall score for Principle 3 very insensitive to these changes (unless of course it falls to less than 0.60). I see no reason for this indicator to be reduced to that level.

> **MML:** The team's assumption is that we are evaluating the applied research that is directly related to management decisions associated with the fishery (i.e. reliability of catch and escapement estimates, spawning goals, harvest rate analysis, migration rates, etc.) This intent information has been added to the scoring rationale and the scores have not been changed.

Indicator 3.3.1 Open Consultations

Agreed, no further comments. Consultation is a significant commitment by DFO and continues to be a priority activity.

Indicator 3.4.1.1 Methods to limit harvest

I **agree** with the assessment. The Department has numerous mechanisms available to manage exploitation, except for limitations in managing effort. Until recently, when a fishery is open, the Department was not able to limit the number of vessels that

participated. However, even this issue is being corrected. The critical issue is not whether the Department has the tools to limit harvest but the accuracy of abundance estimates during a fishery.

Indicator 3.4.1.2 Measures to restore depleted target species

Pink salmon are conservatively managed and account for the evaluation comment that "management procedures appear to be adequate for the majority of target pink stocks." (page 162) Implementation of the WSP will also re-enforce this indicator as recovery plans are required to CUs when the abundance approaches the lower benchmark.

I was surprised by the lack of a condition for this indicator as reference points (lower and upper benchmarks under the WSP) have not yet been determined for any CU.

> **MML:** Recent management strategies are based on maintaining low harvest rates for pink salmon stocks. Therefore, the definition of limit and target reference points is not critical for the current pink salmon management strategy.

Indicator 3.4.2.1 Compliance provisions

This is not my area of expertise but it is very hard to support a score of 100 for ISC and Fraser pink fisheries. However, as long as the evaluation exceeds the 80 score for each fishery, any variation in the score will have no appreciable effect on the overall score under Principle 3.

> **MML:** The team's evaluations were based on the information provided to use for review and direct knowledge related to each fishery. We are aware of documented compliance issues associated with NCC pink fisheries but we are not aware of any compliance issues associated with the other fisheries. This does not mean that there are no compliance issues associated with Fraser and ISC pink fisheries, we are just not aware of any of these issues.

Indicator 3.4.2.2 Monitoring provisions

Given evaluations of previous indicators related to catch and escapement monitoring for target and non-target stocks, **a score of 90 for each fishery seems inconsistent with concerns and conditions already presented**. The evaluation team should review the evaluation of this indicator specifically for consistency with the numerous previous indicators.

In my opinion, monitoring has been adequately addressed in many previous indicators *and in aggregate should not be scored 90 across each of the pink fisheries*. Monitoring is sufficient to meet the stated 80 SGs and achievement of other already stated conditions will significantly strengthen monitoring of objectives.

> **MML:** This indicator is more associated with monitoring management performance than monitoring catch and escapement which are addressed elsewhere. Each fishery received the same score because there is essentially the same IFMP process for monitoring and reviewing the fisheries management performance.

Indicator 3.5.1 Internal reviews

Agreed, Departmental post-season review and consultation processes are strong points for open reviews.

Indicator 3.5.2 External reviews

Agreed, this is a valid identification of a short-coming and external review is certainly a useful exercise. However, I am concerned about a fixed 5 year period for reviews as these will only involve 2 or 3 years of returns for pink salmon. The reviews could be required periodically and the frequency of reviews related to the intensity of fishing (harvest rate) or any significant change in the conduct of a fishery.

The first review within 2 years is a valid request in order to determine a baseline for future reviews. Realistically though, the Department will be challenged by the many other conditions within the 2 year period and this review could be conducted in the third year after certification.

> **MML:** The five year fixed period for the reviews is not intended to be necessarily coincidental with a particular number of pink returns but in fact is meant to ensure that there is a global review planned and conducted. It will be the client`s responsibility to suggest how they intend to meet the requirements of this condition.

Indicator 3.5.3 Incorporation of recommendations

I actually see little merit in this indicator and do not see how 60 SG and 80 SG differ. DFO should obviously consider all recommendations from reviews (and to my knowledge generally do); but it seems naive to believe that every recommendation should be "acted upon". It is, however, appropriate for the Department to report on each recommendation and their response to them. Given my uncertainty in the value of this indicator, I have no comment on the evaluation scores.

> **MML:** Again, this indicator is in keeping with previous MSC assessments for other salmon fisheries.

Indicator 3.5.4 Dispute resolution

I agree with the evaluation but put little weight in the evaluators' concern for final decision authority. Senior government carries the legal authority for the final decisions but that does not mean that a successful dispute resolution would be overturned ... unless the decision is inconsistent with law or existing policies.

Indicator 3.6.1, 3.6.2, and 3.6.4 Compliance with legal and administrative requirements

No comments

Indicator 3.7.1 Avoid catch and minimize mortality of non-target species

Extensive efforts by fishers have been made to minimize mortality of non-target species, however the scoring of ISC pink fisheries at 100 (meets all criteria) is not justified in my opinion. These fisheries have incidental mortality issues just as NCC and Fraser fisheries do.

Unfortunately, none of the indicators under Criterion 3.7 will have any effect on the overall score for Principle 3 since the weight for this criterion is only 0.077

MML: Our evaluations were based on our direct knowledge of the fisheries and the information provided. No evidence was provided that the ISC pink fisheries have bycatch mortality issues like those of the NCC and Fraser fisheries.

Indicators 3.7.2, 3.7.3 ... ***no comments***

Indicator 3.7.4 Cooperation of fishers

I **disagree** with the rationale for the NCC and Fraser fisheries. The issue pertains to the cooperation of fishers. The issue of bycatch in NCC and Fraser fisheries has not been adequately related to fishers to penalize those fisheries. I would recommend that each fishery receive the 90 score.

Conditions 3-2 and 3-3 already address the issue presented in conditions 3-8 and 3-9. I suggest the latter conditions are off topic and redundant to others. These last two conditions should be excluded.

MML: Reliable estimates of discards from any fishery require cooperation of fishers. DFO managers and individuals associated with observer and catch monitoring programs have reported incidences of fishers not providing reliable information on steelhead harvested during fisheries targeting pink salmon returns to the Skeena and Fraser river. This is not surprising given the implications on their fishing opportunities of reporting steelhead harvests.

The conditions are necessary as per the requirements of the MSC Fisheries Certification Methodology so will remain as defined.

Indicator 3.7.5 Fishing methods minimize impacts on habitat ... **agreed**.

Literature cited:

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Pacific Fisheries Resource Conservation Council. 2004. Advisory: salmon conservation challenges in British Columbia with particular reference to central and north coast. Vancouver, B.C. (www.fish.bc.ca)

Price, M.H.H. et al. 2008. Ghost runs: management and status assessment of Pacific salmon returning to British Columbia

March 22, 2010

To: Steve Devitt, TAVEL Certification, Inc.

From: Peer Reviewer 2.

Subject: Review of the draft MSC assessment of British Columbia Commercial Pink Salmon Fisheries (dated February 11, 2010)

In late 2009, I was contacted by Steve Devitt, TAVEL, who requested that I review the Marine Stewardship Council assessment report on British Columbia commercial pink salmon fisheries. The draft assessment report for pink salmon was received on February 15, 2010. Supporting documents included pink salmon profiles prepared by the Fisheries and Oceans Canada (DFO) for each region. These profile documents were prepared by DFO in response to the MSC certification process. DFO also prepared a management summary report for BC pink & chum salmon fisheries. These documents provided considerable information that facilitated the review by the assessment team. Action plans that would describe how the management system would satisfy specific conditions of MSC certification, as described by the assessment team, were not reviewed here.

General Comments

The assessment report was well organized. Good organization is important because the MSC assessment is complex and includes many details. The assessment report provided a concise summary of the fisheries, fisheries management, and status of stocks. This was followed by a review of the MSC scoring process, a review of the certification recommendations (fishery conditions). The assessment report included detailed information for each performance indicator, information provided by the fishery proponent (client), and the rationale for scoring each performance indicator by the assessment team. I appreciated the summary charts in Appendix A that showed long-term trends in key statistics such as spawning escapement, percentage of rivers examined for escapement, and harvest rate. The overall approach was very effective in communicating the strengths and weaknesses of the pink salmon fishery and its management.

The information cited in the assessment report appeared to be accurate and it reflected information provided by DFO and the client. This information was used by the assessment team to score the performance indicators. Evaluation and scoring of the indicators, based on the scoring guidelines, requires interpretation of the information and intent of the indicator, and such interpretations can lead to differences in opinion. Nevertheless, the assessment team provided sufficient information and rational for the score of each indicator.

The pink salmon fishery and its management system were found by the assessment team to be sufficient to meet certification requirements of the MSC, assuming that the conditions for certification were achieved within the specified time frame. This conclusion is reasonable and justified by the information provided in the report and supporting documents.

Nineteen certification conditions were recommended by the assessment team, but some of these were the same for multiple performance indicators. All of these conditions were reasonable and justified by the information provided in the documents. Fisheries management will be improved and sustainability enhanced through achievement of the conditions identified by the assessment team. Compliance with the conditions will require considerable effort by both DFO and the client, but sustainability of the fishery will be well-served by this effort.

Appendix A provided very informative information, which raised additional questions. As discussed, escapement goals for pink salmon in British Columbia are typically based on escapements that have led to relatively large runs in the past rather than on spawner-recruit relationships (as recommended by a condition). It was not clear in the report whether the observed or the reconstructed escapement value should be compared with the escapement goal.

MML: The reconstructed escapement values should be used in comparison with escapement goals. This has been clarified in the report.

Most salmon fisheries do not have a defined limit reference point (LRP), i.e., an undesirable escapement level in which fisheries should be stopped before the LRP is reached. Instead, salmon fisheries typically target a desirable escapement goal that would provide the potential for relatively high future production. The MSC assessment team apparently assumed, based on discussions with DFO, that the LRP was near 25% of the management escapement goal (MEG). This approach may be somewhat different from the approach used in other MSC salmon assessments in which the LRP was assumed to the lower range of the escapement goal. In the latter example, it was recognized that failure to reach the lower escapement goal was not necessarily a conservation issue, although management concerns were raised if the lower escapement goal was not achieved for several consecutive years. Most pink salmon fisheries in BC reduced harvest rates when pink salmon runs declined, but there were a few locations in which some harvests continued even though the observed escapement level was well below the LRP, e.g., Areas 4 & 5 even, mid-Vancouver even, Howe Sound odd, etc. Some of these fisheries were relatively small. Following through with the conditions recommended by the assessment team is important for meeting the sustainability measures set by the MSC.

MML: The Team notes that the harvests which continued below LRP are generally small.

Appendix A also presented information showing that escapement survey coverage has declined in recent years. Following through with the conditions recommended by the assessment team should correct this issue.

Specific Comments

Condition 1-1. The condition requires accurate incidental catch estimates of steelhead in Areas 3 & 4. Since this condition applies to all pink salmon fisheries, I would have expected this requirement to also specify bycatch estimates of steelhead and sturgeon in the Fraser River fishery (Condition 3-3 does address steelhead and sturgeon bycatch).

MML: Condition 1-1 has been modified to include the requirement for accurate incidental catch estimates of steelhead and sturgeon in Fraser River pink salmon fisheries).

Condition 1-6. I wonder if recovery to 150% of the defined LRP is sufficient, especially if the LRP is defined as 25% of the escapement goal. The MSC guidelines specify the intent of recovery before directed fishing is allowed, so I have some confidence that fulfillment of the related condition would satisfy this intent. In my opinion, directed fishing should not be allowed until the stock approaches the targeted escapement goal.

MML: The Team's intention is that rebuilding plans should be implemented and be successful to bring the stock back to the identified MEG.

PI 2.1.1 and Condition 2-1. Given the lack of accurate bycatch data for steelhead and sturgeon in the Fraser River fishery, I would have expected the Fraser pink fishery (score = 90) to be scored the same as NCCC pink fishery (70) and that Condition 2-1 would have been applied to the Fraser fishery, too. Also, see Condition 2-2, which is same as 2-1.

MML: There are monitoring programs in place to assess the bycatch of steelhead and sturgeon in Fraser River pink salmon fisheries but the reliability of these estimates is uncertain. The first SG at the 80 level is partially met and the second SG was considered fully met so the Fraser score should be 75. Corrections to the scoring rationale and the condition have been made in the report text.

Condition 2-3. Implicit within this condition is development of LRP values for non-target stocks, correct? Note: this performance indicator (2.3.1) received the lowest score in the assessment (63).

MML: The non-target salmon stocks of interest must have LRP's, the following has been added to this conditions. "Implicit in this condition is that all non-target stocks have LRP's developed."

P. 81. It was not clear how monitoring of pink salmon fry in the Fraser River was used to estimate parent escapement and how this was used to manage the fishery in order to achieve the spawning escapement. Nevertheless, the associated condition was appropriate.

MML: Fry enumeration bullet has been removed, although the Glendale and Embley bullets are recent, they are still pertinent and have been left in. Ongoing performance of those initiatives will be evaluated through the surveillance audit process

P. 133, 183. Although there seems to be DFO guidelines for retrieving lost fishing gear, I question whether it is accurate to state or imply that all derelict fishing gear has been removed in BC. A colleague contacted DFO recently and so far no program for documenting lost nets or systematic retrieval of lost nets has been described.

MML: Fisheries officers and guardians routinely report removal of derelict fishing gear and unattended nets. The team is not of the opinion that all derelict fishing gear has been removed however, for this fishery, the opinion is that based on current fishing practices, there should be little opportunity for lost gear.

P. 172. The assessment team seemed to score PI 3.5.3 correctly, based on the guidelines, but I wonder if the 85 score is appropriate when, as stated in the scoring rationale, that the management agency did not respond to the recommendations by the Skeena Independent Science Review Panel, or act upon the DFO approved Core Stock Assessment Program review.

MML: The second criteria at the 100 guidepost was only partially met because recommendations are not always acted upon. The recommendations from the ISRP and CSAP have been considered by the management agency and some have been incorporated into the decision making process.

There were several references that were not cited in the reference list, e.g., English et al. (2006), Riddell et al. (2008), Krkosek et al. (2008).

MML: These have been reviewed and corrected. In many cases the client submission text was lifted directly from the client submission and not all references followed.

Appendix D – Client and DFO Action Plan

ACTION PLAN TO ADDRESS CONDITIONS FOR MARINE STEWARDSHIP CERTIFICATION OF BRITISH COLUMBIA PINK FISHERIES (Fraser River, Inner South Coast, North Coast and Central Coast)

June 23, 2011

This action plan provides a detailed response outlining our commitment to meeting the Marine Stewardship Certification (MSC) conditions within a 5-year period.

Many of these conditions are similar across the fishery units and will be met or exceeded through implementation of regional and national policy and programs, such as the Wild Salmon Policy (WSP) and National Sustainability Framework. The WSP describes how DFO will meet its responsibilities for the conservation of wild Pacific salmon. It identifies the following four basic principles:

- Conservation of wild salmon and habitats is the highest priority;
- Honour obligations to First Nations;
- Sustainable use; and
- Open and transparent decision making.

The WSP separates conservation from sustainable use and identifies the primacy of conservation over use. The intent of the policy is to protect the biological foundation of wild salmon in order to provide the fullest benefits to Canadians. It must be noted though that there will be exceptionable circumstances where it is not possible to address all risks.

"Where an assessment concludes that conservation measures will be ineffective or the social or economic costs to rebuild a CU are extreme, the Minister of Fisheries and Oceans may decide to limit the range of measures taken. Such a decision will be made openly and transparently."

We do not believe that this statement is inconsistent with the MSC standard. Many DFO harvest decisions favour conservation (e.g. Thompson coho, Cultus and Sakinaw Lake sockeye, WCVI chinook, Cowichan chinook) despite great social and economic costs.

Third-party assessment of the Fraser River, Inner South Coast (excluding Fraser River), and North Coast and Central Coast pink fisheries against the MSC standard has resulted in conditions that must be addressed for continued certification. Conditions related to these criteria must be met within a 5-year period. Many of these conditions are similar across the fishery units and will be met through implementation of regional and national policy and programs, such as the WSP and National Sustainability Framework. The action plan contains significant commitments for Fisheries and Oceans Canada to implement over the next five years. All of these actions are consistent with plans already underway within the department. It is important to note that implementation of the following action plan

assumes there will be no requirement for additional departmental resources. However, as we initiate implementation of the action plan, we may discover that this assumption was flawed and a re-evaluation of the original assumption is required.

Actions proposed to meet conditions general across all four fishery units are described below followed by actions proposed to meet fishery-specific conditions for Fraser River, Inner South Coast (excluding Fraser River), and North Coast and Central Coast pink fisheries. The following table summarizes the key deliverables of this action plan referenced by condition:

Condition	Unit	Deliverable	Lead	Timeline
General	All	PSARC paper: CU definition	Science - Region	October, 2008
General	All	Workshop	Science - Region	January, 2009
General	All	PSARC paper: Reference Points	Science - Region	October, 2009
1-1	NCCC	1) Report to Certifier: Catch Monitoring Framework; and 2) By-catch report	1) FM, Science 2) Science – Area	1) 1st Audit; and 2) 2nd Audit
1-1	ISC	1) Report to Certifier: Catch Monitoring Framework; and 2) By-catch report	1) FM, Science 2) Science – Area	1) 1st Audit; and 2) 2nd Audit
1-1	Fraser	1) Report to Certifier: Catch Monitoring Framework; and 2) By-catch report	1) FM, Science 2) Science – Area	1) 1st Audit; and 2) 2nd Audit
1-2	ISC	Report to Certifier: Rationale on escapement monitoring	Science - Area	2nd Audit
1-2	Fraser	Report to Certifier: Rationale on escapement monitoring	Science - Area	2nd Audit
1-3	NCCC	Report to Certifier: Rationale for biological sampling	Science - Area	2nd Audit
1-3	ISC	Report to Certifier: Rationale for biological sampling	Science - Area	2nd Audit
1-3	Fraser	Report to Certifier: Rationale for biological sampling	Science - Area	2nd Audit
1-3a	NCCC	1) Report to Certifier Non-target stock impacts 2) Report to Certifier: Rationale for biological sampling	1) FM, Science - Area 2) Science – Area	1) 2nd Audit; and 2) 3rd Audit
1-4	NCCC	Report to Certifier defining lower and upper benchmarks	Science – Area	2nd Audit
1-4	ISC	Report to Certifier defining lower and upper benchmarks	Science – Area	2nd Audit
1-4	Fraser	Report to Certifier defining lower and upper benchmarks	Science – Area	2nd Audit
1-5	NCCC	Report to Certifier defining lower and upper benchmarks	Science – Area	2nd Audit
1-5	ISC	Report to Certifier defining lower and upper benchmarks	Science – Area	2nd Audit
1.5	Fraser	Report to Certifier defining lower and upper benchmarks	Science – Area	2nd Audit
1-6	NCCC	CSAP Paper – Stock Status and Rebuilding Plan Options	Science – Area	2nd Audit

Condition	Unit	Deliverable	Lead	Timeline
1-6	ISC	CSAP Paper – Stock Status and Rebuilding Plan Options	Science – Area	2nd Audit
1-6	Fraser	CSAP Paper – Stock Status and Rebuilding Plan Options	Science – Area	2nd Audit
1-7	NCCC	Report to Certifier on status and management	FM, & Science-Area	2nd Audit
1-7	ISC	Report to Certifier on status and management	FM & Science-Area	2nd Audit
1-7	Fraser	Report to Certifier on status and management	FM & Science-Area	2nd Audit
2-1	NCCC	See 1-1	1) FM, Science 2) Science – Area	1) 1st Audit; and 2) 2nd Audit
2-1	Fraser	See 1-1	1) FM, Science 2) FM & Science – Area	1) 1st Audit; and 2) 2nd Audit
2-2	NCCC	Report to Certifier: Catch Monitoring Framework	Science – Area	2nd Audit
2-3	NCCC	Report on – Stock Status and Rebuilding Plan Options	Science - Area	2nd Audit
2-3	ISC	Report on – Stock Status and Rebuilding Plan Options	Science – Area	2nd Audit
2-3	Fraser	Report on – Stock Status and Rebuilding Plan Options	Science - Area	2nd Audit
3-1	NCCC	Refer to Condition1-4 and 1-6 response.	FM & Science – Area	2nd Audit
3-1	ISC	Refer to Condition 1-4 and 1-6 response.	FM & Science – Area	2nd Audit
3-1	Fraser	Refer to Condition 1-4 and 1-6 response.	FM & Science - Area	2nd Audit
3-2	NCCC	Report to Certifier: By-catch update	FM & Science - Area	1st Audit
3-3	Fraser	Report to Certifier: By-catch Update	FM & Science - Area	1st Audit
3-4	NCCC	Report to certifier: Response to management and conservation concerns	FM & Science - Area	2nd Audit
3-5	NCCC	Report to Certifier	FM - Area	2nd Audit
3-6	NCCC	Report to Certifier: Pink fisheries research plan	Science Area	2nd Audit
3-6	ISC	Resource Assessment Framework	Science Area	2nd Audit
3-6	Fraser	Resource Assessment Framework	Science Area	2nd Audit
3-6a	NCCC	Report to Certifier: Compliance provisions	FM & C&P - Area	2nd Audit
3-7	NCCC	Report on pink salmon fisheries management performance	Client	2nd Audit
3-7	ISC	Report on pink salmon fisheries management performance	Client	2nd Audit
3-7	Fraser	Report on pink salmon fisheries management performance	Client	2nd Audit
3-7a	NCCC	Report to Certifier	Science & FM - Area	2nd Audit
3-8	NCCC	See 3-2	FM & Science - Area	1st Audit
3-9	Fraser	See 3-3	FM & Science - Area	1st Audit

Conditions related to implementing DFO's Wild Salmon Policy:

The goal of DFO's WSP (2005) is to restore and maintain diverse salmon populations and their habitat. The elements of the WSP are consistent with the MSC standard and several conditions of BC pink certification will be met through implementation of the policy. Actions and rationale for actions to meet these conditions are described below.

Defining Benchmarks and Reference Points:

There are several conditions common to all four fishery units that require definition of reference points. The MSC Evaluation Team conditions 1-4, 1-5, 1-6 and 1-7 all make reference to defining either target reference points (TRPs) or Limit Reference Points (LRPs). To be clear when TRPs and LRPs are requested by the MSC Evaluation Team, DFOs response will be to define lower and upper benchmarks for conservation units.[1]

Upper and lower benchmarks as defined in the Wild Salmon Policy (2005) delimit red, amber, and green status zones for fish populations (and may also be used to delimit habitat and ecosystem status zones). The benchmark between amber and green zones identifies whether harvests are less than or greater than the level expected to provide the maximum sustainable catch of the Conservation Unit (CU). CUs in the amber zone are at a low risk of extinction, but there is lost production. CUs in the green zone are biologically secure. Social and economic considerations will tend to be the primary drivers for management of the CUs in the green zone, though ecosystem or other non-consumptive use values could also be considered.

It is the intent of the Wild Salmon Policy to initiate management actions before the lower benchmark is reached and the extent of the actions will likely increase the closer CU is to the lower benchmark. While there are a number of definitions for management reference points the paper "A Harvest Strategy Compliant with the Precautionary Approach. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2006/023" provides an explaination of how the precautionary approach would be implemented and definition of management reference points.

Condition 1-4: By the second surveillance audit, the client or management agency must formally establish target and limit reference points for the appropriate assessment units within each unit of certification through a scientific process, and this process must be peer-reviewed through PSARC to ensure scientific agreement regarding the LRPs chosen to formulate management decisions for the fisheries.

Condition 1-5: Same as 1.1.3.1.

[1] Benchmarks are reference points that identify when the biological production status of a stock unit has changed significantly, but does not prescribe specific restrictions. For the purposes of this report lower and higher benchmarks are as defined in the DFO's Wild Salmon Policy (2005) page 16-18.

Condition 1-6: To achieve a score of 80 over the five year period of the certification, the client or management agency must develop and implement (in the event of severe depletion) recovery plans to facilitate the recovery of depleted stocks to the MEG within three cycles given average rate of productivity. It is recognized that if stocks encounter a series of poor productivity years, even with little, if any, exploitation stocks may not recover in three cycles. The recovery plans must be defined to allow the stocks to recover more than 150% of the defined limit reference point prior to allowing any fishery to target the depleted stocks and the stock should be expected to recover to the MEG under the rebuilding plan. A recovery plan template must be developed and submitted for review and approval by the second annual surveillance audit.

Condition 1-7: By the second annual surveillance audit, the client or management agency must attain general agreement that the methods of estimating escapement and exploitation rates for all target stocks are scientifically defensible and the management agency must formally establish the LRPs, as required under condition 1-3. The status of each target stock should be reviewed, and where the stock is approaching the defined LRP, the exploitation rate on the stock should be estimated. The management agency must report what actions have been taken to reduce fishing as the target stocks approach the LRP and must demonstrate that fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years.

Condition 3-1: Certification of all pink fisheries will be conditional until management objectives, (e.g. maximum harvest rates, escapement goals, LRPs) are clearly defined for most of the target pink stocks harvested in these fisheries. Objectives will be provided to the Certification Body by the second surveillance audit.

The following table describes milestones for implementing Strategy 1 of the WSP. DFO will provide a progress report on Strategy 1 implementation to the MSC certifying body by late 2010.

Action	Description	Timeline
Identify Conservation Units	Paper defining conservation units regionally for all salmon species based on biological criteria (Holtby and Ciruna, 2007)	Paper reviewed and approved by PSARC, published 2008
Develop standardized assessment criteria	Paper defining general methodology for determining reference points for salmon populations and assessment criteria (Holt et al., in prep) Workshop to facilitate application of methods in Holt et al.	PSARC Workshop, January 2009 Finalized methodology: October, 2009
Define Lower benchmarks for each target stock (CU)	Apply criteria and methods of Holt et al. (in prep) to specific CUs.	by second surveillance audit
Define Higher benchmarks for each target stock (CU)	Apply criteria and methods of Holt et al. (in prep) to specific CUs.	by second surveillance audit

Rebuilding Plan:

There are several conditions common to all four fishery units related to acceptable harvest limits on non-target stocks and development of rebuilding plans for these stocks:

For salmon fisheries, the question of how to manage fisheries targeting mixed-stock complexes of weak and strong populations is central. DFO has a proven track record of implementing 'weak stock' management for salmon conservation. Over the last decade, we significantly reduced the harvest rate of mixed stock fisheries in order to conserve stocks of concern. For example:

- In 2001, impacts on Interior Fraser coho were limited to a maximum of 3% Canadian exploitation rate. Since then, this limit has been maintained to allow rebuilding, even in years when the stock was well above the provisional LRP. A rebuilding program is in place for Interior Fraser River coho.
- Mixed-stock fisheries targeting productive Fraser River sockeye populations are managed to avoid stocks of concern, including but not limited to Sakinaw and Cultus Lake sockeye. Rebuilding programs are in place for both these sockeye stocks.
- Fraser River pink fisheries are managed to take Late Run sockeye and Interior Fraser coho conservation constraints into account.
- Fraser chum fisheries are managed within Interior Fraser coho and Fraser steelhead conservation constraints.
- Chinook fisheries coast-wide are managed to limit impacts on low-status WCVI chinook. The maximum allowable exploitation rate in Canadian fisheries is maintained between 10 to 15%. Measures include weekly monitoring of the catch composition of the Northern Troll fishery through DNA analysis, resulting in closures of the fishery with remaining TAC in years when the interception rate of WCVI chinook was too high. Also, there are significant time-area closures off the WCVI for sport and commercial fisheries during periods when WCVI chinook is prevalent.
- Similarly, fisheries are managed to avoid lower Strait of Georgia (LGS) chinook stocks. There have been two management strategies in effect to protect LGS chinook. Up until 2007 catch composition of the WCVI troll was monitored with a ceiling placed on the encounters of Cowichan coded wire tags. When the ceiling was reached the troll fishery is closed. In 2008 an alternative management strategy was introduced to protect LGS chinook. Under this strategy the overall WCVI harvest rate was reduced by 20%.
- In 2008, chinook fisheries were managed to avoid early timed and spring/summer Fraser chinook stocks due to poor recruitment from the 2005 sea-entry year. Again, time and area closures were implemented during periods when these stocks were vulnerable to mixed-stock commercial and sport fisheries.

- Also in 2009, the objective for Skeena River sockeye is to reduce the Canadian commercial exploitation rate on Skeena sockeye to begin rebuilding individual sockeye stocks of concern by maintaining, on average, a Canadian commercial exploitation rate of between 20% and 30%.
- The 2008 Pacific Salmon Treaty (PST) recently negotiated between Canada and the USA resulted in further harvest reductions in Canadian 'AABM' fishing areas to reduce interception of low status US-origin chinook stocks.

The 80% scoring guidepost for Indicator 1.2.1, 2.3.1 and 3.1.5 under the pink assessment tree requires that the management system has the respective conditions:

Condition 1-6: To achieve a score of 80 over the five year period of the certification, the client or management agency must develop and implement (in the event of severe depletion) recovery plans to facilitate the recovery of depleted stocks to the MEG within three cycles given average rate of productivity. It is recognized that if stocks encounter a series of poor productivity years, even with little, if any, exploitation stocks may not recover in three cycles. The recovery plans must be defined to allow the stocks to recover more than 150% of the defined limit reference point prior to allowing any fishery to target the depleted stocks and the stock should be expected to recover to the MEG under the rebuilding plan. A recovery plan template must be developed and submitted for review and approval by the second annual surveillance audit.

Condition 2-3: Certification of the pink fisheries requires development of recovery plans for all non-target stocks that are consistently below the LRP. Implicit in this condition is that all non-target stocks have LRP's developed. The proposed recovery plans, including a commitment to stock monitoring and assessment must be developed and implemented by the second surveillance audit. These recovery plans must meet the requirements of the scoring elements under the 80SG scoring guidepost.

Condition 3-4 - By the second surveillance audit, DFO must document how it has responded to management and conservation concerns such as estimation of bycatch and development of recovery plans for Area 3 to 6 chum stocks. DFO should provide evidence that they have established an effective process for responding to new information and making necessary changes within 12 months of the information becoming available.

The newly standardized MSC assessment trees (2008) provide much needed guidance regarding the assessment of species fished as stock complexes, such as Pacific salmon. Specifically, species fished as stock complexes "may be considered analogous to multi-target species considered under the guidance of performance indicator 2.3.1." This distinction is important because it allows for a pragmatic approach to the central problem of weak stock management, recognizing that factors other than harvest may cause a stock to decline. A non-target stock within the fishery may be below the point at which recruitment is impaired. *The critical factor for certification is whether or not the fishery is 'hindering' recovery of the stock.*

Our WSP prescribes a systematic approach to salmon management, essentially moving DFO from a reactive to a pro-active approach for maintaining the biodiversity of salmon populations within Canada.

To ensure that fisheries have acceptable harvest limits on non-target stocks and that the management system allows for rebuilding of depleted non-target stocks, DFO will:

- Implement 'Strategy 1' of the WSP: Define lower and upper benchmarks for non-target stocks (CUs) and monitor their status. The objective for fishery management shall be to maintain CUs above their lower benchmarks unless otherwise determined by the Minister. Not meeting this objective would occur only in exceptional circumstances where management actions are assessed to be ineffective, or the social and economic costs will be extreme (p.29 WSP).
- Implement 'Strategy 4' of the WSP: Create a regional framework for integrated planning that will be used to articulate salmon management choices that consider social, economic and biological consequences. Consensus based advisory processes will be used to assist in defining these trade-offs and also to assist in developing strategic plans for the management of salmon conservation units; including harvest strategies designed to maintain the biodiversity of stocks within the CU.
- Benchmarks will be used to guide management response. For example, if a CU is below its lower benchmark and in the 'Red Zone' this will trigger consideration for ways to protect the fish, increase their abundance and reduce the risk for loss. Biological considerations will be the primary consideration for CU below the lower benchmark and in the 'Red Zone'. Page 17 of the WSP identifies additional guidance on how response would be taken for CU between the lower and higher benchmark.
- Implement Strategy 5 of the WSP. Review annual performance against measurable objectives, particularly with regards to stock status and rebuilding objectives.

Specifically, DFO will also define lower benchmarks or their equivalent for NCCC, ISC and Fraser River, pink salmon CUs. A rebuilding plan consistent with the WSP will have been developed and implementation initiated within 2 years for stocks harvested in fisheries targeting NCCC, ISC, and Fraser River pink salmon that are below their lower benchmarks. On the Skeena and Nass Rivers the proposed rebuilding plan will include measures to rebuild chum salmon stocks that are below their lower benchmark contingent upon determining whether harvest pressure is found to have a significant risk for chum rebuilding. The rebuilding plan will include a stated objective and rebuilding target and timeline for rebuilding. This rebuilding plan will demonstrate how the fisheries management strategy will assist in ensuring rebuilding objectives are met. Fishery actions may only be one component of a rebuilding plan and could include enhancement, habitat and other measures to enable rebuilding objectives being met. It must recognize though, that there will be instances that rebuilding is not possible even where the appropriate management actions are implemented. Rebuilding may not be possible due to a variety of events that are beyond our control (e.g. low marine survival, habitat changes, environmental conditions, etc.)

The following table describes milestones for implementing elements of the WSP required to meet the Rebuilding Plan Conditions of Principle 1 and Principle 2 conditions for MSC certification of BC pink fisheries.

Action	Description	Timeline
Define lower benchmarks for non-target stocks (CUs)	Apply criteria and methods of Holt et al. (in prep) to specific CUs.	by second surveillance audit
Develop fishery-specific integrated management plans.	Initiate planning processes to develop integrated management plans for salmon CUs that will: - Define lower benchmarks for target and non-target stocks - Define precautionary harvest strategies and decision rules - Determine rebuilding strategies - Define performance measures	NCCC (complete by second surveillance audit) ISC (complete by second surveillance audit)) Fraser River Pink (complete by second surveillance audit))
Implement Annual Performance review	Annually review and report on performance of fishery and management system against defined performance measures for salmon conservation.	Starting third surveillance audit .

Research Plans:

All three of the pink fishery units face the same general MSC condition regarding developing a research plan for the fishery that addresses impacts of the fishery on the ecosystem and socio-economic issues that result from the implementation of management plans.

Condition 3-6: Certification of all pink fisheries will be conditional until DFO develops a research plan for pink fisheries which incorporates the existing elements under 80SG and addresses impacts of the fishery on the ecosystem, socioeconomic issues that result from management decisions and is responsive to changes in the fishery. The research plan must also include an evaluation of alternative management approaches to reduce bycatch or determine the survival rate of discarded non-target species for non-retention fisheries. For example: the research and assessment plans should describe how Fraser pink salmon escapement estimates will be derived in the future when harvesting pressure increases. This research plan must be provided to certification body by the second surveillance audit.

The requirement to include ecosystem values and objectives in planning process is an element of the WSP. Over the next two-three years, DFO will be implementing the revised format for Integrated Fisheries Management Plans (IFMPs). The revised IFMP template is much more fishery specific and requires elements not included in past IFMPs, such as stock status, a socio-economic overview and summary of management issues.

Implementation of the new IFMP template will require many of the gaps identified in the conditions to be addressed.

To addresses the need to include other objectives (ecosystem, socio-economic) in the planning process and assess performance against these objectives, we will need to re-align our current reporting and/or re-allocate research resources. DFO has developed a Resource Assessment Framework (RAF) for Fraser River sockeye (PSARC review in May 2008) to help guide assessment priorities based on the biological status and knowledge gaps for each CU. Over the next year DFO will be developing a comprehensive salmon RAF. The RAF will serve as a template for all salmon research and stock assessment planning in the Pacific Region.

MSC Principle 1

Condition 1-1: The reliability of the catch estimates derived from the catch monitoring systems shall be evaluated by the second surveillance audit and the client or management agency shall commit to conducting similar catch monitoring reporting evaluations at a period of not more than every 5 years in order to meet the performance requirement identified by the third scoring element in the 80 scoring guidepost. The management agency must implement catch monitoring systems that will produce scientifically defensible estimates of catch for non target stocks and species in Area 3-6 pink salmon fisheries by the second surveillance audit. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest.

Under DFO's Pacific Integrated Commercial Fisheries Initiative (PICFI) the Enhanced Accountability element has provided further focus and resources to develop and implement a framework to improve the monitoring and catch reporting in Pacific fisheries. Under this framework fisheries information requirements are categorized as requiring low, moderate or enhanced levels of information according to consistent criteria, largely based on evaluating risk to conservation.

The current and desired monitoring levels for all Pacific salmon fisheries are currently being evaluated utilizing this consistent framework and a report being prepared for release. This strategy calls for subsequent updates of the regional evaluation of all salmon fishery monitoring programs every two years.

DFO will report on the current program to monitor the catch and associated by-catch in Area 3-6 pink fisheries. The utility of this bycatch data for stock assessment of management applications will be evaluated and be the basis for determining the adequacy of the bycatch monitoring programs.

The Skeena Model was developed in the 1990's as a joint effort between MOE and DFO to estimate harvest impacts on steelhead. The 3 recent CSAP papers on Nass sockeye, Skeena chum and Nass chum all provided accepted recommendations to review and expand the Skeena model, and to develop an equivalent for the Nass. These models will

be the basis for evaluating bycatch harvest impacts for Nass and Skeena sockeye and pink fisheries. Review and expansion of the Skeena model and the creation of an equivalent version for the Nass will be developed over the next two years.

Condition 1-2: An escapement monitoring program that is adequate to estimate the status of target stocks harvested in the NCCC, ISC and Fraser pink salmon fisheries must be implemented within two year. Fishery independent indicators of abundance for non-target species harvested in these fisheries (e.g. improved escapement monitoring for lower Skeena chum) must be available for each year and area where fisheries are permitted to target pink salmon. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. A publically available, externally reviewed report on escapement monitoring programs should be available for review within 2 years.

The current assessment framework for inner south coast pink stocks relies heavily of visual surveys in a variety of key indicator stocks. In recent years the focus in regards to the mainland inlet pink returns of Statistical area 12 have increased and the level of assessment activity has improved relative to historic coverage. Majority of the fisheries directly targeting these stocks are typically terminal in nature and the management is driven by the escapement program providing information relative to the Management Escapement Goal (MEG) that is in place for that specific system

Since 2001 there has not been a system wide escapement monitoring program undertaken for Fraser River pink salmon. The system-wide survey was discontinued in 2001 given large returns, heavily curtailed fisheries, and the balance of assessment priorities on the Fraser across all salmon species.

Through 2003, the final estimate of total Fraser River pink salmon abundance is based upon in–season estimates as determined by test fisheries and commercial fishery data. Since 2003 the spawning escapement has been estimated as the total return minus total catch. We think this is low risk for the following reasons:

- in-season test fisheries exists to estimate Fraser Pink run size;
- system estimates of Fraser pink juvenile abundance are conducted annually as an index of spawning escapement;
- the estimated run size in the last decade has been well above the escapement goal of 6 million (see Figure 1 in DFO 2008 report on Fraser River pink salmon Certification unit profile); and
- directed Fraser pink fisheries are limited by co-migrating stocks of concerns (i.e. Fraser Sockeye Late Run and Interior Fraser Coho); exploitation rates have dropped below 10% in recent years (see Table 4 & Figure in DFO 2008 report on Fraser River pink salmon Certification unit profile) due to these constraints on pink fisheries.

A report outlining the rationale for the pink salmon escapement monitoring will be developed and it will include how it meets the management needs for NCCC, Inner South

Coast Pink and Fraser River pink salmon stocks in relation to the level of harvest by second surveillance audit. The DFO report for pink salmon escapement monitoring will include a clear description of how the escapement estimates for NCCC, Fraser and ISC pink salmon are derived.

Condition 1-3: By the second surveillance audit, the client or management agency must meet the requirements of the 80 scoring guideposts. This shall include scientific analysis supporting justification of the current sampling program.

Sampling in the test fisheries is specifically designed to attempt to capture the stock structure of the pink salmon populations moving through Johnstone Strait and the Fraser River at any given time. These test fisheries have been designed to not only provide information on abundance but frequently collect data on stock composition and size distribution.

The visual nature of escapement programs does not lend themselves to direct sampling. We rely heavily on fence programs such as the Keogh River and hatchery programs such as those on the Quinsam River to provide indications of trends in size distribution over time for these pink stocks.

Baseline collections for pink system specific DNA is conducted based on the requirement to fulfill the total South Coast.

Additional details and justification of the sampling program will be provided by the second surveillance audit.

Condition 1-3a: By the third surveillance audit, for the NCCC and ISC UoCs, the client or management agency must document that they have sufficient information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks. The management agency must indicate how the impacts on non-target stocks, and the uncertainty surrounding the productivity of these stocks, are taken into account when planning pink fisheries, by the second surveillance audit.

DFO has ongoing assessment initiatives to derive benchmarks and evaluate escapement goals. These initiatives include evaluations of the relative productivity of stocks.

By the third surveillance audit a report detailing that there is sufficient information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks and the uncertainty surrounding the productivity of these stocks, are taken into account when planning pink fisheries will be provided. BY the second surveillance audit a report will be provide that documents how when planning pink salmon fisheries the uncertainty in non-target stock productivity is taken into account.

MSC Principle 2

Condition 2-1: Certification of North-Central Coast and Fraser pink fisheries will be conditional until reliable estimates of non-target species bycatch are obtained annually in North-Central Coast and in the Fraser River pink salmon fisheries. The certification of these fisheries requires the successful completion of a bycatch monitoring program that meets the requirements of the scoring elements under the 80SG scoring guidepost by the second annual surveillance audit. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. The client or management agency shall present a publically available report on bycatch estimation by the second surveillance audit.

See Condition 1-1 reply.

Condition 2-2: See Condition 2-1 which will be applied to address performance improvement requirements for this indicator for the North Central Coast UoC. Results to be provided by the second surveillance audit.

See Condition 1-1 reply.

MSC Principle 3

Condition 3-2: Certification of North-Central Coast pink salmon fisheries will be conditional until scientifically defensible of non-target species bycatch are obtained annually for North-Central Coast pink salmon fisheries. Bycatch estimates will be reported to the certification body by the first surveillance audit.

A report will be provided to the certifier on by-catch estimates for NCCC.

Condition 3.3: Certification of Fraser pink salmon fisheries will be conditional until scientifically defensible of non-target species bycatch are obtained annually for Fraser pink salmon fisheries bycatch estimates will be reported to the certification body by the first surveillance audit

Programs are in place to estimate the number of sturgeon and steelhead encountered in fisheries directed at Fraser River pink salmon. A mandatory release requirement for both of these species is in effect, therefore, estimates of releases are currently based on unverified reports of releases from fishery participants

To satisfy this condition DFO will develop a program to estimate the impact of Fraser River pink fisheries on steelhead and sturgeon. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed by the first surveillance audit.

Condition 3-5: Certification of North-Central Coast pink fisheries will be conditional until DFO provides evidence that DFO has implemented programs in the North-Central coast that create incentives for harvesters not to exceed target catches in pink fisheries and

that these incentives are working. If DFO has evidence of implementing these types of fisheries in the past, this evidence should be provided by the first annual surveillance audit. Evidence of new incentives or initiatives implemented on the North-Central coast must be provided within by the second surveillance audit.

DFO has been experimenting with new approaches to manage fisheries more efficiently. To contribute to the Pacific Fisheries Reform vision demonstration fishery proposals have been solicited that:

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

If there are pink fisheries that exceed target catches a report on these programs as they pertain to the North-Central coast fisheries will be developed.

Condition 3-6a: For the NCCC, to meet the requirements of the first 80 scoring guidepost DFO must document and implement changes to the existing compliance provisions in order to increase the level effectiveness of the current program to reduce non compliance with fishery regulations and Conditions of licence. A report must be provided to the certification body by the second surveillance audit detailing changes and effectiveness.

A report will be completed and provided by the second surveillance audit documenting any modifications undertaken to improve compliance with fishery regulations.

Condition 3-7: Certification of all pink fisheries will be conditional until an external review of pink salmon fisheries management performance is completed and there is commitment to conducting a similar review at least once every five years. The results of the first external review will be provided to the certification body by the second surveillance audit.

External reviews are conducted on an annual basis through the department's Integrated Harvest Planning Committee. This Committee is comprised of representatives from First Nations, and commercial, recreational and environmental organizations. The Terms of Reference for this Committee require a post-season evaluation be conducted and reported on an annual basis.

In addition, the client agrees to contract a recognized salmon fisheries management expert who will provide a report on pink salmon fisheries management performance. The report will focus on providing an assessment of management performance in meeting stated objectives and will highlight areas or issues of concern and possible opportunities for improved management performance. This contracted expert will provide a presentation on the report to the IHPC during the IHPCs post-season evaluation process.

Condition 3-7a: For the NCCC, to meet the requirements of the second and third 80 scoring guidepost, the fishery in Area 3 to 6 must demonstrate that there have been measures taken to ensure that fishing activity is conducted in a manner that is consistent with the goal of reducing the catch (mortality) of non-target species of conservation concern. DFO must provide clear evidence of either a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries or that exploitation level of those species has been determined by management to be acceptable. This evidence shall be provided by the second annual surveillance audit.

See Condition 1-1 reply

Condition 3-8: Same as Condition 3-2. Certification of North-Central Coast pink fisheries will be conditional until scientifically defensible of non-target species bycatch are obtained annually for North-Central Coast pink fisheries. To be provide by the first annual surveillance audit.

See Condition 3-2 reply

Revised Condition 3-9: Same as Condition 3-3. Certification of Fraser pink fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained for Fraser pink fisheries. To be provide by the first annual surveillance audit.

See Condition 3-3 reply.

Appendix E – Stakeholder Comments and Team Responses

Submission 1

A review of the December 7, 2011 draft MSC assessment of B.C. pink salmon fisheries

January 19, 2010

Prepared by:
SkeenaWild Conservation Trust, Raincoast Conservation Foundation,
David Suzuki Foundation, and Watershed Watch Salmon Society

Executive Summary

This paper provides an evidentiary-based critique of the Public Certification Draft Report (PCDR) for Marine Stewardship Council (MSC) certification of BC's pink salmon fisheries. The PCDR is an assessment of British Columbia's pink salmon fisheries prepared by Moody International for the Canadian Pacific Sustainable Fisheries Society (CPSFS). The CPSFS is seeking MSC Certification of British Columbia's pink salmon fisheries.

This paper challenges some of the scores given by the Assessment Team, speaks to the inadequacy of specific conditions as well as DFO commitments to meeting some conditions in their action plan. The authors recommend (1) changes in specific scores and conditions, (2) improvements to the DFO action plan to ensure that conditions are met if certification is granted, and (3) that certification be withheld until fishery performance is improved, especially for the eight performance indicators where fishery performance is insufficient to award passing scores based on an objective and precautionary interpretation of available information

The major obstacles to sustainability in BC's commercial pink salmon fisheries include significant problems associated with the bycatch and discarding of sockeye, coho, chum, chinook and steelhead. This paper provides evidence that bycatch and discards may be impeding the rebuilding and recovery of salmon stocks. It also provides evidence that commercial pink salmon fisheries are killing an unknown number of salmon stocks that DFO has defined as being of special conservation concern. DFO does not have scientifically defensible estimates of the numbers of salmon of non-target species caught and killed in commercial pink salmon fisheries, underreporting of bycatch is significant, and compliance with selective fishing measures is often poor. The PCDR does not adequately address these issues, and is particularly negligent in the case of chum salmon. As such, the proposed certification of BC's commercial pink salmon fisheries will not lead to the long-term protection of co-migrating salmon species that often share the same marine and freshwater habitats.

Management of the target stock itself represents another major obstacle to sustainability for this fishery. Specific shortcomings include DFO's insufficient assessment of target (pink) stocks, lack of biologically defensible escapement goals and exploitation rate targets, poor status of several pink salmon stocks in recent years, and failure to adequately protect pink stocks from anthropogenic impacts such as those arising due to open net cage salmon farms on juvenile pink salmon migration routes. Overfishing of both target and non-target stocks by the pink salmon fishery can have negative impacts on salmon-dependent riparian and freshwater ecosystems, and progress towards understanding these impacts and minimizing them when setting fishing plans is extremely slow.

Introduction

This paper provides an evidentiary-based critique of the Public Certification Draft Report (PCDR) for Marine Stewardship Council (MSC) certification of BC's pink salmon fisheries. The PCDR is an assessment of British Columbia's pink salmon fisheries prepared by Moody International for the Canadian Pacific Sustainability Fisheries Society (CPSFS). The CPSFS is seeking Marine Stewardship Council (MSC) Certification of British Columbia's pink salmon fisheries. It challenges some of the scores given by the Assessment Team (AT), speaks to the inadequacy of specific conditions, and recommends changes in specific scores and conditions.

The paper is divided into 4 major sections:

Acronyms used

AT – Assessment Team
C&P – DFO Conservation and Protection branch
CPSFS – Canadian Pacific Sustainability Fisheries Society
CPUE – Catch Per Unit Effort
CUP – Certification Unit Profile
DFO – Department of Fisheries and Oceans
FAO – Food and Agriculture Organization of the United Nations
IFMP – Integrated Fishery Management Plan
IHPC – Integrated Harvest Planning Committee
ISC – Inner South Coast
MEG – Management Escapement Goal
MSC – Marine Stewardship Council
NCCC – North Coast and Central Coast
PCDR – Public Comment Draft Report
PI – Performance Indicator
SG – Scoring Guidepost

Discussion of salmonid bycatch and discards in British Columbia's pink salmon fisheries

This section examines the Public Certification Draft Report's (PCDR) treatment of Salmonid bycatch and discards in British Columbia's pink fisheries.

Bycatch and discards are a problem across the world's fisheries. They confound sustainable management as

> *"Bycatches in their various forms can have significant consequences for populations, food webs, and ecosystems. The economic effects of bycatches can influence not only the levels of yields to individual fisheries, but also may have major effects on allocations among competing fisheries. The lack of comprehensive monitoring programs in most areas to assess by catches and integrate them into population and multispecies models seriously impedes a full understanding of bycatch consequences and the efficacy of measures for their amelioration". (Crowder, 1998)*

FAO (The Food and Agriculture Organization of the United Nations) guidelines call for gathering accurate data on bycatch and discards, ensuring compliance of fishers, reducing bycatch through using more selective gear and fishing strategies, and developing incentives and disincentives that will change fishermen's behavior towards bycatch and discards (FAO, 1997).

The bycatch and discarding of sockeye, coho, chum, chinook and steelhead is a significant problem in British Columbia's commercial pink salmon fisheries. In order to maximize commercial pink fishing opportunities in areas and times where non-target species are present, DFO permits the bycatch of stocks of concern and allows fishermen, through Conditions of License, to discard some or all of their bycatch.

DFO does not have scientifically defensible estimates of the numbers of salmon of non-target species caught and killed in commercial pink salmon fisheries. This paper provides evidence that bycatch and discards may be impeding the rebuilding and recovery of stocks. It also provides evidence that commercial pink salmon fisheries are killing an unknown number of salmon stocks that DFO has defined as being of special conservation concern, and that compliance with selective fishing measures is often poor.

MSC's Mandate, Principles and Criteria for Sustainable Fishing and Objectives

The Marine Stewardship Council's mandate "is the long-term protection of the world's marine fisheries and the associated ecological components". It is the

second element of the mandate – associated ecological components -which this section concerns itself with. It provides evidence that the proposed certification of BC's commercial pink salmon fisheries will not lead to the long-term protection of co-migrating salmon species that often share the same marine and freshwater habitats.

MSC's Principles and Criteria for Sustainable Fishing set the standard for MSC's fisheries assessments. Any assessment that is awarded MSC certification must meet this standard. Listed below are the key Principles and Criteria that speak to bycatch.

1) Principle 2: Fishing operations should allow for the maintenance of the structure, productivity, function, and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

   a. Principle 2, Criterion 2 of MSC's Principles and Criteria for Sustainable Fishing ensures that MSC Certified fisheries are "conducted in a manner that does not threaten biological diversity at the genetic, species, or population levels, and avoids or minimizes mortality of, or injuries to, endangered, threatened, or protected species".

   b. Principle 2, Criterion 3 MSC states that "Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields".

2) Principle 3: The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

   a. Principle 3, Criterion 10 (a) states that a Certified fishery should set "catch levels that will maintain the target production and ecological community's high productivity relative to its potential productivity, and account for the non-target species captured and landed in association with, or as a consequence of, fishing for target species.

   b. Principle 3, Criterion 11: MSC demands that "appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specific corrective actions be taken in the event that they are".

   c. Principle 3, Criterion 12: the fishing operation should "make use of fishing gear and practices designed to avoid the capture of non-target species;

minimize mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive."

d. Principle 3, Criterion 17: the fishing operation should "assist and cooperate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery".

MSC's objectives in terms of bycatch, as communicated to the authors, is represented by this wording at the 80 guidepost in a similar fishery: "bycatch species are highly likely to be within biologically based limits or if outside those limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery or rebuilding". MSC described their objective as being to encourage fisheries seeking certification to adopt global best practices. They further described their objective as not to encourage fisheries to adopt the global "average", but to seek out and adopt leading edge initiatives in sustainability (pers. comm. MSC).

Bycatch and Discard Issues Associated with B.C. Pink Salmon Fisheries

This section focuses on chum bycatch and discards in pink salmon fisheries in Areas 3 through 8 on BC's North Coast. But most of the same issues, such as scientifically defensible estimates of bycatch catch and mortality, compliance, enforcement and mitigation, are applicable to south coast (including Fraser River) pink salmon fisheries.

No exploitation rate objectives for bycatch stocks

The Client's Management Summary (1.3.2 and 2.5.4) describes the inadvertent catch of different species of concern as bycatch. DFO's stated objective is to keep the exploitation rates on stocks of concern within the limits described in the fishery management objectives. Unfortunately, neither the Client's Management Summary nor Certification Unit Profile for Area 3 – 6 specifies any exploitation rate objectives for stocks of concern caught as bycatch in these fisheries.

Chum bycatch ignored in PCDR

The bycatch of chum salmon is largely ignored in the PCDR even though north coast chum salmon in areas 3 through 6 are categorized by DFO as being depressed and of special conservation concern (DFO Management Summary 3.4.1.5). The AT's failure to substantively address chum bycatch issues is all the more mysterious given that until the release of the PCDR the assessment also included four units of certification for BC chum salmon.

MML Response: The original intent of the client and assessment team was that the pink and chum assessments would proceed concurrently through the certification process. Due to availability of information, this did not occur as planned. The intent of the team was that the issues described by stakeholders in relation to the chum bycatch in the pink salmon fishery would have been captured in the chum assessment but as pointed out, this did not happen.

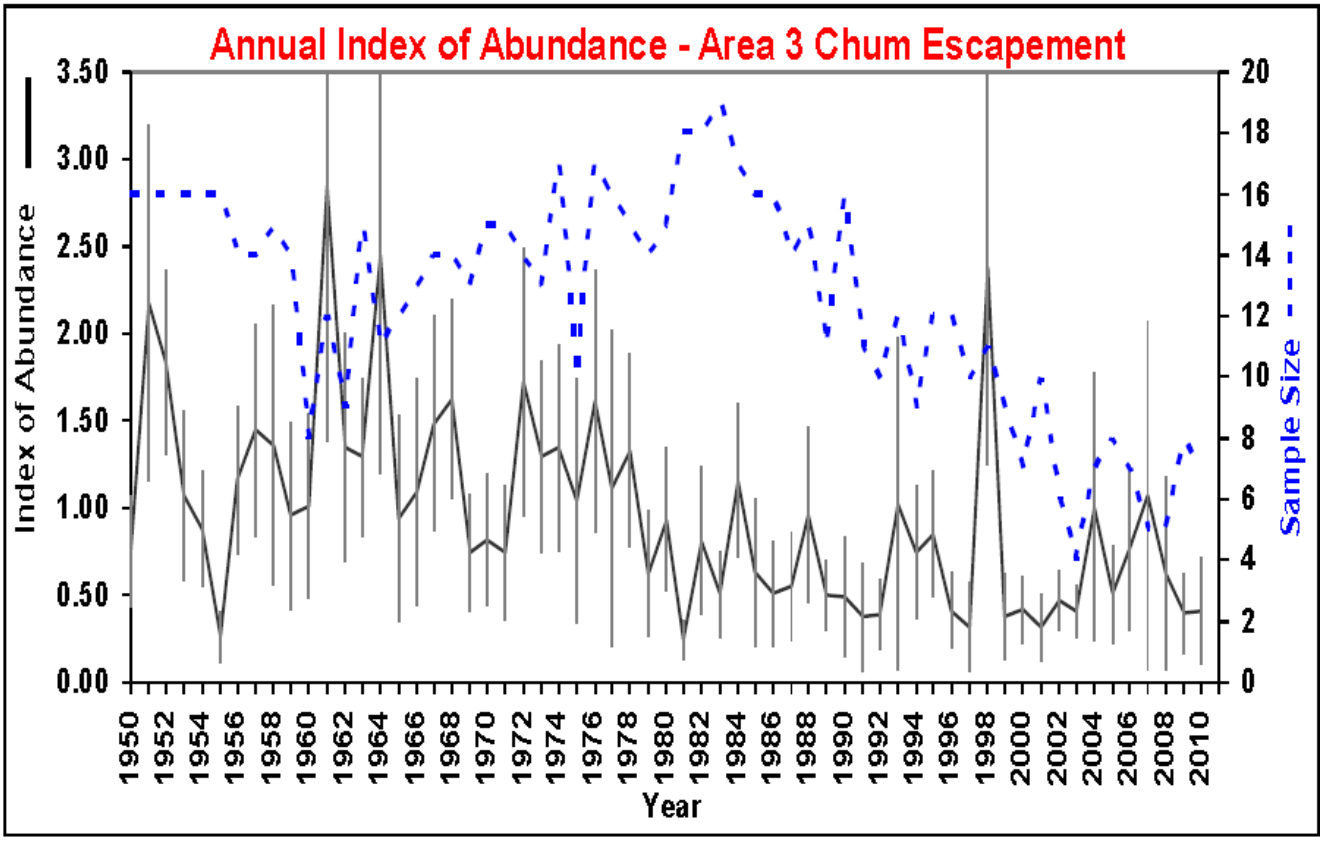
At the 2009 IFMP meeting DFO distributed their stocks of concern which described Area 3 and 4 chum stocks as experiencing, "a long term depression among wild stocks" and Areas 5 and 6 stocks as showing evidence of "widespread long term decline among small and medium wild stocks (DFO: Stocks of Concern for 2009, November IFMP meeting). This categorization remains in place in the 2011 salmon outlook. (DFO, November 2010 IHPC Meeting).

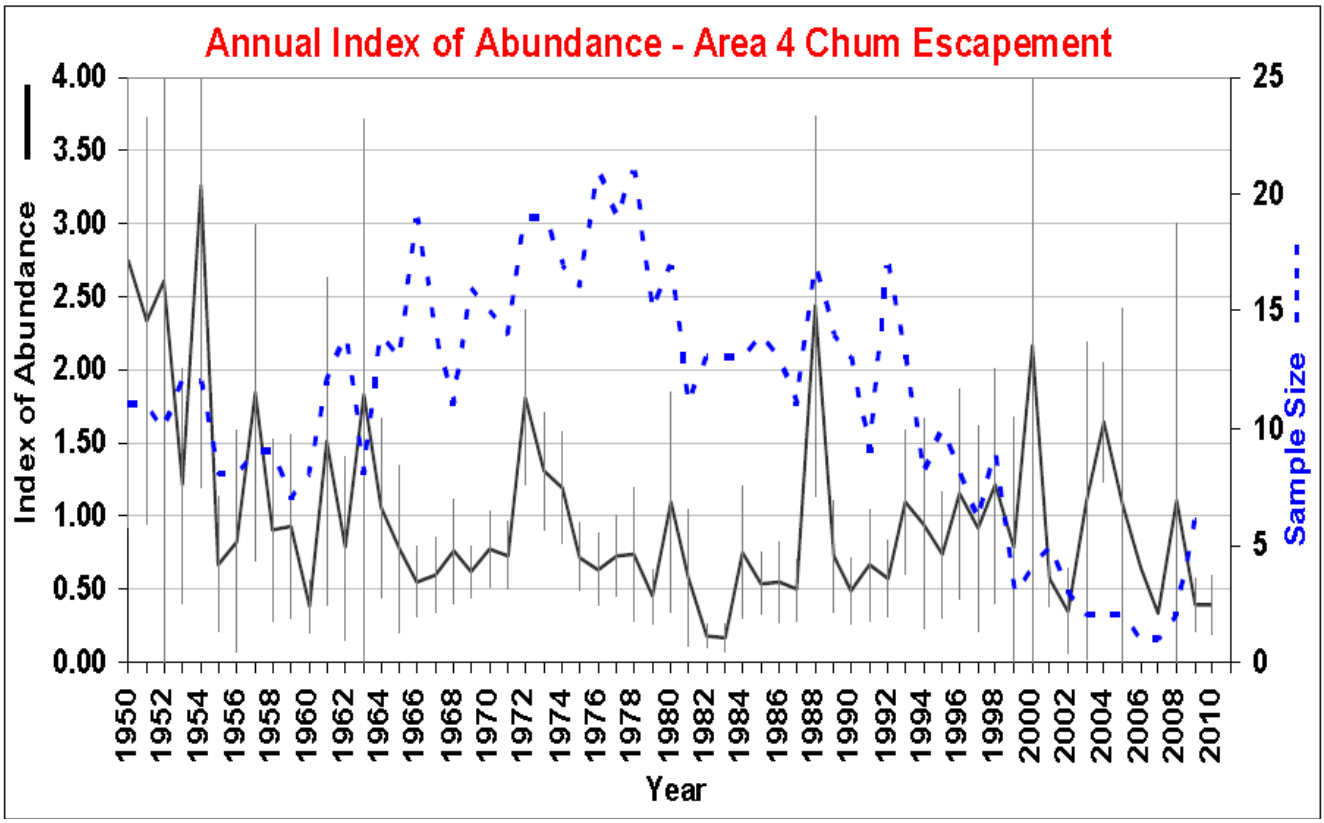
A recent Canadian Science Advisory Secretariat paper describes Area 3 chum stocks as follows

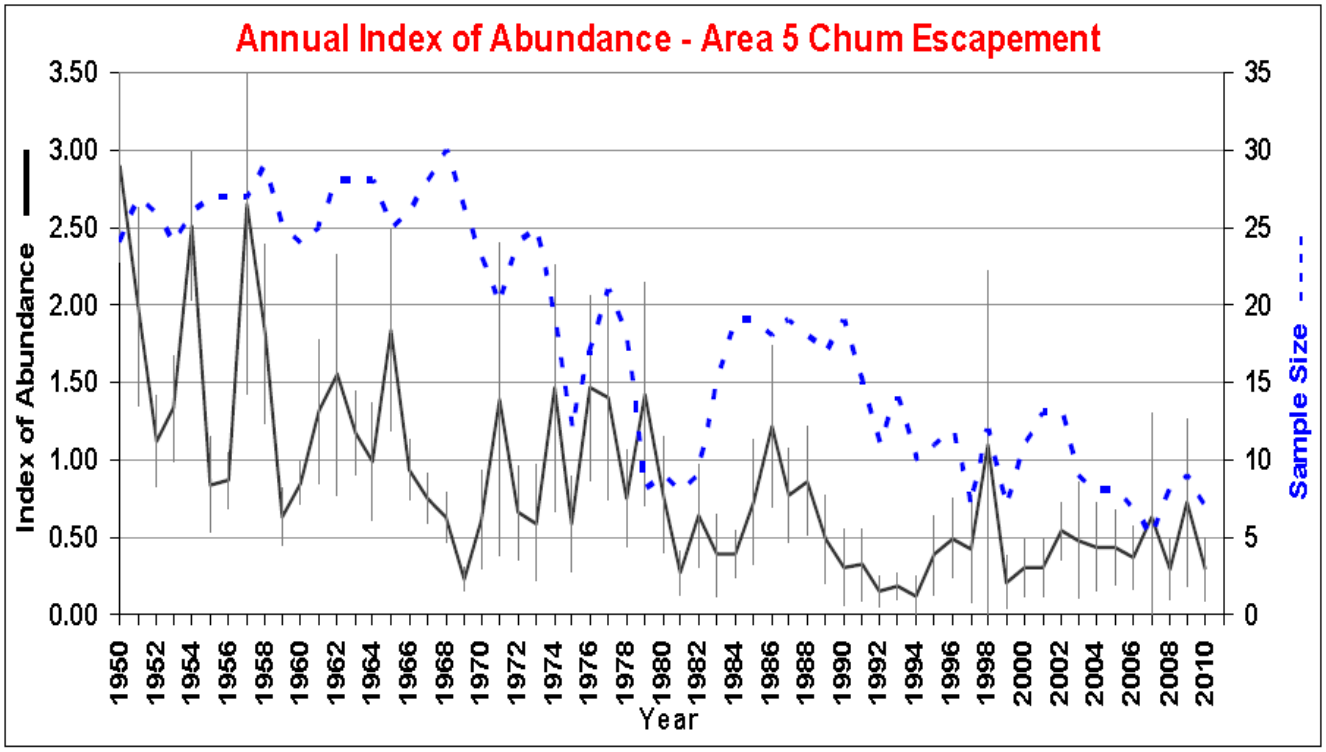
> "The very low escapement of recent years for many streams is a significant concern. While the overall chum escapements have not shown a pattern of decline over last four decades, there are a number of stocks that have declined to very low levels, and in some cases may be extirpated. Nass chum are currently depressed but the freshwater productive capacity is likely still there for stocks to rebuild given favorable ocean conditions and low harvest rates. Area 3-Nass chum abundance is expected to increase under the conditions of reduced harvest impacts and an environment of higher return rates. However, even major changes in harvest impacts do not ensure a "recovery". Even with significantly reduced harvest rates we would not expect an increase if return rates are very poor. Recent management changes that have reduced harvest rates on Area 3 – Nass chum stocks appear to have slowed but not halted the recent decline of some stocks". (CSAS Working Paper 2010/p58).

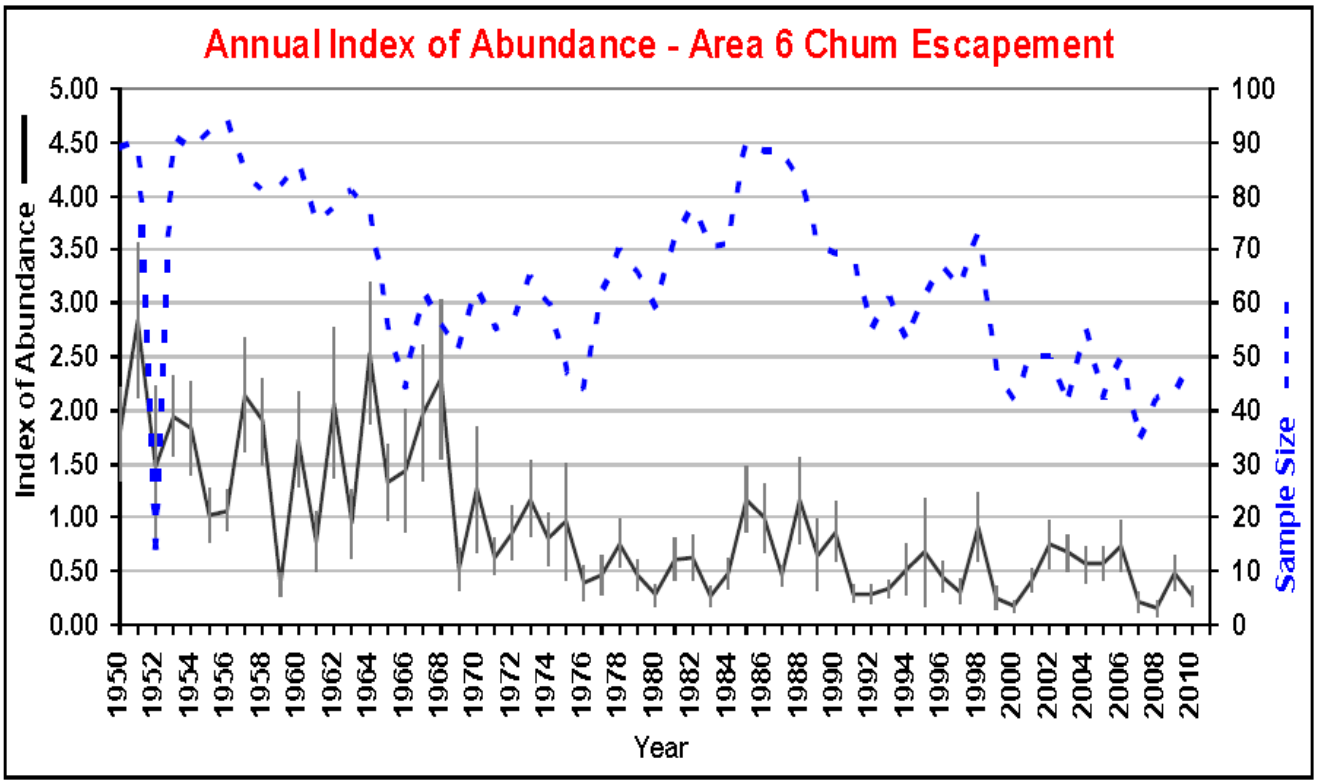
The assumption that north coast chum abundance may increase under conditions of reduced harvest rates and more favorable ocean conditions is likely overly optimistic. North Coast unenhanced chum salmon are harvested as bycatch in north coast commercial pink and sockeye fisheries. Improved marine conditions will likely benefit the target species, leading to more intense commercial fisheries on these target stocks. The bycatch and discarding of chums is therefore likely to increase in the event of more favourable marine conditions under the management strategies described in the Client's submission.

The following graphs prepared by DFO (Brian Spilsted, Stock Assessment, DFO Prince Rupert) indicates the declining trend in chum abundance in Areas 3, 4, 5 and 6.


Annual Index of Abundance - Area 3 Chum Escapement
Index of Abundance
Sample Size
Year
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
20
18
16
14
12
10
8
6
4
2
0
1950 1952 1954 1956 1958 1960 1962 1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010

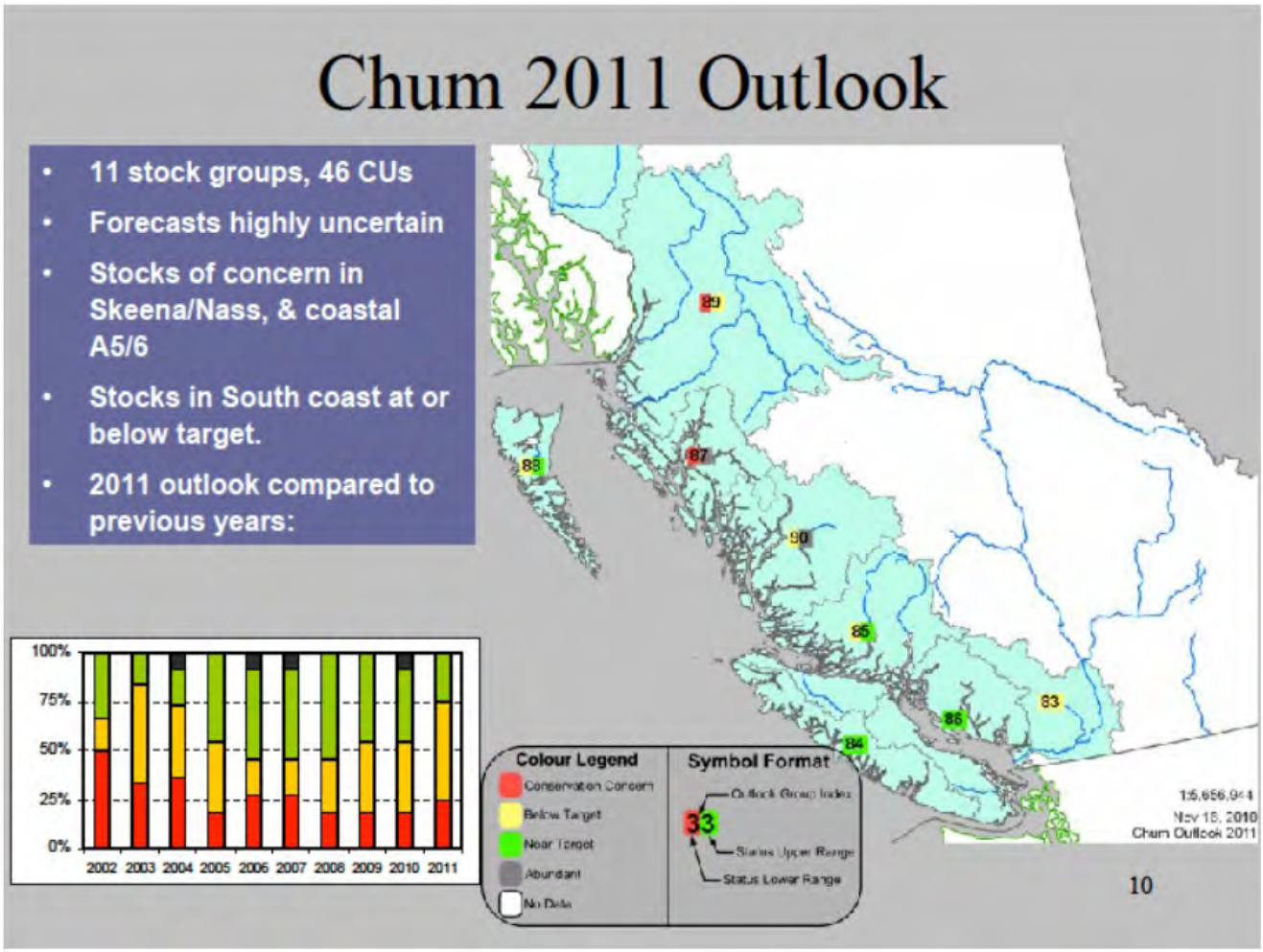

Annual Index of Abundance - Area 4 Chum Escapement
Index of Abundance
Sample Size
Year
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
25
20
15
10
5
0
1950 1952 1954 1956 1958 1960 1962 1964 1966 1968 1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010





Graphs supplied by Brian Spilsted, DFO Stock Assessment, Prince Rupert

In the November 2009 and 2010 IHPC meetings DFO classified several stocks in each of the above areas as “Stocks of Concern”. DFO defines Stocks of Concern as populations that are less than 25% of target and declining rapidly of the above areas as “Stocks of Concern”. DFO defines Stocks of Concern as populations that are less than 25% of target and declining rapidly



(http://www.gulftrollers.com/news/IHPC/2011%20Outlook%20Nov%2024%202010%20(IHPC).pdf)

The bycatch of chum constitutes a significant proportion of the total chum stock in northern areas. In 2009, the estimated Area 3 chum bycatch was 72,679 of which 26,252 were released compared to a final chum escapement of 20,615 (pers. comm. Dave Einarson, DFO Area Manager). In Area 6 the total bycatch of chum salmon was 72,788 compared to a total chum escapement of 40,515 (2009 DFO Post-season report). Similar proportions of chum bycatch to target pink catch have occurred in previous seasons, as the AT should know.

MML Response: These comments will be addressed through the context of the relevant performance indicator below.

Misreporting and underreporting of bycatch

A scientifically defensible estimate of chum bycatch in commercial fisheries in areas 3 and 6 is unavailable as there are no independent measures of either catch or mortality. Although fishermen are required to both phone in daily catch and release information and record species caught and released in a logbook, fishermen do not necessarily accurately report or record the number of non-target species caught and released. In their recent document, "Steelhead Bycatch and Mortalities in the Commercial Skeena Net Fisheries of British Columbia from Observer Data: 1989 to 2009, J.O. Thomas and Associates describe wide variations in catch data provided by fishermen through hails, logbooks and phone-ins compared to what was provided by independent observers. The report states that "non-retention, non-possession regulations for steelhead for gillnet and seines led to an almost complete reduction of reported catches of steelhead for the remainder of the 1990's through to the present time"(J.O.Thomas, 2010, p.5). In yet another example, 2010 observer data for chums released in the Area 3 seine fishery was more than double the reported catch (J.O.Thomas, 2010, p.6).

MML Response: – "The report states that "*non-retention, non-possession regulations for steelhead for gillnet and seines led to an almost complete reduction of reported catches of steelhead for the remainder of the 1990's through to the present time*" (J.O.Thomas, 2010, p.5).

The above statement is accurate for most of the 1990's and reflects the catch numbers for Area 3 and 4 plotted in Figure 5 of the J.O. Thomas report. However, Figure 5 does not include the catch numbers reported through phone-in and logbooks data for 2001-09 provided in Tables 36-39 of the J.O. Thomas report.

These comments will be addressed through the context of the relevant performance indicator below.

The problem of misreporting or underreporting is not a recent one, or confined to northern fisheries. Discrepancies between observed catches and the catch reported by fishermen ranged up to 51% for non-target species in southern fisheries (Bijterveld et al "Comparison of Catch Reporting Systems for Commercial Salmon Fisheries in British Columbia", Canadian manuscript Report of Fisheries and Aquatic Sciences 2626, 2002). Velez-Espino et al. (2010) also detail persistent underreporting of bycatch in BC troll fisheries: "Statistical analyses of data reported by observer and logbook programs in West Coast Vancouver Island (WCVI) troll fishery for the period 1998-2008 demonstrated that there is a consistent underreporting of released Chinook in retention periods in logbooks when trollers are allowed to keep only legal size fish."

DFO has also published Observer Reports from 1998 to 2003 on its website:

http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/fisheries-peches/stats-donneeseng.htm.

Failure to closely scrutinize available observer data and summary reports is a major shortcoming in the PCDR.

The difference between the expanded observer data and the expanded fishermen's logbook data for the species subject to non-retention, non-possession conditions in Area B (southern seine) fisheries is as follows:

Species	1998	2000	2001	2002	2003	Average
Coho	-20%	-18%	-38%	-47%	-20%	-29%
Chinook	-52%	-37%	-50%	-45%	-58%	-48%
Steelhead	-50%	-22%	-35%	-10%	-40%	-31%

But the problem of under reporting or misreporting bycatch is not limited to salmon fisheries or to BC. In the 1990's DFO was unable to obtain accurate bycatch information from groundfish and halibut fishermen. In each of these fisheries, fishermen knew that the accurate reporting of bycatch and bycatch mortality would likely limit their access to the target species. There was little upside and an enormous downside to accurate reporting. Hence, there was rampant misreporting of bycatch and discards in both fisheries. DFO responded with a three-step approach: logbooks, 100% at-sea monitoring and dockside validation (Grafton et al, 2005).

MML Response: These comments will be addressed through the context of the relevant performance indicator below. However, as a general comment, it is important to note that this MSC assessment is evaluating the performance of the fishery for the most recent management period which the assessment team considers to be 2005 onward. As such, the information displayed above, for the years 1998 – 2003, is not appropriate for influencing the score of the candidate fisheries in the course of this evaluation.

AREA 3 SEINES 2010 OBSERVER MONITORING SUMMARY

Activity Summary

Date	FOS Effort	Ves Part	Obs Days	Sets Obs	Sets/ Day	Sets Monitored Est
Jul-12	9	9	4	33	11	33.3%
Jul-13	9	7	4	27	11	27.3%
Total	18	16	8	60	11	30.3%

Sockeye Kept

Date	Set Avg	Ttl Catch Obs	Est. Catch	FOS Catch
Jul-12	12.58	414	1245	655
Jul-13	10.56	285	1045	379
Total	11.67	699	2290	1034

Chum Rel

Date	Set Avg	Ttl Catch Obs	Est. Catch	FOS Catch
Jul-12	40.67	1342	4026	2631
Jul-13	53.81	1453	5328	1944
Total	46.58	2795	9354	4575

Coho Rel

Date	Set Avg	Ttl Catch Obs	Est. Catch	FOS Catch
Jul-12	0.94	31	93	71
Jul-13	0.93	25	92	63
Total	0.93	56	185	134

Chinook Rel

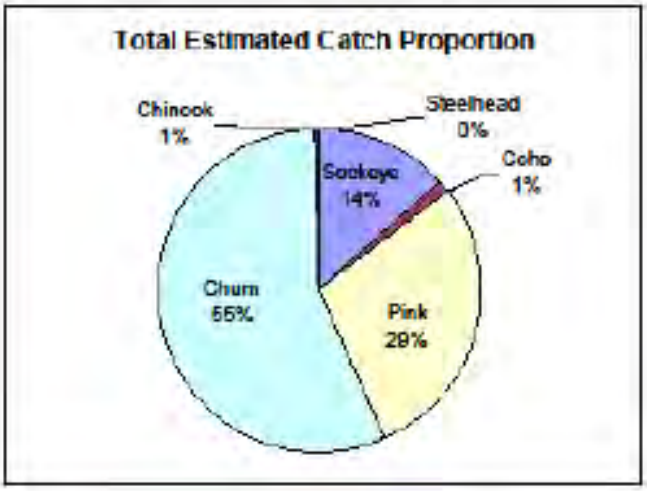
Date	Set Avg	Ttl Catch Obs	Est. Catch	FOS Catch
Jul-12	0.58	19	57	13
Jul-13	0.37	10	37	10
Total	0.48	29	94	23

Pink _Kept

Date	Set Avg	Ttl Catch Obs	Est. Catch	FOS Catch
Jul-12	24.58	811	2433	2216
Jul-13	23.56	636	2332	1633
Total	24.12	1447	4765	3849

Steelhead_Rel

Date	Set Avg	Ttl Catch Obs	Est. Catch	FOS Catch
Jul-12	0.12	4	12	0
Jul-13	0.04	1	4	0
Total	0.08	5	16	0



(DFO, Area 3 Seine Observer Summary, 2010)

MML Response: The assessment team reviewed the FOS and Observer data from core data provided by DFO. More detailed evaluation can be seen below under relevant performance indicators. In short, the assessment team suggests modifying Conditions for PIs 1.1.2.1 and 2.1.1 to include the requirement to improve bycatch monitoring of all species in all units of certification. This requirement is in keeping with the expected outcomes defined in the version 2 of the MSC Fisheries Assessment Methodology.

Poor compliance with Conditions of License and insufficient monitoring

The other serious problem in addressing bycatch and discard issues in BC's pink salmon fisheries is compliance with DFO's Conditions of License. Compliance with bycatch reduction measures is a recognized problem in all north coast fisheries. The J.O.Thomas report mentioned above records concerns about compliance with revival boxes by gillnets. DFO has officially reprimanded the fleet several times for noncompliance and has threatened to close fisheries. DFO enforcement has expressed concerns about "release techniques of prohibited species" (pers. comm. Dennis Burnip, Conservation and Protection, DFO, 2009). Seine fishermen in public meetings have often complained about their colleagues "ramping" and the absence of enforcement. DFO's Conservation and Protection Branch has said in post-season reports that it does not have the capacity to monitor and enforce selectivity rules in north coast fisheries. They have also said that compliance with selective measures is at times very poor (2007, 2008, and 2009 North Coast Post Season Reports).

But even when fishermen comply with their Conditions of License; they often avoid abiding by the spirit of the Conditions. In seine fisheries, some fishermen have responded to the Condition of License requiring all sets to be brailed by employing very large brailers. The reason ramping up over the stern of the seine vessel was outlawed, and seines forced to brail their catch aboard, was so fish could be brought aboard alive in limited quantities, quickly sorted, and the bycatch species released back into the water with the "least possible harm" (DFO – Conditions of License). The use of very large brailers (allowing fishermen to get their catch aboard faster and therefore return to fishing sooner) has a similar impact as ramping the fish over the stern.

The other way fishermen have adapted to the Conditions of License is to allow the bycatch species to remain on deck until the fish have stopped moving. They are then returned to the water. The reason for this is that it is difficult and time consuming to release very active large bycatch species such as steelhead and chum salmon. It is much easier to sort them from the target pink or sockeye, push the target species down the hold, and deal with the bycatch while travelling to, or waiting for, the next set. DFO Managers and Charter Patrolmen have also related many stories of bycatch species being flung overboard by the tail (which will kill a salmon by dislocating its vertebrae), or even kicking them overboard. (The

SkeenaWild Conservation Trust is prepared to produce evidence and affidavits to the above. We would encourage the Assessment Team to discuss these issues in private with Area Managers, Conservation and Protection people, fisheries observers and charter patrolmen). None of the above is a unique response by fishermen in BC salmon fisheries (Vestergaard, 1996; Branch, Hilborn, et al, 2006, FAO, 1996; Grafton etal, 2006). Hilborn, et al, 2006, FAO, 1996; Grafton et al, 2006).

These responses by fishermen are rational as there are few disincentives to comply with the Conditions of License in terms of effective monitoring, enforcement or financial risk (fines are often relatively low and infrequent, and considered a cost of doing business) when compared to the significant incentives not to comply as reduced compliance leads to increased catch of the target species in a open access fishery. Again, these responses are not unique to BC net fishermen. (Pascoe, S. Bycatch management and the economics of discarding, 1997; Gjertson et al, Incentives to Address Bycatch Issues, 2010). A study of the discrepancy between observer and logbook data in Velez-Espino, 2010 states that, “underreporting of encounters and releases of non-target and sublegal fish is consistent with fisher awareness of the implications non-target-and sublegal mortality on their total allowable catches and possibly on the public opinion”

MML Response: There is evidence on a multi-year basis (2006 – 2010) that there have been compliance issues across the NCCC UoC of a repetitive nature. In particular, non compliance appears to be related to license conditions (e.g. logbook infractions, revival box use) and concerns of laundering of FSC fish into commercial fishery. It should also be noted that there appears to be significant challenges with the recreational fishery in some areas. The DFO summary across multiple years is that overall compliance appears to have improved since 2006. This issue will be addressed through the context of the relevant performance indicator below.

Indefensible estimates of chum bycatch mortality

Scientifically defensible estimates of chum catch and release mortality are not available. DFO must estimate that they are very high as they have allowed seines to retain depressed chum when DFO Managers and charter patrolmen felt the chums would be dead upon release in any event (DFO Post season report, 2005). It is evident from observations, anecdotal reports, DFO Conservation and Protection reports and the J.O. Thomas paper that chum survival upon release may be very low. In DFO’s CSAS Working Paper 2010/059, DFO concedes that they have no independent measure of chum survival but use a 50% mortality rate “as a placeholder”. There are few studies describing a relationship between salmon that escape or are released and subsequent spawning success. The most recent study (Baker and Schindler, 2009) conservatively suggests that 50% of the sockeye salmon that inadvertently escape from gillnets (as opposed to being caught and released as mandated in many BC fisheries) do not successfully

spawn due to injuries. Underwood et al, 2004 describe how chum salmon suffer significant mortality rates after being released from fish wheels and that evidence of mortality increases from the point of capture. The few studies that are available would suggest that DFO's assumption of a 50% mortality rate is overly optimistic.

The evidence on chum bycatch and discards in commercial net pink fisheries on the
north coast is that:

1) DFO has defined Area 3, 4,5 and 6 chums as being of "special conservation concern".

2) Chum bycatch and discards in Areas 3 and 6 can be a significant proportion of the chums returning to these areas

3) Data on the number of chums caught and released in north coast fisheries is based on fishermen phone-in reports and logbook records. This information is not independently verified. There are no consistent independent at-sea observer reports that could supply independent reports on catch, compliance or mortality. The only dockside validation programs are for Area 4 sockeye quota fisheries. And there is evidence from both the salmon fishery and other BC fisheries that information from fishermen's phone-in reports and logbook records is suspect. In fact, there is an incentive not to accurately report regulatory discards, and very little disincentive to report discards accurately.

4) It is recognized by DFO managers, DFO's Conservation and Protection staff, independent observers, and fishermen themselves that compliance with selective fishing requirements can be low and often inconsistent.

5) There is no independent measure of post-release mortality on chums. However, reports by DFO would indicate that it is very high in intensive seine fisheries and gillnet fisheries

MML Response: These comments will be addressed through the context of the relevant performance indicator below.

Summary

The high incidence of unmonitored bycatch and discarding in BC's salmon fisheries is inconsistent with best practices as described by FAO (FAO, 1997; Best Practices for Fisheries Management, Baltic Sea 2020, 2009). These are not insolvable issues as managers both in BC and around the world have found that they "can be mitigated with the appropriate mix of incentives, monitoring and enforcement".(Grafton et al, 2005).

The problem is that DFO's salmon managers have been unwilling to directly deal with bycatch and discard accounting, compliance, and enforcement. And the PCDR, as currently written, would allow DFO to maintain their current management practices.

MSC Certification, as it stands, would not lead to BC salmon fisheries adopting global best practices for catch and discard reporting, reducing bycatch and discards, rebuilding stocks of concern caught or discarded as bycatch, and decreasing the mortality of stocks of conservation concern discarded during commercial fishing operations.

Analysis of the Public Draft Comment Report the Public Draft Comment Report

This section deals only with those PIs where the authors of this paper determined that the Assessment Team had issued an incorrect score that made a material difference to the outcome of the certification, either by causing it to pass where failure was warranted (60 Scoring Guideposts), or by prescribing inadequate conditions (80 Scoring Guideposts).

1.1.1.4 – Where indicator stocks are used as the primary source of information for making management decisions on a larger group of stocks in a region, the status of the indicator stocks reflects the status of other stocks within the management unit.

SG 60.2: There is a scientific basis for the indicator stocks used in the management of the fishery.

PARTIAL PASS

SG 80.1: There is general agreement among regional fisheries scientists within the management agency that the status of indicator stocks reflects the status of other stocks within the management unit.

PARTIAL PASS

Rationale

SG 60.2 NC/CC and ISC:

• Despite references to indicator stocks, index stocks, and target stocks, (i.e., English et al. 2006; NC/CC CUP and ISC CUP) there are no definitions for distinguishing between or defining these stocks. Further, identification of indicator and index streams are not provided within the cited references. Many stocks

identified in the references represent higher productivity target stocks that have been the primary focus of DFO management as identified in Price et al (2008, Can. J. Fish. Aquat. Sci. 65: 2712-2718). Other than Areas 7-10, indicator runs or key streams are not identified in public documents. SG 60.2 ISC:

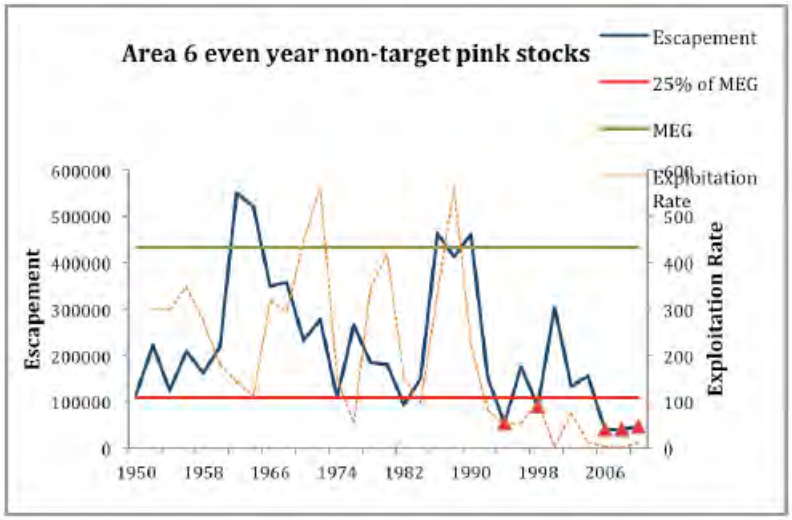
• The selection of indicator /index streams for Mid Vancouver Island in Area 14 are all enhanced except the Qualicum. One wild run is not an adequate as an indicator of the region's stock status.

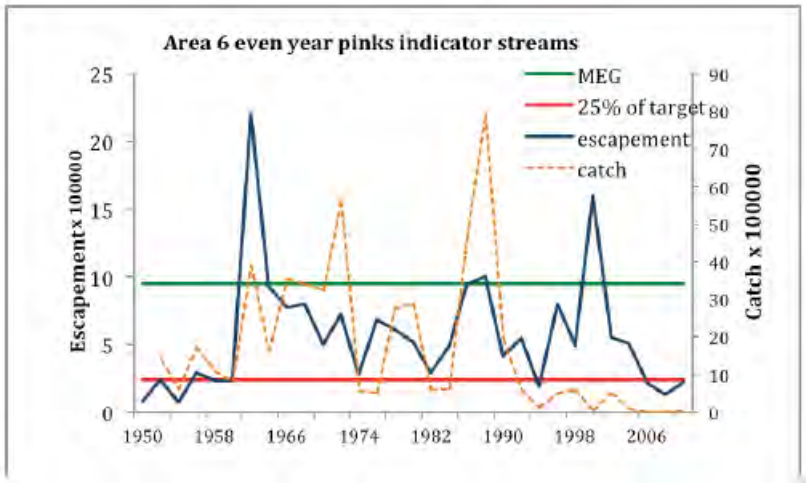
• Pinks in areas 15 and 16 lack sufficient indicator streams and monitoring. There are only 2 even year runs that have been counted more than 50% of the time in the last 5 years.

SG 80.1:

• Price et al (2008) showed that biases in stream selection caused by budget and staff cuts resulted in monitoring preferences for larger, healthier runs while smaller, depressed runs were dropped from enumeration. The consequence is an increasingly biased view of population health that can lead to harvest management that risks extirpation of small runs.

This point is somewhat illustrated in the differences in status between Indicator and non-target streams in Area 6 (see figures below). The status of smaller non-target streams fall below the LRP more often than the indicator streams.





MML Response: Indicator streams for North and Central coast pink salmon were selected because they are streams where reliable estimates can be obtained and escapement are monitored on a regular basis.

Distinction and fidelity among pink salmon stocks is not as precise as other salmons Chinook, chum and sockeye. Through the Core Stock Assessment Review (English *et al*, 2006), indicator streams for the NCCC were selected on the basis of where DFO can get the most useful data, year on year. The team has not revised the score for the NCCC UoC.

The team was concerned that the correlation between indicator stocks and conservation units does not appear to have been validated, and the relationship between the indicator stocks and conservation units has not been periodically assessed. In many cases the number of indicator stocks is relatively small and may not adequately reflect the changes in diversity at scales smaller than the CUs and this is reflected in the failure to meet most of the 100% scoring guideposts

During preparation of its Corrective Action Plan, DFO subsequently provided feedback, as provided in 1.1.1.4 above. That feedback corrected the information provided in the original CUP and provided further detail regarding indicator streams.

The team is satisfied that the DFO analysis has addressed the concerns regarding the validation of indicator streams and relationship between the indicator stocks and conservation units has been addressed. As such, a score of 80 has been awarded to the ISC UoC.

1.1.2.1 – Estimates exist of the removals for each stock unit

SG 60.1: Catch estimates for the majority of target stocks are available.

ISC FAIL

SG 60.2: Catch estimates are available for non-target stocks where the catch of the non-target stocks may represent a significant component of that stock.

FAIL

SG 80.2: Catch estimates are available for non-target stocks where the catch of the non-target stock may represent a significant component of the harvest of that stock.

FAIL

SG 60.3: Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years.

FAIL

Rationale

There are no scientifically verifiable catch estimates for non-target stocks where the catch of the non-target stock may represent a significant component of the harvest of that stock. Evidence provided by DFO in Post-Season Summaries of Catch and

Escapement shows that the bycatch and discards of chum stocks in Areas 3 and 6 often exceed the escapement of these same stocks to the same area. The bycatch and discarding of chums constitutes a significant proportion of the total chum stock in northern areas. In 2009, the estimated Area 3 chum catch was 72,679 of which 26,252 were released compared to a final chum escapement of 20,615 (pers. comm. Dave Einarson, DFO Area Manager). In Area 6 the total catch was 72,788 compared to a total chum escapement of 40,515 (2009 DFO Post-season report).

It is important note that there is a significant discrepancy in the 2009 Area 6 discard data. The bycatch of chum hailed in to charter patrolmen was 71, 693, compared to the 61,713 fishermen phoned in or reported in their logbooks. A similar discrepancy exists for coho (see tables below) Both of these sets of data were not independently verified as there were no observers present. It is therefore impossible to know if either of them provides a reasonable estimate of chum bycatch and discards in Area 6.

Hailed Reports		
	Area 3	Area 6
Coho kept	Not Provided	15,914
Coho Released		65,175
Chum Kept		350
Chum Released		71,693

Phone-in Reports		
	Area 3	Area 6
Coho Kept	Not Provided	11,521
Coho Released		47,223
Chum Kept		350
Chum Released		61,713

Similar data should be available for previous seasons (e.g. 2007) through direct request to Dave Einarson, and the AT would be remiss in failing to request these data.

JOT and DFO reports show that the catch estimates collected by DFO through hails, logbooks, and fishermen phone-ins may not accurately reflect the level of bycatch and discards in fisheries. It is also incorrect to assume that all commercial harvesters hail-in their catches after the fishery closes as per their condition of License. Failure to hail-in catches is an ongoing enforcement problem in BC's commercial salmon fisheries.

Page 13 of this document describes the discrepancy between the bycatch calculated from observer data in an experimental program in Area 3 compared to what was reported by fishermen. Fishermen reported less than half the chum discards than what the observers estimated to have been caught. Fishermen reported 0 steelhead caught compared to the 16 estimated to have been discarded from observer reports.

The contention in the Client's submission that commercial hail-in data are occasionally verified is, at best, misleading. There has been no consistent, scientifically defensible, independent measure of non-target bycatch, discard, and compliance for most open access commercial net fisheries in the north coast. There was, at one time, dock-side monitoring of north coast open access fisheries. But this has been discontinued. Enforcement is limited due to capacity constraints. There are no consistent observer programs that meet international standards and compliance patrols are limited due to lack of resources. A reading of DFO's North Coast Post-Season reviews over the past few years does not describe any scientifically defensible, consistent, fishery independent monitoring that would lead one to conclude that the inaccuracy of catch and discard data concerns identified in the J.O.Thomas and DFO reports is not continuing.

Furthermore, the AT's acceptance of the status quo means that the issues are unlikely to be addressed and that MSC would be certifying a fishery that does not meet international standards for the monitoring, control, and surveillance (MCS) of bycatch and discards (FAO, 2000).

It is unclear what the PCDR means when it says regulatory discards are "occasionally" verified. It is not clear what value this would be, even if it were true. But, the fact is, contrary to what is reported in the PCDR, there is no ongoing on-grounds verification program. Nor is there any current dockside validation of open access fisheries. The AT's acceptance of the Client's submission on this point would mean that MSC would be certifying a fishery that does not meet global best practices, or even for that matter, practices embraced by other BC fisheries such as groundfish and halibut.

The PCDR also points to CUP 4 as evidence that there are accurate catch estimates for bycatch and discards. Unfortunately, CUP 4.2.3.1 makes four key misstatements:

Daily inspections by enforcement patrol staff surveying harvest information and monitoring compliance to all fishery restrictions and management guidelines (e.g. use of revival boxes when mandatory). This data is recorded in the fishery managers Record of Management Strategies (RMS).

Post season reports produced by DFO Enforcement Staff make it clear that this is not done, nor do they have the resources should they want to (North Coast Post-season: 2007, 2008, 2009, 2010). For example, DFO Conservation and Protection staff state that they have only checked between 3.0% and 7% of the total commercial effort between 2006 -2009, and much of this was directed at the commercial sockeye fishery. (DFO Post-Season Reports 2007-2009).

Commercial hail-in data are verified occasionally by on-water inspections of catch by Fishery Officers, dock-side monitoring and auditing of sales slip data. Nearly all commercial harvesters submit catch information to DFO.

There is no evidence that there is a useful amount of on-water inspections by Fishery Officers: they spend relatively little time in the field during commercial fishing openings.

Catch monitoring programs also track by-catch and monitor compliance with conservation restrictions to assess impacts of fishing on non-target species for use in determining conservation measures on stocks of concern. For example, post–season estimates of steelhead by-catch are derived from in-season monitoring by charter patrol boats, weekly call-in by individual harvesters, log book data, and sale slip data.

Evidence has already been provided that most fishery dependent data is not independently verified. And there is no evidence that there is a systematic on grounds program to monitor compliance. Furthermore, J.O. Thomas 2010 shows that DFO is not able to produce scientifically defensible estimates of steelhead discards.

Comparisons between logbook and expanded observer estimates for south coast salmon fisheries from 1998-2003 are available at the following DFO website: http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/fisheriespeches/stats-donnees-eng.htm. These reports show clear and consistent discrepancies between observed, logbook, and managers data. Specifically, they show consistent underreporting of bycatch species.

An analysis of the variances between logbook and observer data in the south coast troll fishery that is available for the years 1998-2008 shows that logbook data consistently underreports discards. It concludes that, “an independent source of catch and release data such as the one provided by the observer program seems to be irreplaceable to monitor fishing dynamics and potential changes in reporting biases” (Velez-Espino, 2010).

DFO is developing a Draft Strategic Framework for Catch Monitoring and Catch Reporting. Currently, it is nothing more than a plan for future discussions with stakeholders. It does not provide any certainty that DFO intends to meet international best practices for monitoring and compliance within the proposed certification term.

FAO has stated (Proceedings from International Conference on Integrated Fisheries Monitoring, 1999 http://www.fao.org/docrep/x3900e/x3900e00.htm#topofpage) that collecting data directly from fishermen is only feasible when:

1. Data collection is within the competence of the fishers;
2. The activity is accepted as a priority component of operational procedures;
3. There is no incentive to cheat or falsify records, and
4. Where the data are validated.

Further to the above rationale for failure of this PI, SG 60.2 is not met for ISC because there is very limited data on catch impacts to target stocks of odd year pinks returning to areas 11-14. SG 60.2 is also not met for NC/CC because catch estimates of non-target central coast chum stocks caught in Area 3 mixed stock fishery are not available (Nass chum CSAS 2010). There are significant conservation concerns for chum stocks returning to the central coast (DFO Stocks of concern, 2010) and as evidenced by the status of indicator streams which have been falling below their LRP.

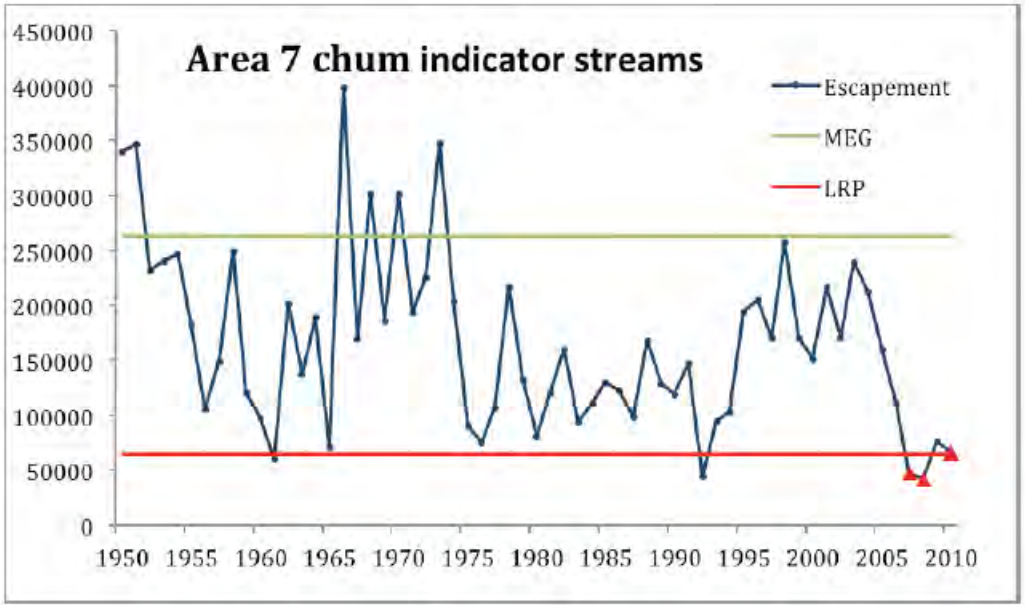
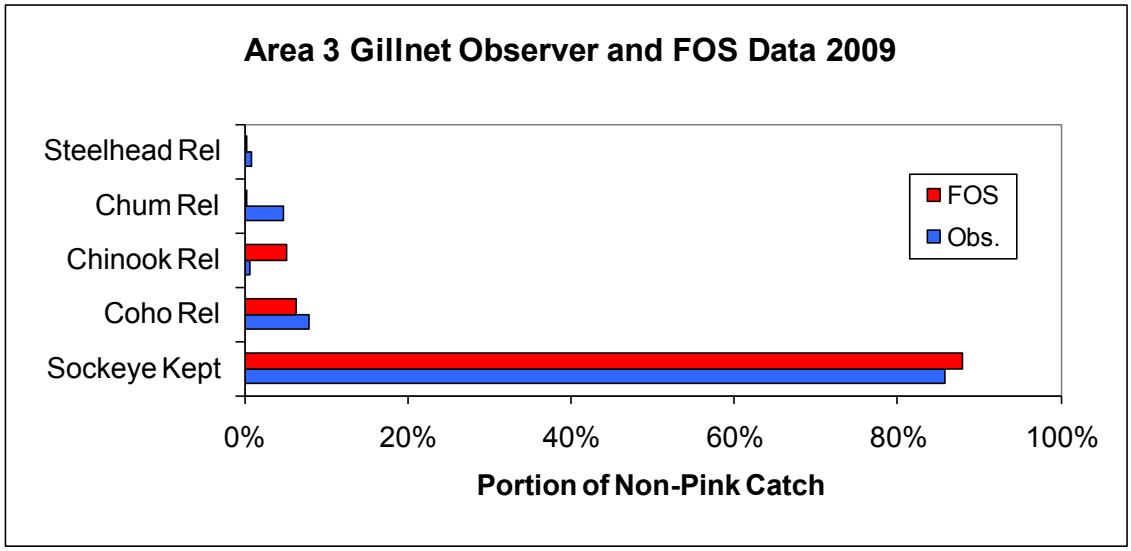


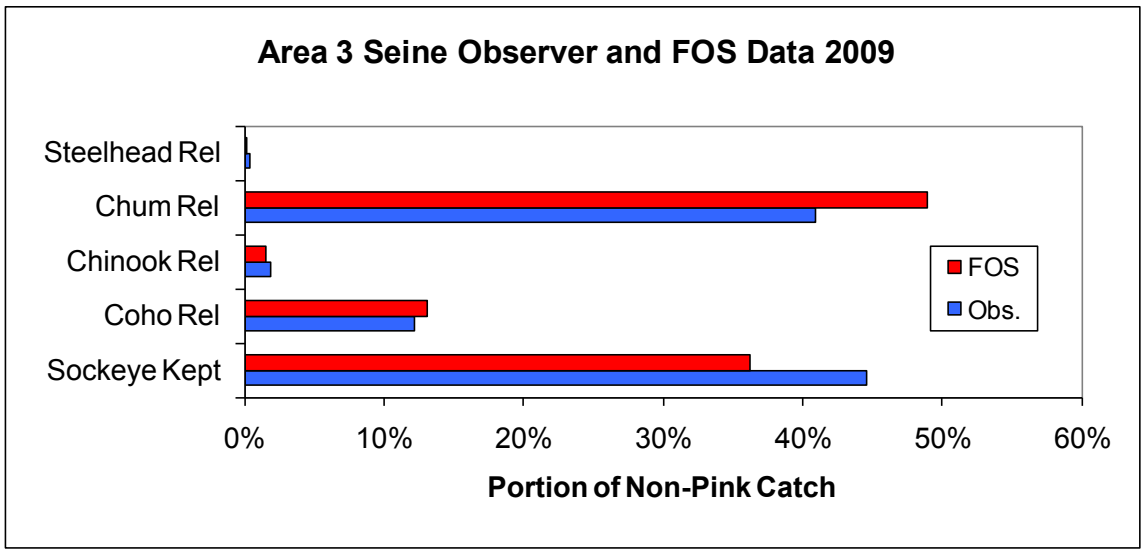
Figure: Area 7 non-target chum stocks. There are conservation concerns for chum stocks returning to the central coast (DFO Stocks of concern, 2010) and as evidenced by the status of indicator streams, which have been below the LRP in 3 of the recent 5 years.

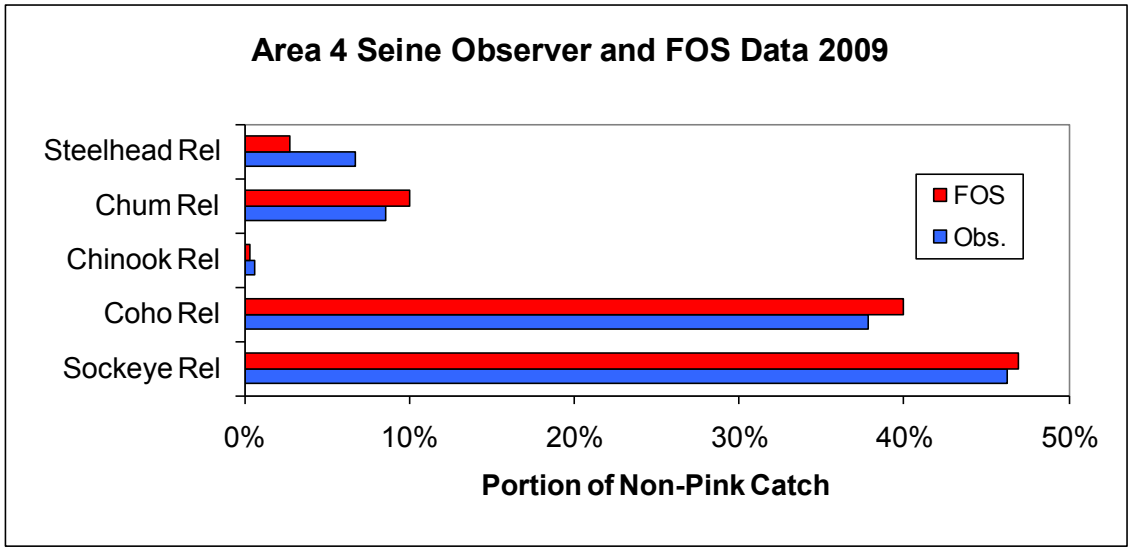
In addition the above rationale, SG 80.2 is not met for ISC pinks because there are inadequate data on catch impacts of odd year pinks to Areas 11-14 and inadequate catch estimates for non-target stocks of mainland pinks caught in the Johnstone Straight fishery targeting Fraser pinks.

MML Response: The assessment team requested and analyzed source data for the 2009 season for both at-sea observer data and FOS (DFO Fishery Operations System) data. Comparison of this data suggests that resulting catch information from the two different monitoring streams is similar in a number of cases; however, divergent results suggest ongoing issue of non-reported steelhead. The comparison did not include pink salmon as addition of pink into the data would greatly overshadow the non-pink catch, thus reducing ability to clearly see differences for the non-target species.

The following figures clearly demonstrate that in most cases, reported observer data versus data provided at the point of landing are quite comparable, with the differences being insignificant.


Area 3 Gillnet Observer and FOS Data 2009
Steelhead Rel
Chum Rel
Chinook Rel
Coho Rel
Sockeye Kept
FOS
Obs.
0%
20%
40%
60%
80%
100%
Portion of Non-Pink Catch


Area 3 Seine Observer and FOS Data 2009
Steelhead Rel
Chum Rel
Chinook Rel
Coho Rel
Sockeye Kept
FOS
Obs.
0%
10%
20%
30%
40%
50%
60%
Portion of Non-Pink Catch



The Assessment Team does not agree with stakeholders that the 60 scoring guideposts are not met for the any of the fisheries. The stakeholders have not provided convincing evidence that there are not estimates of removals for the major stocks. DFO provides estimates through both the annual post season review and the data base sources mentioned above.

The assessment team has considered the information provided by stakeholders and has rescored the second 80 scoring guidepost of the NCCC unit of certification from a pass to a partial pass, thus the PI for NCCC is rescored to 73. The basis of changing the score was the uncertainty about the confidence of the non-target stock reporting of discards. Condition 1-1 to be modified to recommend that additional observer programs be implemented to ensure that accurate catch estimates can be produce for all species caught.

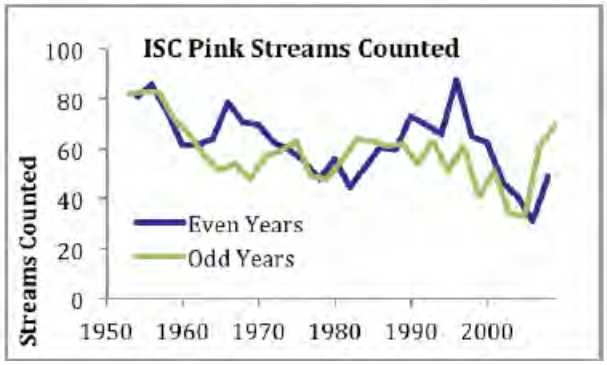
1.1.2.2 – Estimates exist of the spawning escapement for each stock unit.

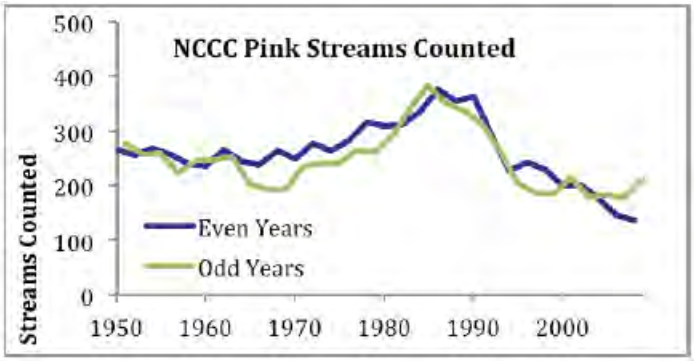
SG 60.2: Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.

PARTIAL PASS at best

Rationale

Escapement estimates and the salmon enumeration program have been severely eroded over the last two decades (figures below). While this was acknowledged in the CDR, the loss of information on salmon escapement from important target and non-target streams has meant a reduced ability to accurately and precisely assess trends and provide the quality of data needed to conserve salmon populations under heavy fishing pressure.





Figures above show trends in enumeration of pink streams in Areas 11-16 on the Inner South Coast and Areas 3-10 on the Central/North Coast. Recent increased enumeration in the ISC has been focused heavily on the Broughton (Area 12) in response to concern over sea lice impacts from salmon farms.

Recommendations to DFO were made by English et al. (2006) who identify a minimum of 152 pink index stream (even year) and 128 (odd year) to be enumerated annually on the North and Central Coast. Currently DFO is monitoring a little more than half of these streams, (optimistically 52% even years, 66% odd). The recommended increase would provide enumeration for 28% of the 766 odd year pink runs and 18% of the even year pink runs on the NC/CC.

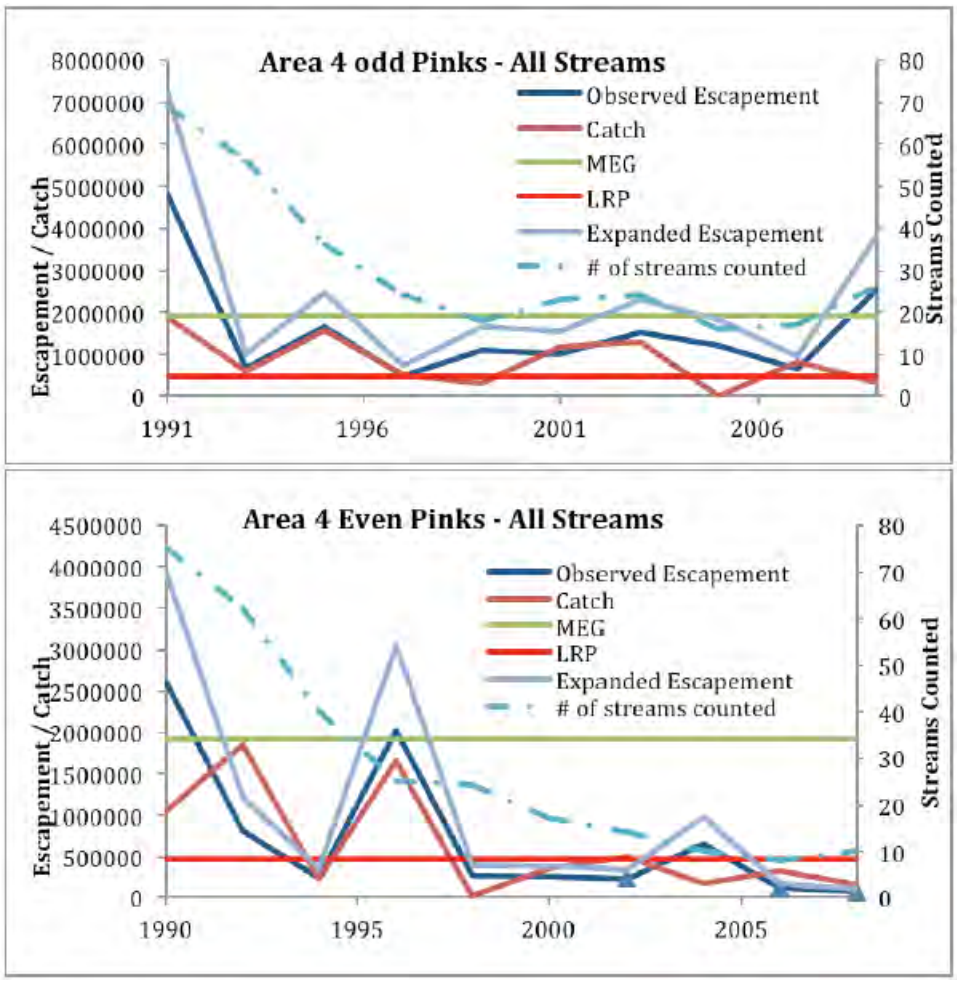
A comparison with the existing level of monitoring in Areas 11-16 on the ISC shows a lower percentage of streams monitored on the south coast.

• 60.1: As indicated by Condition 1-2, escapement estimates are not adequate for the ISC. Applying the same scale of improvement to monitoring as recommended for the NC/CC, monitoring of 17 (unenhanced) even-year streams would need to be increased to 56, and 15 (unenhanced) odd-year streams would have to be increased to 47. Given the spotty catch and escapement information, the critical status of some ISC stocks and the intense anthropogenic pressures in this region, this should be a considered the minimum

• 60.1: Escapement estimates for even-year target stocks of Skeena bound pinks caught in the Area 4 fishery have experienced severe declines and show significant gaps in the monitoring, especially when applied to the Middle Upper Skeena, Lower Skeena and Skeena Estuary Pink Conservation Units. Enumeration has declined to only 10 even-year pink streams in the Skeena drainage. At the same time, stock status of even-year pinks is now below their limit reference point in more than 3 of the last 5 years (Figure 3).

The following figures show trends in monitoring and status of Skeena even and odd year pinks. Even-year monitoring has declined drastically in 20 years from 75 in 1990 to 10 in 2008 with a low of 8 in 2006. Odd-year declined from 69 in 1991 to

26 in 2009 with a low of 16 counted in 2005. Substantial increases to monitoring and stock health need to occur if fisheries harvests are to be continued.



The following table is based on English et al. (2006). For ISC runs, the recommended to be counted annually was extrapolated from the NCCC recommendations since no such data exists for the ISC areas.

	NC/CC EVEN	NC/CC ODD	ISC EVEN	ISC ODD
Total Systems	766 NC /CC		282 ISC	
Maximum Streams Counted	377 (1986)	384 (1985)	88 (1996)	83 (1957)
Minimum Streams Counted	137 (2008)	177 (2007)	31 (2006)	33 (2006)
Recommended no of inidcators[1]	152	128	56	47
Counted annually over the last 5 Cycles (excluding enhanced runs)	80	85	17	15
Current level of monitoring compared to goal	**53 %**	**66%**	**30%**	**32%**

The authors of this paper agree with the AT that for Fraser pinks SG 80.3 is partially met, at most, because reliable estimates of escapement are not available.

In the case of Fraser River pink salmon, escapement has not been directly and accurately estimated since 2001. Currently, the only estimate of escapement is based on an indirect approach using the purse seine test fishery. Abundance is estimated based on the relationship between CPUE in the test fishery and historical estimates of escapement. Escapement is estimated by subtracting the catch from the total abundance. Unfortunately, because catchability and diversion rates through Juan de Fuca/Johnstone straight are confounded and have changed over the years, these estimates are biased and inaccurate (Cave and Michelson, 2010, A blueprint for inseason estimation using test fishery data with a Bayesian cumulative normal model. Paper presented at the 24th Northeast Pacific Pink & Chum Salmon Workshop, Nanaimo, BC, March 3, 2010). Also, estimates do not account for any en route mortality, as the “management adjustment” does for sockeye salmon, or for nonretention mortality by fisheries. Therefore, there are no reliable estimates of escapement for the Fraser aggregate, and no estimates at all for smaller stock units (e.g. run-timing aggregates, geographical groupings, etc).

MML Response: The assessment team was aware that a number of indicator streams were not enumerated each year. However, it is unclear what number and at what frequency indicator streams are being monitored in NCCC. Using assessment data received from DFO, the assessment team evaluated the indicator streams that have been monitored in recent years. The analysis confirms the number of indicator streams surveyed in 2005 or 2007 for odd years and 2006 or 2008 for even years versus the total number of indictor streams identified. The coverage of indicator streams based on the team’s analysis (78% even, 83% odd) is better than the ENGOs finding (52% even and 66% odd) but the coverage for the two major Skeena pink CUs is poor based on our analysis (42% even, 66% odd). It should be noted that these analyses are just the indicator streams (i.e. not all pink stream). The number of indicator streams in these 2009 tables for NCC is larger than the number identified in the 2006 Core Stock Assessment Review.

The assessment team has revised the NCCC score to 70 (as per other UoCs) as DFO did not provide evidence of monitoring as described in the Core Stock Review. The rationale for partial score for the first 80 scoring guidepost is the poor monitoring coverage of escapement in the Skeena area pink salmon CUs. The second 80 scoring guidepost for the NCCC is only awarded partial value because of the poor monitoring coverage of Skeena chum CUs and the third 80 SG get a partial score because test fisheries only provide useful in-season information for some of the target stocks.

Condition 1-2 will be revised as follows:

An escapement monitoring program that is adequate to estimate the status of target stocks harvested in the NCCC, ISC and Fraser pink salmon fisheries must be implemented within two year. Fishery independent indicators of abundance for non-target species harvested in these fisheries (e.g. improved escapement monitoring for lower Skeena chum) must be available for each year and area where fisheries are permitted to target pink salmon. The rationale for the monitoring program must be described and demonstrate the adequacy of the monitoring is sufficient to meet the management needs in relation to the level of harvest. A publically available, externally reviewed report on escapement monitoring programs should be available for review by the second surveillance audit.

1.1.2.4 – The Information collected from catch monitoring and stock assessment programs is used to compute productivity estimates for the target stocks and management guidelines for both target and non-target stocks.

SG 80.2: There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks.

FAIL

SG 80.3: The harvest limitations for target stocks take into consideration the impacts on non-target stocks and the uncertainty of the productivity for these stocks.

FAIL

Rationale

As shown for PI 1.1.2.1, DFO does not have accurate catch data on regulatory discards. There is little in the way of independent verification of bycatch and discards in catch and release fisheries. Furthermore, DFO and the Client seem to

assume, for convenience, that most discards survive to spawn, therefore deflating the actual harvest rate impacts on the non-target stocks.

It is not clear what the post-release mortality rate for chums is, but the literature suggests that it may be relatively high. DFO clearly agrees because they allowed seines to retain chums in Area 6 in 2005 because the survival rate of the discarded chums in the intense pink fisheries at the time was so low (Fishery Notice FN0549). DFO has also expressed concerns in their Fishery Notices to industry about the lack of compliance in both data reporting and the selective fishing provisions of harvester's Conditions of License.

It is difficult to understand how "there is adequate information to estimate the relative productivity of non-target stocks" when

- There is no scientifically defensible estimate of bycatch and discards
- Compliance with selective fishing rules has been shown to be poor
- There is no scientifically defensible estimate of post-release mortality or spawning success of released fish

Harvest limitations for target pink stocks are not the first strategy DFO uses when it "take[s] into consideration the impacts on non-target stocks and the uncertainty of the productivity of these stocks". DFO response on the North Coast has not been to limit access to abundant pink stocks, but instead to put in place selective fishing measures through Conditions of License (Client Submissions: Certification Unit Profile and Management Summary for BC Pink and Chum Fisheries). But as has been shown above, there has been no systematic independent effort to access the accuracy of catch or discards, fishermen compliance, or post-release mortality. The most DFO has done is to issue fishery notices urging the fleet to comply with their Conditions of License. (example: Fishery Notice FN 0551). DFO Conservation and Protection (C&P) has raised concerns with Managers as reported in the 2008 and 2009 Post-Season review. For instance, in the 2008 Review C&P states that, *"We encountered several problems with seine vessels ramping their catch, contrary to license conditions. This practice saves them time (doubling their fishing effort) and money, however, it isn't very selective. I attended several industry meetings to address the issue. I have raised concerns with Steve Groves, FM [North Coast Fisheries Management]"*

In the Assessment Team's Scoring Rational they argue that "Where non-target stocks are captured exploitation rates are kept low to reduce impact". There is no indication that this strategy is pursued in North Coast pink salmon fisheries. Unless, that is, the AT is suggesting that catch and release fisheries decrease exploitation rates on the stocks of concern. But this would mean that most discards would have to survive capture. There is no evidence to support this contention. Even DFO says that they have no idea what the post-release mortality is (CSAS, 2010/059). If, on the other hand, DFO is suggesting that the exploitation rates of the target species – pink salmon – are kept low, there is little evidence of

this. Abundant pink salmon returns trigger aggressive commercial fishing by seines in Areas 3, 4 and 6 as shown in the table below. And this has not changed as concerns over chum salmon stocks have increased as there has been little appreciable change in pink harvests once chum non-retention was put into place. The following table compares the ratio of the commercial pink catch by gillnet and seine fisheries in Areas 3 – 6 with the total catch and escapement in these areas.

Year	Ratio of Catch to Escapement	Catch Plus Escapement	Chum Catch
1996	1.08	6,552,598	378,038
1997	0.97	2,021,005	167,385
1999	0.79	2,073,036	657,134
2001	1.45	9,862,440	Non-Retention
2003	1.55	11,680,449	Non-Retention
2005	1.86	11,192,981	Non-Retention
2007	2.19	9,091,255	Non-Retention
2009	1.36	14,222,828	Non-Retention

(from DFO's North Coat Post--□Season Reviews: 1996, 1997, 1999, 2001, 2003, 3005, 2007, 2009: (See Appendix 1)

Taking into account the significant (but likely understated) chum discard estimates described earlier, this is not a fishery where exploitation rates are kept low to protect "stocks of special conservation concern ".

MML Response: The Assessment Team agrees that there are not productivity estimates which are reliable for chum salmon. Available information is not adequate to estimate the productivity of the chum stocks harvested in NCCC pink fisheries. Area 4 does not have adequate escapement monitoring for chum, Area 3 is only marginally better. All fisheries in Area 3 and 4 have mixed stock separation issues due to significant numbers of AK fish caught in the marine fishery.

In the ISC, DFO is able to conduct reconstruction analysis which will separate out Fraser chum from other chum stock, but this method is unable to separate the smaller inside chum stocks. The Assessment Team is suggesting the second 80 scoring guidepost is not met for the NCC and ISC. The condition will require DFO to document that they have sufficient information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks.

1.1.3.1 – Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.

SG 80.1: There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries.

FAIL

Rationale

We can find no evidence that this guidepost has been met. The current MEGs bycatch issues should be considered in setting the buffer.

MML Response: This performance indicator relates to the establishment of LRPs or operational equivalents for the target candidate species being evaluated in the current MSC assessment. As stated in the scoring rationale for this PI, operationally equivalent LRPs (MEGs) are defined for pink salmon target stocks. This PI does not relate to non-target stocks. This approach is consistent with the requirements of the MSC Fisheries Assessment Methodology. The AT has not changed the PI scores.

1.2.1 – There is a well-defined and effective strategy, and a specific recovery plan in place, to promote recovery of the target stock within reasonable time frames.

SG 60.1: In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 5 reproductive cycles.

FAIL

SG 60.2: Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks.

FAIL

Rationale

Despite departmental objectives to achieve MEGs, these management targets are consistently not being met. Often, fishing pressure continues until target escapements approach their Limit Reference Points (25% of the MEG). As such, the TRP has become a ceiling and the LRP is the new target to aim for.

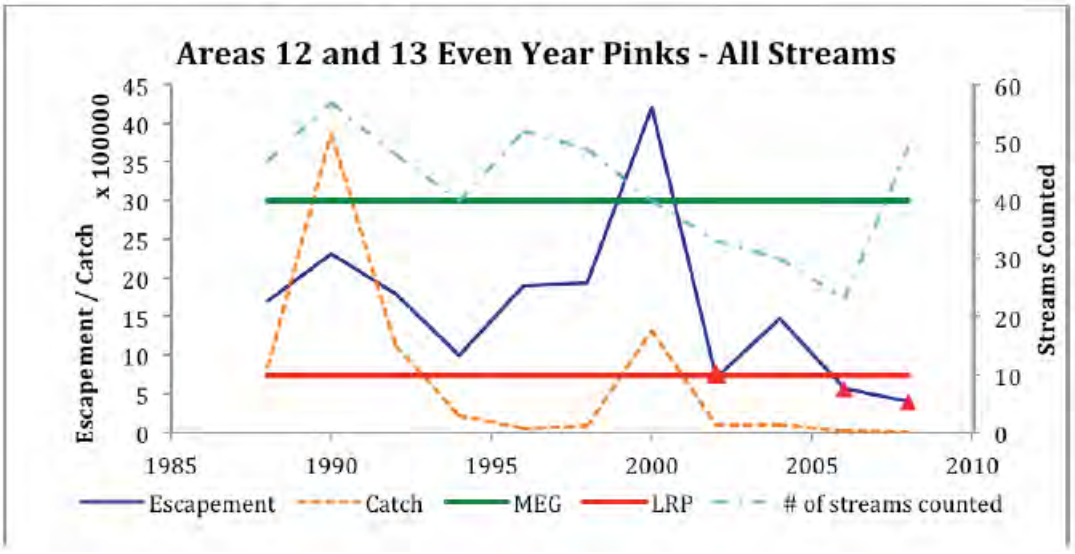
There is growing concern on the north, central and south coasts for declining abundance of even year pink stocks. Several areas impacted by mixed stock fisheries (Areas 4, 6, 7 and 12) have even year pink returns falling below their LRPs. While this has curtailed some terminal fisheries, most of these stocks are still being fished and no recovery plans have been identified. In most cases these stocks are not even formally identified as stocks of concern

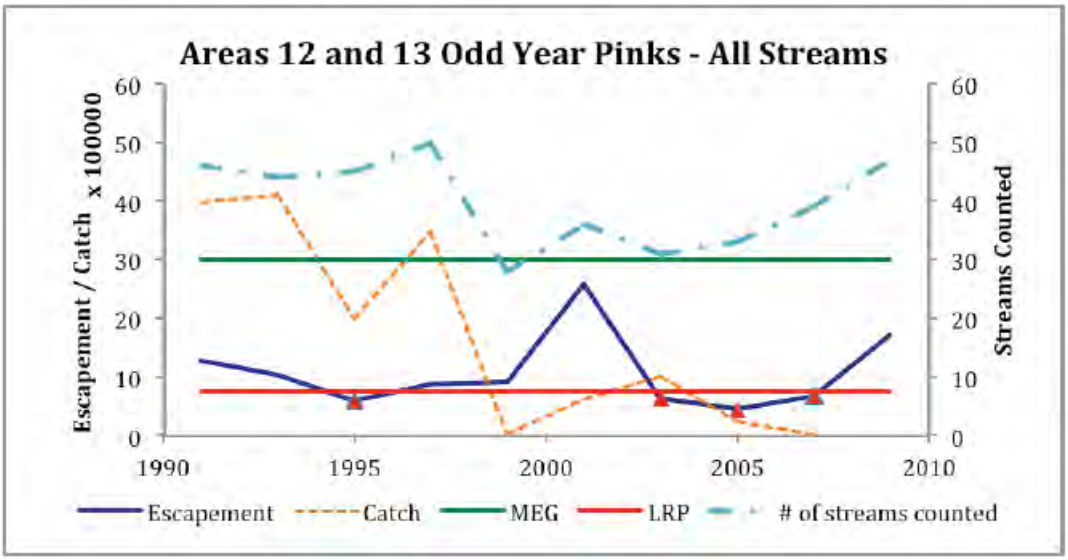
Analysis by Price et al. (2008, Can. J. Fish. Aquat. Sci. 65: 2712-2718) shows that north and central coast runs that did not meet their MEGs in the previous decade were those most likely to be dropped from further monitoring efforts when budget

and other resource constraints were imposed. The consequence is an increasingly biased view of population health.

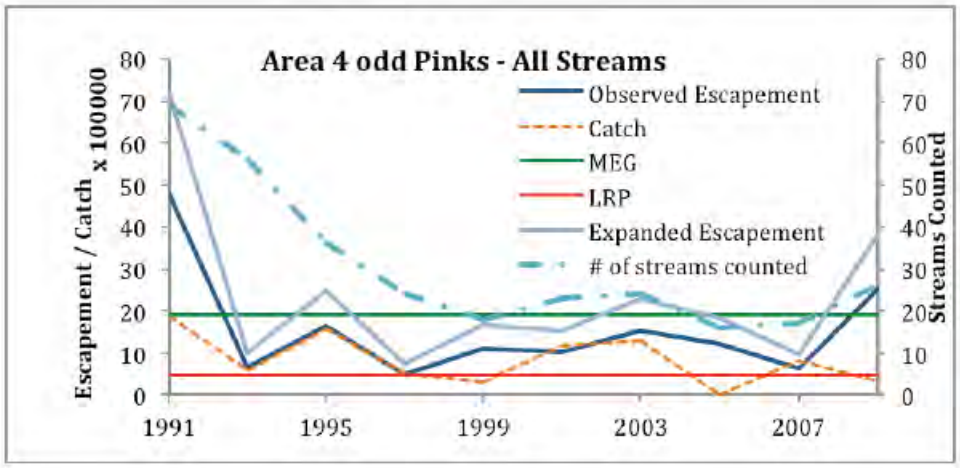
Given the decline in monitoring that has occurred in the last 20 years, and the bias toward dropping streams near their LRP, it is likely we have a much rosier picture of the region's health than is likely the case. This can be likened to a 'shifting baseline' syndrome (Pauly 1995) in the context of enumeration efforts.

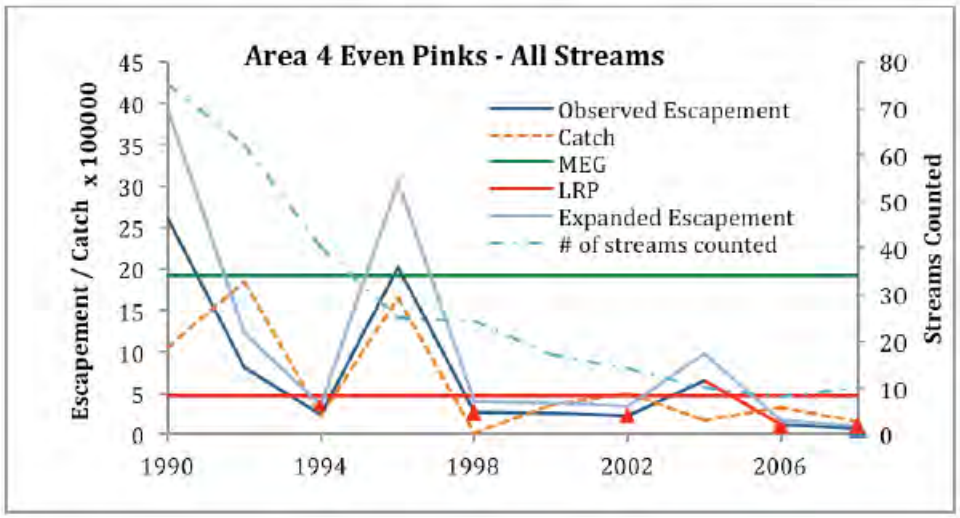
SG 60.3: In the ISC, low abundance and depletion of pink stocks in the Broughton and mainland inlets has curtailed terminal fisheries, however actual recovery plans have not been developed and many stocks are still under pressure from intense high density net pens and mixed stock fisheries.





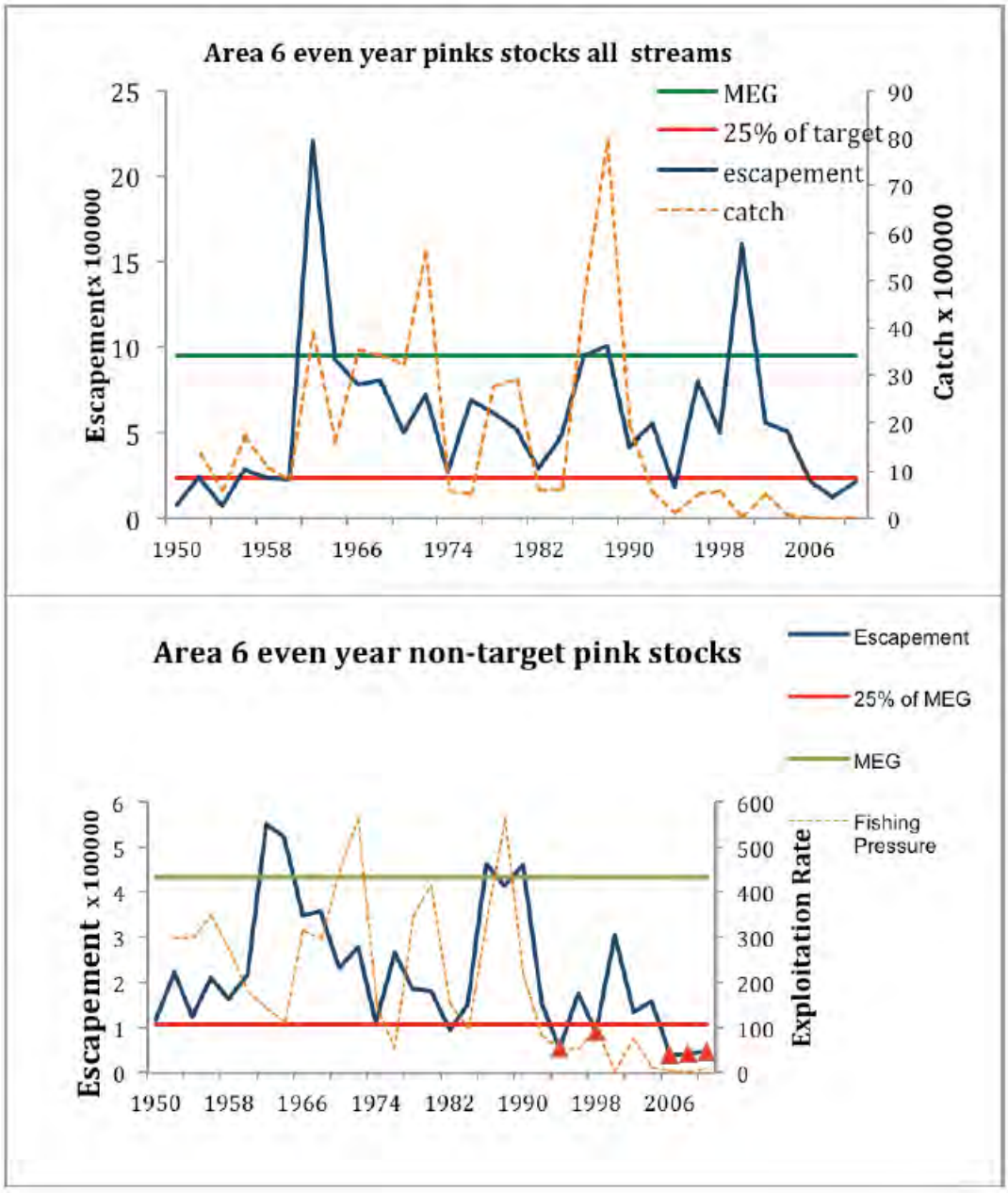
Figures above show odd and even pink stocks in Areas 12 and 13 of the ISC. Both stocks have been below their LRPs in 3 of the last 5 cycles with odd years very depressed back to the mid 1990s. While directed fisheries on these stocks have not occurred since 2001, this does not appear to have assisted in recovery. Boundary modifications to the Johnstone Strait fishery may be inadequate to protect many of the non-indicator runs that return to the Broughton with peak runs timing in September. Additionally, fish farm production in the Broughton has only increased during the time that the 'management plan' has been in place. As such, necessary actions these stocks clearly need for recovery are still pending and measures to this point appear somewhat superficial.





Figures above show trends in status of Skeena even and odd year pinks. Both the raw and the expanded escapement (as per English et al 2006) of even year pink show returns have been below their Limit Reference Point in three of the last five cycles, yet fishery pressure is still occurring. The status of even year returns

warrants more stringent harvest restrictions and a management plan that recognizes a conservation concern for even year pinks. Currently this fishery does not pass the 60.1 and 60.2 SG. If poor escapement estimates due to dramatically reduced monitoring are a factor in the over exploitation of weak even year runs, this fishery would fail the 60.1 SG in 1.1.2.2 as well.



The above figures show even year pink status in Area 6. The status of even year pink stocks in Area 6 supports other lines of evidence suggesting broader conservation concern for even year runs. The slightly more depressed state of the less productive, non-target steams have failed to meet the LRP in 5 of the last 9 cycles and would suggest that fishing pressure is a factor.

MML Conclusion: The assessment team has reviewed the trend information provided by the management agency, the Final Certification Report presents trend figures in Appendix A which clearly define the 25% MEG used as the operational equivalent LRP. The assessment team does not agree with the stakeholders that there is no recovery plan in place. The team's opinion is that there is an inherent recovery plan in place, which is the reduction of fishing pressure when target stocks fall below the 25% MEG and the management agency does not have a directed harvest. The assessment team has defined a condition requiring development of formal recovery plans. Certification conditions have been prescribed for 1.2.1 and 1.2.2. The assessment team did not revise the scoring for this PI.

2.1.1 – The management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-target species are identified.

SG 60.1: Data on bycatch in the majority of the fisheries are available to determine impacts on non-target species.

FAIL

SG 80.2: In known problem areas of high bycatch, there is an ongoing monitoring program.

FAIL

Rationale

There is an extensive description of DFO policy and intentions in the Client's submission, but little of it addresses either the criterion contained in the 60 and 80 guideposts. The 60 guidepost asks for "Data on bycatch in the majority of the fisheries are available to determine impacts on non-target species". It has been demonstrated that there are no independently verifiable data on bycatch and discards, nor has the PCDR provided any research detailing post-release chum mortalities. Therefore, it is difficult to see how the PCDR concludes that the impacts on non-target species have been determined.

The PCDR seems to recognize the problem by passing the 60, but placing a condition on SG 80.1. But it is difficult to determine why the AT has said steelhead, which DFO has said is not a significant conservation concern, warrants special mention in a condition, when chum stocks, which DFO have said are stocks of "special conservation concern", are ignored.

Regarding SG 80.2, there is no ongoing monitoring program in place in open access fisheries other than the unverifiable logbook and phone-in data. Fisheries

literature suggests that accurate bycatch and discard data requires fishery independent information (FAO 2010, Branch et al, 2006). And FAO defines Monitoring as:

> • *Monitoring the collection, measurement and analysis of fishing activity including, but not limited to: catch, species composition, fishing effort, bycatch, discards, area of operations, etc. This information is primary data that fisheries managers use to arrive at management decisions. If this information is unavailable, inaccurate or incomplete, managers will be handicapped in developing and implementing management measures.*
> *FAO, 2000*

The monitoring in place in most B.C. pink fisheries does not meet the above minimum standard.

The AT should provide reasoning for its conclusion SG 80.2 has been met because, "there are extensive monitoring programs and reporting requirements, by log books, for all of the fisheries". This definition of effective monitoring is, according to international standards, insufficient for effective monitoring of a fishery (Sampson, 2002, “Best Practices” for Fisheries Management, 2010).

There is little evidence that DFO employs a monitoring program for pink salmon fisheries that meets FAO's guidelines for Monitoring, Control and Surveillance (MCS) (FAO, 1997; FAO, 2010). The AT does say they reached their conclusion based on the client's submission. We would suggest that the AT verifies that the client's submission is accurate, and that it meets MSC's objectives, and FAO and international standards for best practices for the monitoring of bycatch and discards. Finally, it has been demonstrated already in this submission that the logbook program does not provide a “high confidence” that direct impacts on non-target species have been identified.

MML Response: The Assessment Team has compared the observer data and FOS data and accept there are some concerns about reliability of non-target species data. The assessment team has not revised the scores awarded for this PI. The existing certification condition currently prescribed for this PI will be modified to incorporate “non-target species” catch (in place of just steelhead, as stated in the condition in the PCDR version of the report). This change will be made in Condition 2-1 which applies to NCC and Fraser pink salmon fisheries.

2.1.3 – Research efforts are ongoing to identify new problems and define the magnitude of existing problems, and fisheries managers have a process to incorporate this understanding into their management decisions.

SG 80.2: When new problems are identified, the management plans require a new monitoring program be instituted to determine the effectiveness of bycatch reduction measures.

FAIL

Rationale

In 2002 DFO published " Bijsterveld, L., S. Di Novo, A. Fedorenko, and L. Hop Wo. 2002. Comparison of catch reporting systems for commercial salmon fisheries in British Columbia. Can. Manuscr. Rep. Fish. Aquat. Sci. 2626: 44p", which describes serious problems with catch reporting and monitoring in BC salmon fisheries and provided a series of recommendations. DFO has not made any significant progress in addressing the problems identified or implementing the recommendations. It is therefore difficult to understand how the AT agreed this criterion has been successfully addressed. As stated previously DFO has produced a Draft Strategic Framework for Fishery Monitoring and Catch Reporting in the Pacific Fisheries (http://www.gulftrollers.com/news/IHPC/IPHC%20presentation%20Nov%2025%202010.pdf), but it is limited to being a plan to discuss the issue with stakeholders. It does not meet the test of the 80 Guidepost.

The AT has determined that a condition is required for steelhead in the area 4 pink fishery because, "there is no evidence of a successful monitoring program and associated bycatch control program." This submission has provided evidence that similar issues exist for stocks that DFO has described as being of "special conservation concern". It is therefore unclear why the AT has singled out steelhead when the same issues apply to other non-target species discarded in commercial pink net fisheries. Clear evidence that bycatch reporting is inaccurate, due primarily to a lack of observer coverage (Bijsterveld et al. 2002), is not adequately reflected in the condition prescribed for this performance indicator.

MML Response: DFO has not addressed all of the recommendations in the Bijsterveld et al 2002 report, however it is important to clarify that one key recommendation which DFO has implemented is that they no longer use the sale slip catch estimates as their final estimate for South Coast fisheries. DFO have moved their catch estimate systems to the FOS system. The assessment team has not revised the score awarded for this PI. Condition associated with this indicator is that same as the condition for indicator 2.1.1 above, therefore, the addition of non-target species to Condition 2-1 should address the ENGOs concerns related to this indicator.

2.1.5 – The management system supports research efforts to understand human caused impacts on the environment caused by non-fishing activities (e.g., aquaculture, climate change, water removal, water quality, timber harvests, agriculture, etc.); the effect of these impacts on salmon production

and incorporates this information into harvest management plans and escapement goals.

SG 80.1: Management has some research to evaluate effects of major environmental impacts on natural salmon productivity and capacity, though quantitative estimates not always available.

ISC PARTIAL PASS

SG 80.2: Management has track record for attempting to minimize or mitigate impacts of human caused environmental impacts.

ISC PARTIAL PASS

SG 80.3: Results and conclusions from research are made available to stakeholders and there are on-going efforts to incorporate this information when developing harvest plans and escapement goals, if necessary.

ISC PARTIAL PASS

Rationale

The above 80 SGs are only partially met, particularly for the inner south coast unit of certification, due to DFO's inadequate research and management of pathogen transfer from salmon farms to juvenile pink salmon.

Pathogens are threats to wildlife (Macdonald and Laurenson et al. 2006; Thirgood 2009) and the spread of infectious pathogens frequently occurs when increased contact between infected domestic animals and wildlife is allowed (Dobson and Foufopoulos et al 2001; Otterstatter et al 2008). As a result, epizootics can deplete wild populations, as shown by the transmission of rabies from domestic dogs to wild carnivores (Power et al 2004; Daszak et al 2000), Pasteurella from domestic to wild sheep (Jessup et al. 1991), and Crithidia bombi from commercial to wild bumble bees Otterstatter et al (2008). Salmon farming is no different and has resulted in sea lice epizootics which have negative effects on wild pink salmon populations (Krkosek et al. 2007). As aquaculture continues and expands, diseases will continue to emerge and affect wild fish adversely (Murray and Peeler 2005). Recently a new virus was identified in farmed Atlantic salmon in Norway and threatens wild fish (Palacios et al 2010).

Although work has been conducted in BC regarding sea lice epizootics in wild fish as a result of salmon farming, scant other research is available on the multitude of other parasitic and infectious diseases that occur on salmon farms in BC and how they affect pink salmon. It is also unknown and unclear based on the DFO Management Summary (MS) and the Certification Unit Profiles (CUP) whether research or monitoring has been conducted on pinks that pass by the

approximately 120 farm sites in BC to assess the risk of disease transfer from farms to pink salmon.

The creation of an additional condition (see conclusions) is recommended.

MML Response: The assessment team agrees that there is not clear evidence of monitoring programs on salmon farms for transferable parasites or diseases to wild pink salmon populations. DFO should provide evidence of monitoring if available. In the instance that clear evidence is not available, the assessment team agrees that score for the second 80 scoring guidepost for the ISC UoC should be changed to a partial score with an overall PI score of 77 for the ISC. Clearly DFO has a track record and are attempting to minimize or mitigate impacts of human caused environmental impacts as demonstrated by permitting projects which are undertaken routinely. The AT is not convinced that there is a clear track record for minimizing or mitigating environmental impacts related to salmon aquaculture, particularly, monitoring programs on salmon farms for transferable parasites or diseases. A new condition has been prescribed for this indicator.

Condition 2-2a: See Condition 2-1 which will be applied to address performance improvement requirements for this indicator for the North Central Coast UoC. Results to be provided by the second surveillance audit.

2.3.1 – Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points)

SG 60.1: The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks.

FAIL

SG 60.2: The management system ensures that the fishery is executed such that the recovery of depleted non-target stocks is likely to occur in a reasonable time period.

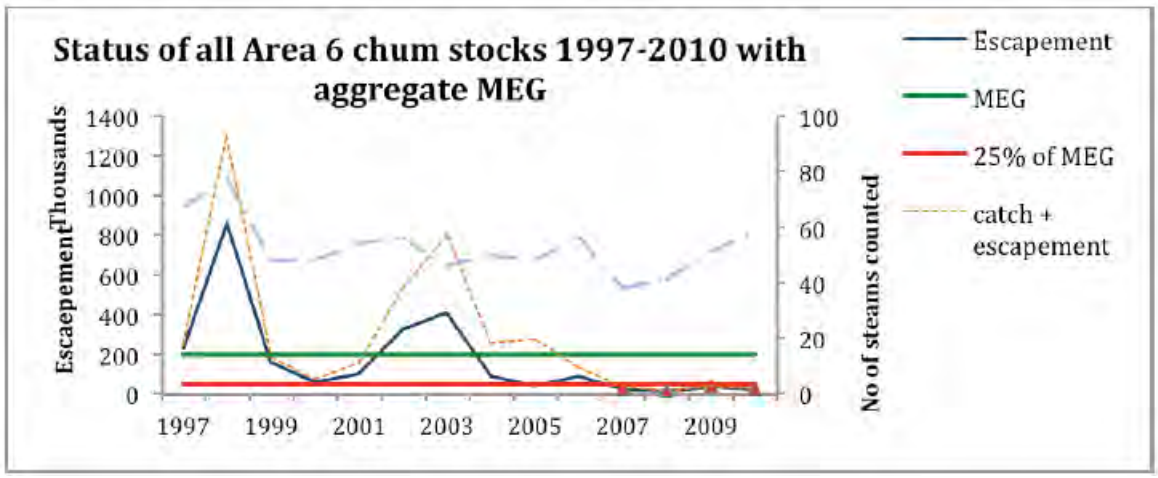
FAIL

Rationale

Meeting management escapement goals is directly related to exploitation levels. In 2006, English at el. found that 48% of salmon runs in Areas 3-10 were either highly exploited or of conservation concern. A quick assessment suggests that in 2011 the situation has not improved and has likely gotten worse. Skeena pink CUs, Non Babine sockeye CUs, Area 6 sockeye CU's Area 3 Nass chum CUs, Skeena chum CUs, Douglas Channel chum CU's and likely more, all suggest

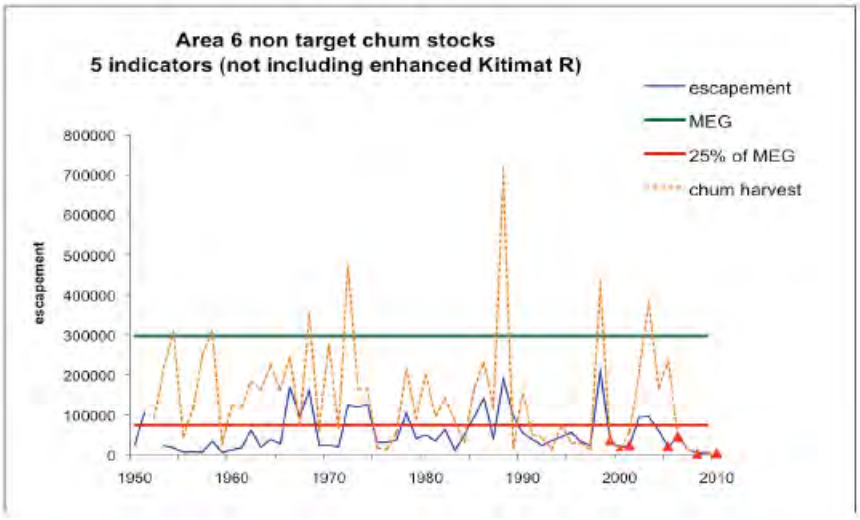
there are serious conservation concerns for salmon stocks on the North coast impacted by the Area 3, Area 4 and Area 6 pink fisheries.

• 60.3: As stated earlier, the management agency has historically placed its emphasis on fostering production over the conservation of less productive, smaller, and more diverse stocks. Further, despite its stated goals of striving to achieve MEGs, analysis by Darimont et al (2010) shows that over the course of six decades the Department has repeatedly not met its own targets, often pushing stocks below the TRP. As such, managers appear to have come to treat the MEG (a.k.a. TRP) as a ceiling rather than a target and non-target stocks of pink, chum, sockeye and steelhead have all slipped toward their LRP's and beyond. The figure below illustrates the depressed state of these non target stocks

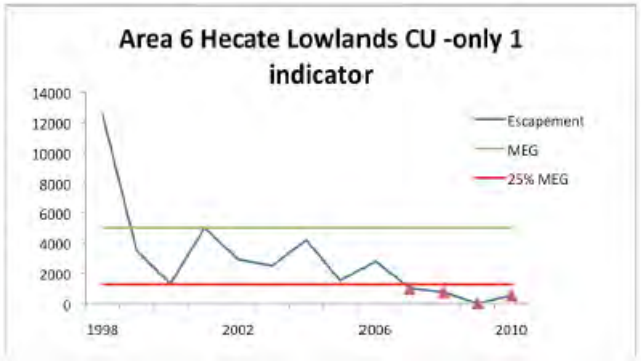


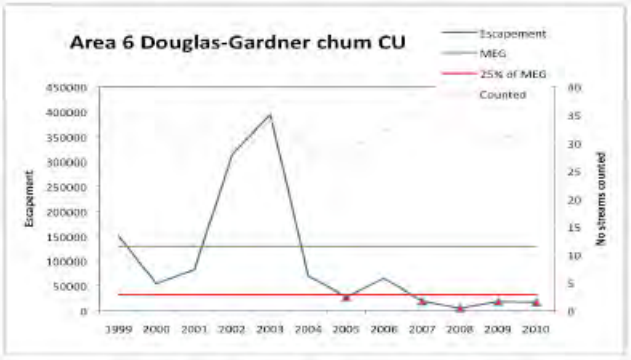
This figure shows the combined status of indicator, index, target and non-target streams over the last 10+ years and suggests that chum status in Area 6 is a serious conservation concern. High exploitation rates on non-target chum stocks did not decline until stocks were falling below their LRPs, demonstrating the fallacy of the MEG system to self regulate and 'assure stocks maintain potential productivity' (Public Draft Report). In 4 out of the last 5 years escapements have been below the LRP (25% of MEG). The MEG shown here is the Area 6 aggregate, which is lower than the sum of individual stream goals.

Note: While declining stock status is not a function of stream enumeration, poor escapement monitoring on the Kitimat River has contributed to and confounded low returns.

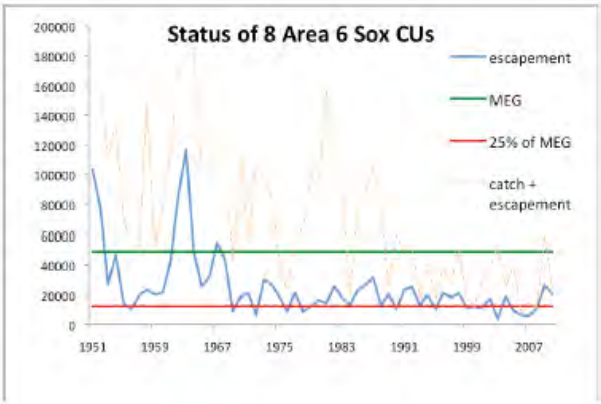


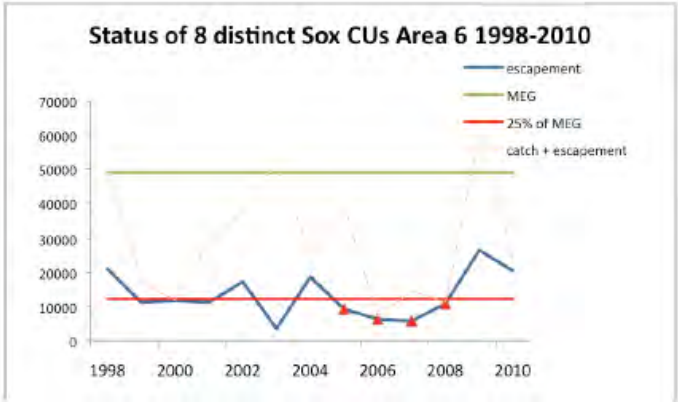
The above figure shows status of non-target chum stocks in Area 6 based on indicator streams. Serious conservation concerns are apparent with high exploitation rates on non-target stocks in the Gil Island/Area 6 pink fishery. The MEG is the sum of stream escapement goals for 5 indicator streams. The accepted management practice of maintaining high fishing pressure despite repeated failure to achieve the TRP has resulted in falling below the LRP in 7 of the last 9 years. Fishing pressure is not significantly reduced until stocks have fallen below the LRP.



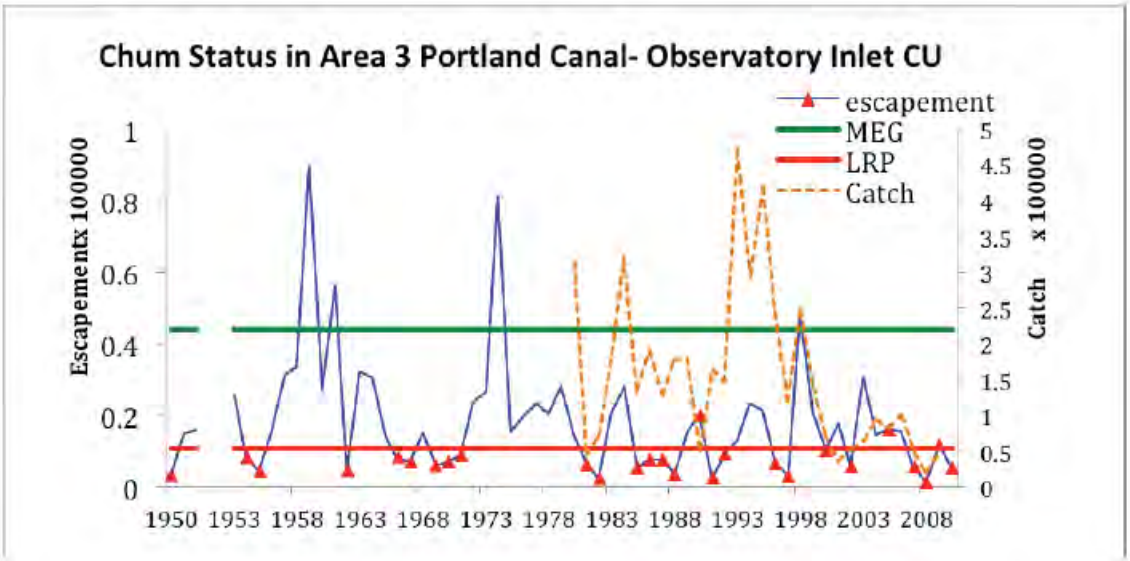


The two figures above show conservation unit status of Area 6 non-target chum stocks harvested in the Area 6 pink fishery. MEG is the sum of the individual stream targets: Douglas-Gardner Chum CU contains 5 indicator streams. The Hecate Lowland CU contains only 1. Both substantiate previous analysis that suggests chum stocks caught in the Area 6 pink fishery are a serious conservation concern as returns are below the LRP in more than 2 of the previous 5 years with a 10 year downward trend.

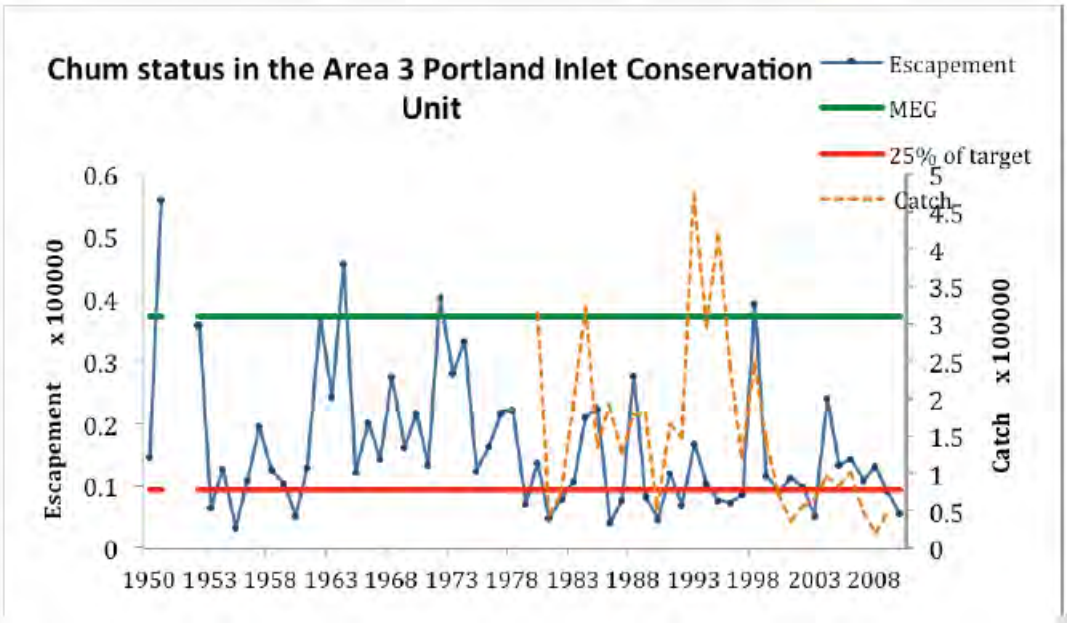




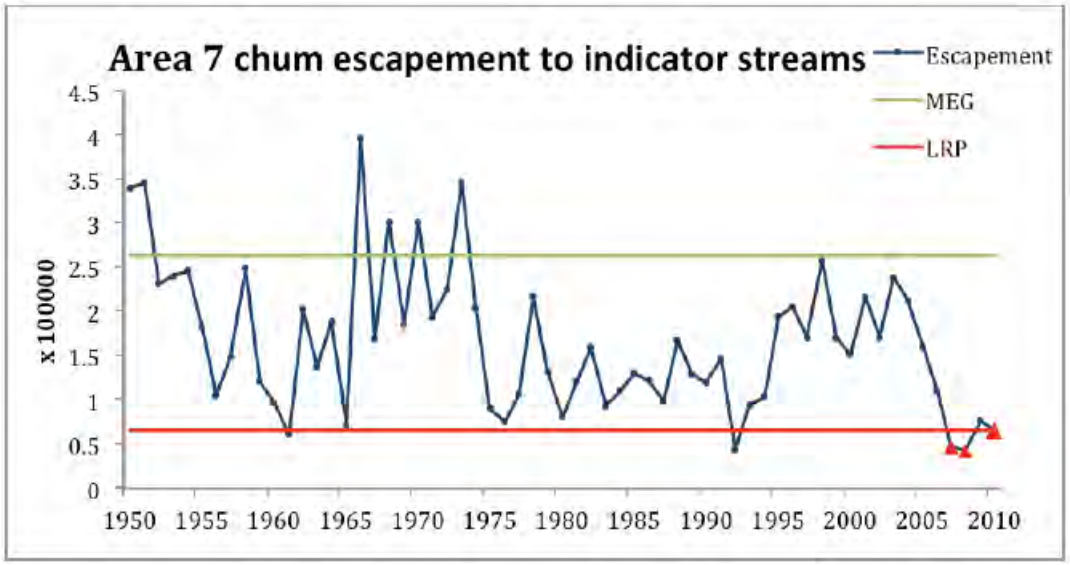
The above figures the long-term and recent status of 8 distinct sockeye Conservation Units in Area 6. The MEG is the sum of the 8 individual stream targets. Serious conservation concerns are apparent yet high exploitation rates continue under pressure of the Gil Island/Area 6 pink fishery. These trends underscore the accepted management practice of continued fishing pressure despite the depressed state and declines in non target stocks. Sockeye stocks/CUs in Area 6 have now failed to meet the LRP in 4 of the last 6 years. No rebuilding plan is in place nor is there any recognition of the stock status in DFO documents, non-retention of sockeye or further, closure of this fishery because of its impacts on so-called non-target stocks.



The above figure shows the extremely depressed state of non-target chums stocks in the Portland Canal-Observatory Inlet Conservation Unit. Despite management objectives to keep stocks above the LRP and meet the TRP, chum stocks have been consistently overexploited in the Area 3 pink fishery for over 20 years with no rebuilding or recovery plan.



As with the Portland Canal –Observatory Inlet CU, the above figure shows the extremely depressed state of non-target chums stocks in the Portland Inlet Conservation Unit. Despite the purported existence of a management goal to stay above the LRP and meet the TRP, chum stocks have been consistently over-exploited in the Area 3 pink fishery for over 20 years with no rebuilding or recovery plan. In addition to critical stock status, there has been a declining trend in stream monitoring with Area 3 CUs having minimal coverage.



Despite the curtailment of directed fisheries on central coast chum, they are still caught in the Area 3 mixed stock fishery (Nass chum CSAS 2010). There are significant conservation concerns for chum stocks returning to the central coast

(DFO Stocks of concern, 2010) as evidenced by the status of indicator streams which have recently been below their LRP (see above figure).

This paper has provided ample evidence that mixed stock pink fisheries are not "executed such that the recovery of depleted non-target stocks is likely to occur in a reasonable time period". The fishing induced mortality rates on these stocks remain too high. The AT specifically acknowledges this in their scoring rational for the 80 guidepost.

The PCDR provides no evidence that DFO plans to reduce intensive mixed stock pink fisheries in areas of high abundance of non-target species. The AT should note that QCI pink fisheries have not been mentioned in this paper. The reason is because they are managed as retention terminal fisheries that encounter relatively little bycatch.

There are four ways for DFO to effectively reduce the impact on non-target species while maintaining relatively high catches of the target species in mixed stock fisheries:

1. Move to selective fishing incorporating scientifically verifiable estimates of non-target encounter and mortality rates which would allow the agency to effectively monitor fishery impacts and take management action where necessary.
2. Reduce exploitation rates on the target species to what would allow non-target species to recover within a reasonable time
3. Move to terminal fisheries
4. Employ incentives or disincentives that would encourage fishermen to reduce bycatch such as establishing bycatch limits with transferable shares for non-target species, moving to full retention fisheries with bycatch targets or video or video monitoring as employed in the BC halibut fishery.

The first option is very costly for industry. The second foregoes catch and therefore revenues; the third avoids some of the cost while maintaining revenues. The third encourages the participation of fishermen in addressing the issue by employing innovative incentives and disincentives.

The AT should, in its condition, prescribe that DFO look at reducing mixed stock fisheries in areas where the encounters of non-target stocks of "special conservation concern" are relatively high by employing alternative harvesting strategies.

MML Response: With the possible exception of a few non-Babine sockeye CUs within the Skeena watershed, fisheries have been severely restricted to enable the recovery of depleted non-target stocks harvested in North Coast pink salmon fisheries.

The ENGO submission contains a plot entitled: "Status of all Area 6 chum stocks 1997-2010 with aggregate MEG". The estimates in this plot appear to be the observed escapement not the total reconstructed escapement corrected for missing values presented in the provided DFO plots in Appendix A of the report. The ENGO submission also includes a plot for Area 6 non-target chum stocks. It is not clear which stocks they define as non-target. They also contend that exploitation rates are high but DFO plots indicate that chum exploitation rates were consistently less than 30% from 2006-08.

The ENGO report presents a figure for Area 7 but does not make any reference to this figure.

At the end of this section, ENGO stakeholders indicate:

> ***"The AT should, in its condition, prescribe that DFO look at reducing mixed stock fisheries in areas where the encounters of non-target stocks of "special conservation concern" are relatively high by employing alternative harvesting strategies."***

The ENGOs have suggested reduction of mixed stock fisheries. DFO have done that in several areas and the assessment team has defined certification conditions which require the development of recovery plans of non-target stocks which are consistently below their LRPs. The assessment team expectation is that those recovery plans would include consideration of mechanisms to reduce harvest rates in the mixed stock fisheries. The assessment team has not revised the scores awarded for this PI or made changes to the existing condition.

3.1.1 – The management system has a clear and defensible set of objectives for the harvest and escapement for target species and accounts for the non-target species captured in association with, or as a consequence of, fishing for target species.

CONDITION INADEQUATE

Rationale

The Client's submission details four possible Reference Points to manage fisheries that impact non-target stocks, the first two of which are exploitation rate ceilings and fixed harvest rates. Pink fisheries are not managed to ensure escapement targets for other salmon species are met. Second, there is no clear evidence from Post-Season Reports that exploitation rates for the target species have been significantly curtailed in north coast mixed stock fisheries to rebuild depressed chum stocks. Evidence should be provided, or a condition is warranted.

The scoring rationale states that the fourth criterion for the 80 guidepost is not reached because “estimates of bycatch of Skeena steelhead” are lacking. This paper has provided evidence that reliable estimates of other non-target species are also lacking. What has made steelhead discard estimates particularly problematic is that fishers, as a response to the political and allocation issues surrounding steelhead catch, have all but quit reporting steelhead bycatch in their logbooks (J.O.Thomas, 2010). Observer reports (see page 13) indicate that the same response by fishers is evolving for chums. This phenomenon is not unique to the BC salmon fishery as it is an expected response by fishermen to a regulation that is not being enforced and may limit their ability to fish (Mathieson, 2003) (Mathieson, 2003).

It is therefore to be expected – based on fishermen behavior and experience with steelhead (and in other BC fisheries such as groundfish and halibut) – that the underreporting of discards in commercial net fisheries will increase. Therefore, the conditions should be expanded to include all non-target species. This is confirmed by the Velez-Espino (2010) when they conclude, “underreporting of encounters and releases of non-target and sublegal fish is consistent with fisher awareness of the implications non-target-and sublegal mortality on their total allowable catches and possibly on the public opinion”

MML Response: The assessment team concurs and Conditions 3-2 and 3-3 will be modified to require reliable estimates of non-target species (not simply just steelhead) in the NCC pink fisheries.

3.1.3 – The management system includes a mechanism to identify and manage the impact of fishing on the ecosystem.

SG 80.1: The management system includes mechanisms to identify and evaluate the impact of fishing on the ecosystem.

FAIL

SG 80.2: Control mechanisms are used to minimize impacts of fishing on the ecosystem.

FAIL

Rationale

The Client, in its scoring summary states that, "In general, the methods used by commercial fishers to harvest pink salmon in commercial fisheries generally have minimal impact on the ecosystem" and that, "The evidence of the application of control mechanism to minimize the impact of fishing on the ecosystem are adequate (e.g. short nets, short sets, recovery boxes, coloured floats)" in support

of its contention that the second criterion of the 80 guideposts is surpassed. This paper has supplied evidence that the fishery has significant impacts on non-target stocks, and that the control mechanisms in use in open access mixed stock fisheries are both inadequate and unenforced. Furthermore, the absence of scientifically defensible estimates of the proportion of non-target species survive to spawn means that the impacts are not fully defined.

Pink salmon provide important nutrient inputs to coastal terrestrial and aquatic ecosystems (e.g., Wilkinson et al. 2005). The AT failed to identify this important ecosystem contribution of pink salmon and the lack of both research and management (e.g., management objectives or decision rules related to pink salmon nutrient input) to ensure pink salmon continue to fulfill their integral role in these ecosystems.

Moreover, interception and retention of sockeye salmon in Area 6 in the so-called pink salmon fishery is often significant relative to the escapement of sockeye salmon to Area 6 systems where sockeye salmon provide proven freshwater ecosystem benefits (e.g. Kitlope Lake; Hill et al. 2009, Can. J. Fish. Aquat. Sci. 66: 1141-52). However, no efforts have been made by DFO to estimate the stock composition of the Area 6 sockeye bycatch to evaluate the impact of fishing on the ecosystem, despite the ability to readily do so using molecular tools (pers. comm. Dave Peacock, Area Chief, DFO North Coast stock assessment), and recommendations to do so by regional experts outside of the management agency (Hill et al. 2009; Hill et al. 2010, Ecology and Society 15(2): 20. [online] URL: http://www.ecologyandsociety.org/vol15/iss2/art20/)

Both of the 80 SGs have not been met and a condition should be added, or condition 36 strengthened to more explicitly identify the above considerations.

MML Response: The assessment team`s conclusion is that the management system does identify mechanisms to evaluate to impacts on the ecosystem. Observer program, review of fishing pattern distribution, fishery control mechanisms are but a few methods used to evaluate fishery impacts on the ecosystem. One mechanism is to evaluate escapement up stream.

Pink salmon harvest rates have been curtailed when return rates are low, and when returns are high, the harvest rates do not prevent significant escapement which has large nutrient loading implications for the watersheds. The assessment team has not revised its scores.

3.1.5 – Management response to new information on the fishery and the fish populations is timely and adaptive.

CONDITION INADEQAUTE

Rationale

There have been no significant responses to:

1. Steelhead Bycatch and Mortalities in the Commercial Skeena Net Fisheries of British Columbia from Observer Data: 1989 to 2009, J.OThomas, 2010
2. Area 3 Observer Reports (Page 13)
3. Comparison of Catch Reporting Systems for Commercial Salmon Fisheries in British Columbia, L. Bijsterveld, S. Di Novo, A. Fedorenko, and L. Hop Wo, Fisheries and Oceans, 2002, Canadian Manuscript Report of Fisheries and Aquatic Sciences 2626

Condition 3.4 should be expanded to include a reference to providing accurate catch reporting and monitoring.

MML Response: Two of the three reports that the ENGOs have cited are very recent (2010). The DFO response to the third report (Bijsterveld et al. 2002) was to stop using sale slip catch data to estimate the harvest for most commercial fisheries. The ENGO concerns regarding Condition 3-4 have been addressed within the context of other performance indicators, specifically PI 1.1.2.1 and PI 1.1.2.2.

Revised Condition 3-4: By the second surveillance audit, DFO must document how it has responded to management and conservation concerns such as estimation of bycatch and development of recovery plans for Area 3 to 6 chum stocks. DFO should provide evidence that they have established an effective process for responding to new information and making necessary changes within 12 months of the information becoming available.

3.1.9 – The hatcheries are subjected to regulations that ensure harvest management practices and protocols that sustain the genetic structure and productivity of the natural spawning population are followed and there is coordination between hatchery programs from different agencies/operators.

SG 80.2: The hatcheries mark a sufficient proportion of production with coded-wire-tags (CWTs) or use other suitable methods such that reliable and meaningful estimates of hatchery composition of the catch and escapement can be estimated.

FAIL

Rationale

Hatcheries are not required to and do not mark pink salmon that are released. Only the number of fry released is known. The abundance of wild Fraser pink salmon fry is estimated annually based on field sampling program at Mission, BC. However, because marine survival of hatchery versus wild pink salmon from the Fraser River has not been assessed, the proportion of hatchery fish cannot be

estimated from fry abundance. Although enhancement currently contributes a small percentage of total Fraser pink production (<5%; CUP), there is no defensible method of estimating the contribution of hatchery fish to the catch and escapement. Because the majority of production is from wild populations, it could be argued that SG60.2 is met or partially met. SG80.2 is clearly not met.

MML Response: The assessment team has concluded in the PCD report that pink salmon hatchery production is an insignificant component of BC salmon fisheries and this indicator was not scored. The assessment team has considered the comments provided by the stakeholders and sees no additional evidence to suggest that pink salmon hatchery production is significant, therefore, this performance indicator will remain un-scored for the three units of certification.

3.2.1 - The research plan covers the scope of the fishery, includes all target species, accounts for the non-target species captured in association with, or as a consequence of fishing for target species, and considers the impact of fishing on the ecosystem and socioeconomic factors affected by the management program.

SG 80.1: The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species.

FAIL

SG 80.6: There is progress in understanding the impact of the fishery on target and non-target species.

FAIL

CONDITION INADEQUATE

Rationale

There is no ongoing or planned research into whether discarded non-target species survive to reproduce. Current research from Bristol Bay Alaska suggests the proportion of discards from competitive, mixed stock fisheries that fail to spawn may be relatively high (Baker and Schindler, 2009). Defensible estimates of the proportion of discards from North Coast pink fisheries that fail to spawn are a necessary component to understanding the impacts of pink harvests on the ecosystem.

Reference to the failure of the above guideposts to pass should be included in Condition 3.6.

MML Response: DFO has not provided any evidence of an ongoing or planned research regarding the survival of discarded non-target species or whether fishers could reduce impacts on non-target species by identifying and taking active measures to avoiding areas with higher catch rates for non-target species. These concerns are related to all three of the 80 scoring guideposts that were not met. The existing condition will be modified to include a requirement for the research plan to include an evaluation of alternative management approaches to reduce bycatch or determine the survival rate of discarded non-target species for non-retention fisheries.

3.4.2.1 – The management system includes compliance provisions.

SG 80.1: The management system includes compliance provisions that are effective for the fisheries.

FAIL

SG 80.2: Infractions, which result in adverse impacts on the status of the stocks or on the ecosystem, are rare.

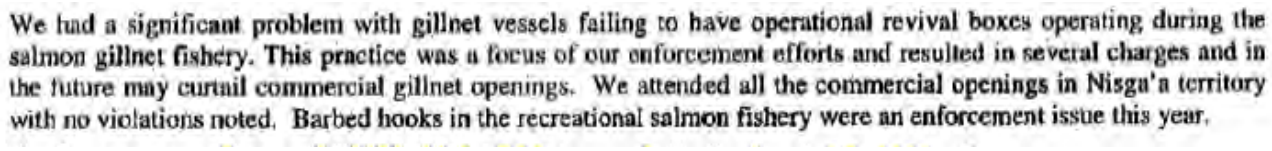
FAIL

Rationale

Evidence has been provided that there is not sufficient compliance in catch reporting and monitoring.

DFO Management and Conservation and Enforcement personal have reported a lack of compliance with selective fishing regulations contained in fishermen's' Conditions of License (North Coast Post-Season Reports 2005 – 2009, C&P Reports http://www.cec.org/Storage/91/8878_09-5-ARSP-Annex_9_North_Coast_CP_2008.pdf, Notices to Industry, IHPC meetings). This is confirmed by the recent J.O.Thomas report (J.O.Thomas, 2010) and by the results of dockside validations from the years they were in effect for north coast seines (J.O.Thomas). Further descriptions of the lack of compliance are contained in a "Submission to the Commission for Environmental Cooperation", 2009, (http://www.cec.org/Storage/29/7744_09-5-SUB_en.pdf).

In the 2008 Mid-year C&P Review it states that:


We had a significant problem with gillnet vessels failing to have operational revival boxes operating during the salmon gillnet fishery. This practice was a focus of our enforcement efforts and resulted in several charges and in the future may curtail commercial gillnet openings. We attended all the commercial openings in Nisga'a territory with no violations noted. Barbed hooks in the recreational salmon fishery were an enforcement issue this year.

http://www.cec.org/Storage/91/8878_09-5-ARSP-Annex_9_North_Coast_CP_2008.pdf

C&P said in their 2009 mid-year review that compliance with revival box regulations improved. But this would be expected in that there was no Skeena River sockeye fishery in 2009 to monitor

The 2010 C&P Mid-Year Review states that:

> *"The current detachment strength is a 20-percent reduction from the previous 10 officer organization. The management of most of the Department's fisheries has become increasingly more complex in recent years. This has resulted in an inability to address many issues/fisheries, i.e. proper auditing and enforcement actions regarding logbook/fish slip compliance in salmon gillnet fisheries."*
> (2010 Post-Season Review)

The following are a series of internal DFO comments on north coast compliance in 2006 accessed through the Freedom of Information Act:

On July 18, 2006, Steve Cox-Rogers, Head of DFO North Coast Stock Assessment wrote to the Area Director for the North Coast Area of DFO expressing his concerns over the lack of compliance with selective harvest methods by the gill net fleet.

"I now expect to see the old SWC guidelines exceeded…The Area 3/4 fishery this year has been quite aggressive and given the complete relaxation of selective fishing requirements this year (no short nets, no short sets, low effective compliance for attempting to revive fish, few weedlines etc) I doubt there will be anything technical I can provide that will show we (DFO) implemented any of the selective fishery objectives for steelhead as outlined section 3.1.6 of the 2006 IFMP."

On August 8, 2006, Cox-Rogers wrote the following in a memo to DFO North Coast Area Chief, Dave Einarson:

" When we do the post season estimates, however, several issues will affect the estimated harvest rates. The first is the apparent lack of compliance this year with regard to steelhead/coho catch and release requirements for the GN fleet. On a tour I did last Thursday to collect DNA/scales, none of the boats we sampled had functioning blue boxes on board…in fact, all of the fishermen I spoke to expressed little desire to participate in reviving steelhead or coho and were just throwing them back dead or alive as soon as they hit the boat. Ian Bergsma (our sample coordinator) tells me this has been the case all year in both Area 3 and 4. The proportion of boats using weedlines also seems very low to non-existent this year which probably reflects that scramble to attain and use smaller mesh nets in 2006. "

In a memo to DFO biologist, Dave Peacock, dated August 21, 2006 Cox-Rogers wrote:

"Dave. Some management philosophy, as optics now are important. The GN fleet has fished three days straight with little selectivity, and Dan is considering letting them go go [sic] for another five days…my view is fishing to ceiling guidelines is one thing, but it is how is done that will come back to haunt us."

On the same day, Cox-Rogers voices his concern to colleague, Dan Wagner, over the lack of compliance with selective guidelines and how that might affect the chances for the Skeena fishery to meet the criteria for certification by the Marine Stewardship Council.

Hi Dan, Some wording from the IFMP 3.11.5 that needs some thought for the post-season:

Skeena steelhead

The objective for Skeena steelhead, as well as all north coast steelhead, is to release to the water with the least possible harm all steelhead caught incidentally in fisheries targeting other species,

-the intention of this statement is to minimize the capture experience suggesting we (DFO) are committed to using fishing techniques which do this. Simply fishing to a ceiling exploitation rate is independent of actually trying to achieve this objective

The application of selective fishing approaches in recent years has reduced steelhead impacts to
below the harvest ceilings

-with zero percent impact, the fleet could fish 7 days a week. Seines are getting there, as is the inland fishery. By fishing to the ceiling this year without trying to be as selective as possible, it will be harder for the GN fleet to convince "outside" pressures that they meet the Marine Stewardship Council objectives for this fishery as we have stated they are doing…

Later in the same memo Cox-Rogers registers his disappointment at DFO's backtracking:

"…The real issue for me is that we said we would fish selectively to minimize harvest impacts on non-target species and we caved under pressure."

The client takes some effort in explaining the role of observers in ensuring compliance, including describing how observer deployment focuses on areas with high priority catch reduction regulations. The fact is, there has been almost no

observer coverage in northern seine fisheries for pink salmon in the last ten years other than a brief experiment in 2010.

The Client describes that "if there is potential to have an impact on stocks of concern, the number of observers can increase to 6 to 10 per fishery (with 30 to 100 vessels operating in the fishery)". This is insufficient according to the literature which suggests a minimum of 20% to 50% observer coverage is necessary to provide an accurate estimate of bycatch (Babcock and Pikitch, 2004). However, this is to estimate bycatch, not to measure and monitor compliance. DFO felt it necessary to implement 100% coverage to ensure compliance in the BC halibut and groundfish fisheries.

FAO describes monitoring, control and surveillance as being a key component of the fisheries management process. Key tools are:

• an appropriate participatory management plan developed with stakeholder input;
• enforceable legislation and control mechanisms (licenses etc.);
• data collection systems -dockside monitoring, observers, sea and port inspections, etc.;
• supporting communications systems;
• patrol vessels capable of extended operating to remain at sea with the fishing fleets;
• aircraft available for rapid deployment to efficiently search large areas;
• use, where appropriate, of new technology (VMS, satellite, video, infra-red tracking, etc.);
• linked, land-based monitoring;
• support of the industry and fishers;
• bilateral, subregional and regional cooperation with other MCS components; and,
• professional staff.
(FAO, 2000: http://www.fao.org/fishery/topic/3021/en)

The current north coast commercial pink fisheries are lacking the above bullets one, three, and eight. It is therefore does not meet international best practices.

The management system states that its goal is to minimize impacts on non-target stocks. But as shown above, it does not have the monitoring and compliance capacity to do so. It therefore cannot meet SG 80.1. Monitoring, as described above, is very limited in scope. SG 80.2 is therefore also not met. A condition is therefore clearly warranted.

Also, as shown in the table and rationale on page 13 of this report, reporting of non-target stock and non-target species is inaccurate, particularly in south coast pink salmon fisheries. Observer coverage must reach at least 20% to bring the quality of reporting data to a level that provides reasonable estimates of catch.

MML Response: The assessment team suggests that first 80 scoring guidepost for the NCCC is only partially met and score should reduce to 75. Rules are appropriate but evidence from the C&P reports indicates inadequate resources to enforce selective fishing rules. There is clear evidence in the C&P reports of similar violations year on year, suggesting that sanctions are not effective enough.

New Condition 3-6a – For the NCC pink salmon UoC. - For the NCCC, to meet the requirements of the first 80 scoring guidepost DFO must document and implement changes to the existing compliance provisions in order to increase the level effectiveness of the current program to reduce non compliance with fishery regulations and Conditions of License. A report must be provided to the certification body by the second surveillance audit detailing changes and effectiveness.

3.4.2.2 – The management system includes monitoring provisions.

SG 60.1: The management system includes provisions for a monitoring program to evaluate the performance of the majority of the fisheries against its policies and objectives.

FAIL

SG 80.1: The management system incorporates an effective monitoring program, which evaluates the performance of the fishery relative to management goals and policies.

FAIL

SG 80.2: Monitoring is broad in scope, and results are available to the majority of the stakeholders.

FAIL

Rationale

The scoring rational for 3.4.2.2 states that the DFO submission provides sufficient evidence of monitoring systems to pass the 60 and 80 guidepost criteria. But the key failing of this conclusion is that the AT should be assessing the performance of the management system relative to the assigned criteria, not against the Client's descriptions of policy and management guidelines. It is the fishery that is being accessed, not the "back story". This requires examining whether the performance of the management system actually delivers what the Client describes. If there is evidence that the outcomes promised in the Client's submission are not being delivered upon, the AT should address this with a condition.

Evidence has been provided that monitoring is not broad in scope. In 2009 there were 3,572 boat days in Areas 3, 4, 5, and 6. DFO C&P checked 381 or around

10% of the net fishing effort. But the C&P effort was disproportionally spent monitoring the GN fleet. The seine fleet therefore had less than 10% of its effort monitored in 2009. (pers. Comm. Dave Einarson, DFO). It should be noted that vessel checks by C&P are quite different from monitoring the fishery. C&P vessel checks are like a road side check for vehicles. C&P officers do not stay with the boat and monitor its fishing operations. They check the operator's license, whether the vessel meets specific regulations, issues a citation if required, then leaves to check another vessel.

The following table describes the proportion of the total commercial fishing effort that was monitored by independent observers in the years 1998 to 2003 in southern fishing areas. In each of these years there were significant discrepancies between observer reports and logbook reports for various species. There is no information that would suggest that there were any observer programs from 2004 through to 2010. Again, this evidence would suggest that monitoring is not “broad in scope”.

Percentage of Southern Commercial Salmon Fishing Effort Monitored: 19992003

http://www.pac.dfo-mpo.gc.ca/fm-gp/species-especes/salmon-saumon/fisheriespeches/stats-donnees-eng.htm

Year	Monitoring Coverage
1998	7.0%
1999	5.0%
2000	6.0%
2001	6.0%
2002	2.6%
2003	2.7%

It is noteworthy that DFO’s 2009 Post-Season Report states that 350 chum in area 6 and 0 chum in area 3 were caught by seines. The actual number of chum caught and released was over 71,000 in Area 3 and 61,000 in Area 6.

Therefore, the second criteria under the 80 guidepost should not have passed as monitoring is not broad in scope and results are unavailable to the majority of stakeholders.

For information purposes monitoring does not necessarily have to be by on-board observers. Video monitoring for seines is being developed that could be implemented in
much the same way as it has been for the BC halibut fishery. See this website from
Archipelago Marine:

http://www.archipelago.ca/highlight.aspx?ID=3bb5f344-f9cd-481a-b2e2-c3ff23b31862

MML Conclusion: The assessment team considers that the issue evaluated by this PI is how current monitoring programs inform the agency about performance of the fisheries relative to management objectives and policy. The assessment team's opinion is that the existing monitoring program provides the necessary basis of information for performance evaluation of the fishery in regards to the policies and objectives of management and has not revised its score at this time.

3.7.1 – Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch.

SG 80.2: Taking into consideration natural variability in population abundance, there is evidence that the capture and discard of non-target species or undersized individuals of target species is trending downward, or is at a level of exploitation that has been determined by management to be acceptable.

FAIL

SG 80.3: Fishers generally conduct their fishing activity in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.

FAIL

Rationale

The client provides a great deal of information describing DFO's intentions relative to the use of gear and fishing practices that minimize both the catch and mortality of non-target species. But the test in SG 80.2 is whether the capture and discard of non-target species is trending downward or is at a level of exploitation determined by management as acceptable.

Whether the discards are trending downward is unlikely as fishing practices, areas fished, and management actions in Area 3, 6, 7, and 8 pink fisheries have not significantly changed over the past decade. Furthermore, a decline would be undetectable as there is no independent assessment of discards. For instance, if fishery dependent data for steelhead was employed, it could be concluded that steelhead discards are trending downward, but it is difficult to tell because of the misreporting of steelhead catches.

DFO does not have a scientifically defensible estimate of chum mortality due to fishery impacts on the north coast. They therefore do not have a reliable estimate of current exploitation rates. The current depressed state of north coast chum

stocks suggests that the current level of exploitation is too high to allow for stock rebuilding. The fishery therefore fails to meet SG 80.2 and a condition is called for.

SG 80.3 also fails. The scoring rational for 3.4.2.1 states that, "there is evidence of compliance concerns with regarding (sic) to the reporting of steelhead catch in Area 3 and 4 fisheries, ramping for seine vessels and the use of revival boxes. There is also evidence that harvest management rules for Area 3 and 4 pink fisheries have not been consistently applied and enforcement actions have not been effective in some years use of revival boxes. There is also evidence that harvest management rules for Area 3 and 4 pink fisheries have not been consistently applied and enforcement actions have not been effective in some years (e.g. 2006)". It is therefore difficult to see how the AT agreed with the third criteria under the 80 guidepost that "fishers generally conduct their fishing activity in a manner that is consistent with the goal of reducing the catch of non-target species".

The concerns expressed by the AT are confirmed by DFO C&P reports and by notices to industry detailing DFO's concerns over the fleet's compliance with their Conditions of License.

MML Response: The assessment team agrees that there are documented concerns regarding some Area 3 and 4 commercial net fishers that conduct their fishing activity in a manner that is not consistent with the goal of reducing the catch (mortality) of non-target species. Also, DFO has not been able to provide evidence that their selective fishing or other initiatives have resulted in a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries. Therefore, the second and third scoring guideposts at the 80 level are only partially met and the score has been revised to 73.

New Condition 3-7a – For the NCCC, to meet the requirements of the second and third 80 scoring guidepost, the fishery in Area 3 to 6 must demonstrate that there have been measures taken to ensure that fishing activity is conducted in a manner that is consistent with the goal of reducing the catch (mortality) of non-target species of conservation concern. DFO must provide clear evidence of either a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries or that exploitation level of those species has been determined by management to be acceptable. This evidence shall be provided by the second annual surveillance audit.

3.7.4 – The management system solicits the cooperation of the fishing industry and other relevant stakeholders in the collection of data on the catch and discard of non-target species and undersized individuals of target species.

CONDITION INADEQUATE

Rationale

Again, the scoring rationale only details problems with steelhead discards in saying that, “no evidence of the quality and quantity of catch and discard data has been provided”. This paper has provided evidence that similar, if not more pronounced, issues exist for other non-target species.

The condition should therefore be expanded to include other species discarded in north coast pink salmon fisheries.

MML Response: Conditions 3-8 and 3-9 will be expanded to incorporate data collection on bycatch of non-target species (i.e. not just steelhead or sturgeon).

Condition 3-8. For NCCC pink salmon UoC. Same as Condition 3-2. Certification of North-Central Coast pink fisheries will be conditional until scientifically defensible estimates of non-target species bycatch are obtained annually for North-Central Coast pink fisheries. To be provide by the first annual surveillance audit

Condition 3-9. For Fraser Pink Salmon UoC. - Same as Condition 3-3. Certification of Fraser pink fisheries will be conditional until scientifically defensible annual estimates of non-target species bycatch are obtained for Fraser pink fisheries. To be provide by the first annual surveillance audit.

DFO Action Plan for meeting certification conditions

Many of DFO’s timelines for key conditions are significantly different from what the conditions in the PCDR stipulate. In fact, some of DFO’s timelines could conceivably mean that no significant changes in management performance might be expected until the final year of the certification, or even beyond. The table and notes below contrasts what the conditions prescribe and what DFO says they are prepared to do.

Condition	Deliverable	Certification Deadline for Condition (June 1st certification)	DFO Current Timeline	Season DFO Action may lead to Compliance with Condition
1.1 NCCC	Report to Certifier: Catch Monitoring Framework	June 1, 2013	July 2012	Unknown, does not commit to addressing condition
1.1 NCCC	PSARC Review of Steelhead Model	June 1, 2013	July 2013	likely 2014
1.1. ISC, Fraser	Report to Certifier: Catch Monitoring Framework	June 1, 2013	July 2012	Unknown, does not commit to addressing condition
1.4 all units	Report to Certifier defining Upper and Lower Benchmarks	June 1, 2013	July 2014	
1.5 all units	Report to Certifier defining Upper and Lower Benchmarks	June 1, 2013	July 2014	
1.6 all units	PSARC Paper: Stock Status and Rebuilding Plan Options	June 1, 2013	July 2015	2015 or even post certification
1.7 all units	Report to Certifier defining Upper and Lower Benchmarks	June 1, 2013	July 2014	2014 or 2015
2.3 all units	PSARC Paper: Stock Status and Rebuilding Plan Options	June 1, 2013	July 2015	2015 or later
3.1 all units	same as response to 1.4 and 1.6	June 1, 2013	July 2014 and 2015	2015 or later

Notes on DFO Response

Condition 1.1 NCCC does not commit to producing accurate catch reporting for target and non-target stocks. It also does not commit to producing scientifically defensible catch estimates for steelhead. The current draft is nothing more than a template for further discussion with stakeholders. As work will not completed until mid-season 2013, it is unlikely any management action to comply with the condition will occur before 2014.

Condition 1.4 The timelines and commitments in DFO's Action Plan are different from what is in the PCDR and what is required by the Condition. DFO is only committing to produce a report by mid-season 2014.

Condition 1.5 Same as note on 1.4

Condition 1.6 DFO response will not address condition as it fails to commit to rebuilding depleted stocks to the MEG within 3 cycles. DFO timelines in the Action Plan differ from what is required by the Condition and what is reported on page 58/59 of the PCDR. The current timeline will not implement changes to the management plan in time for the last season of the certification (2015) (see table in DFO Action Plan).

Final note: DFO says in its Action Plan that its timelines could be extended if certification is delayed beyond February 1, 2010.

In addition to the facts that (1) the certification should be withheld at this time due to objective failure of several 60 scoring guideposts, and (2) many of the conditions in the PCDR are not sufficient and that the final the final PCDR should contain more and strengthened conditions, DFO's timelines in the Action Plan do not meet what is required by the current conditions in the PCDR.

Conclusions and Recommendations

In accessing the management performance of the BC commercial pink salmon fishery this paper has identified six critical failings:

1. The catch reporting mechanism for the bycatch and discards of non-target species fails to provide accurate catch and discard data.
2. The monitoring and compliance regime does not ensure that bycatch and discards are accurately reported or that fishermen abide by their Conditions of License governing selective fishing practices
3. There is no scientifically defensible estimate of the proportion of discards that survive to spawn
4. The incentives and disincentives incorporated in the management regime fail to encourage fishermen to either reduce or eliminate bycatch
5. Bycatch and discard levels for stocks of special concern are too high to permit the recovery and rebuilding of these stocks.
6. There is no direct link within the management system between knowledge of fishing impacts on non-target stocks and rebuilding and recovery plans for those stocks.

7. Research, monitoring and management objectives related to the contribution of pink salmon to coastal terrestrial and aquatic ecosystems is inadequate to ensure pink salmon and sockeye and chum caught as bycatch in pink salmon fisheries continue to fulfill their critical role in these ecosystems.

Addressing the first three failings are necessary to ensure that the pink salmon fishery meets MSC's Principles and Criteria for Sustainable Fishing and International Best practices. But it is failings 4 through 7 that speak to the identified problems with management performance in the BC pink salmon fishery.

This paper has provided objective evidence that either the 60 or 80 guideposts have not been met for several Performance Indicators. On page 47 of the PCDR it states that "What is unique about the MSC certification process over the vast number of other certification schemes is the requirement of the independent certification assessors to analyze and evaluate the objective evidence and confirm that the evidence proves that the fishery performance merits a specific score". And that evidence may take many different forms including "internationally peer-reviewed literature, grey literature, working documents of the scientific and management authorities, policy documents, observations on the part of the assessment team, observations and fact presented in written or oral form from direct and indirect stakeholders, etc". This paper has provided a wealth of objective evidence from the above sources that indicate that the Client has not met many of the scoring guideposts at the 60 and 80 levels. And therefore the PCDR does not meet the MSC standard.

It is worthwhile at this point to reread MSC's Principles and Criteria for Sustainable Fishing contained in the introduction of this paper and test them against the objective evidence supplied. After considering the evidence provided it is clear that the PCDR will not lead to fisheries being *"conducted in a manner that does not threaten biological diversity at the genetic, species, or population levels, and avoids or minimizes mortality of, or injuries to, endangered, threatened, or protected species."*

Or, that they will ensure that DFO "Account(s) for the non-target species captured and landed in association with, or as a consequence of, fishing for target species. "

or that,

1. appropriate procedures are put into place to ensure effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specific corrective actions be taken in the event that they are
2. fishing operation(s) make use of fishing gear and practices designed to avoid the capture of non-target species; minimize mortality of this catch

where it cannot be avoided, and reduce discards of what cannot be released alive.

3. And, that fishing operations should assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery".

Finally, the PCDR, in terms of data collection, monitoring, compliance, and enforcement, does not meet international "best practices" as expected by MSC. In "Best Practices" for Fisheries Management, Baltic Sea, 2020, 2010), prepared by eminent fisheries scientists including: Carl-Chrisitian Schmidt, Anthony Cox, Emily Andrews-Chouicha, Quentin Grafton, Bonnie McCay, Ray Hilborn, and Matilda Thyresson. Best Practices concludes that:

> *High quality data on catches are essential for reliable scientific fisheries advice but often such data are corrupted where management instruments (e.g. individual quotas) create incentives to misreport landings or to discard fish at sea. Thus reducing or measuring discards (e.g. through bans, disincentives, or observer or camera monitoring) and tackling unreported landings by effective landing controls can improve the quality of data. P.19*

In discussing Norwegian fisheries it states that:

> *At all stages documents (e.g. logbooks, sales notes) are checked against actual observations (e.g. catch onboard, amount landed) to prevent loopholes where documents declare false information. P. 28*

In the US experience:

> *US fisheries management plans have to include accountability measures for non-compliance, as well as plans for onboard observers. High observer coverage in many US fisheries increases the incentives for compliance and likelihood of detection in cases of non-compliance.*

It speaks to the Issue of fishermen responsibility by stating:

> *Placing the burden of proof on users of a public resource and applying the precautionary approach is a way to put long-term sustainability and the public interest first. It allows the private sector to benefit from the use of public resources with sufficient evidence that the public interest is not unduly jeopardized and certifies that obligations are fulfilled.*

o allow the PCDR to address the objective evidence provided, meet the MSC standard and embrace international best practices, BC's pink salmon fisheries should not be certified until all of the 60 scoring guideposts are fully met. Moreover, the following conditions should be in put into place or amended where the 80 guideposts have not been met and/or the AT's prescribed conditions are

inadequate to ensure that the 80 guideposts are met within a reasonable length of time.

Condition 1-1 should be modified to include:

Bycatch and discard data must be independently verified in mixed stock fisheries where stocks of concern are encountered. Scientifically defensible catch and discard estimates for all non-target species caught in pink salmon fisheries need to be provided within 1 year.

New Condition for 1.1.2.4

Certification is conditional until DFO provides scientifically defensible information on harvesting impacts on stocks of concern, and how these impacts are incorporated into management strategies. Harvesting impacts must include defensible estimates of the proportion of discards that survive to spawn. DFO must also – beginning in 2011 – provide evidence of how pink fisheries are managed in a precautionary manner in regards to both reducing impacts on non-target stocks, and incorporating concerns over their productivity and rebuilding.

Condition 1-4 should be modified to include:

The LRP's must explicitly include reference on how concerns for co-migrating non-target stocks are incorporated into the LRPs for target stocks.

Condition 2-1 should be modified to include:

Certification of pink fisheries will be conditional until scientifically defensible estimates of bycatch and discards are obtained annually in all pink fisheries beginning in 2011. Certification of pink fisheries requires the successful introduction of a comprehensive, fleet wide bycatch and discard monitoring program that ensures that each participating fishermen's bycatch and discards are reported accurately, and that each fisherman complies with their License Conditions.

Condition 2-2 should be modified to include:

DFO must, beginning in 2011, address identified problems with the underreporting and misreporting of bycatch and discards, and ensure compliance by all participating fishermen with selective fishing measures.

Condition 2-3 should be modified to include:

DFO should, beginning in 2011, reduce harvest rates on target stocks in pink salmon fisheries with co-migrating non-target stocks identified as: (1) being below their LRP, (2) in need of protection, or (3) requiring reduced impacts as part of

their recovery plan. Fishing plans, once LRP's are implemented for non-target stocks, must ensure that the recovery of stocks of concern is highly likely to occur within a reasonable time period.

The above would be in addition to what the AT has already proposed in this condition.

New condition for 2.1.5

Peer reviewed research must be conducted on the impacts of all infectious and parasitic diseases reported on salmon farms. Monitoring of pink salmon for salmon farm diseases must occur in all areas where they migrate in the vicinity of salmon farms and processing plants that discharge waste to the marine environment must have effluent tested. Any farms with pathogens present must fallow until it is demonstrated these diseases do not transfer and negatively impact wild pink salmon.

Conditions 3-2 and 3-3 should be modified to include:

Certification will be conditional until scientifically defensible estimates of bycatch, discards, and post-release mortalities are obtained annually for non-target species encountered in all pink salmon fisheries. And that evidence is supplied – within one year – of how escapement goals, harvest rates, or exploitation rate ceilings for the target stocks are modified to ensure the recovery and rebuilding of non-target stocks.

Condition 3–6 should be modified to include:

A research plan should be initiated to describe the proportion of non-target stocks that survive to spawn after being discarded in pink salmon fisheries. This research plan should be provided to the certification body within one year.

A socio-economic analysis should be provided that examines the social and economic incentives and disincentives inherent in the current management practices and how they either encourage or discourage fishers from meeting ecosystem objectives.

New Condition for 3.4.2.1

Certification is conditional until a comprehensive monitoring program is put into effect that ensures all fishermen participating in pink fisheries comply with their License Conditions. And that information gathered through monitoring is employed as an incentive for fishermen to comply with management objectives and License Conditions (e.g. the BC halibut fishery). This monitoring program should be in place in one year.

New Condition 3.4.2.2

Certification is conditional until a comprehensive monitoring program is put into place that monitors bycatch, discards, post-release mortalities of each fisher involved in pink salmon fisheries. The monitoring program should provide annual reports linked to the recovery and rebuilding objectives in place for non-target stocks. The monitoring plan will be in place within one year.

New Condition for 3.7.1

Certification is conditional until evidence is supplied that impacts on non-target stocks (as defined by the proportion of the non-target stocks encountered in pink fisheries that survive to spawn) meets rebuilding and recovery objectives for those stocks. And that managers work with fishers to reduce encounters with non-target stocks by avoiding fishing in times and areas with a relatively high abundance of non-target stocks.

Condition 3-8 and 3-9 should be modified to:

Certification will be conditional until scientifically defensible estimates of bycatch, discards and post-release mortalities are obtained annually for non-target species encountered in all pink salmon fisheries. And that evidence is supplied – within one year – of how escapement goals, harvest rates, or exploitation rate ceilings for the target stocks are modified to ensure the recovery and rebuilding of non-target stocks.

Management of the fishery should be modified to encourage -through effective incentives and disincentives – fishers to reduce their impact on non-target stocks.

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Appendix 1

Pink Catch and Escapement for Areas 3, 4, 5, and 6 for the years 1996, 1997, 1999, 2001, 2003, 2005, 2007, 2009

		1996	
Area	Catch	Escapement	Chum Catch
3	1,232,215	304,560	195,421
4	1,164,174	2,003,161	137,339
5	330,011	273,100	20,077
6	673,409	571,968	25,201
Totals	**3,399,809**	**3,152,789**	**378,038**
Ratio of Catch to Escapement		**1.08**	

		1997	
Area	Catch	Escapement	Chum Catch
3	420,439	214,340	119,050
4	389,241	444,283	17,333
5	10,451	68,750	386
6	193,711	299,790	30,616
Totals	**993,842**	**1,027,163**	**167,385**
Ratio of Catch to Escapement		**0.97**	

		1999	
Area	Catch	Escapement	Chum Catch
3	356,905	163,600	243,316
4	17,223	271,731	12,263
5	1,470	148,170	1,630
6	541,969	571,968	399,925
Totals	**917,567**	**1,155,469**	**657,134**
Ratio of Catch to Escapement		**0.79**	

		2001	
Area	Catch	Escapement	Chum Catch
3	1,391,892	1,007,899	Non-Retention
4	1,198,087	1,017,612	
5	550,857	400,350	
6	2,688,658	1,607,085	
Totals	**5,829,494**	**4,032,946**	
Ratio of Catch to Escapement		**1.45**	

		2003	
Area	Catch	Escapement	Chum Catch
3	1,946,526	841,856	Non-Retention
4	908,483	1,493,266	
5	319,765	233,825	
6	3,930,208	2,006,520	
Totals	**7,104,982**	**4,575,467**	
Ratio of Catch to Escapement		**1.55**	

		2005	
Area	Catch	Escapement	Chum Catch
3	2,499,501	917,635	Non-Retention
4	0	1,191,722	
5	191,219	234,225	
6	4,589,404	1,569,275	
Totals	**7,280,124**	**3,912,857**	
Ratio of Catch to Escapement		**1.86**	

		2007	
Area	Catch	Escapement	Chum Catch
3	3,016,567	588,684	Non-Retention
4	802,378	627,423	
5	649,122	111,200	
6	1,769,491	1,526,390	
Totals	**6,237,558**	**2,853,697**	
Ratio of Catch to Escapement		**2.19**	

		2009	
Area	Catch	Escapement	Chum Catch
3	1,064,912	640,214	Non-Retention
4	341,403	2,367,670	
5	131,704	146,350	
6	6,655,835	2,874,740	
Totals	**8,193,854**	**6,028,974**	
Ratio of Catch to Escapement		**1.36**	

DFO North Coast Post-Season Reviews

Submission 2: Fred Hawkshaw

Submission regarding-
MSC application to Certify the BC pink and chum salmon fisheries- 2011

Principle 1:
3. **Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.**
*
(attached- DFO 2004 Post season review) In essence there are two means to achieving the above *under the current management and advisory system*: shut a fishery down completely, a second option does not exist as a direct result of the current management and advisory system policies. The second- engage responsible individuals as leaders (IVQ) to achieving desired results and the start of a viable and sustainable fishery will only occur when DFO changes its policies within the advisory system! This system is so open to "abuse of a dominant position" and or in contravention of Canada's Anti-trust laws, to call it ridiculous misses the mark entirely.
++++++++++++++++++++++++++++++++++
** **Stocks are allowed to recover to more than 150% of the LRP for abundance• before any fisheries are permitted that target these stocks.**
***facilitate the recovery of the depleted stocks within 3 reproductive cycles.**

** **Extremely poor wording**! For example, Alaskan seine fisheries intercept Skeena, River's and Smith's Inlet sockeye (to name just a few). The Pacific Salmon Commission uses the wording "by-catch" to describe "interception" under the premise it is not intentional. In other words, according to the wording used by the MSC, unless a fishery "*targets*" a specific stock, regardless its status or country of origin said fishery interception impact is of no consequence. Because DFO has refused to list the Smith's Inlet sockeye as endangered and more recently, quote: "now at possible risk of extinction"- end quote, (wording as stated by DFO biologist Dave Peacock at a Public meeting in Terrace, BC, 2009), coupled with this flawed application of the word "target", it would seem to appear the MSC can get away with listing any fishery it so chooses as being managed sustainably when in fact, it is a simple but effective twisting of the wording that avoids any accountability on DFO's part, the ADFG's part, the Pacific Salmon Commissions part and the MSC, thereby enabling the distinct possibility what was once an extremely viable and sustainable gill net fishery on the north coast of BC, is today all but written off even as the MSC has certified it as sustainable. Oh, pinks, what pinks, the fishery I refer to, the Area "C" gill net fishery is no longer allowed to fish pinks- the majority refuse to get over killing non-target species or respect DFO's attempts to rebuild weak chum stocks (attached letter from former Minister)

*** It is now more than 15 years since River's and Smith's Inlet sockeye stocks collapsed. Until 20 years ago these two stocks were BC's second most important sockeye stocks – *second only to the Fraser sockeye*. Because the Alaskan south-southeast seine fishery is largely a **pink fishery** having no commercially harvestable sockeye of their own, no one could prove Alaskan seines "target" these stocks of sockeye which makes the wording above totally useless and completely without credibility. However, I am submitting a study out of Alaska regarding the value attributed to their pink salmon and other fishery resources, something Canada does not seem to care about or understand. (attached- Ainsworth and Pitcher 2010)

MML Response: The stakeholder is referring "target" versus "bycatch" and is suggesting that the choice of wording in the performance indicators is misrepresentative as bycatch in the salmon fisheries is typically intentional. Development of performance indicators and scoring guideposts (PISG) took place in 2008 with the PISG published for public feedback in May 2008, PISG development was based on previous MSC assessment projects and used language and wording which was consistent with those projects. Key terminology is defined in Section 1.6 of the report.

2. **The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimizes mortality of, or injuries to endangered, threatened or protected species.**

Here in BC, DFO has no means to enforce compliance with non-target encounters and appears to have no plans to implement incentives. We have at least one stock of sockeye DFO refuses to list as endangered. One of these stocks could conceivably have been the victim of size-selective gill nets but to date DFO has neither addressed nor encouraged re-formatting the conventional gill net to stop such genetically invasive intentions from ongoing. The entire management regime is directed at discouraging responsible fishing practices.

North Coast chum stocks have been failing for years, and in the case of the Nass chum, according to DFO going back 30 years. To date DFO has done nothing to correct seine chum kill in Area 3, basing their management solely on non-retention which in reality is nothing more than a cover-up because like the gill net fishery, both fisheries are managed as "derby" style fisheries in which no one can or is held accountable.

DFO's only response in regards to the gill net fishery has been to provide incentive to kill as many Nass chum as possible by making "dead" chum legal for sale. (See attached letter from Minister of Fisheries) In 2009 DFO finally began taking a tiny step forward to discourage directing effort at Nass chum by making it illegal to retain chum in certain defined areas of Area 3 but left the option wide open to targeting them in other parts (of Area 3). As with the Area 3 seine fishery, both net fisheries must be switched to an IQ fishery to stop the killing of non-target species. Until individual licensees are legally held

to account for their own actions, regardless target species fishery or area, the unfettered slaughter of non-target salmon and steelhead stocks will go on. No, non-retention or "out of sight out of mind" is not a certifiable solution!
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MML Response: The assessment team has evaluated and imposed certification conditions in a number of the key areas discussed by the stakeholder including PI 1.1.2.1 – Estimates for the removals for each stock unit, including non-target bycatch species; PI 2.1.1 – management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-target species are identified; PI 3.4.2.1 – management system includes compliance provisions; and PI 3.7.1 - Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of the non-target species.

Principle 3:
Management criteria;

The management system shall:
2. **Demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves **** all interested and affected parties** ***(under the current advisory system such positive actions are not accessible or possible because salmon net fisheries on the north coast are managed as derby fisheries in which majority rules and this does not allow for involving or respecting the rights of anyone else – (attached letter submitted to BC Fishnet)*** **so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisan, and fishing dependent communities shall be addressed as part of this process;** ***** "All" in the case of the north coast net fisheries does not include individual rights, artisan fisheries or respect because DFO's advisory system tolerates only majority rule and as we know, it is this majority or cannery rule that has provided DFO with the means to delete our right to harvest North Coast pinks and their coho by-catch (as per attached pers com DFO) and will never allow a sustainable or viable commercial small-boat net fishery in Area "C". No, PICFI or multi-area/species licensing access is not the answer under current conditions because DFO has failed to include individual accountability regardless the number of areas where the individual fishes and won't until the derby fishery and "majority rule" as interpreted by DFO and Industry are done away with.

MML Response: The assessment team evaluated the existing consultative process under performance indicatory 3.3.1. The team's conclusion was that there is a transparent process that is open to all affected parties, that the management system operates in accordance with existing international conventions (PI 3.6.1) and is consistent with domestic laws (PI 3.6.2).

5. **incorporates an appropriate mechanism for the resolution of disputes arising within the system (2);**
(2) Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.
DFO has no means to resolve disputed issues such as access to pinks or coho by-catch by the small boat net fishery here on the North Coast and an increasingly less access to sockeye – without ever acknowledging or correcting seine by-catch kill! (Attached – PSF – ISRP - 2008)

Still to this day DFO refuses to acknowledge the impact size-selective fishing imposes, choosing instead to select the seine fleet for 100% of the north coast pink harvest based on majority non-target non-compliance *in the gill net fishery alone*. I say "alone" because DFO refuses to acknowledge size-selective gear could also be a considerable factor in what has happened to many of our sockeye stocks harvested mainly by conventional gill net. Instead they've chosen to avoid dealing with the issue by taking away our right to access pinks and other species co-migrating with pinks. On this issue it *must be recorded that Alaska shifted their pink harvest away from the gill net fishery over to the seines based on concerns related to the size-selective intent of the conventional gill net*! We can show no end of data supporting the negative issues regarding size-selective gear and harvesting intent but here in BC, DFO makes a concerted effort to deny such a concern exists? The good news is *we have the ability to correct this problem with the conventional gill net but not the means* (reference Principle 3- criteria 2) – 100% attributed to the flaws built into the current Advisory system and the derby fishery. Until the current Advisory system is reformatted to fit a certified responsible fishery management agenda, we would ask the MSC not to proceed further with this application to certify the BC pink and chum fishery. Of course just changed the advisory system without also doing away with the derby style fishery would be pointless.

MML Response: The MSC fishery certification program evaluates candidate fisheries against their existing management rules and the MSC sustainable fishing standard. The MSC program does not evaluate issues of resource allocation between fishers or sectors.

6. **Provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing;** (#- attached- UBC study on subsidies and large vessel fisheries vs. small boat fisheries)
There is no representation within DFO's advisory system for artisan type fisheries or small scale independent fishers. The system revolves around majority rule and it's incumbent *disincentives* for responsible fishing gear and practices. DFO would argue such is not the case but the facts speak differently. DFO has no tolerance for minority position or concerns and only hears the voice of majority and its "majority rule". For as long as

DFO's claimed need for responsibly fishing practices have been around, (mid-1980's) neither of these issues (unfair subsidies such as cannery-funded fuel subsidization and area/species licensing without accountability, plus completely unsustainable fishing practices) are allowed to be addressed because the "system" (Advisory Board) is designed to enable rejection of any concerns or issues that might not favor: the canneries, their seines, their upriver Native-only fisheries or Unionized shoreworkers.
Subsidies: The canneries provide fuel subsidies for their seine and gill net fishers. It would be argued these are used to encourage fishers to fish for them and make running from area to area less costly but the cost is actually included in the low prices they pay for salmon which makes competing against this unfair subsidization anti-competitive and unhealthy to the environment. If fishers were held to account for their actions within any given area and the costs to apply or practice responsible fishing borne by individuals themselves, they could not afford to sell their fish to the canneries.

The canneries also provide start-up money for those fishers fishing for them. This means the fisher is completely disconnected from the real costs of fishing and fishing irresponsibly. Had they to go to a bank and get start-up costs on their own account, at current cannery prices and so little access the banking system would laugh.
It would be very defendable to argue the real issue is such subsidies are the simplest means for keeping the price paid for salmon dockside below the real costs of fishing without it being seen as such. Such subsidies make for a very anti-competitive field for non-cannery fishers or small fishing business enterprises who must account for every penny they spend in order to arrive at a fair market value for their product and return a viable income while delivering a sustainably harvested product to their customers.

The buyers generally discourage buying pinks from the gill net fishery because of poor quality attributed to the conventional gill net. This has become no longer a problem because DFO conveniently took our right to access pinks away. The appropriate response is for DFO to provide **incentive** for fishers to adopt better formats of the conventional gill type net known to eliminate these concerns.
In essence it could be argued UIC (Unemployment Insurance) is also a subsidy that is used to discourage the need for sustainable fishing. DFO is trying to encourage a program called PICFI, perhaps as a means to weaning more fishers off their reliance on UIC and onto alternate species? The current system can be likened to robbing Peter to pay Paul.
DFO has done nothing to stop non-compliant fishing behavior from running to other areas or species! If we can include "viable" as part of the definition for sustainable, the solution is not to provide false subsidies or cover-ups for poor policies but rather progressive incentives that lead to improved earnings while reducing risks to the resource and other user groups and individuals, we might just rebuild the BC commercial salmon net fishery as something of real value. Non-retention simply covers up the abuse as does unaccountable and open (unenforceable behavior) access to alternate areas for salmon and alternate species and does nothing to provide incentive for correcting non-compliant behavior. The only workable solution is to enable individual vessel quotas into the gill net

fishery whereby only the individual is made accountable for his/her own actions and viability!

MML Response: The assessment team agrees that there are documented concerns regarding some Area 3 and 4 commercial net fishers that conduct their fishing activity in a manner that is not consistent with the goal of reducing the catch (mortality) of non-target species. Also, DFO has not been able to provide evidence that their selective fishing or other initiatives have resulted in a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries. Therefore, the second and third scoring guideposts at the 80 level for PI 3.7.1 are only partially met and the score for NCCC has been revised to 73. New Condition 3-7a was imposed as a result of this score.

New Condition 3-7a – For the NCCC, to meet the requirements of the second and third 80 scoring guidepost, the fishery in Area 3 to 6 must demonstrate that there have been measures taken to ensure that fishing activity is conducted in a manner that is consistent with the goal of reducing the catch (mortality) of non-target species of conservation concern. DFO must provide clear evidence of either a downward trend in the capture and discard of non-target species in the Area 3 and 4 net fisheries or that exploitation level of those species has been determined by management to be acceptable. This evidence shall be provided by the second annual surveillance audit.

10. **Specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:**
b) Identifying appropriate fishing methods that minimize adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;

Such concerns would include the use of size-selective (conventional) gill nets intended to target the median and larger fish in a given stock that impose a negative impact on spawning habitat. (Attached- W.R. Ricker + Ecosystem based fisheries management) For the seine fishery to harvest salmon within the inner areas of the Skeena for example and meet these terms of reference there must no longer be any concern for the seine nets ripping up the bottom environment, tearing up kelp and eel-grass and killing species such as crabs as they do now.

MML Response: See previous response.

B. **Operational Criteria**
The fishing operation shall:
12. **Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimize mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive;** (see attached- Tangle-net study 2001 + 2002)

MML Response: The assessment team revised its scoring and imposed a certification condition for PI 3.7.1, which pertains specifically to this MSC criteria (see above).

13. **Implement appropriate fishing methods designed to minimize adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;**

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Condition 6:
"Our WSP prescribes a systematic approach to salmon management, essentially moving DFO from a reactive to a pro-active approach for maintaining the biodiversity of salmon populations within Canada."

First, both DFO and the MSC must pay attention to what the people claiming to have the most to lose are telling the Cohen Commission Judicial Inquiry! (Attached) This person is far too close to the entity requesting certification – Director on the Board for the BC Seafood Alliance, Director Fisheries Council of Canada and Vice-President Canfisco operations Canada. Until DFO accepts size-selective gear and fishing practices are a constant negative, premium spawning habitat will continue to be at risk of loss and/or degradation. (attached) Nursery area viability can only be effective if the fish providing the progeny are the best and strongest from the gene pool, an issue size-selective gear and fishing practices will not allow to happen.
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Condition 8 **"Certification of North-Central Coast and Fraser pink fisheries will be conditional until reliable estimates of by-catch are obtained annually for steelhead caught in Area 3 and Area 4 North-Central Coast Pink fisheries."**

Very flawed. It would appear at first glance the intent is good but it misses a very serious issue that cannot go unreported. Included must be ***chum*** by-catch, especially in Area 3 but not exclusive to. Seine chum by-catch in Area 3 is entirely out of proportion to justifying ***any*** fishery: a) because DFO cannot provide any reliable or credible data when the only terms or conditions are ***non-retention***. There is no definitive data on seine impact resulting from **encounter**, not in the short-term or long-term and until such data is fully and openly available there is no justification for the seine fleet to fish pinks while the gill net fishery is refused access. Steelhead became the default species for non-target issues which is a good thing because that species is out of DFO's hands subjecting DFO to rethinking their management practices in regards to the commercial net fisheries – as a whole – **if only this had happened**! That the issue fell to the gill net fishery alone to deal with was unscrupulous to say the least and fraudulent at best?

For Area 4, the issue is Skeena sockeye, but again, not exclusive to. In recent years the Skeena seems to barely if at all, make sockeye escapement requirements, marginal at best and that is not what the Canadian Constitution obligates DFO to do. Two years ago

there was a large return of pinks. At issue was sockeye by-catch. DFO made retention illegal, enforcing non-retention. The cry "Food fish" when Native fishers fail to abide by the rules creates disparity and racial inequality within all our fisheries. Responsible and/or sustainable fishing is supposed to be a one size fits all users issue, not selecting out one group while ignoring the abuses in another group.

Following the weekly escapement reports in 2009 during the Area 4 & 5 pink fishery it seemed too coincidental that the Skeena sockeye escapement numbers would go up when the seines were shut down and drop when the pink fishery re-opened. The data would be available from MOE as their concern would be steelhead. On a positive note it would seem the MSC has included such concerns as "to be addressed". That is a good start but must include incentives to include access for the small-boat net fishery, all users for that matter regardless race or gear format as well, regardless species.
One of the more egregious issues being challenged by "abuse of dominant position" within the advisory system is the ability for the union and the processing representatives to reject change that doesn't suit their demands. It is without question, this issue that has caused our north coast small boat net fishery to all but be eliminated – from every species and what used to be our rightful access divvied up between the Alaskan seines, Area "A" seines and the canneries upriver Native-only fisheries, especially during years of pink abundance! DFO has no means or the will to enforce compliance when the issue involves "majority", short of shutting the entire GILL NET fishery down ONLY. The result is the wrong fishers or minority are **always** the only ones being punished. That is not a solution nor can it be defined or certified as responsible management so the only alternative has to be Individual Vessel Quota (IVQ – **not ITQ**! IVQ will enable individual accountability and cannot negatively impact others within the same fishery or area or even alternate areas they might choose to run to. IVQ will prevent the canning industry from gaining the 100% control it now imposes in the derby fisheries and provide individual fishers with the incentive to earn more from less cheap volume while practicing sustainable harvesting practices that respect ALL users regardless.

Pinks by themselves may not be seen as "valuable" without massive numbers such as only a seine can catch but the legal by-catch (coho) that goes with them is, and for the small-boat net fisher, currently we're being denied even that small bit of essential access and have been for years while the seines have been unfairly gifted up to 96% of this potential by-catch. The Global data bulges with conventional format gill net negative impact, too much for me to load you with but not a thing is available for seine impact - in BC which precludes certification has no validity in BC until all these issues are addressed fishery by fishery, area by area tied together through individual by individual accountability.

It must be noted and included in this assessment; the gill net fishery is entitled to fully 25% of the pink harvest in BC. Just because it would not be possible for the gill net fishery to harvest this 25% as a viable alternative to sockeye does not mean we have no right to access whatever percentage we can make full use and benefit from! DFO used biased and prejudiced data to eliminate the gill net fishery from the pink harvest. No one could deny

there must be huge changes in the way the gill net fishery is managed and enforced but the same must include the seine fishery which is currently being gifted fraudulent benefit – benefit underserved until the issue of non-compliance is fully addressed equal to that of the gill net fishery.

MML Response: The assessment team has evaluated and imposed certification conditions in a number of the key areas discussed by the stakeholder including PI 1.1.2.1 – Estimates for the removals for each stock unit, including non-target bycatch species; PI 1.1.2.4 – estimates of productivity and management guidelines for both target and non-target stocks; PI 2.1.1 – management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-target species are identified; PI 3.4.2.1 – management system includes compliance provisions; and PI 3.7.1 - Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch. The condition the stakeholder references above for PI 2.1.1 has been revised to include information about all non-target catch.

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North Central and Central Coast Submission
Currently, North & Central Coast pink salmon populations are healthy enough not to warrant a legislated level of protection and the overall persistence of North Coast and Central Coast pink salmon populations is not immediately threatened. However, if any of the conservation units declined to a point where their persistence was threatened, Canada's Species at Risk Act (SARA) provides a legislative and policy framework for recovery.

Absolutely not true! DFO stated at a meeting in Terrace, Feb, 16th, 2009 that quote: "It is possible the Smith's Inlet sockeye could go extinct". Correct me if I'm wrong but would not a tangible threat of extinction acknowledged by DFO management itself warrant an immediate response by SARA? Not even a hint of such action has ever been forthcoming for the Smith's and River's Inlet sockeye stocks, yet over 15 years since they collapsed, long past the 3 cycle time frame allowed by the MSC their future remains clearly uncertain! Here's the twist to this seeming paradox: DFO states these stocks are, quote: "In the rebuilding phase"- end quote. Pardon me if I'm mistaken but when did extinction translate as rebuilding!

If they are in fact truly at risk of extinction and nothing is done to stop Alaskan interception on this essential sockeye stock, the only other possible explanation for DFO's "concern" lies in what might be the greatest scam ever in Canadian fisheries. Because DFO describes these two stocks as being in the rebuilding phase which definitely does not fit with extinction, the only rational explanation for what DFO said at the meeting in Terrace if it's not true the Smith's Inlet sockeye could go extinct would have to be, there is an internal effort going on to cause sufficient sense of fear to drive "non-Native" fishers

out at the cheapest possible price? I say "non-Native" with fair justification because on the very same day DFO was busy describing north coast sockeye stocks (Area "C") as being all but finished, DFO was hosting a group of Natives in Vancouver teaching them how to become paid mentors to younger Natives to encourage them to get into the salmon fishery- ***fact***!

MML Response: This fishery assessment is focusing on pink salmon, not sockeye.
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In January 2001, the Department released A Policy for Selective Fishing in Canada's Pacific Fisheries. The policy lays out the department's objectives and principles for selective fishing as part of a long-term strategy for conservation and sustainable use. The policy outlines the responsibilities of harvesters for continuous development and implementation of new selective techniques and practices. The policy was based on the results of the intensive 4-year Selective Fisheries Program (Section 3.2.4.2), in which DFO researchers and harvester groups experimented with a variety of methods to reduce the impact of fisheries on non-target species, with a number of measures reaching implementation in fisheries. The policy defines selective fishing as the ability to "avoid non-target fish, invertebrates, seabirds, and marine mammals or, if encountered, to release them alive and unharmed".

The Selective Fishing Policy clearly identifies the need for continuous improvement of gear and practices, and establishes strong incentives by linking that continuous improvement to future fishing opportunities. (Until the Dept's advisory system, top to bottom, is redone, and policies on individual fishers rights are re-assigned to include initiatives to develop or pro-actively support through benefit and incentive management, we can unequivocally prove the above is not possible and will never be.) **The policy lists an overarching objective and five principles. The full text of the Selective Fishing Policy is available at www.dfo-mpo.gc.ca/Library/252358.pdf.**

Words without action as we've witnessed over the last decade have zero meaning.

The objective is to ensure that selective fishing technology and practices are adopted where appropriate in all fisheries in the Pacific Region, and that there are continuing improvements in harvesting gear and related practices.
DFO has no apparent policy tolerance for or intent to enable, protect or encourage documented sustainable and pro-active responsible fishing gear and practices nor can or will be given priority which concludes such intent, while in writing as indicated above does not exist within DFO. It will require a full change in policy before such positive actions can or will be allowed to occur. Again, as in repeat, the problem lies within DFO's flawed advisory system – top to bottom including the dominance imposed all the way through to the Ottawa level by the "Fisheries Council of Canada". – http://www.fisheriescouncil.ca/

http://www.fisheriescouncil.ca/page.cfm?ID=5
http://www.fisheriescouncil.ca/page.cfm?id=12
http://www.fisheriescouncil.ca/page.cfm?ID=23
It should be noted one of the above URL's shows a bunch of colorful DFO brochures, giving the Public the illusion all is well in the BC commercial salmon fishery – NOT.

Selective fishing is a requisite element of conservation-based fisheries. In meeting conservation objectives, fishing opportunities and resource allocations will be shaped by the ability of all harvesters – First Nations, commercial and recreational anglers – to fish selectively.
Implementation of the Selective Fishing Policy focuses on two priorities:

Avoidance of non-target species is the best possible option in selective• fishing. Test harvests on stock abundance, timing, and migration routes can supply valuable data to help develop fishing strategies that avoid non-target species or stocks of concern. Licensed harvesters can also play a role by informing the Department if stocks of concern are encountered. This may require improved communications and a shift in the practices of licensed harvesters who may be accustomed to keeping such information confidential.
Keeping such information confidential is not related to issues normally associated with the need to keep others from knowing what one is catching but fishers have been conditioned to believe the two are connected with the result DFO cannot get the information it needs nor in a timely manner. With regard to non-target species, the issue of reporting is a management issue that management alone has failed to deal with. For the seines DFO enforces non-retention which in essence tells the fisher's non-target species have no value therefore not worth bothering to report even accurate numbers of encounters much less kill.
In the event the issue is non-target kill, combined with excessive numbers of a designated weak stock or non-target species, reporting such events is seen as a serious threat to the fishery because DFO manages the salmon net fisheries as a derby controlled by majority rule and for the majority to report issues that will knowingly cause the loss of access, ***rather than alter fishing behavior*** it is seen as something best avoided altogether. The ONLY way to create the **incentive** is to switch the net fisheries to IQ whereby those willing to alter their behavior and/or gear sufficient to meet DFO's expectations would find no reason not to work WITH DFO! Individual accountability drives incentive whereas majority rule in a derby style fishery drives bad fisher choices, provides protection from punishment for the non-compliant, covers up management failures, enables rampant abuse of weak stocks (and management intent) as well as other user groups and minimizes the overall viability of Canada's salmon fisheries as the social and economic engine it should and could otherwise be.

MML Response: The assessment team has evaluated and imposed certification conditions in a number of the key areas discussed by the stakeholder including PI 1.1.2.4 – estimates of productivity and management guidelines for both target and

non-target stocks; PI 2.1.1 – management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-target species are identified; PI 3.4.2.1 – management system includes compliance provisions; PI 3.7.1 - Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch; and PI 3.7.4 – cooperation of the fishing industry to provide data on catch and discard rates.

The next best option involves releasing non-target fish, invertebrates,• seabirds, and marine mammals encountered (and captured) alive and unharmed, or in the best possible condition, to maximize survival. Fish released that would not likely survive long enough to reproduce should be counted as mortalities, along with all retained fish. Fisheries and Oceans Canada is interested in developing ways of estimating spawning success of released fish.

We have a start at such data (attached, Baker et al) but we have nothing on seine issues, they remain a black hole of unknowns through the too convenient management policy of non-retention.

Section 2.5.4 of the Management Summary describes general conservation measures in BC pink and chum fisheries. Section 3.2.4 of the Management Summary recounts the development and implementation of selective fishing measures in BC salmon fisheries.

Great on intent but has never been adopted by or acceptable to majority rule in industry. Such a vision will never be as long as the derby fishery and majority rule dominate the ability to reject change.

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Scoring Rationale: **The team was of the opinion that the Area 3 and 4 North Coast Pink salmon fisheries did not have a scientifically defensible monitoring program for steelhead by-catch.** DFO has made certain there cannot be any concern for gill net issues with pink harvest- they've taken the righto access pinks away arbitrarily because of majority rule, aka the advisory system that has no tolerance for those expecting the right to fish with a conscience. As for Steelhead, they seem to make their way home quite nicely – into too many fishers smoke houses. Those that don't, well as yet I've not heard the crabs willing to talk and for certain, majority rules certainly isn't going to either.

MML Response: The assessment team has imposed certification conditions related to the monitoring of catch and discards in the NCCC fisheries. Timelines and deliverables have been defined for conditional certification.

The definition of by-catch is the harvest of non-target species or stocks. The Team's opinion is that the data do not include statistics for non-target species which are released as part of the condition of license. Where logbooks are required, the rigor and verification of commercial catch data is limited with test fisheries or other observer

programs essential to provide reliable estimates of fish caught and discarded. One of the two 80 SGs were met; hence a score of 70 was awarded.

Here's the flaw in this wording: by-catch is not simply or always "the harvest of non-target species or stocks". The word "harvest" implies landings for sale. This should read "by-catch as it refers to non-target "**encounters**".

MML Response: The revised scoring rationales and certification conditions of a number of performance indicators have been changed to require information on catch of non-target species as well as information on the fate of that catch (landed vs discarded).

We know for a fact seines kill by-catch and plenty of it but because we have no transparent data on seine *encounters and the essential follow-up radio tagging data on it*, short and long term kill or spawning impact resulting from poor handling practices go unknown. In both the seine and gill net fisheries ***encounters,*** not handling alone, drive the real concern and it's at this point when the unknowns begin and where inequality has driven the rights of the small-boat net fishery out of the fishery based on nothing more than a system that protects majority rule – in the gill net fishery alone- (attached – 2006 run up to the PSF – ISR, also attached)

The problem for DFO is, try as they might to hide or cover up negative issues within any fishery, when negative actions by one group begin to negatively affect another user group, someone is bound to talk about it and while the majority may be willing to say nothing in a false belief this will somehow protect the whole, reality is, anyone with any moral sense of respect for the privilege to be a Canadian commercial fisher will feel obligated to speak out. Currently such actions are seen as whistle-blowing and do not lead to positive reinforcement for being responsible or securing a better relationship with DFO as the MSC suggests is essential for sustainable certification to work as intended. During the course of the MSC's exercise to certify DFO's management practices and level of commitment to the Public Trust we continue to see or hear of the abuses ongoing but only through the proverbial "grape-vine" and not through what should be an open and transparent system designed to protect everyone's rights- equally. Again, I cannot state it strongly enough, under the current advisory system and derby style fisheries, the probability of achieving the MSC's stated intent is all but nil – without DFO finally breaking free of its "duck, dodge, deceive and cover-up" policies. As long as the management system remains closed to the truth, why would anyone of sound mind expect a majority rules derby fishery to be different?

Sincerely,
Fred and Linda Hawkshaw,
4623 Graham, Terrace, BC.
V8G 1A6
Ph- 250-635-3741

Submission 3: Area 6 Seine Fishery for Pink Salmon

From: Mike Jacobs [mailto:fisheries@haisla.ca]
Sent: January-17-11 6:32 PM
To: Steven Devitt
Cc: brenda@fnfisheriescouncil.ca; 'Grant, Alex (RTA)'; 'Whitney Lukuku'; 'Chris Wilson'
Subject: MSC Certification for Pink and Chum Salmon - Area 6 Seine Fishery

Dear Steve Devitt,

RE: Area 6 Seine Fishery for Pink Salmon, Impacts on Chum, and MSC Certification

The serious decline or complete disappearance of chum salmon stocks in recent years, within Area 6 steams, points toward the extirpation of many (formerly robust) chum populations within the Haisla First Nation's territory.

Both DFO and the Area 6 seine fleet, including the UFAWU, are currently focused on the harvest of 2011 (odd-year) pink salmon runs in the approach areas to these streams. This fishery inevitably catches chum salmon (i.e. 70,000 in 2009).

While DFO and industry maintain that there is little chum mortality within this fishery, as a result of brailing and mandatory release, 4 participants within the fishery in 2009 have indicated to me that they estimate a chum mortality of 100% at the time of release. This is purportedly attributable to behavioral aspects of this species within the net (they dive to the bottom) and the shear weight and volumes of pink salmon on top of them, resulting in trauma and/or suffocation. If the latter is true, these mortalities constitute more than the entire recorded escapement for chum in Area 6 for 2009.

Until such time as the truth is known about the condition of released chum within this fishery or there are efforts to avoid them altogether, we request that no MSC certification be granted within this fishery. While options do exist to minimize impacts to chum, these are unlikely to be explored if denial remains the first response to challenges faced within this mixed-stock fishery.

Mike Jacobs - Fisheries Manager
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MML Response: MML Response: The assessment team has evaluated and imposed certification conditions in a number of the key areas discussed by the stakeholder including PI 1.1.2.1 – Estimates for the removals for each stock unit, including non-target bycatch species; PI 1.1.2.4 – estimates of productivity and management guidelines for both target and non-target stocks; PI 2.1.1 – management plan for the prosecution of the fisheries provides a high confidence that direct impacts on non-

target species are identified; PI 3.4.2.1 – management system includes compliance provisions; PI 3.7.1 - Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch and PI 3.7.4 – cooperation of the fishing industry to collect data on catch and discard of non-target species and undersized individuals of the target species.

Appendix F – MSC Comments and CB Responses

1	Major	FCMv6	Appendix 1: 5.2	(…) the report shall describe the system of tracking and tracing of fish and fish products in the fishery.		Clarification on the scope of the assessment/report is requested. Title of the report is 'pink salmon'. In the Executive summary it says: 'This report provides the results of the assessment of the three pink salmon units of certification'. In Section 1.1 it says: 'the defined units of certification for this project are the fisheries targeting pink salmon'. In Section 1.1.1 however, it says: 'The specific scope of this full certification assessment is the BC Pink and Chum Salmon seine'. And in Section 3.3 it says: 'The specific scope of this full certification assessment is the British Columbia seine, troll and gillnet fisheries for pink and chum salmon'
MML Response: The two sections have been revised to be consistent.						
2	Major	FCMv6	Appendix 1: 5.2	The report shall set out the scope of the fishery assessment in the context of the assurances the certification body can make about the point to which products from the fishery can be traced and describe known risk factors prior to or after the point of first landing that my influence subsequent chain of custody assessment	page 49	In section 3.8 on bycatch it is stated that common to all gear types is the incidental catch of other salmon species including: coho, Chinook, sockeye and steelhead trout. A clear risk assessment should be included on page 49 (traceability within the fishery) to indicate the level of risk associated with certifying by catch species outside the scope of the certification. What practices are in place in the fishery to ensure that non-certified samon species are not presented and sold as MSC?
MML Response: Text has been added to provide clarification on this point.						

3	Major	FCMv6	Appendix 1: 5.2	The report shall set out the scope of the fishery assessment in the context of the assurances the certification body can make about the point to which products from the fishery can be traced	Page 1	In section 1.1, it is stated these fisheries (pink in the mentioned geographic areas) represent the majority of the BC commercial fisheries that harvested pink salmon in recent years. Can clarification be given as to which operators (fisheries/vessels) is included in the fishery certificate, or where this information can be found.
MML Response: Clarification has been added to Section 1.1.						
4	Major	FCMv6	Appendix 1: 5.2	The report shall set out the scope of the fishery assessment in the context of the assurances the certification body can make about the point to which products from the fishery can be traced	Page 3	In section 1.1.1, can clarification be included to confirm if only fish landed in BC ports is eligible to be sold as MSC.
MML Response: This section has been revised as requested.						
5	Major	PA	4 v2		Page 3	In Section 1.1.1, reference is made to Policy Advisory 4. This should be updated to Policy Advisory (v.2) and changes made to this section as the Policy Advisory no longer requires back dating of certificates (and products).
MML Response: The section has been revised as requested.						
6	Major	PA	4 v2		Page 3	The target eligibility date could be any date prior to the certfication of the fishery back to a maximum of six months prior to the publication of the most recent Public Comment Draft report. Therefore the eligibility date can't be prior to 07/06/2010.
MML Response: A Variation Request has been made pursuant discussions with the MSC in late 2009 and 2010.						

7	Major	PA	5v2: 4	Where the information required for this section is found in other parts of a fishery certification report, such information shall be repeated within the traceability section of the fishery certification report.	Page 49	All information about the traceability assessment present on page 3 should be repeated in section 9.0.
MML Response: Information copied to Section 9 as requested.						
8	Major	FCM v6	TAB D-029 v1	Revised Requirements for Stakeholder Consultation in Fishery Assessments	Pages 11-13; 44	Pursuant with paragraph 9, parts a) and c) in TAB D-029, the report does not contain in a separate section or appendix written submissions from stakeholders (part a). A summary of main topics of discussion and concerns are noted in the report. Explicit responses from assessment team are not noted (part c).
MML Response: Information has been included in Appendix B. There was very little written input prior to the release of the PCDR.						
9	Major	FCMv6	Appendix 1	1. The summary shall … include a brief explanation of … the main strengths and weaknesses of the client operation, …. and any conditions attached to the certification and the time scale for compliance.	Pages i-ii, 4-6	No such explanation are provided within either the Executive Summary (pages i-ii) or the 'Summary' (section 1.3). Restructuring the text to avoid the duplication of material provided in these sections would assist readers in identifying this key information.
MML Response: Summary information paragraph has been included in the Executive Summary.						
10	Major	FCMv6	3.4.2	Where the fishery achieves a score of less than 80… the CB shall set one or more conditions…	Condition 9 (2.2), page 60	This condition is raised against 'all pink salmon UoCs' on page 60 even though only the NCCC unit is scored below 80 (Table 5 and Table 9).

MML Response: The Condition has been corrected to require an action plan for only NCCC.						
11	Major	FCMv6	Appendix 1: 5.1	The report shall..…provide a detailed rationale which justifies the scores assigned to each of the performance indicators	PI 1.2.2. Pages 104-106	The rationale provided for PI 1.2.2 does not provide any quantitative analysis of the second scoring guidepost, specifically that "fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks". Such rationales should be consistent with the information presented in Section 5.2.
MML Response: Scoring rationale has been revised.						
12	Major	FCMv6	3.4.2	The condition(s) shall improve performance to at least the 80 level within a period set by the certification body....	Condition 7 (1.7) page 58	The condition is not phrased to ensure achievement of the second scoring issue, specifically that "fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks".
MML Response: The condition has been reworded to take fully address the requirements of the second scoring issue.						
13	Guidance	FCMv6	Appendix 1	Section 5.2		The text refers to certain escapement years being below the "25% line" for some stocks as presented in graphs in Appendix 1. Such line does not appear to be clearly delineated on these graphs, where the 'sum of stream goals,' line is understood to be the '100%' line (interim TRP). Clarification is suggested.
MML Response: Revised figures including the 25% sum of streams or 25% MEG line have replaced graphs in Appendix 1.						
14	Guidance	FCMv6	Appendix 1	Sections 3.8 and 5.1		The text appears to refer to chum salmon and not pink salmon. Checking of the information is suggested.
MML Response: This text has been corrected.						

15	Guidance	FCMv6	Appendix 1: 5.1	The report shall.....…include…. any conditions	Section 10. Pages 50-66	The dual numbering of conditions as both 1-19 and 1.1-3.9 appears to be without any obvious rationale. With the numbers 1-19 not referred to elsewhere (e.g. in the PISG tables and the Client Action Plan), it is suggested they could be dropped from these pages.
MML Response: Corrections made as suggested.						