The British Columbia Commercial Sockeye Salmon Fisheries

PUBLIC CERTIFICATION REPORT

VOLUME 2 – Stakeholder Submission Appendices

Contract Number: 08-09 BC Sockeye Salmon
Version: Public Certification Report Version 1
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Appendix 1 – Letters Exchanged with Conservation Sector Representatives Concerning Stakeholder Consultative Processes.

August 27, 2007

Terry Glavin
Sierra Club of BC
578 Johnson St.
Victoria BC V8W 1M3

Terry:

Here is the information I promised when we last met in Vancouver. While a little later than I had originally anticipated, it should give you the general sense of what we are proposing as a procedural plan should an evaluation ever take place. I have copied Karl so that he can add additional material if I have inadvertently missed something. I did not have a chance to pass this by him before sending it to you.

What Karl and I are recommending goes beyond the minimum requirements of the MSC in many cases. We are making these recommendations after getting many comments back from you and others about addressing concerns of thoroughness and transparency. If you have additional suggestions, please let me know.

As I stated at lunch, I need your comments to feel comfortable that my budget proposal will include the necessary time and personnel to do the required job. I do not want to quote inappropriately and then find out after the fact that a number of additional steps are needed to ensure stakeholders of a proper process. Therefore, I would prefer to include any input you or your colleagues might have up front so I can tailor a budget to properly address any concerns. This is the only way I know to ensure that we can accomplish all the steps necessary to maintain a thorough and transparent process.

Below is a general framework for the steps Karl and I have recommended for completing an evaluation of the BC salmon fisheries. What I have included is a brief explanation of how the proposed steps may (in my view) be different from the MSC requirements at present. I have no doubt that the MSC requirements will be changing to keep pace with the concerns and comments from the individuals and groups that have expressed both support and concern regarding MSC certifications.

Recommended Steps for the Evaluation Process

1. Hire fisheries experts to form an evaluation team

--The MSC requirement is that the certifier of record picks a competent team with the credentials necessary to evaluate the fishery. At a minimum the team must be comprised of three people, and their backgrounds cover the range of expertise needed in fisheries management, ecosystem impacts of fishing, and stock assessments.

--For this project, we are recommending that both industry and stakeholders be asked for recommendations as to experts that can serve on the evaluation team. All recommendations will be gathered and sent out for comment prior to picking experts. Experts will be chosen by the certifier with the goal of meeting recommendations from as many stakeholder groups as possible. At the very least, experts will be chosen to keep the group neutrally balanced regarding any perceived bias. The goal is a neutrally balanced team that can come to as objective an outcome as possible.

--We will choose 3 expert scientists to provide the content review of the fisheries. All will be under subcontract to the certifier. The certifier will have one person work with the team to make sure that the proper processes are followed and completed. All team members cast equal votes as to the level of compliance with MSC Principles and Criteria so no one person can sway the results. The person from the certification company will not be a voting member of the team.

2. Draft a set of performance indicators and guidelines for using them to evaluate the fishery

--The minimum MSC requirement is that the guidelines be drafted by the certifier and posted on the MSC website.

--For this project, we are recommending that the expert panel draft the performance indicators and then make them available to independent scientists and stakeholders for review and comment. The expert panel will then take the comments and revise the performance indicators as needed. After stakeholder comments/suggestions are incorporated, the redrafted performance indicators will be submitted to the MSC for final approval by the MSC Standards Council.

3. ***The final performance indicators will be given to the applicant fishery or fisheries to put together the necessary documents for the expert panel to review.***

   --It will be up to the applicant fishery or fisheries to put a set of documents/data together to prove to the review panel that the fishery or fisheries under consideration meet the MSC Principles and Criteria.

4. ***Stakeholder Consultation***

   --The MSC minimum is that stakeholder groups need to be notified of the process and then the certification team is to solicit the views of any stakeholders showing interest.

   --As you can see from the points above, we are already proposing to extend the stakeholder consultation to include input into the experts chosen on the review panel and in reviewing the performance criteria. In addition, we are proposing to ask the stakeholders to provide written comments where they can on the actual management of the fisheries. We propose then to arrange face-to face meetings to be able to exchange information and ensure that the expert panelists fully understand the issues raised by the stakeholders. While the MSC requirements are to allow several weeks for this consultation, we would be looking for direct feedback from stakeholder groups as to how much time is needed to properly respond. We will adjust as necessary and within reason to ensure a successful process.

5. ***Draft Report***

   --The review is completed and the fishery scored against the performance criteria. A report(s) is then written and submitted for internal review by the applicant fishery or fisheries to catch any possible errors or omissions.

6. ***Peer Review***

   --Peer reviewers are hired to independently review the report(s). We will use a similar process in picking peer reviewers by talking to stakeholder groups. This again is well beyond the minimum requirement, which is for the certifiers to choose reviewers without consultation.

7. ***Public summary document***

--The minimum requirement by the MSC at present is to release a public summary document if the fishery or fisheries are certified. For fisheries that do not pass, there is no requirement for a public document.

--In this project, we are again going beyond the MSC requirement and recommending to the client fishery or fisheries that the full report(s) be put into the public domain, not a shortened version as a public summary. This would allow stakeholders to properly comment.

In general, this is the basic process that we are proposing for any evaluation that may take place in BC. Moreover, others and I have been advocating this as the general process for all fisheries. I believe the MSC is taking these process issues under consideration at the next Standards Council meeting, but you would have to ask the MSC that question directly to get an accurate answer.

I trust this helps explain further the intent for the BC process, which is to get as much cooperative participation as possible from stakeholders and make the process and the outcome as transparent as possible.

As I mentioned at the start, any constructive comments or suggestions for improving upon this are welcome. I hope as Karl reads this he will add his comments as well.

Sincerely,

Chet Chaffee
Manager, Marine Fisheries Certification Program
Scientific Certification Systems, Inc.

cc: Sharon Chow, Sierra Club of BC
Karl English, LGL
Christina Burridge, BC Salmon Marketing Council
Trevor Axford, MSC Accreditation Officer
Duncan Leadbitter, MSC Fisheries Officer

June 27, 2001

Chet Chaffee,

Scientific Certification Systems Inc.

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Oakland, California,

United States of America

94040

Dear Chet:

Thank you for your letter of June 12 regarding a "procedural plan" for a possible MSC certification application from the B.C. Salmon Marketing Council.

As you will see by the attached letter, the Sierra Club of B.C. is in the midst of an internal review, with the Sierra Club of Canada and the Sierra Club of the U.S., with respect to our position on the Marine Stewardship Council generally. This review was prompted by the MSC's recent conduct, especially its certification of Alaska's salmon fisheries, and by the possibility of MSC certification being extended to B.C.'s salmon fisheries.

As to the specific matter of the process you envision for an MSC certification process for B.C. salmon, your letter has been considered at length by the marine committee of the Sierra Club of B.C. What follows is a summary of our response, addressing points in the order in which you raise them in your letter.

We take no comfort in your suggestion that an application for certification from the B.C. salmon-fishing industry would prompt you to canvass "industry and stakeholders" for recommendations regarding the names of experts to serve on the "evaluation team." This was something you told us to expect of a B.C. application when we first discussed this matter several weeks ago.

In the event that your company chose appropriately in the selection of an evaluation team, you propose that the three-member expert panel will draft performance indicators for their evaluation that will then be available for review by "independent scientists and stakeholders." We have no confidence that the performance indicators would be appropriately revised as a result of these reviews. There is nothing in what you propose to ensure that "stakeholder comments/suggestions" will be incorporated. Further, should draft performance indicators be developed in this way, it is solely the MSC Standards Council that approves them.

Further, while you propose that stakeholders should be given an opportunity "to provide written comments where they can on the actual management of the fisheries," it is unclear whether stakeholders, or indeed anyone outside of government and industry, will be given any opportunity to review or comment upon the case the applicant makes that the salmon fisheries meet the MSC's criteria. Neither does your correspondence indicate where an opportunity might exist for independent review, or stakeholder comment, on the data the applicant would present in an attempt to prove its case.

Importantly, beyond a review by peers chosen only by the certifier, the expert panel's draft report - in which the fisheries-management regime is scored against the panel's performance criteria - would be made available only for internal review by the applicant. There is no assurance that independent scientists and stakeholder groups will be given any opportunity to fully review the report. "Talking to stakeholder groups" about who reviewers might be is insufficient.

Similarly, we take no comfort in knowing that the full, final report will be made public only if certification is granted, and only if the applicant agrees to an SCS recommendation that it be made fully public.

In response to your request that we provide suggestions about how to improve upon the procedures you've proposed, we must preface our comments by reminding you that among reputable environmental organizations, confidence in the MSC process has been shaken worldwide, and the Sierra Club of B.C., specifically, remains adamant that the MSC's blanket certification of Alaska's salmon fisheries was irresponsible.

We are convinced that a fundamental flaw with the MSC process is that certification may be extended to fisheries that are not sustainable – but merely managed and prosecuted by agencies and industry groups that make certain specific promises which, theoretically, would place their fisheries on a sustainable footing. Moreover, the MSC process itself is designed to produce only the best evaluation an applicant's money can buy. The more rigorous the evaluation, the more the process costs the applicant. This not only compromises the integrity of the MSC process, but it is unfair to potential applicants whose fisheries may be subjected to more rigorous evaluation than others.

Under these circumstances, in order for an MSC certification of any portion of the B.C. salmon fisheries to have any credibility with conservation organizations, the following conditions would necessarily be present:

- The individuals chosen to serve on the expert panel must be scientists with credibility among conservationists – individuals who recognize the importance of restoring and conserving the diversity of naturally-spawning salmon populations over the greatest possible range, in an abundance that takes the role of salmon in the functioning of terrestrial ecosystems into account.
- The conservation sector would have to be confident that the performance indicators established by the panel are appropriate to the circumstances of the salmon-fisheries management regime on Canada's west coast, and to the specific circumstances with respect to the protection of salmon habitat in British Columbia, and to the protection of the constitutionally-protected fishing rights of B.C.'s aboriginal peoples. It would be necessary to consult directly with mainline conservation groups and aboriginal organizations to ensure that such performance indicators are acceptable. The MSC itself would have to take measures to ensure that B.C.'s conservation sector, and B.C.'s aboriginal leadership, are satisfied that the performance indicators are sufficient.
- All information provided to the review panel by the applicant and by fisheries-management agencies should be publicly available. Aboriginal groups and the conservation sector should be provided with an opportunity to present their own case with respect to whether B.C.'s salmon fisheries meet the MSC's criteria.

- The draft report of the review panel should be made immediately available to conservation organizations and the aboriginal leadership for their comment and response. The MSC should make every effort to ensure that the final report enjoys the widest possible approval.

We realize that what we are proposing may, in effect, hold B.C.'s salmon fisheries to a higher standard than was required of the Alaskan fisheries-management regime. This is regrettable, because it would be patently unfair. However, we must insist that conservation standards should not be lowered simply because the MSC conducted itself in a less-than-rigorous way with respect to the Alaskan salmon fisheries.

We also realize that what we have outlined here may add somewhat to the costs of the certification application, which are expected to be borne by the applicant, in this case the B.C. Salmon Marketing Council. This, too, is unfair. Ideally, should SCS and the MSC commit to a certification process that is satisfactory to the conservation sector, B.C.'s conservationists might find the resources, with the MSC's help, to specifically recover these costs.

We have advised the B.C. Salmon Marketing Council that the best-case scenario is that we proceed together in this matter. We have made it clear that we would prefer to think of the problems created by the MSC's certification of Alaska's salmon fisheries as problems that both the B.C. industry and B.C.'s conservationists will most effectively solve cooperatively and jointly.

It is in that spirit that we offer the observations and suggestions contained in this letter.

Sincerely,

Terry Glavin,

on behalf of the Sierra Club of B.C.

3 October 2001

Terry Glavin and Sharon Chow
Sierra Club of BC
578 Johnson St.
Victoria BC V8W 1M3

Terry and Sharon:

I am writing to you once again in hope of clarifying what appears to be a misunderstanding regarding our commitment to conduct the evaluation of the BC commercial salmon fisheries under the Marine Stewardship Council initiative in a manner that will have credibility with all stakeholder groups, including the conservation and aboriginal groups.

In my letter of 3 September 2001, I did not properly acknowledge the fact that in general the four conditions you raised in your letter dated 27 June 2001 were acceptable to us. I apologize for not clarifying this in writing.

So to be clear, we agree that each of the four conditions you raised must be addressed early in the evaluation process of the BC salmon fisheries. To accomplish that:

- SCS will consult with many groups to ensure that the individuals chosen for the expert panel are respected fisheries scientists and include scientists with credibility among conservationists and BC's aboriginal leadership.

- SCS and the MSC will take measures to ensure that the performance indicators address the concerns of the BC conservation sector and BC aboriginal leadership with respect to the evaluation of the BC fisheries.

- Aboriginal groups and the conservation sector will have access to all public information provided to the review panel, and representatives for each group will be encouraged to present their own case regarding the certification of the BC fisheries directly to the review panel.

- Lastly, the report of the review panel will be circulated to conservation organizations, aboriginal leadership and others for comments and response.

I hope that this helps clarify our response to the points you raised. Once again, if there is anything that needs to be included that I have missed or not properly understood, please contact me directly so that I can work to solve the problem as quickly as possible. As always, I am committed to working with all sectors to make this project a success as well as an example for all future evaluations.

Sincerely,

Chet Chaffee

Manager, Marine Fisheries Certification Program
Scientific Certification Systems, Inc.

cc: LGL, Karl English
BC Salmon Marketing Council, Christina Burridge
MSC, Trevor Axford, Duncan Leadbitter, Brendan May, Jim Humphreys

Appendix 2 – Peer Review of Performance Indicators and Scoring Guideposts

Comments on
MSC Evaluation of the British Columbia Commercial Salmon Fisheries

Performance Indicators

From: B. Riddell,

Pacific Fisheries Resource Conservation Council and

Science Branch, Dept. Fisheries and Oceans

Tuesday, August 06, 2002

In order to get you comments back as soon as possible, I am writing about some general concerns and you can determine if you want more specific comments. After several readings of the document I have to admit that I was disappointed. But, I was not certain why because many of the indicators seemed reasonable. So I started from each MSC principle and criterion (p&c) that I understand you are not allowed to change. Unfortunately, I think these are a serious problem. I believe that the p&c were originally written for marine fisheries (non-salmon) and I can see how they could be more applicable to those fisheries. But even then the principles are not clear and their meaning must be interpreted (i.e., the Intent sections), use of terms is confusing (e.g. productivity), and the criteria repeated between principles. I extracted just the p&c so that I could more easily review the text (attached to this memo) and note: that criteria 1b and 2c are exactly the same, that criteria 1c and 2b address the same issues, and that wordings in 1a and 2a are very confusing (these seem more concerned for using important "terms" than be clearly understood). I am assuming that Principle 1 concerns fishing conduct and that Principle 2 concerns the biological bases of the resource, but even this is not transparent. I have less concern for Principle 3 but it maybe a more easily described issue. So the challenge becomes how to take such poorly written "principles" and apply them to Pacific salmon fisheries, and understand what the evaluation will be based on.

The approach then seems to be to write sub-criteria and indicators that compensate for the p&c that you cannot address. I considered what is required for sustainable management of commercial fisheries, and summarized my list in the second attachment. My list of points may not be comprehensive but it does identify that there are issues of resource inventory and assessment, a management plan, conduct of fisheries and data collection, post-season evaluation, and enforcement and compliance (with numerous Treaties, etc.). This does expose another problem though since this evaluation only addresses the commercial fisheries. The issues of stock sustainability are clearly now involved with 3 major fishing sectors (Native, recreational, and commercial), International obligations, and habitat management (most of which are not addressed in this evaluation). Not to mention the responsibility of the Dept. of Fisheries and Oceans for the core assessment data that the commercial sector has no control over at all. So what is that you can really evaluate about commercial fishing? We could review stock

sustainability for some stocks (e.g.. sockeye, pink and chum salmon), but only a minor component for other stocks. Is the evaluation intended to be species/stock specific by areas, or an overall assessment? We could evaluate the conduct of the fisheries but for what time periods (this is never even mentioned).

If this evaluation is important to the commercial industry and the people involved, then the evaluation criteria (the indicators in this case) should be clear and understandable, appropriate to the commercial sector, and measurable. An example of the latter is the frequent reference to ecosystems … other than the theory, how would you evaluate consideration of ecological issues in salmon management?

I think that many of your sub-criteria and indicator statements are workable but I encourage you to limit the text to very clear and explicit meanings. For example:

Sub-criteria 1.2 include "… and associated ecological community." None of the indicators refer to anything ecological?

Sub-criteria 1.3 refer to "… to unsustainable levels." Most levels of stock production can be sustained at some rate of fishing, but I presume you actually mean lower levels of production being undesirable even if they are sustainable.

Principle 2, indicator 2.1 and 2.2, how would you provide any credible evaluation of these statements?

Indicator 3.1 requires knowledge of "age, size, sex and genetic structure of the target stocks.." What is being assessed here, certainly the genetic bases of these traits are not. Is it the genetic structure of the sub-populations in the target stocks? The traits identified involve phenotypic variation and vary annual with the survival rate of brood years. Are these the only traits that influence reproductive capacity?

Further, there are certain important terms that are not defined. The most confusing of which is "productivity". At times I think you mean production, other times yield, etc. This will lead to poor evaluations. Also, "target stock" … I presume for salmon you mean a key indicator stock with detailed information gathered, or are you referring to the stock that a fishery is literally targeted at? And then there are LRP and TRP, there is no agreement on the application of these to salmon so how will they be assessed?

Suggestions:

1) Decide under Principles 1 and 2 what will actually be involved in the evaluation. I might suggest that Principle 1 address the conduct of fishing (objectives, accounting, total mortality issues, sampling including non-target, non-salmon species, and compliance and enforcement monitoring). Principle 2 would then address the stock inventory and assessment/evaluation issues (identification of stock management units, accountability of indicator stocks and application to other stocks, basis of biological objectives, total mortality accounting over all fisheries, and appropriateness of Departmental monitoring

programs, etc.). If Principle 3 addresses management processes and governance, then it is likely fine, including Criterion 7.

2) I think you need to reconsider and agree on what exactly is being evaluated. At present, this outline is more an evaluation of the stock and management process that allows for commercial fishing. But as I noted, the impacts on stocks and their conservation are not only due to commercial fishing. Also, commercial fishing today is very different from the past. I think you need to define the geographic scale and time period included in this evaluation. The commercial sector has made great improvements in recent years, but it took major setbacks during the 1990s to stimulate these changes.

3) In this evaluation, the adequacy of government monitoring and assessment programs and their accounting for uncertainty will be as important as any comments on fishing activities. It would be very useful to separate these issues where possible and make clear statements about these factors. This could be addressed by including appropriate indicator questions.

4) Similar to point 3, the issue of appropriate research is mentioned in several locations. This would be another important issue to comment on but likely needs some specific indicators. For example, if stock management units are undefined or ecological process unknown, are there research programs addressing these. Or, if incidental mortalities of non-target species are monitored in a fishery, can the impact of those mortalities be put in any context … is it a problem?

5) A number of criteria and indicators involve identifying frameworks or processes. Frequently these are in place but the real issue for review is whether they are effective. Have these processes in the past lead to appropriate change in the fisheries or establishment of new research programs, etc.? The indicators and evaluation standards should note past effective processes and not vague statements about the existence of process.

I suspect that I am creating more work than being very useful, so I should move on to my own work. I was rather surprised by the difficulty of applying the MSC p&c to salmon fisheries and hope they consider re-writing them for such evaluations. But that won't assist your current task. If you clarify the evaluation intent of the principles, and then provide explicit and measurable indicators under each, then I think the evaluation could be supported. With the present text though I am not confident that an objective and fair evaluation of the commercial fisheries would result. It would certainly be highly dependent upon the members of the review team and their interpretations.

Thanks for providing a copy to review … I will be reviewing with interest how Alaskan ever met these criteria in all fisheries!

MSC Principles and Criteria

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.

Criterion 1a: 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.

Criterion 1b: 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.

Criterion 1c: 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.

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.

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.

Criterion 2a: 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.

Criterion 2b: 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.

Criterion 2c: 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 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

Criterion 3a: 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.

Criterion 3b: The management system provides for a framework for research, the results of which are pertinent to achieving the objectives of management.

Criterion 3c: 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.

Criterion 3d: The management system implements measures to control levels of exploitation in the fishery.

Criterion 3e: 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.

Criterion 3f.: The management system provides for the operation of the fishery to be in compliance with all relevant legal and administrative requirements.

B. Fishery Operations Criteria

Criterion 3g: Fishing operations make use of gear and fishing practices that limit ecosystem impacts.

Steps in Stock Assessment and Management of Pacific Salmon (excluding research)

Determine the resource inventory:

a) based on species, geographic area or habitats, and biological traits … determine the populations units in the resource

b) develop an assessment framework of spawning escapements by population, determination of productivity and sustainable exploitation rates (based total fishing mortality) for some indicator populations, conduct annual assessment surveys for basic biological and demographic data

c) develop biological objectives for management (escapement goals, LRP or TRP, etc.) and annual forecasts of abundance

d) establish annual monitor programs (e.g. tagging) including environmental variables that affect production

e) habitat monitoring and protection (enforcement)

Fishery management planning:

a) develop management objectives for fishery, identify stocks exploited (frequently multiple stocks/species) and identify limiting factors, such as depressed individual populations, etc.

b) balance conflicting issues of production and yields vs. conserving biodiversity and ecosystem aspects

c) identify levels of uncertainty and incorporate allowances for uncertainty in decision processes (Precautionary principle)

d) conduct consultations in determining final management plans

e) establish regulations/procedures, and assess compliance against other agreements (Pacific Salmon Treaty, domestic policies, and Native agreements)

f) develop an evaluation framework and check points

Conduct of Fisheries:

a) fisheries are defined by area, time period, and gear ...and for each there will be retained catch and incidental mortalities (estimate encounter rates of non-retained fish, and appropriate mortality rates)

b) monitor catch and fishing effort, accounting must be timely and accurate (or if estimated then designed for a specified level of precision and accuracy)

c) conduct sampling of fishing mortalities (encounter rates, stock compositions, age for some species, recovery of tags, average weights, etc.)

d) conduct in-season test assessments (monitor check points and pre-season forecasts

e) monitor fishery for compliance

Post-season Evaluations:

a) develop an annual post-season assessment process to review conduct of fishery, regulations, compliance, and adequacy of data collected

b) examine timeliness of data needed for annual assessments and appropriateness of sampling strata, data, etc., identify limiting factors

c) at higher level … assess consistency with regulator processes and Treaties.

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26 July 2002

Chet Chaffee

Scientific Certification Systems, Inc.

2004 Sunnyview Lane

Mountain View, CA 94040

Dear Chet,

Please find attached my comments on your "MSC Evaluation of the British Columbia Commercial Salmon Fisheries Performance Indicators" draft dated 3 July 2002. I commend the certification team for their efforts. All of you had a difficult task.

Although I have many comments, I hope that they are useful to you and the other members of the certification team. My intention was to help improve the certification procedures. Thanks for the opportunity to have input to your process. Please let me know if you want me to attend a meeting. Good luck!

Sincerely,

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26 July 2002

Comments on the "MSC Evaluation of the British Columbia Commercial Salmon Fisheries Performance Indicators" draft dated 3 July 2002

Background

As I understand it, you were given the Marine Stewardship Council (MSC) Principles 1 through 3, and each principle was associated with one or more of the MSC's criteria. You have developed the "Subcriteria" and their affiliated "Indicators" to apply to the B.C. commercial salmon fisheries. Each indicator will be used to give a "score" to these fisheries. I think that the "certification team" (henceforth called "the team") has done an excellent job of drafting text to achieve these ends. It is much better than the Alaskan certification guideposts. This initial draft is the hardest step, in some sense, and I could not have done any better. However, I have many questions, comments, and suggestions below, but keep in mind that the bulk of your framework is very good.

A few of my comments arise from a lack of information provided about exactly how the team will apply the written material to come up with the scores. I will assume that the procedures will be what I heard from Karl English informally over the phone and from what I learned a couple of years ago about how the Alaskan salmon certification process worked. Specifically, I heard from Karl that these principles, criteria, subcriteria, and indicators will be applied separately to each species and region (unspecified) in B.C. Furthermore, apparently the onus will be on the management agencies (DFO and PSC in particular) to provide detailed information for the team to use in their scoring. This is both appropriate and necessary for most components of your scoring. However, it bothers me on one particular point. In some indicators, you give a certain score for "...a strong record of taking action on ..." or "...most often adjustments are made in a timely fashion." Clearly the score will depend on what proportion of the cases that the certification team knows about take the appropriate action. Lack of some independent "score card" can lead to misrepresentation of reality in either direction (i.e. either in favor of the claim that the agency is doing a good job if the team is presented with mostly those cases or not in their favor if the team hears about the high profile, mostly negative cases that appear in the press and that are the focus of many harvesters). I don't have a practical suggestion to get around this other than for the certification team to be aware of the issue.

As well, if your B.C. process is to be like the Alaskan one, there will be some procedure (Analytic Hierarchy Process?) to help the team develop their scores. Without knowing how that process is being applied, I cannot know exactly how the overall scores will be developed. In

addition, is it the case the a score of 60 is a failure but 80 is a pass, and 100 is pass "with flying colors?" This has to be clarified in the publicly written documents about the procedures. One person's 60 is a pass, whereas another's 60 is a dismal failure.

General comments

Before I get into specific detailed suggestions, I'll state some general ideas that were in the back of my mind as I was reading your draft. You might consider whether these ideas are worth articulating somewhere or acting upon.

The broad objective of the MSC certification process is to help maintain biologically and economically productive fish populations over the long term. To that end, the indicators and guideposts for a passing score should be quite rigorous (i.e. high standard of proof that the required conditions are being met). Generally they are sufficient in your document, with the exceptions that I note later. However, the success of a certification scheme also hinges on at least two things: (1) retailers and consumers being educated about what MSC certification actually means in terms of the environment, and (2) management agencies and harvesters being provided with strong incentives to "perform" to high standards over the long term. For these reasons, it is critical that there be very clear meanings for the indicators and guideposts that result in a passing score. This is one major place where the current draft could be improved considerably. As I detail below, ambiguities are very common.

In recent years, considerable work has been done on developing measurable "indicators of sustainability," particularly by Serge Garcia and John Caddy at FAO in Rome. You should consider reviewing documents such as the symposium volume edited by Garcia and Staples (2000a) and their detailed paper therein (Garcia and Staples 2000b). These papers contain ideas on which measures are practical and useful and how to articulate more specifically some of the conditions that you want met to obtain passing scores. Unfortunately, I read those papers when they first came out and don't remember details, and I don't have time to dig them out right now. However, I remember that they had some innovative and useful ideas (e.g. traffic light and other graphical representations), which seemed to be relatively easy to implement and communicate to others.

Another general suggestion comes from a paraphrase of a point in Yost (1999). "Does the [management system] set performance standards for industry, enlisting companies' creativity in solving environmental problems rather than micromanaging through traditional command and control?" I make one suggestion later to create such an incentive, but you might consider inserting others elsewhere.

Another important point is that the indicators and scoring guideposts should provide incentives for management agencies and harvesters to continually improve their performance over time. You mentioned this idea in only a few places in the document; you might consider inserting it elsewhere too. A related point is that the indicators and guideposts should help the management agencies and harvesters move toward having similar objectives, rather than different ones and collaborating to achieve them. For example, ultimately, both groups should have as their primary objective the maintenance of fish populations that are highly productive, biologically and economically. You could do this by building in more recognition in your 80% and 100% guideposts that harvesters comply with conservative regulations when required by the poor status of a stock, management agencies use the latest innovative methods for anything, etc. You already have a few instances of this idea, but more could be inserted. At the same time, I would like to see some statement that you can't have an economically productive system without

it also being biologically productive. While that seems obvious to us, it is worth stating -- harvesters seem to forget this sometimes in the presence of their short-term goals.

After finishing your draft, it occurred to me that there was very little evaluation of the fishing industry; most of the indicators focused on the management system. You should come up with more evaluations of fishing practices because they contribute heavily to conservation problems.

Detailed questions, comments, and suggestions

1. It should be made very explicit and unambiguous which components of the MSC evaluation structure have a "veto" over the certification of a given species/region. I believe that the general MSC material says that a failure of any one of the "Principles" to "pass" means that the fishery will not be certified. However, it is not clear whether an overall pass would be given to Principle 1 (for instance) if its MSC criterion #1 passes but its criterion #2 fails. This question applies to each level in the hierarchy below the level of "criteria." For instance, it is not clear whether an overall pass would be given to MSC criterion #1 if subcriterion #1.1 passes but subcriterion #1.2 fails. Likewise, what happens if the fishery fails on indicator 1.1.3 but passes on indicators 1.1.1 and 1.1.2? Also, what if one of the scoring elements under a 60% scoring guidepost is true (i.e. the situation is bad), but the rest are not true? Does that lead to a 60% score for the indicator or does the score depend on the relative weight given to each scoring element? Can you give different grades (A, B, or F), rather than just pass or fail?

I realize that in the past, the MSC certification used some process of averaging (perhaps even weighted averaging using the Team's judgment). However, what should be done first is to identify in writing which indicators, subcriteria, or criteria are "fatal" to the certification of the species/area fishery if they do not pass. This suggestion arises because obviously, some indicators are more critical than others for achieving the goals of the MSC principles and therefore should get more weight. To ensure a credible process, the team needs to write down this ranking/weighting of indicators, subcriteria, and criteria before the "data" are gathered to develop the scores, and keep this ranking/weighting confidential to prevent biasing of information by the groups providing the data. Also, if you are averaging scores, watch out for a built-in bias of having two categories with a passing score and one with a failing (e.g. what if you gave a zero to the failing scoring elements?).

2. It is also essential that the team insert into subcriteria and indicators its own elaborations or clarifications of the MSC Principles and MSC Criteria in cases where those are too vague or unclear. For instance, I would suggest clarifying MSC Principle #1 by explicitly addressing several issues. First, clearly define what you take the MSC to mean by "overfishing." This is non-trivial; the U.S. National Marine Fisheries Service has an entire technical report on the topic. However, you could make it as simple as avoiding "recruitment overfishing" (suitably defined, e.g. having a probability less than X of the spawning population abundance of a given stock management unit dropping below abundance Y in the next Z years). These three elements (X, Y, and Z) are also critical to mention regarding "recovery" (last word in MSC Principle #1). Otherwise, you could get into a controversy because one person's "recovery" level is not another's.

Second, I would carefully define various terms in the publicly available text. For instance, in MSC Criterion #1, "productivity" could lead to confusion. I am continually amazed at how

many biologists, let alone managers, don't use such terms correctly. DFO traditionally uses the word "production" to mean amount of fish caught. As the members of the team know, traditionally, ecologists use the term to mean an increase in biomass of a population. "Productivity" (different from "production") usually refers to the amount of increase in some population per unit time (e.g. per year), per unit spawning population, and/or per unit area. Obviously, there is a big difference between the total abundance of some population and its rate of increase (or decrease). Furthermore, as you know, in the case of Pacific salmon, abundance of the population is usually measured in terms of numbers of adult recruits, rather than using units of biomass or reproductive potential. In any case, regardless of how you choose to define it, to avoid confounding interpretations, I would suggest making your interpretation of "productivity" in MSC Criterion #1 really clear.

3. In general, please invoke the "clarity test" of Morgan and Henrion (1990, page 50). This is where one asks, "Is the condition stated in a scoring element under a given scoring guidepost sufficiently well specified that a group of knowledgeable people, given a description of the issue, could agree whether the condition had been met (e.g. recovery or maintaining genetic and ecological diversity)? Without such precision, vagueness about what the stated condition represents is liable to get confounded with uncertainty about whether it was met. This suggestion of asking yourselves whether the clarity test has been met applies throughout the document, which currently contains quite a few ambiguous terms. While I respect the certification team and trust their judgment, the less ambiguous terms are, the easier the scoring process will be, and the greater will be the credibility of results.

4. a. Your italicized interpretation directly under MSC Criterion #1 needs some editing for grammar and style. More importantly, though, clarify whether the last phrase "will influence the evaluation scores" refers to Principle #1 or #2.

b. The rest of the document also needs considerable detailed copy editing, e.g. "rationale" instead of "rational", "defensible" rather than "defensive," etc. I recognize that the team had very little time to write this draft and I think it has done an excellent job of producing a framework for comments. However, it really needs to be polished to make it more readable.

In my comments below, rather than referring to pages on my printout, I use headings denoting the criteria and indicators. This is because I have sometimes found that my printer gives different pagination than other printers.

5. Indicator 1.1.1:

a. The wording of the 100 and 80 Scoring Guideposts are too similar. I cannot tell the conditions under which one of them will be met and the other not.

b. You should define "stock management unit." I began to question what you meant by this when you mentioned "stock management units for non-target species" under Indicator 1.1.2. Don't you really mean limits on by-catch of particular stocks or species, regardless of which population they come from?

6. Indicator 1.1.3:

Knowing the "geographic range for harvest" is not good enough. What you need to get a 100 or even an 80 should be "reliable" and "timely in-season" information on this topic. While this might sound picky, I recall numerous places in the MSC scoring guideposts for Alaskan salmon where such vagueness and lack of rigor apparently allowed so much "weasel room" that a pass was given by the certification team when most biologists/managers would have given a failing score. You could even go further and indicate quantitatively what you mean by "reliable."

7. Subcriterion 1.2:

a. It is really important that somewhere, perhaps not here, you clearly state what you mean by "maintain the productivity." I don't mean just defining the word as I mentioned above. Instead, I mean to state, for example, that you want to maintain productivity of the target populations at a moderate to reasonably high level. The reason to state this is that I can maintain a population at a low level of productivity (e.g. recruits per spawner per year), but that is clearly not desirable. Again, while this might seem obvious, it doesn't hurt to be explicit.

b. Modify your italicized paragraph as shown in bold text: *Extended* [**meaning what**?] *monitoring of specific stocks is generally required to compute* **reliable** *estimates of productivity.* Furthermore, what is meant by "**reliable**" (± X% of variable Y, and what units does Y have?). This last question applies to every use of the word "reliable" in the text.

c. Also, in every place that you refer to some data or information being "available", indicate how frequently the data must be available (e.g. annually applies to most cases in this subcriterion).

8. Indicator 1.2.1:

Expand on the fisheries for which you need reliable catch estimates, i.e. all commercial, sport, native fisheries, both Canadian and non-Canadian, that harvest a particular target or non-target stock.

9. Indicator 1.2.2:

a. Is it possible to insert something in the second scoring element under "100" or perhaps elsewhere in the document the idea that the Team's scoring process is critically affected by how data "are used." It is one thing for a scientist or manager to take in-season estimates into account in some quantitative model and another to just qualitatively consider the categorical state (e.g. low, medium, high estimate).

b. Insert "spawning" before "abundance" in the second scoring element under "80".

10. Indicator 1.2.3:

a. The statement "…have been considered…" for this indicator is too vague. Don't you need to know what has been done with the information by the management agency? See point 9a above. I suggest tightening up the wording on several points like this in order to create the incentive over the long term to improve on the way in which information is used. The management agencies have come a long way in the past two decades but compared with NMFS's

management of groundfish populations, for instance, we have some room for improvement in the development of scientific advice for management of Pacific salmon.

b. 80%, 2nd scoring element: Define "biosampling."

c. In the first scoring element under "60" define what "is not adequate." Except for the most obvious failings of not having things like aging data, I would suggest that "not adequate" can only be determined after broader risk assessments have simulated the effects on performance of management procedures that are missing various bits of information (or that have such data but with high variance on the estimates). A given state of the "information available" would be "not adequate" if it led to an unacceptably high probability of a population dropping below its limit reference point (defined as I do below) in some specified period. This is not intended to be an idealistic academic suggestion. It is a practical matter. Someone decides what is "adequate" based on several criteria. I would like to see the bar raised over time by creating the incentive for more applications of rigorous quantitative risk assessments, like they have done in NMFS.

11. Indicator 1.2.4:

a. I think you meant in the definition of this indicator that "…management guidelines…" should apply to both target and non-target stocks; it only says the latter.

b. 100%, 2nd scoring element: Expand on what you think should go into "risk assessment." For instance, at the very least, it should include an explicit consideration of the major uncertainties and an examination (preferably through quantitative modeling) of the implications of these uncertainties for estimates of stock productivity and the potential effects of the range of management options on both the target and non-target stocks.

12. Subcriterion 1.3:

a. Reword this subcriterion to be: "Management goals and procedures for achieving them have been set and are appropriate to create an acceptably low probability (X) that stocks will decline to unacceptable levels (Y_i, one for each stock i) within Z years."

b. The most important change to make here is to the Team's italicized interpretation of "limit reference point (LRP)" under indicator 1.3.1. It is not correct, according to my understanding, which is based on the FAO's use of the term (e.g. Caddy and Mahon 1995). As far as I am aware, the standard definition of an LRP in most fisheries is that it is a condition to be avoided. It may be an unacceptably low abundance or an unacceptably high % harvest rate but regardless, it is expected that sufficient regulatory action will be taken by the agency that there will be a small chance that the stock will ever reach that LRP. Therefore, action such as closing fisheries, which you mention, should be taken well before the LRP is reached. We cannot wait until "the exploitation rate is greater than an LRP exploitation rate", as you put it. How can a scientist evaluate the effectiveness of some proposed management regulation if there is ambiguity about what it is trying to avoid (or achieve)? If my interpretation is correct, you must change the LRP wording in several places in this document. Unfortunately, I have heard highly respected DFO scientists using this term LRP incorrectly (the way you use it) and my attempting to explain their misuse of the term and sending them copies of the appropriate FAO papers, etc. seems to not have changed their thinking. Perhaps you can set them straight. By the way, if I am wrong here, please let me know.

13. Under the first Indicator 1.3.1 (there are mistakenly two indicators with this number):

a. The 4th scoring element and others under this indicator state "…protect all stocks…" Isn't that an impossible task? Perhaps it should read "an acceptably high proportion of stocks." This generally applies throughout the document. There should be explicit recognition in the relevant scoring elements that the stated conditions should be achieved in a certain proportion of the time or by a given proportion of the stocks. This builds in a general recognition of the uncertainty in achieving some stated goal or condition.

b. Insert in some scoring element that "the LRPs, TRPs, etc. are widely available for inspection and evaluation."

c. The "60" score should also include at the end of the sentence "… appropriate for target stocks or protect only an unacceptably small proportion of target stocks."

14. Under the second Indicator 1.3.1:

a. The definition of Target Reference Point (TRP) is too restrictive. You define it as the point at which the maximum productivity of the stock occurs. Many scientists (and perhaps managers) argue that this MSY state (if that is what you mean) is too risky. Given the large uncertainties arising from natural variation, measurement error, and implementation uncertainty, many agencies no longer consider that the target should be MSY. In fact, some of them in Europe and the U.S. consider the MSY state to be one of the LRPs (something to be avoided)! [I noticed that you said essentially this later under Indicator 2.2, so change 1.3.1 to be consistent.] Many scientists and managers now suggest that the TRP should be some state that "presses" the population less hard. To fix this, I would simply change your wording to leave open the definition of TRP because you quite properly create an expectation in your scoring guideposts below that the TRP will have been reviewed and found appropriate.

b. Do you mean sub-stocks in the phrase "the components of the target stock" in the 3rd scoring element?

I reached the end of MSC Criterion #1 and was struck by the very limited mention of the concepts of uncertainties, risk, and probability. Surely these are among THE key issues that the certification process is trying to deal with, so you should consider incorporating here and elsewhere some of my suggestions above about phrasing that will bring measures of probability into the Team's scoring procedures. As you well know, nothing is "black and white", so these three issues of uncertainties, risk, and probability must be dealt with explicitly in as many places as possible.

15. MSC Criterion 2, Indicator 2.1:

a. 100%, first scoring element: "…pre-agreed responses to low stock size or high exploitation rate …" Some species like chinook and coho are managed on the basis of target exploitation rates, rather than target spawner abundances. Your text properly recognizes this point later but all of it should be checked for consistency. Also, the "…comprehensive and pre-agreed responses…" should preferably be developed through quantitative analyses.

b. 100%: delete the second scoring element because of my previous point about LRPs.

c. 100%: insert a scoring element such as, "Stocks are allowed to recover substantially before fishing on them is increased."

d. 100% and 80%: After reading the entire document, I did not find a single reference to "enhancement" or "artificial propagation." That is an oversight. This section might be the most appropriate place to put something about this. For example, in keeping with the FAO's (1995) suggestion, give high scores for a scoring element such as: "The management agency does not use artificial propagation or other forms of enhancement as a substitute for maintaining or recovering wild populations." You might also consider having a new principle that is very similar to MSC's Principle 2 (which says "Fishing operations should allow for the maintenance of structure..."), only the new one would start with "The management system should ...maintain biodiversity, etc." Is this point covered somewhere? It is really important.

e. Similarly, create a 100% scored scoring element somewhere that says: "The management system takes extra precautions in the presence of the limited knowledge about biodiversity [or whatever topic you wish to insert] and how to effectively measure it."

f. For the "60" guidepost under indicator 2.1 -- add on after the end: "…depletion, or the plans are inadequate to achieve the recovery goal, or their adequacy has not been determined through analysis."

16. Indicator 2.2:

a. In the indicator's definition, expand on the concepts to get away from the lack of a "black or white" situation in the salmon fisheries, e.g. "The abundance of a target stock is not sufficiently reduced to create an unacceptably high probability of stock depletion." [You could define depletion near the start of the document as I did above -- stock abundance being less than Y by year Z]." Also, "sustainable" is not a yes/no variable; there are various levels of sustainable harvest or probabilities of having a highly productivity population. Perhaps say instead "harvest rates are at moderate to high levels". Again, the point about limit reference point applies at the end of your phrasing about this indicator.

b. Replace B_{MSY} with S_{MSY} because, as you know, Pacific salmon normally use S (abundance of spawners), not biomass.

c. As noted above, the definition of a LRP should be changed to represent the condition to be avoided, i.e. the state that causes various responses to be initiated before the stock gets there. I will not try to re-write all sections where the incorrect use of LRP appears. I assume that you will want to do so in a way that will make everything consistent and integrated. Short of focusing entirely on the probabilistic definitions that I have described above, you might use Caddy and Mahon's (1995) term, "threshold reference point" (ThRP). This is the state of the stock or fishery at which new management actions will be taken so as to avoid the LRP. In many of the places where you use LRP now, you could use ThRP instead of LRP. For instance, the second scoring element under the "80" guidepost could read "Exploitation rate is reduced or other measures are taken as stocks decline below their ThRPs."

However, in my opinion, using ThRP is a poor compromise. It is not a widely used term now because it is unnecessary to the extent that management actions are designed to achieve the probabilistic objective that I have mentioned several times above (the actions lead to a probability of less than X that the population (or other indicator like exploitation rate) will be at level Y within the next Z years. The ThRP is unnecessary because at every state of the stock or

fishery, actions should aim to keep that probability less than X. If they don't, they should get a failing score.

d. Even after you re-write the scoring guideposts for this indicator to deal with the problem of the use of "LRP", it is appropriate to include under the "60" guidepost some criterion such as "below the LRP" in 2 of the last 5 years (or whatever numbers you choose).

17. In your italicized interpretation of MSC Criterion 3, the last sentence says that "impacts on "local stocks or spawning units" are used as a proxy at the 80% scoring level." However, your text of that 80% guidepost does not mention "local stocks or spawning units".

Furthermore, I expected you to distinguish between having information comprehensively across all major stocks for a 100% score compared with just having good data for some specific local indicator stocks for the 80% score. Your wording does not do this. Wouldn't that distinction be useful to make here or elsewhere in the guideposts? I have not yet read anything about indicator stocks and it may appear later in the document. However, if you do bring in this idea, a key issue is, "How well do the indicator stocks (for which there tends to be lot of information) reflect the status and productivity of other stocks in the region, particularly those that are most at risk?" I would think something like the following would be appropriate, perhaps somewhere under MSC Criterion 1 near indicator 1.1.2 (or perhaps under MSC criterion 2):

Indicator X.X: *Where indicator stocks are used (define them) 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 is well correlated with the status of other stocks, particularly those that are most at risk.*

100% scoring guidepost

- 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 Pacific Stock Assessment Review Committee or the appropriate Pacific Salmon Commission technical committee.
- There is general agreement among regional fisheries scientists outside the management agency that the indicator stocks are appropriate.

80% scoring guidepost

- There is general agreement among regional fisheries scientists within the management agency that the indicator stocks are appropriate for target species.
- There is no significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery.

60% scoring guidepost

- There is significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery.

or

- There are few or no analyses regarding the appropriateness of the indicator stocks used.

18. Indicator 3.1:

First scoring element: insert the boldface words: "…and the impact **of changes in these factors** on the reproductive capacity…"

19. MSC Principle 2:

a. Generally, this section contains more specific measures that are used to come up with scores than the sections under MSC Principle 1. That is good. However, the wording in this entire section is way too convoluted and complex. Simplify it in several ways: (1) a good thorough editing would help a lot; (2) break some of the complex indicators like 2.1 down into several separate indicators, (3) reduce the occurrence of double negatives (e.g. see the "intent" paragraph under indicator 2.1; it has so many negative words in it that I had to read it three times to figure out the intent). An "intent" paragraph is meant to clarify what the indicator is attempting to achieve, not confuse readers.

b. Again, I caution you against using wording implying that something is black and white, e.g. "ensure sustainability", "do not have measurable impacts", "will not adversely impact".

c. A related issue is that the wording in various places under MSC Principle 2, Criterion 1 should recognize that managers legitimately frequently make tradeoffs, for example, between the need for more catch and the need for more spawners and nutrients from carcasses. I suggest that what you should be asking for in some 100% guidepost is that sufficient research has been done and sufficient documentation of the reasoning of managers is available to justify whatever tradeoff decisions they have made. 80% might result from having a well-documented procedure for assessing those tradeoffs, but the documentation of the reasoning of managers might be missing.

d. In numerous places under this Principle 2, the topic of nutrients from carcasses comes up. The implication with the current wording is too limited because it generally implies that more nutrients are better, without exception. For instance, under indicator 1.2's 100% guidepost, you state, "Escapement goals for each species and stock aggregates are based on maintenance of nutrient requirements…" Surely you mean "based IN PART on …" because legitimate considerations about density-dependent processes, for instance, also come into play when setting escapement goals. Not all systems are nutrient limited and not all salmon populations' abundances are equally affected by nutrients in the freshwater life stage. Furthermore, you are undoubtedly aware that many salmon scientists are not convinced of the broad general benefits of nutrients from carcasses. Such benefits seem to be clearest in cases of extremely nutrient-poor systems, combined with current stocks at extremely low abundances, and for salmon species where in-stream or lake residence time is substantial. However, there are many cases in which one or more of those conditions is not met, and where it is unreasonable to expect that maximizing nutrients is important. Among other edits, I would tone down the wording about nutrients in this section by putting in caveats (e.g. "for species, locations, and abundances where appropriate, etc.") and emphasize other aspects of the ecological system.

20. MSC Principle 2, Criterion 1, Indicator 1.1:

a. Don't you need a continuous numbering system to make each criterion and indicator number unique throughout the entire document? As I flipped back and forth among sections, it was not immediately obvious which principle or criterion I was reading.

b. There is way too much complexity included in this single indicator. Split it up into two or three indicators.

c. You need to define what you mean by "…the management approach is precautionary." I am continually amazed at how few people really know what this means. I would stick with the definitions from FAO (1995). You might need more space than you have here, so it could be put in an appendix.

d. Again, risk assessment is a key approach to developing and evaluating management plans these days. You might add this as another scoring element under the 100% scoring guidepost: "A risk assessment has been conducted as part of developing the management plan." You justifiably did this under the 2nd scoring element of the 100% guidepost for indicator 2.2 later.

21. MSC Principle 2, Criterion 1, Indicator 1.2:

a. Under the 100% guidepost, in the third scoring element, what do you mean by "when referenced against decadal variation in natural abundance"? Cut out "natural" and replace "referenced against" by "compared to past ranges of..."

b. In the 4th scoring element, explain what you mean by "remote".

c. Under the 60% guidepost, insert "Managers assume that" at the start of each scoring element and edit the rest for clarity.

22. MSC Principle 2, Criterion 2, Indicator 2.1:

a. The 3rd scoring elements for both 100% and 80% guideposts should also refer to the mature fish that are harvested. Size selective fishing gear on mature adults may also detrimentally affect populations.

23. MSC Principle 2, Criterion 3:

a. In your interpretation of Criterion 3, be more explicit about your intentions because your wording is a bit convoluted. In your indicators, you actually consider three causes of declines in abundance of salmon: directed harvesting by fisheries, non-fishery human activities (e.g. habitat destruction, global warming), and natural processes (e.g. changes in climatic regimes not related to global warming, often occurring on decadal scales).

b. Do you mean anthropomorphic or anthropogenic? You use both.

24. MSC Principle 2, Criterion 3, Indicator 3.1:

a. Under 100% and 80%, I would insert a scoring element like the 4th one that you currently have under 100% for indicator 3.2, i.e. "The fishery management actions have a strong track record of closing fisheries..." This is essential for any level of a pass, 80% or 100%, because it is not sufficient to have the flexibility and management plans in place for dealing with depletions if they are not implemented.

b. 1st scoring element: "to ensure" is again a bit unrealistic. All we can do is develop management plans that have an acceptably high probability of producing long-term recovery of depleted stocks. Nothing is 100% certain. I know that I have said this many times, but I'll put it another way now. Perhaps one difference between 100%, 80%, and 60% scoring guidelines could be the probability of achieving the goal (recovery in this case). That probability would be highest for the 100% score (perhaps >0.8), moderate for 80% (perhaps >50%), and low or not even estimated for 60% score (failure). That structure could be used in many places in the document, although the numbers would vary among variables being assessed.

c. 3rd scoring element: Why do you put "independent" in front of risk analysis here but not elsewhere in the text? While this is a great idea under ideal circumstances, at present risk analysis is rarely done. I would keep something there about doing a risk analysis in the ideal situation, but I would also add as separate scoring elements the ideas that you used earlier in the text, which stated "[Proposed management strategies] have been reviewed and found to be scientifically defensible and appropriate by the Pacific Stock Assessment Review Committee or the appropriate Pacific Salmon Commission technical committee. Also, you said, "There is general agreement among regional fisheries scientist outside the management agency that the [management strategies] are appropriate." In fact, setting up an expectation of external peer review is a very good goal for many of the components of this entire document's indicators and scoring guidelines. Please consider inserting such scoring elements elsewhere.

d. Insert a scoring element under 100% and 80% to say that "monitoring and assessment programs are sufficient to determine with a high degree of confidence and in a timely manner whether recovery is occurring."

25. MSC Principle 3, 3A (Management system criteria), Criterion 1:

You should define the management system, which I think you intend to mean not only the managers but also the scientific assessment group and other units that provide advice to managers.

26. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.1:

a. In the definition of the indicator, it is good that you state "as qualified by environmental factors." Be sure to keep that. Also, to take into account discarding, don't you mean just "captured" rather than "captured and landed"?

b. For consistency, you might consider stating the various scoring elements about objectives and goals in terms of having clearly defined and agreed-upon TRPs.

c. Although the scoring elements under this indicator are generally excellent, the 100% and 80% scoring guideposts are almost indistinguishable. To differentiate them more, you could use an explicit gradient of % of target species/stocks/areas from high to low.

27. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.2:

a. Third scoring element under both the 100% and 80% guideposts. Of course, it is unrealistic to expect that annual stock assessments will be published in peer-reviewed journals -- delete "technical analysis" because I interpreted that to mean stock assessment results. Why not adopt the wording that you used elsewhere regarding review by PSARC and the Pacific Salmon Commission? Of all the topics so far in this MSC text, reviewing stock assessments and methods of assessment is closest to what those groups already do on a regular basis.

28. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.3:

a. For the 100% case, include the same "control mechanisms are used" as stated in the 80% case, but add "on a regular basis as required," or use your wording from before "a strong track record of using control mechanisms when required." Also, for 100% you should expect that "There is sufficient evidence that the control mechanisms are adequate for meeting the objective." This additional concept of adequacy of actions is really important and applies to most of this document. If you do not adopt my suggestions mentioned earlier about using objectives that state having a given probability of such-and-such occurring, then you should at least add some text about requiring evidence that the control mechanisms used are adequate to the task. I am sensitive to this point because of the appallingly small "adjustments" to harvest strategies that we discovered in the 1999 Canada-US Pacific Salmon Treaty. Even if those adjustments are triggered frequently to respond to low abundance, they are probably inadequate for generating recovery or preventing further decline in abundance.

b. For the 60% case, at the end of the line, add something like: "or only uses controls infrequently compared to when they were appropriate."

29. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.4:

a. You should insert one of your italicized paragraphs interpreting the text of this indicator, and reword some of the scoring elements below it to reflect the following point. Uncertainty always exists in assessments and technically we usually don't know how accurate they are (i.e. no "true" state to compare them to). We can say something about precision of estimates, though, and can compare estimates derived from different methods or from simulated cases similar to real ones.

b. Under the 100% guidepost, you might reword the first scoring element to reflect the idea that what you want is a management system that is based on "the best scientific information and advice available and the best available methods of analyses to take the inevitable uncertainties into account."

c. Add the following boldface words: "...such controls being **biologically** precautionary in nature **to the degree required**." The reason is that I have heard some business people using the term "precautionary" from their perspective, as in, for example, "If we are so uncertain about the effects of A on B, then a precautionary approach is in order, which would not change harvest rates until we are more certain about the effects." BLAH! Perhaps a clear definition of precautionary as I suggested earlier would suffice.

d. 80% guidepost, 1st scoring element: I don't like "allows for" because it is not the same as implementing the required controls. Make this statement stronger, but less so than in the

100% case. Merely "allowing for some action" without a track record of taking it should be grounds for failure (60%).

e. Somewhere, perhaps here under indicator 1.4, you should explicitly deal with newly developing fisheries. Although this might be unlikely for B.C. salmon, it is still appropriate to put it down writing that when developing new fisheries, management agencies should follow the recommendations of the FAO (1995) precautionary approach, among others. I have been amazed at how often this has not been done in B.C. (particularly for invertebrate fisheries).

f. To deal with implementation uncertainty (e.g. the tendency for actual harvest rates or escapements to differ from those intended by the management regulations), insert scoring elements under the scoring guideposts such as the following:

100%: Under all circumstances, the management system quantitatively evaluates the effect of implementation uncertainty (defined as...) on the effectiveness of the proposed conservation and management controls.

80%: The management system occasionally, or only qualitatively, considers the effect of implementation uncertainty on the effectiveness of the proposed conservation and management controls.

60%: The management system either does not consider the effect of implementation uncertainty on the effectiveness of the proposed conservation and management controls or the effect is so large as to severely reduce the conservation benefits of those controls.

30. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.5:

a. Clarify what you mean by "quasi-real-time."

b. Add to the end of the definition of this indicator 1.5 "... and the fish populations" because the natural system can show reduced or increased productivity over time.

c. The 100% and 80% guideposts are not very different. How about the following text to make them more distinguishable? You may want to use different numbers for the years than in these examples.

100% : second scoring element, replace "such adjustments are made on a quasi real-time basis" with "such adjustments are made on a time scale approaching the rate of change in the factors of concern." Example: if the Ricker 'a' parameter drops by 50% over a 10-year period, the management response should be tracking that as closely as possible, given the lags created by the maximum age-at-maturity of the salmon. The response should not appear 10 or 15 years later.

80%: second scoring element, replace "most often adjustments are made in a timely fashion" with "most often adjustments are made but with a lag of up to 5 years beyond what they would ideally be"

60% add to the present text: "or when adjustments are made, they are not timely."

31. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.7:

a. 100%, First scoring element - excellent.

b. 100%, Second scoring element - is this reasonable to expect? Won't other information affect the tough tradeoff decisions that fisheries managers have to make? Perhaps you are assuming that all such information comes in through the formal stakeholder meetings, reports, etc.

c. 80%, first scoring element - Don't say "whenever possible"; surely managers should always be provided with a range of alternatives for management. Some of them may be ruled out immediately for various reasons, but it should not be up to analysts to decide ahead of time which options to give to managers. Discussions between analysts and managers should occur and may identify constraints, but only then should options be ruled out.

32. MSC Principle 3, 3A (Management system criteria), Criterion 1, Indicator 1.8:

a. Clarify what you mean by "social incentives" that can be used by the management system. I thought that such incentives would arise within the fishing industry.

b. Add a scoring element under each guidepost with variations on the theme: "The management system creates strong incentives for harvesters to not exceed target catches or exploitation rates." This is a critical component that is missing.

33. MSC Principle 3, 3A (Management system criteria), Criterion 2, Indicator 2.1:

a. 100%, 3rd scoring element: omit "that are of a natural or operational nature."

b. 100%, Here is where you could refer again to research being "published in peer review journals and/or reviewed by PSARC or the PSC."

34. The 100% and 80% scoring guideposts for most indicators under MSC Principle 3, Criteria 2, 3, and 4 are way too similar. The 60% is good; it is almost always qualitatively different from the others. To make your scoring task easier, you should go back through all guideposts and reword the 100% and 80% scoring elements to make them more distinctive.

35. MSC Principle 3, 3A (Management system criteria), Criterion 3, Indicator 3.1:

b. Omit the last scoring element of the 60% case. You will never know whether some view has been ignored. However, it is legitimate for a scientist or manager to consider a view and then dismiss it due to lack of supporting evidence.

36. MSC Principle 3, 3A (Management system criteria), Criterion 4:

a. Reword the last 7 words of sub-criterion 4.1 ("and as ... species"); they are garbled.

b. In the italicized part under this sub-criterion, broaden the definition of "closed areas and no-take zones" to include closed dates/times as well. Make this change elsewhere too.

37. MSC Principle 3, 3A (Management system criteria), Criterion 4, Indicator 4.1.1:

a. Add to some scoring element in the 100% section that "the mechanisms for establishing no-take zones or other regulatory measures are based on pre-agreed upon guidelines, where feasible and appropriate." Comment -- This is obviously ideal because it reduces the amount of in-season consultation and friction between management agencies and harvesters when changes are made to an initial management plan. However, such pre-agreed upon guidelines are not feasible or appropriate in every case.

b. 100%, 4th scoring element: Omit "as a result of fishing." Surely, for a 100% score you want fishing pressure to decrease if there is evidence of a serious decline in stocks due to any cause.

38. MSC Principle 3, 3A (Management system criteria), Criterion 4, Indicator 4.1.2:

This indicator "Provides for restoring depleted target species to specified levels within specified time frames." Wasn't this already dealt with earlier under MSC Principle 1? The subtle difference that I can see is that here you are asking whether the management system has some procedures in place for restoring depleted stocks. In contrast, under MSC Principle 1 you were determining whether the fishery was actually being conducted in a way that is likely to achieve recovery. Please clarify the differences between these two occurrences of topics related to recovery.

39. MSC Principle 3, 3A (Management system criteria), Criterion 4, Indicator 4.2.1:

a. Add a scoring element under 100%: "Enforcement actions are effective."

b. Under 60%, reword as: "...are implemented only irregularly or inadequately, or there is a record of consistent infractions."

40. MSC Principle 3, 3A (Management system criteria), Criterion 4, Indicator 4.2.2:

a. Under 100%, explain what you mean by "relative to the policies and objectives of the management plan." In case you do not mean the following, I would suggest putting in something like: "fully evaluates the performance in terms of whether the regulations are resulting in the intended harvest rates and escapements." This deals with one very important aspect of implementation uncertainty, which is often ignored when evaluating management options. That is whether there are physical or biological processes in the environment and/or activities of the harvesters that result in the intended harvest rate being exceeded, for instance. Your idea to have that effectiveness monitored is great, but I would be more explicit about what you want monitored.

b. Again, define "quasi real-time basis."

41. MSC Principle 3, 3A (Management system criteria), Criterion 5, Indicator 5.1:

I'm confused by the first and second scoring elements under 100%. The first says "The management system... internal review" and the second says "input from stakeholders." Do you consider stakeholders as an internal part of the management system? If so, that is a surprise and you should go back to earlier sections where you discuss the management system and clearly

state that assumption. I had been operating under the assumption that stakeholders were outside the management system but were having input to it through multi-stakeholders meetings.

42. MSC Principle 3, 3A (Management system criteria), Criterion 5, Indicator 5.2:

a. I like this indicator! I have been arguing for years that to create the incentive for improved decision making processes we have to focus more on the adequacy of those procedures and less on the outcomes. The latter are often affected by favorable or unfavorable natural variation in survival rates, growth rates, etc. and it is difficult to attribute a particular cause to some observed change in status of a stock. Management regulations are usually confounded with such natural changes.

b. 100%, first scoring element. "Regular and continuing" is a bit unrealistic. How about "every X years?" For the reason noted in the paragraph above, clarify that by "performance" at the end of this scoring element you do NOT mean outcomes in terms of the status of the stocks. Instead, focus on whether comprehensive, rigorous decision making procedures are being used.

c. 60%, add to the end of the scoring element: "or there is no internal or external review of management performance."

43. MSC Principle 3, 3A (Management system criteria), Criterion 5, Indicator 5.3:

a. 100%: Add a scoring element: "The management agency should provide a publicly available report describing how it has acted on the recommendations of these reviews."

b. 80%: insert "only occasionally" between "are" and "used".

44. MSC Principle 3, 3A (Management system criteria), Criterion 6:

a. Insert "also" after "In this context we" in your italicized paragraph.

45. MSC Principle 3, 3A (Management system criteria), Criterion 6, Indicator 6.1:

I don't know how far you want to take the idea of obligation to international agreements but it occurred to me that there are some that Canada has signed, but that may not yet be in force because the required number of nations still has not ratified the treaty. For example, as of the year 2000, the 1995 United Nations Agreement on Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks was not yet in force but Canada had ratified it. We should therefore expect that the management system in Canada would be consistent with that agreement. I don't know whether this would also apply to the 1992 Biodiversity Convention.

46. MSC Principle 3, 3A (Management system criteria), Criterion 6, Indicator 6.2:

The phrase under the 80% guidepost "when violation of these would adversely impact the fishery" should also apply to the 100% case. To me, it was implied in the 100% wording.

47. MSC Principle 3, 3A (Management system criteria), Criterion 6, Indicator 6.3:

Clarify what you mean by "First Nations communities have been included in the management system." I didn't know that they were part of the management system. They are part of consultations but does that mean that they are part of the management system? This relates to a similar question that I raised above in my point #41 about whether stakeholders were part of the management system.

48. MSC Principle 3, 3B (Fishery operations criteria), Criterion 7

a. In the italicized paragraph on Criterion 7, why include the phrase "under its own volition?" Don't you want to ensure that the fishing industry is pursuing responsible fishing practices regardless of whether they are being forced to or whether they are doing it on their own?

b. How about using the word "harvesters" instead of "fishers?" It's politically correct and as most biologists know, fishers are a taxonomic group of animals in the weasel family that eats fish and small invertebrates in streams. That message is out and at least some people in the industry don't like fisher. Mike Sissenwine from NMFS once mentioned that the commercial fishing groups that he deals with on the east coast hate being called "fishers" because they know about this. I know the media use it around here, but you can do better than the media!

c. A general comment on Criterion 7: I strongly encourage you to re-think the structure and wording of all indicators and guideposts under Criterion 7 because at present, it is a jumble of items. Some evaluate *the management system's attempts to influence fishing practices* and others evaluate *the fishing industry's activities*. For instance, the italicized text under Criterion 7 gave me the impression that this section will be used to evaluate the fishing industry's activities, yet in numerous places below it, you mention "the management system does such-and-such." Instead, you should have separate criteria for evaluating the management system and the fishing activities. First, you want to know what actions the management system takes to encourage or force the industry to fish responsibly. Second, and quite separately, you want to know whether the industry is actually acting consistently with those incentives and complying with regulations. Another reason for separating these two categories of evaluation criteria is that if in some stock/area the management system passes but the industry does not (or vice versa), you want to be able to say unambiguously which group needs to improve.

In addition, it seems like some of these ideas may overlap with earlier sections. You may want to have another look at those to see whether they are indeed distinct enough.

49. MSC Principle 3, 3B (Fishery operations criteria), Criterion 7, Indicator 7.1

a. If you do retain the intention that this indicator 7.1 aims to evaluate the management system's actions, here are some minor edits.

b. 100% guidepost, first scoring element: insert "management" before "system."

c. 100% guidepost, 3rd open-circle scoring element: "to make them aware of the benefits of using fishing techniques..."

d. 100% guidepost, 3rd solid scoring element: This is an example of a guidepost that, as written now, applies only to evaluating the management system. In a separate new section evaluating fishing activities, it could be worded as: "Harvesters do not discard non-target species

or undersized individuals of target species that are dead." This rewriting from a different perspective would be relatively easy to do for most of the relevant guideposts under Criterion 7, using the same points and having a parallel structure for the scoring elements.

e. How about adding more proactive ideas to 100% guideposts such as "The management system creates incentives to decrease by-catch (e.g. more fishing time for particular vessels)." This was once considered in the Alaskan groundfish fishery, but I am not sure whether it was implemented.

f. 80% guidepost, 2nd scoring element: replace "sustainable" with "acceptable to the management agency." The reason is what I mentioned previously -- there are lots of different levels of sustainable harvest. I could harvest 1 fish per year from a heavily depleted population and do it in perpetuity, but of course that is not acceptable.

50. MSC Principle 3, 3B (Fishery operations criteria), Criterion 7, Indicator 7.2

a. Clarify "destructive" so that it is not misconstrued as only meaning destructive to the target population. It should also refer to other species, other stocks, and the habitat.

b. You should add a scoring element to the 80% and 100% guideposts that says "The industry and/or management agencies are taking effective actions to restore habitats that have been degraded."

51. MSC Principle 3, 3B (Fishery operations criteria), Criterion 7, Indicator 7.3

a. This indicator should read "Harvesters minimize operational waste..."

b. The 2nd scoring element under 100% is good and it should also be inserted elsewhere above where you are evaluating the management system, which should be monitoring and quantifying other things as well. That reminds me though, you did have some of this idea much earlier in the document (e.g. regarding monitoring by-catch). If so, you should avoid overlap.

c. The 100% and 80% guideposts are too similar.

52. MSC Principle 3, 3B (Fishery operations criteria), Criterion 7, Indicator 7.4

Add to the end of the scoring element under 60%: "for evaluating catch and discard rates of target and non-target species/stocks."

52. MSC Principle 3, 3B (Fishery operations criteria), Criterion 7, Indicator 7.5

Reword the scoring element under 60%: "is silent with respect to the recommendation of **suitable fishing gear and practices** or proscription of fishing gear and practices that are known to have adverse impacts on habitat.

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(CommentsMSCCertifBCsalmon)

Appendix 3 – Stakeholder Comments Concerning Performance Indicators and Scoring Guideposts

From: fred hawkshaw [linfred@citytel.net]
Sent: Tuesday, October 30, 2001 12:32 PM
To: Jim Humphreys
Cc: Min@DFO-MPO.GC.CA; Jon VanDongan; Lorne Clayton; Countrywide CBC
Subject: Certification for whom? I would appreciate a reply, please.

Marine Stewardship Council - "Work for sustainable marine fisheries by promoting responsible, environmentally appropriate, socially beneficial and economically viable fisheries practices."

Dear Mr. Humphreys,

Good day to you sir. I am a Commercial fisher (producer/harvester) from the North Coast of BC, Canada. I understand that apparently the Salmon Fishing Industry in BC (BCSMC) has applied to you people for Certification of it's Salmon Fishery.

On the surface it sounds like a great idea, and certainly very doable. I for one, am very supportive of the FOC's (Fisheries and Oceans, Canada) Management practices here in BC. Any program that will lend it's support to protecting the Publics interests and concerns around the management and sustainability of one of our priceless renewable resources, certainly gets my support. **But therein lies the rub:** I've used the term "priceless" to describe the potential value of a renewable natural resource, if it is managed in a manner that will not only sustain it in perpetuity, but also **harvested** in a manner that will enable us to attain not only public support, but also, the maximum potential benefits overall, from the resource.

Responsible harvesting practices, responsible fish handling practices, responsible processing techniques, and responsible marketing strategies must all become part of the mandate as our contribution to the process. Issues from Forest resource harvesting practices, to subdivision builders, water way users, water quality management, cities effluent management, from Ocean marine life management and water quality to issues around our ability to maintain the fresh water environment, not just for the salmon, but for all the very complex issues that go along with maintaining that environment, are just a few of the others. Maintenance of all those values is key and integral to successfully managing, sustaining and maximizing all the potential that can come as a result. There are a huge spectrum of values and issues, right?

But even after we've looked at all those concerns, what about the fishery itself, the issue that the industry is concerned about? The very complexity and incredibly large amount of issues that

must be dealt with, brings into question the credibility and possibility of such an undertaking, if it does not address **all** the issues.

By now, you may be wondering just where I am coming from or where I'm going with this? Let me see if I can explain.

This industry was once a very valuable component of and contributor to, Canada's GDP or economic values. It was also a very large and valuable contributor to our Rural and Native Coastal Communities economic well-being. I won't go back in time to where there may have been issues that needed addressing, because we've certainly moved ahead since. The fishers (producers) have been hit with tremendous management controls, that for some, has resulted in devastation of their livelihoods, disruption of their families and communities. Certainly, we were not alone in bearing the pain nor the responsibility. But, if the abrupt tightening of fishing opportunities and fishing practices was not enough, the prices paid to the fishers by the buyers, has dropped to possibly their lowest levels in history.

This is where my concern over the intentions of having this industry "certified" as "sustainably managed and harvested", rises to the surface. I am writing to you, not to call into question your intentions or ability to convince the consuming pubic about our managers ability to manage or to carry out their responsibilities. No, not at all. What is concerning me the most is that there seems to be a false belief, false sense of security, being conveyed to the fishers and the public, that as a result of applying for this certification, (if we should receive it), that this is it! This is all we need to return to prosperity once again. That this is some magical kind of panacea, that will once again make us all rich. This will ensure "fish and fortune forever".

There is no doubt in my mind about our managers ability to manage these public resources, in fact, I'm very optimistic. I'm also not concerned about the intent or the need to reassure the public that as much as is humanely possible is being done to protect their resources, especially in the present day reality of over 6 billion people in the world, the most of whom, for the most part, all live on, near, around, alongside of or have an inevitable impact on all the world's water and natural resources. What I am so very skeptical about is, not so much what it is we will gain, but **very much more so, who will gain**?

For certain, this industry as a whole, suffers greatly from a credibility/public perception/image problem. The potential for certification to help ameliorate some of those concerns could be there, should be there, however, some (UBC) have called into question your ability to maintain an arms length distance from the corporate processors, and I very much, share that same concern. For whom are we seeking certification? It is for this reason, that I write you.

If I have trouble believing that something largely supported by the corporate sector is going to help the fishers and our communities, when these are the very people who paid such a paltry price for this priceless resource this year, what will be the publics perception, after the doing? How valid will the public consider this process? I would like to believe that these kind of

concerns are merely perception and not valid in reality, so how will you convince those of us who are taking the full brunt of the all but non-existent values in our natural resources, that this is not just simply another prescription, written only for the benefit and protection of the processors, and will leave us, the producers, our communities and the public coffers, out in the cold?

Using management practices as the sole means to certify a healthy resource maintenance program, could, with the proper delivery, leave the public with the impression that all's well. Please understand that I may be missing the whole point here, but, if the sole intent of certifying proper management was just to protect the resource forever, with no intention to harvest, perfect, but if the intent of certification is to convince consumers and the public, that all's well, and that they can once again feel comfortable buying and eating our resources, should not also that certification include a responsibility that falls directly on the shoulders of the users/benefactors of the resource in the form of newer and better fish harvesting/ handling techniques and **processing/marketing strategies** that will result in a higher quality product, higher recoveries, better use of our share, much more responsible use and delivery of our resources and the benefits that will in turn, result directly in higher returns to our fishers, our communities and the public?

Let me try and zero in on what I'm trying to say. In everything that falls prey to the corporate commodity marketing stream, only the stockholders win. The "shareholders/stakeholders" become the "collateral damage." WHO'S BENEFITTING?

This MSC thing, only appears to me to be another form of corporate subsidy, if there is not also support for and equal responsibility attached to the producers harvesting gear technology development, live fish handling techniques development, and more flexible and responsive marketing strategies, resulting in the highest value returns to all. The whole issue of sustainable management practices, around harvesting, is directly related to the successful development of better harvesting gear technology and responsible fish handling techniques! If there were such a thing as the perfect gear type that can precisely avoid any encounters with non-target species or stocks of concern, no problem, but until such technology comes along, we need better gear development and fish physiology understanding for the fishers and fish handling techniques, to enable us to fulfill our side of the bargain of truly selective and sustainable harvesting, resulting directly in socially beneficial, economic viability and vitality to all.

Alaska has your MSC certification. These issues were not addressed in their hasty pursuit of "Utopia" and they are now asking themselves why their "priceless" MSC Certified Wild Alaskan Salmon, is now all but "worthless".

Right from the moment we anticipate encountering/harvesting this resource, out to the consumer/public, there must also be a certification of what we do with the resource and how we will get there. The responsibility must fall on everyone's shoulders, all inclusive, and not just the managers of the resource! As they say in the forest industry **"STUMP TO DUMP" Are these the values you uphold?**

Sincerely,

Fred Hawkshaw

421 - 6th Ave E,

Pr. Rupert, BC, Can.

V8J - 1W6

e-mail; linfred@citytel.net RSVP

From: fred hawkshaw [linfred@citytel.net]
Sent: Monday, September 30, 2002 2:25 AM
To: fisheries@msc.org
Cc: Dir.Pac.Reg. John Davis; Hon. Robert Thibault; chaffe3@attglobal.net
Subject: Comments to the MSC

Dear folks at the MSC,

I have taken the time to read through your "Principles and Criteria for Sustainable fishing." I must say, at first glance I sincerely commend your principles and goals. However, (of course there has to be one of those, right?) in the first four principles, I wonder if I've missed something or could it be possible that I'm just not interpreting it all correctly? Your first one mentions and speaks about "target species (or stocks)", but it doesn't come out loud and clear speaking about "non-target" stocks or species. Further down in the document you do bring up the subject of "non-target" concerns and for that I commend you again.

It's just that in our wild salmon fishery, especially here on the North Coast of BC, we are constantly dealing with non-target or stocks/species of concern. Each passing season seems to bring about new ones to care about. Perhaps your way of referring to these other stocks/species is dealt with in the second principle? I am not trying to find fault, I think your doing a great job, but I just would like to feel comfortable in my mind that we are not overlooking the greatest current concerns regarding access to our local fishery, ensuring that fishers are in full compliance of and in full understanding of the need to respect and maintain not only the integrity of our target species, but so too, our non-target species.

I have no shame in mentioning that I really tried to take you folks to task in the beginning of this process, but please understand that at that time, it did not seem possible that the BC salmon fishing industry would ever be willing or able to come to terms with the need to protect all our resources for the future, in spite of the Federal Dept of Fisheries best efforts to persuade fishers to change their behavior and attitudes. I hope I tried to make it clear that my concerns were not so much with you people, but more with the general attitude here to our resource as a whole. At that particular time, I firmly believed that if a fishery with such belligerent attitudes towards respect and responsibility and in such chaos as ours, at the time, could receive your certification, something was wrong with the process and the public was not going to trust us regardless.

I don't want to make this too long, but I really want to congratulate you people on your efforts. There was no doubt in my mind then and there is no doubt now, that **if** we fishers follow yours and the Federal Dept's directions for our collective future, none of us will regret moving forward. The past has come and

gone and today I agree wholeheartedly, we all need to make a firm commitment to the future and **independent of industry** guiding principles such as these, will ensure a future and benefits for all stakeholders. I think you could have patted yourselves a little more in your scoring elemented benefits of getting involved with the MSC program at the top of your website, by including:

- Wild Salmon for our collective future

because that's how important I see the potential of your independent of industry role, working together with the Dept of Fisheries and us.

Clearly you have put a huge amount of time and effort into drawing up the guiding principles for the benefit of our resources, the Public and the wild salmon fishery and the best part of it all is, you have gone out of your way to maintain not only yours but also our integrity by remaining independent of industry. It is that independent integrity that is a must if we are to have any credibility and a future in the world's marketplace.

Sincerely, Fred and Linda Hawkshaw

421 6th Ave East,

Pr. Rupert, BC

Appendix 4a – Stakeholder comment during assessment process

Secwepemc Fisheries Commission
274-A Halston Connector Road, Kamloops, BC V2H 1J9
PH: (250) 828-2178 FAX: (250) 828-2756

Date: August 3, 2005

Chet Chaffee
Manager, Marine Fisheries Certification Program
Scientific Certification Systems Inc.
2000 Powell Street, Suite 1350,
Emeryville, California 94608
USA

Re: Secwepemc Fisheries Commission comments on the BC Salmon Marketing Council Application for MSC Certification for BC Salmon Fisheries

Dear Mr. Chaffee,

This letter is in response to the invitation for consultation provided to the Secwepemc Fisheries Commission on April 20, 2005 entitled "*MSC Stakeholder Consultation Process - Independent Evaluation of British Columbia Commercial Salmon Fisheries".*

The SFC is a non-profit, support service agency operating as a division of the Shuswap Nation Tribal Council Society. We are based in Kamloops in south-central British Columbia within the territory of the Secwepemc or Shuswap people. SFC is a unique organization originally formed in 1992 as a technical and policy support organization for the tribal leadership on fisheries issues. On behalf of our affiliated bands SFC's mission is to promote the protection, maintenance and sustainable use of fisheries resources in Secwepemc territory. We are responsible for guiding the recovery of traditional fisheries and developing First Nations governance capacity for fisheries management.

Our response to the MSC application for certification for BC salmon fisheries by the BC Salmon Advisory Board is from Secwepemc communities in Thompson / Shuswap drainage only. Other Secwepemc communities in the mid-Fraser need to be contacted and involved directly. We can provide contacts if required.

We will not be participating in the performance indicator evaluation process(Criteria 100,80,60 etc.), however, we will make general and specific references to the MSC Principles and Criteria for Sustainable Fishing relative to Department of Fisheries and Oceans (DFO) management of salmon stocks of concern to the Secwepemc communities.

Principle 1
A fishery must be conducted in 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.

DFO's management of salmon in a mixed-stock harvest regime, particularly in the marine area, has led to the over fishing of salmon populations destined for streams within the Thompson drainage. Examples of DFO's non compliance with Principle 1 are as follows:

- There is a decreasing trend in escapement of several key sockeye populations within the Thompson basin that are of extreme cultural and ecological importance to the Secwepemc people.

  Early summer sockeye:

  - Exploitation rates (ER) on sockeye stocks destined for Scotch, Seymour, Fennell and Raft have averaged over 60% for all cycle years since the early 1950s. Recent decreases in ER have not led to demonstrable increases in escapement. The repression of these populations through overfishing has directly impacted the Secwepemc people's opportunity to harvest fish.

  - Several of these sockeye populations are declining at alarming rates
    - Seymour River (2001 cycle) is declining at a rate of -43%, which is considered threatened under Canada's COSEWIC (Committee on the Status of Endangered Wildlife in Canada) status rating for population health
    - Fennell Creek (2001 cycle) is declining at a rate of -46%
    - Both the 2001 and 1997 escapements (2,449 and 3,085 respectively) for Scotch Creek are less than ½ of the previous two brood cycle escapements for 1993 and 1989 (8,359 and 7,236)

  - In 2004 early summer sockeye escapements to the Thompson drainage were only 10% of the 2000 brood year – DFO could not fully account for the loss of several hundred thousand sockeye from the marine area to the spawning grounds

  Late summer sockeye:

  - In 2004 DFO failed to meet their pre-season conservation objectives for Cultus (COSEWIC endangered sockeye population in lower Fraser) and late run Shuswap stocks. The pre-season exploitation ceiling targets for Cultus and Late Run Shuswap were 10 -12% and 15% respectively. The actual exploitation rates were 24% on Cultus and 31% on late Shuswap (41% on the Adams River population)

  - the DFO objective to maintain the 2005 late summer escapement at the brood year level of 25,000 was too low; this provided no opportunity for rebuilding and recovery
    - this objective is below the previous five year cycle average of 75,000 and the interim escapement goal of 364,000

While these examples are of immediate concern to the Secwepemc people, DFO's approach using large management units based on aggregate timing groups for sockeye is the source of its inability to meet any of the MSC principles. DFO cannot protect or rebuild smaller or repressed sockeye populations by managing at large aggregate levels. While large aggregates of sockeye may be stable or increasing in size smaller non target populations are declining, thus this regime of fishery management is not sustainable.

Our cause for concern is that on cycles, like the 2005 cycle, several sockeye populations within the early summer aggregate are declining at alarming rates. While DFO mentions these as concerns they have not described any management measure that will demonstrably lead to their recovery. We fear that DFO will allow these populations to decline to levels that are deemed too costly to recover based on management or socio-economic costs. While DFO has put in place the Wild Salmon Policy to protect population diversity this process is not implemented as yet and is unproven. Even within that process there is still an opportunity for DFO to write off endangered or threatened populations based on socio economic costs.

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.

DFO cannot adhere to this principle as they have minimal, if any, understanding of the effects their management of salmon have on biological diversity or the ecosystem within the marine or freshwater environment. One certainty is that they may never understand nor be able to measure how their management of salmon harvests have impacted the ecosystem. A review of DFO escapement records for sockeye populations in our area indicates they have continuously repressed sockeye escapements by managing harvests at exploitation rates in excess of 60%. We believe the only way to determine the structure, productivity, function and diversity of the ecosystem in freshwater is to allow escapements to be fully productive. It is well known that a variety of resident freshwater fish species, wildlife, and other aquatic species depend on the health of salmon populations. It is logical that by repressing salmon populations like sockeye the entire ecosystem is impacted in a negative manner. Again, DFO have not shown in a demonstrable way how fisheries will be executed such that recovery and rebuilding will occur to a specified level or within a specified time frame consistent with the precautionary approach and considering the ability of the populations 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

DFO has not developed long-term objectives consistent with MSC principles. There are several sockeye populations that are declining at threatened or endangered rates within our area. Escapement goals for aggregates or single populations have not been identified using any biological or habitat based methods. While DFO has incorporated new harvest management approaches for sockeye, these are based on large aggregates or management units and afford little or no protection for non target weak or declining populations.

There has been little or no effort in developing lower limit reference points for harvests on smaller or weak populations. Target stocks like the large summer sockeye run in 2005 are managed to maximize harvests and ensure escapement, however, exploitation rates on smaller co-migrating populations are extremely high, particularly those destined for the Thompson/Shuswap system. While the fishery may be sustainable on the target stocks it is not sustainable for those smaller non-target populations caught as bycatch. Examples of the declines in non-target stocks are expressed under Principle 1.

DFO should be lauded for the direction it has taken to develop consultative processes with First Nations and other sectors by initiating the Integrated Fisheries Management Plan Salmon. While this process is still evolving it is still far from achieving the objectives of the Secwepemc people in terms of recovering salmon populations, particularly sockeye populations that our communities depend on for food, social, or ceremonial purposes.

As you are aware, International and Canadian law have described First Nations as having priority in the allocation of salmon resources and also in having a substantive say in how salmon should be managed to protect their interests. The issue of allocation and DFO management practices are inseparable; the way DFO deals with their harvest and conservation objectives has a direct impact on Secwepemc communities and our ability to re establish our fisheries to historic levels.

The SFC has repeatedly described to DFO how the repression and decline of sockeye escapements and other salmon populations directly impacts our harvest opportunities. They have not described to us nor demonstrated how sockeye populations that we depend on will be recovered in the short or long term. Our concerns and objectives are considered along with those put forward by other fishery sectors; however, the law states First Nations interests take priority above others. DFO has not described in detail how our interests are weighed against others; they simply balance their management on some sort of reasoning without explanation. This is not a transparent process, thus it does not comply with Principle 3 criteria.

Summary

The SFC cannot support the BC Salmon Advisory Board Application at this time. We fully believe that DFO's management of BC fisheries does not adhere to MSC principles for the reasons listed above. While DFO may have improved their management structure, their performance in managing and recovering stocks and ensuring the harvest interests of the Secwepemc people are met does not meet our standards or those set out by MSC.

DFO has initiated the Wild Salmon Policy and various planning structures to ensure a wide range of input into fisheries management; however, this process is not fully implemented and as yet is unproven. It may provide the framework to enable a MSC certification in the long term, but until DFO's management performance improves we cannot support the BC fishery MSC certification application.

We would consider supporting conditional approval of MSC certification if DFO can agree with SFC on demonstrable recovery plans for salmon populations that are of concern to us. As well meaningful discussions would need to take place describing how the abundance of sockeye and other salmon species can be increased to meet our harvest requirements. We will await provision of the draft MSC technical team assessment prior to considering any conditional approval of MSC certification.

Secwepemc Fisheries Commission, 274-A Halston Connector Road, Kamloops, BC, V2H 1J9 ph: (250) 828-2178 fax: (250) 828-2756

Thank you for this opportunity to express our concerns at this time and please incorporate our views into the MSC assessment. Please provide us with a draft of your assessment when it is complete and we will review it further. If you have any questions or require clarification please contact Pat Matthew or myself at (250) 828 2178.

Sincerely,

_____

Fred Fortier
Chair/Director
Secwepemc Fisheries Commission

Cc:	Christina Burridge	BC Salmon Marketing Council
	Bert Ionson	DFO
	Arnie Narcisse	BCAFC
	Marcel Shepert	FRAFS
	Bob Moody	Shuswap Nation Tribal
	B Rosenberger	DFO BCI
	G Sterritt	Caribou Tribal Council
	Karen Tarica	Marine Stewardship Council

Appendix 4.b – Stakeholder comment summaries received during client/ stakeholder draft report comment period

Summary of Comments from First Nations

Below is a summary of public comments received from First Nations on the assessment process during the Public Comment Period, approximately 50 emails were received.

Similar to public comments received on the fisheries, the main concerns voiced by First Nations included:

- Habitat degradation impact on salmon stock health
- Impact of fish farming on wild stocks
- Gear selectivity and by-catch
- Management approach and focus by DFO

Management of the salmon stocks in British Columbia by DFO was addressed in the majority of comments received. If not the focus of the comment, the issue of poor management concern was noted in many of the communications. For example, habitat degradation was a major concern, however it was noted by all individuals that such impact could be minimized if DFO were to increase monitoring of compliance with regulations. The general opinion expressed was that DFO has been reactive to issues and concerns with regards to the salmon fishery, when in fact management should be more proactive in order to prevent stock declines and collapse, such as those seen in the east coast cod fishery.

Several individuals indicated that DFO does solicit public input and involvement in management, however it is not always evident that due consideration was given to such input.

Reoccurring in numerous emails, was the concern of declining fish stocks as a result of habitat degradation issues related to inadequate development practices. Case studies were presented in which development near water bodies, was not compliant with habitat protection measures required by DFO. Poor construction has lead to increased sedimentation in water bodies as a result of removal of too many trees, decreased water quality and had destroyed some stream habitats.

In addition to habitat deterioration, a main concern identified by First Nations was the impact of fish farms on local stocks. Concerns related to the fowling of clean migrating salmon with sea lice prevalent in farmed fish and alterations in genetics of wild stock were concerns with respect to fish farming activities.

Concerns related to fish farming in other areas were also raised First Nations. Several individuals reported on the sanctioned release of 10,000 hatchery pinks in Alaska into water bodies connected to those under consideration in this assessment. It was questioned as to why the surplus of pinks, was not turned into fish meal, rather release with unknown impacts on wild stocks that are already in peril.

Similar to comments received on the Skeena sockeye fishery, the issue of gear selectivity was presented. The importance of avoiding, or at least minimizing the catch of non-target species was recognized by individuals providing comment on this issue. It was noted that tools are available

to increase selectivity of the gear, therefore providing the opportunity to put into practice in daily operations, the tools necessary to assist management in achieving a truly sustainable fishery, no changes have been implemented.

In addition to modifying harvest to include more selective gear, there was concern over the current lack of enforcement and monitoring of bycatch in the BC salmon fishery. While there are retention rules on some bycatch, including coho and steelhead in areas 3 and 4, it was noted that in recent years almost 100% of these species caught have been landed. It is anticipated that increased monitoring and enforcement would result in a lower percentage of retention.

Finally, the Alaskan interception of BC sockeye was identified as a serious constraint to the future of the fishery. There were concerns of the number of sockeye that were harvested each year in SE Alaska. Although the Canada/US Pacific Salmon treaty is implemented with the provisions of sharing the resource, there is concern that too many sockeye are being removed by the Alaska fishery. It was noted that a request for full disclosure of the numbers of BC sockeye taken by the AK net fishery was not provided. In addition, given that BC sockeye harvested in the AK interception fishery are some of the largest and strongest individuals in the stock, there are concerns about potential impacts this may have on population genetics.

Summary of Comments from the Public in Relation to the MSC Certification.

Below is a summary of public comments received primarily on the Skeena River unit of certification.

Between 70 and 80 email comments were received by the certification body, over the course of the public comment periods of the assessment. Comments were received from commercial harvesters, sport and recreational fishers, non-government organizations (NGO's), fishing lodge owners/operators and guides, as well as concerned citizens with general interest in the Skeena River fishery and conservation.

Many of the comments and concerns raised focused on similar issues, including:

- Declining steelhead populations
- Interactions between the sport and commercial fisheries
- Impact of Alaskan interception of BC sockeye from the Skeena
- Effectiveness and approach to management by DFO with respect to salmon fisheries in British Columbia

The majority of comments received were in respect to the impact of the commercial fishery on declining steelhead populations. Poor fisheries management, use of non-selective gear, and timing of fishery were citied as major contributing factors of steelhead decline. Several individuals voiced concern over increased mortality of non-target species due to the non-selective nature of the gear. It was noted that while tools are available to improve selectivity of the gear, which would limit incidental take of steelhead, coho and chinook, they have neither been implemented nor required by management. The general consensus was that key

components required to aid in the recovery of steelhead populations are improved management by DFO, alternations in gear to limit by-catch, and limiting gillnetting at the mouth of the Skeena during times of high steelhead density.

There is concern that gear currently used in the fishery is selectively harvesting the largest and strongest individuals in the population. Stakeholders are concerned that such selective fishing may be contributing to stock declines, as there is the potential that genetics of the stock that evolved to a size most suited to the specific habitat are being removed.

Concerns of declining steelhead populations were, for the most part, directly related to the value of the sport fishery on the Skeena. Tourism operators, anglers, and others involved in the sport fishery, either directly or indirectly, stressed the value of the industry. The argument presented was that while sport fishers individually contribute thousands of dollars per year in flights, lodges, and guides supporting a vibrant angling economy, the commercial fishery contributes less, and may be a net loss to the tax payers of Canada. It was also recognized that both the commercial and sport fishery could possibly co-exist, however management by DFO would have to be improved and be more considerate of the socio-economics of the commercial and recreational harvest. Several individuals felt that the management and promotion of a solid sport fishery would have greater long term impacts on the economy of BC, as oppose to short term benefits associated with commercial harvest of a declining populations.

In addition to the concerns over declining steelhead populations, and the interactions between commercial and recreational fisheries, there were several comments on the impact of the Alaska interception fishery. The Pacific Salmon treaty signed in the late 1990's makes provisions for the sharing of the resource, however, there is concern regarding the numbers of BC sockeye harvested in Alaska. It was noted by one individual that there are some years in which the harvest of BC sockeye in Alaska may exceed harvest in British Columbia. Contributing to the concern is that harvest of BC sockeye in Alaska is on the largest and strongest fish in the population which raises concern of what impact this selection has on the genetics of the wild population.

While there were several reasons outlined as contributing factors to declines in sockeye and other salmon species within the Skeena watershed, the majority of individuals that submitted comments identified poor management by DFO as the underlying factor in stock declines. Comments received stated that DFO is in a position to implement change that may prevent further decline, however, due to reactive, as oppose to proactive, management approaches, stocks have experienced continual decline, and as a result it may be to late for some stocks to rebound.

Other concerns regarding DFO management were submitted. DFO solicits public comment on issues, it is not always clear that stakeholder comments are incorporated into decision making, rather decisions are sometimes politically driven. Individuals indicated that the decision making and management approaches need to be more transparent and proactive, focusing not primarily on single stock management but considerate of all species and conservation in general. There were numerous comments, mainly from anglers and those involved in the sport fishing industry, that management by DFO is too focused on maximizing the harvest for the commercial fleet and not putting enough effort into other fisheries and other conservation concerns. This concern was somewhat echoed by commercial harvesters, in that they agreed that there were other conservation issues that needed to be addressed in order to improve the fishery (ie habitat

degradation). The importance of effective monitoring of compliance and enforcement of management measures is of utmost importance, and needs to be improved.

Other concerns brought forward during public comment, which did not appear as often as those mentioned above, included the extent of habitat degradation as a result of poorly managed projects in the watershed and impacts on fish populations, the impact fish farming on wild stocks with respect to both genetic issues and the transfer of parasites, and the impact of actions taken outside of BC, such as the release of hatchery reared pinks in Alaska on wild fisheries.

Appendix 4c – Environmental and Conservation Group Stakeholder comments received during client/ stakeholder draft report comment period

Environmental, conservation and government groups provided stakeholder comments to the Certification Body during the client/ draft stakeholder pre-peer review draft report comment period.

The submissions included the following:

- Fraser River Sockeye Spawning Initiative/ WSP Pilot. Prepared by Ken Wilson, Craig Orr and Jeffry Young, Wild Salmon Committee, Marine Conservation Caucus. February 2007.

- Review of the Draft MSC Assessments for Four British Columbia Sockeye Salmon Fisheries. Prepared by Jeffry Young, David Suzuki Foundation and Craig Orr, Watershed Watch Salmon Society. November 2007.

- Review of the Draft MSC Assessment of British Columbia Fraser River Sockeye Salmon Fisheries. Prepared by: Ken Wilson. Prepared For: Watershed Watch Salmon Society. November 2007.

- Review of the Marine Stewardship Council Draft Assessment of the Barkley Sound Sockeye Fisheries. Prepared By: Jeffery Young, David Suzuki Foundation. November 2007.

- Critical Review Of The Marine Stewardship Council Draft Assessment Of Skeena And Nass River Sockeye Fisheries. Prepared By: Aaron Hill, Hillfish Consulting. Prepared For: Watershed Watch Salmon Society. November 2007.

- Steelhead Bycatch in Skeena Sockeye Fishery. Prepared by Guido Rahr, Wild Salmon Center. October 2007.

- Key Deficiencies in the MSC Re-Assessments of Skeena and Nass Commercial Sockeye Fisheries, prepared by Aaron Hill, Watershed Watch Salmon Society, August 2009. 5 p. (Hill 2009a).

- Testing Whether the Draft Public Report and DFO's Action Plan Meets MSC's Principles and Criteria for Sustainability in Regards to the Skeena River Sockeye Fishery. Submitted by Skeena Wild Conservation Trust. 19p. (SWCT 2009a).

- MSC Certification of British Columbia Sockeye Fisheries – Core Issues and Recommendations for the Skeena Unit of Certification. Submitted by Skeena Wild Conservation Trust August 2009. 4 p. (SWCT 2009b).

- Review of the July 2009 Marine Stewardship Council draft assessment of British Columbia Fraser River sockeye salmon fisheries. Prepared by Jeffery Young, David Suzuki Foundation, and Ken Wilson, Watershed Watch Conservation Society. August 2009. 10 p.

- Review of the Marine Stewardship Council Draft Assessment of the Barkley Sound Sockeye Fisheries. Prepared by Jeffery Young, David Suzuki Foundation. August 2009. 8 p.

The assessment team has responded to the significant issues raised in these submissions in Vol. 3: Appendix 7.

February 28, 2007

Paul Ryall
Lead, Salmon Team
Fisheries and Oceans Canada

Re: Fraser River Sockeye Spawning Initiative/WSP Pilot.

Dear Mr. Ryall:

The Marine Conservation Caucus (MCC) recently suspended involvement in the Fraser River Sockeye Spawning Initiative (FRSSI)/ Wild Salmon Policy (WSP) pilot implementation process. This process involved structured decision analysis (SDA), supported by simulation modeling to provide a basis to choose between participant-identified management alternatives. As you know, we were involved in a smaller scale but somewhat similar process last year around the management of Cultus sockeye. We think it is fair to say that conservation interests were not particularly well served by this negotiation. The issue was ultimately resolved outside of the IHPC and without MCC involvement and led to the over-harvesting of Cultus sockeye while the associated and promised funding to support habitat work and enhancement remains unavailable. We did however learn a great deal about structured decision analysis, and despite its weaknesses we still support this approach.

One of the things we learned from the activities of last year is the critical role that the simulation model(s) play in evaluating the performance of the alternatives considered. We learned that the models must be thoroughly evaluated at the beginning, and must meet the needs of (and be clearly understood by) all of the participants. We also learned that the way the question is framed is reflected in the models structure, and has a profound influence on both the type of alternatives that can be evaluated and compared, and on the way the performance of the alternatives can be evaluated.

We believe that we have clearly identified several critical shortcomings of the models being used in the FRSSI SDA. We have provided detailed comments both at the last workshop, and at the technical session immediately following. We do not feel that our concerns have been addressed, nor do we believe it is DFO's intention to address these concerns before proceeding with the SDA process and selecting a management alternative for implementation in 2007. This is unacceptable to the MCC.

Specifically, the FRSSI process is asking the question "What is the best way to manage sockeye aggregates and what are the consequences of harvesting these aggregates in mixed stock fisheries at different rates?" The MCC is interested in asking a different question. We want to understand the consequences of alternative harvesting strategies on the individual conservation units that the WSP is intended to protect. The model as currently configured assumes that there are four timing aggregates of Fraser sockeye and that any harvesting action on an aggregate has the same impact on each of the constituent stocks. In fact all of us know that this is not true, and in our view it is not an acceptable assumption. With the possible exception of the early Stuart run, we do not believe that there is any biological basis for aggregating Fraser sockeye. In reality there are dozens of individual Conservation Units, each with their own unique migration timing and biology.

These individual stocks or conservation units are the units we must manage and protect. These units also support First Nations fisheries and are the components that must be modeled if we are to understand the true consequences of our harvesting strategy, not only on spawning escapement but also on First Nations fisheries.

We have pointed out repeatedly that there is a tremendous body of scientific literature that questions the use of MSY models particularly when applied to long time series of data collected using a range of techniques and with errors that are likely significant, but very difficult to quantify. The fundamental relationships between Fraser sockeye stocks and their environment are shifting, leading to changes in survival, carrying capacity, and behaviour that are not reflected adequately in the historical time series. At best, any analysis of historical data provides only a weak basis for predicting the future productivity of salmon populations, and the response of these populations to a particular harvest regime.

We note with some concern that the simulation models used to forecast the return of Fraser sockeye in 2007 for fishery planning purposes are not, for the most part, the same models used to simulate the returns for up to 50 years into the future. For 2007, the returns for three of the four summer runs and for the late run to the Shuswap are based on biologically naive models, not the Larkin MSY models used to support the SDA planning process. Conditions are changing so fast in the Fraser that the biologically naïve models outperform the MSY models for the purposes of fishery planning one year in advance. This should be considered a warning about the reliability of the simulations we are relying on in the SDA process to choose a harvesting strategy.

There are many other issues of concern to the MCC. There are no models or even proxies for the smaller less productive Fraser sockeye conservation units. It is not coincidental that we have insufficient data to model the productivity of these stocks, but they are important nonetheless. The benchmarks in use do not reflect our understanding of the levels of escapement necessary to maintain stock health and to protect the fisheries of Fraser First Nations. These are not issues that should be addressed by the MCC, or on short notice. While the models in use are highly complex and prone to errors that could easily change the outcome of the analysis, we have insufficient time to review them before we are asked to use the output from the models to choose between alternative harvest strategies. We have pointed out the need to capture the benefits of terminal harvest when strong stocks are not harvested in order to protect weaker stocks. The models now in use assume that excess escapement not only has no value, but will reduce future returns. We believe these surplus fish can benefit First Nations communities and the Canadian economy and that these benefits must be captured by the models if we are to fairly consider the sorts of harvest strategies that protect less productive stocks. We understand the tyranny of time, but the fact that we urgently need a management plan for Fraser sockeye is no excuse for rushing the process and the participants to the point that they are no longer comfortable with the analysis or the process.

Alternative and incremental management improvements could be made at this time through the FRSSI process despite the lack of a finalized conservation unit list or a model to support it. Such improvements include the design of robust and precautionary pre- and in-season management rules (e.g., limit reference points), revision of the design, use and

communication of forecasts, and implementation of more effective in-season assessment tools that support conservation.

If there is a lesson in this process, we believe it is this: managing stock aggregates can have unpredictable impacts on individual stocks, and for this reason requires the utmost in precautionary management. MSY is not a concept that can be applied to stock aggregates, and should not be considered a harvest objective for any salmon population.

We would like to close with a word to the wise, from the wise, written by the man that developed the models you are using to decide how to best manage stock aggregates of Fraser sockeye.

An Epitaph for the Concept of Maximum Sustained Yield

Here lies the concept, MSY,
It advocated yields too high,
And didn't spell out how to slice the pie,
We bury it with the best of wishes,
Especially on behalf of fishes
We don't know yet what will take its place,
But we hope it's as good for the human race.

Peter Larkin

We hope so too. Please give us a call when you are prepared to focus on the conservation of Fraser sockeye stocks and not simply on the management of mixed stock fisheries. When we are convinced that you are asking the right question in a reasonable way, and are prepared to accept our input and advice, we will be happy to reengage in the process.

Sincerely,



Ken Wilson Craig Orr Jeffery Young
Marine Conservation Caucus, Wild Salmon Committee

cc Mark Saunders
Brian Riddell
Don Radford
Paul Sprout

November 29, 2007

RE: Marine Conservation Caucus review of Draft MSC BC sockeye assessments

Dr. Chet Chaffee
2200 Powell Street
Suite725
Emeryville, CA 94608

Dear Dr. Chaffee,

Enclosed are reviews prepared by the Pacific Marine Conservation Caucus of the four draft MSC assessments of British Columbia sockeye salmon fisheries. Please accept these reviews and this cover letter as "stakeholder" comments for the review period ending Nov. 30th.

These reviews are based on a thorough technical analysis of the assessed fisheries using the MSC scoring principles, criteria, and indicators. Although in some cases we have identified specific problems with the appropriateness of criteria or indicators for assessing BC salmon fisheries, the basis of our reviews primarily use the measures as used by the assessment team.

In summary, we do not support the certification of the Skeena, Fraser, or Barkley Sound sockeye fisheries. We have also identified discrepancies with the Nass sockeye assessment, but are supportive of certification with inclusion of improved conditions.

Main issues of concern identified in the reviews include:

- weak implementation and use of limit reference points
- poor definition of "target" stocks
- inconsistent and ineffective recovery of depleted stocks
- inconsistent, absent, unclear, or indefensible management objectives

In addition, the draft assessment was conducted using information available up to early 2005. The 2005 and 2006 fisheries are of significance to the assessments and should be considered. For example, serious management problems were identified in the 2006 Skeena fishery, particularly bycatch of steelhead trout. Further, many sockeye populations throughout the province have undergone significant declines and effective management actions to stop the declines, promote recovery, and ensure that fisheries are not contributing to declines or hindering recovery have not been effectively implemented. The Salmonid Specialist Group (SSG) of the World Conservation Union (IUCN) has proposed listing 10 of the 24 subpopulations assessed in B.C. as threatened (4 vulnerable, 2 endangered, and 4 critically endangered). The SSG identified mixed stock fishing and negative effects of enhancement as key threat to the species.

Although we are supportive of the use of conditions in the Nass assessment, we are strongly concerned that conditions will not be sufficient to promote the needed reforms in the Skeena, Fraser, and Barkley Sound sockeye fisheries. Further, the conditions presented in the draft assessment are numerous and we are not confident that Fisheries and Oceans Canada has the capacity or will to implement all of them fully within the five year period before re-assessment.

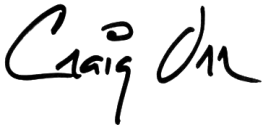
Supported by the strong technical basis of these reviews we request the opportunity to work with the assessment team in the re-drafting of the assessments. This interaction would allow us to further explain the basis of our reviews and identify the best options for improving the assessment. Some of the problems identified in our reviews were based on the acceptance by the assessment team of unsupported or weakly referenced statements made by Fisheries and Oceans Canada. The rigour of the assessment process depends on the use of verifiable information, particularly for supporting a passing score.

The MCC is supportive of effective implementation of Canada's Wild Salmon Policy (WSP) and the future certification of BC salmon fisheries by the MSC. We recognize the positive incentive MSC certification provides for fisheries reform. However, although Fisheries and Oceans Canada has recognized the need to reform salmon fisheries management by creating the WSP this policy is not sufficiently implemented to support certification at this time. Until the WSP is effectively implemented, with fisheries managed to support the sustainability of conservation units and the protection of ecosystem values, we suggest that premature MSC certification could act as a negative incentive for the management changes needed.

We look forward to your response to these reviews and an opportunity in the near future to discuss them with the assessment team.

Sincerely,

Jeffery Young, MSc
Aquatic Biologist, David Suzuki Foundation



Craig Orr, PhD
Executive Director, Watershed Watch Salmon Society

cc Karl English, MSC BC Sockeye Assessment Team Lead
Don Radford, Regional Director, Aquaculture and Fisheries Management, DFO
David Einarson, North Coast Area Chief, DFO
Paul Ryall, Salmon Team Lead, DFO
Paul Sprout, Pacific Regional Director General, DFO
Brian Riddell, Division Manager, DFO
Christina Burridge, BC Salmon Marketing Council

Review of the Draft MSC Assessment of British Columbia Fraser River Sockeye Salmon Fisheries

Prepared by: Ken Wilson
Prepared For: Watershed Watch Salmon Society

November 27, 2007

General comments

The MSC has established a benchmark for sustainable fisheries management through the principles and criteria for sustainably managed fishing. The management of salmon fisheries, and in particular the management of mixed stock commercial fisheries for Fraser sockeye, is a very complex and even arcane process that has slowly evolved over the last century. Sadly, it has not evolved quickly enough. DFO is struggling to adapt to a new understanding of the biology, population dynamics, and genetics of the resource, and the social and economic context of our fisheries. Salmon fisheries in southern BC are strongly influenced by legal obligations to First Nations, the Pacific Salmon Treaty, and by Canada's fundamental obligation to protect and preserve the resource for future generations. Where we once considered salmon populations to be relatively stable and predictable and protected from the impacts of over fishing by increased stock productivity at small population sizes, most salmon scientists now see a fragile complex of genetically unique, locally adapted populations with highly variable productivities, struggling to adapt to a rapidly changing environment, and the multiple and confounded impacts of fisheries, global climate change, human development, and changing ecosystem dynamics. Many Fraser sockeye stocks captured in the fishery are in decline and are eligible for listing as threatened or endangered under COSEWIC/IUCN criteria. I know first hand that First Nations in much of the Fraser routinely fail to harvest the food fish that they need.

Maintaining the biodiversity and abundance of Fraser sockeye populations is fundamental to the ability of Fraser sockeye to adapt to change, and their capacity to support fisheries over the long term. The question is not whether DFO is doing their best to manage Fraser sockeye fisheries in a sustainable way with the resources at hand, but rather is the current management process protecting the abundance and genetic integrity of Fraser sockeye while respecting the Aboriginal and Treaty rights of First Nations as well as the National and international obligations that Canada has assumed.

The task at hand is to decide if Fraser sockeye fisheries meet the MSC criteria as sustainably managed fisheries under the MSC guidelines. I have some concerns regarding the extent to which the MSC guidelines are appropriate and complete. Some matters related to defining target stocks and incidentally harvested stocks, and the relationship between these stocks and the conservation units yet to be defined under DFO's Wild Salmon Policy remain. In general I found the MSC review to be sensitive to the concerns expressed in my earlier review of the materials presented by DFO to the MSC.

I have reviewed the SCS rankings, and I have compared these rankings to my earlier review of the DFO material. This review will focus on those assessment criteria where my assessment differs substantively form the assessment teams findings. I have also commented on the Conditions imposed on the Fraser assessment. That said, I feel that the principles and criteria are adequate for an assessment of the sustainability of Fraser sockeye commercial fisheries provided that these criteria are rigorously applied and the information provided by the proponents (which in this instance is really DFO) is balanced, and verified by the assessment team. I have not attempted to duplicate my earlier review, but have attempted to clarify and expand on the earlier assessment. I made a number of comments in my earlier review concerning the extensive use of unverifiable "Pers com" citations in support of the proponents view of the structure, application and intent of DFO's Fraser sockeye management process, These 'citations' should not be considered as unbiased scientific commentary.

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.

MSC 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.

General comments on Principle 1

Defining target stocks is critical to this review. In the case of Fraser sockeye given the substantial overlaps in run timing of individual stocks or CU's, most commercial fisheries have the potential to harvest most spawning populations. For example, a fishery on mid summer sockeye will certainly harvest stocks classified as both early summers and lates in addition to mid summer stocks. I will comment on this issue later in this review, but for clarity, I consider all Fraser sockeye populations to be target populations for all Fraser sockeye commercial fisheries.

DFO's commentary on the management of Fraser sockeye suggests that the in season management process is highly refined, uncontroversial, and capable of regulating the harvest impacts of mixed stock fisheries on 7 to 10 "production units" dived into four run timing aggregates. For the purposes of production planning, DFO states that they possess sufficient data to model the production dynamics of 18 to 20 stock units which account for the majority of the harvest, and for conservation purposes DFO states that they monitor the escapement of about 37 to 41 'stock units'.

It is true that Fraser sockeye are managed based on four timing aggregates. It is also true that for the purposes of in season harvest management, DFO assigns the 7 to 10 productions units to one of the four timing aggregates. For the purposes of production planning, the 18-20 most productive stock units are also assigned to one of the four run timing aggregates and DFO uses simulation modeling with population dynamics derived from the fitting Ricker or Larkin models to each of the 18-20 stocks (this process is called the FRISSI model (Fraser River Sockeye Spawning Initiative, some of our concerns about this process were explored in the attached letter from the MCC to DFO). These forward looking simulations are used to explore the impact of alternative fishing plans on each production units and to evaluate the conservation risks of alternative strategies.

If the management process described by DFO for Fraser Sockeye works as well as DFO suggests, then Fraser sockeye stocks should be in pretty good shape. There is currently no clear description of the CU's DFO is obligated to manage and protect under the WSP. Target and limit reference points for these CU's are not in place, and there has been no comprehensive review of the status of Fraser sockeye CU's. Many Fraser sockeye populations are in long term decline. These issues are fundamental to determining the sustainability of Fraser sockeye fisheries, and cannot be adequately addressed by placing conditions on the certification of these fisheries.

Fraser sockeye stocks begin entering the Fraser in June, and the flow of fish continues into September. Timing overlaps between the stocks in different run timing aggregates are very significant, and there is considerable scientific debate about the appropriate process for grouping stocks or CU's into timing aggregates. The timing aggregates that DFO manages are an intellectual construct intended to facilitate harvest regulation, but the placement of stocks into timing aggregates is somewhat arbitrary and controversial. I have attached a copy of a 1996 memorandum from Dr. Jim Woodey (then chief of fisheries management for the PSC), suggesting that nine early-summer stocks would be better grouped with the four mid-summer stocks. Dr. Woodey's recommendation was never acted upon, and DFO to this day still manages a mid-summer aggregate that

consists of four relatively strong stocks. Reorganizing the summer stock group along the lines recommended by Dr. Woodey would have a profound effect on the management of Fraser sockeye. I won't speculate about the reasons that so many stocks that appear to be mid-summer timed are assigned to the early summer stock group, but I can say that the current arrangement of stocks simplifies commercial access to stronger summer run populations (which produce the bulk of the commercial harvest in non-Adams years) while complicating any assessment of fishery impacts on the stocks that are miss assigned (since the models used assume that all stocks within each timing aggregate are equally vulnerable to all fisheries, even though this assumption is clearly incorrect.

Assigning stocks to the early summer run group when they migrate primarily as mid-summer stocks has significant implications for in-season management decisions. 'Optimum' management strategies developed through forward simulations, the escapement goals set for the timing aggregates, and the assumed impact of fisheries on specific stocks are all affected by the assumptions made concerning run timing.

Only about one half of the stocks or CU's have sufficient data to use to fit a Stock Recruit relationship. In almost every case, the fits for SR data are very poor, so poor that the pre-season forecasts prepared each winter for the approaching season often use simple naive models based on cycle line averages. Yet DFO uses these same stock recruit models (that are in many cases considered to be too unreliable for preparing forecasts one year in advance) to simulate the response of Fraser sockeye to harvesting strategies in forward simulations that look 50 years into the future. The problems associated with SR models are well documented in the literature. These models have limited utility in managing single stock fisheries, and have been discredited as a source of guidance in the management of mixed stock fisheries. In this context the FRISSI models are really little more than a rationalization of the current mixed stock management process.

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The historical productivity of almost one half of Fraser sockeye CU's is unknown, and for the remainder is known only with great uncertainty. It is clear that stock productivity is not constant over time, (as the management models used to develop management goals for Fraser sockeye generally assume) but highly variable, and productivity for the majority of Fraser stocks appears to have declined substantially over the last 20 years or so. These long term declines in productivity means that simulation models based on SR models fitted to 50 years of data will have a strong positive bias and can lead to dangerously optimistic assessments of yield and the impacts of fisheries on less productive units of Fraser sockeye.

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1.1.1.1 MU's are defined,
1.1.1.2 Scientific agreement on units

DFO's failure to define CU's (at present) and the considerable scientific uncertainty (Woodey 1996) around the bests way to aggregate these Cu's (once defined) into timing aggregates for the purpose of management argues that these two criteria are not achieved at the 100 level

1.1.1.3 Geographic range for harvest of each stock management unit in the fishery is known

Condition 1 - Certification is conditional until a review of the run timing and harvest rates for Sakinaw sockeye has been completed and the fisheries management plan is consistent with the goal of minimizing the harvest rate on Sakinaw sockeye (**Fraser Condition #1.1**).

There are two issues here. First, there are a dozen 'non-target' stocks of sockeye that migrate through Johnstone strait and that are primarily harvested in fisheries for Fraser sockeye (see Dobson and Wood). Based on Dobson and Wood, Many of these stocks are depleted, but too little is know about escapements and harvest to allow for a proper assessment. Sakinaw are not at all unique among these stocks except that there are sufficient data to support an assessment, and for that reason these fish were listed by COSEWIC. Second, there is little likelihood that run timing or harvest rates for Sakinaw sockeye can be directly assessed, because the run is now too small to monitor in the fisheries.

1.1.1.3 Indicator stocks

Condition 2 –Certification will be conditional until a rigorous review has been completed to confirm that the indicator stocks reflect the status of the other stocks within each management unit (**Fraser Condition #1.2**)

What are the MU's and indicator stocks? If we are referring to timing aggregates, we already know that there are significant variations in run timing and harvest impacts within each timing aggregate. If the indicator stocks are those stocks with sufficient data to fit an SR curve, then there is clearly a strong stock bias. I question the logic in certifying any fishery as sustainable where the fundamental basis for management must be demonstrated to be true as a condition of certification.

1.1.2.1 Estimates exist for the removals for each stock unit

Condition 3 - Certification is conditional until the harvest rate analysis for Sakinaw sockeye has been updated using the best available data and appropriate fisheries management actions are consistent with the goal of reducing harvest rates for Sakinaw sockeye and rebuilding this depleted stock. (**Fraser Condition #1.3**).

Sakinaw is not rebuilding, so it appears unlikely that harvest impacts and fisheries management actions are consistent with the objective of rebuilding this stock.

1.1.2.4 Stock assessment in support

Condition 4 -Certification is conditional until a review of the relative productivity of Sakinaw sockeye has been completed and the fisheries management plan is consistent with the estimated productivity and goal of rebuilding the Sakinaw sockeye stock (**Fraser Condition #1.4**).

It seems self evident that the 'relative' productivity of Sakinaw sockeye (relative to the target Fraser sockeye populations co-migrating with Sakinaw, whatever stocks those are?) is somewhat below the Fraser populations. Since this population is critically endangered using the IUCN criteria, I suggest that the appropriate exploitation rate should be very close to zero. With the data at hand, the exploitation rate for Sakinaw sockeye cannot be measured, and efforts to protect Sakinaw sockeye have been limited to actions that do not unduly disrupt fisheries for Fraser sockeye.

1.1.3.1 LRP's are set and are appropriate to protect the stocks harvested in the fishery

Condition 5 - Certification is conditional until the Conservation Units have been defined for Fraser sockeye using the methods described in Holtby and Ciruna (2007) and LRP's for each Fraser sockeye conservation unit are defined and peer reviewed. (**Fraser Condition #1.5**).

This criteria gets right to the heart of what sustainable management of Fraser sockeye is all about, and the need for placing such a condition on certification argues strongly that Certification should not be granted at all until this condition is met.

1.1.3.2 TRP's or the operational equivalent has been set.

Condition 6 -Certification is conditional until the Management Units have been defined for Fraser sockeye and the management agency defines the TRPs for each Fraser sockeye management unit taking into account the productivity of target and non-target stocks within each management unit. (**Fraser Condition #1.6**).

The review states that ;

> "TRP's have been defined for all the major sockeye stocks but there continues to be considerable scientific debate regarding the TRP's for both target and non-target stocks. It is anticipated that the implementation of the WSP will provide a clear definition of the TRP's for Fraser sockeye."

I disagree strongly. DFO has set management objectives for Fraser run timing aggregates, but not for the individual stocks or CUs. Setting TRPs for individual stocks is a very different matter, and this has not been done, nor is there an operational equivalent used at this time. I do not consider an escapement goal or mortality limit

placed on timing aggregate to be the equivalent of a TRP on a CU, since the management of aggregates under the current process clearly allows individual CUs to decline indefinitely as long as the aggregate goals are met. In essence, DFO's current process allows abundant spawning for strong CUs to compensate for inadequate spawning for weak CUs within a timing aggregate.

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.

Condition 7 - Certification is conditional until the management agency provides a clear commitment to implement the recovery plan for Cultus sockeye and evidence that fisheries management actions are consistent with the recovery goals for Cultus sockeye. (**Fraser Condition #1.7**).

This condition really states that DFO has no clear commitment to implement the recovery plan for Cultus sockeye, and has provided insufficient evidence that man agent goals are consistent with the recovery of Cultus sockeye. I agree. The recovery plan was to be implemented by an Action plan. No such plan exists. It is a telling comment that five years after Cultus sockeye were listed as endangered by COSEWIC, there is not only no sign of recovery, but no existing plan to implement the recovery strategy. That DFO routinely exceeds their own harvest limits for Cultus sockeye suggest that their harvest plans for strong stocks take clear precedence over the recovery plans for weak stocks. .

1.2.2 Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points for the target stocks.

Condition 8 - Certification is conditional until the management agency defines the LRP's for the target stocks and the management agency provides documentation that fisheries have not resulted in escapements that approach or are below the LRP in more than one year in a period of the most recent 5 cycle years, for any of the target sockeye stocks. The intent for this condition is to resolve the effects of fisheries, not other factors, on the stock and to recognize that the Fraser River sockeye undergo cycles so that these cycles must also be taken into account when examining whether the stocks are being maintained above LRP's. (**Fraser Condition #1.8**).

That DFO has failed to meet this criterion is evident from the condition imposed. Fishing has contributed to stock declines throughout the Fraser, and there are no LRPs established to prevent ongoing declines. This condition like several others is not a reasonable condition to impose on a fishery being proposed for certification as a sustainable fishery. This condition argues strongly that the fishery is not demonstrably sustainable, and this condition must be met before any certification can be justified.

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.

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.

MSC 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.

General comments on Principle 3
The impact of commercial fisheries for Fraser sockeye on biodiversity and the ecosystem are rather difficult to evaluate with the available data. Certainly, the most profound impacts of commercial fisheries for Fraser sockeye are the loss of sockeye abundance and diversity, and it is fair to say that target stocks are managed for fishery yield and are not managed to support other components of the ecosystem. Perhaps defining CU's and the associated TRPs and LRPs will provide for these ecosystem functions, or perhaps not. It is clear that "ecosystem needs" are not explicitly addressed by management plans for Fraser sockeye in any way. I also consider the food needs of First Nations to be related to ecosystem functioning, but will address this issue under Principle 3.

Indicator 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.

Condition 17 - Continued certification of the Fraser sockeye salmon fishery is contingent upon providing reliable and defensible estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. See also Condition 1, 3, and 4 regarding Sakinaw sockeye, and the need to be able to identify and understand the impact of fish released from a supplementation program to assist in the recovery plan of Sakinaw

sockeye and to be able to detect impacts on natural spawning produced returning adults. (**Fraser Condition 2.1**)

In this instance, I assume harvest impacts include non-catch mortality. Sturgeon are not retained by commercial harvesters, and are released, but not all survive. Once again I refer the reviewers to Dobson and Wood. Sakinaw is only one of a group of depleted sockeye stocks that spawn in streams entering Georgia strait that are harvested in commercial fisheries for Fraser sockeye. The incidental harvest and depletion of these stocks has increased the fishing pressure on Fraser sockeye by First Nations seeking food fish, since in many cases the local stocks no longer support food fisheries. Impacts on local ecosystems are likely profound, but are unassessed. The wording of this condition is rather vague. Words like reasonable, defensible and reliable can mean different things to DFO and the MSC certifiers

Indicator 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)

Condition 18 - Fraser Sockeye Salmon Condition #2. Certification of the Fraser sockeye salmon fishery is contingent upon developing and implementing a risk assessment of the Sakinaw Lake recovery strategy that will include the following items: 1) Examination of the risk of differing temporal harvest rates on returning run and its implication on the probability of the recovery of the stock; and 2) refinement and peer review of run reconstruction analysis for Sakinaw sockeye. (**Fraser Condition 2.2)**

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Condition 19 - Fraser Sockeye Salmon Condition #3. Certification will be conditional until Limit Reference Points or their equivalent have been defined for Fraser sockeye salmon stocks, and recovery plans have been developed and implemented for stocks harvested in Fraser sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. (**Fraser Condition 2.3)**

Once again, these indicators are central to the concept and definition of sustainable fishing and are fundamental to any assessment of the fishery. That these conditions need to be imposed strongly argues that the fisheries are not demonstrably sustainable. That these conditions are not already clearly met suggest that Fraser commercial sockeye fisheries are not sustainably managed.

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.

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.

MSC Criteria:
Management System:

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
3. 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, artisinal, and fishing-dependent communities shall be addressed as part of this process;

4. 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;

5. 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;

6. incorporates an appropriate mechanism for the resolution of disputes arising within the system; 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 minimize 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;

    f. contains 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.

11. contains 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.

Fishing operations 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;

13. implement appropriate fishing methods designed to minimize 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. minimize 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.

General comments on Principle 3

The long term impacts of the commercial exploitation of Fraser sockeye on the biodiversity of the target stocks are primarily dealt with under Principle 1. I believe that DFO has failed in their legal obligation to consult with First Nations, and in their fiduciary obligation to manage commercial fisheries in a way that allows First Nations to harvest the food fish they need.

DFO has no clear process to evaluate the impact of their management strategy on the success of First Nations fisheries within the Fraser River (under FRISSI for example). Ineffective consultation is a general problem in BC. Failure to deliver the food fish needs of First Nations is a chronic problem, but particularly in the upper Fraser. Many of the First Nations fisheries in the upper Fraser depend on the abundance of only a few, often weak stocks. Many of these fisheries also depend on dip nets and small set nets that harvest only a small fraction of the fish passing. Unless the stocks being harvested are at least modestly abundant, food fish catches are inadequate to meet the needs of the community. This issue must be addressed in setting LRPs and TRPs for Fraser sockeye.

As I mentioned earlier, the depletion of numerous non-Fraser sockeye stocks have forced First Nations along the south coast to increase their dependence on Fraser sockeye. This not only increased the complexity of providing food fish within the Fraser during periods of conservation concern, but has lead to disagreements concerning the role of Fraser sockeye in meeting the needs of coastal First Nations.

Indicator 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 24 - Certification will be conditional until a clear set of management objectives has been defined and found to be consistent with MSC criteria and measures are taken to reduce the bycatch of sturgeon and improve the monitoring systems used to estimates sturgeon bycatch. (**Fraser Condition #3.1**).

That such a condition might reasonably be applied to the Certification of Fraser sockeye fisheries is an indictment of the current management process and argues strongly that this fishery should not be certified.

Indicator 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.

Condition 25 - Certification will be conditional until the management agency provides a clear commitment to implement recovery action plans for Cultus and Sakinaw sockeye (**Fraser Condition #3.2**).

Please see comments under condition 24

Indicator 3.1.8: The management system provides for socioeconomic incentives for sustainable fishing.

Condition 26 - Certification will be conditional until the management agency provides a clear evidence that measures are being implemented to encourage harvesters not to exceed catch targets or exploitation rate limits (**Fraser Condition #3.3**).

In fact, the lack of defined catch shares is a strong incentive for each fisher to maximize their own catch regardless of the impacts on the stock. At present, it is DFO's obligation to monitor the fishery and close the fishery when the catch limit is reached. In order for incentives to work to limit catch, the whole system under which salmon are allocated in BC must change. This is hardly an appropriate condition for Certification.

Indicator 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.

Condition 27 - Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks, and takes into consideration socioeconomic factors and anticipated changes to fisheries. (Fraser Condition #3.4).

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This is a reasonable request, and is part of DFO's core responsibilities. While I question DFO's capacity to fulfill this condition, the condition itself is entirely appropriate.

Indicator 3.4.1.2: Provides for restoring depleted target species to specified levels within specified time frames.

Condition 28 - Certification will be conditional until the management agency provides TRPs for the Cultus sockeye salmon stock and an assessment of the probability of recovery and the timing for recovery for Cultus sockeye. (**Fraser Condition #3.5**).

Cultus sockeye have been in steady decline for many decades, and began to decline precipitously in 1995. Cultus sockeye were listed as endangered by COSEWIC in May of 2003. It is now the end of 2007, and the MSC feels that DFO should have five more years to think about the best way to protect and rebuild Cultus sockeye. If this represents due diligence and sustainable management then the extinction of Cultus sockeye is assured.

Indicator 3.6.3: The management system provides for the observation of legal and customary rights of First Nation peoples.

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Condition 29 – Certification will be conditional until the management agency provides evidence that First Nation issues regarding aboriginal and treaty rights have been identified and these issues are being addressed through an effective consultation or negotiation process. (**Fraser Condition #3.6**).

I have evidence that this is not the case in the form of letters from Fraser First Nations to the Minister of Fisheries, and copies of letters from Fraser First Nations to SCS. I believe it is the obligation of the MSC and SCS to review this information, and to contact the affected First Nations prior to certifying Fraser sockeye fisheries.

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.

Condition 30 – Same as Condition 17. Certification will be conditional until the management agency provides reasonable estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. (**Fraser Condition #3.7**).

As mentioned previously, it is not the harvest of Sturgeon, but the fishing related mortality that must be assessed. I'm sure this is the intent, but the wording should be changed.

Refferences

D. Dobson, C. Wood 2004 PSARC stock status report (accepted with revisions)
S2004-09 Status Review of "Inside" Sockeye Stocks – those adjacent to the Strait of Georgia, North-Eastern Vancouver Island and the Southern Mainland. (D. Dobson 1-250-756-7186) Document Summary available at http://www.dfo-mpo.gc.ca/csas/Csas/proceedings/2004/PRO2004_036_E.pdf

Attatchments

FRSSI letter

Woodey Memo

Review of the Marine Stewardship Council Draft Assessment of the Barkley Sound Sockeye Fisheries

Prepared By: Jeffery Young, David Suzuki Foundation

Introduction

The following review and attached scoring summary is provided by the David Suzuki Foundation and the Watershed Watch Salmon Society based on previous input provided to the Marine Stewardship Council (MSC) sockeye assessment process by Dr. John Nelson, on behalf of the Sierra Club BC Chapter[1]. Additional information since 2004 was also used to inform this review, such as the 2007 Integrated Fisheries Management Plan and the 2008 Salmon Stock Outlook, both provided by Fisheries and Oceans Canada.[2]

This review focuses on the key criteria and indicators for which we disagree with the current assessment scoring. The basis for refuting these scores is provided and recommendations for dealing with these discrepancies are provided.

In summary, there are particular issues with the following:

- Designation, assessment, and management of "stock management units"
- Reliable estimates of escapement
- Limit reference points
- Recovery of target and non-target units
- Availability and use of information on biological diversity
- Clear and defensible set of objectives

Overall, given the intent of the MSC criteria in many cases the current draft assessment scores are not accurate. The current draft conditions identify some of the key discrepancies but we have significant concerns about whether these conditions are sufficient and whether they will be implemented or enforced in the five-year time frame.

The draft MSC assessment identifies most of the serious issues with the management and status of the Barkley Sound sockeye fishery. However, despite strong rationales presented to define these problems there are many instances where 60 guideposts are passed or 80 guideposts are given partial scores where there is no clear justification for doing so.

The MSC scoring process

This review assumes that the reader has an understanding of the MSC scoring process. A detailed description of the scoring process can be found in the Draft Assessment and a brief synopsis is also presented here:

[1] Available at: http://www.msc.org/html/content_493.htm
[2] Available at: www.pac.dfo-mpo.gc.ca

- The fundamental scoring units in the MSC certification are the Scoring Guideposts (SG), and they fall under the following hierarchy:
    - Principles > Criteria > Indicators > SGs.
- SGs are separated into 3 ranked categories: 100, 80, and 60.
    - The 100 Guidepost is the highest mark any fishery could be expected to receive.
    - The 80 Guidepost indicates the MSC level of acceptable performance.
    - The 60 Guidepost indicates the minimum threshold allowable in an MSC evaluation.
- In the Draft Assessment, the SGs were assessed as met, partially met, or not met.
- Conditions were imposed on the certification if one or more 80 SGs was not fully met under a particular indicator.

Principle 1 – Fishery Management for Target Populations

Criterion 1.1 – Maintain high productivity of target population & associated ecological community

Of the ten applicable indicators in this criterion seven fail to meet the 60 scoring guideposts, as detailed in Appendix 1 and based on previous analysis by Dr. John Nelson. The most serious failures of 60 scoring guideposts are discussed further below.

Indicator 1.1.1.1 Stock management units 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.

Unique local adaptations associated with genetically distinct units are key to the productivity and resilience of Barkley Sound sockeye. To date, there has not been an adequate assessment of the distinct sockeye populations or sub-populations captured in the fishery, from within the Somass system or adjacent to it. This lack of assessment undermines the credibility of the existing stock management units.

There are 11 draft Wild Salmon Policy conservation units[3] identified for southwest Vancouver Island. Currently, it is not clear which of these conservation units the fishery captures.

Before certification a more clear accounting of the conservation units and/or sub-populations affected by the fishery is required. This problem also affects the outcome of scoring indicator 1.1.1.3 (Geographic distribution known). This information is also necessary to determine success in meeting a number of the other indicators, including management to reference points and recovery of both target and non target units.

[3] Information on the Wild Salmon Policy available here: http://www.pac.dfo-mpo.gc.ca/species/salmon/wsp/default_e.htm

Indicator 1.1.2.2 Reliable estimates of escapement

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.

As identified in the draft assessment, recent escapement estimates for Henderson Lake sockeye are too uncertain to be a useful independent indicator of abundance for this stock. This problem has become even worse over the past four years where Henderson Lake sockeye declines have been most severe, return estimates have been highly uncertain, and potential impacts of the fisheries of greatest concern. Henderson Lake sockeye are directly affected by this fishery, despite attempts to use time/area closures, and therefore "fishery harvests may represent a significant component of the harvest of that stock."

As a result of this problem the 60 scoring guidepost has clearly not been met. Proposed condition 10 is designed to address this problem and if implemented meaningfully would appear to do so.

Indicator 1.1.3.1 Limit reference points

There is general agreement among regional fisheries scientists within the management agency that the LRP's or equivalent are appropriate to achieve the management goals for target stocks.

The 2007 south coast salmon integrated fisheries management plan[4] only identifies a very general limit reference point for Great Central and Sproat Lakes combined of 200,000 fish. It is not clear what the specific management actions are when this LRP is reached or what recovery actions are necessary. In 2007 the total return of Somass sockeye is currently estimated to below the LRP (170,000) and escapement estimates are falling far below this number.[5]

A scientifically defensible process for setting LRP's for all of the target stocks within the fishery is necessary before this indicator is passable. More importantly, a more clear definition of how DFO intends to use this LRP for management of the fishery and recovery of affected stocks is needed. The Wild Salmon Policy has laid out a useful framework for this effort, but has not yet been implemented in this fishery.

Criterion 1.2 – Fishery allows for the recovery of depleted stocks (Target stocks)

Indicator 1.2.1 Well-defined and effective recovery strategy

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.

[4] Available at: http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/MPLANS/MPlans.htm
[5] Based on information provided by Fisheries and Oceans Canada at a November 2007 Salmon Integrated Harvest Planning Committee Meeting

Accepting that Henderson Lake sockeye is a non-target stock, which is problematic given directed fishing, the south coast Integrated Fisheries Management Plan for 2007 does not provide a defined or effective recovery strategy for the existing stock management units. There are no indications of management actions that would be taken if stock levels are low. This is particularly problematic given that the current status of the stock aggregate unit managed by the fishery is below the LRP identified (as discussed in the Indicator 1.1.3.1 above).

The DFO 2008 salmon stock outlook for WCVI sockeye suggests that return of Somass sockeye will be "well below the long-term average of approximately 760,000 combined return to Great Central and Sproat Lake." This leaves Somass sockeye in the "low" or "stock of concern" categories as identified in the stock outlook document. Henderson Lake sockeye are identified in the "stock of concern" category in the 2008 outlook. Given these "low" returns it is evident that Barkley Sound fisheries management must have clear and defensible objectives for recovery before this indicator and criteria could be passed.

Principle 2 – Ecosystem and Non-Target Populations

Criterion 2.2 – Fishery minimizes impacts on endangered, threatened or protected species

Indicator 2.2.1 Information on biological diversity acquired and used

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 current fishing management plan contains no information on the protection of endangered or threatened species. Sea otters and Stellar sea lions are identified as threatened and special concern, respectively, and there is no evidence that current fisheries management has assessed the potential impact on these species (e.g., direct bycatch or food web alteration) or provides any management strategies to manage impacts.

A condition of certification should require an assessment of the potential impacts of the fishery on endangered, threatened (e.g., COSEWIC listed) or protected (e.g., SARA listed) species and clear demonstration of adequate management efforts to reduce these impacts.

Criterion 2.3 – Fishery allows for the recovery of depleted stocks (Non-target Stocks)

Indicator 2.3.1 Provide for recovery of non-target stocks

The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.

The current draft assessment identifies numerous problems in meeting this indicator, but is too liberal in scoring. Four of the six 80 scoring guideposts receive a partial pass, and it is indicated that this is due to the lack of a recovery plan for Henderson sockeye. However, this rationale and further points made in the assessment does not support this level of scoring given and strongly indicates that neither the 60 nor 80 scoring guideposts concerning the probability of achieving long-term recovery of depleted non-target stocks will be met.

Attempts to mitigate the impact of the fishery on Henderson Lake sockeye have failed. Despite attempts to use time and area closures for fisheries targeting target stocks, there is no scientific evidence to indicate that this approach is viable and does not contribute to the continued decline of Henderson sockeye.

As described in the only 2007 Henderson sockeye bulletin provided by DFO[6] escapement has been less than 4,000 fish for at least the last four years, which is unprecedented. Henderson Lake sockeye used to provide many of the targeted sockeye in this fishery and the long-term average escapement is approximately 28,000 fish.

As indicated in the assessment report there is a lack of meaningful escapement goals or LRPs for this stock and returns are not adequately assessed. Despite precipitous declines and a lack of information on the impact on this stock fisheries in the last four years have proceeded.

Significant research and recovery planning work is necessary for this fishery to pass 60 scoring guideposts. The proposed condition (11) is insufficient to meet this concern and would permit ongoing fisheries directly affecting this highly depleted stock.

Principle 3 – Management and Operational Framework

Criterion 3.1 – Management system consistent with MSC principles and criteria

Indicator 3.1.1 Clear and defensible set of objectives

Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks.

[6] Available at: http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/salmon/sc%20stad/HendersonSockeye/HendersonSock2007-1.pdf

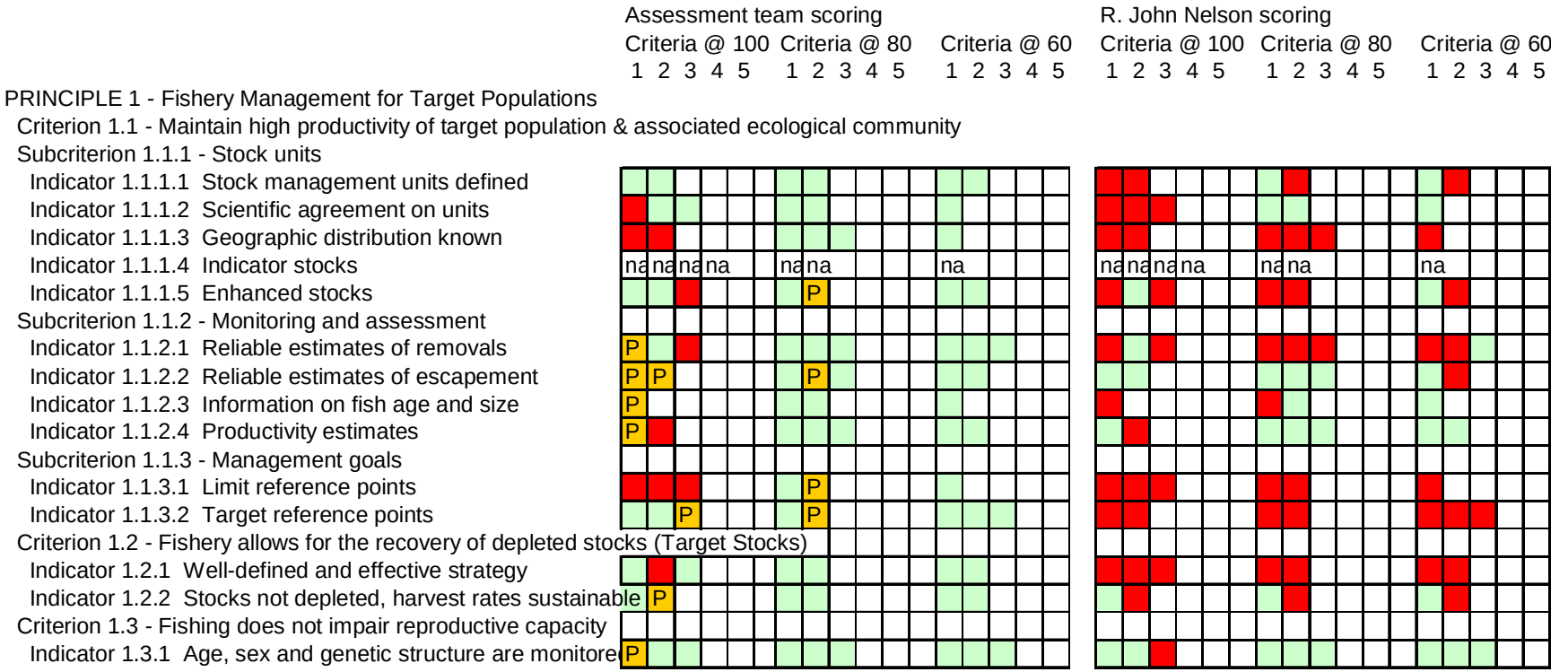
A summary of the issues discussed above clearly identifies problems in meeting this indicator. This fishery lacks an adequate assessment of:

- the diversity of populations caught
- potential impacts to species at risk
- reference points for fisheries management

The fishery lacks clear and defensible objectives for:

- protecting Henderson Lake sockeye
- managing the Wild Salmon Policy conservation units caught in the fishery
- mitigating potential impacts to species at risk

Appendix 1 – Summary of Barkley Sound sockeye scoring




Assessment team scoring
R. John Nelson scoring
Criteria @ 100
Criteria @ 80
Criteria @ 60
Score
1 2 3 4 5
1 2 3 4 5 6
1 2 3 4 5
PRINCIPLE 3 - Management and Operational Framework
Management Framework
Criterion 3.1 - Management system consistent with MSC principles and criteria
Indicator 3.1.1 Clear and defensible set of objectives
Indicator 3.1.2 Periodic assessment of biological status
Indicator 3.1.3 Identify the impact of fishing on the ecosystem
Indicator 3.1.4 Uses best information and precautionary approach
Indicator 3.1.5 Responses to new information are timely and adaptive
Indicator 3.1.6 Responsive to social and economic impact of fishery
Indicator 3.1.7 Useful and relevant information to decision makers
Indicator 3.1.8 Socioeconomic incentives for sustainable fishing
Criterion 3.2 - Framework for research pertinent to management
Indicator 3.2.1 Research plan for target and non-target species
Indicator 3.2.2 Research is timely, available and reviewed
Criterion 3.3 - Transparency in operations and consultation process
Indicator 3.3.1 Open consultations process
Criterion 3.4 - Measure to control levels of harvest
Subcriterion 3.4.1 - Catch and exploitation levels
Indicator 3.4.1.1 Fishery control systems including no-take zones
Indicator 3.4.1.2 Measures to restore depleted fish populations
Subcriterion 3.4.2 - Ensure that conservation objectives are met
Indicator 3.4.2.1 Compliance provisions (effective enforcement)
Indicator 3.4.2.2 Monitoring provisions
Criterion 3.5 - Regular and timely review of management system
Indicator 3.5.1 Internal review
Indicator 3.5.2 External review
Indicator 3.5.3 Recommendations from reviews incorporated
Indicator 3.5.4 Mechanism for resolving disputes
Criterion 3.6 - Compliance with legal and administrative requirements
Indicator 3.6.1 Compliance with international agreements
Indicator 3.6.1 Compliance with domestic laws and regulations
Indicator 3.6.3 Observes legal and customary (First Nation) rights
Fisheries Operational Framework
Criterion 3.7 - Ecosystem sensitive gear and fishing practices
Indicator 3.7.1 Avoid catch and minimize mortality of non-target species
Indicator 3.7.2 No destructive fishing practices
Indicator 3.7.3 Minimize operational waste
Indicator 3.7.4 Cooperation of fishers
Indicator 3.7.5 Fishing methods mimize impacts on habitat
P
na
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CRITICAL REVIEW OF THE MARINE STEWARDSHIP COUNCIL DRAFT ASSESSMENT OF SKEENA AND NASS RIVER SOCKEYE FISHERIES

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Aaron Hill
Hillfish Consulting

Prepared for:
Watershed Watch Salmon Society

November 2007

TABLE OF CONTENTS

INTRODUCTION

Background and purpose

The purpose of this document is to provide critical analyses of the Marine Stewardship Council (MSC) draft assessments for the Skeena and Nass sockeye fisheries, and also to provide recommendations to the MSC assessment team based on those analyses. This review was commissioned by the Watershed Watch Salmon Society as part of a Marine Conservation Caucus initiative.

The Skeena and Nass watersheds are adjacent, their associated marine fisheries interceptions overlap substantially, and both fisheries are managed by DFO North Coast; therefore many issues discussed in this review are common to both fisheries. Initial reviews of the 2004 DFO self-evaluations, the 2005 independent reviews commissioned by the Sierra Club of Canada's BC Chapter (SCBC), and the August 2007 MSC Draft Assessment[1], and consultations with regional experts, led to the conclusion that conditional certification was likely warranted for the Nass fishery, but not the Skeena fishery. Therefore, given limited time and resources, the MSC Draft Assessment of the Skeena fishery received much more scrutiny in this review than that of the Nass fishery.

Approach taken in reviewing the Assessment

The 2005 independent reviews of the DFO self-evaluations commissioned by the Sierra Club formed the basis for this review[2, 3], and this review focuses only on apparent deficiencies in the Draft Assessment – mostly scores that appeared to be unjustifiably high and conditions that appeared inadequate. For each indicator the scores suggested[4] by the SCBC reports were compared to the scores assigned by the assessment team. In the majority of cases for the Skeena assessment, indicators were only scrutinized if it was determined that at least one 60 Scoring Guidepost may be not met or partially met. For the Nass assessment, indicators were scrutinized where the evidence (or lack thereof) suggested that the score assigned by the assessment team was unjustifiably high and a more appropriate score would necessitate an additional condition or modification of the existing condition(s).

There is clearly an element of subjectivity inherent in determining whether Guideposts have been met or whether assigned conditions are appropriate. I endeavoured to strictly

[1] All documents available at: http://www.msc.org/html/content_493.htm
[2] Bocking, R. 2005. Review of MSC Certification Evaluation of Skeena Sockeye Stocks. Prepared by Robert Bocking, LGL Ltd.; prepared for Sierra Club of Canada, BC Chapter; April 21, 2005.
[3] Levy, D. 2005. Independent Review of Nass River Sockeye Fishery Performance Measures, Prepared by David Levy, Levy Research Services Ltd.; prepared for Sierra Club of Canada, BC Chapter; April 2005.
[4] In the case of the Levy (2005) independent review it was often necessary to infer a suggested score from the author's comments.

adhere to a precautionary approach in my own determinations regarding deficiencies in the DFO submissions and the Draft Assessment. As such, failure on the part of DFO or the assessment team to provide or point to reasonable evidence that a particular Guidepost had been fully met was considered sufficient grounds for considering that Guidepost not met or partially met. Wherever possible, I have cited the existing studies, data, personal communications, and other sources that informed my arguments and suggestions.

The MSC scoring process

This review assumes that the reader has an understanding of the MSC scoring process. A detailed description of the scoring process can be found in the Draft Assessment[5], and a brief synopsis is also presented here:

- The fundamental scoring units in the MSC certification are the Scoring Guideposts (SG), and they fall under the following hierarchy:
    - Principles → Criteria → Indicators → SGs.
- SGs are separated into 3 ranked categories: 100, 80, and 60.
    - The 100 Guidepost is the highest mark any fishery could be expected to receive.
    - The 80 Guidepost indicates the MSC level of acceptable performance.
    - The 60 Guidepost indicates the minimum threshold allowable in an MSC evaluation.
- In the Draft Assessment, the SGs were assessed as met, partially met, or not met.
- Conditions were imposed on the certification if one or more 80 SGs was not fully met under a particular indicator.

In this review, colour codes are used to indicate the score received in the Draft Assessment for the Guidepost under discussion:

- Green = SG requirements have been met
- Orange = SG requirements have been partially met
- Red = SG requirements have not been met
- Black = the SG requirements are not applicable to the fishery being assessed

Headings for each Indicator being critiqued in this review were colour-coded as follows:

Grey: 80 or 100 Scoring Guidepost not or partially met

Yellow: 60 Scoring Guidepost partially met

Red: 60 Scoring Guidepost not met

[5] http://www.msc.org/html/content_493.htm

Summary of findings

For the Skeena there were numerous cases where the score suggested by the SCBC reviewer (Bocking 2005) was substantially lower than that assigned by the assessment team. Such cases were less frequent for the Nass. For both fisheries there were several cases where the scores suggested by the both the assessment team and the SCBC reviewer were considered to be too lenient, often because new or additional information was being considered. It should be noted that the timeframe in which the SCBC reports were prepared was much shorter than the timeframe for this report.

In general the DFO self-evaluations for both fisheries contained numerous unsubstantiated claims, yet the majority of the resulting self-assigned scores were adopted by the assessment team. I did not find any of the Indicator scores assigned by the assessment team for either fishery to be unjustifiably low.

Given the high number of 60 and 80 Scoring guideposts that I found were not met or partially met (27 of each) I conclude that the Skeena sockeye fishery is not currently being managed in a sustainable manner, and therefore should not be certified as such. I argue that any assumption that existing or additional certification conditions could be met in a timely manner would be unfounded and unrealistic.

Major problems in the management of the Skeena sockeye fishery are as follows:

- Numerous sockeye stocks are fluctuating at low levels of abundance, and are being considered for “endangered” or “critically endangered” listings by the IUCN.
- Non-target stocks subject to bycatch in the sockeye fishery are fluctuating at low levels of abundance.
- Insufficient status data and assessment procedures for several target and non-target stocks.
- Interceptions of weak target and non-target stocks in the mixed-stock marine fishery are continuing at rates too high to allow for the recovery or those stocks.
- Limit reference points are not defined or effectively implemented for the majority of stocks exploited in the fishery.
- Management model is not robust to increasing ecological variability as a result of climate change.
- Narrow and unprecautionary approach to ecosystem-based management and failure to implement ecosystem-based management provisions of the Wild Salmon Policy in a timely or meaningful manner.
- Inability to enforce fleet compliance with selective fishing measures, bycatch reporting requirements, and other conditions of license.
- General lack of management control in the marine component of the fishery due to derby-style fishery openings.
- Disintegrating relationships with numerous First Nations, as evidenced by active lawsuits.

While serious flaws in the management of the Nass fishery were identified in this review, they appeared to be realistically manageable through the use of certification conditions.

Major problems in the management of the Nass sockeye fishery are as follows:

- Numerous sockeye stocks are fluctuating at low levels of abundance or declining and the Nass sockeye aggregate is being considered for a "vulnerable" listing by the IUCN.
- Non-target stocks subject to bycatch in the sockeye fishery are fluctuating at low levels of abundance.
- Insufficient status data for several target and non-target stocks.
- Interceptions of weak target and non-target stocks in the mixed-stock marine fishery are continuing at rates too high to allow for the recovery of those stocks.
- Limit reference points are not defined or effectively implemented for the majority of stocks exploited in the fishery.
- Some components of the management model are not robust to increasing ecological variability as a result of climate change.
- Narrow and unprecautionary approach to ecosystem-based management and failure to implement ecosystem-based management provisions of the Wild Salmon Policy in a timely or meaningful manner.
- Inability to enforce fleet compliance with selective fishing measures, bycatch reporting requirements, and other conditions of license.
- Lack of management control in the marine component of the fishery due to derby-style fishery openings

COMPARING THE SKEENA AND NASS FISHERIES AND ASSESSMENTS

The main obstacle to sustainability in both fisheries is the threat to biodiversity posed by the continual interception of weak stocks and non-target species in the mixed-stock marine fisheries. Gillnets and seines are inherently unselective and gillnet bycatch mortality rates are not demonstrably less than 40-50% for all species under normal (uncontrolled) fishing scenarios.[6] And in 2006 DFO demonstrated a lack of commitment to require and enforce selective fishing measures set out in the North Coast Integrated Fisheries Management Plan (IMFP). Moreover, there are no empirical studies to support the notion that fish released live from gillnet or seine hauls do not suffer significant reductions in spawning success. [7] Both watersheds have multiple stocks from multiple species that are either declining or fluctuating at low levels of abundance and will likely not recover if they are continually subjected to recent exploitation rates in mixed-stock

[6] Cox-Rogers. 2007. A brief comment on the structure of the current SKEENA management MODEL and some of its key inputs. *DFO Memorandum*, June 20, 2007.
[7] Cox-Rogers. 2007. A brief comment on the structure of the current SKEENA management MODEL and some of its key inputs. *DFO Memorandum*, June 20, 2007.

fisheries (*i.e.* above estimated maximum sustainable yield (MSY)). This is reflected in the *proposed* listings for Nass and Skeena subpopulations in the latest draft IUCN report on sockeye: the single Nass subpopulation is deemed "vulnerable" and of the 5 Skeena subpopulations two are deemed "critically endangered", one is deemed "endangered", one is "data deficient", and one is of "least concern".[8]

The definition of 'target stock' used in the Skeena assessment was problematic in that it only included the enhanced Babine stock. The point is made several times in this review that all Skeena sockeye stocks that are exploited in the marine commercial fishery are *de facto* target stocks. The certification could easily fail under some of the Principle 1 Indicators if a more precautionary definition of 'target stocks' was adopted. In the case of the Nass assessment the 'target stocks' appear to be all Nass sockeye stocks exploited in the commercial fishery, not just the much larger and better-studied Meziadin stock. The scoring and conditions for the Nass assessment thus reflect the poor status of stock assessments for the smaller sockeye stocks (e.g. Indicator 1.1.2.2). No explanation for the apparent inconsistency between the 'target stock' designations for the two fisheries is provided in the draft assessment.

Substantial differences exist between the Nass and Skeena fisheries. Stock assessment procedures on the Nass are far ahead of those on the Skeena in the scope and quality of data they provide to managers. In terms of functional relationships between First Nations, DFO's situations on the Skeena and Nass are vastly different. The Nisga'a have a treaty, they are active participants in the management of the fishery, and it appears that their legal and customary rights and needs are being met by DFO. On the Skeena, no First Nations have signed treaties, and some are actively involved in various legal disputes with the Federal Government over management issues in the commercial sockeye fishery.[9, 10] The successful use of multiple fishwheels on the Nass allows for significant fishing effort to be moved upriver where selectivity is much easier to achieve. Selective in-river fisheries have not yet achieved sustained or widespread commercial success on the Skeena.

The fact that Skeena-bound salmon are intercepted in the Nass Management Area (Area 3)[11] could present a problem from a certification perspective. This review indicates that the assessment team would be justified in granting conditional certification for the Nass fishery and withholding certification for the Skeena fishery. Even if conditional certification is granted to both fisheries, it seems that certification could easily be revoked for the Skeena fishery at a later date given the number and scope of the conditions compared to the Nass certification, and the resources that would be required to meet all of the conditions in a timely manner. If either scenario were to unfold, would all sockeye

[8] Classifications are based on decline rates in multiple stocks over 3 generations (12 years) of trend data – Salmonid Specialist Group of the Species Survival Commission of IUCN World Conservation Union. 2007. IUCN Red List Assessment for Sockeye Salmon *Oncorhynchus nerka*. DRAFT – Nov.26, 2007.
[9] Personal communication with Gerald Wesley, Chief Negotiator, Tsimshian First Nations Treaty Society.
[10] Luba, F. 2007. First nation sues DFO over sockeye fishery. *The Province*, July 27, 2007.
[11] English *et al*. 2005. *Assessment of the Canadian and Alaskan Sockeye Stocks Harvested in the Northern Boundary Fisheries using Run Reconstruction Techniques, 2002-03*. Prepared for: Pacific Salmon Commission, DFO, and ADFG, Dec.31, 2005.

retained or offloaded in Area 3 still be considered MSC-certified? If so, what are the Chain-of-Custody implications? And what is to stop DFO from shifting fishing effort from Areas 4 and 5 to Area 3 in order to maximize interception of MSC-certified fish? Certification for the Nass fishery could provide justification for maintaining or increasing harvest rates in Area 3 while lack of certification for the Skeena fishery could provide motivation to reduce harvest rates in Areas 4 and 5. If the Nass fishery ends up being certified while the Skeena fishery is not, the assessment team should consider restricting the certification to those sub-areas and times where fisheries would be least likely to intercept Skeena-bound sockeye.

Guideposts not met or partially met for each fishery are as follows:

	80 Guideposts not fully met	60 Guideposts not fully met
Skeena:	27	27
Nass:	22	11

SKEENA CRITIQUE

MSC PRINCIPLE 1

Principle: "*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.*"

General comments and concerns

The MSC evaluation of the Skeena sockeye fishery is strongly weighted towards the performance of the Department in their management of the so-called target stock – the Babine Lake stock that is enhanced through the Pinkut Creek and Fulton River spawning channels. A more precautionary definition of 'target stock' would include any stock of the target species that has an estimated average harvest rate in the fishery above some reasonable pre-determined threshold. Indeed, the Principle (above) explicitly refers to "the exploited populations", not the *intended* populations. Certainly from a production standpoint the target (Babine) stock itself is sustainably managed. However, the fundamental and as yet insurmountable obstacle to the ecological sustainability of the Skeena commercial sockeye fishery is its continual interception of weak and non-target stocks due to the similar run timing of various species and stocks.

Indicator concerns and criticisms

1.1.1.3 – Geographic distribution known SG 100.1, 80.3, 60.1

Assessment team and Bocking (2005) are NOT in agreement.

SG 80.3: The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over-harvesting of these stocks.

SG 60.1: The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over-harvesting for the majority of the stocks within each stock unit.

Bocking (2005) argues that these guideposts have only been partially met due to the fact that no information was provided on pink, chum, or chinook. Geographic distributions of steelhead harvests are poorly understood in commercial and First Nations' marine and in-river fisheries alike.[12] It is not clear why Bocking's recommended scoring of SGs 80.3 and 60.1 was rejected by the assessment team.

1.1.1.5 – Enhanced stocks All Scoring Guideposts

Assessment team and Bocking (2005) are in *general* agreement. However, I argue that several guideposts here are not met or partially met, especially the following:

SG 100.2: Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.

SG 60.1: There is general scientific agreement within the management agency regarding the impacts of enhanced fish on the resultant harvest rates or escapements of un-enhanced fish stocks

SG 60.2: Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of un-enhanced stocks within each stock unit.

The scoring for SG 100.2 should be reconsidered given the anomalous run timing and age-size distribution that occurred in 2006 and the resulting management crisis. Variability in run timing and composition will likely become greater as increasingly erratic weather patterns associated with global climate change affect freshwater flow regimes and oceanic productivity patterns. Based on the information provided in the DFO submission and the Draft Assessment it is not clear that DFO science programs provide

[12] Personal communication with Mark Beere, Senior Fisheries Biologist, BC Ministry of Environment – Skeena Region.

sufficiently robust data for local stock assessment biologists to make adequate predictions of run timing, strength, and age-size distribution in a changing climate. The Tyee test fishery does not provide ideal in-season information in this regard as it samples the run after it has passed through the gauntlet fishery[13] and the calibration of the sockeye index does not occur in-season as the Babine River fence counts begin near the end or after the completion of the commercial sockeye fishery. Thus the predictive models used to manage the fishery fall apart when run timings deviate significantly from previously calculated averages. It should be noted that such predictive models would be much less necessary if the bulk of the fishing effort was moved to terminal fisheries.

Moreover, given the high fishing pressure in 2006 and 2007 despite the extremely poor performance of several wild sockeye stocks in recent years[14] (*e.g.* Lakelse, Kitwanga, Bulkley-Maxan, Morice) it could now be argued that none of the Scoring Guideposts under this indicator have been fully met, most notably SG 60.2 (above).

The majority of weak sockeye stocks are routinely fished at exploitation rates above their estimated MSY, yet reliable stock status information does not exist for approximately 1/3 of them.[15,16] Fishery openings occur long before Limit Reference Point (LRP) or equivalent escapements have been reached for unenhanced stocks, many of which are not enumerated on an annual basis. Even in most cases of unenhanced stocks that receive rigorous annual enumerations, DFO managers do not know that these stocks have been "adversely affected" until after the fishery has been conducted and after the spawner density has peaked, at which point it would of course be impossible to adjust the harvest rate. At best, SG 60.2 has been partially met.

SG 60.1 is also only partially met. The Skeena sockeye aggregate abundance, stock composition, and timing is extremely complex and at present is barely understood, and therefore difficult to manage for in a sustainable manner. Also, the mortality estimates used by DFO for seine and gillnet bycatch mortalities are based on studies of short-term (i.e. > 24 hr.) mortality, not escapement, and certainly not spawning success. If there is general agreement among Department scientists on this matter it likely does not have an empirical basis.

1.1.2.1 – Reliable estimates of removals SG 100.2, 80.3, 60.3

Assessment team and Bocking (2005) are NOT in agreement on SG 100.1 and 100.2. I concur and argue that SG 80.3 and 60.3 have also not been met.

[13] Personal communication with Carl Walters, Professor, UBC Fisheries Centre.
[14] *e.g.* Kitwanga, Morice, Lakelse, Bulkley-Maxan; from Gottesfeld and Rabnett. 2007. *Skeena Fish Populations and Their Habitats*. Skeena Fisheries Commission, Hazelton, BC.
[15] Personal communication with Dave Peacock, North Coast Stock Assessment Area Chief, DFO.
[16] Cox-Rogers *et al*. 2004. Stock status and lake based production relationships for wild Skeena River sockeye salmon. *CSAS Research Document* 2004/010.

SG 100.2: Mortality rates for the fish released or discarded during the fishery are available.

SG 80.3: Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years.

SG 60.3: Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years.

Bocking (2005) disagreed with DFO that "mortality rates for the fish released or discarded during the fishery are available" (SG 100.2). Indeed, long-term mortality rates on released bycatch are notoriously difficult to estimate and in fact these have not been established.

DFO asserts that "catch reporting systems are closely scrutinized because of the catch accounting requirements of the Nisga'a Treaty and the Pacific Salmon Treaty" but provides no substantiating information. Exactly what are these mechanisms and how are these mechanisms evaluated?

As of November 2007, the Pacific Region catch monitoring framework that is cited multiple times in the DFO self-evaluation has not yet led to a draft public document for catch reporting standards in commercial salmon fisheries.[17]

It is widely speculated that many commercial fishers engage in 'token reporting' and personal retention of non-target bycatch. In fact, DFO and BC MOE stock assessment biologists consider reported steelhead catches to be of little value and do not use them for predictive modelling.[18] The accuracy of catch reporting, especially hail-ins, could theoretically be estimated by comparing hail data between boats with and without on-board fisheries observers, or by comparing observer and hail catch data within fisheries. Apparently such comparisons have never been made or at least have not been made publicly available. Given the importance of accurate catch data in estimating exploitation rates for non-target species SG 80.3 and 60.3 should be considered not met until DFO provides explicit proof to the contrary.

1.1.2.2 – Reliable estimates of escapement SG 80.1, 60.2

Assessment team and Bocking (2005) are NOT in full agreement.

Bocking (2005) argues that SG 60.2 is only partially met and that 80.1 is met "if one does not factor in whether or not the escapement estimates are reliable." I concur and interpret this to mean that SG 80.1 is only partially met.

[17] Personal communication with Bert Ionson, DFO.
[18] Personal communication with Dave Peacock, North Coast Stock Assessment Area Chief, DFO and personal communication with Mark Beere, Senior Fisheries Biologist, Ministry of Environment – Skeena Region..

SG 60.2: Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.

As argued elsewhere in this document, any sockeye stock subject to harvest in the commercial fishery is a *de facto* target stock. And I assume that some form of regular escapement estimate (*e.g.* every 1-3 years) or minimally, some form of juvenile survey is nearly always necessary to provide the information necessary to protect individual stocks from over-exploitation.

The non-Babine aggregate contains several stocks of concern, no non-Babine sockeye stocks are at or above target escapements[19], and in the current draft IUCN sockeye assessment, proposed listings for two out of five Skeena sockeye subpopulations are "critically endangered" and one is "endangered".[20] Insufficient numbers of spawning adults is a major factor limiting juvenile production for these stocks[21]. Of the 29 Skeena sockeye stock units 16 are not monitored annually for escapement and approximately one third are monitored rarely or not at all; one third of these stocks have not had a juvenile survey, and another third have not had a juvenile survey for over 10 years.[22]

The Tyee test fishery only gives in-season escapement data at the species level. DNA analysis from the test fishery can be used to provide stock-specific data post-season, but the test fishery is located in the estuary, and the stocks are subject to mortality by in-river First Nations and recreational fisheries as well as natural sources after they pass the test fishery. The Core Stock Assessment Program is currently being developed for the North Coast and may fill many of the current stock assessment data gaps if it is fully implemented with sufficient funding.[23] However, that remains to be seen as funding cuts to DFO science programs in recent years have been substantial, and for now it appears that SG 60.2 is indeed only partially met.

1.1.3.1 – Limit reference points (LRPs) All scoring guideposts

Assessment team and Bocking (2005) ARE in agreement. However, if a more precautionary definition of "target stocks" was adopted for this assessment it is doubtful that a passing grade could be assigned for this indicator given that LRPs have not been established for numerous non-Babine sockeye stocks. Where LRPs have been established there is no indication that DFO is using them for their intended purpose: "*If an LRP is*

[19] English *et al.* 2006. *North and Central Coast Core Stock Assessment Program for Salmon*. Prepared by LGL Ltd. for Pacific Salmon Foundation and Fisheries and Oceans Canada.
[20] Classifications are based on decline rates in multiple stocks over 3 generations (12 years) of trend data – Salmonid Specialist Group of the Species Survival Commission of IUCN World Conservation Union. 2007. IUCN Red List Assessment for Sockeye Salmon *Oncorhynchus nerka*. DRAFT – Nov.26, 2007.
[21] Cox-Rogers *et al*. 2004. Stock status and lake based production relationships for wild Skeena River sockeye salmon. *CSAS Research Document* 2004/010.
[22] Personal communication with Dave Peacock, North Coast Stock Assessment Area Chief, DFO.
[23] English *et al.* 2006. *North and Central Coast Core Stock Assessment Program for Salmon*. Prepared by LGL Ltd. for Pacific Salmon Foundation and Fisheries and Oceans Canada.

inadvertently reached, management action should severely curtail or stop fishery development, as appropriate, and corrective action should be taken."

1.1.3.2 – Target reference points (TRPs) SG 60.2

Assessment team and Bocking (2005) are NOT in agreement. Bocking argues that since SG 100.2 is not met, then SG 60.2 also can not be met because they are both asking the same question: *Are the target reference points (TRPs) for Skeena sockeye scientifically accepted outside the management agency?*

SG 60.2: 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.

It is difficult to see how SG 60.2 has been met. The DFO submission clearly states that a functional TRP equivalent only exists for the Skeena sockeye aggregate, and that this TRP equivalent does not take into account the productivity of the wild components of the Babine stock or the non-target wild sockeye stocks, the majority of which are fluctuating at low levels of abundance and are continually exploited above MSY. Furthermore, Skeena Condition #1.2 (below) does not mention TRPs for non-target stocks and non-target species. TRPs are also not mentioned anywhere in Principle 2. Does this mean that the assessment team considers these TRPs unnecessary for the sustainable management of the Skeena sockeye fishery?

Skeena Condition #1.2: *Certification will be conditional until the management agency provides direct evidence that the productivity of non-target stocks has been taken into account when setting the TRP for the target Babine stock.*

Criterion 1.2 – Fishery allows for the recovery of depleted target stocks Indicators 1.2.1 and 1.2.2

This Criterion has been deemed not applicable by the assessment team as they do not consider non-Babine sockeye to be target stocks. The intent statement for Criterion 1.2 explicitly refers to "exploited populations", and certainly the majority of non-Babine sockeye stocks are exploited populations. The assessment team obliquely states on page 38 that they interpret "exploited populations" to refer to "targeted stocks" for the purposes of their evaluation. The definition of 'target stock' used in the Skeena assessment should be changed to include non-Babine stocks that are exploited (harvested) in the commercial fishery at rates approaching or exceeding MSY.

1.3.1 – Age, sex, and genetic structure are monitored SG 60.3

Assessment team and Bocking (2005) are NOT in agreement.

SG 60.3: 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.

Bocking (2005) agrees with DFO that the management system includes the above provisions, but argues that they do not appear to be sufficiently implemented. He cites the fact that "Cox-Rogers *et al*. (2003) identified 7 non-Babine sockeye stocks risking escapement declines of 30-50% under continuous high fisheries exploitation" and that "only Babine sockeye stocks (enhanced and unenhanced) appear to be showing evidence of increasing escapements."

The majority of non-Babine sockeye stocks are fluctuating at levels far below anything that could be considered optimum and they are routinely exploited at rates exceeding their (loosely) estimated MSY. Over time, small populations become increasingly prone to increased extirpation risk due to genetic drift resulting from inbreeding and immigrations of genetically divergent individuals.[24] There is no evidence presented in the DFO submission that the genetic structures of these sockeye populations are being monitored and are not being adversely impacted in this manner.

MSC PRINCIPLE 2

Principle: *"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: *"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."*

General comments and concerns

Bycatch of non-target stocks is a major focus of this Principle, and conditions for certification have therefore been assigned requiring the development of recovery plans for weak sockeye and chum stocks. In isolation the conditions appear both sound and appropriate; however, there is no mention of steelhead anywhere in the draft assessment for Skeena. Significant numbers of summer run steelhead are intercepted in the sockeye fishery[25, 26] and several Skeena steelhead stocks are currently depressed to the point that their economic viability is questionable. Regional Ministry of Environment biologists

[24] Tallmon, Luikart, and Waples. 2004. The alluring simplicity and complex reality of genetic rescue. *TRENDS in Ecology and Evolution*, 19: 489-496.
[25] Gottesfeld and Rabnett. 2007. *Skeena Fish Populations and Their Habitats*. Skeena Fisheries Commission, Hazelton, BC; p. 41.
[26] Tyee test fishery data: http://www.pac.dfo-mpo.gc.ca/northcoast/skeena/tyeetest.htm.

(responsible for management of Skeena steelhead) were not adequately consulted in the MSC assessment process. Given this lack of consultation and the significant conservation concerns around Skeena steelhead stocks they do not endorse the MSC certification of the Skeena sockeye fishery as it is currently managed.[27] Dysfunctional management of steelhead bycatch aside, the fact that recovery plans are required for multiple stocks from *at least* 2 species demonstrates that this fishery has not been sustainably managed when it comes to impacts on non-target stocks.

Another overarching concern with the DFO self-evaluation and the Draft Assessment under Principle 2 (and 3) is the narrow and outdated concept of what constitutes an ecosystem and an ecosystem impact. This approach is at odds with the Wild Salmon Policy, it is unprecautionary, and as argued here and under Principle 3, it is not scientifically valid.

Indicator concerns and criticisms

2.1.2 – Provisions to reduce ecosystem impacts SG 60.1

Assessment team and Bocking (2005) ARE in agreement on the 60 and 80 guideposts. However, I argue that SG 60.1 is only partially met.

SG 60.1: The management system has a history of responding to by-catch problems and has procedures that are followed to limit by-catch.

While DFO has a history of responding to by-catch problems on the Skeena, they also have a history of not responding to by-catch problems, or responding to them inappropriately and ineffectually, as well as not following established procedures to limit by-catch. The 2006 fishing season is a case-in-point. Refer to the communications between DFO and BC MOE that occurred during the summer and fall of 2006 regarding conservation concerns over steelhead bycatch. On August 3, 2006 the BC MOE Fish and Wildlife Section Head told DFO managers the following: "Based on our capacity modelling (Tautz *et al*. 1992; Lessard 2005) and risk assessment modelling (Johnston *et al*. 2002) we are in the realm of extreme conservation concern for Skeena steelhead."[28] DFO continued to hold non-selective fisheries into September, fished to the ceiling exploitation rate for steelhead, and likely exceeded that ceiling. Selective fishing measures that were established in the IFMP to limit bycatch (short sets, half nets, revival tanks, weedlines), however unproven, were not followed.

[27] Personal communication with Mark Beere, Senior Fisheries Biologist, Ministry of Environment – Skeena Region.

[28] Personal email correspondence from Dana Atagi (Skeena Fish & Wildlife Section Head – BC MOE) to Dave Einarson (DFO North Coast Resource Management Area Chief); copied to other DFO and MOE employees.

2.1.3 – Sufficient research on ecosystem impacts SG 60.1

Assessment team and Bocking (2005) ARE in agreement. However, while the wording in the intent statement for this indicator is vague, the short title for this indicator (from the scoring summary table) is quite clear, as is SG 60.1.

SG 60.1: The management agency collects or plans to collect data on by-catch problems or ecosystem concerns.

Aside from a vague reference to PSARC, the DFO self-evaluation provides no substantive discussion of ecosystem concerns under this Indicator, and provides no detail regarding plans to collect data on ecosystem concerns.

2.1.4 – Escapement goals address ecosystem needs All Scoring Guideposts

Assessment team and Bocking (2005) are NOT in agreement on any of the 100 or 80 Guideposts. And if "support" is taken to mean anything more than "approval" then I argue that SG 60.1 is only partially met.

SG 60.1: The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.

Indeed, a key strategy in the Wild Salmon Policy is "Inclusion of ecosystem values and monitoring". However, Bocking (2005) states, and I agree that "very little has been done by DFO (in comparison to research in Washington State for example), to advance our understanding of freshwater ecosystem needs as they relate to salmon escapement requirements. Current Target Reference Points are based on maximizing yield for fisheries and Limit Reference Points are supposedly set to avoid extinction. It is notionally accepted that escapements, at least occasionally, above MSY are required for proper ecosystem function. Although DFO supports research in this area, very little is occurring. DFO does not have sufficient annual funding to address this research need." The assessment team has provided no explanation for the large difference between their score and Bocking's, particularly regarding funding for ecosystem research.

All but one of the studies cited in the DFO self-evaluation as evidence of freshwater ecosystem research they have conducted pertain to the limnology of Skeena sockeye nursery lakes. While these studies have been excellent as far as they go, they have been mostly concerned with various facets of sockeye production potential. And they only cover one portion of the freshwater ecosystem – lakes. Headwater streams, wetlands, and alluvial floodplain systems are all key components of the Skeena freshwater ecosystem that Skeena salmon depend on[29] and numerous studies from other regions indicate that

[29] Gottesfeld and Rabnett. 2007. *Skeena Fish Populations and Their Habitats*. Skeena Fisheries Commission, Hazelton, BC.

they are affected by harvest removals and by-catch mortality of spawners.[30] The single non-lake study cited by DFO was funded by Forest Renewal B.C. (according to the Acknowledgements), and only one of the four authors listed is from DFO[31]. The only comprehensive research being conducted on the Skeena relating to salmon carcass contributions to freshwater ecosystems outside of sockeye nursery lakes is being conducted by researchers from The University of Montana[32] funded by a charitable U.S.-based foundation. DFO has been notionally supportive of this research, and greater use of project results could help DFO refine escapement goals for the Skeena River.[33]

2.3.1 – Provide for recovery of non-target stocks All 60 SGs

Assessment team and Bocking (2005) are NOT in agreement. The DFO self-evaluation provides no substantial evidence for their claim that they have achieved the three 60 Scoring Guideposts.

SG 80.3: The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks.

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.

SG 60.2: The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.

SG 60.3: The management system has a strategy for periodically revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks.

The wording in SG 60.1 is unclear – what constitutes an attempt to prevent extirpation? It could be argued that DFO's practice of routinely fishing the majority of depressed wild sockeye stocks at exploitation rates above their estimated MSY undermines any attempts to prevent extirpation. Whatever the meaning of the Guidepost, in order for SG 60.1 to be met DFO would have to be monitoring escapement for the majority of non-target stocks so they could identify those that were at risk of extirpation. They are not doing this for sockeye or chum and BC MOE is not doing this for steelhead escapements. Also, no stock-specific rebuilding strategies were mentioned or referenced in the DFO self-evaluation and to my knowledge stock-specific rebuilding strategies do not exist for the majority of depressed stocks.

[30] For example, see review by Schindler *et al*. 2003. Pacific salmon and the ecology of coastal ecosystems. *Frontiers in Ecology and Environment*, 1: 31-37.

[31] Johnston *et al*. 2004. Effects of the abundance of spawning sockeye salmon (*Oncorhynchus nerka*) on nutrients and algal biomass in forested streams. *Canadian Journal of Fisheries and Aquatic Sciences* 61: 384-403.

[32] Salmonid Rivers Observatory Network – http://umt.edu/flbs/Research/SaRON.htm

[33] Personal communication with Jack Stanford, Professor and Principle Investigator, Salmonid Rivers Observatory Network, Flathead Lake Biological Station, University of Montana.

Regarding SG 60.2, The assessment team states that since "[they] are unable to distinguish the difference between a 50% probability at the 60 scoring level and a 60% at the 80 scoring level, [they] are interpreting the difference between these two criteria as qualitative in that meeting the provisions of the 80 scoring level of 60% is likely to occur given conditional certification." There are two problems here.

First, there is no evidence presented in the DFO self-evaluation or in the Draft Assessment that either Guidepost (60.2 or 80.3) has been met. In fact, the draft assessment states in the preceding paragraph regarding depressed wild sockeye stocks that "given the relatively long term period of low returns to the depressed systems, there is reasonable doubt that these stocks will have at least a 60% probability of recovery." Bocking (2005) states "I am not at all clear on what basis DFO thinks that the system has a 50% probability of achieving long term recovery of depleted non-target stocks. They have provided no supporting evidence of this." Moreover, the majority of the 29 Skeena sockeye nursery lakes appear to be below 50% of their rearing capacity, with low escapements and/or fry recruitment listed as limiting factors on 12 of the 13 lakes where sufficient data exist to establish a limiting factor.[34]

Second, it would seem that either both the 60 and 80 guideposts are flawed because they ask questions that can not be answered, in which case they should be changed or redacted, or DFO has not met either of them, in which case the scoring should reflect this reality.

Regarding SG 60.3, I argue that whatever strategy DFO has for "periodically revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks" is inconsequential on the Skeena given the lack of quality data for the majority of stocks. For example, Cox-Rogers *et al*. (2004) judged the mean quality of existing limnological and juvenile data to be either "poor" or "very poor" for 16 of the 29 sockeye nursery lakes. As of 2003, limnological and juvenile assessments had not been conducted on 11 of these lakes. And as mentioned previously, of the 29 Skeena sockeye stock units 16 are not monitored annually for escapement, and one third are monitored rarely or never. Chum and steelhead escapements are only monitored in a rigorous manner at the Tyee test fishery, yet there is no calibration of the index for any species other than sockeye. The test fishery closes down as soon as the majority of the sockeye go through, leaving insufficient trend data for chum, coho, and steelhead. Stock-specific escapement estimates for species other than sockeye are few and far between.

[34] Cox-Rogers *et al*. 2004. Stock status and lake based production relationships for wild Skeena River sockeye salmon. *CSAS Research Document* 2004/010.

MSC PRINCIPLE 3

Principle: *"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."*

General comments and concerns

DFO has raised serious doubts among reputable experts regarding their ability to maintain an adequate scientific information base for effective salmon management. The Pacific Fisheries Resource Conservation Council (PFRCC; 2004) notes that "data are inadequate to assess the status of many of the non-Babine sockeye lakes in the Skeena River" and regarding pink salmon, "the recent reductions in escapement monitoring are of particular concern in the Skeena River where pink production can be substantial in both year lines" [35]. Escapement estimates for chum and steelhead are generally not rigorous or spatially explicit enough to ensure a loss of spatial and genetic diversity as a result of the current declines in aggregate escapements as measured at Tyee.

DFO's conduct during the 2006 Skeena sockeye fishery was widely criticized by regional MOE biologists, Skeena First Nations, conservationists, and many others, including people within DFO. Departmental correspondence from DFO and BC MOE regarding the 2006 fishery was obtained by Skeena River conservationists through Freedom of Information (FOI) and Access to Information (ATIP) requests. I refer to this correspondence occasionally in this critique but I also encourage the assessment team to review this correspondence in full. It paints a very different picture of fisheries management on the Skeena than the DFO self-evaluations from 2004 and should be integral to any rigorous, objective audit of the Skeena sockeye fishery. Most importantly, the management of the 2006 fishery should be considered in all cases where the assessment team has given DFO the benefit of the doubt regarding their ability to meet the numerous conditions attached to this certification. Particular consideration should be given to DFO's apparently unilateral in-season abandonment of certain objectives of the Integrated Fisheries Management Plan (IFMP), as IFMPs are referenced repeatedly in the DFO self-evaluation.

[35] PFRCC. 2004. *Advisory: Salmon Conservation Challenges in British Columbia with Particular Reference to Central and North Coast*. Pacific Fisheries Resource Conservation Council, Vancouver, BC.

Another overarching concern with the management system relates to its slow move towards an ecosystem-based approach. This is discussed in detail under Indicator 3.1.3 below.

Indicator criticisms and concerns

3.1.3 – Identify the impact of fishing on the ecosystem All 60 and 80 Guideposts

The assessment team and Bocking (2005) are NOT in agreement on the 100 Scoring Guideposts and I do not think that any of the guideposts in this indicator have been fully met. I will focus on the 60 and 80 guideposts.

SG 80.1: The management system includes mechanisms to identify and evaluate the impact of fishing on the ecosystem.

SG 80.2: Control mechanisms are used to minimize impacts of fishing on the ecosystem.

SG 60.1: 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.

While the "inclusion of ecosystem values and monitoring" is a key strategy in the WSP, the DFO response to this indicator demonstrates an outdated and unprecautionary approach to fisheries management that is clearly not "ecosystem-based".

First, DFO provides no evidence to substantiate their claim that "spawning escapements of target and most non-target stocks have been either stable or increasing over the last 5 decades". In fact, as the assessment team points out, Skeena chum and several non-target sockeye stocks are currently in various states of depression and in need of recovery plans, and proposed listings in the current draft IUCN report on sockeye salmon are "critically endangered" for 2 out of 5 Skeena sockeye subpopulations and "endangered" for another.[36] Even if DFO's above claim were true it is made in reference to a perceived healthy ecosystem state and therefore belies a *shifting baseline syndrome*[37, 38] by only considering the past 5 decades. Numerous studies in Alaska have demonstrated the dramatic effect that the advent of commercial fishing had on freshwater ecosystems through the removal of marine-derived nutrient subsidies [39, 40] and commercial fisheries

[36] Classifications are based on decline rates in multiple stocks over 3 generations (12 years) of trend data – Salmonid Specialist Group of the Species Survival Commission of IUCN World Conservation Union. 2007. IUCN Red List Assessment for Sockeye Salmon *Oncorhynchus nerka*. DRAFT – Nov.26, 2007.
[37] Pitcher and Pauly. 1998. Rebuilding ecosystems, not sustainability, as the proper goal of fishery management. In: *Reinventing Fisheries Management.* Pitcher *et al*. (eds.). Kluwer.
[38] Pauly. 1995. Anecdotes and the shifting baseline syndrome of fisheries. *TRENDS in Ecology and Evolution*, 10: 430.
[39] Finney *et al*. 2000. Impacts of climatic change and fishing on Pacific salmon abundance over the past 300 years. *Science*, 290: 795-799.
[40] Schindler *et al*. 2005. Marine-derived nutrients, commercial fisheries, and the production of salmon and lake algae in Alaska. *Ecology*, 86: 3225-3231.

have been removing millions of Skeena River salmon annually for over 100 years.[41] Spawning escapements over the past 5 decades provide little evidence for DFO's claim that "it [is] likely that contributions of spawners to nutrient loads in watersheds and to food for predators and scavengers are improving and unlikely an impact on the current ecosystem".

Next, consider the following statement from the DFO self-evaluation: "To date, no damage to the ecosystem has been reported by the management system. This appears to be supported by an ever-vigilant public comprised of harvesters and stewardship groups who have not reported or alleged damage to the ecosystem." I refer the assessment team to peer-reviewed papers that review the vast body of empirical studies produced in the past decade or so demonstrating the myriad benefits that salmon-bourne marine-derived nutrients provide to freshwater and terrestrial ecosystems.[42, 43, 44, 45] Additional studies have presented evidence for a pervasive nutrient deficit in systems and regions where salmon stocks have been chronically depressed or extirpated[46, 47], including in British Columbia.[48, 49] During the time period being considered by the assessment team, and until the present, millions of pink and sockeye have been harvested annually in areas 3/4/5. The BC Ministry of Environment unofficially considers these interceptions of marine nutrients to be an ecological concern.[50]

Regarding fishing impacts on the marine ecosystem, DFO refers to their response under Indicator 2.1.2. However, the response under indicator 2.1.2 is mostly dedicated to non-target stock management. The passing mention of impacts of fisheries removals on marine piscivores is limited to sockeye removals, with no mention of any other salmon species subject to incidental harvest mortality (e.g. Chinook, pink, chum). The only references cited are personal communications and the 2003 IFMP. A recent study found

[41] Argue and Shepard. 2005. Historical commercial catch statistics for Pacific salmon (*Oncorhynchus* spp.) in British Columbia, 1828 to 1950. *Canadian Technical Report of Fisheries and Aquatic Sciences*, 2601: 595 p.
[42] Cederholm *et al*. 1999. Pacific salmon carcasses: Essential contributions of nutrients and energy for aquatic and terrestrial ecosystems. *Fisheries*, 24: 6-15.
[43] Gende *et al*. 2002. Pacific salmon in aquatic and terrestrial ecosystems. *Bioscience*, 52: 917-928.
[44] Naiman *et al*. 2002. Pacific salmon, nutrients, and the dynamics of freshwater and riparian ecosystems. *Ecosystems*, 5: 399-417.
[45] Schindler *et al*. 2003. Pacific salmon and the ecology of coastal ecosystems. *Frontiers in Ecology and Environment*, 1: 31-37.
[46] Gresh, T., J. A. Lichatowich and P. Schoonmaker (2000). An estimation of historic and current levels of salmon production in the northeast Pacific ecosystem: Evidence of a nutrient deficit in the freshwater systems of the Pacific Northwest. *Fisheries*, 25: 15-21.
[47] Thomas *et al*. 2003. Assessing the historic contribution of marine derived nutrients to Idaho streams. In: *Nutrients in Salmonid Ecosystems: Sustaining Production and Biodiversity*. J.G. Stockner – ed. American Fisheries Society, Symposium 34, Bethesda, MD, USA.
[48] Schoonmaker *et al*. 2003. Past and present Pacific salmon abundance: Bioregional estimates for key life history stages. In: *Nutrients in Salmonid Ecosystems: Sustaining Production and Biodiversity*. J. G. Stockner (ed.). American Fisheries Society, Symposium 34, Bethesda, MD, USA.
[49] Harvey and MacDuffee – eds. 2002. *Ghost Runs: The Future of Wild Salmon on the North and Central Coasts of British Columbia*.
[50] Personal communication with Mark Beere, Senior Fisheries Biologist, BC Ministry of Environment – Skeena Region.

that resident killer whales (*Ornicus orca*) preferentially prey on chinook salmon in north coastal BC (management areas 1-6) but also prey on chum salmon when they are available.[51] This would indicate that the poor stock status of Skeena chum and continuing harvest and release mortalities of Skeena-bound chinook and chum in the area 3/4/5 commercial fisheries may have some impact on the marine ecosystem.

Finally, based on the DFO self-evaluation, the official strategy regarding ecosystem-based management of escapements appears to be mostly oblivious to the aforementioned body of literature: "DFO Stock Assessment Division is monitoring research in the Pacific Northwest on ecosystem impacts of salmon escapement levels [references to 4 papers – see below] and is carrying out its own research. Canadian research and operational guidelines will be developed when clear impacts have been identified." There are several problems here. First, of the 4 papers they cited as examples of research they were monitoring, only 1 (Chaloner *et al*. 2002) contains original empirical research. The other 3 papers are all quite interesting, but they are perspective papers and essays and should therefore be disregarded by the assessment team for the purposes of evaluating DFO's performance under this Criterion. Second, I am at a loss as to how DFO could imply that "clear impacts" have not been identified for fisheries removals of millions of salmon annually from a salmon-based ecosystem. Third, as "clear impacts" *have* been demonstrated (see above), it appears that by DFO's own admission, they have not developed any substantive "research and operational guidelines" on this matter, and therefore do not pass the 60 Scoring Guidepost.

3.1.7 – Useful and relevant information to decision makers SG 60.2 and 80.2

Assessment team and Bocking (2005) are NOT in agreement on SG 60.2 and I am not in agreement on SG 80.2.

SG 60.2: Risk assessments are considered in formulating important management decisions.

Bocking argues that SG 60.2 is only partially met, due to the fact that risk assessments are not always conducted or considered in formulating important management decisions. Despite the lack of evidence provided by DFO for this Guidepost, it could be argued that there is probably no fisheries management agency in the world that does not engage in some form of risk assessment regarding important management decisions. If that is the case, it would appear that the MSC does not require a particularly high standard under this Indicator.

SG 80.2: 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.

[51] Ford and Ellis. 2006. Selective foraging by fish-eating killer whales *Ornicus orca* in British Columbia. *Marine Ecology Progress Series*, 316: 185-199.

I argue that SG 80.2 is not met. Regarding the first part of the Guidepost, management decisions *often* "rely on useful and relevant information" but not *consistently*. DFO North Coast stock assessment biologists are highly competent and appear to provide sound advice based on the information they have. However, funding for science is inadequate[52] and there are numerous information gaps that undermine the overall quality of the information used in management decisions. Some examples:

- While the Tyee Test Fishery is useful for estimating escapements to the mainstem Skeena, no test fishing is conducted 'in front' of the commercial fishery. Therefore robust data on abundance, timing, and composition are not available for managers, sometimes leading to incorrect predictions of the above parameters (*e.g.* 840k overestimate of the sockeye return in 2006). Expert opinion has identified this as a significant flaw in the Skeena fishery model.[53]
- Monitoring of oceanic distributions of Pacific salmon is highly limited, and certainly does not occur on a stock-specific basis to the extent that it would be useful for regional managers to make run predictions.
- When climate-driven changes in run timing and behaviour occur (*e.g.* 2006) the management agency is caught off-guard, as the utility of established predictive models declines. Research on climate change impacts on Skeena region stocks is virtually non-existent.
- Annual escapements are not monitored for numerous stocks, including some stocks of concern, and for some stocks of concern the escapement data are only reliable for the aggregate when it hits the estuary (*e.g.* chum).
- In-season escapement data from the Tyee test fishery are only useful for the target species – sockeye – as they are calibrated using data from the Babine and Sustut counting facilities. No statistically reliable multiplier exists for non-target species, making sound decision-making around weak-stock management very difficult.
- Short-term mortality rates for released bycatch are somewhat well-established, but the spawning mortality rates for released bycatch used to calculate exploitation rates on non-target species are informed guesses at best.
- Hail data are widely suspected to underestimate bycatch and retention of non-target species by fishers. Gross under-reporting of bycatch was documented through observer programs in the early-mid 1990s[54, 55, 56, 57] and is alleged to still

[52] PFRCC. 2004. *Advisory: Salmon Conservation Challenges in British Columbia with Particular Reference to Central and North Coast*. Pacific Fisheries Resource Conservation Council, Vancouver, BC.
[53] Personal Communication with Carl Walters, Professor, UBC Fisheries Centre.
[54] Thomas, J.O. 1991. Catch sampling and tag recovery involving steelhead caught in the 1991 northern British Columbia net fishery. Unpublished report prepared by J.O. Thomas and Assoc. for BC Ministry of Environment, Lands, and Parks (MELP). Draft report, 1993. 59 p.
[55] Thomas, J.O. 1992. Catch sampling and tag recovery involving steelhead caught in the 1992 northern British Columbia net fishery. Unpublished report prepared by J.O. Thomas and Assoc. for BC Ministry of Environment, Lands, and Parks (MELP). Draft report, 1993. 69 p.
[56] Thomas, J.O. 1993. Catch sampling and tag recovery involving steelhead caught in the 1993 northern British Columbia net fishery. Unpublished report prepared by J.O. Thomas and Assoc. for BC Ministry of Environment, Lands, and Parks (MELP). Draft report, 1993. 108 p.
[57] Thomas, J.O. 1994. Skeena Fisheries Resource Technician Program. Unpublished report prepared by J.O. Thomas and Assoc. Ltd. for the BC Ministry of Agriculture, Fisheries, and Food (MAFF), and the BC Ministry of Environment, Lands, and Parks (MELP). Draft report, December 1994.

be taking place[58, 59]. While ample observer data exist that could be used to assess the veracity of bycatch hail data, DFO has not undertaken such an analysis for any North Coast fisheries, or if so they have not made it public.

- Exploitation rate estimates for non-target species are directly affected by fleet compliance with selective fishing requirements (*i.e.* short nets/sets, weedlines, revival boxes). However, there have been no recent empirical studies to assess the accuracy of compliance rate assumptions, and enforcement resources and practices are not sufficient to ensure consistent compliance.

Regarding the second part of the Guidepost, I argue that there *is* a record of decisions going against the information provided. The 2006 departmental correspondence that was obtained through FOI details a decision making process that is dominated by politics and concerns over "optics", and which allowed the in-season abandonment of selective fishing measures that were prescribed in the IFMP and the extension of the fishery by over 3 weeks. Under pressure from fishing interests, DFO North Coast Resource Management opened the fishery in early September based on a model which informed them that the steelhead run was either late or "virtually over", with either scenario resulting in a steelhead harvest rate less than the allowable maximum of 24%. However, the model was apparently never meant to be used after late August, and it is well known that the steelhead run continues well into September. The final harvest rate likely exceeded the agreed upon ceiling for steelhead given that the model inputs for compliance may not have been accurate.

3.1.8 – Socioeconomic incentives for sustainable fishing SG 80.1, 80.2, 60.1

Assessment team and Bocking (2005) are NOT in agreement on SG 80.1 and Levy's (2005) arguments quoted in the Nass certification regarding SG 80.2 are applicable to SG 80.2 and 60.1 here as well – please refer to them.

SG 80.1: 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.

SG 80.2: The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates.

SG 60.1: The management system provides for the use of social or economic incentives to ensure sustainable fishing.

3.4.1.1 – Fishery control systems including no-take zones SG 60.2

[58] Personal communications with fisheries observers who wish to remain anonymous – October 2007.
[59] Personal email correspondence from Bob Hooton (Head, Fish & Wildlife Section – Vancouver Island Region – BC Ministry of Environment) to other BC MOE officials; August 4, 2006; obtained under FOI.

Assessment team and Bocking (2005) are NOT in agreement; and neither am I.

SG 60.2: 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.

The DFO response under this indicator makes no mention of ecosystem consideration in harvest and/or escapement goals. As Bocking states, "established escapement goals do not implicitly consider the impact of the fishery on the ecosystem generally." To paraphrase DFO's response under Indicator 3.1.3, they do not believe that clear ecosystem impacts of the fishery have been demonstrated, and until such time as impacts are demonstrated they are refraining from even conducting research on how they might go about incorporating ecosystem requirements into escapement and harvest management.

3.4.2.1 – Compliance provisions (effective enforcement) SG 60.1

Bocking (2005) declined to comment on this indicator. I argue that SGs 100.3, 100.4, 80.1, 80.2, and 60.1 have not been met. I focus here on the 60 SG, as it trumps the other SGs for the purposes of the MSC certification.

SG 60.1: The management system includes compliance provisions that are effective for the majority of the fisheries.

DFO has described the conservation and protection framework but has provided no evidence in their submission that compliance provisions are effective for the majority of fisheries.

The fact that "the Conservation & Protection Directorate (within Fisheries Management) currently deploys 170 Fisheries Officers plus Marine Enforcement Officers and Aboriginal Fishery Guardians" is a meaningless statistic. What would be more useful here is average number of officers that are deployed to patrol the Skeena commercial sockeye fisheries relative to the number of boats fishing (*e.g.* officer hours per boat day) for several consecutive years. On page 41 DFO describes several variables that they calculate statistics for at the end of the season in order to determine enforcement efficacy, calculate compliance rates for each area and fishery, and identify enforcement priorities for the following season. This same text appears verbatim on the DFO Conservation and Protection website (http://www.pac.dfo-mpo.gc.ca/ops/Cp/evaluation_e.htm). The fact that such a process occurs is not evidence of effective compliance provisions; however, the summary data resulting from this process could provide evidence that compliance provisions are effective. It does not appear that such data were made available to the assessment team or the public.

The compliance and enforcement strategy website cited in the DFO self-evaluation (http://www.pac.dfo-mpo.gc.ca/ops/Cp/issues_e.htm) indicates that no punitive actions

are taken when fishers are found to be non-compliant with conservation-related conditions of their licence, and no examples of punitive actions for non-compliance are provided in the self-evaluation. The incentives for non-compliance are many but what incentive is there for compliance?

As a fisheries observer on board commercial gillnetters and seiners on the north coast in the 1990s I personally witnessed numerous acts of non-compliance with fisheries regulations and conditions of license on board multiple vessels, and I have spoken with many other observers who have had similar experiences. This begs the question, what is the severity of infractions being committed on the many vessels in the fleet that do not carry observers?

In 2006 there were no enforcement officers present on the North Coast, with the exception of the final two poorly attended openings in September. DFO biologists collecting DNA samples found the fleet to be in gross non-compliance with license requirements to maintain functioning revival boxes for bycatch species.

Given the widespread allegations of routine non-compliance I suggest that granting a passing mark under this indicator would be less than rigorous in the absence of multiyear summary data on the following:

- Intensity of compliance monitoring (e.g. officer hours per boat day)
- Frequency of vessel checks and inspections relative to the intensity of the fishery (e.g. checks per boat day).
- Compliance rates for vessels checked.
- Descriptions of infractions and resulting enforcement actions.
- Vessel, dockside, and processor observer reports.

3.5.2 – External review SG 80.1

Assessment team and Bocking (2005) are NOT in agreement.

SG 80.1: The management system provides for a review of management performance by one or more independent experts at least once every five years.

The DFO self-evaluation contains no evidence that the above Guidepost has been met for management of the Skeena sockeye fishery. The assessment team has not indicated why they were able to consider this Guidepost met in the absence of such evidence. An independent science review panel is currently being put together to review salmon management on the Skeena, but its membership and terms of reference have not yet been made public. There is no indication that it will reconvene again within 5 years.

3.5.3 – Recommendations from reviews incorporated All Scoring Guideposts

Assessment team and Bocking (2005) are NOT in agreement. Bocking states, and I concur, that "because of the lack of external reviews, these Scoring Guideposts can only be partially met." For example, consider SG 60.1:

SG 60.1: 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.

At best, the guideposts under this indicator are not applicable given the lack of external reviews.

3.5.4 – Mechanism for resolving disputes All 80 Guideposts

Assessment team and Bocking (2005) are NOT in agreement regarding any the 80 Guideposts, and I concur with Bocking.

SG 80.1: The management system has a dispute-resolution process for resolving significant disputes.

SG 80.2: The dispute resolution mechanism is available for use by affected parties, but is not routinely used.

SG 80.3: The dispute resolution mechanism does not discriminate against any disputing party.

DFO has not described a dispute resolution process for resolving significant disputes in their self-evaluation, only a dispute resolution mechanism – Ministerial authority. Therefore SG 80.1 is not met. If such a process has come into existence since DFO made this submission, the assessment team should describe it in future versions of the assessment.

Regarding SG 80.2, the availability of the Minister to resolve disputes for or between affected parties is highly questionable; DFO certainly provides no proof of this in their submission. Given that the dispute resolution mechanism is the discretion of an elected official there are several scenarios where discrimination would be inherent; the most obvious example being a case in which the affected party had a dispute with the Minster himself. Another consideration would be the events that transpired in 2006 where the Department had a series of highly controversial commercial fishery openings late in the season following lobbying by interested parties and industry representatives. In that case the outcome favoured those who exercised the most effective political leverage. The Gitanyow and other First Nations' current legal actions against the Department[60], [61] suggest that DFO's dispute resolution protocols on the Skeena are less than effective.

[60] Luba, F. 2007. First nation sues DFO over sockeye fishery. *The Province*, July 27, 2007.
[61] Personal communication with Gerald Wesley, Chief Treaty Negotiator, Tsimshian First Nations Treaty Society.

3.6.3 – Observes legal and customary (First Nation) rights	SG 80.1 and 60.1 and Condition 39

Here the assessment team has assigned a lower score than Bocking (2005) suggested; however, I argue that the score should be lower still given recent developments. I also argue that the associated condition is inadequate.

SG 100.1: The management system is in compliance with all major legal and customary rights of First Nation peoples that are impacted by the fishery.

SG 80.1: The management system is found to be in compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery.

SG 60.1: The management system is in compliance with the legal rights of First Nation peoples that are impacted by the fishery.

Again, I refer the assessment team to the Gitanyow First Nation's current legal action against the Department. Given that the matter is before the Federal Court it would appear that SG 80.1 may not be met (compliance with ALL legal rights) and SG 60.1 may be only partially met. Of course, we in Canada are innocent of a crime until proven guilty. However, given that the MSC appears to be a champion of the precautionary approach it would seem appropriate to apply it in the scoring of all indicators in this assessment, including this one.

Condition 39: *Certification will be conditional until the management agency provides evidence that First Nation issues regarding aboriginal and treaty rights have been identified and these issues are being addressed through an effective consultation or negotiation process.*

The wording in the condition the assessment team has imposed for this indicator does not match the wording of the above Guideposts. In order for the Department to meet SGs 60.1 and 80.1, it would seem that they must *be* in compliance with the legal rights of First nation peoples that are impacted by the fishery and not simply engaging in a loosely defined process. In any event, the Gitanyow lawsuit suggests that whatever consultation and negotiation processes exist, they are not very effective.

3.7.1 – Avoid catch and minimize mortality of non-target species	SG 60.1

The assessment team and Bocking (2005) are NOT in agreement on SG 80.2. I argue that given the conduct of the fleet and the Department in 2006, SG 60.1 is only partially met.

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.

SG 60.1: 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.

Regarding SG 80.2 Bocking (2005) states: "I do not believe there is evidence that the capture and discard of non-target species is trending down or that the level of exploitation is acceptable, particularly for steelhead and chum." I concur; DFO has provided no data to support this claim.

Regarding both Guideposts, consider again the 2006 fishery. The mean size of earlier returning sockeye in the 2006 run was far below average while their abundance was above average. The small size of the earlier returning sockeye led to substantial reductions in their catchability by gillnets. This led to a general fleet-wide abandonment of selective fishing methods and equipment (half nets, short sets, weedlines, use of revival boxes, etc.) as stipulated in the 2006 IFMP in the hopes that traditional fishing methods and equipment would allow for increased catches. The increased effort with traditional gear for the majority of the season likely led to substantial increases in catches and mortality of non-target species. The abandonment of revival box use likely led to further increases in pre-spawning mortality rates for released fish. And consider again the nearly complete lack of enforcement in 2006, and the small enforcement presence in 2007.

Gillnets are inherently non-selective, and given the extremely high short-term mortality rates associated with gillnets (*e.g.* ~50-75% for steelhead[62]), any mixed-stock fishery employing gillnets is inherently non-selective. Short-term mortality rates associated with seines are considerably lower than for gillnets (*e.g.* ~20-40% for steelhead[63]); however, they too have problems which have not been adequately addressed by DFO. For example, people on the grounds in Area 3 in 2007 described up to 200-300 chum being thrown back (literally) per set, with boats lined up three deep in a confined area, potentially re-catching the same fish numerous times.[64] Very little empirical data exist for recapture rates of individual fish in such situations, and no reliable estimates exist for long-term mortality rates of fish that are caught and released even once.

Selective net fisheries have a limited ability to reduce exploitation of non-target species; there is little evidence that the exploitation rate reductions are at all substantive, and no evidence that they result in higher spawning success.

[62] For example: Beere. 1992. The Skeena River steelhead observer program July 18 – August 18, 1992. *Skeena Fisheries Report* # SK 80, BC Ministry of Environment, Smithers, BC, and references therein.
[63] Reviewed in: Bison and Labelle. 2007. A simulation model to investigate the potential impacts of marine and fresh water fisheries on the Thompson River steelhead trout population (*Oncorhynchus mykiss*). *In preparation.*
[64] Personal communications with individuals who wish to remain anonymous.

3.7.3 – Minimize operational waste SG 100.1, 100.2, 80.1, 60.1

Assessment team and Bocking (2005) are NOT in agreement on any of the following Guideposts.

SG 100.1: The management system has a formal program to reduce operational waste in the fishery, with the long-term goal of eliminating such waste.

SG 100.2: The program is effective, as reflected by reduced incidents of operational waste.

SG 80.1: The management system has a program that sets guidelines for reducing operational waste.

SG 60.1: There is a program to reduce operational waste.

Here, I will only reiterate what Bocking (2005) has already said – there is no evidence presented in the DFO submission that any of the above guideposts are met.

3.7.4 – Cooperation of fishers SG 60.1, 80.1

Assessment team and Bocking (2005) are NOT in agreement on SG 80.1 and I suggest that SG 60.1 may not be met.

SG 80.1: 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.

SG 60.1: 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.

Certainly there are many good operators within the fleet who report all bycatch with precision and accuracy. However, there is no evidence presented in the DFO submission that speaks directly to the Scoring Guideposts in this indicator. The only compliance rate data provided are without context and come from a personal communication:

"DFO has documented compliance with catch monitoring provisions. These documents show that compliance with log book requirements ranges from 67% to 89% of the fleet depending on which fishery is surveyed [citation: Bert Ionson, Fisheries and Oceans Canada, pers comm.]." This same text appears verbatim in the Nass and Fraser submissions, so it appears that the numbers may apply to the entire BC salmon fleet. The fishery under consideration here is the Skeena sockeye fishery and compliance rate data

from other fisheries is not appropriate. There is no mention of a time frame, sample size, or sampling method for the above data.

As stated under Indicator 1.1.2.1, it is widely speculated that many commercial fishers engage in non-reporting or 'token reporting' and personal retention of non-target bycatch. As a fisheries observer during the 'coho crisis' I personally witnessed such behaviour around coho on numerous vessels. Reliable estimates of steelhead bycatch are not obtained – DFO and MOE stock assessment biologists consider reported steelhead catches to be of little value and do not use them for predictive modelling.[65] The accuracy of catch reporting, especially hail-ins, could theoretically be estimated by comparing hail data between boats with and without on-board fisheries observers, or by comparing observer and hail catch data within fisheries. Apparently such comparisons have never been made or at least have not been made publicly available. Given the importance of accurate catch data in estimating exploitation rates for non-target species, SGs 80.1 and 60.1 should be considered not met until DFO provides explicit proof to the contrary.

If the assessment team is considering giving DFO the benefit of the doubt in this matter they should also consider the fleet's gross non-compliance with the revival box condition-of-license and DFO's complete failure to enforce this requirement in 2006. And as stated previously, as of Nov 2007 the Pacific Region catch monitoring framework that is cited multiple times in the DFO self-evaluation has not yet led to a draft public document for catch reporting standards in commercial salmon fisheries.[66]

3.7.5 – Fishing methods minimize impacts on habitat SGs 60.1, 80.1, and 100.1

Assessment team and Bocking (2005) are not in agreement.

SG 60.1: 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.

Bocking (2005) states that the above Guideposts can not be fully met due to the lack of a formal program. The assessment team has not indicated that a program does in fact exist as stated in the Scoring Guideposts for this Indicator.

[65] Personal communication with Dave Peacock, North Coast Stock Assessment Area Chief, DFO and personal communication with Mark Beere, Senior Fisheries Biologist, BC Ministry of Environment – Skeena Region.
[66] Personal communication with Bert Ionson, DFO.

NASS CRITIQUE

Due to the close proximity of the Skeena and Nass watersheds, the substantial overlap in their associated fisheries, and the fact that they are both managed by DFO North Coast, many of the concerns expressed below regarding the Nass assessment are similar or identical to those expressed above regarding the Skeena assessment. In an attempt to avoid needless repetition the reader is often referred to comments made in the Skeena portion of this review that are directly transferable or applicable to the Nass. In some cases repetition was deemed necessary.

As stated in the Introduction, conditional MSC certification appears to be justified for the Nass fishery. However, it does not appear that the existing conditions will successfully hold the management system to full compliance with the MSC 80 Scoring Guideposts. These deficiencies can likely be resolved with the modification of existing conditions and/or the addition of further conditions suggested below. Please note that there is considerable overlap among these suggested additions and modifications, and I have made no attempt to resolve this matter. Some harmonization of the suggested additions/modifications will likely be necessary if they are accepted by the assessment team.

MSC Principle 1

Refer to Skeena critique (above) for definition and intent (page 6).

General comments and concerns

As Levy (2006) states, "from a production perspective, the Nass River salmon fishery is probably the most effectively managed commercial salmon fishery in BC...There is probably no other large salmon fishery in BC or elsewhere which compares with the Nass for the quality of in-season fisheries management information".[67] Yet the recent declines in abundance and lack of spawning escapement data for several smaller Nass sockeye stocks indicate some serious flaws in an otherwise exemplary stock assessment system. The certification conditions proposed by the assessment team cover the majority of these flaws as they pertain to sockeye. However, it appears some issues have been overlooked.

[67] Levy, D. 2006. *Nass River Salmon Fishery Report Card*. Prepared by David Levy, Levy Research Services Ltd.; prepared for Sierra Club of Canada, BC Chapter; August, 2006.

Indicator and condition comments and concerns

1.1.2.1 – Reliable estimates of removals SGs 60.3, 80.3, and 100.2

The issues with these Guideposts for the Nass fishery are identical to the issues raised under the same Indicator for the Skeena fishery (above). Please refer to those comments.

SG 100.2: Mortality rates for the fish released or discarded during the fishery are available.

SG 80.3: Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years.

SG 60.3: Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years.

The objection to certification under this indicator is DFO's failure to provide explicit proof that they have mechanisms to ensure accurate catch reporting and that those mechanisms are evaluated every 5-10 years. If DFO or the assessment team is able to provide such explicit proof then the problem is solved. If not, the problem could be solved for the Nass fishery with the **addition of a condition stipulating that:**

1. **DFO rigorously evaluate their mechanisms for ensuring accurate catch reporting, and**
2. **If mechanisms for ensuring accurate catch reporting are determined to be insufficient (reported catches are statistically inaccurate) the mechanism(s) must be improved and re-evaluated in a reasonable time frame (<< 5 years).**

1.1.2.2 – Reliable estimates of escapement Condition #1.1

Nass Condition #1.1: *Certification will be conditional until annual escapement estimates are computed for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye.*

Regarding this indicator and the above condition, the draft assessment states that escapements of the smaller sockeye stocks currently not being monitored could be "readily estimated using DNA samples obtained from the Lower Nass fishwheels." While this statement is true, it could be taken to imply that such a program would be a viable substitute for routine spawner and/or juvenile surveys and therefore meet the requirements of the condition. **The use of fishwheel/DNA-based escapement estimates should include routine calibration (*i.e.* every 1-3 years) using stock-specific spawner and/or juvenile counts.**

1.1.2.4 – Productivity estimates SG 100.1, 80.2, 80.3

Assessment team and Levy (2005) appear to not be in agreement regarding SG 100.1 and (perhaps) partially not in agreement on SG 80.2 and 80.3. The assessment team gave this Indicator full marks, but it is not on the "looks good" list for Principle 1 in the draft assessment.

SG 100.1: Scientifically defensible productivity estimates (eg, stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.

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.

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.

Levy (2005) made the following points, and these may have been overlooked by the assessment team:

- Productivity estimates are based on juvenile assessments, not stock:recruitment analysis (refs. 46,47).
- The juvenile studies are based on lake capacity estimates and assume no spawning habitat limitation.
- Historical fishery performance information gives information on target stock productivity, but is less useful for non-target stocks.
- Management focuses on providing sufficient escapement, not on biological productivity.
- Reference is made to coho and steelhead as non-target stocks; no consideration is given to non-Meziadin Lake sockeye stocks.

1.1.3.1 – Limit reference points (LRPs) Condition 1.2

SG 80.1: There is some scientific basis for the LRPs for target stocks and these LRPs are defined to protect the stocks harvested by the fisheries.

Nass Condition #1.2: *Certification will be conditional until LRP's have been defined for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye.*

The above condition apparently is meant to address SG 80.1, the only Guidepost under this Indicator that the assessment team deemed not fully met. However, the wording of the condition does not match the wording of SG 80.1. **In order to comply with SG 80.1, Nass Condition 1.2 should require that LRP's for all sockeye stocks are not only defined but have "some scientific basis".** That said, the phrase "some scientific basis" could be taken to mean anything from the opinion of a scientist to a rigorous empirical

evaluation. Something resembling the latter interpretation would of course be the most desirable from a conservation/sustainability perspective. Whatever the interpretation, it should be clarified here and wherever else similar terminology is used in the assessment.

1.1.3.2 – Target reference points (TRPs) SG 100.1, 80.1, 80.2

Assessment team and Levy do not appear to be in agreement on SG 100.1 and 80.1, and I argue that 80.2 has not been fully met.

SG 100.1: The Target Reference Point (TRP) for target species have been reviewed and found to be scientifically defensive (*sic*.?) and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee.

SG 80.1: There is no significant scientific disagreement regarding the TRPs used by the management agency to formulate management decision for the fishery.

SG 80.2: The TRPs 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.

Regarding SG 100.1, Levy states that the TRPs have not been reviewed by PSARC. Based on the DFO self-evaluation it appears that the TRPs may not have been reviewed by a Pacific Salmon Commission technical committee either. However, this may have changed.

The DFO response does not indicate whether SG 80.1 has been met – As Levy points out, "absence of expressions of concern from provincial scientists is largely irrelevant since the province is not involved in sockeye management."

Regarding SG 80.2, it is not clear in DFO's response that variable productivities of non-target stocks are explicitly considered in setting the target stock TRPs. **If such proof exists, it should be provided, and if not, a condition should be assigned to the certification that deals with this Guidepost.**

Criterion 1.2 – Fishery allows for the recovery of depleted stocks Indicators 1.2.1 and 1.2.2

Indicator 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.

Indicator 1.2.2: Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points for the target stocks.

The assessment team has deemed the two Indicators under this Criterion to be not applicable, stating: "There are no depleted target stocks. In years when returns of Nass sockeye are small or returns of other salmon species are less than escapement goals, appropriate management actions were taken to reduce harvest pressure. Escapements have been consistently above LRP for Nass sockeye since 1982 despite large variations in annual returns." I argue that the two indicators are quite applicable.

Regarding the Criterion, the Draft Assessment states (p.38): "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." It would appear from this intent statement that the current status of the target stock(s) is not the only attribute of the fishery that this Criterion is meant to judge. In the case of Indicator 1.2.1 it would appear to deal with the ability of the management agency to enact a recovery plan for a target stock in the event that it becomes depleted.

Indicator 1.2.2 speaks directly to the issue of whether or not the target stocks are depleted. As stated in the Draft Assessment (p.38), this indicator "evaluates the current status of the target species or stocks, and the basis for being reasonably certain about their status." Not only does this seem quite applicable, it is arguably one of the most important Indicators in this assessment.

Given that the Guideposts under both indicators refer to "target stocks" and not "target species" it would seem the only reasonable grounds for considering both indicators not applicable would be the lack of sufficient information to determine whether or not several of the target stocks are depleted. According to Levy (2006) "[sockeye] populations with poorly defined or no escapement goals (or where there is uncertainty in stock status) include: Damdochaux Lake and Creek, Bowser Lake, Fred Wright Lake, Gingit Creek, Zolzap River, and Brown Bear Lake."[68] It should also be noted that the management agency has expressed concern over the fact that several smaller Nass sockeye stocks appear to be declining[69], and the Salmonid Specialist Group of the IUCN has proposed that Nass sockeye are "vulnerable" to biodiversity loss based on recent declines in several stocks.[70]

[68] Levy, D. 2006. *Nass River Salmon Fishery Report Card*. Prepared by David Levy, Levy Research Services Ltd.; prepared for Sierra Club of Canada, BC Chapter; August, 2006.
[69] Personal communication with Dave Peacock, North Coast Stock Assessment Area Chief, DFO.
[70] "Vulnerable" classification is based on > 30% rate of decline in multiple stocks over 12 years of trend data and falls between "least concern" and "endangered" – Salmonid Specialist Group of the Species Survival Commission of IUCN World Conservation Union. 2007. IUCN Red List Assessment for Sockeye Salmon *Oncorhynchus nerka*. DRAFT – Nov.26, 2007.

MSC Principle 2

Refer to Skeena critique (above) for definition and intent (page 12).

General comments and concerns

The concerns here are similar to those for the Skeena assessment, except that all sockeye stocks are considered 'target stocks' under the Nass assessment, and are therefore dealt with more thoroughly under Principle 1. And with the small modification suggested below, the poor status of Nass chum stocks should be adequately addressed with Condition 2.1. One important consideration that may not be adequately addressed under Nass Principle 2 is the interception of Skeena-bound salmon and steelhead in Area 3 (Nass) sockeye fisheries.

As with the Skeena assessment, another overarching concern here is the narrow concept that DFO and the assessment team appear to have of what constitutes an ecosystem and an ecosystem impact. This issue is discussed at length elsewhere in this review.

Indicator and condition comments and concerns

2.1.2 – Provisions to reduce ecosystem impacts SG 60.1

SG 60.1: The management system has a history of responding to by-catch problems and has procedures that are followed to limit by-catch.

Please refer to the comments made under this Indicator for the Skeena. The problem appears to be less acute in the case of the Nass fishery, but is still relevant given that Skeena salmon and steelhead are intercepted in Area 3 fisheries. And issues with non-compliance and lack of enforcement likely extend to Area 3, or to put it another way, there's no proof that they don't.

2.1.3 – Sufficient research on ecosystem impacts SG 60.1

SG 60.1: The management agency collects or plans to collect data on by-catch problems or ecosystem concerns.

Again, the problem here is quite similar to the problem with this Indicator in the Skeena assessment. To repeat those concerns: aside from a vague reference to PSARC, the DFO self-evaluation provides no substantive discussion of ecosystem concerns under this Indicator, and provides no detail regarding plans to collect data on ecosystem concerns. **If the Department is not collecting data on ecosystem concerns – and it is likely they**

are not in any substantive manner (see 2.1.4 below) – then a condition requiring them to do so would be justified here.

2.1.4 – Escapement goals address ecosystem needs All Scoring Guideposts

The assessment team and Levy (2005) are NOT in agreement on this Indicator.

SG 80.1: Ongoing research is supported to determine the impacts of carcasses on freshwater ecosystem processes and to identify tradeoffs between harvests and freshwater ecosystem concerns.

SG 80.2: 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.

SG 60.1: The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.

Indeed, a key strategy in the Wild Salmon Policy is "Inclusion of ecosystem values and monitoring". However Levy (2005) states, and I agree, that "Preliminary research efforts, mostly undertaken in other watersheds, do not permit analysis of trade-offs, determination of impacts between fish harvests and freshwater ecosystem impacts. Nor do they permit understanding the adequacy of existing escapement goals for meeting freshwater ecosystem needs. This is an important area where focused research is required to determine these relationships." The statement quoted from Bocking (2005) under this indicator for the Skeena assessment is also applicable here – please refer to it.

As with DFO's Skeena submission, all but one of the studies cited as evidence of freshwater ecosystem research they have conducted appear to focus on the limnology of Nass sockeye nursery lakes. While these appear to be rigorous and respectable studies, their scope does not extend to analyzing the adequacy of escapement targets in meeting freshwater ecosystem needs for salmon carcasses. Furthermore, they only cover one portion of the freshwater ecosystem – lakes. Headwater streams, wetlands, and alluvial floodplain systems are all key components of the Nass freshwater ecosystem that Nass salmon depend on and numerous studies from other regions indicate that they are likely affected by harvest removals and by-catch mortality of spawners.[71] The single non-lake study cited by DFO was funded by Forest Renewal B.C. (according to the Acknowledgements), and only one of the four authors listed is from DFO[72]. There is no reasonable proof in the DFO submission that the Department is conducting or supporting research into whether Nass escapement goals meet Nass freshwater ecosystem needs.

[71] For example, see review by Schindler *et al.* 2003. Pacific salmon and the ecology of coastal ecosystems. *Frontiers in Ecology and Environment,* 1: 31-37.

[72] Johnston *et al*. 2004. Effects of the abundance of spawning sockeye salmon (*Oncorhynchus nerka*) on nutrients and algal biomass in forested streams. *Canadian Journal of Fisheries and Aquatic Sciences* 61: 384-403.

In order for the fishery to be certified an additional condition should be imposed explicitly requiring full compliance with the 80 Scoring Guideposts under this Indicator *for all (lake and non-lake) components of the freshwater ecosystem that stand to benefit from salmon carcasses*.

2.3.1 – Provide for recovery of non-target stocks Condition 2.1

SG 80.3: The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks.

SG 80.5: Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans.

SG 80.6: The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks

Nass Condition 2.1: *Certification of the Nass sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks that are below the LRP and that spawn in the Nass or its tributaries. Such a plan must have clear procedures to determine the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery.*

While the above condition is good as far as it goes, it does not speak to SG 80.6., but it should given the extent to which the Nass catchment has been modified by industrial forestry. **Nass Condition 2.1 should explicitly require that the impact of non-fishing related human activity be considered in the Nass chum recovery plan, and any future recovery plans for Nass salmon.**

MSC Principle 3

Refer to Skeena critique (above) for definition and intent (page 17).

General comments and concerns

The Nass salmon fishery is widely viewed as being the best-managed large salmon fishery in British Columbia. The fishwheel mark-recapture tagging programs on the Nass provide managers with excellent in-season data and the successful use of multiple fishwheels on the Nass allows for significant upriver fishing effort where selectivity is much easier to achieve. The Nisga'a have substantial ownership in the fishery and are

active participants in the management of the fishery, and it appears that their legal and customary rights and needs are being met by DFO.

As with the Skeena, the obstacles to sustainability in the Nass sockeye fishery mostly arise from the mixed-stock nature of the marine component of the fishery. These include high incidental capture rates for non-target stocks, fleet compliance and enforcement issues, and lack of management control in the derby-style fishery openings. As discussed elsewhere, there appears to be an outdated and narrow concept in the management agency of what constitutes an ecosystem and an ecosystem impact resulting from the fishery. And the Department appears to be moving quite slowly to implement those aspects of the Wild Salmon Policy pertaining to ecosystem-based management. If these serious but manageable flaws in Nass fishery management system are to be addressed anywhere, they should be addressed through improvements to the conditions attached to the MSC certification.

Indicator and condition comments and concerns

3.1.2 – Periodic assessment of biological status SG 80.1

SG 80.1: 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.

Given that escapement estimates are not available in recent years for most of the smaller sockeye stocks (*e.g.* Bowser, Damdochax, Kwinageese) it is unclear how SG 80.1 could be fully met. Presumably this will be taken care of with Nass Condition 1.1; however, the scoring under this guidepost should still reflect the current reality.

3.1.3 – Identify the impact of fishing on the ecosystem All Scoring Guideposts

Assessment team and Levy (2005) are NOT in agreement on SG 80.1, and I argue that none of the Scoring Guideposts have been fully met under this Indicator.

SG 80.1: The management system includes mechanisms to identify and evaluate the impact of fishing on the ecosystem.

SG 80.2: Control mechanisms are used to minimize impacts of fishing on the ecosystem.

SG 60.1: 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 issues here are essentially the same as they are under this same indicator in the Skeena assessment – please refer to those comments. The argument for failure of the certification under this Indicator could be ruled out if DFO were to provide some acknowledgement that removals of salmon through fishing have been clearly shown to

have direct impacts on salmon-based freshwater ecosystems. Such acknowledgement would make it possible to **impose a condition requiring the management system to:**

1. **Develop a mechanism to identify and evaluate the impact of fishing on the ecosystem.**
2. **Demonstrate that their control mechanisms effectively minimize impacts of fishing on the ecosystem.**

3.1.8 – Socioeconomic incentives for sustainable fishing SG 80.2, 60.1

Assessment team and Levy (2005) are NOT in agreement.

SG 80.2: The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates.

SG 60.1: The management system provides for the use of social or economic incentives to ensure sustainable fishing.

Levy argues, and I agree, that "Selective fishing and collaborative management are well-developed however they are not incentives, in themselves, for sustainable fishing." He also makes the following points:

- "There are no target catches and Nass sockeye fisheries are regulated by means of openings and closures. This provides partial lack of management control of the fishery."
- "In reality there are no incentives and the primary motivation for commercial fishers is to harvest as many fish as rapidly as possible."

Ironically, conditional MSC certification for the Nass sockeye fishery should provide some measure of economic incentive to fish in a sustainable manner. However, the current certification conditions don't address the fact that target catches do not exist, even though SG 80.2 makes explicit reference to target catches. The continuation of derby-style gillnet and seine openings with little emphasis on value-added processing will likely prevent any substantive increase in the sustainability of the fishery. **The certification should include a condition explicitly requiring the implementation of a program that would create incentives for harvesters to not exceed target catches or exploitation rates.**

3.2.1 – Research plan for target and non-target species SG 80.1, 80.2, 80.3, 80.5

Assessment team and Levy are not in agreement on SG 100.2; however, I further argue that SGs 80.1, 80.2, 80.3, and 80.5 have only been partially met.

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.

SG 80.2: The research plan addresses concerns related to the impact of the fishery on the ecosystem.

SG 80.3: The research plan addresses socio-economic issues that result from the implementation of management.

SG 80.5: Funding is adequate to support short-term research needs.

If SGs 80.1, 80.2, and 80.5 were fully met there would not be substantial information gaps on the status of several non-Meziadin sockeye stocks. In the DFO self-evaluation SG 100.2 was deemed not met (red) while the assessment team has deemed it partially met. SG 80.3 is similar enough to SG 100.2 that it could be considered partially met given the complete lack of substantiating evidence of socio-economic research in the DFO submission.

3.4.1.1 – Fishery control systems including no-take zones SG 60.2

The comments made under this Indicator for the Skeena assessment are directly applicable here – please refer to them.

SG 60.2: 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.

3.4.1.2 – Measures to restore depleted fish populations SG 80.2

DFO scored SG 80.2 as not met (red); however, the assessment team has upgraded this SG to fully met (green).

SG 80.2: A time schedule for restoration, which considers environmental variability, is determined by the management system.

If there have been recent developments that would change the scoring for this Guidepost, they should be explained in the assessment. If the Guidepost is considered not applicable because there are no Nass sockeye stocks in need of restoration, the Guidepost should be marked as such in the assessment. However, this indicator may be applicable due to the concern over the smaller non-Meziadian sockeye stocks, and the general concern for biodiversity among Nass sockeye stocks recently expressed by the IUCN Salmonid Specialist Group[73].

[73] Salmonid Specialist Group of the Species Survival Commission of IUCN World Conservation Union. 2007. IUCN Red List Assessment for Sockeye Salmon *Oncorhynchus nerka*. DRAFT – Nov.26, 2007.

3.4.2.1 – Compliance provisions (effective enforcement) SG 60.1

I argue that SGs 100.3, 100.4, 80.1, 80.2, and 60.1 have not been met. I focus here on the 60 SG, as it trumps the other SGs for the purposes of the MSC certification.

SG 60.1: The management system includes compliance provisions that are effective for the majority of the fisheries.

The DFO response to this Indicator is virtually identical between the Skeena and Nass assessments. As such, my response is also nearly identical between the two assessments – please refer to comments made under this Indicator for the Skeena assessment (above).

Presumably DFO is capable of providing information proving that they at least partially meet SG 60.1, but they have not done so. **A condition should be attached to the certification requiring DFO to provide reasonable evidence (see comments under Skeena) proving that compliance provisions are effective for the Area 3 sockeye fishery.**

3.5.2 – External review SG 80.1

Assessment team and Levy (2005) are not in agreement on the 100 Scoring Guideposts and I argue that SG 80.1 may not be met.

SG 80.1: The management system provides for a review of management performance by one or more independent experts at least once every five years.

While broad scale reviews have been undertaken for west coast salmon stocks and fisheries from time to time, the DFO self-evaluation contains no evidence that the above Guidepost has been specifically met for management of the Nass sockeye fishery.

3.5.3 – Recommendations from reviews incorporated All Scoring Guideposts

Regarding the Skeena, Bocking (2005) states, and I concur, that "because of the lack of external reviews, these Scoring Guideposts can only be partially met." This appears to be applicable to the Nass as well. For example, consider SG 60.1:

SG 60.1: 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.

3.7.1 – Avoid catch and minimize mortality of non-target species SG 80.2, 60.1

The response to this Indicator for the Skeena is also applicable here. The assessment team and Bocking (2005) are not in agreement on SG 80.2. I argue that given the conduct of the fleet and the Department in 2006, SG 60.1 is also only partially met.

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.

SG 60.1: 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.

Regarding SG 80.2, no evidence is provided in the DFO submission that the capture and discard of non-target species is trending down or that the level of exploitation is acceptable.

Regarding both Guideposts, the assessment team is referred to the abandonment of selective fishing measures in 2006. This is discussed in detail under this Indicator for the Skeena assessment (above) – please refer to it.

The following text is repeated from the Skeena section as it deals specifically with the Area 3 fishery:

People who were onboard seiners in Area 3 in 2007 have described up to 200-300 chum being thrown back (literally) in single seine sets, with boats lined up three deep in a confined area, potentially re-catching the same fish numerous times.[74] Very little empirical data exist for recapture rates of individual fish in such situations, and no reliable estimates exist for long-term mortality rates of fish that are caught and released even once.

So-called selective net fisheries have a limited ability to reduce exploitation of non-target species; I have seen little evidence that the exploitation rate reductions are at all substantive, and no evidence that they result in higher spawning success.

3.7.4 – Cooperation of fishers SG 60.1, 80.1

The comments made under this Indicator for the Skeena (above) are directly applicable here – please refer to them.

SG 80.1: 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

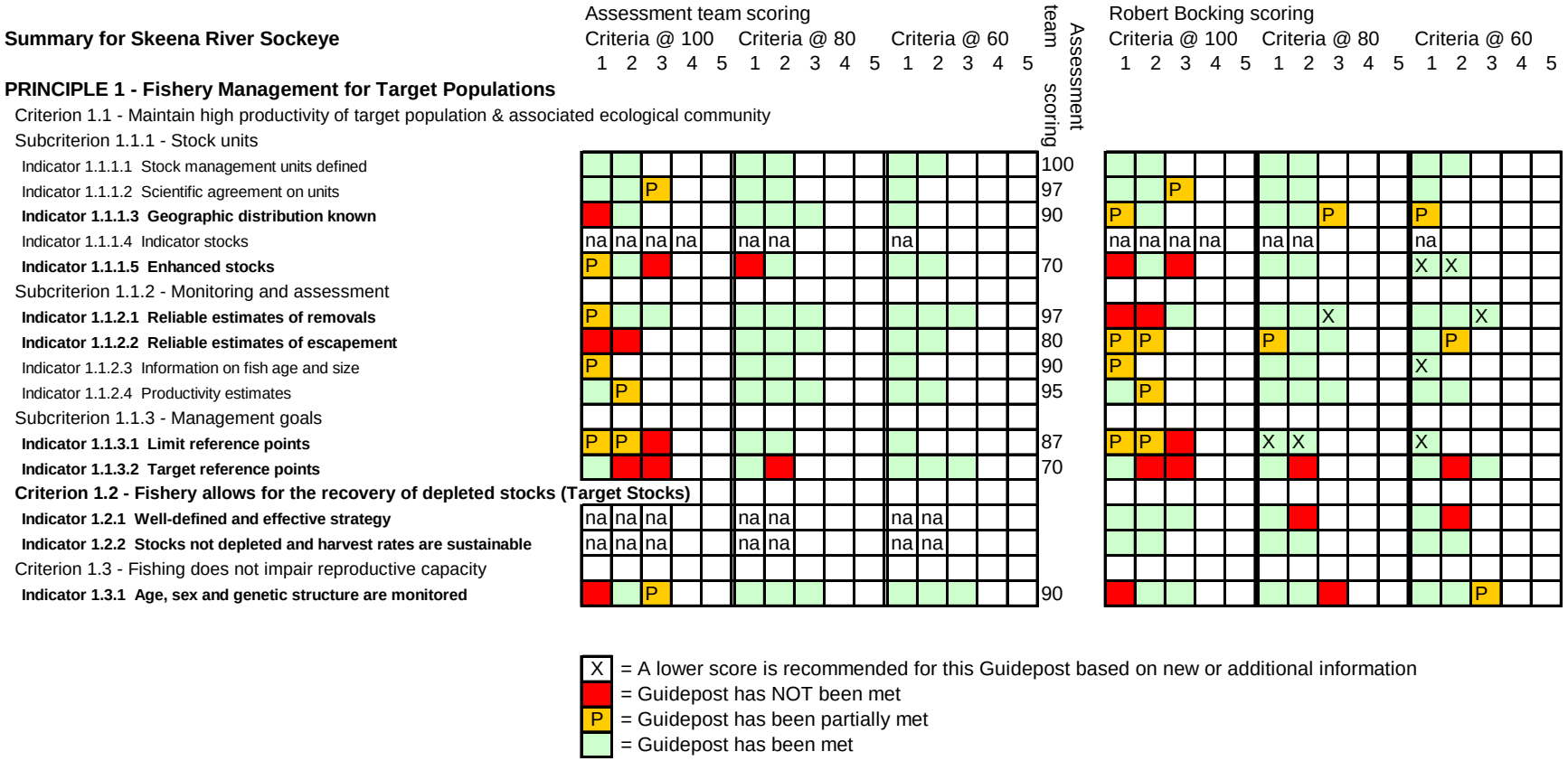
[74] Personal communications with individuals who wish to remain anonymous.

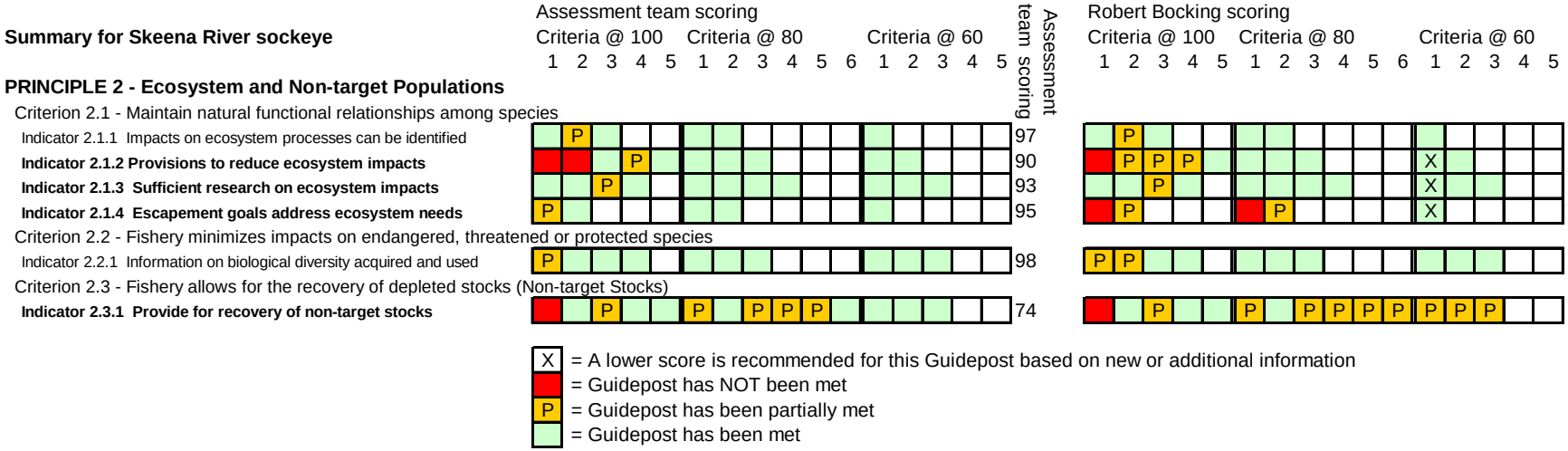
species to ensure that reliable estimates of total catches and discards for the fishery can be obtained.

SG 60.1: 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.

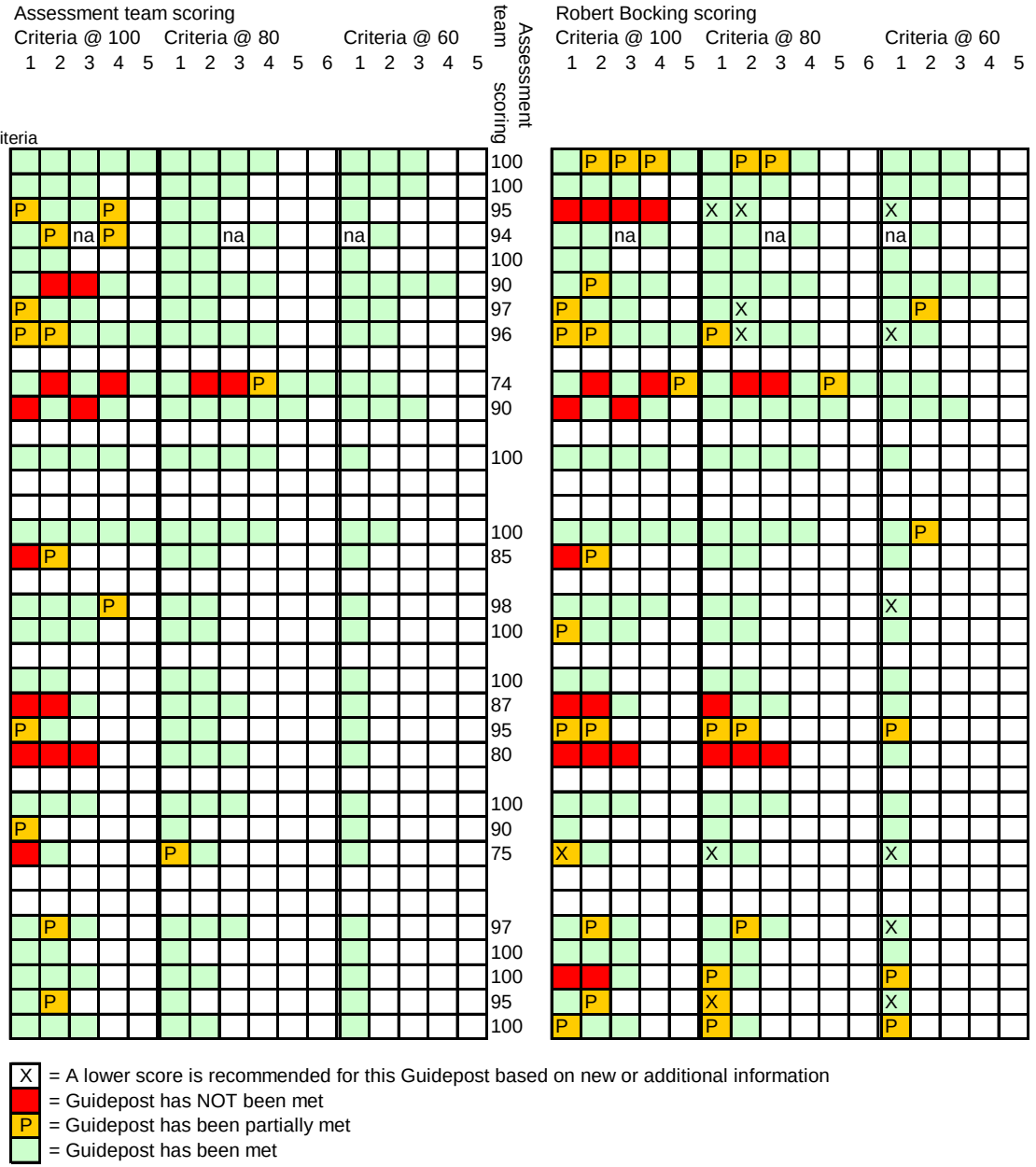
Given the importance of accurate catch data in estimating exploitation rates for non-target species, SGs 80.1 and 60.1 should be considered not met until DFO provides explicit proof to the contrary.

Appendix A – Comparison scorecards for Skeena sockeye fishery with scores from the MSC Draft Assessment and scores suggested by Bocking (2005)

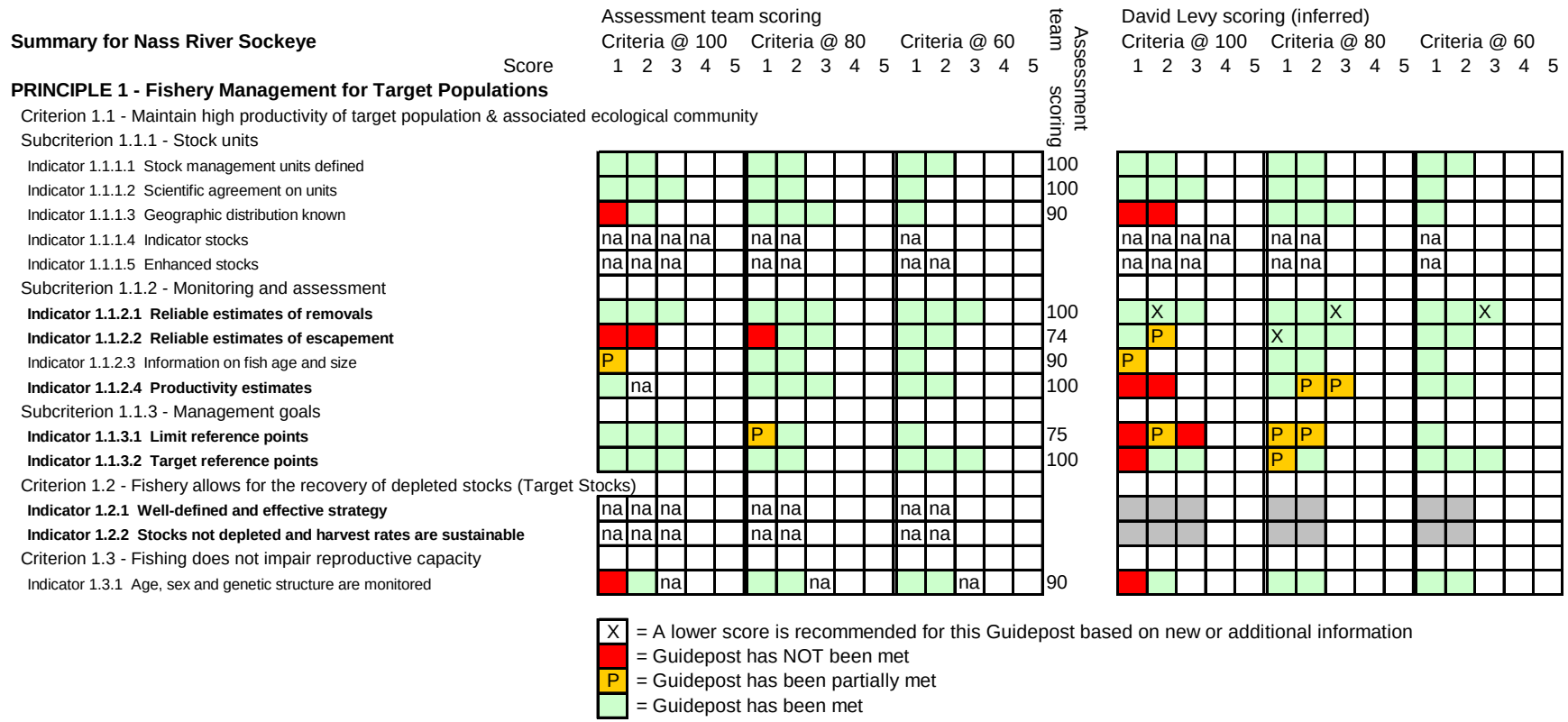


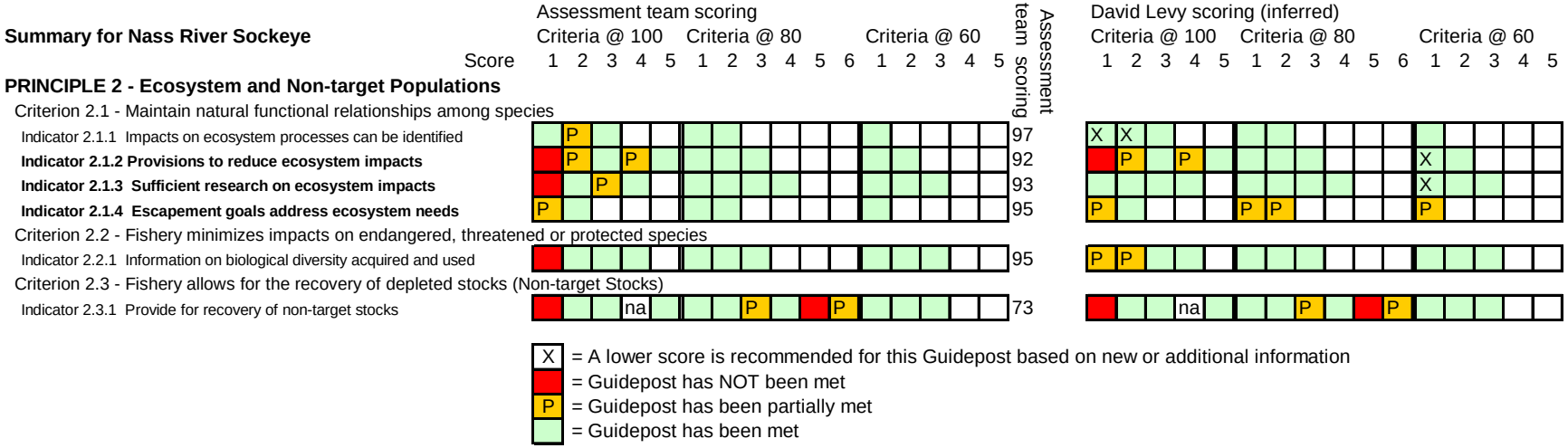

Summary for Skeena River sockeye
Assessment team scoring
Criteria @ 100
Criteria @ 80
Criteria @ 60
1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5
Assessment team scoring
Robert Bocking scoring
Criteria @ 100
Criteria @ 80
Criteria @ 60
1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5
PRINCIPLE 2 - Ecosystem and Non-target Populations
Criterion 2.1 - Maintain natural functional relationships among species
Indicator 2.1.1 Impacts on ecosystem processes can be identified
97
Indicator 2.1.2 Provisions to reduce ecosystem impacts
90
Indicator 2.1.3 Sufficient research on ecosystem impacts
93
Indicator 2.1.4 Escapement goals address ecosystem needs
95
Criterion 2.2 - Fishery minimizes impacts on endangered, threatened or protected species
Indicator 2.2.1 Information on biological diversity acquired and used
98
Criterion 2.3 - Fishery allows for the recovery of depleted stocks (Non-target Stocks)
Indicator 2.3.1 Provide for recovery of non-target stocks
74
X = A lower score is recommended for this Guidepost based on new or additional information
= Guidepost has NOT been met
P = Guidepost has been partially met
= Guidepost has been met

Summary for Skeena River sockeye

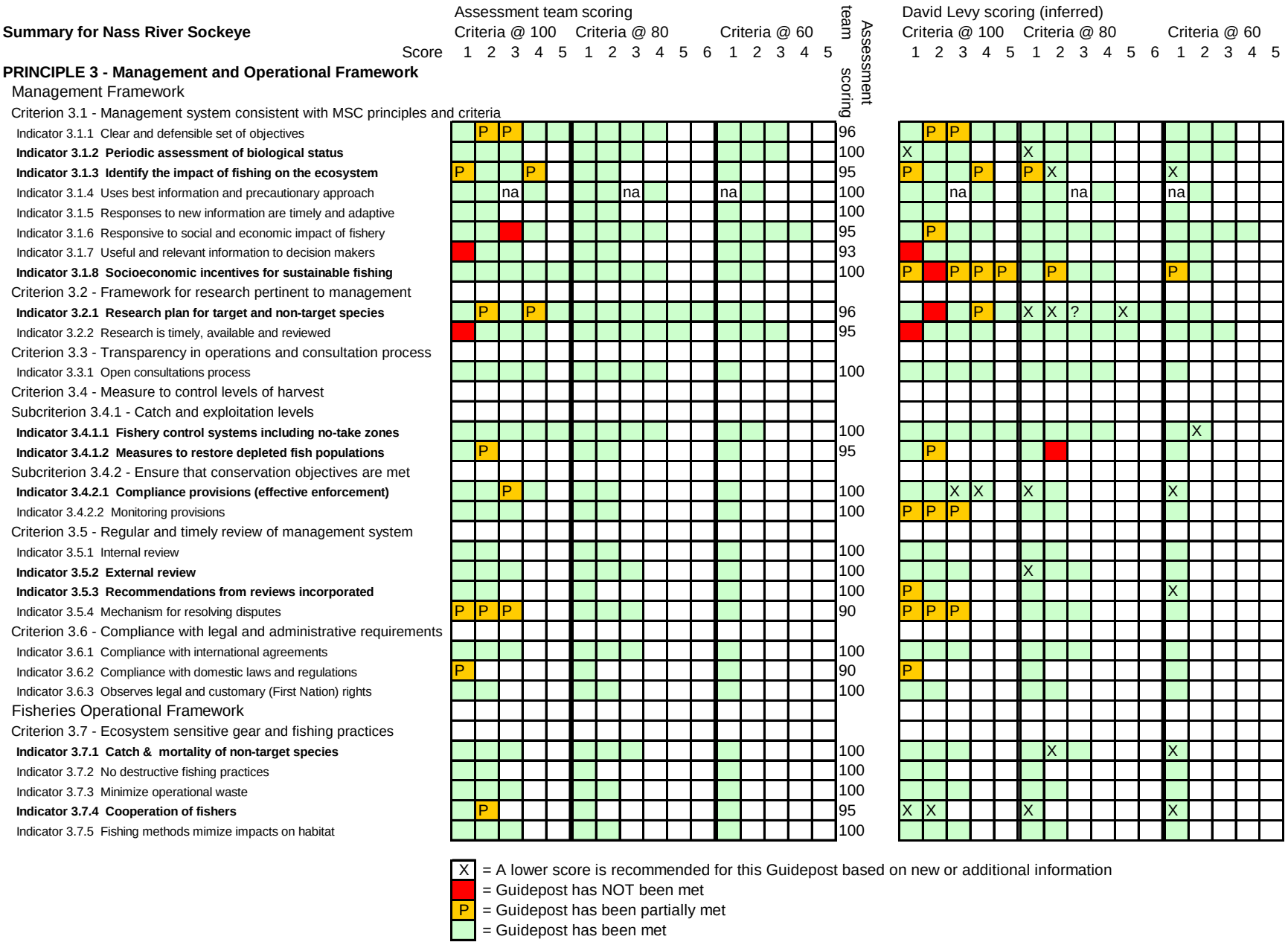


Appendix B – Comparison scorecards for Nass sockeye fishery with scores from the MSC Draft Assessment and scores suggested by, or inferred from Levy (2005)




Summary for Nass River Sockeye
Assessment team scoring
Criteria @ 100
Criteria @ 80
Criteria @ 60
Score 1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5
Assessment team scoring
David Levy scoring (inferred)
Criteria @ 100
Criteria @ 80
Criteria @ 60
1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5
PRINCIPLE 2 - Ecosystem and Non-target Populations
Criterion 2.1 - Maintain natural functional relationships among species
Indicator 2.1.1 Impacts on ecosystem processes can be identified
Indicator 2.1.2 Provisions to reduce ecosystem impacts
Indicator 2.1.3 Sufficient research on ecosystem impacts
Indicator 2.1.4 Escapement goals address ecosystem needs
Criterion 2.2 - Fishery minimizes impacts on endangered, threatened or protected species
Indicator 2.2.1 Information on biological diversity acquired and used
Criterion 2.3 - Fishery allows for the recovery of depleted stocks (Non-target Stocks)
Indicator 2.3.1 Provide for recovery of non-target stocks
97
92
93
95
95
73
X = A lower score is recommended for this Guidepost based on new or additional information
= Guidepost has NOT been met
P = Guidepost has been partially met
= Guidepost has been met

Summary for Nass River Sockeye



October 31, 2007

Chet Chaffee
Manager, Marine Fisheries Certification Program
Scientific Certification Systems, Inc.
2000 Powell Street, Suite 1350
Emeryville, CA 94608

Re: Steelhead by-catch in Skeena Sockeye fishery

Dear Dr. Chaffee:

The Wild Salmon Center appreciates the opportunity to comment on Scientific Certification System's draft assessment report on British Columbia Commercial Salmon Fisheries prepared as a requirement of Marine Stewardship Council certification.

We believe that the elevated risk of by-catch of non-target steelhead stocks in the Skeena River sockeye fishery, high mortality of incidentally caught steelhead and evidence of sharp and sustained decreases in marine steelhead survival along the BC Coast warrant greater attention in the assessment report. Our specific concerns and recommendations are discussed below.

After several years of declining rates of summer steelhead by-catch in the commercial Skeena River sockeye fishery there are indications that this trend may have ended with the resumption of the regular sockeye fishery in 2006. According to the Department of Fisheries and Oceans, the aggregate harvest rate of summer steelhead for the Skeena River reached its seasonal allowable by-catch ceiling of 24 percent of estimated total run size of Skeena summer steelhead in 2006. The estimated steelhead by-catch harvest of 11 percent for the 2007 fishing season is lower but remains the second highest level since 2002. It should be stressed, however, that the 11 percent mortality rate in 2007 is for the aggregate run (both early and late run). The early run of steelhead – a likely genetically unique run that had one of the weakest runs on record in 2007 – is disproportionately impacted in the commercial sockeye fishery.

Steelhead caught in Skeena sockeye fisheries, particularly the gillnet fishery, experience high mortality rates during or immediately after capture, underscoring the importance of minimizing incidental harvest in the first place. Gillnets are the most popular type of fishing gear used in the Skeena River sockeye fishery. A 1989 study determined that out of 113 steelhead caught in a test gillnet fishery only 7 (6.2%) of the live fish fitted with radio transmitters and subsequently released actually survived (Beere 1991). Other studies confirm that incidental steelhead catch in gillnets ranges between 49 and 73 percent (Bison and Labelle, 2007; Cox-Rogers, 1994; McGregor and Carson. 1993). We are concerned that DFO is relying too heavily on mortality rates as low as 40 percent in

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models used to estimate incidental steelhead harvest and that the agency should take a precautionary approach, erring on the side of using more cautious (higher) figures in these models.

A dramatic and persistent decline in ocean and freshwater survival of wild steelhead from the south-central British Columbia coast and the resulting low productivity is another reason for minimizing incidental harvest and the associated pressure this places on recruitment. The longest running steelhead monitoring project in British Columbia found that steelhead run sizes from 1990 to 1998 were one tenth the average run sizes from 1976 to 1990 (Ward 2000). The precise cause of the decline is not known but climate change is strongly suspected as a contributing factor. Lowering steelhead bycatch in the sockeye fishery would help compensate for reductions in marine survival rates expected with ocean climate patterns expected in the future.

In its current form, the draft assessment does not identify steelhead by-catch harvest as an environment impact in the Skeena River sockeye fishery, although the reasons to do so are compelling and include the following: 1) history of biological impacts of the Skeena sockeye fishery on steelhead spawners; 2) an elevated potential for higher by-catch given recent increases in the number of commercial fishery openings (2006, 2007); and 3) decreases in coast-wide productivity tied to low marine and freshwater steelhead survival.

To rectify this shortcoming, we would like to see another condition added to indicator 2.3.1.that addresses this issue and reads:

"Condition #3. Continued certification of the Skeena sockeye salmon fishery is contingent upon developing and implementing an updated interagency strategy for reducing incidental harvest of non-target steelhead by the first annual audit. The updated strategy should review steelhead by-catch ceilings, mortality rates and the effectiveness of models and their inputs for estimating steelhead by-catch and escapement. The strategy should articulate a process and benchmarks for reducing gillnet mortality through gear modification or substitutions or changes in fishing duration, timing or location."

The Wild Salmon Center appreciates the opportunity to comment on the draft assessment report and looks forward to seeing these changes reflected in the final report. Should you have any questions or need clarification of our concerns, please do not hesitate to contact me.

Yours Sincerely,

Guido Rahr
CEO and President
Wild Salmon Center

Enclosure

References

Beere, M. 1991. Steelhead migration behavior and timing as evaluated from radio tagging at the Skeena River test fishery, 1989. June, 1991. Ministry of Environment, Recreational Fisheries Branch, Smithers. B.C. No. SK 69. 25 pp.

Bison, R. and M. Labelle. 2007. (In Prep.) A simulation model used to investigate the impacts of marine and freshwater fisheries on the Thompson River steelhead trout population (*Oncorhynchus mykiss*). 53 pp.

Cox-Rogers, S. 1994. Description of a daily simulation model for the Area 4 (Skeena) commercial gillnet fishery. Canadian Manuscript Report of Fisheries and Aquatic Sciences. No. 2256. 46 pp.

McGregor, I. and D. Carson. 1993. Steelhead observer program. October, 1992. Ministry of Water, Land and Air Protection, Kamloops, B.C.

Ward, B. 2000. Declivity in steelhead (*Oncorhynchus mykiss*) recruitment at the Keogh River over the past decade. Canadian Journal of Aquatic Sciences. 57:298-306.

Key Deficiencies in the MSC Re- Assessments of Skeena and Nass Commercial Sockeye Fisheries

Prepared by: Aaron Hill, Biologist, Watershed Watch Salmon Society

Skeena

Indicator 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 unenhanced stocks.

> SG 80.1 • *In fisheries where both enhanced and un-enhanced stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the un-enhanced stocks.*
> SG 80.2 • *There are adequate data and analyses to determine that the presence of enhanced fish in the management units do not adversely impact the unenhanced fish stocks.*
>
> SG 60.1 • *There is general scientific agreement within the management agency regarding the impacts of enhanced fish on the resultant harvest rates or escapements of un-enhanced fish stocks.*
> SG 60.2 • *Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of un-enhanced stocks within each stock unit.*

For this indicator, both 80 guideposts were deemed *not* met, and both 60 guideposts were deemed met.

SG 60.1 is only partially met. The Skeena sockeye aggregate abundance, stock composition, and timing is extremely complex and at present is barely understood. There is no routine stock assessment on approx. 1/3 of Skeena sockeye CUs. Also, the mortality estimates used by DFO for seine and gillnet bycatch mortalities of released bycatch species are based on studies of short-term (i.e. > 24 hr.) mortality, not escapement, and certainly not spawning success. If there is general agreement among Department scientists on this matter it likely does not have an empirical basis.

At best, SG 60.2 has been partially met. The majority of weak sockeye stocks often are fished at exploitation rates above their estimated MSY during the peak of the run timing (refer to figures in the submission from Skeena Wild Conservation Trust); yet reliable stock status information does not exist for approximately 1/3 of them. Fishery openings occur long before Limit Reference Point (LRP) or equivalent escapements have been reached for unenhanced stocks, many of which are not enumerated on an annual basis. Even in most cases of unenhanced stocks that receive rigorous annual enumerations, DFO managers do not know that these stocks have been "adversely affected" until after the fishery has been conducted and after the spawner density has peaked, at which point it would of course be impossible to adjust the harvest rate.

Indicator 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 60.1 • *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.*

This indicator only passes at the 60 guidepost if the current erroneous definition of the target stock (only *enhanced* Babine sockeye) is maintained. Please refer to the extensive argument against the current target stock definition in "measure 1" (p.1) of the SkeenaWild submission "Testing Whether the Draft Public Report..."

Indicator 1.1.3.2: Target Reference Points or operational equivalent have been set.

SG 60.1 • *There is general agreement among fisheries scientist within the management agency that the TRP's are appropriate for the target stocks.*
SG 60.2 • *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.*
SG 60.3 • *The management agency has taken into account the relative productivity of non-target stocks when setting the TRP's for the majority of target stocks.*

As with the previous indicator, this indicator only passes at the 60 guideposts if the current erroneous definition of the target stock (only enhanced Babine sockeye) is maintained. Please refer to the extensive argument against the current target stock definition in "measure 1" (p.1) of the SkeenaWild submission "Testing Whether the Draft Public Report..."

Indicator 2.3.1: Provide for recovery of non-target stocks

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.*

SG 60.2 • *The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.*

Regarding SG 60.1, what constitutes an attempt to prevent extirpation? As described in detail in the attached SWCT submission, DFO's 2009 fishing plan for Skeena sockeye included weekly harvest rates above what was recommended by the Skeena Independent Science Review Panel (SISRP) as being necessary for the rebuilding of weak sockeye stocks (e.g. Kitwanga). Moreover, it is impossible to know if SG 60.1 has been met as DFO does not have reliable stock status data for the majority of non-target stocks, so how can they identify those stocks that are at risk of extirpation? This guidepost has not been met.

Regarding SG 60.2, The assessment team states that since "[they] are unable to distinguish the difference between a 50% probability at the 60 scoring level and a 60% at the 80 scoring level, [they] are interpreting the difference between these two criteria as qualitative in that meeting the provisions of the 80 scoring level of 60% is likely to occur given conditional certification." It is unclear how DFO can assert that the system has a 50% probability of achieving long term recovery of depleted non-target stocks. According to Cox-Rogers (2004), the majority of the 29 Skeena sockeye nursery lakes appear to be below 50% of their rearing capacity, with low escapements and/or fry recruitment listed as limiting factors on 12 of the 13 lakes where sufficient data exist to establish a limiting factor.[1]

[1] Cox-Rogers *et al*. 2004. Stock status and lake based production relationships for wild Skeena River sockeye salmon. *CSAS Research Document* 2004/010.

It is noted that the assessment team readily admits in the draft report that they have made a subjective, qualitative judgement call in scoring this guidepost. Overfishing of weak stocks that would have been permitted under the 2009 fishing plan - given stronger returns of the enhanced stock - should call the assessment team's faith in DFO into question when it comes to their commitment to prevent extirpation of weak stocks. See appendices of the attached SWCT submission for more detail.

Indicator 3.4.2.1: The management system includes compliance provisions

> SG 60.1 • *The management system includes compliance provisions that are effective for the majority of the fisheries.*

This indicator should have been rescored when the assessment team was considering other information and data from the mismanaged 2006 fishing season. In 2006 there were no enforcement officers present on the North Coast, with the exception of the final two poorly attended openings in September. DFO biologists who were out collecting DNA samples found the fleet to be in gross non-compliance with license requirements to maintain functioning revival boxes for bycatch species and no substantive measures were taken to bring the fleet into compliance. The assessment team is aware of this information, as it was the same information they used to lower the score for indicator 3.7.4 down to a bare "pass". This scoring discrepancy begs the question: how can the management system have effective compliance provisions if fishers are getting away with being uncooperative? The low score for indicator 3.7.4 should compel the assessment team to provide justification for providing such a high score here. It is unclear what the assessment team is basing their decision on given that in the DFO submission, they were not provided with any of the following information:

- Intensity of compliance monitoring (e.g. officer hours per boat day)
- Frequency of vessel checks and inspections relative to the intensity of the fishery (e.g. checks per boat day).
- Compliance rates for vessels checked.
- Descriptions of infractions and resulting enforcement actions.
- Vessel, dockside, and processor observer reports.

Indicator 3.6.3: The management system provides for the observation of legal and customary rights of First Nation peoples.

> SG 60.1 • *The management system is in compliance with the legal rights of First Nation peoples that are impacted by the fishery.*

It is unclear how approving fishing plans (e.g. 2009 IFMP) that allow overfishing to occur on weak stocks that individual First Nations depend on (e.g. Gitanyow Nation and Kitwanga Lake Sockeye) is consistent with the above guidepost. At best this guidepost is partially met.

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.

> SG 60.1 • *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.*

Vessel catch and discard data for the Skeena fishery are notoriously unreliable. For example, rreliable estimates of steelhead bycatch are not obtained – DFO and MOE stock assessment biologists consider reported steelhead catches to be of little value and do not use them for

predictive modelling.[2] The accuracy of catch reporting, especially hail-ins, could theoretically be estimated by comparing hail data between boats with and without on-board fisheries observers, or by comparing observer and hail catch data within fisheries. Apparently such comparisons have never been made or at least have not been made publicly available. Given the importance of accurate catch data in estimating exploitation rates for non-target species, SGs 80.1 and 60.1 should be considered not met until DFO provides explicit proof to the contrary.

But the problem lies not only with steelhead. Chum salmon caught and released in the Skeena sockeye fishery are also not accurately accounted for. The same is likely true for coho.

If the bycatch data are considered unreliable for management purposes, how can this guidepost possibly be considered to be met?

Nass

Condition 23 *- Nass Sockeye Salmon Condition #1. Certification of the Nass sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks that are below the LRP and that spawn in the Nass or its tributaries. Such a plan must have clear procedures to determine the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery. (**Nass Condition 2.1)***

The above condition is good as far as it goes, but it does not speak to SG 80.6., despite the extent to which the Nass catchment has been modified by industrial forestry. **In order to fully address SG 80.6 Nass Condition 2.1 should explicitly require that the impact of non-fishing related human activity be considered in the Nass chum recovery plan, and any future recovery plans for Nass salmon.** This deficiency in the condition was brought to the attention of the assessment team after the first draft assessment in 2007, yet this omission has not been corrected in the current draft assessment, and the assessment team does not offer an explanation for it.

While DFO provides a lengthy response to this condition in the Action Plan, the commitment and associated timelines fall far short of promising actions that will result in the condition being met. **Under this action plan, DFO only commits to developing an LRP for Nass chum for PSARC review, and not until late in 2011.** It does not mention when this LRP will actually be implemented, but presumably it would not happen until the 2012 fishing season. Furthermore, developing a working LRP is arguably only one of the first steps in developing and implementing the rebuilding plan for Nass chum that is outlined in the above condition.

Indicator 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.*

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.*

[2] Personal communication with Dave Peacock, North Coast Stock Assessment Area Chief, DFO and personal communication with Mark Beere, Senior Fisheries Biologist, BC Ministry of Environment – Skeena Region.

The above guideposts were deemed partially met for the Skeena and fully met for the Nass. It is unclear how the assessment team could justify this distinction between the two fishery units when it is common knowledge that fleet behavior is essentially the same between the Skeena and Nass. Ample evidence exists (e.g. from fishery observer records) that both of the above 80 guideposts have also not been fully met for Area 3 (Nass) sockeye fisheries. The primary problem in those fisheries is the large bycatch of chum salmon, and the careless manner in which they are typically released by fishers, doing nothing to decrease mortality. DFO has provided no data to show that chum released from multiple seine sets are not recaptured in subsequent sets and/or suffer reduced survival and spawning success as a result of this trauma. The assessment team has previously been informed of this problem, and can be assured that substantiating information will be brought forward during the objections process.

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.

> SG 80.1 • *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.*

This guidepost was deemed to be not met for the Skeena fishery, but as with the above indicator, it is common knowledge that fleet behavior is essentially the same between Area 3 and Area 4. The assessment team provides no explanation for this scoring discrepancy, and they provide no justification for providing a higher score for the Nass fishery, such that a condition is not required for Nass under this indicator. If the assessment team is unable to show that fleet compliance is better in Area 3 than in Area 4, the MSC methodology and the need for objectivity dictate that they assign a condition to the Nass fishery that is analogous to Condition 36b (Skeena Condition #3.2): *Certification will be conditional until there is a clear commitment from the fishers participating in Skeena sockeye fisheries to provide sufficient information for managers to derive reliable estimates of the catch and discards of steelhead and other non-target species.*

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Testing Whether the Draft Public Report and DFO's Action Plan Meets MSC's Principles and Criteria for Sustainability in Regards to the Skeena River Sockeye Fishery

The following four measures were developed – in consultation with conservation biologists, other ENGOs and fisheries managers – to test whether the Public Draft Report and associated action plan for the Skeena River sockeye fishery meets the standards set out by MSC's Principles and Criteria for Sustainable Fishing.

The four measures are:

1. Each genetically distinct population harvested within a Unit of Certification should be categorized as an exploited or "target" population for purposes of certification. It is contrary to the intent of principle 1 to aggregate genetically distinct populations of a single species and manage them in a manner that intentionally overfishs one or more of the populations.
   Principle 1 and Principle 2, criteria 2

2. The status of each genetically distinct population should be assessed relative to its potential biological production and associated ecological community.
   Principle 1, criteria 1 and Principle 3, criteria 8 and 9

3. A rebuilding target should be established for each genetically distinct population that provides for the conservation of the population, ecological resilience and subsistence use
   Principle 2, criteria 3 and Principle 3, criteria 4

4. A rebuilding or recovery plan with specified targets and time lines should be established for each genetically distinct population that is below its rebuilding target.
   Principle 2, criteria 3 and Principle 3, criteria 10 (c)

Measure 1 – Target Stocks

In three of four Units of Certification – Nass, Barkley Sound and the Fraser – all exploited sockeye stocks are considered "target stocks". Only in the Skeena are exploited sockeye stocks classified as either "target" or "non-target stocks". The reasons that the Skeena is treated differently are:

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1. “because when there were very low returns of Babine sockeye (e.g. 1998 – 99) there were no targeted fisheries for sockeye”, (p.5: BC Sockeye Salmon: Public Draft Report)
2. “There are no opportunities to isolate component stocks spatially in ocean fisheries” although terminal fisheries allow for the harvest of enhanced stocks as there are significant timing differences separating the majority of the latter timed wild Babine stocks from the mid-timed enhanced stocks. (p.7)
3. “There is general scientific agreement that the primary target for Skeena fisheries are the enhanced Babine sockeye produced from the Pinkut and Fulton spawning channels.” (p.89)
4. Managers have indicated that the available stock-recruitment data provides a scientific basis that current harvest rates set for mixed-stock fisheries should not adversely affect the majority of unenhanced stocks within each stock unit (i.e., Babine and non-Babine sockeye) (p.89)

The Public Draft Report lumps both enhanced and wild Babine sockeye stocks into the target stock: Babine sockeye (p.5). The reason being that in 2004 it was assumed that there was a relatively high degree of gene flow between sockeye stocks returning to Babine Lake and River, Nilkitkwa Lake and Morrison Lake. Since that time the Babine, Morrison and Nilkitkwa have been defined as discreet Conservation Units. Both the Morrison and Nilkitkwa are not meeting their escapement targets and may be below their LRP’s (Appendix 1). That both wild and enhanced Babine stocks are defined as target stocks would suggest that all Babine sockeye stocks – whether they are enhanced or wild - should be individually assessed under Principle 1. But the Public Draft Report and Action Plan focus on enhanced sockeye and largely ignore the status of wild Babine stocks. Therefore, either the Unit of Certification should be redefined to specify only enhanced Babine sockeye or wild Babine stocks must be assessed under Principle 1. If it is the latter it would raise the awkward question of why some unenhanced Skeena sockeye stocks are considered target stocks and therefore assessed under Principle 1 while others are not. And if it is the former it sets out the conservation issues and management trade-offs more starkly: targeting the one artificially enhanced Conservation Unit has led to the overfishing of genetically distinct sockeye populations co-migrating to adjacent lake systems within the Babine Watershed. The question arises as to whether the assessment and peer reviews would have proceeded as they have if the Unit of Certification was defined as only enhanced sockeye.

The argument that non-Babine sockeye stocks cannot be target stocks because in years in which Babine stocks are not abundant there has been no fishery is flawed (Public Draft Report p. 5). First, most Skeena sockeye populations typically experience similar strength of returns due to the dominance of ocean conditions on survival rates (Walters et al, 2008). This similarity in fluctuation of abundance of non-Babine and Babine stocks is also evident in the DFO Salmon Escapement Data Sets. Hence, in

years when the Babine stocks are not abundant it is unlikely that non-Babine stocks would have been available in harvestable numbers. Second, the stock composition of test fishery samples indicates that non-Babine sockeye currently make up a significant portion of the harvest, accounting for an average of 24% of the aggregate Skeena sockeye return (Wood, 2001). Further, non-Babine sockeye historically made up over 40% of the total return, highlighting the importance of this stock component in the commercial fishery and the impact of managing to maximize harvest on the enhanced Babine stock (Wood, 2001).

In reference to point 2, classifying a stock as being either target or non-target based on whether it can be identified in the marine environment avoids the sustainability issues inherent in mixed stock fisheries. The inevitable result of such an approach stocks of the same species within the same Unit of certification being caught in the same place and time by the same gear type but being assessed to a different standard. Target stocks would be subject to the rigour of Principle 1, non-target stocks would avoid it. MSC's Principles and Criteria for Sustainable Fishing recognize that a sustainable fishery should be based on "the maintenance and re-establishment of healthy populations of *targeted species*". Principle 1 is fundamental to ensuring this standard is met and maintained. In this case the targeted species is Skeena sockeye not enhanced Babine stocks of sockeye.

Point three argues that the concept of defining one out of thirty-two conservation units as the target stock is defensible as the fishery on the target stock is not adversely affecting the majority of unenhanced sockeye stocks. Numerous qualified fisheries scientists - including some within DFO - have published rigorous assessments of Skeena sockeye stocks that contradict this argument. (Gottesfeld et al, 2008, Cox-Rogers, 2004, Wood, 2001, ISRP, 2008). Current and proposed exploitation rates will lead to the continued overfishing of many unenhanced stocks. For instance, DFO and Gitanyow stock assessment biologists have determined that an exploitation rate of less than 34% is required to begin rebuilding Kitwanga River sockeye. The 2009 Integrated Fisheries Management Plan (IFMP) recommended an exploitation rate of around 41% if there was an average return of sockeye to the Skeena River. Furthermore, the exploitation rate on Kitwanga sockeye would increase in proportion to the size of the return. Similarly, a recent report by Gazey determined that most unenhanced Skeena sockeye stocks were being exploited well above the 30 – 40% exploitation rates recommended by the ISRP. (Appendix 2).
http://www.skeenawild.org/uploads/reports/Skeena_Interception.pdf

Point three further argues that available stock-recruit data defends the notion that current exploitation rates will not adversely affect unenhanced stocks. However, the Public Draft Report says that the ISRP concluded that available data are not sufficient to define escapement trends or assess stock status for 15 of the sockeye CU's. (p.92 Public Draft report). Hence, there is insufficient data to support this assertion.

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MSC must penetrate the argument that Skeena sockeye other than the enhanced Babine stock are not exploited populations. It demeans the intent of MSC's Principles and Criteria for Sustainable Fishing to assess some exploited populations of the same species as target stocks and others as non-target. If sockeye are being exploited and sold into the market they should come under Principle 1. Avoiding this reality on the Skeena is a convenience employed by the client and management agency to avoid determining the status of overfished stocks and categorizing them relative to their thresholds as described by the Precautionary Approach (UNFSA; United Nations 1995). Relegating overfished exploited stocks to Principles 2 and 3 could allow the Client and management agency to avoid developing appropriate recovery plans for depleted stocks

Finally, industry markets sockeye from most Skeena sockeye stocks. Enhanced Pinkut and Fulton may make up the majority of the catch but other stocks are also caught, processed and marketed. Proportions may change by year, time and area of catch and the relative size of the return of enhanced Pinkut and Fulton sockeye. Certifying Skeena sockeye as sustainable is supposed to tell the consumer that any Skeena sockeye they buy are being managed in a sustainable manner according to the precautionary approach whether it comes from the Fulton River spawning channel or the Kitwanga River.

In summary, the Public Draft Report does not meet measure 1: stating that the Skeena has only one target stock is not supportable from a logical, scientific or chain of custody perspective. The Unit of Certification for the Skeena should classify all exploited sockeye stocks as target stocks and assess them under Principle 1.

Measure 2 – the status of each genetically distinct population should be assessed relative to its potential biological production and associated ecological community.

Measure 3 - A rebuilding target should be established for each genetically distinct population that provides for the conservation of the population, ecological resilience and subsistence use

The Public Draft Report states "that management agency has indicated that the TRP for the Babine stock does not take into account the productivity of non-target Skeena stocks" but then in the next line justifies a 60% score by saying that the current TRP for the target Babine sockeye stock is based on the plans to limit harvests in mixed-stock fisheries to levels that take into account the lower productivity of non-target stocks". The Public Draft Report employs Condition 14 "Certification will be conditional until the management agency provides direct evidence that the productivity of non-target stocks

has been taken into account when setting the TRP for the target stock" to ensure the fishery meets the minimum standard for MSC certification.

Condition 14 provides insufficient guidance for ensuring that unenhanced stocks are accounted for in developing the TRP for enhanced Babine sockeye and mixed stock fisheries are sufficiently limited to protect less productive unenhanced stocks. It fails to define what productivity means: must non-target stocks be above their Limit Reference Point, around their Target Reference Point or simply persisting? And what does "take into account" mean? The 2009 exploitation rate target for Babine sockeye that the Public Draft Report was presumably referring to in providing its 60% score took into account unenhanced stocks but the weekly harvest rates written into the IFMP still allowed for overfishing of these same stocks (pers. Comm. Mark Cleveland Gitanyow First Nation; Skeena Salmon Management Model presented to the Skeena watershed Initiative – Appendix 3).

There is often confusion in how benchmarks are employed. Biological Reference Points – in the context of the Wild Salmon Policy - are not operational parameters or benchmarks for managing fisheries. Rather, they are the performance standards against which annual monitoring and management program outcomes are compared (S. Cox, 2009). In terms of managing fisheries Biological reference Points must be translated into operational benchmarks or decision rules. The Public Draft Report and specifically Condition 14 should be much more prescriptive in how the Biological Reference Points for unenhanced stocks should be used to guide harvesting decisions.

But it is also important to test the management agency's claim that current harvest rates take into account the productivity of non-Babine sockeye stocks. The Public Draft Report and the ISRP both state that non-Babine sockeye stocks have been significantly overfished. One would assume, therefore, that current and planned harvest rates would be significantly less than they were in the past. But in fact the 2009 weekly harvest rates planned for the main fishing period (July 15 through August 11) were only 19% less than the average weekly harvest rates for 1970 to 1997. This is much less than the 50% cut recommended by the ISRP. (Appendices 4 and 5)

Measure 4 - A rebuilding or recovery plan with specified targets and time lines should be established for each genetically distinct population that is below its rebuilding target.

The Public Draft Report acknowledges that the Skeena sockeye fishery falls short in the area of developing recovery plans for several non-Babine stocks that have been seriously overfished. It clearly struggled (p.111) with whether it should give a passing grade to this Performance Indicator. In the end it decided to trust that DFO will complete the necessary recovery plans and abide by a rigorous Condition (Condition 21b). Emphasizing the central importance of Condition 21b the Assessment Team warns

DFO that a failure to meet the condition would result in the certification of this fishery being terminated (p.111). The Team is clearly aware that in not designating exploited non-Babine sockeye as target stocks they are leaving them vulnerable to continued overfishing unless the certification process demands that they be rebuilt.

Condition 21b states:

Certification will be conditional until LRPs or their equivalent have been defined for Skeena sockeye salmon stocks and recovery plans have been developed and implemented for stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and timing for recovery. P.111

The Public Draft Report is unequivocal in what it is seeking from DFO. DFO response to Condition 21b is in the two parts. The first being:

As an interim measure for the 2009 fishing season DFO adopted a precautionary management objective of keeping the Canadian commercial exploitation rates in the range of 20 to 30%. This represents a reduction of 30 to 50% from recent decade averages. This range is consistent with the advice provided in the Skeena ISRP (Independent Science review Panel).

DFO response that Canadian commercial exploitation rates will be reduced in line with the recommendations of the ISRP is not correct in two important ways. First, the ISRP's advice called for a 50% reduction in Canadian commercial exploitation rates not a 30 to 50% reduction (ISRP, p. 5). Secondly, the final 2009 fishing plan did not achieve the 30 to 50% reduction (Appendix 5 and the 2009 IFMP). More importantly, no scientifically defensible link is drawn between an arbitrary reduction in Canadian commercial exploitation rates and recovery plans for overfished unenhanced sockeye stocks.

The second part of DFO's response is as follows:

DFO also supports recommendation #1 of the ISRP, "There is a need to confront the major trade-off decisions that are implied by the Wild Salmon policy and the impacts of mixed-stock ocean fisheries on Skeena stocks. There should be an explicit public decision about the loss of biodiversity (number of weak stocks allowed to remain overfished or at risk of extinction) that is deemed acceptable and changes required to fisheries in order to achieve particular harvest objectives." Resolving this issue will be the central focus of the Skeena Watershed Process over the next few years.

Problems with this part of DFO's response include:

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1. It refers to a political, not a scientific recommendation of the ISRP that was designed to speak to the conundrum of marine mixed stock fisheries. It has little to do with a science based, objective certification process.
2. It fails to follow Strategy 1 of the Wild salmon Policy. The WSP – which is referenced directly on page 8 of the Action Plan – demands that stocks that are below their lower benchmark "and in the Red Zone…will trigger consideration for ways to protect the fish, increase their abundance and reduce risk for loss. Biological considerations will be the primary consideration for CU below the lower benchmark and in the 'Red Zone'".
3. Whereas Condition 21b says that rebuilding plans ***must*** be developed and implemented DFO's response says that it will ultimately decide which stocks will be rebuilt and which will be allowed "to remain overfished or at risk of extinction."
4. The response assumes a successful Skeena Watershed Imitative (SWI). There are two difficulties with this: the first is that it is the SWI has got off to a very slow and troubled start; and second, certain participants (ENGO's, some recreational representatives and First Nations) have expressed reservations about the Action Plan and its references to SWI participation (SWI Planning Committee Notes, 2009). Hence, there is little certainty that the SWI will make progress within the certification period. There is also the problem of annual audits. There is little for the auditor to measure within this second part of DFO's response other than a Process exists. Finally, the Public Draft Report calls for progress in "timely manner". Little urgency is registered in DFO's response.
5. DFO's response does not meet the objectives established under Strategy 4 of its Wild Salmon Policy. Strategy 4 of the WSP states that, "as a minimum, these plans must be capable of maintaining and restoring all CU's above their established lower benchmarks within an acceptable degree of certainty within a defined time frame".

The Draft Public report is unequivocal regarding the central role Condition 21b plays in the successful certification of the Skeena sockeye fishery. The report states that, "Failure to meet such provisions (rebuilding plans and determining the probabilities of recovery for unenhanced Skeena sockeye) in a timely manner would result in the certification of this fishery being terminated". There is little in DFO's response to Condition 21b to indicate that it has any intention of addressing the reasons which led to it almost failing to meet the 60 Scoring guidepost for Indicator 2.3.1.

DFO is indicating that regardless of the recommendations of the Assessment team and Peer Reviewers or its own Wild salmon Policy it will not commit to developing, implementing and assessing recovery plans for overfished unenhanced stocks. Agreeing to establish LRP and TRP's as DFO does in response to Condition 13 is insufficient. The LRP and TRP's only describe stock status. Condition 21b is the key element in translating stock assessment into management action through the development and implementation of recovery plans.

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Conclusion

This paper proposed four measures to test whether the Public Draft Report and Action Plan meets MSC's Principles and Criteria for Sustainable Fishing. It has identified three areas where it fails: the Public Draft report assess stocks of the same species harvested in the same fishery by different standards and criteria; it fails to ensure that the TRP for the target stock and associated fishing plans maintain non-target stocks above their LRP; and the Action Plan explicitly states that it does not intend to meet one of the Public Draft Report's key Conditions.

Reading the Public Draft Report one could conclude that the Client, Assessment Team and DFO cooperated to reduce the disruption to ocean fisheries as much as possible by categorizing unenhanced Skeena stocks as non-target stocks. In this way they avoided assessing unenhanced Skeena stocks under Principle 1 Performance Indicators.

Subsequent to the release of the first public draft comment report in 2007 the ISRP highlighted the impact of mixed stock fisheries on unenhanced Skeena sockeye stocks. This led to a rescoring of the Skeena and recognition that rebuilding and recovery plans for overfished and depleted stocks were not adequately addressed. The assessment team dealt with this by insisting through specific conditions, including Condition 21b, that rebuilding plans be developed and implemented for overfished unenhanced sockeye stocks.

DFO argues on page 8 of the Action Plan that MSC should trust it to manage the Skeena in a precautionary manner providing several examples including that in 2008 it held the exploitation rate on Skeena sockeye to 30%.[1] The Assessment team and Peer Reviewers said in the Draft Public Report that they were looking for an explicit commitment from DFO that they would manage fisheries to rebuild Skeena sockeye stocks that were below their LRP. Conditions 13b, 13c and in particular Condition 21b were included in the revised Public Draft Report to ensure this.

DFO's response falls well short of a commitment to rebuild overfished unenhanced Skeena sockeye stocks. In fact, DFO's response falls short not only of what is required under MSC but what is required under its own Wild Salmon Policy.

[1]This is incorrect in that it allowed an aggregate exploitation rate of around 36% and weekly harvest rates in the peak of the return of depleted Kitwanga sockeye were up to 70% (2008 post-season report, December, 2008). Furthermore, as discussed above, the 2009 IFMP contained allowable aggregate exploitation rates and weekly harvest rates that would continue to overfish depressed unenhanced sockeye stocks.

Recommendations

This paper makes five recommendations:

1. The Draft Public report should be rewritten so that all Skeena sockeye stocks are assessed under Principle 1.
2. DFO's response to Condition 21b be withdrawn and rewritten to abide by the intent of the Public Draft Report, Assessment team and Peer Reviewers, MSC's Principles and Criteria for Sustainable Fishing and the Wild Salmon Policy.
3. If MSC chooses to certify the Skeena fishery without insisting that all Skeena sockeye stocks are assessed under Principle 1 then it must take an assertive role in ensuring that DFO's response to Condition 21b is rewritten. A rewritten response to Condition 21b must – at a minimum - commit to developing management plans that will maintain and restore all overfished Skeena sockeye stocks above their LRP with an acceptable degree of certainty within a defined time frame and that such plans are implemented within the period of certification.
4. DFO's Action Plan should, as an interim step, establish interim operational benchmarks and precautionary maximum aggregate exploitation rates for *known* stocks of concern including Kitwanga using Cox-Rogers et al, 2003
5. Condition 14 should be rewritten to define that "productivity of non-target stocks" is measured by fishing plans that ensure that unenhanced stocks are maintained or rebuilt above their LRP.'s

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Appendix 1

Skeena Sockeye Stock	Current Average Escapement 1990-2002	Escapement Required To Maintain Stock At or Above "Prudent Reference Point"	Escapement Required To Maintain Stock At or Above "Maximum Sustained Yield (MSY)"	2008 Escapement
Alastair	6,385	3,300	13,575	**DNS**
Lakelse	4,369	2,600	11,301	**2,390**
Swan	7,482	2,400	9,162	**DNS**
Stephens	w/Swan	700	2,958	**DNS**
Club	w/Swan	60	290	**DNS**
Morice	19,412	12,000	40,866	**10,000**
Atna	w/Morice	1,400	4,750	**DNS**
Maxan	n/a	n/a	n/a	**DNS**
Slamgeesh	837	80	536	
Kitwanga	449	1,800	6,137	**1,108**
Kalum	3,606	2,050	8,374	**DNS**
McDonnel	3,356	360	1,426	**DNS**
Dennis	w/Mcdonnel	55	240	
Aldrich	w/Mcdonnel	110	478	
Johanson	1,705	310	1,349	**DNS**
Sustut	w/Johanson	280	1,252	**212**
Bear	2,313	3,000	12,666	**DNS**
Asitka	w/Johanson	110	463	
Morrison	8,379	4,400	19,657	**2,000**
Babine(all)	1,249,479	220,000	1,347,548	**694,108**
Azuklotz	w/Bear	1,300	5,507	**3,200**
Damshilgwit	w/Slamgeesh	100	414	**150**
Johnston	1,090	670	2,832	**DNS**
Kluatantan	no data	160	695	**DNS**
Kluayaz	no data	410	1,699	**DNS**
Sicintine	no data	210	870	**DNS**
Spawning	w/Johanson	60	252	**DNS**
Motase	no data	8,200	34,442	**A/P**

Prudent Reference Point has been Defined by DFO Scientists as a Stock That Can Be Rebuilt to MSY Escapement Levels Within 3 Generations Under no Exploitation. The Prudent Reference Point (PRP) lies above the Limit Reference Point Which Scientists use as a Boundary Below Which a Significant Conservation Concern Exists

DNS = Did Not Survey, AP= Adults Present but inadequate information to make an Estimate

Derived from Cox-Rogers and 2008 post-season report

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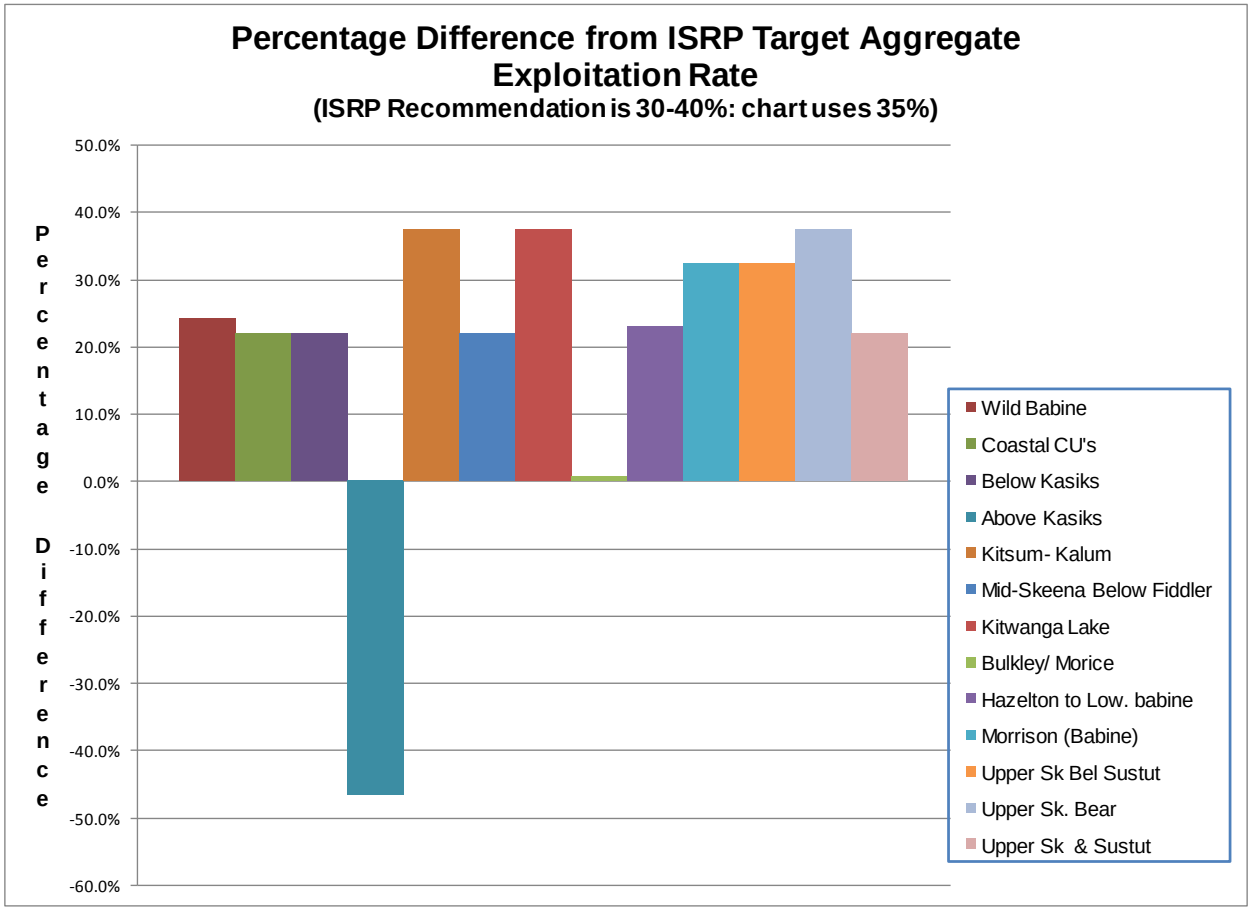
Appendix 2



From gazey, 2008

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Appendix 3

This is the run of the 2009 Salmon Stock Management Model presented to the Skeena Watershed process that described the aggregate exploitation weekly harvest rates on specific stocks that could be expected from the 2009 fishing plan. The aggregate exploitation rate expected for Kitwanga sockeye for the lower than average return expected for 2009 is almost 25% higher than what has been recommended as necessary to begin rebuilding the Kitwanga Conservation Unit.

Skeena Exploitation Rate Calculations				Return to Canada	2000000		Return to Canada		0.88
				Sockeye		Canadian	**Sockeye**		
		Weekly HR		**Aggregate**		Catch	**Kitwanga**		Weekly
				Timing		Commercial	**Timing**		ER
June 10-16	62	0%		1%	16000	0	0%	0%	0.0%
June 17-23	63	0%		2%	35400	0	0%	0%	0.0%
June 24-30	64	0%		3%	61600	0	1%	1%	0.0%
July 1 - 7	71	0%		10%	192600	0	4%	3%	0.0%
July 8 - 14	72	10%		19%	378400	37840	11%	10%	1.0%
July 15 - 21	73	30%		22%	440600	132180	21%	19%	5.6%
July 22 - 28	74	35%		19%	375200	131320	27%	23%	8.2%
Jul 29 - Aug 4	75	40%		12%	242600	97040	21%	19%	7.5%
Aug 5 - 11	81	25%		8%	152200	38050	11%	10%	2.4%
Aug 12 - 18	82	10%		4%	70400	7040	4%	3%	0.3%
Aug 19-25	83	0%		1%	23800	0	1%	1%	0.0%
				Aggregate sockeye catch		443470			
Total Skeena sockeye return	2272727			Canada commercial ER		0.20	Canada commercial ER		0.25
				Alaska ER		0.12	Alaska ER		0.12
				FN FSC ER		0.06	FN FSC ER		0.05
				Total Aggregate sockeye ER		0.38	Total Kitwanga sockeye ER		0.42

Assumptions		**Summary Output**	
Alaskan sockeye ER	0.12	**Total Aggregate sockeye ER**	**0.38**
Non-Babine FSC ER	0.06	**Total Kitwanga sockeye ER**	**0.42**
Kitwanga FSC ER	0.05	**Total Nanika sockeye ER**	**0.34**
Lakelse FSC ER	0.01	**Total Lakelse sockeye ER**	**0.15**
Moricetown FSC ER	0.09	**Total Skeena chum ER**	**0.17**
Chum FSC ER	0.01	**Total Skeena Pink ER**	**0.35**
Chum release mortality	0.50		
Alaska chum ER	0.11		

Skeena Management Model presented by DFO to the Skeena Watershed Process, April 2009

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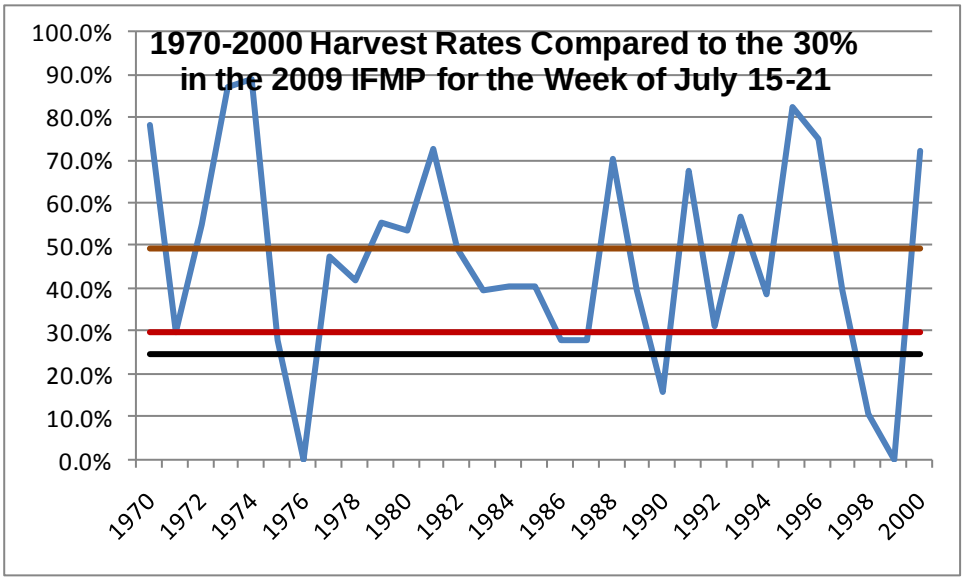
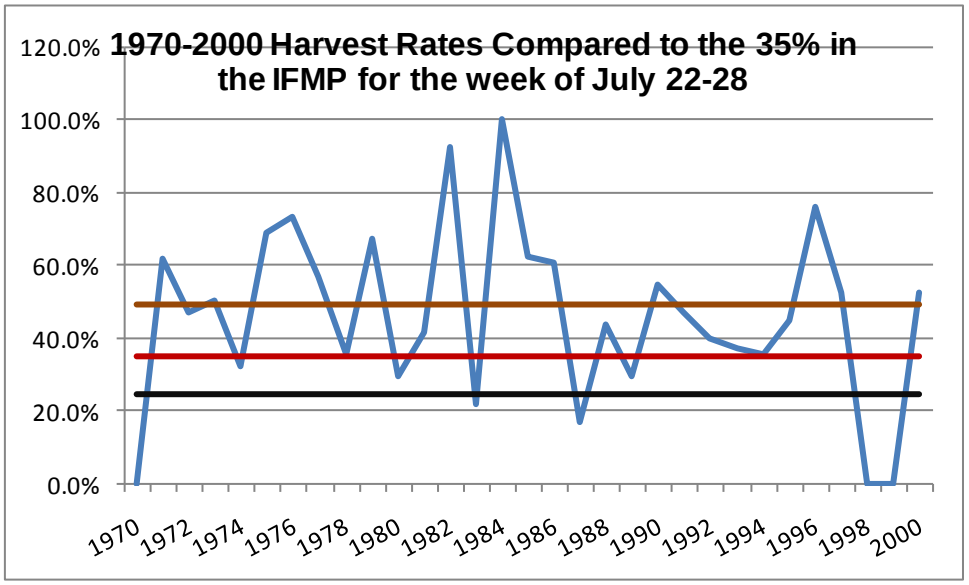
Appendix 4

Blue Line – historical harvest rates for week
Red line – weekly harvest rates proposed in 2009 IFMP
Brown line – average weekly harvest rate for period
Black line – a 50% cut in the average weekly harvest rate





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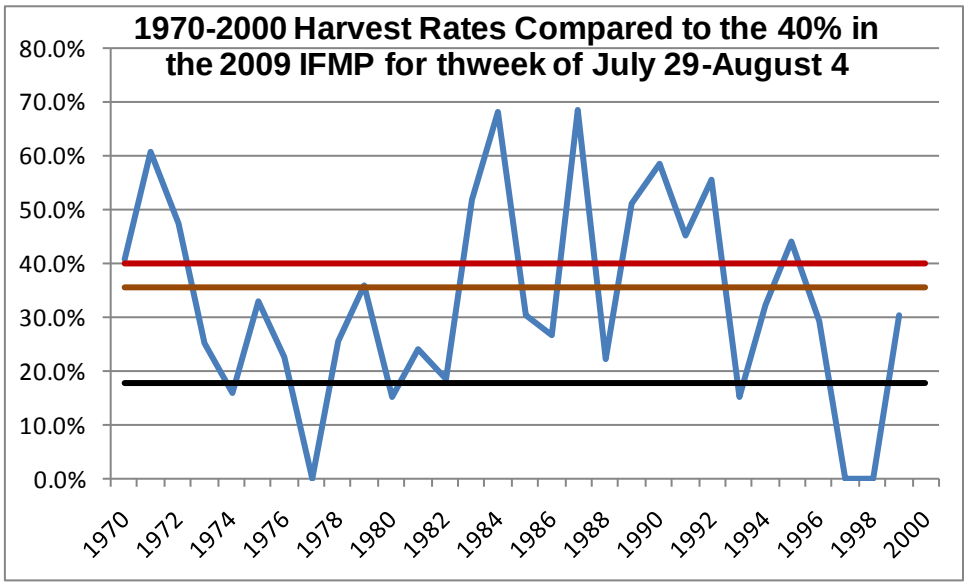
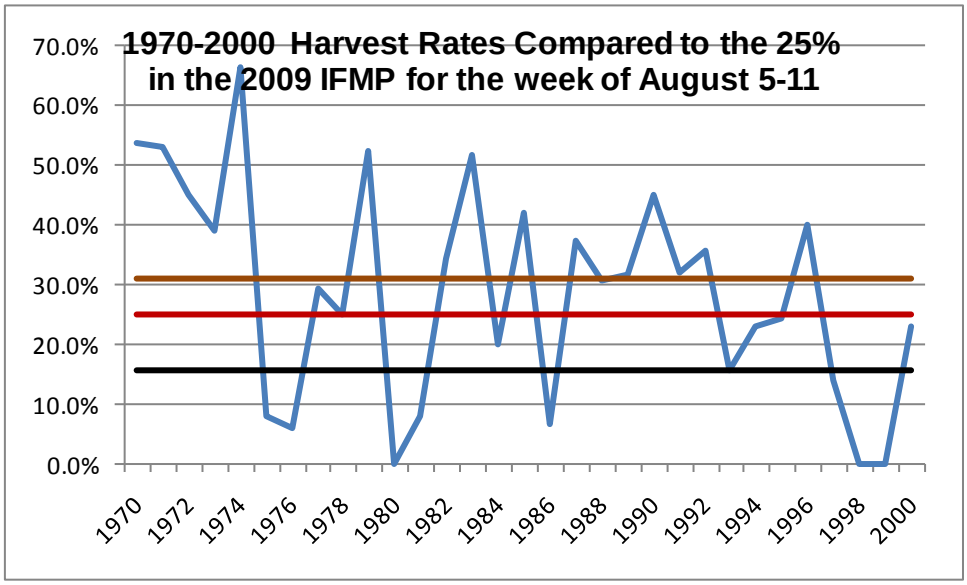
Appendix 4 cont'd





The graphs above depict the modest cuts in weekly harvest rates that were planned for 2009. The cuts in the aggregate exploitation rate fail to translate into a significant reduction in weekly harvest rates in the period where many of the overfished unenhanced stocks are migrating through the marine fishery.

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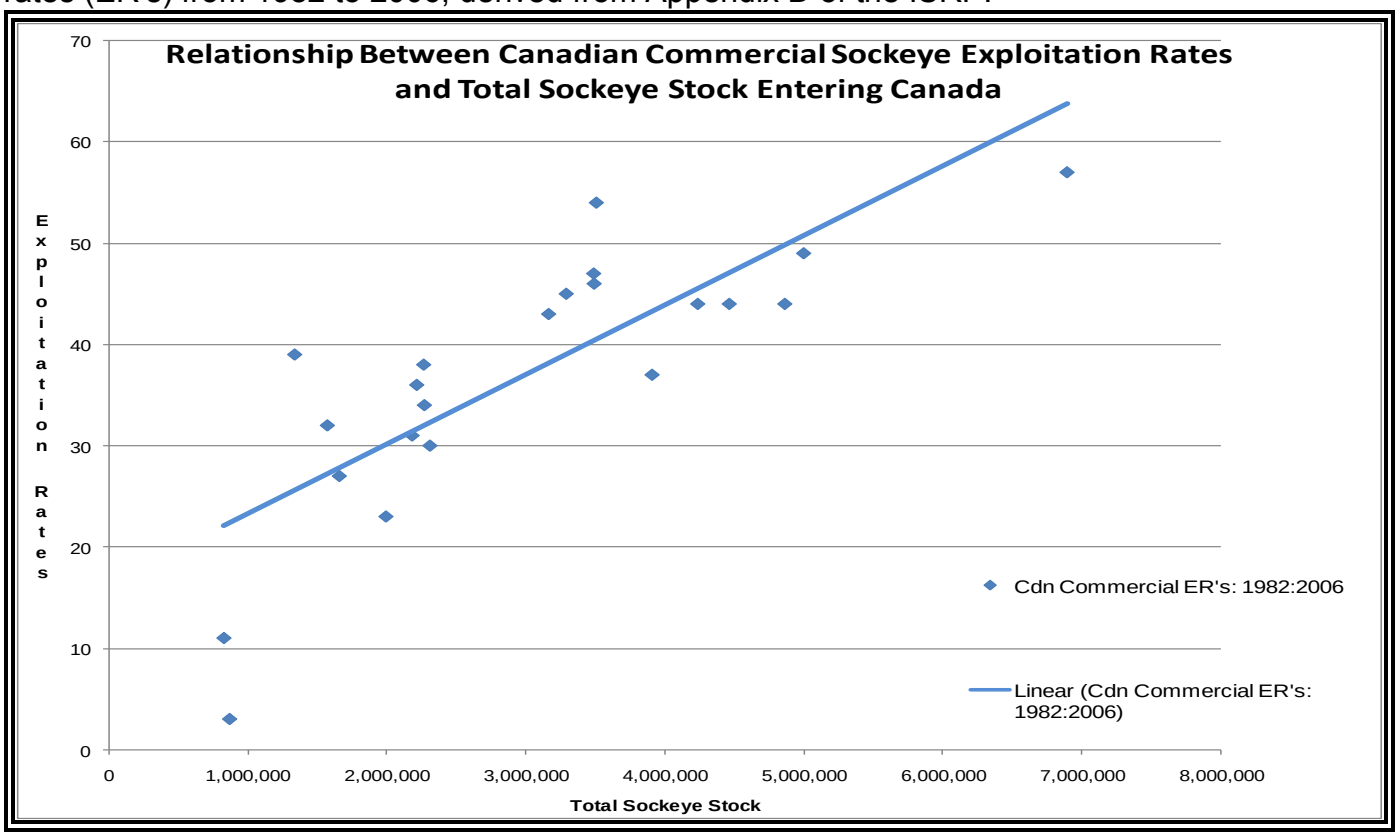
Appendix 5
Employing the Recommendations of the Skeena Independent Science Review Panel to Calculate Interim Canadian Commercial Exploitation Rates

DFO recently presented the Planning Committee of the Skeena Watershed Initiative with a revised proposal for the 2009 Skeena River Sockeye Exploitation Rates (ER). The proposal states that Skeena exploitation rates should range between 20% and 30%, as recommended on Page 6 of the Report of the Skeena Independent Science Review Panel (ISRP).

Concerns are now being raised that DFO has misinterpreted the ISRP's recommendations. The ISRP Report stated that, "these stocks (less productive Skeena sockeye stocks) will remain at severely depressed levels unless total exploitation rates in the ocean fisheries (Alaskan plus Canadian) are reduced to around 30% - 40%, i.e., by reducing Canadian *ocean* fisheries exploitation rates from 40%-50% to 20% - 30%, or about half of what they have been over the last 20 years" (author's Italics).

The following analysis describes the intent, meaning and application of the ISRP's recommendations. The analysis also illustrates why DFO must reduce its proposed Skeena exploitation rates if it intends to abide by the Panel's recommendations. The chart below shows the Canadian Commercial exploitation rates (ER's) from 1982 to 2006, derived from Appendix D of the ISRP.



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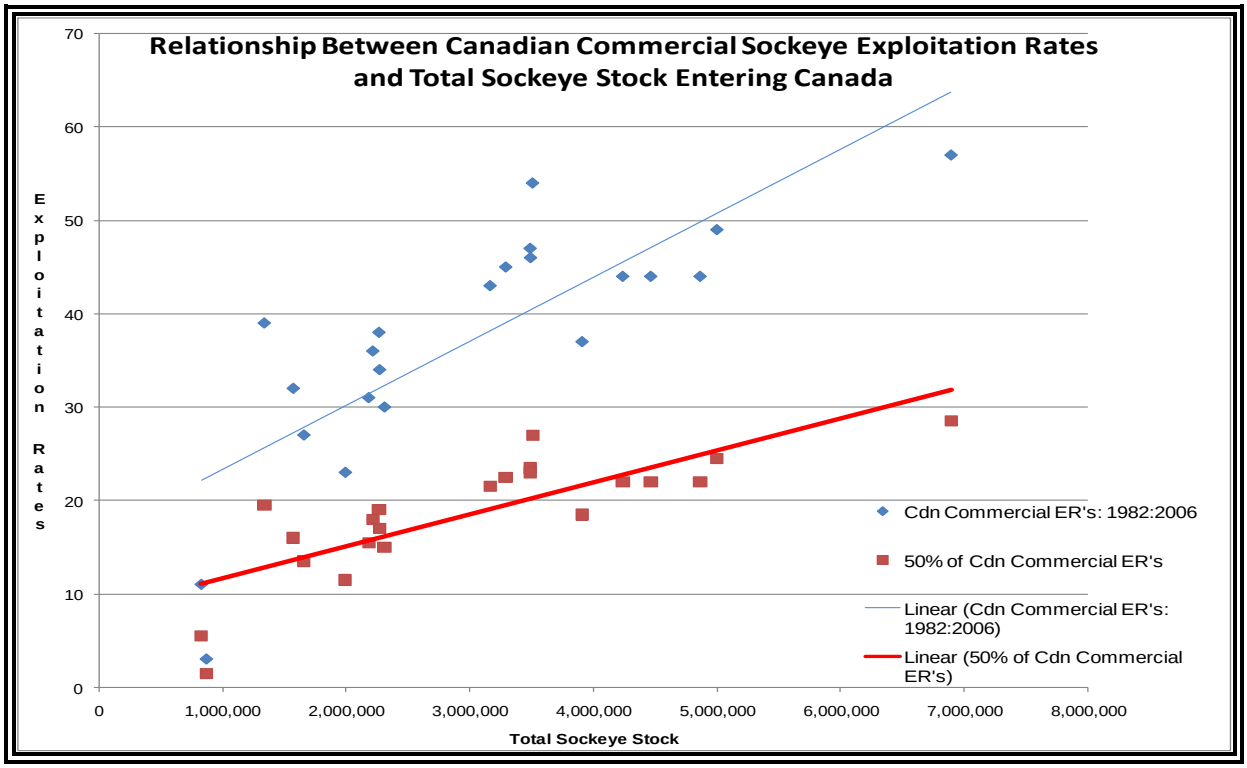
A. This chart shows the result of cutting the 1982 to 2006 Canadian Commercial ER's by 50%, as recommended by the ISRP (red line).



B. DFO's proposed ER's are shown in black against the 50% cut in ER's recommended by the ISRP. DFO's proposed ER's are one-third higher than what was recommended by ISRP at low run sizes. This will significantly limit DFO's capacity to, as stated in its proposal, "stabilize and re-build weak Skeena sockeye stocks."

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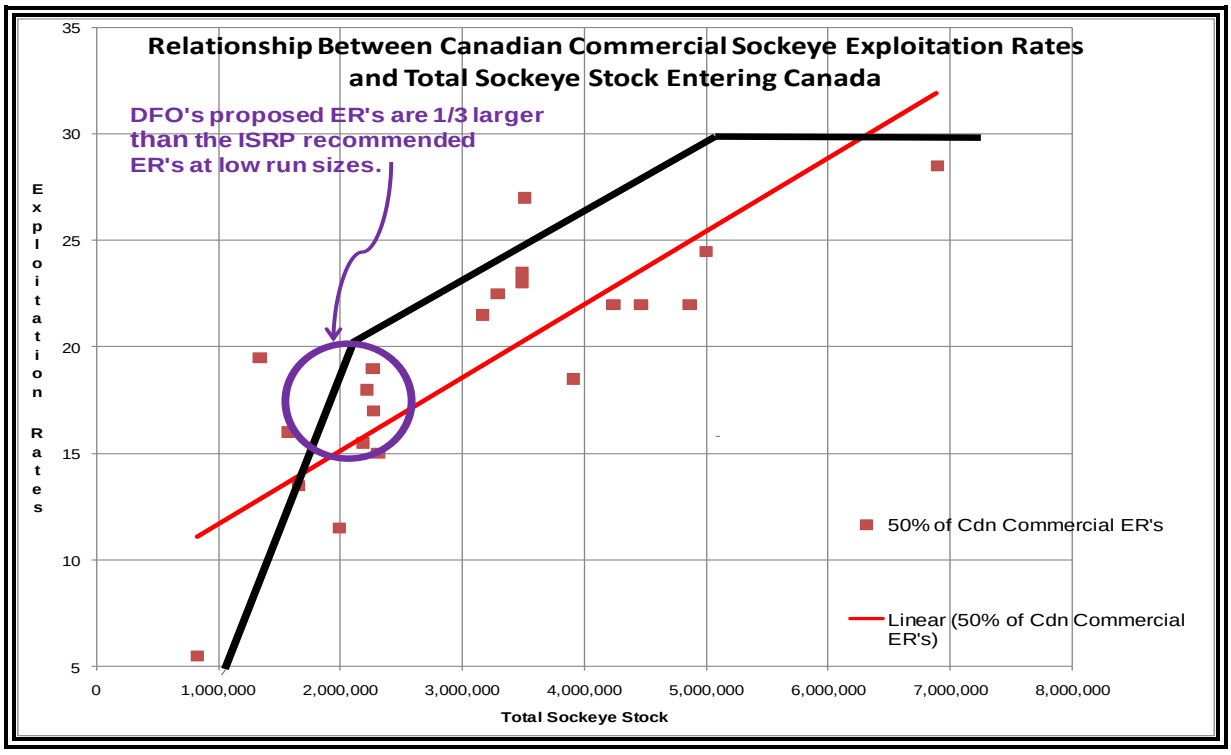

C. The discrepancy between DFO's and the ISRP's proposed exploitation rates may have been caused by DFO's misinterpretation of the Panel's recommendations. The ISRP stated that exploitation rates in "Canadian ocean fisheries" should be cut by 50%, producing a 20% - 30% ER for all fisheries impacting Skeena River sockeye. The ISRP meant the term, "Canadian ocean fisheries", to be understood as being the sum of Canadian commercial fisheries AND mixed stock FSC fisheries. (this has been confirmed in writing by Carl Walters, one of the ISRP Panel members),

As a consequence, to calculate the recommended ERs for *Canadian commercial fisheries,* mixed stock FSC ERs must be subtracted from the ERs recommended by the ISRP. DFO has estimated mixed stock FSC ERs to be 5% (as presented in the latest version of the Skeena Salmon Management Model). Subtracting 5% would mean that Canadian commercial fisheries exploitation rates should range between 15% and 25%, not the 20% to 30% proposed by DFO.

The graph below shows that if DFO subtracted the mixed stock FSC ERs from their proposed exploitation rates the resulting ER's would be equivalent to the reduction in exploitation rates recommended by the ISRP.

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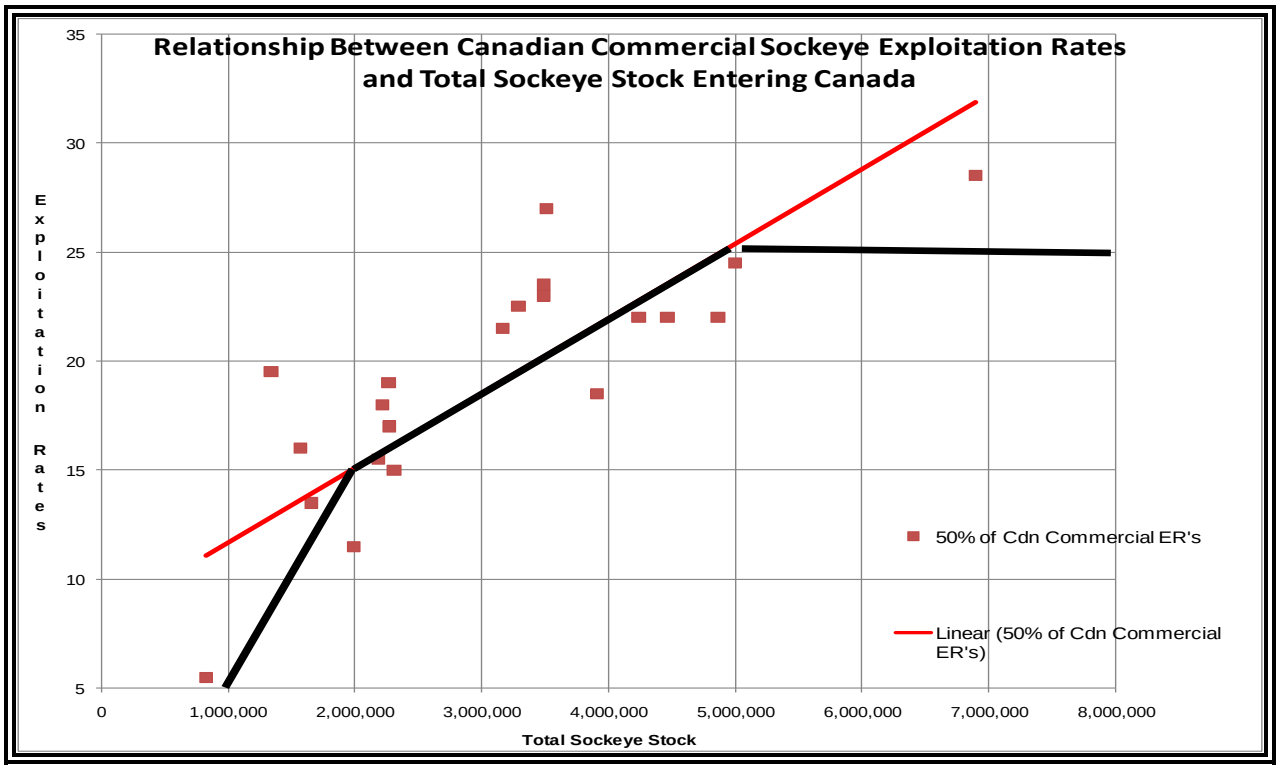

In summary, if DFO intends to employ the ISRP recommendations to guide Canadian Commercial exploitation rates, they must institute Canadian commercial exploitation rates of between 15% and 25% (as determined by run size) as shown above.

Skeena Wild Conservation Trust
April 28, 2009

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MSC Certification of British Columbia Sockeye Fisheries

Core Issues and Recommendations for the Skeena Unit of Certification

The rescoring of the Skeena unit of certification resulted in a revised assessment which highlighted the key management issues associated with this fishery, and set out specific issues to be resolved within five years of conditional certification. Unfortunately, this assessment fails to properly define the Unit of certification for the fishery because it does not include non-Babine sockeye as a target stock for the fishery. In addition, the action plan devised by DFO lacks the commitment necessary to meet the conditions required for conditional certification. Specifically, the action plan does not commit to protecting and rebuilding threatened sockeye stocks, defers its obligation to meet several key conditions to the Skeena Watershed process, and contains no commitment to implement specific selective fishing measures and techniques to reduce by-catch mortality.

Unit of Certification

The unit of certification in the Skeena is inappropriate because it does not include non-Babine sockeye.

In Fraser, Nass, and Barkley Sound fisheries the target stocks are defined as all of the sockeye stocks intercepted by the mixed stock fisheries. In the Skeena it is only the Babine sockeye stock which is designated as the target stock. The assessment team's rationale is that in years where the Babine stock is not abundant there is no fishery so therefore the non-Babine sockeye stocks cannot be target stocks (Assessment p. 4). This line of reasoning is flawed for a number of reasons. First, most Skeena sockeye populations typically experience similar strength of returns on any given year due to the dominance of ocean conditions on survival rates (Walters et al, 2008). This similarity in fluctuation of abundance of non-Babine and Babine stocks is also evident in the DFO Salmon Escapement Data Sets. Hence, in years when the Babine stocks are not harvested the non-Babine stocks would not be targeted anyway because their returns are also likely to be poor. Second, the stock composition of test fishery samples indicates that non-Babine sockeye currently make up a significant portion of the harvest, accounting for an average of 24% of the aggregate Skeena sockeye return (Wood, 2001). Further, non-Babine sockeye historically made up over 40% of the total return, highlighting the importance of this stock component in the commercial fishery and the impact of managing to maximize harvest on the enhanced Babine stock (Wood, 2001). Third, many of the non-Babine sockeye stocks have the same run timing as the enhanced Babine stock and there is no way that these stocks can be avoided or selected out (targeted) in the mixed stock commercial fisheries (Walters et al, 2008).

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All of these points support the inclusion of non-Babine stocks should as target stocks in the MSC process. By not including non-Babine stocks as target stocks, the MSC obfuscates its responsibility to ensure these populations are rebuilt and maintained at or above their TRP to maximize production for commercial harvest over the long term.

Weekly Harvest Rate Caps

DFO's action plan contains no commitment to implement weekly harvest rate caps to protect threatened Skeena sockeye stocks.

Several Skeena sockeye stocks have been red listed by the International Union for the Conservation of Nature (IUCN, 2008), and identified by DFO biologists and Skeena First Nation as being of serious conservation concern. A key impact on these stocks is harvesting by the commercial fishery (Walters et al, 2008). DFO in cooperation with Skeena First Nations have already devised interim precautionary exploitation rates for threatened Kitwanga and Nanika sockeye. These could be implemented immediately by capping weekly commercial harvest rates during the Kitwanga and Nanika sockeye migration period through the fishery. This would offer critical protection for these stocks while LRP's and TRP's are being developed. The recommended weekly harvest rate caps would also help protect threatened Slamgeesh sockeye, and over a dozen other potentially threatened small sockeye stocks with similar run timing that have little or no stock assessment information. The 30 – 50% exploitation rate reduction referenced in DFO's action plan will provide some protection for threatened sockeye stocks. However, these exploitation rates still concentrate harvesting within a three week period which coincides with the migration of threatened Kitwanga and Slamgeesh sockeye through the fishery (DFO, 2009).

LRP & TRP Development

DFO's action plan contains no commitment to prioritize LRP and TRP development for Kitwanga and Nanika sockeye.

Although LRP's have yet to be developed for these stocks, Kitwanga and Nanika sockeye are considered to be threatened and are a key conservation focus of DFO and Skeena First Nations (DFO, 2009; SFC Pers. Comm., 2009). In addition, good stock assessment programs, historical abundance, and lake productivity information exists for these stocks. Kitwanga and Nanika sockeye are also of primary food and cultural interest to the Gitanyow and Wet' suwet' en peoples. As a result, DFO and Skeena First Nations have already been undertaking work around developing LRP's and TRP's (or their equivalent). Therefore, similar to Henderson (Barkley Sound) and Cultus / Sakinaw (Fraser), these two stocks should be prioritized in the action plan. Specifically, commitment should be given to develop LRP's and TRP's for these stocks prior to the 2010 fishing season.

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Recovery Plans

DFO's action plan contains no commitment to prioritize recovery plan development and implementation for threatened Kitwanga and Nanika sockeye.

As stated above, the Kitwanga and Nanika sockeye stocks are of primary conservation focus, are considered to be below their LRP or equivalent, and should be prioritized in the action plan. Further, rebuilding plans for both of these stocks are currently under development by DFO, the Gitanyow, and Wet' suwet' en (Gitanyow Fisheries Authority Pers Comm, 2009; Wet' Suwet' en Fisheries pers comm., 2009). Specifically, a commitment should be included in the action plan to prioritize the development and implementation of rebuilding plans for these stocks with associated timelines and probability of recovery, as mandated under Skeena Condition 2.1b.

Skeena Watershed Process

DFO's action plan contains excessive deference to the Skeena Watershed process.

Skeena Condition 2.1b is explicit that LRP's or their equivalent and recovery plans be developed and implemented for stocks harvested in Skeena sockeye fisheries that are below their LRP's. The action plan contains no specific commitment or mention of how they will meet this condition. Instead it discusses how it will defer to the Skeena Watershed Process to decide which weak stocks should be allowed to remain overfished or at risk of extinction (action plan p 21). This process has no mandate, and has made no commitment to meet condition 2.1b. Further, several process participants (ENGO, Sport fishing, First Nation members) have expressed concern over the action plan and its references to SWI participation (Planning Committee Notes, 2009). At a minimum, the action plan should contain similar commitments and timelines to develop and implement LRP's and rebuilding plans as are outlined for Skeena chum salmon - Skeena Condition 22 (Action Plan pp 21-22).

Selective Fishing

DFO's action plan contains no commitment to implement existing and new selective fishing techniques.

There is no commitment by DFO to implement several selective fishing techniques which have been proven effective in reducing by-catch mortality. Specifically, the short net / short set technique (20 minute set times with half length nets) has been shown to dramatically reduce mortality on coho and steelhead (Clark, 2003). The action plan should state that short net / short sets will be made mandatory in the gill net fishery. Further, tangle nets catch fish by the mouth as opposed to the gills, and have been under experimentation by the department for over a decade. The results of this experimentation show by-catch mortality reduced to less than 10% (Clark, 2003) compared to traditional gill net mortality of 35 – 70% (Buchanan et al, 2002). DFO needs to commit in the action plan to a large pilot project using tangle nets for the 2010 season.

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Review of the July 2009 Marine Stewardship Council draft assessment of British Columbia Fraser River sockeye salmon fisheries

Prepared by: Jeffery Young, Aquatic Biologist, David Suzuki Foundation
Ken Wilson, Watershed Watch Conservation Society
Members of the Canadian Pacific Salmon Integrated Harvest Planning Committee (Canadian domestic fisheries planning body)
Official Observers of the Fraser River Panel under the Canada-U.S. Pacific Salmon Treaty (Bi-lateral in-season fisheries management)

August 18, 2009

Introduction

The Fraser sockeye fishery is probably the most challenging to manage of the four units under consideration for certification. There are more than 40 distinct sockeye salmon populations captured by the fishery (see Appendix 1). The Fraser River sockeye salmon commercial fishery is not managed in a consistent manner with many of the MSC scoring criteria and multiple 60 scoring guideposts not passed. As a result, conditions on certification are insufficient and this fishery should not be recommended for MSC certification at this time.

This review focuses on the most substantial issues of the July 2009 draft assessment for which significant evidence is available to demonstrate where MSC scoring criteria are not passed.

These issues are:

Issue 1: Most sockeye salmon populations not monitored or protected

Issue 2: Fishing continues on target populations below any reasonable LRP

Issue 3: Bycatch of non-salmon species is not considered

Issue 4: Ability of responsible government agency to make necessary fisheries reforms

Issue 5: Inconsistency between assessments

Issue 1: Most sockeye salmon populations not monitored or protected

Assessment and conditions do not adequately consider sockeye populations targeted or affected by the fishery other than Cultus and Sakinaw Lake sockeye.

There are approximately 37 extant sockeye populations originating within the Fraser watershed (some comprised of multiple spawning areas), and at least 10 others from adjacent watersheds that are also caught (see Appendix 1 for list). In the current management of the fishery only 19 stocks from the Fraser River are used for fisheries planning and the fishery is managed to four management groups based partly on timing. Many of these populations lack regular assessment of status and most are not considered in commercial fisheries management.

Cultus and Sakinaw Lake sockeye populations are singled out in the assessment as populations of concern. These populations were assessed as endangered by Canada's independent scientific advisory body that identifies wildlife at risk (COSEWIC) and both of these populations have relatively good datasets on abundance over time. Despite generally appropriate attention made in the assessment to these two populations there are other populations that are below reasonable

LRP's and/or have undergone significant recent declines (e.g., Bowron, Takla/Trembleur, Early Stuart, Late Stuart, Early Shuswap, Kamloops Lake, Widgeon, Fairy, Tzoonie, Hobiton, Cheewat, East Vancouver Island/Georgia Strait, Nimpkish). Abundance estimates for some of these sockeye populations of concern are shown in Appendix 2.

The concern around Fraser sockeye populations at risk is further highlighted by the World Conservation Union's recent assessment of sockeye salmon (available at www.iucnredlist.org), which segregated Fraser River sockeye into 11 subspecies, 5 of which were identified as vulnerable or endangered.

Most of the sockeye populations affected by the fishery are not adequately assessed (e.g., Indian/Kruger, Kawkawa, Francois Summer, and most Fraser river-type sockeye). In an internal government report Fisheries and Oceans Canada scientists found that numerous sockeye salmon populations originating from lakes and rivers adjacent to the Fraser system were highly depressed due to fishing impacts (referenced in Levy 2006 and reviewed in Thomas 2004). Thus, Sakinaw Lake sockeye, which is the focus of many of the conditions and originates in a watershed adjacent to the Fraser are by no means unique. The diversity of affected populations further suggests that measures to address Sakinaw Lake sockeye are insufficient not only for recovery of Sakinaw, but to provide protection for these additional populations.

These problems severely undermine the scoring of Fraser sockeye under multiple indicators under MSC Criterion 1.1 and related conditions are insufficient to bring the fishery into compliance with this criterion.

Issue 2: Fishing continues on target populations below their LRP

Fundamental Principle 1 minimum scoring criteria clearly not met in Fraser sockeye fishery.

One of the 60 scoring guideposts under principle 1 (indicator 1.2.1) states that "Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks."

As revealed by the proposed conditions regarding Sakinaw and Cultus Lake sockeye the current fisheries management system does not require a "no fishing point" for endangered populations. The action plan identifies that although Sakinaw and Cultus sockeye are clearly endangered they continue to be fished at 12% and 20% exploitation rates, respectively, and these targets are poorly assessed. Fisheries and Oceans Canada explicitly states in the preamble to the draft action plan that where social or economic costs to rebuild a CU (i.e., population) are extreme they may decide to limit the range of measures taken. These tradeoffs have been made for Cultus and Sakinaw Lake sockeye and this statement indicates that Fisheries and Oceans Canada does not intend to implement no fishing points for these populations.

Under indicator 1.2.1 the assessment team states "Cultus sockeye are a clear example of a severely depleted target Fraser sockeye stock. We acknowledge that a recovery plan has been developed for Cultus sockeye but there are significant concerns regarding the implementation of this plan." The following condition is meant to address this issue but will clearly not bring the fishery into compliance with the 60% scoring guidepost of recovery to 125% of the LRP before fisheries are permitted targeting these stocks.

This position is contradictory to minimum scoring requirements for MSC certification under Principle 1. This issue is further compounded by the ongoing decline of Sakinaw and Cultus

Lake sockeye (see Figure 4, Appendix 2 for Sakinaw status) and the drastically low overall returns of Fraser River sockeye in 2007, 2008 and 2009.

Issue 3: Bycatch of non-salmon species is not considered

Bycatch impacts are not considered, yet impacts to non-salmon species could be significant

Although the assessment provides some consideration of the bycatch of steelhead trout (*Oncorhynchus mykiss*), white sturgeon (*Acipenser transmontanus*), and Pacific salmon species (*Oncorhynchus* spp.) the assessment fails to consider bycatch impacts of other species, particularly seabirds. The assessment provides the following explanation, "In general, sockeye salmon harvests in the marine environment have little evidence of significant impacts on birds and mammals as indicated by log book records." This statement, which follows from the limited information provided in the client submission of information written by Fisheries and Oceans Canada in 2003/2004, is inaccurate and demonstrates that bycatch impacts and management were not adequately considered by the assessment team and certifier.

Smith and Morgan 2005 evaluated seabird bycatch in Canadian fisheries and demonstrate that salmon fishery observer coverage is very low and logbook reporting of seabird bycatch is voluntary (resulting in very low reporting). They extrapolate this test fishing information and estimate that on average over 12,000 seabirds could be caught (with low release survival), 285 of which could be marbled murrelets. Marbled murrelets are listed under Schedule 1 of Canada's Species at Risk Act as threatened, with gill net entanglement identified as a substantial threat to marbled murrelet. For troll fisheries, Smith and Morgan report that "Troll fisheries may catch birds but the extent of bycatch (and mortality) is not documented." This Canadian Wildlife Service report, co-authored by a Fisheries and Oceans Canada scientist, go on to recommend an increase to 10% minimum observer coverage for the salmon fishery. Information for bycatch or encounter impacts with marine mammals and other non-salmonid fish species is also poor.

The assessment team failed to consider these issues. As a result, scoring for Principle 2 criteria and indicators are overestimated.

Issue 4: Ability of responsible government agency to make necessary fisheries reforms

Meeting conditions requires significant increases in assessment and substantial reforms to management that are inconsistent with an international treaty with the United States.

The conditions and action plan put considerable pressure on the effective implementation of the federal Wild Salmon Policy. This includes developing benchmarks, effectiveness of indicator stocks, recovery plan development and implementation, and population-level monitoring. There are no additional funds available to implement these reforms and since release of the Wild Salmon Policy in 2005 there have been no increases in on-the-ground monitoring. Such escapement and fisheries monitoring would be fundamental to implementing any of these required reforms and without additional commitments to this monitoring these reforms will not be made.

The Pacific Salmon Treaty is a bi-lateral agreement between the United States and Canada concerning the shared fisheries management of co-migrating salmon stocks. Fraser River sockeye fisheries management is central to this treaty, including the Fraser River Panel where the U.S. and Canada share in-season management responsibility for these fisheries. Changes

required to bring Fraser River sockeye salmon fisheries into compliance with MSC criteria, and meet the current draft conditions, would require changes to the management objectives of the Pacific Salmon Treaty. The current draft assessment fails to mention this responsibility or identify necessary reforms to meet MSC criteria. Although the Fraser sockeye and pink chapters of the treaty are being re-negotiated there have been no attempts made by either party to reform Fraser sockeye management in a manner consistent with meeting MSC criteria. As a result, the Pacific Salmon Treaty now limits, and will likely continue to limit, the ability of the client to undertake reforms necessary to meet conditions of certification.

Issue 5: Inconsistency between assessments

Lack of re-scoring of Fraser unit in 2008 makes this assessment out-of-date and inconsistent with other unit assessments and conditions.

The Fraser certification unit was not re-scored in 2008, as the Skeena and Nass units were. As a result, these assessments are based primarily on information provided by Fisheries and Oceans Canada in 2003/2004. Since 2005, when the current Fraser assessment was largely drafted, three of the lowest returns of Fraser sockeye on record occurred and the IUCN released its comprehensive assessment of sockeye salmon. The lack of re-scoring of the Fraser severely undermines the consistency of the assessments, conditions and action plan between the units, and leaves the Fraser unit with inappropriate scoring and insufficient conditions to bring the fishery into compliance with MSC standards. Despite having the greatest concerns around mixed stock fishery impacts on endangered populations and the weakest processes in place to implement necessary reforms to meet conditions, the Fraser certification now has scores higher than some of the other units and has a weaker set of conditions than the Skeena unit.

In the Certification Process Context section of the draft assessment Tavel Certification Inc. suggests that the management actions employed in 2006-2008 on the Fraser “were either consistent with those described during the fishery evaluation and interview process or more precautionary, not less. As a result, the team concluded that there was no reason that these fisheries needed to be re-scored in 2008.” Despite these claims, fisheries in each of these years varied significantly, both in terms of the weakness of the returns and in the management plan applied. For example, despite very high en route and pre-spawn mortality in late-run sockeye salmon and the very poor condition of Cultus Lake sockeye exploitation rates on these populations increased from a maximum of 12% to 20% in 2007 and 2008, and up to 60% in 2006. Total mortality rate and exploitation rates for the four Fraser sockeye management units in years 2005-2008 are provided in Appendix 3, Figures 1 and 2.

Although commercial harvest was constrained in 2007 and 2008 this was due to drastically low returns across all management units and not because managers were being “more precautionary, not less.” Further, despite two of the lowest returns on record in 2007 and 2008 the average exploitation rate was approximately 35%. Exploitation rates on populations of concern could be much higher, based on the timing of fishing impacts, but these exploitation rates are not assessed. Under current management, if only one stock came back strong in 2007 or 2008 fishing would have proceeded on its component management group despite the poor returns of the other populations.

References

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Appendix 1

Pacific salmon in Canada are to be protected at the level of "conservation unit," which corresponds to the biological definition of "population." Below is a list of Canadian-origin conservation units targeted and affected by Fraser sockeye fisheries. There are additional populations that would be affected by these fisheries, including US-bound populations (e.g., Baker Lake, Lake Washington, Columbia River)

Fraser sockeye conservation units:

1. Kawkawa-Late timing
2. Lillooet-Late timing
3. Pitt-Early Summer timing
4. Harrison -upstream migrating-Late timing
5. Harrison -downstream migrating-Late timing
6. Cultus-Late timing
7. Chilliwack-Early Summer timing
8. Seton-Late timing
9. Nahatlatch-Early Summer timing
10. Anderson-Early Summer timing
11. Chilko-Early Summer timing
12. Chilko-Summer timing
13. Francois-Early Summer timing
14. Francois-Late timing
15. Fraser-Early Summer timing
16. Fraser-Summer timing
17. Mckinley-Summer timing
18. Quesnel-Summer timing
19. Kamloops-Early Summer timing
20. Stuart-Early Stuart timing
21. Stuart-Summer timing
22. Takla/Trembleur-Early Stuart timing
23. Takla/Trembleur-Summer timing
24. Taseko-Early Summer timing
25. Bowron-Early Summer timing
26. Indian/Kruger-Early Summer timing
27. Kamloops-Late timing
28. Shuswap Complex-Early Summer timing
29. Shuswap Complex-Late timing
30. Nadina-Early Summer timing
31. Widgeon
32. Thompson
33. Southern Fjords
34. Middle Fraser
35. Lower Fraser
36. Fraser Canyon
37. Upper Fraser

Sockeye conservation units originating from watersheds adjacent to the Fraser watershed and likely affected by Fraser sockeye fisheries:

1. Osoyoos
2. Sakinaw
3. Nitinat
4. Nimpkish
5. Sooke
6. Fairy
7. Chewat
8. Hobiton
9. East Vancouver Island & Georgia Strait
10. Boundary Bay

Appendix 2

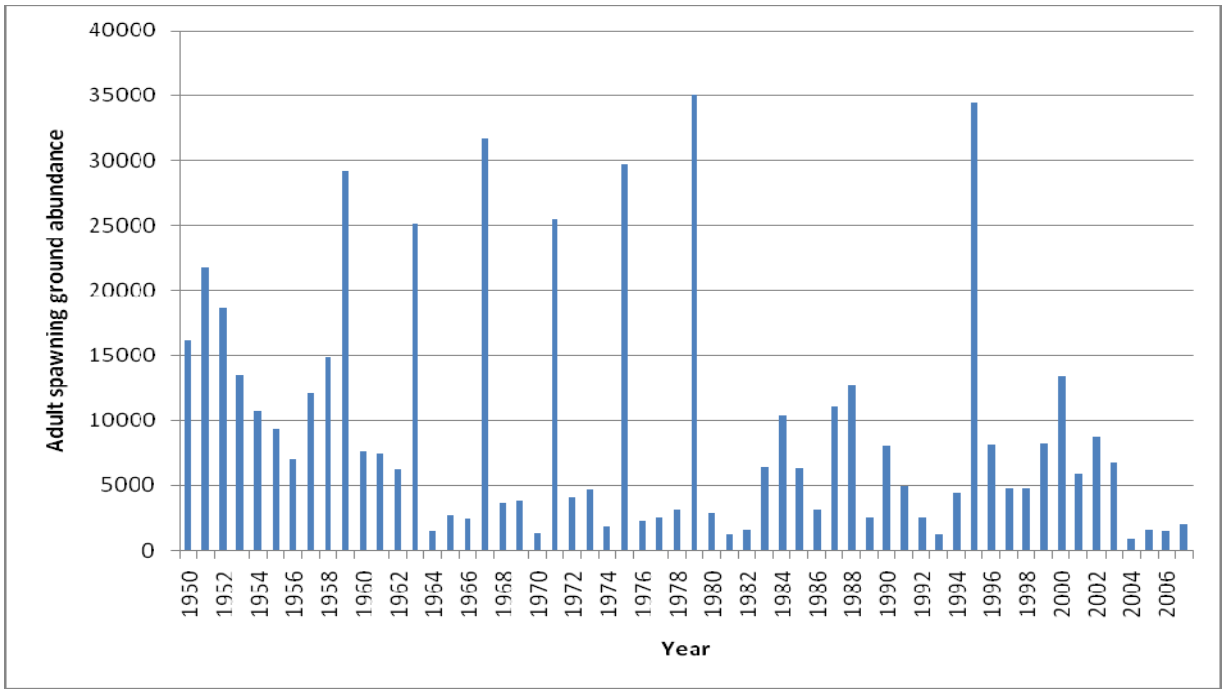


Figure 1. Annual spawning ground adult abundance estimates for Bowron Lake sockeye salmon (Bowron River monitoring location) from 1950-2007 (Source: Fisheries and Oceans Canada).

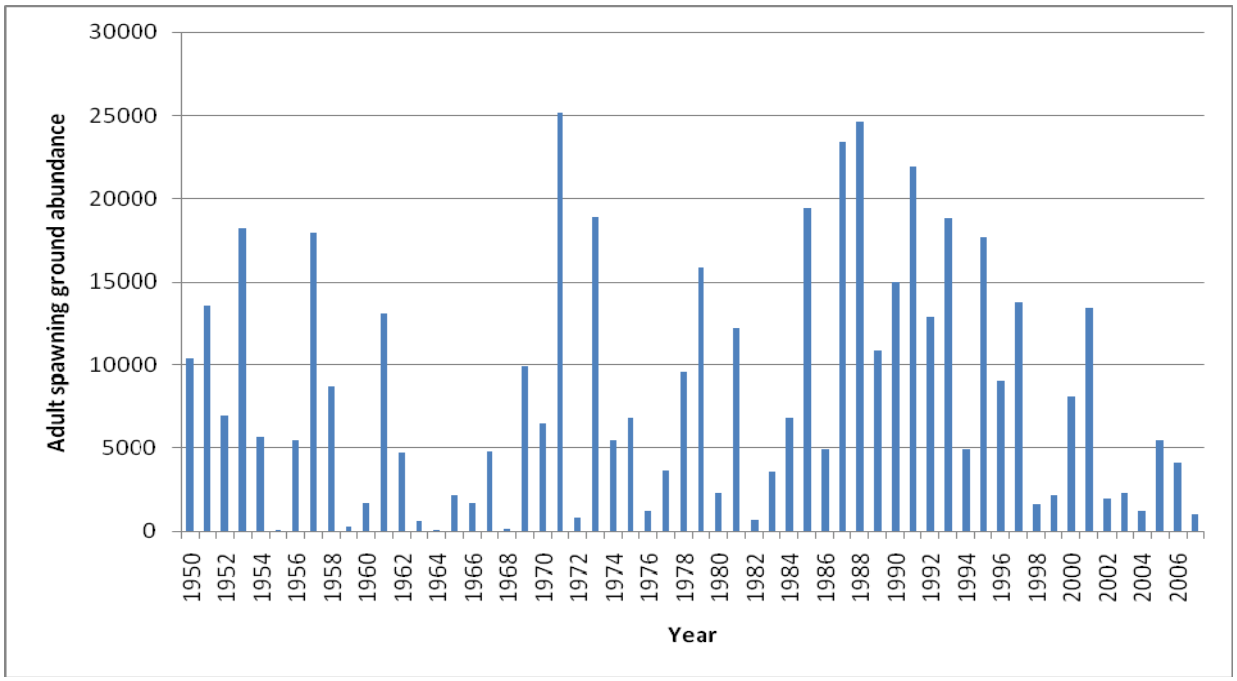


Figure 2. Annual spawning ground adult abundance estimates for Takla/Trembleur Early Stuart sockeye salmon (Forfar Creek monitoring location) from 1950-2007 (Source: Fisheries and Oceans Canada).

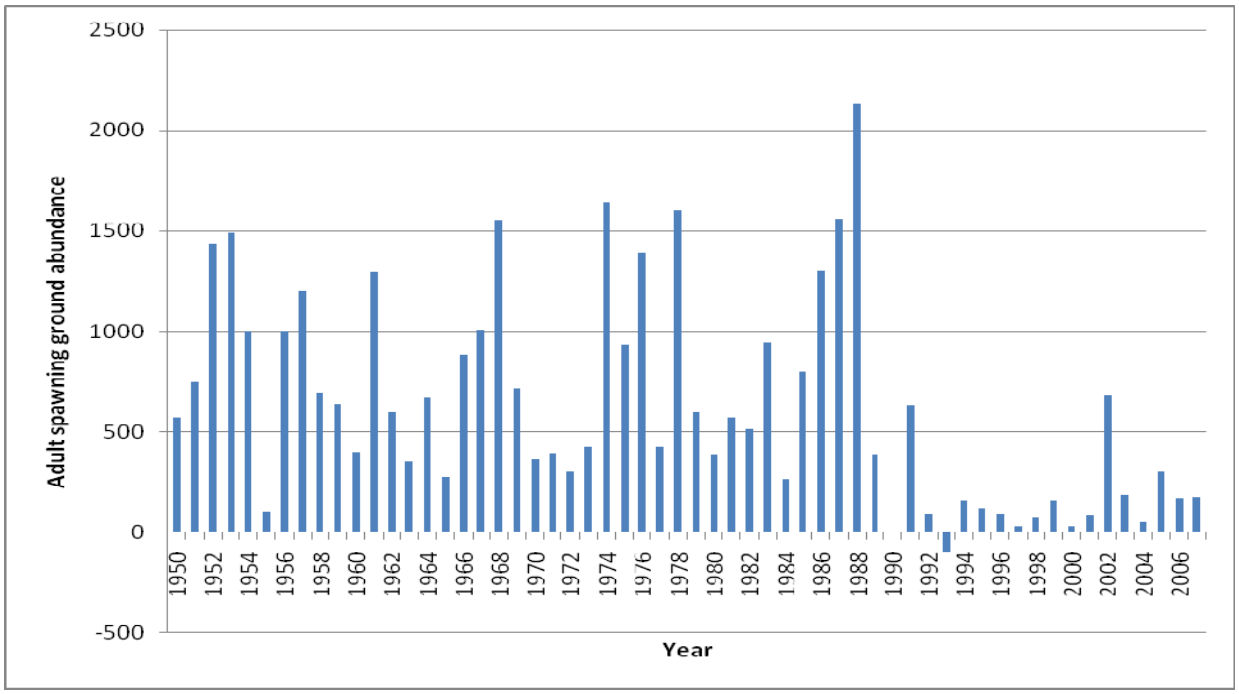


Figure 3. Annual spawning ground adult abundance estimates for Widgeon sockeye salmon (Widgeon Creek monitoring location) from 1950-2007 (Source: Fisheries and Oceans Canada). Negative value shown in year 1993 indicates no information available.

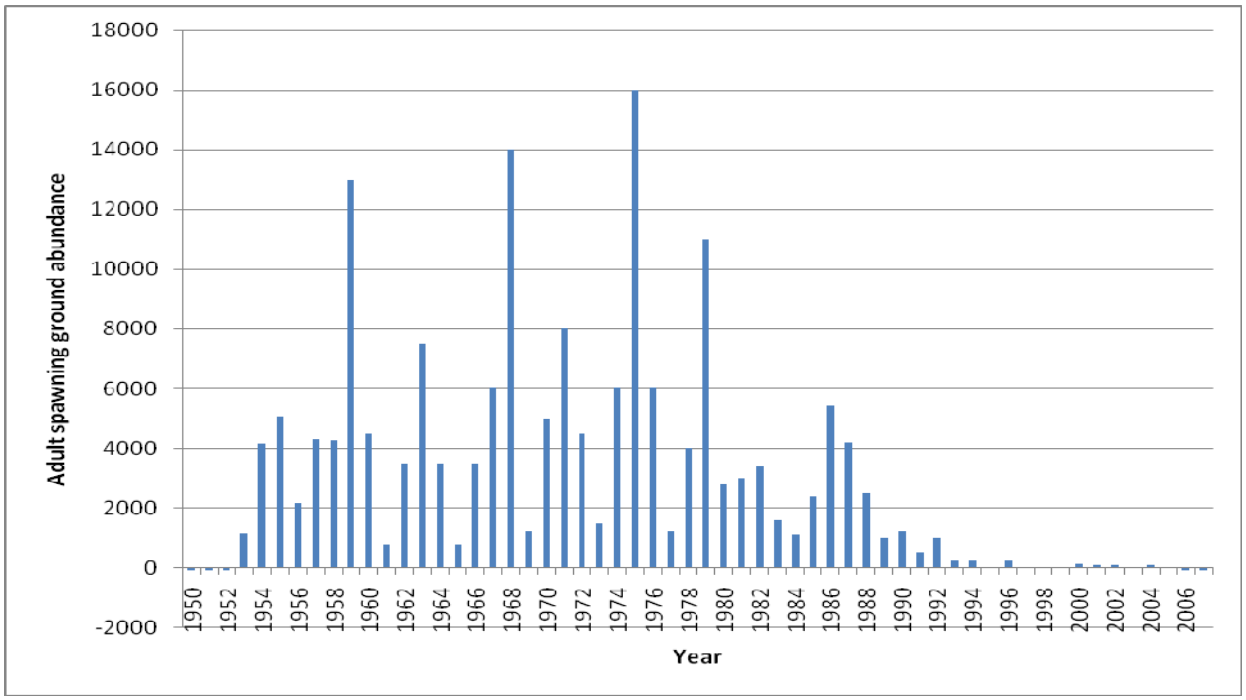


Figure 4. Annual spawning ground adult abundance estimates for Sakinaw Lake sockeye salmon (Ruby Creek monitoring location) from 1950-2007 (Source: Fisheries and Oceans Canada).

Appendix 3

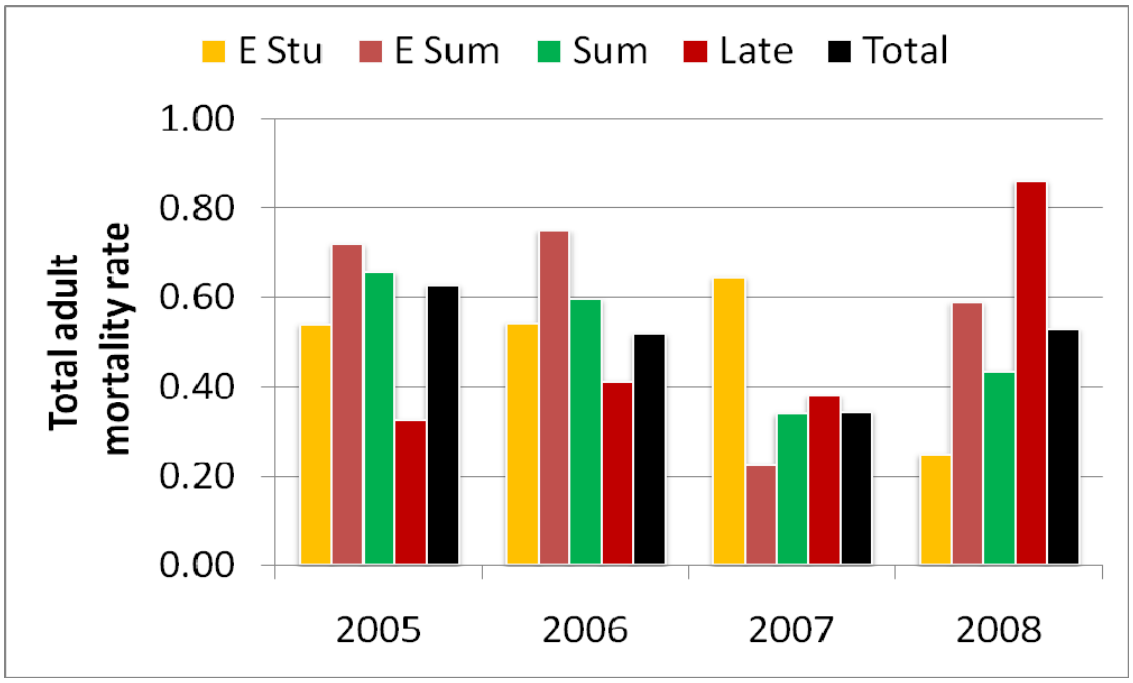


Figure 1. Total adult mortality rates, which includes both fishing and en route mortality, estimated for the four Fraser River sockeye management groups managed in the fishery (Early Stuart, Early Summer, Summer, Late) for the last four years (data provided by Fisheries and Oceans Canada).

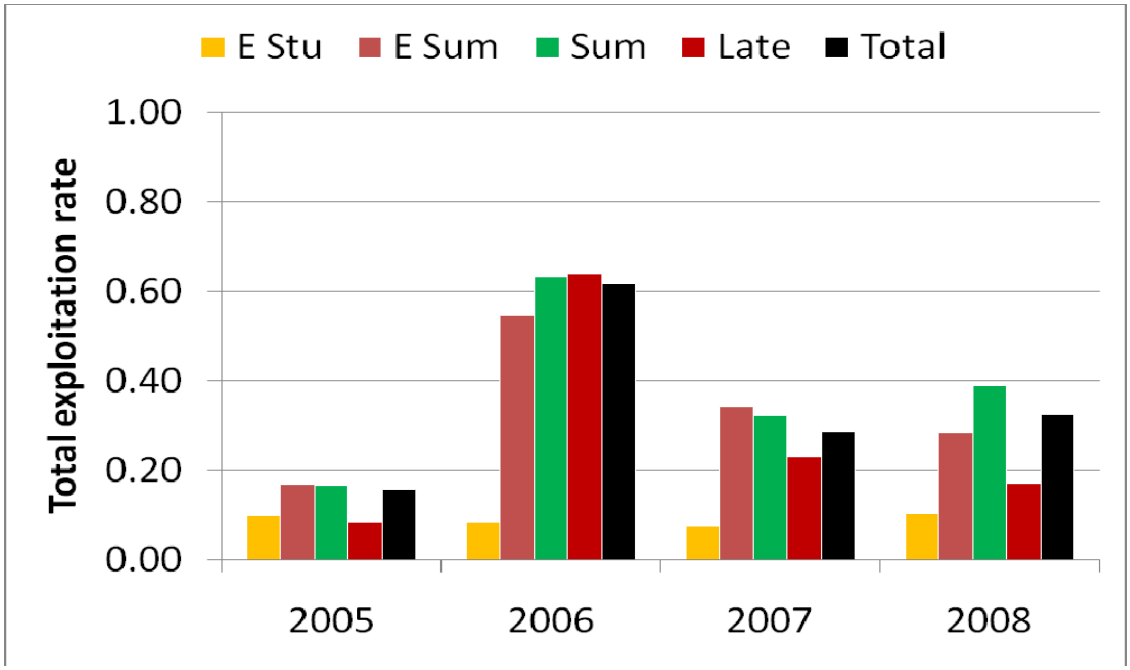


Figure 2. Fishery exploitation rates estimated for the four Fraser management groups.

Review of the Marine Stewardship Council Draft Assessment of the Barkley Sound Sockeye Fisheries

Prepared By: Jeffery Young, David Suzuki Foundation

Introduction

The following review and attached scoring summary is provided by the David Suzuki Foundation and the Watershed Watch Salmon Society based on previous input provided to the Marine Stewardship Council (MSC) sockeye assessment process by Dr. John Nelson, on behalf of the Sierra Club BC Chapter[1]. Additional information since 2004 was also used to inform this review, such as the 2007 Integrated Fisheries Management Plan and the 2008 Salmon Stock Outlook, both provided by Fisheries and Oceans Canada.[2]

This review focuses on the key criteria and indicators for which we disagree with the current assessment scoring. The basis for refuting these scores is provided and recommendations for dealing with these discrepancies are provided.

In summary, there are particular issues with the following:

- Designation, assessment, and management of "stock management units"
- Reliable estimates of escapement
- Limit reference points
- Recovery of target and non-target units
- Availability and use of information on biological diversity
- Clear and defensible set of objectives

Overall, given the intent of the MSC criteria in many cases the current draft assessment scores are not accurate. The current draft conditions identify some of the key discrepancies but we have significant concerns about whether these conditions are sufficient and whether they will be implemented or enforced in the five-year time frame.

The draft MSC assessment identifies most of the serious issues with the management and status of the Barkley Sound sockeye fishery. However, despite strong rationales presented to define these problems there are many instances where 60 guideposts are passed or 80 guideposts are given partial scores where there is no clear justification for doing so.

The MSC scoring process

This review assumes that the reader has an understanding of the MSC scoring process. A detailed description of the scoring process can be found in the Draft Assessment and a brief synopsis is also presented here:

[1] Available at: http://www.msc.org/html/content_493.htm
[2] Available at: www.pac.dfo-mpo.gc.ca

- The fundamental scoring units in the MSC certification are the Scoring Guideposts (SG), and they fall under the following hierarchy:
    - Principles > Criteria > Indicators > SGs.
- SGs are separated into 3 ranked categories: 100, 80, and 60.
    - The 100 Guidepost is the highest mark any fishery could be expected to receive.
    - The 80 Guidepost indicates the MSC level of acceptable performance.
    - The 60 Guidepost indicates the minimum threshold allowable in an MSC evaluation.
- In the Draft Assessment, the SGs were assessed as met, partially met, or not met.
- Conditions were imposed on the certification if one or more 80 SGs was not fully met under a particular indicator.

Principle 1 – Fishery Management for Target Populations

Criterion 1.1 – Maintain high productivity of target population & associated ecological community

Of the ten applicable indicators in this criterion seven fail to meet the 60 scoring guideposts, as detailed in Appendix 1 and based on previous analysis by Dr. John Nelson. The most serious failures of 60 scoring guideposts are discussed further below.

Indicator 1.1.1.1 Stock management units 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.

Unique local adaptations associated with genetically distinct units are key to the productivity and resilience of Barkley Sound sockeye. To date, there has not been an adequate assessment of the distinct sockeye populations or sub-populations captured in the fishery, from within the Somass system or adjacent to it. This lack of assessment undermines the credibility of the existing stock management units.

There are 11 draft Wild Salmon Policy conservation units[3] identified for southwest Vancouver Island. Currently, it is not clear which of these conservation units the fishery captures.

Before certification a more clear accounting of the conservation units and/or sub-populations affected by the fishery is required. This problem also affects the outcome of scoring indicator 1.1.1.3 (Geographic distribution known). This information is also necessary to determine success in meeting a number of the other indicators, including management to reference points and recovery of both target and non target units.

[3] Information on the Wild Salmon Policy available here: http://www.pac.dfo-mpo.gc.ca/species/salmon/wsp/default_e.htm

Indicator 1.1.2.2 Reliable estimates of escapement

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.

As identified in the draft assessment, recent escapement estimates for Henderson Lake sockeye are too uncertain to be a useful independent indicator of abundance for this stock. This problem has become even worse over the past four years where Henderson Lake sockeye declines have been most severe, return estimates have been highly uncertain, and potential impacts of the fisheries of greatest concern. Henderson Lake sockeye are directly affected by this fishery, despite attempts to use time/area closures, and therefore "fishery harvests may represent a significant component of the harvest of that stock."

As a result of this problem the 60 scoring guidepost has clearly not been met. Proposed condition 10 is designed to address this problem and if implemented meaningfully would appear to do so.

Indicator 1.1.3.1 Limit reference points

There is general agreement among regional fisheries scientists within the management agency that the LRP's or equivalent are appropriate to achieve the management goals for target stocks.

The 2007 south coast salmon integrated fisheries management plan[4] only identifies a very general limit reference point for Great Central and Sproat Lakes combined of 200,000 fish. It is not clear what the specific management actions are when this LRP is reached or what recovery actions are necessary. In 2007 the total return of Somass sockeye is currently estimated to below the LRP (170,000) and escapement estimates are falling far below this number.[5]

A scientifically defensible process for setting LRP's for all of the target stocks within the fishery is necessary before this indicator is passable. More importantly, a more clear definition of how DFO intends to use this LRP for management of the fishery and recovery of affected stocks is needed. The Wild Salmon Policy has laid out a useful framework for this effort, but has not yet been implemented in this fishery.

Criterion 1.2 – Fishery allows for the recovery of depleted stocks (Target stocks)

Indicator 1.2.1 Well-defined and effective recovery strategy

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.

[4] Available at: http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/MPLANS/MPlans.htm
[5] Based on information provided by Fisheries and Oceans Canada at a November 2007 Salmon Integrated Harvest Planning Committee Meeting

Accepting that Henderson Lake sockeye is a non-target stock, which is problematic given directed fishing, the south coast Integrated Fisheries Management Plan for 2007 does not provide a defined or effective recovery strategy for the existing stock management units. There are no indications of management actions that would be taken if stock levels are low. This is particularly problematic given that the current status of the stock aggregate unit managed by the fishery is below the LRP identified (as discussed in the Indicator 1.1.3.1 above).

The DFO 2008 salmon stock outlook for WCVI sockeye suggests that return of Somass sockeye will be "well below the long-term average of approximately 760,000 combined return to Great Central and Sproat Lake." This leaves Somass sockeye in the "low" or "stock of concern" categories as identified in the stock outlook document. Henderson Lake sockeye are identified in the "stock of concern" category in the 2008 outlook. Given these "low" returns it is evident that Barkley Sound fisheries management must have clear and defensible objectives for recovery before this indicator and criteria could be passed.

Principle 2 – Ecosystem and Non-Target Populations

Criterion 2.2 – Fishery minimizes impacts on endangered, threatened or protected species

Indicator 2.2.1 Information on biological diversity acquired and used

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 current fishing management plan contains no information on the protection of endangered or threatened species. Sea otters and Stellar sea lions are identified as threatened and special concern, respectively, and there is no evidence that current fisheries management has assessed the potential impact on these species (e.g., direct bycatch or food web alteration) or provides any management strategies to manage impacts.

A condition of certification should require an assessment of the potential impacts of the fishery on endangered, threatened (e.g., COSEWIC listed) or protected (e.g., SARA listed) species and clear demonstration of adequate management efforts to reduce these impacts.

Criterion 2.3 – Fishery allows for the recovery of depleted stocks (Non-target Stocks)

Indicator 2.3.1 Provide for recovery of non-target stocks

The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.

The current draft assessment identifies numerous problems in meeting this indicator, but is too liberal in scoring. Four of the six 80 scoring guideposts receive a partial pass, and it is indicated that this is due to the lack of a recovery plan for Henderson sockeye. However, this rationale and further points made in the assessment does not support this level of scoring given and strongly indicates that neither the 60 nor 80 scoring guideposts concerning the probability of achieving long-term recovery of depleted non-target stocks will be met.

Attempts to mitigate the impact of the fishery on Henderson Lake sockeye have failed. Despite attempts to use time and area closures for fisheries targeting target stocks, there is no scientific evidence to indicate that this approach is viable and does not contribute to the continued decline of Henderson sockeye.

As described in the only 2007 Henderson sockeye bulletin provided by DFO[6] escapement has been less than 4,000 fish for at least the last four years, which is unprecedented. Henderson Lake sockeye used to provide many of the targeted sockeye in this fishery and the long-term average escapement is approximately 28,000 fish.

As indicated in the assessment report there is a lack of meaningful escapement goals or LRPs for this stock and returns are not adequately assessed. Despite precipitous declines and a lack of information on the impact on this stock fisheries in the last four years have proceeded.

Significant research and recovery planning work is necessary for this fishery to pass 60 scoring guideposts. The proposed condition (11) is insufficient to meet this concern and would permit ongoing fisheries directly affecting this highly depleted stock.

Principle 3 – Management and Operational Framework

Criterion 3.1 – Management system consistent with MSC principles and criteria

Indicator 3.1.1 Clear and defensible set of objectives

Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks.

[6] Available at: http://www-ops2.pac.dfo-mpo.gc.ca/xnet/content/salmon/sc%20stad/HendersonSockeye/HendersonSock2007-1.pdf

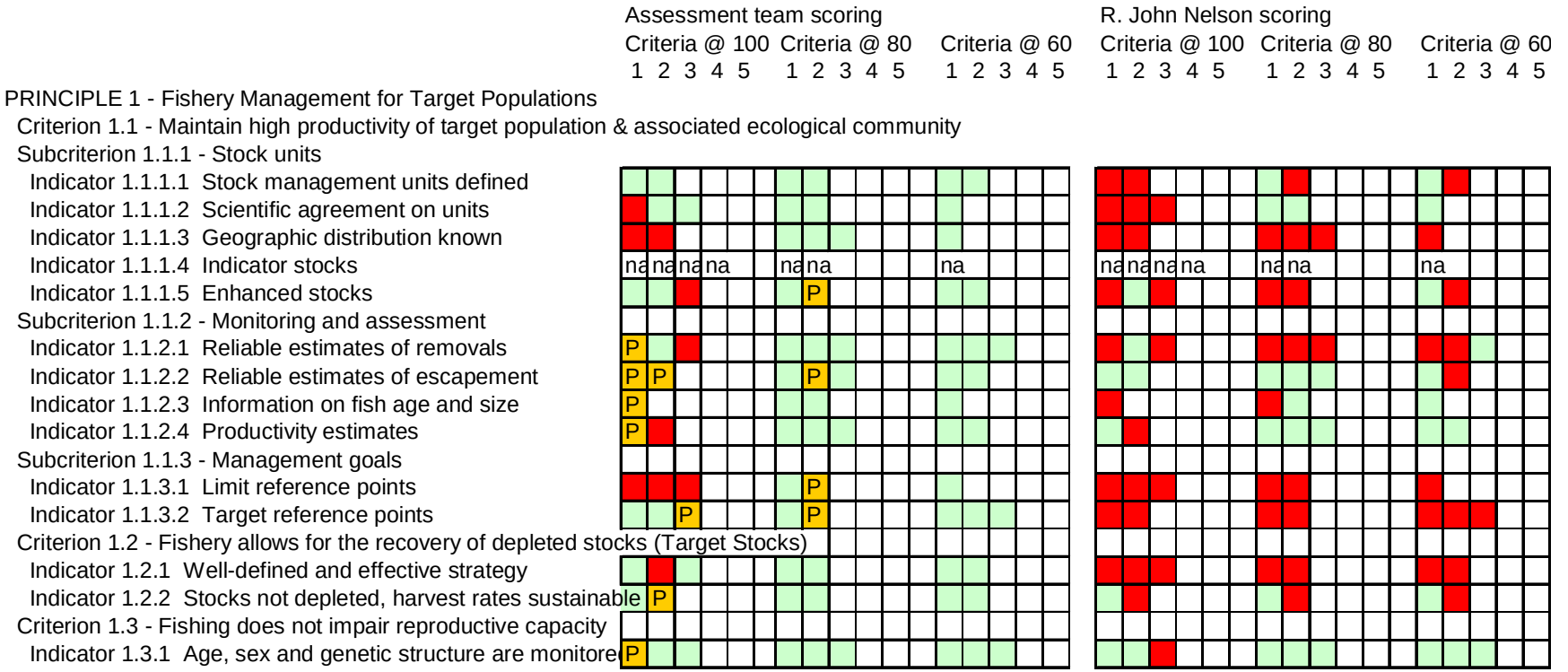
A summary of the issues discussed above clearly identifies problems in meeting this indicator. This fishery lacks an adequate assessment of:

- the diversity of populations caught
- potential impacts to species at risk
- reference points for fisheries management

The fishery lacks clear and defensible objectives for:

- protecting Henderson Lake sockeye
- managing the Wild Salmon Policy conservation units caught in the fishery
- mitigating potential impacts to species at risk

Appendix 1 – Summary of Barkley Sound sockeye scoring




Assessment team scoring
R. John Nelson scoring
Criteria @ 100
Criteria @ 80
Criteria @ 60
Score
1 2 3 4 5
1 2 3 4 5 6
1 2 3 4 5
PRINCIPLE 3 - Management and Operational Framework
Management Framework
Criterion 3.1 - Management system consistent with MSC principles and criteria
Indicator 3.1.1 Clear and defensible set of objectives
Indicator 3.1.2 Periodic assessment of biological status
Indicator 3.1.3 Identify the impact of fishing on the ecosystem
Indicator 3.1.4 Uses best information and precautionary approach
Indicator 3.1.5 Responses to new information are timely and adaptive
Indicator 3.1.6 Responsive to social and economic impact of fishery
Indicator 3.1.7 Useful and relevant information to decision makers
Indicator 3.1.8 Socioeconomic incentives for sustainable fishing
Criterion 3.2 - Framework for research pertinent to management
Indicator 3.2.1 Research plan for target and non-target species
Indicator 3.2.2 Research is timely, available and reviewed
Criterion 3.3 - Transparency in operations and consultation process
Indicator 3.3.1 Open consultations process
Criterion 3.4 - Measure to control levels of harvest
Subcriterion 3.4.1 - Catch and exploitation levels
Indicator 3.4.1.1 Fishery control systems including no-take zones
Indicator 3.4.1.2 Measures to restore depleted fish populations
Subcriterion 3.4.2 - Ensure that conservation objectives are met
Indicator 3.4.2.1 Compliance provisions (effective enforcement)
Indicator 3.4.2.2 Monitoring provisions
Criterion 3.5 - Regular and timely review of management system
Indicator 3.5.1 Internal review
Indicator 3.5.2 External review
Indicator 3.5.3 Recommendations from reviews incorporated
Indicator 3.5.4 Mechanism for resolving disputes
Criterion 3.6 - Compliance with legal and administrative requirements
Indicator 3.6.1 Compliance with international agreements
Indicator 3.6.1 Compliance with domestic laws and regulations
Indicator 3.6.3 Observes legal and customary (First Nation) rights
Fisheries Operational Framework
Criterion 3.7 - Ecosystem sensitive gear and fishing practices
Indicator 3.7.1 Avoid catch and minimize mortality of non-target species
Indicator 3.7.2 No destructive fishing practices
Indicator 3.7.3 Minimize operational waste
Indicator 3.7.4 Cooperation of fishers
Indicator 3.7.5 Fishing methods mimize impacts on habitat
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Appendix 4d – Government Stakeholder comments received during client/ stakeholder draft report comment period

Federal (DFO) and Provincial (British Columbia) government departments provided stakeholder comments to the Certification Body during the client/ draft stakeholder pre-peer review draft report comment period.

The submissions included the following:

- Independent Assessment of BC Commercial Salmon Fisheries. Submitted by: D.D. Radford, A/Regional Director, Fisheries and Aquaculture Management, Fisheries and Oceans Canada, Pacific Region. October 2007.

- Comments on the draft "British Columbia (Canada) Commercial Salmon Fisheries Managed by the Department of Fisheries and Oceans – An Independent Assessment Report". Submitted by Joan Hesketh, Deputy Minister. BC Ministry of Environment. December 2007.

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Your file Votre référence

Our file Notre référence

OCT 2 4 2007

Mr. Chet Chaffee
Project Manager
Scientific Certification Systems Inc
Marine Fisheries Conservation Program
2200 Powell St., Ste 725
Emeryville, CA 94608, USA

Dear Mr. Chaffee:

INDEPENDENT ASSESSMENT OF BC COMMERCIAL SALMON FISHERIES

This is in response to your request for comments on the Independent Assessment of British Columbia (Canada) Commercial Salmon Fisheries dated August 27, 2007. As you are aware, as the managing agency, Fisheries and Oceans Canada (DFO) has worked with the Client and the Assessment Team throughout this evaluation. We are of the view you and the team has captured many of the most important elements in demonstrating the sustainability of the management system for the subject stocks.

As noted in the assessment, we are continuing to make improvements to the management system (e.g. Wild Salmon Policy implementation, Fraser sockeye stock assessment frameworks and ongoing enhancements to catch monitoring and escapement monitoring protocols). Given the delay between review of the sockeye fishery assessment submission July 14, 2004 and completion of the MSC Evaluation Team's report on August 27, 2007 we think that we have already met 16 of the proposed conditions.

I would therefore ask you to reconsider the application of the conditions contained in your August 27, 2007 report. We have grouped our concerns in the remainder of this letter into five categories. In addition we are attaching an appendix that provides further detail for each of the proposed 36 conditions.

1. Additional analysis of Sakinaw sockeye (Conditions 1, 3, 4, 17 and 18)

Some of the proposed conditions relate to undertaking further analysis to make improvements of the stock status of Sakinaw sockeye. This sockeye system has limited data and current returns are now in the range of only a few fish returning annually. The analysis that has been done has been inferred from this limited data set. Other analysis, like Sakinaw

sockeye harvest rates, is based on an inferred run timing curve and associated harvest rates based on other co-migrating sockeye stocks.

The available data has been extensively analyzed and there is little to be gained from either further analysis of this data set or trying to undertake any meaningful analysis given current stock levels. While DFO will continue to monitor this system for salmon status and any habitat perturbations, it is felt that further analysis would be fruitless. It is recommended that sections of Conditions 1, 3, 4, and 18 that provide for further analysis of Sakinaw sockeye be deleted.

As well, regarding Condition 17, the supplementation program for Sakinaw is intended to be fully integrated with natural spawners and is a planned element of recovery. Given the status of the stock, supplementation is seen a necessary part of recovery; at this stage, efforts to undertake studies to detect impacts of supplementation on natural spawning produced returning adults would be costly and in our view, unnecessary given the low returns.

2. Prescriptive Conditions (Condition 9)

There are some conditions where in our view, the condition provided is unnecessarily confined or restricted in order to meet the indicator. For example, in the example of Barkley sockeye, Indicator 1.1.1.5 provides for ensuring that in those situations where enhanced and wild stocks are being fished together, measures are taken to ensure the (presumably more vulnerable) wild stocks are not impacted while fishing for the enhanced stocks. However Condition 9 refers to the need to assess the adequacy of the strontium marking approach to identify the impact on the enhanced Henderson Lake stock. While the low status of this stock is understood and other conditions do reflect on this, in our view this condition is to prescriptive and therefore is inappropriate for this indicator.

3. Conditions that do not reflect the Indicator (Condition 28)

Indicator 3.4.1.2 provides for restoring depleted target stocks to specified levels within specified time frames while Condition 28 references actions related to Cultus sockeye. While DFO acknowledges many responsibilities related to Cultus sockeye (including recovering the stock) throughout the document, this indicator references target stocks; Cultus sockeye is not a target stock and many management measures are taken to avoid or minimize the mortality to these stocks. We believe this indicator should be dropped.

4. Conditions have already been achieved (Conditions 10, 12, 25, 26, 29, 32, 34 and 36)

There are other circumstances where we believe the conditions have been achieved. For example, Condition 10 was based on information provided to the MSC in 2005. Since then, several upgrades have been made to the Henderson Lake sockeye assessment program. The counting fence structure was upgraded in the summer of 2005: panels were improved and a floating structure was put in place to reduce breach events. The mechanical counters were upgraded to pulsar counters and observer calibrations have been conducted regularly to validate the pulsar counts. In addition, swim surveys of Clemens Creek are conducted to estimate spawner abundance through Area Under-the-Curve methods as a back-up to the

fence operation in the event of breaching. Through these efforts, we feel that we are generating reliable escapement estimates for Henderson sockeye.

Condition 12 indicates certification is conditional until there is evidence of the productivity of non-target stocks being considered when the interim Target Reference Point for Somass sockeye was defined. There is a TRP for Henderson sockeye (the only non-target stock of consideration) that was developed using stock-recruit data for that population separate from similar analysis for the target stocks. Therefore this condition should be dropped.

Regarding Condition 25, for Indicator 3.1.4, the only "Yellow" statement in the 100 benchmark references "the management system always evaluating the effect of implementation uncertainty on the effectiveness of the proposed management action" (presumably marked yellow because the Assessment Team did not feel DFO did this adequately). We are of the view that these impacts are measured in season and then as part of the post season review. As well, Condition 25 is unnecessarily restrictive (is the only way the management agency can meet this indicator is to commit to implementing recovery action plans?). Therefore this condition should be dropped.

Finally, regarding Conditions 26 and 32, measures are in place to provide incentives for sustainable fishing. The department undertook a major program to study and implement selective fishing practices in order to reduce by-catch and focus harvest on target stocks. A variety of techniques has been utilized and is now widely adopted by the Pacific fleet. In addition in recent years we have increased enforcement efforts on the Fraser River in particular and hired additional Fishery Officers for the Pacific Region. Catch monitoring improvements, which were not underway at the time of our submission, is an other area where we have increased efforts in recent years. Consequently we don't think that this condition is necessary with these changes, and should be dropped.

There is some uncertainty regarding the evaluation Criteria might be used to evaluate DFO's progress towards addressing Conditions 29, 34 and 36 (dealing with evidence about First Nations issues regarding aboriginal and treaty rights being identified and being addressed through an effective consultation or negotiation process) beyond which is already occurring. While there are a wide range of views on this indicator in BC, and letters from First Nations sent to you reflect some of these feelings, what you are hearing about is disagreements about decisions that are taken and are not necessarily reflective of the indicator which states "The management system provides for the observation of legal and customary rights of First Nations peoples". Accordingly we believe the noted conditions should be removed.

5. Evaluation Uncertainty (Conditions 19)

There is some uncertainty about Condition 19; it is the intent to identify LRPs for Fraser sockeye stocks but the last portion of the condition references developing recovery plans for CU's below the LRP impacted by fisheries targeting on Fraser sockeye. These are 2 quite different tasks. Clarification of this condition is requested.

Thank you for your consideration of the issues we have raised in our letter.

Yours truly,

D. D. Radford
A/Regional Director
Fisheries and Aquaculture Management

cc B. Riddell, A. Cass, D. Dobson, B. Ionson, D. Peacock, P. Ryall, C. Burridge

Appendix 1: Response to August 27, 2007 MSC Report and draft conditions

Fraser Sockeye Table 1.2. Summary of the evaluations for each Principle 1 criteria and indicator for the Fraser sockeye fishery.

Indicator 1.1.1.3: The geographic range for harvest of each stock management unit in the fishery is known.

Condition 1 - Certification is conditional until a review of the run timing and harvest rates for Sakinaw sockeye has been completed and the fisheries management plan is consistent with the goal of minimizing the harvest rate on Sakinaw sockeye (**Fraser Condition #1.1**).

The assessment of timing and harvest rates based on run reconstruction techniques has been completed. Advice for fisheries management has been provided and the fisheries management plan is consistent with the advice as documented in 2007 South Coast IFMP. In particular the guidepost 80 "information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks" is met. For this reason we believe that we have met or exceed the 80 scoring guidepost and therefore no condition is required.

Indicator 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.

Condition 2 –Certification will be conditional until a rigorous review has been completed to confirm that the indicator stocks reflect the status of the other stocks within each management unit (**Fraser Condition #1.2**).

Canada's Wild Salmon Policy (June 2005) and its implementation over the next few years requires the identification of Conservation Units (CUs), conservation benchmarks and monitoring systems to assess status of individual CUs. The current state of each CU within management units will be evaluated to assess status in order to meet the WSP objective of maintaining biodiversity. The management of Fraser River sockeye now routinely uses state-of-the-art DNA stock identification techniques. This reduces the uncertainty in stock composition estimates of CUs in each management unit. Cultus Lake sockeye are severely depressed and cannot be sampled representatively in mixed stock fisheries. The choice of indicator stocks to represent the Cultus Lake sockeye has been agreed upon by the Pacific Salmon Commission and the Fraser River Panel Technical Committee.

Indicator 1.1.2.1: Estimates exist of the removals for each stock unit.

Condition 3 - Certification is conditional until the harvest rate analysis for Sakinaw sockeye has been updated using the best data available and appropriate fisheries management actions are

consistent with the goal of reducing harvest rates for Sakinaw sockeye and rebuilding this depleted stock (**Fraser Condition #1.3**).

See response to Condition 1 and 25. Reconstructed estimates of recent harvest rates on Sakinaw sockeye have been completed. Actions have been taken to protect Sakinaw sockeye and estimates of harvest rates have declined substantially in recent years. For this reason we believe that we have met or exceed the 80 scoring guideposts.

Indicator 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 nontarget stocks.

Condition 4 -Certification is conditional until a review of the relative productivity of Sakinaw sockeye has been completed and the fisheries management plan is consistent with the estimated productivity and goal of rebuilding the Sakinaw sockeye stock (**Fraser Condition #1.4**).

Estimates of relative productivity for Sakinaw sockeye have been completed. Estimates of marine survival rates in recent years have been very low. Harvest rate reductions in conjunction with enhancement and habitat improvements have been implemented by DFO in an attempt rebuild Sakinaw sockeye.

We believe we've met the 80 scoring guidepost.

Indicator 1.1.3.1: Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.

Condition 5 - Certification is conditional until the Conservation Units have been defined for Fraser sockeye using the methods described in Holtby and Ciruna (2007) and LRP's for each Fraser sockeye conservation unit are defined and peer reviewed (**Fraser Condition #1.5**).

A major science peer-review review of the methodology used to identify Conservation Units under Canada's Wild Salmon Policy (WSP) was completed by DFO (June 2007). The next step in the implementation of the WSP will be to develop and peer-review the methodology for establishing benchmarks (i.e. LRPs) for each CU.

DFO is well positioned to meet this condition within 5 years.

Indicator 1.1.3.2: Target Reference Points or operational equivalent have been set.

Condition 6 -Certification is conditional until the Management Units have been defined for Fraser sockeye and the management agency defines the TRP's for each Fraser sockeye management unit taking into account the productivity of target and non-target stocks within each management unit (**Fraser Condition #1.6**).

See the response to Condition 5 and the requirement under the WSP to identify lower and upper benchmarks to evaluate CU status relative to conservation and management objectives. This work is planned over the next few years.

We have met the first criteria under the 80 scoring guidepost and the first part of the second criteria.

Indicator 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.**

Condition 7 - Certification is conditional until the management agency provides a clear commitment to implement the recovery plan for Cultus sockeye and evidence that fisheries management actions are consistent with the recovery goals for Cultus sockeye (**Fraser Condition #1.7**).

Canada's Wild Salmon Policy requires "response teams" to provide recommendations for the protection and restoration of priority CUs like Cultus Lake sockeye. This will result in a strategy to rebuild Cultus Lake sockeye Harvest reductions, pike minnow removal programs and hatchery supplementation have been invoked to increase spawning escapements, improve freshwater survival and increase smolt output.

We believe that we meet the second criteria under the 80 scoring guidepost

Indicator 1.2.2: **Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points for the target stocks.**

Condition 8 - Certification is conditional until the management agency defines the LRP's for the target stocks and the management agency provides documentation that the fisheries have not resulted in escapements that approach or are below the LRP in more than one year in a period of the most recent 5 cycle years, for any of the target sockeye stocks. The intent of this condition is to resolve the effects of fisheries, not other factors, on the stock and to recognize that the Fraser River sockeye undergo cycles so that these cycles must also be taken into account when examining whether the stocks are being maintained above LRPs (**Fraser Condition #1.8**).

No comment on Condition 8.

Barkley Sound Sockeye

Indicator 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 unenhanced stocks.**

Condition 9 - Certification will be conditional until an assessment is completed regarding the adequacy of the strontium marking approach to identify the effect of the Henderson Lake enhancement efforts on non-enhanced stocks (**Barkley Sound Condition #1.1**).

This guidepost was scored at 75. It is not clear that the scoring reflects the intent of the MSC criteria, which would appear to address the issue of over-harvest of wild stocks in mixed stock fisheries targeting hatchery returns. In the Barkley sockeye case, the enhanced Henderson sockeye stock is not the targeted stock. All Henderson fish are avoided through management action (time-area closures) and the allowable catch of Henderson sockeye has not been deliberately increased because it is enhanced. However, notwithstanding this fact, the relative contribution of enhanced stock to the Henderson population has previously been unresolved because of lack of assessment data. Over the last three years, strontium marking of juvenile hatchery sockeye has allowed for assessment of the hatchery contribution by recapturing migrating juveniles in the lake trawl survey and a downstream trap. In addition, juveniles were calcein marked in the May, 2007.

We believe that the 80 scoring guidepost has been met or exceeded.

Indicator 1.1.2.2: Estimates exist of the spawning escapement for each stock unit.

Condition 10 - Certification will be conditional until a more reliable escapement estimates are available for Henderson Lake sockeye (**Barkley Sound Condition #1.2**).

Based on information provided to the MSC in 2005, this guidepost was scored at 77. Since then, several upgrades have been made to the Henderson Lake sockeye assessment program. The counting fence structure was upgraded in the summer of 2005: panels were improved and a floating structure was put in place to reduce breach events. The mechanical counters were upgraded to pulsar counters and observer calibrations have been conducted regularly to validate the pulsar counts. In addition, swim surveys of Clemens Creek are conducted to estimate spawner abundance through AUC methods as a back-up to the fence operation in the event of breaching. Through these efforts, we feel that we are generating reliable escapement estimates for Henderson sockeye.

These upgrades warrant a passing score for this indicator as we meet the first & second 100 scoring guidepost.

Indicator 1.1.3.1: Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.

Condition 11 - Certification will be conditional until a LRP has been defined for Henderson Lake and there is no significant scientific disagreement regarding this LRP (**Barkley Sound Condition #1.3**).

This guidepost was scored at 75. While there is an interim LRP for Henderson sockeye, this LRP is generally not considered reasonable given the available stock-recruit data. Since the original MSC submission, progress has been made toward revising and developing a new LRP

for Henderson. This work will be presented for review to PSARC in the near future as part of an overall stock status review paper. When complete we expect that we will have met the 80 scoring guidepost and therefore this condition can be removed.

Indicator 1.1.3.2: Target Reference Points or operational equivalent have been set.

Condition 12 - Certification will be conditional until evidence has been provided that the productivity of non-target stocks was considered when the interim TRP was defined for Somass sockeye (**Barkley Sound Condition #1.4**).

This guidepost was scored at 75. The interim TRP escapement of 350,000 for Great Central and Sproat Lake, combined, is based on stock-recruit data for those populations analyzed separately. Similarly, the interim TRP of 50,000 for Henderson Lake sockeye was based on a stock-recruit data from that population analyzed separately. Because these analyses were conducted independently, they inherently take into account the different productivity of the stocks. The status of CU's in mixed-stock fisheries will affect the harvest rates allowed for these fisheries, but not the biological reference points determined for either target or non-target CU's.

Based upon the method of calculation we believe that we meet the second 80 and 100 scoring guideposts and thus our score exceeds 80.

Skeena Sockeye

Condition 13 - Certification will be conditional until the LRP's have been clearly defined for the un-enhanced sockeye stocks (**Skeena Condition #1.1**).

No comment.

Indicator 1.1.3.2: Target Reference Points or operational equivalent have been set.

Condition 14 - Certification will be conditional until the management agency provides direct evidence that the productivity of non-target stocks has been taken into account when setting the TRP for the target Babine stock (**Skeena Condition #1.2**).

No comment.

Nass Sockeye

Indicator 1.1.2.2: Estimates exist of the spawning escapement for each stock unit.

Condition 15 - Certification will be conditional until annual escapement estimates are computed for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye (**Nass Condition #1.1**).

No comment.

Indicator 1.1.3.1: **Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.**

Condition 16 - Certification will be conditional until LRP's have been defined for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye (**Nass Condition #1.2**).

No comment.

8.2 MSC Principle 2

Fraser Sockeye

Indicator 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.**

Condition 17 - Continued certification of the Fraser sockeye salmon fishery is contingent upon providing reliable and defensible estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. See also Condition 1, 3 and 4 regarding Sakinaw sockeye, and the need to be able to identify and understand the impact of fish released from a supplementation program to assist in the recovery plan of Sakinaw sockeye and to be able to detect impacts on natural spawning produced returning adults. (**Fraser Condition 2.1**)

Programs are already in place to estimate the number of sturgeon and steelhead kept and released in commercial and First Nations Economic Opportunity fisheries. Furthermore, given the return timing of steelhead to the Fraser River encounters are at low levels and thus is not a significant issue. However, because of mandatory release requirements for these species, estimates of releases are currently based on unverified reports of releases from fishery participants. Improving estimates of fishery impacts on these species would require the implementation of an on-board observer program to provide direct, validated, observations of encounters of steelhead and sturgeon. With sufficient funding, implementing an observer program would be feasible for fisheries with larger vessels (e.g. Area E commercial, FN Economic Opportunity fisheries below Mission). However, fisheries using smaller vessels (e.g. FN Economic Opportunity fisheries above Mission) could not accommodate on-board observers. These fisheries could potentially be monitored with shore-based observers, but only in select locations. Using a direct observer program, release estimates from both Area E and Economic Opportunity fisheries should be available within a week (or less) of a given opening.

Estimates of recent escapements of hatchery and natural Sakinaw sockeye are at levels too low to reliably detect the abundance of Sakinaw sockeye in commercial fisheries.

We believe that we already meet this condition.

Indicator 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)

Condition 18 - Fraser Sockeye Salmon Condition #2. Certification of the Fraser sockeye salmon fishery is contingent upon developing and implementing a risk assessment of the Sakinaw Lake recovery strategy that will include the following items: 1) examination of the risk of differing temporal harvest rates on returning run and its implication on the probability of the recovery of the stock; and 2) refinement and peer review of run reconstruction analysis for Sakinaw sockeye. (**Fraser Condition 2.2)**

Generic run reconstruction techniques are well developed and have been peer review by DFO's Pacific Scientific Advice Review Committee (PSARC). Uncertainty in the output of run reconstruction depends on the quality of input data and parameters. Refinement of key data inputs in the run reconstruction of Sakinaw sockeye have been completed (see Condition 1). The WSP also requires monitoring systems of CUs to assess status. Annual monitoring of the spawning escapements to Sakinaw sockeye is continuing to assess current recovery progress. Recovery has been severely impacted by prevailing low marine survival rates.

Condition 19 - Fraser Sockeye Salmon Condition #3. Certification will be conditional until Limit Reference Points or their equivalent have been defined for Fraser sockeye salmon stocks and recovery plans have been developed and implemented for stocks harvested in Fraser sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing of recover. (**Fraser Condition 2.3)**

We request clarification of this condition. We are not certain whether this condition relates only to sockeye populations within the Fraser River basin, or does it include any CU below there LRP that are impacted by fisheries targeting Fraser River sockeye?

Barkley Sound Sockeye

Indicator 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)

Condition 20 - Barkley Sound Sockeye Salmon Condition #1. Certification will be conditional until Limit Reference Points or their equivalent have been defined for Barkley Sound sockeye salmon stocks, with particular reference to Henderson Lake sockeye and recovery plans have been developed and implemented for stocks harvested in Barkley Sound sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. (**Barkley Sound Condition 2.1**)

This guidepost was scored at 70. Since the original MSC submission, significant progress has been made toward developing a Henderson sockeye recovery plan. First, as mentioned above, an LRP and TRP are being developed for the stock as part of a stock status paper with a target completion date of Fall, 2007. (The first draft has already been completed.) Secondly, a

Henderson sockeye technical working group was convened in 2006 as part of the Henderson Watershed Fisheries Sustainability Planning (WFSP) process. This group has compiled, analyzed and presented recommendations regarding Henderson stock assessment and recovery, largely with the help of a new biologist (David O'Brien) who was hired in Spring, 2006. An 'Options Paper' for recovery is also in preparation with a target completion date for end of July, 2007. In addition, an independent scientific authority was contracted (Dr. Marc Labelle) to estimate harvest rate parameters for Henderson sockeye in the Barkley Sound fishery. This work is near completion and will provide an alternative model for estimating interception of Henderson sockeye to the deterministic run reconstruction model presented for MSC review in 2005. Therefore, in general, the current work-plan outlined for Henderson recovery is similar to what is prescribed in Condition 20. Moreover, progress has been made toward achieving some of the specific goals and we expect that shortly we will be applying to have this condition removed.

Skeena Sockeye

Indicator 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)**

Condition 21 - Skeena Sockeye Salmon Condition #1. Certification will be conditional until Limit Reference Points or their equivalent have been defined for Skeena sockeye salmon stocks and recovery plans have been developed and implemented for stocks harvested in Skeena fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery.. **(Skeena Condition 2.1)**

No comment.

Condition 22 - Skeena Sockeye Salmon Condition #2. Continued certification of the Skeena sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plan must include procedures for determining the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon **(Skeena Condition 2.2)**

No comment.

Nass Sockeye

Indicator 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)**

Condition 23 - Nass Sockeye Salmon Condition #1. Certification of the Nass sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks that are below the LRP and that spawn in the Nass or its tributaries. Such a plan must have clear procedures to determine the impact of the existing fishery management system on these stocks

and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery. (**Nass Condition 2.1**) \

No comment.

8.3 MSC PRINCIPLE 3

Fraser Sockeye

Indicator 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 24 - Certification will be conditional until a clear set of management objectives has been defined and found to be consistent with MSC criteria and measures are taken to reduce the bycatch of sturgeon and improve the monitoring systems used to estimates sturgeon bycatch. (**Fraser Condition #3.1**).

Measures are already in place to reduce sturgeon impacts in the commercial, recreational, and First Nation fisheries in the Fraser River. All commercial Area E, recreational, and First Nations commercial fisheries are mandatory non-retention, and sturgeon releases are included in catch reports from fishery participants. For the First Nation FSC fishery, catch is reported either through a census-based program (which should have 100% reporting), or a creel survey, which will generate a sturgeon release estimate within +/- 20% (this is the level of precision the program achieves for sockeye estimates). New for 2007 Area E commercial fisheries also have census-based catch reporting programs, which should meet the 100% reporting requirement for sturgeon releases. Sturgeon releases from the recreational fisheries are estimated with a creel survey, which will have some error associated with it.

Indicator 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.**

Condition 25 - Certification will be conditional until the management agency provides a clear commitment to implement recovery action plans for Cultus and Sakinaw sockeye (**Fraser Condition #3.2**).

We don't see how the condition matches Indicator 3.1.4. DFO has already demonstrated a clear commitment to recover both Sakinaw and Cultus sockeye using harvest rate reductions in conjunction with enhancement and habitat improvements. Recovery plans have been developed for both Cultus and Sakinaw sockeye. Actions have been in place to protect the majority of the Sakinaw and Cultus sockeye that return each year which are documented in the annual South Coast IFMP. In addition enhancement efforts have been undertaken for both systems by the use of a captive brood enhancement program, freshwater habitat improvement efforts and removal of significant numbers of predatory pikeminnow from Cultus Lake. With the purse seine efforts

used in the last two years we are likely to remove in excess of 25% of the pikeminnow biomass and likely on the order of 40-45%.

This year (2007) we are on schedule for an 80-100 smolts/spawner production from the lake (112 spawners in 2005). This is greater than in recent years where the values were less than 50, but not outside the range of the historical data. So whether this reflects predator control or just interannual variation is not clear. Nonetheless it's encouraging.

DFO has increased research efforts in order to better manage the fishery. Recent examples of this include significant research efforts undertaken on Late run mortality and better understanding of the effect of enhancement and habitat medication efforts being undertaken at Cultus Lake.

Consequently, we believe that we meet or exceed the 80 score for this Indicator.

Indicator 3.1.8: **The management system provides for socioeconomic incentives for sustainable fishing.**

Condition 26 - Certification will be conditional until the management agency provides clear evidence that measures are being implemented to encourage harvesters not to exceed catch targets or exploitation rate limits (**Fraser Condition #3.3**).

Measures are in place to provide incentives for sustainable fishing. The department undertook a major program study and implement selective fishing practices in order to reduce by-catch and focus harvest on target stocks. A variety of techniques has been utilized and is now widely adopted by the Pacific fleet. In addition in recent years we have increased enforcement efforts on the Fraser River in particular and hired additional Fishery Officers for the Pacific Region. Catch monitoring, which was not underway at the time of our submission, is an other area we have increased efforts in recent years. Under the Pacific Fishery Reform program the department has worked with fleets to explore management regimes that provide clear definition of shares and alternative strategies for obtaining those shares (i.e. ITQ's versus competitive access).

We believe that we meet the 2nd scoring guidepost by providing a variety of techniques to that create incentives for harvesters to not exceed target catches or exploitation rates. Examples of these techniques include small bite fisheries, demonstration fisheries, the socio economic incentive being to organize themselves to fish in a sustainable way, or else not fish. Therefore, we have met or exceeded the 80 scoring guidepost.

Indicator 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.**

Condition 27 - Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks and takes into consideration socioeconomic factors and anticipated changes to fisheries. (Fraser Condition #3.4).

The department has just completed a stock assessment framework for Fraser River sockeye. This stock assessment will form the template for research plans within the Pacific Region for salmon. It is planned that over the next year consultation through the advisory process will be undertaken to finalize the assessment framework and begin implementation. In addition the department has conducted a review of science programs in order to focus research efforts and has explored socio-economic impacts of different management objectives under the Fraser Sockeye Spawning Initiative as part of implementation of the Wild Salmon Policy.

We believe that we have met the 4th 80 scoring guidepost

Indicator 3.4.1.2: Provides for restoring depleted target species to specified levels within specified time frames.

Condition 28 - Certification will be conditional until the management agency provides TRP's for the Cultus sockeye salmon stock and an assessment of the probability of recovery and the timing of recovery for Cultus sockeye. (**Fraser Condition #3.5**).

Since the original submission was completed, considerable effort has been undertaken through the Fraser River Sockeye Spawning Initiative (FRSSI) in order to implement the Wild Salmon Policy. In 2007 the department has completed a escapement plan that outlines LRP's and indicators for ensuring that we avoid going below those LRP's. With respect to TRP's an exploitation rate strategy was developed for Fraser River sockeye places a 65% exploitation rate ceiling for all management groups.

We believe that significant progress has already been made for this Indicator and that we are well positioned to meet at least all 80 scoring guideposts within five years through continual refinement and implementation of the FRSSI process as part of WSP implementation.

Indicator 3.6.3: The management system provides for the observation of legal and customary rights of First Nation peoples.

Condition 29 – Certification will be conditional until the management agency provides evidence that First Nation issues regarding aboriginal and treaty rights have been identified and these issues are being addressed through an effective consultation or negotiation process. (**Fraser Condition #3.7**).

In BC the scope and extent of Aboriginal rights is undefined and we are negotiating with First Nations through the treaty negotiations process to define those rights. Though courts have addressed elements of Aboriginal rights and provided tests, uncertainty about these rights still remains.

DFO believes that it is meeting all scoring guidepost for this indicator. We believe that we have met or exceeded the 80 scoring guidepost.

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.**

Condition 30 – Same as Condition 17. Certification will be conditional until the management agency provides reasonable estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. (**Fraser Condition #3.8**).

Duplication of Condition 17 and 24 on Sturgeon. With respect to Steelhead, any releases from commercial, recreational, or First Nations fisheries would be accounted for through the same catch estimation process that is used to estimate sturgeon releases. Additionally, observer programs have been utilized in order to estimate the impact upon steelhead of fall commercial chum fisheries, and some chum-directed First Nations Economic Opportunity fisheries (beach seines). The time-frame for generating estimates of sturgeon and steelhead catch (and releases) varies by fishery, but all fisheries will have estimates available within a month of the fishery occurring. Most fisheries will have these estimates available within a few days.

We believe that these programs are providing good estimates of both sturgeon and steelhead impacts in most fisheries. We will be examining whether further improvements should be made.

Barkley Sound Sockeye

Indicator 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.**

Condition 31 – Same as Condition 20 (**Barkley Sound Condition #3.1**).

This guidepost was scored at 77. Condition 31 duplicates Condition 20, which inherently requires a recovery plan for Henderson sockeye. However, as described above, actions that have been taken since the MSC review shows a clear commitment on the part of DFO to implement recovery plans for Henderson Lake sockeye. A technical working group was convened to provide recovery recommendations, a draft PSARC stock status review has been completed and will contain specific reference to stock LRP and TRPs, a recovery options paper is in preparation, further analytical work has been conducted to accurately evaluate the Henderson interception rate in the mixed stock fishery, a biologist was hired and primarily tasked through 2006 with working on Henderson assessment, and funding has been applied towards these activities and recommendations.

When this work is completed we will be applying to have this condition removed.

Indicator 3.1.8: **The management system provides for socioeconomic incentives for sustainable fishing.**

Condition 32 - Certification will be conditional until the management agency provides clear evidence that measures are being implemented to encourage harvesters not to exceed catch targets or exploitation rate limits (**Barkley Sound Condition #3.2**).

This guidepost was scored at 77. Generally, incentives are provided to harvesters to encourage fishermen to not over-harvest. Probably the most important incentive is flexibility in fishing plans and greater certainty through participation in the Barkley 'Round Table' Harvest Committee. Because this is a table of peers (fishers from different sectors: First Nation, Sport, Commercial), harvesters are accountable and face pressure from other stakeholders to harvest according to manageable fishing plans.

We believe that we meet or exceed the 80 scoring guidepost.

Indicator 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.**

Condition 33 - Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks and takes into consideration socioeconomic factors and anticipated changes to fisheries. (**Barkley Sound Sockeye Condition #3.3**).

This guidepost was scored at 73. It is not clear how the management system is failing at this guidepost. Through other indicators that deal with ecosystem impacts, such as Indicators 2.1.1 to 2.1.4 and Indicators 3.7.1 to 3.7.5, the management system was scored at or near 100 for almost every Indicator. While there is no specific research plan to cover the issues addressed in Indicator 3.2.1, the scoring on the other relevant guidepost seems to suggest there are no serious concerns.

Indicator 3.6.3: **The management system provides for the observation of legal and customary rights of First Nation peoples.**

Condition 34 – Same as Condition 29. (**Barkely Sound Condition #3.4**).

In BC the scope and extent of Aboriginal rights is undefined and we are negotiating with First Nations through the treaty negotiations process to define those rights. Though courts have addressed elements of Aboriginal rights and provided tests, uncertainty about these rights still remains.

DFO believes that it is meeting all scoring guidepost for this indicator. We believe that we have met or exceeded the 80 scoring guidepost.

Skeena Sockeye

Indicator 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.**

Conditon 35 - Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks and takes into consideration socioeconomic factors and anticipated changes to fisheries. (**Skeena Condition #3.1**).

No comment

Indicator 3.6.3: **The management system provides for the observation of legal and customary rights of First Nation peoples.**

Condition 36 – Same as Condition 29. (**Skeena Condition #3.2**).

In BC the scope and extent of Aboriginal rights is undefined and we are negotiating with First Nations through the treaty negotiations process to define those rights. Though courts have addressed elements of Aboriginal rights and provided tests, uncertainty about these rights still remains.

DFO believes that it is meeting all scoring guidepost for this indicator. We believe that we have met or exceeded the 80 scoring guidepost.

BRITISH COLUMBIA
The Best Place on Earth

Reference: 95549

DEC 1 0 2007

Dr. Chet Chaffee
Scientific Certification Systems, Inc.
2200 Powell Street
Suite725
Emeryville, CA, USA 94608

Dear Dr. Chet Chaffee:

RE: Comments on the draft "British Columbia (Canada) Commercial Salmon Fisheries Managed by the Department of Fisheries and Oceans – An Independent Assessment Report"

Thank you for the opportunity to provide comments on the draft assessment report prepared by Scientific Certification Systems, Inc. in response to the BC Salmon Marketing Council's proposal to certify four British Columbia commercial sockeye fisheries under the Marine Stewardship Council's (MSC) program for sustainable fisheries management.

The Government of British Columbia places a priority on high quality fisheries management in its coastal waters. In turn, the British Columbia Ministry of Environment views MSC certification of commercial fisheries as a way to demonstrate the sustainability of these fisheries, and to identify opportunities for further management improvement. The Ministry has provided technical and financial support to the assessment process, and has worked to ensure First Nations, stakeholders and the public were involved.

There is an issue with summer run steelhead interception in the Skeena River commercial sockeye fishery which emerged in 2006 and 2007 that is not reflected in the draft assessment report. The issue of Skeena River summer run steelhead interception needs to be explicitly identified in the MSC conditions and in an Action Plan that will be developed by the Ministry and Fisheries and Oceans Canada.

Sockeye salmon are present in the Skeena River approach waters at the same time as summer run steelhead. During the course of the commercial sockeye and pink salmon gill net and seine net

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fisheries, a portion of the steelhead run is also intercepted. While there is a non-retention regulation for steelhead, survival after gill net release is generally poor. The current BC Salmon North Coast Integrated Fisheries Management Plan specifies a harvest rate ceiling of 37% for early returning summer steelhead and 24% for the aggregate summer run, regardless of the overall run size. These ceilings had not been approached since 1993, however, in 2006 the ceilings were reached, and although the harvest rates were below the ceilings in 2007, both 2006 and 2007 steelhead returns were depressed from recent levels. The Ministry's concern is that these ceilings are too high, are not responsive to low escapement, and have contributed to inadequate numbers of fish reaching the spawning grounds. This in turn has given rise to concerns about the sustainability of Skeena summer run steelhead and the associated economic value of the recreational fishery. Consequently the Ministry and Fisheries and Oceans Canada have agreed to undertake a collaborative post-season review of the appropriateness of these harvest ceilings in meeting the collective management and conservation concerns for steelhead.

The MSC assessment report on British Columbia's sockeye salmon fisheries does not clearly identify a specific issue or condition pertaining to the interception of Skeena River summer run steelhead. The recent low steelhead escapements highlight the need to review and establish, at a minimum, biologically defensible management measures that are sensitive to variations in escapement combined with a stock assessment program sufficiently robust to evaluate the effectiveness of these measures.

With this in mind the Ministry requests the following addition (in italics) to Condition 35: "Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks, *particularly Skeena summer run steelhead interception*, and takes into consideration socioeconomic factors and anticipated changes to fisheries."

The Ministry of Environment and Fisheries and Oceans Canada both agree that a sustainable population of Skeena River steelhead is a high priority in the exchange of correspondence between Minister Barry Penner, Minister of Environment and
Loyola Hearn, Federal Minister of Fisheries and Oceans. The time frame for developing and implementing an Action Plan to address conditions associated with MSC certification is not yet defined. However, the Ministry and Fisheries and Oceans Canada have agreed to establish a process that will incorporate an independent science review and stakeholder consultation. The outcome of this process will identify interim measures for steelhead management and short and long-term requirements for steelhead research and monitoring that will be incorporated in the Action Plan.

With inclusion of explicit references to address Skeena steelhead interception as a condition to MSC certification, and moving forward with an agreed joint federal / provincial Action Plan to address this issue the Province will be able to fully endorse this report.

We look forward to working with you and Fisheries and Oceans Canada to address steelhead interception issues in Skeena River commercial fisheries and appreciate the opportunity to provide comment on the MSC draft assessment report. Please contact me if you have any questions or concerns regarding these comments.

Sincerely,

Joan Hesketh

Joan Hesketh
Deputy Minister

pc: Loyola Hearn, Federal Minister of Fisheries and Oceans
C.C. (Bud) Graham, ADM, Ministry of Environment

Appendix 5 – Peer Review Comments and Responses

February 24, 2009

To: Steve Devitt, TAVEL Certification, Inc.

From: Peer Reviewer 1

Subject: Review of the draft MSC assessment of British Columbia Commercial Sockeye Salmon Fisheries (September 26, 2008)

In mid-December, 2008, I was contacted by Steve Devitt, TAVEL, who requested that I review the Marine Stewardship Council assessment report on British Columbia commercial sockeye salmon fisheries. The draft report was received on January 8, 2009. Supporting documents included the Action Plan (dated December 12, 2008) prepared by the Fisheries and Oceans Canada (DFO) to satisfy conditions of MSC certification, the report of the Skeena Independent Science Review Panel (SISRP), and numerous comments from stakeholders.

General Comments

The review by the MSC Assessment Team was facilitated by documentation and scoring of all MSC Indicators by Fisheries and Oceans Canada (DFO). The Assessment Team reviewed information provided by DFO and critiqued their scores while developing their own independent scores for each indicator.

The report prepared by the Assessment Team was brief and typically provided only one or two sentences to justify indicators that reportedly required a condition in order to meet the intent of the certification. For indicators that did not require a condition (>80 score), there was a score but no description of how this decision was reached. Instead guideposts were color-coded to identify whether the specific guidepost was fully or partially met, or not met at all. Therefore, the reader must examine the original scoring documents by DFO for descriptive information about the fishery. This approach reduced the length and complexity of the assessment report, but it also requires that one continually refer back to the DFO reports in order to retrieve background material and some justification for the scores.

TAVEL> Section 1.2, Interpreting this Report has been added to provide specific explanation of how the team incorporated information from the client submissions. The team has attempted to incorporate additional explanations where necessary to address any identified shortcomings from the peer review process.

This assessment focused on sockeye salmon. Table 1 noted that the original intent was to review all five species of Pacific salmon, but that this goal was reduced to sockeye salmon. The report (P. 2) stated that the MSC evaluation of Alaska salmon fisheries incorporated the Taku and Stikine sockeye salmon runs that extend into Canada. The Alaska review did examine sockeye runs to the Taku and Stikine watersheds but it did not specifically address Canadian fisheries that targeted Taku and Stikine sockeye salmon. The Alaska review focused on the Alaska fisheries.

TAVEL> Section 2 has been modified substantially to include clear definitions on the Units of Certification, definitions for various terms used in salmon fishery management and referred to throughout the report and short descriptions of the fisheries. These modifications included revising Table 1 to provide information specific to the candidate fisheries and has removed any reference to the Taku and Stikine fisheries.

The previous scoring was conducted two years ago in September 2006 (Fraser, Barkley Sound), or three years ago (Nass). Principal 3 was scored in June 2007. Only the Skeena fishery was rescored in June 2008. Thus, two or three years have lapsed since most of the fisheries were reviewed by the Assessment Team. The DFO analyses provided to the Assessment Team were prepared in 2003 or 2004 depending on stock of sockeye salmon. Thus, the assessment is out of date to the extent that the status of some of the stocks may have changed since the initial review. It would be helpful if the Team could state whether or not stock status has changed since the review. Sockeye salmon runs in the Fraser River have continued to decline in recent years, yet the analysis may not account for these current conditions. This is unfortunate because some of the indicators relate to observations, such as escapement levels, during the past five years.

TAVEL> Section 1.1, Certification Process Context, has been added to specifically address the timeline and process constraints that this fishery certification process has faced. Specifically, the team is of the opinion that fishery management performance scoring, the resulting certification conditions and the recommended certification outcomes represented within this report are appropriate for the four evaluated sockeye fishery units of certification.

It was not clear whether or not the Assessment Team had reviewed and approved the DFO Action Plan that addressed each condition. This is an important action because Assessment Team is best qualified to determine whether or not the Action Plan adequately addresses the conditions developed by the Assessment Team. Implementation of these conditions are an important component of MSC certification.

TAVEL> The assessment team reviewed the action plan and subsequent to the peer review, sought further clarification and commitment from DFO on a number of conditions, primarily associated with Recovery plans.

It is noteworthy that many stakeholder comments were quite critical of DFO's management of the mixed stock fisheries and they suggested that the fisheries should not be provided with certification by MSC. Alternatively, the fishing industry commented that the assessment was too critical.

The Assessment Team has identified a number of key issues in each fishery that need to be improved in order to meet MSC standards for certification and to sustain both target and non-target stocks. The conditions identified by the Assessment Team were typically justified and consistent with the scoring guideposts. An Action Plan was developed by DFO to address each condition. The next key effort is to determine whether DFO actions are consistent with these conditions. Presumably this effort would occur during the annual surveillance, assuming the fisheries are certified.

TAVEL> The intention of the clarifications sought in May 2009 was to improve the language of the DFO Action plan, specifically regarding the commitments to implement recovery actions. Completion of Action Plan tasks and subsequent rescoring of performance indicators will be evaluated during the annual surveillance audits.

Fraser River Sockeye

Principle 1

The management agency (DFO) scores were typically quite high, indicating that the agency thought they were consistently meeting most criteria for good management, as define by MSC guidelines. In contrast, the Assessment Team typically scored the MSC Indicators at a much lower score. The lower scores by the Assessment Team stemmed primarily from their consideration of two very depressed sockeye salmon stocks—Sakinaw sockeye, which is located in the Sunshine Coast, and Cultus Lake sockeye which is located in the lower Fraser River and is harvested incidentally with stronger late run wild (e.g., Adams) and enhanced (Weaver spawning channel) sockeye salmon. The scores by the Assessment Team appeared to be reasonable and justified relative to the higher scores provided by DFO.

Scoring of Indicator 1.1.1.5 appeared to be somewhat high because the weak Cultus stock is harvested along with Weaver Creek (spawning channel) sockeye salmon. However, the DFO stated that harvest rates had been reduced by 40% in order to reduce fishing effects on the Cultus sockeye salmon. The question remains as to whether this reduction is sufficient.

TAVEL> The intention is that the effect of the reduced fishing effort on the recovery of the Cultus stock would be evaluated during the annual surveillance process.

The Assessment Team identified seven conditions that must be met within 5 years. Most of these conditions related to Sakinaw and Cultus sockeye salmon. The conditions appear to be reasonable and they reflected the guideposts that were not fully achieved. Given the ongoing decline in Fraser sockeye, the Assessment Team should determine whether or not these conditions should be applied to other stocks in the Fraser River watershed.

TAVEL> At this time, there is no intention to incorporate extension of these conditions to other Fraser River stocks. However, should this become necessary during annual surveillance audits, the certification process for issuing additional conditions for certified fisheries has been defined and can be used.

Action Plan An Action Plan was developed by DFO to address the MSC conditions. The Action Plan indicated some of these conditions have been addressed and that documentation will be forthcoming. Implementation of the Wild Salmon Policy (WSP) is important to many of the conditions placed on the Fraser and other sockeye salmon fisheries. Problems or issues with the conditions were not identified by DFO, although the Action Plan did note that abundance of Cultus sockeye was so low in the mixed stock fishery that Cultus sockeye salmon could not be representatively sampled in the mixed-stock fisheries.

TAVEL> DNA samples are obtained from test and commercial fisheries are used extensively in the management of Fraser sockeye fisheries. In most years, the abundance of Cultus sockeye relative to other co-migrating Fraser sockeye stocks is too low to be representatively sampled in the mixed-stock fisheries, therefore, managers have substantially reduced fishing opportunities and harvest rates during the period that Cultus stocks are believed to be present in these fisheries.

Principle 2

The Assessment Team found the management system to be responsive to ecosystem needs in most instances. This assessment appeared to be reasonable. Two key conditions were placed on the Fraser River fishery in order to improve assessment of impacts on weak sockeye salmon stocks and bycatch of non-target species, e.g., steelhead. These conditions are reasonable. DFO addressed these conditions in their Action Plan. They noted that maximum allowable harvest rate goals (i.e., limit reference points) for Sakinaw and Cultus sockeye salmon were 12% and 20%, respectively. However, it is not clear whether run reconstruction efforts indicate that the fisheries harvested these stocks at the maximum harvest rate goal or less.

TAVEL> The intention is that the effect of the reduced fishing effort on the recovery of the Cultus stock would be evaluated during the annual surveillance process. These maximum allowable harvest rate goals for Sakinaw and Cultus have only recently been defined. It will be important to assess during the surveillance process whether or not these goals are achieved and if they have provided an assessment of the harvest rates that meets peer review standards.

Action Plan The DFO Action Plan stated that it will develop limit reference points (LRPs) for all non-target stocks (CUs) by 2011. It is not clear why it will take so long to developed these LRPs. Presumably implementation of fishery management actions to achieve these LRPs will be developed as part of the Wild Salmon Policy, as implied by the Action Plan. Furthermore, evaluation is needed to monitor stock status and to determine whether the LRP targets are achieved each year.

TAVEL> Under the WSP, DFO has committed to defining lower and upper benchmarks for all Canadian Pacific salmon CUs. The process for assessing stock abundance and historical trends for each CU has only just begun. These facts combined with DFO's extensive consultation process make it unrealistic to expect DFO to define the LRP's for all non-target stocks (CUs) before 2011.

Principle 3

The scoring and seven conditions for certification were appropriate with regard to the MSC scoring criteria.

Action Plan For many of the conditions, the DFO refers to the Wild salmon Policy (WSP). The timeline for completion of some of the plans is long, e.g., December 2011. Thus, progress reports will be needed to see if WSP is being implemented as indicated in the Action Plan.

Condition 26 refers to the First Nations treaty which provides an avenue for defining allocations among user groups, but it is not clear whether the new IFMPs will incorporate this information.

TAVEL> There are two First Nation Treaties currently in place (Nisga'a and Tsawwassen). Each Treaty defines the salmon allocation for these groups and the appropriate IFMPs have incorporated this information and First Nation management plans into the fisheries planning process.

Barkley Sound

Principle 1

The scoring and several conditions for certification were appropriate. Most conditions involved Henderson Lake sockeye salmon, which is a non-target stock with low productivity. However, the Action Plan noted that hatchery production was eliminated in 2007, therefore it makes sense that Condition 9 be eliminated.

> **TAVEL>** The intention is to confirm the status of the hatchery during the first surveillance audit visit. Once we can confirm that production is eliminated, then we will rescore as necessary. The condition would remain in effect if in the future the hatchery production is resumed.

The Assessment Team noted that production of sockeye salmon in Henderson Lake, a lake with low productivity, is substantially below historical levels and states that fishing has likely had a significant role in its decline (p. 91). This question raises the question of whether the fishery management process has sufficiently changed so that another sockeye stock will not be overharvested. This type of question is not easily addressed in the structured format of the MSC assessment, but the Assessment Team did note that enhancement (lake fertilization) of Sprout and Great Central lakes and increased abundance and harvests of these stocks may have contributed to its demise. According to the Assessment Team, current management is likely to prevent further depletion of Henderson Lake sockeye salmon.

> **TAVEL>** Again, the intention of the Certifier is to confirm the status of the fertilization program during the first surveillance audit and to determine if the fisheries management actions allow for harvests while allowing Henderson Lake sockeye to recover.

Principle 2

Scoring of Principle 2 indicators was reasonable. The key condition for Barkley Sound involved development of a LRP (or equivalent) for Henderson Lake sockeye salmon. This condition is reasonable because the stock is depleted and it is harvested incidentally in mixed-stock fisheries. Development of an LRP should help protect this stock if it is utilized by managers.

Principle 3

The scoring and four conditions for certification were appropriate with regard to the MSC scoring criteria. Two of the conditions were identical to conditions associated with other indicators.

Skeena River

Principle 1

The scoring and five conditions for certification were appropriate with regard to the MSC scoring criteria. The revised scores accounted for issues raised by the Skeena Independent Science Review Panel (SISRP) with regard to estimating incidental harvests of steelhead, evaluating the effects of spawning channel sockeye on wild sockeye salmon, estimating escapement for 15 sockeye CUs that currently have inadequate data, and estimating and accounting for productivity of non-target stocks when setting the TRP for the target Babine stock. The conditions were consistent with comments and recommendations provided by the SISRP report.

Estimating relative productivity of some non-target sockeye salmon stocks may be difficult if the stocks cannot be identified in the harvests, but escapement levels could be monitored. The ultimate goal here should be to ensure that the non-target stock are not severely over fished while fishing on targeted stocks (e.g., Condition 13c).

As indicated by SISRP, the target and non-target sockeye salmon stocks are harvested in nearby and distant ocean fisheries. These harvests should be incorporated into the target reference point (TRP) analyses for Babine sockeye. The management process should examine tradeoffs associated with the differing productivities of target and non-target stocks, where non-target stocks include all species that may be significantly captured in the fishery. This is not to say that all non-target stocks should be managed for MSY, as that is unrealistic.

Action Plan. Indicator 1.1.1.5 (enhancement impacts) received a low score (60 pts) that was barely passing, and the associated Condition 13 required a peer reviewed analysis involving the effects of spawning channel salmon on non-target salmon and development of TRPs and LRPs. This is a key issue in the Skeena River and it is not clear why this analysis will not be completed prior to December 2011. An important task by the surveillance Team will be to evaluate the progress of this condition each year.

> **TAVEL>** While the assessment team accepted the action plan, it was acknowledged that the timeline was longer than desired but probably realistic in terms of the available resources for DFO.

It is not clear why a catch monitoring framework for steelhead cannot be developed for review by PSARC prior to December 2010 (Condition 13a). Two years seems to be a long time to prepare a monitoring program for review. When would it be implemented? As a major recommendation by SISRP, it seems a plan could be developed and implemented in the 2009 fishery. Likewise, it is unclear when DFO will implement Condition 13b (escapement and fall fry monitoring): does in begin in 2009, or does it wait for the PSARC review in 2011? In Condition 13c, it is not clear why the review of relative productivity will be delayed until December 2011, unless DFO is planning to collect new data during this period. Data collection needed for this review was not described in the Action Plan.

TAVEL> The desire to implement a new Skeena Watershed fisheries consultation body (Skeena Watershed Initiative Technical Working Group) has substantially delayed the implementation of most of the recommendations of the Skeena ISRP.

Principle 2

The scoring and three conditions for certification were appropriate with regard to the MSC scoring criteria. The Assessment Team noted the difficulty with addressing an indicator that required a statement about the probability of recovery (50% vs. 60% probability). Their response is reasonable.

Action Plan. The DFO Action Plan described an interim measure in 2008 to reduce Canadian exploitation rates to 20-30%, which is a 30-50% reduction from recent decades averages. This measure indirectly addresses this condition. However, post-season evaluation is needed to see if this measure was achieved. Although DFO described some measures to reduce harvests on non-target sockeye and chum salmon stocks, it did not state whether or not it would develop formal plans for recovery of these stocks. It is possible such plans are covered by the Wild Salmon Policy, and if so, it should be described in the Action Plan.

The Action Plan (p. 20) did not state whether it would develop LRPs for sockeye salmon stocks, but it did note that this is a requirement of the Wild Salmon Policy (p. 8). Development of these LRPs is an important step in fulfilling the MSC conditions.

Principle 3

The scoring and seven conditions for certification were appropriate. Several of the conditions were similar to previous conditions. Condition 35c, which requires selective fishing practices, is an important action to reduce impacts on non-target species such as steelhead. Implementation of selective fishing practices, enforcement, and research to determine survival of released fish are important actions in this controversial fishery.

The fishing industry disagreed with conclusions that the fishers were not accurately reporting catch and discards of steelhead and other non-target species. Documentation of bycatch is an important issue. The condition is appropriate because it requires a level of confidence in the reporting of bycatch, which is a controversial issue among the user groups.

Indicator 3.6.2 appeared to have an incorrect score in Table 3.4.

Nass River

Principle 1

The scoring and two conditions for certification were appropriate. The conditions focused on information to evaluate and protect the smaller stocks.

Principle 2

The scoring and one condition for certification were appropriate. The Assessment Team identified chum salmon as a depressed stock. In its Action Plan, DFO concurred that it would develop LRPs for chum salmon and develop a recovery plan.

Principle 3

The scoring was appropriate. No conditions were required for Principle 3 of the Nass sockeye salmon fishery.

TO: **Steve Devitt, TAVEL Certification**

FROM: **Peer Reviewer 2**

DATE: **February 20, 2009**

SUBJECT: **Review of MSC Assessment,**
British Columbia Commercial Sockeye Salmon Fisheries

Overview

This memorandum summarizes scientific review comments on the adequacy of the assessment Team's interpretation of the MSC Fishing Standard and the assessment of the candidate fishery in the 12/31/08 Rescore Draft of the Certification Report. My review also included:

- 2004-2005 client and stakeholder submissions from Stage 3 information gathering, stakeholder meetings and scoring found at (http://www.msc.org/track-a-fishery/in-assessment/pacific/british-columbia-sockeye-salmon/assessment-downloads).
- Summaries of the public and first nation email comments on the pre-peer reviewed draft report provided by the lead auditor (Aug 07).
- Public and stakeholder comments on the pre-peer reviewed draft report.
- Department of Fisheries and Oceans comments on the pre-peer reviewed draft report.
- Province of British Columbia comments on the pre-peer reviewed draft report.
- Draft action plan to address conditions for certification.
- Report of the Skeena Independent Science Review Panel.
- Client comments on Rescored Draft Report.

This review focuses on: 1) the adequacy of descriptions of background information in terms of informing the reader about the fishery, the MSC assessment process, and the evaluation Team's conclusions and recommendations; 2) whether the written text in the scoring notes/rationale section under each performance indicator adequately describes the information reviewed, the assessment Team's conclusions as drawn from the information provided, and the assigned scores appear logically consistent with the written explanation; and 3) whether the scores and rationale provided in the report take appropriate consideration of the broad issues of sustainability considered in the certification process.

Clarity & Adequacy of Background Information

The draft certification report effectively describes the application of the MSC assessment process to the BC commercial sockeye salmon fisheries. Summaries of the certification development and review process, data received from the client on fishery performance, stakeholder involvement, and stakeholder comments were particularly helpful for understanding the chronology and depth of review for this fishery. These included descriptions of certification activities in Section 7.0 (pages 6-11); information reviews, meetings, and interview in sections 7.5 and 7.6 (pages 59-63); and certification assessment transition and formulation of conditions and corrective action plans in Section 8.0 (pages 65-67). As an editorial note, report clarity might be enhanced by aggregating all of this scattered process-related material together in the beginning of Section 7.0.

TAVEL> Much of this information is specifically located in MSC defined sections of the report. A narrative has been added to Section 1 to provide some context for the assessment process and the report.

The units of certification are defined to include fisheries targeting stocks returning to the Fraser, Skeena and Nass watersheds and Barkley Sound. Descriptions of the fisheries and management system are quite brief. Rather than including extensive descriptions and summaries, the certification report relies on descriptions and explanations included in client submissions for each fishery and MSC evaluation principle. The client submission was very conducive to assessing the fishery performance indicator by indicator as noted in the report (pg. 59). This material included brief summary descriptions of information pertinent to each indicator and was extensively supported with citations to related reference material. Most or all of the pertinent information appears to be detailed in client submission or references but the lack of a more comprehensive and detailed overview of the fisheries and management system in the report makes it difficult for a reader (or reviewer) without specific knowledge to understand the context for the evaluation. Inclusion of additional summary descriptions in sections 2 and 3 would substantially improve the clarity of the report. In particular, the certification unit fisheries should be more clearly identified with respect to fishing area, timing, and gear.

TAVEL> As now indicated in Section 1.2, to be properly interpreted, the certification report must be read concurrently with the client/ DFO submissions for each Unit of Certification. Inclusion of all the submission information into the Certification report would be cumbersome and duplicative.

However, Section 2 has been modified substantially to include clear definitions on the Units of Certification, definitions for various terms used in salmon fishery management and referred to throughout the report and short descriptions of the fisheries.

Some clarification of target and non-target stocks would be helpful in section 2. The certification unit and Table 1 suggest that all sockeye stocks returning to the Fraser, Skeena and Nass watersheds and Barkley Sound are target stocks. The stock listings in the client submission material also inclusively identify all sockeye stock units subject to the fisheries. However, some individual sockeye populations are treated as non-target stocks under the performance indicators (e.g. some Skeena sockeye under indicator 1.1.2.2 on page 84, Cultus sockeye under indicator 2.3.1 on page 96-97). Table 1 also identifies pink, chum, Chinook and coho as target species which further confuses the issue. Other species such as steelhead are not explicitly identified as non-target stocks but are treated as such.

TAVEL> Section 2 has been modified to incorporate the suggested changes.

The assessment is based on a thorough set of criteria and indicators with specific guideposts for scoring. Key terms used in indicators are explicitly defined. The criteria and indicators describe a very high standard for certification. Criteria appear to have been described and applied consistent with other salmon certification assessments including the 2007 reassessment of Alaska's commercial salmon fisheries[3], the 2005 assessment of the California Chinook salmon

[3] http://www.msc.org/track-a-fishery/certified/pacific/alaska-salmon/assessment-downloads-2/Final_Cert_Report_Oct07.pdf

fishery[4], and the current assessment of Iturup Island pink and chum salmon fisheries[5]. The exception is that the BC assessment did not incorporate two management system criteria addressed by the other salmon certifications. These were 3.1.9: *The management system has taken significant steps to protect salmon habitat including water diversions and agricultural practices* and 3.1.10: *The hatcheries use management practices and protocols that sustain the genetic structure and productivity of the natural spawning population and there is coordination between hatchery programs from different agencies/operators*. Both of these indicators would have been pertinent to stakeholder comments regarding enhancement including the effects of fish farming and the enforcement and compliance of existing habitat protection requirements. The additional indicators may have been incorporated into the MSC review process for salmon subsequent to the initiation of the BS sockeye process. In any case, an explanation of the differing certification standards would be appropriate for inclusion in the assessment report.

TAVEL> An explanation that the BC sockeye performance indicators were developed prior to these subsequent fishery evaluations and as such did not incorporate these specific PIs has been added to Section 1.1 of the assessment report.

Assessment Results

Principle I

Assessment results included summaries for indicators where each fishery met or exceeded the 80 scoring guidepost and additional detail on the indicators that did not achieve the 80 scoring guideposts. Details included identification of guideposts that were met, partially met, or not met, and a few sentences of explanation for guideposts that were not met. As with the background descriptions of the fishery, this section relies on descriptions and explanations included in client submissions for each fishery and MSC evaluation principle. By implication, this appears to suggest that the explanation in the client submission was deemed to be adequate and accurate by the assessment team. However, there are numerous scoring differences between the client submission and the certification report without an explanatory rationale. It is sometimes unclear whether differences were based on review of additional information, differences in interpretation of the descriptions summarized in the client submission, or differences in interpretation of the guideposts. No specific explanations are provided regarding the 60 scoring guideposts. Explanations included where 80 scoring guideposts are not met are very brief.

This brevity of explanation makes it difficult to determine what information led to a conclusion and whether the score assigned to each performance indicator is logically consistent with the scoring guidelines. The need for explanation is particularly important for scores close to the margin or those called into question by the client or stakeholders. Assessment transparency would be improved with additional explanation of the rationale for specific scoring decisions. Explanations should include rationales for why 60 guideposts are met, descriptions of what information led to different conclusions of the assessment team and the client regarding 80

[4] http://www.msc.org/track-a-fishery/in-assessment/pacific/california-chinook-salmon/assessment-downloads-1/PIs_Draft_CS.pdf

[5] http://www.msc.org/track-a-fishery/certified/pacific/alaska-salmon/assessment-downloads-2/Final_Cert_Report_Oct07.pdf

scoring guideposts, and sufficient detail in explanation to address questions or issues identified in stakeholder comments.

TAVEL> Section 1.2, Interpreting this Report has been added to provide specific explanation of how the team incorporated information from the client submissions. The team has attempted to incorporate additional explanations where necessary to address any identified shortcomings from the peer review process.

Principle II

Assessment results included detailed summaries of results and a discussion of conclusions. These summaries did an excellent job of providing an information context for the discussion and are substantially more developed than the Principle I and III explanations. Detailed explanations were provided for performance indicators scoring less than 80. Scores assigned to each performance indicator appear logically consistent with the written explanation and the scoring guidelines for each performance indicator with the exception noted below.

Principle III

Assessment results identified indicators where each fishery met or exceeded the 80 scoring guidepost and addressing in greater detail the indicators that did not achieve the 80 scoring guidepost. Details included identification of guideposts that were met, partially met, or not met, and a few sentences of explanation for guideposts that were not met. This brevity of explanation makes it difficult to determine what information led to a conclusion and whether the score assigned to each performance indicator is consistent with guidelines for each performance indicator. Explanations in this section do make specific reference to stakeholder comments and provide additional discussion related to those issues. Assessment transparency would be improved with additional explanation of the rationale for specific scoring decisions consistently throughout this section.

TAVEL> Where appropriate, the team has tried to incorporate additional information to enhance explanations and rationales in the specific scoring decisions.

Comments on specific indicators

Fraser – Indicator 1.1.1.4. The explanation is confusing. It indicates there is not complete agreement among regional scientists outside the management agency regarding the adequacy of the indicator stocks but also suggests there is not significant disagreement regarding the stocks used. Is there disagreement or not, and if not what is the nature of the disagreement?

TAVEL> Part of the confusion here is because two of the evaluation criteria under this indicator are identical (i.e. the first evaluation criteria under SG60 and the second evaluation criteria under SG80). The performance colour for the second criteria at the 80SG: "There is no significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery." has been coloured (green) the same as it was scored at the 60SG.

While the team concluded that was no significant scientific disagreement regarding the indicator stocks used, there remains a need to assess the degree to which these

stocks represent the status of the other stocks within each management unit (i.e. run timing group). Hence, the first evaluation criteria under SG 80 has not been fully met. The score for the performance indicator and the defined condition have not been changed.

Barkley Sound – Indicator 1.1.1.5. Additional explanation is needed for the 60 scoring guidepost regarding the scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of un-enhanced stocks given the observation that the available data is not adequate to determine the effect of the enhancement initiative on un-enhanced stocks.

TAVEL> While the numbers of sockeye fry produced by the Henderson Lake hatchery were probably too low to have a significant effect on the unenhanced stock, the team wanted to see a more rigorous analysis of the contribution of hatchery fish to the total return, if enhancement efforts were continued.

The scoring rationale has been improved to reflect this detail.

Skeena – Indicator 1.1.1.5. Clarification is needed for the basis for meeting the 60 scoring guidepost "managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of un-enhanced stocks within each stock unit." The score appears to be inconsistent with accompanying explanation that the primary target for Skeena sockeye fisheries are enhanced Babine sockeye and these fisheries have had a significant impact on the Skeena's wild sockeye stocks and other co-migrating salmon and steelhead. Enhancement--related guideposts in Indicator 1.3.1 need to be similarly addressed.

TAVEL> Historically, the fisheries targeting the enhanced Babine sockeye have had a significant impact on the Skeena's wild sockeye stocks, however, recent harvest rates are significantly reduced from historical levels and managers have indicated that the available stock-recruitment data provides a scientific basis that current harvest rates set for the mixed-stock fisheries should not adversely affect the majority of un-enhanced stocks within each stock unit (i.e. Babine and non-Babine sockeye).

This clarification has been added to the scoring rationale. There has been no change to the score or condition.

Skeena – Indicator 1.1.2.1. Clarification is needed for the basis for meeting the 60 scoring guidepost "catch estimates are available for non-target stocks where the catch of non-target stocks may represent a significant component of that stock." It is not clear from the client explanation for this indicator whether the lack of information refers to catch, exploitation or impact rate. The accompanying explanation would appear to suggest that this indicator is not met due to the lack of information on catch or exploitation rates of steelhead in Skeena sockeye target fisheries that are thought to represent a significant component of the harvest of the steelhead stock. The corresponding 80 and 60 guideposts are worded exactly the same for this indicator. The assessment indicates the 80 scoring guidepost is not fully met. Thus, the same 60 scoring guidepost must not be met either.

TAVEL> The 80 and 60 guideposts are not worded exactly the same. The second guidepost for the SG60 reads *"Catch estimates are available for non-target stocks where*

the catch of the non-target stocks may represent a ***significant component of that stock****."* The second guidepost for the SG80 reads *"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****."*

While the steelhead bycatch in fisheries targeting Skeena sockeye can represent a significant portion of the harvest of Skeena steelhead, the steelhead harvest rates are believed to be relatively low, and thus a much less significant component of the steelhead stock in most years. However, there is a need to improve the current catch and harvest rate estimates.

This clarification has been added to the scoring rationale. There has been no change to the score or condition.

Skeena – Indicator 1.1.2.2. Clarification is needed on the availability of escapement data and the basis for meeting the 60 scoring guidepost for non-target stocks of salmon and steelhead other than sockeye. Clarification is also needed of the basis for meeting the 60 scoring guidepost for non-target sockeye stocks given the accompanying explanation that fishery independent indicators are not sufficient to define escapement trends or assess stock status for roughly half of the sockeye stock units. The corresponding 60 and 80 guideposts are worded the same for this indicator, except for the 60 guidepost qualification referring to stocks where fishery harvests may represent a significant component of that stock. The explanation does not identify whether the fishery harvests may represent a significant component of that stock and the basis for that conclusion.

TAVEL> There are fishery independent indicators of abundance for non-target stocks (i.e. non-Babine stocks). The shift towards management by conservation units (CU), would require more information on the abundance within each CU. This is flagged as a gap in the current annual stock assessment program that is supposedly going to be filled through the DFO commitment to implement the approaches defined in the Core Stock Assessment Review for North and Central Coast salmon stocks.

Additional clarification has been added to the scoring rationale. There has been no change to the score or condition.

Skeena – Indicator 1.1.3.2. Clarification is needed on the basis for meeting the 60 scoring guidepost "the management agency has taken into account the relative productivity of non-target stocks when setting the TRP's for the majority of target stocks" given the explanation that the TRP for the Babine stock does not take into account the productivity of non-target stocks.

TAVEL> The current TRP for the target Babine sockeye stock is substantially higher than the optimum for Babine enhanced stocks and as a consequence of the elevated TRP, the fishery typically harvests a large portion of the available catch within the Babine watershed resulting in reduced harvest pressure on non-Babine stocks in the mixed-stock fisheries.

Skeena – Indicator 2.1.1. Clarification is needed on the basis for meeting the 60 scoring guidepost "data on bycatch in the majority of fisheries are available to determine impacts to non-target species" given the explanation that estimates of steelhead exploitation rates are unreliable but likely to be high.

TAVEL> The 60SG is passed because there is data on bycatch of steelhead and these data indicated that the Skeena sockeye fisheries represent known high bycatch of steelhead. The condition is necessary because there is a need for an ongoing monitoring program and these types of programs have not been consistently conducted in the past.

Additional clarification has been added to the scoring rationale. There has been no change to the score or condition.

Fraser – Indicator 3.1.4. Additional clarification is needed of the apparently contradictory statements in 3.1.4 and 2.3.1 regarding conservation and recovery of depleted Cultus Lake sockeye. On page 97 it is stated that "the current management system has adequately addressed the likelihood of recovery of Cultus Lake sockeye by conducting a risk analysis." However, page 115 includes the statement "the management agency has not shown a clear commitment to define and implement action plans for two sockeye stocks (Cultus and Sakinaw) where precautionary measures are necessary to manage Fraser sockeye fisheries."

TAVEL> The Team's statements in 3.1.4 and 2.3.1 are not contradictory, DFO has done the analysis and developed the recovery plan but the team has not seen a document that shows their clear commitment to implementing the recovery action plans for Cultus and Sakinaw sockeye.

There has been no additional clarification added to either performance indicator (3.1.4 or 2.3.1).

All – Indicator 3.1.6. Additional clarification is needed on the basis for meeting guideposts concerning the management system process for considering social and economic impacts of the fishery, particularly in light of the stakeholder concerns regarding this issue. The client submission includes a description of the allocation policy and process. The assessment appears to assume that this explanation satisfies this indicator but provides no specific explanation.

TAVEL> The 80 scoring guideposts are met because of the extensive consultation procedures undertaken by DFO with regard to: First Nation's FSC fisheries, the distribution of commercial harvest opportunities across the BC coast and their ongoing socioeconomic analyses associated with First Nation treaty negotiation, fleet rationalization, and assessment of recreational fisheries. While there are subsidies to the fishing industry, there is no evidence that these subsidies have lead to unsustainable fishing or ecosystem degradation.

There has been no additional clarification added to PI 3.1.6 under any of the candidate fisheries.

Fraser – Indicator 3.7.4. Additional clarification is needed on the basis for meeting the 60 scoring guidepost "catch and discard data provided by the fishing industry and other relevant stakeholders are sufficient to manage harvests from the majority of the non-target species" relative to the explanation that the number of complying fishers is not sufficient to provide reliable estimates of total catches and discards for steelhead.

TAVEL> The Team's opinion is that the catch reporting is sufficient to manage the majority of non-target species harvested. While it is important that the catch reporting be improved for Fraser sturgeon and steelhead caught in Fraser sockeye fisheries, these species do not represent the majority of the non-target species harvested in Fraser sockeye fisheries.

Additional clarification has been added to the scoring rationale. There has been no change to the score or condition.

Consideration of Sustainability Issues

The assessment appears to have correctly identified key sustainability issues prevalent in Pacific salmon fisheries, including the British Columbia sockeye commercial fishery, and has identified a series of remedies to address those issues. The assessment described an extensive public review process that provided an opportunity to highlight any concerns or issues that may not have been obvious in the review of the client submissions. At the request of the stakeholders, the assessment process made extra effort to provide access to the available information. The assessment team obviously considered stakeholder comments and went so far as to reconsider and rescore several areas where new information became available. The assessment team also appeared to effectively distinguish stakeholder concerns over allocation issues from biological sustainability issues.

The assessment identified approximately 40 conditions to address indicators where guideposts were not met at the 80 scoring guidepost level. Conditions appear to be generally consistent with the specific guideposts they address. One clarification that is needed is whether all conditions are specified to address unmet or partially-met 80 scoring guideposts and not specified in any case to satisfy a 60 scoring guidepost. In several instances, noted above for specific indicators, explanations might be interpreted to suggest that additional information identified in a condition pertains to a 60 scoring guidepost. If a 60 scoring guidepost is not met, it was my understanding that the fishery would not be certified until the problem was remedied, not that fishery would be certified with a condition for remedy. As an editorial note, the numbering scheme for conditions is confusing with the same conditions sometimes assigned a new number but pointed at a previous condition, and others assigned subletters.

TAVEL> All conditions were issued in the instance that the fishery scored a minimum of 60 and less than 80. Fisheries which do not score a minimum of 60 on all performance indicators cannot be certified with conditions.

Explanation for the condition numbering scheme has been added to Section 1.2 of the report. In short, conditions with letters were issued as a result of the rescoring process conducted in 2008.

Significant sustainability issues highlighted by the assessment and associated conditions are as follows:

Enhancement. The assessment identified the need for additional evaluation of the impact of enhanced sockeye stocks on wild sockeye and other salmon and steelhead species (1.1.1.5). While stock enhancement does not inevitably result in negative impacts to wild stocks, the well-documented risks of negative impact warrant a thorough assessment wherever enhancement is significant. Sockeye enhancement programs occur in Barkley Sound (pg. 78-79) and the Skeena River (pg. 82-83). In both cases, deficiencies in current information on enhancement impacts were identified in the assessment. Deficiencies were effectively addressed by conditions including marking of hatchery fish, peer-reviewed assessment of impacts, and implementation of fishery limitations for un-enhanced stocks.

Non-target impacts. The assessment identified a need for additional information on the harvest (1.1.2.1, 2.1.1), escapement (1.1.2.2), and productivity (1.1.2.4) of non-target species including sockeye and other co-migrating salmon and steelhead species. The concern is whether incidental harvest of less-productive non-target stocks or species might affect their sustainability. Areas of concern included Sakinaw sockeye on the Fraser (pg. 72-73), Henderson Lake sockeye in Barkley Sound (pg. 79), non-target sockeye in the Skeena (pg. 84), Skeena steelhead and chum (pg. 84, 103-105), and Nass sockeye substocks (pg. 88). Deficiencies were effectively addressed by appropriate conditions including improved estimation of non-target catch, harvest rate, escapement, and productivity, and development of recovery plans for harvested stocks that are below their LRP.

Recovery of depleted stocks. The assessment identified a need for more rigorous treatment of fishery-based recovery measures for depleted stocks (1.2.2, 2.3.1). Depleted stocks included Cultus and Sakinaw Lake sockeye in the Fraser (p. 97), Henderson Lake sockeye in Barkley Sound (p. 101), Damshiquit, Kitwanga, Sicintine, and Spawning sockeye in the Skeena (p. 104), and chum stocks in the Nass (p. 108). The assessment effectively identifies a series of appropriate conditions to address this issue including fishery impact estimates, risk assessments, recovery plans, and limit reference points. It should be noted that recovery of depleted stocks does not require that they are subject to no incidental fishery impacts but that impacts need to be reduced to a level where their marginal affect does not jeopardize the likelihood of long term persistence. Where depletion results from other systemic factors such as degraded habitat conditions, fishery restrictions alone cannot be expected to recover the stock in the absence of other improvements.

Fishery selectivity. Fishery selectivity refers to differential harvest with respect to age, size, sex and genetic structure that could change the fundamental characteristics and diversity of the stock. Selectivity was identified as a significant concern by stakeholders. Selectivity is addressed in assessment criteria by Indicator 1.3.1 which is met when information on biological characteristics is considered and management actions are consistent with maintaining stock health. The assessment concluded that all fisheries met at least the 80 scoring guideposts for this indicator with the explanation that Pacific Salmon Commission and Department of Fisheries and Oceans provide all necessary composition information required for stock assessment and effective fisheries management. Accordingly, the assessment identified no conditions related to fishery selectivity. The level of explanation regarding indicator 1.3.1 does not appear to be

adequate to answer scientific and stakeholder concerns regarding potential fishery selectivity. Additional clarification is needed on the basis for meeting the 60 and 80 scoring guideposts. The key question is not whether programs collect age, size, sex, and genetic stock composition data for use in run reconstructions and productivity assessments but whether data have been analyzed to determine if: 1) fisheries selectively harvest for different attributes such that characteristics of the spawning escapement are different from that of the run encountering the fisheries, and 2) population trends in characteristics over time reflect the effects of this selection.

TAVEL> The Team discussed information from other sockeye fisheries that suggest selectivity has little impact on long term population trends, even when escapements differ significantly in age and size from the harvests and believed the current data collection efforts were adequate to discern trends in the future.

Research plans. The assessment identified a need in the management system for a comprehensive research plan that addresses concerns related to the impact of the fishery on the ecosystem, socioeconomic issues, and changes in the fishery (3.2.1). A formal plan will highlight gaps in current research efforts and also proactively identify long term needs. This need was identified in all four fisheries and is effectively addressed by the corresponding condition. This condition would at least partially address stakeholder identification of the need for a proactive rather than reactive approach by the management system and a need by policy makers for information to weigh economic tradeoffs between sport and commercial fisheries highlighted by stakeholder comments.

First Nations rights. The assessment highlighted questions regarding the adequacy of the management system for meeting all legal and customary rights of the First Nations People that are impacted by the fishery (3.6.3). This assessment was based on consultation with First Nations and conservation groups and was particularly pertinent to the Fraser and Skeena fisheries. The assessment addressed this concern with a condition requiring provision of evidence from the management agency that First Nation issues regarding aboriginal and treaty rights have been identified and that these issues are being addressed through an effective consultation or negotiation process.

Appendix 6 – DFO Action Plan

ACTION PLAN TO ADDRESS CONDITIONS FOR MARINE STEWARDSHIP CERTIFICATION OF BRITISH COLUMBIA SOCKEYE FISHERIES (Fraser River, Barkley Sound, Nass River and Skeena River)

December 21, 2009

This action plan provides a detailed response outlining our commitment to meeting the 36 Marine Stewardship Certification (MSC) conditions 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 Wild Salmon Policy (WSP) and National Sustainability Framework. The WSP describes how DFO will meet its responsibilities for the conservation for 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. In specific cases such as Sakinaw sockeye, further harvest restrictions would be unlikely to achieve a significant marginal increase in the probability of survival of the population. However, they would result in great hardship.

Third-party assessment of the Fraser, Nass, Skeena and Barkley sockeye fisheries against the MSC standard has resulted in conditions for continued certification. There were 36 assessment criteria that did not meet the required 80% scoring guidepost. 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, Barkley Sound, Skeena River and Nass River sockeye fisheries. The following table summarizes the key deliverables of this action plan referenced by condition:

	Unit	Deliverable	Lead	Timeline	Item
General	All	PSARC paper: CU definition	Science - Region	October, 2008	1
General	All	Workshop	Science - Region	January, 2009	
General	All	PSARC paper: Reference Points Methodology	Science - Region	October, 2009	2
General	All	Regional Framework for Integrated Planning	FAM - Region	December 2010	3
General	All	Report to Certifier: Progress on integrated planning	FAM - Region	December, 2010	4
1	Fraser	Report to Certifier: Sakinaw program update	FAM, Science - Area	September, 2010	5
2	Fraser	Report to Certifier: Indicator status update	FAM, PSC	June, 2010	6
3	Fraser	Report to Certifier: Sakinaw program update	FAM, Science - Area	September, 2010	5
4	Fraser	Report to Certifier: Sakinaw program update	FAM, Science - Area	September, 2010	5
5	Fraser	PSARC paper: Fraser sockeye LRPs	Science - Area	December, 2011	7
6	Fraser	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2012	8
7	Fraser	Report to Certifier: Cultus program update	FAM, Science - Area	December, 2010	9
8	Fraser	PSARC paper: Fraser sockeye LRPs	Science - Area	December, 2011	7
9	Barkley	PSARC paper: Henderson Lake SO stock status	Science - Area	February, 2010	10
10	Barkley	PSARC paper: Henderson Lake SO stock status	Science - Area	February, 2010	10
11	Barkley	Report to Certifier: Barkley sockeye LRPs	Science - Area	December, 2011	11
12	Barkley	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2012	12
13	Skeena	PSARC paper: Skeena stock status	Science - Area	December, 2011	13
13a	Skeena	Report to Certifier: Catch monitoring framework	Science - Area	December, 2011	14
13b	Skeena	PSARC paper: Skeena stock status	Science - Area	December, 2011	13
13c	Skeena	PSARC paper: Skeena stock status	Science - Area	December, 2011	13

	Unit	Deliverable	Lead	Timeline	Item
14	Skeena	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2009	15
15	Nass	Technical workshop, Nass monitoring plan	Science - Area	December, 2010	16
16	Nass	PSARC paper: Nass sockeye LRPs	Science - Area	December, 2011	17
17	Fraser	Report to Certifier: Bycatch update	FAM - Area	May, 2012	18
18	Fraser	Report to Certifier: Sakinaw program update	FAM - Area	September, 2010	5
19	Fraser	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2012	8
20	Barkley	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2012	12
21a	Skeena	Refer to condition 13a			
21b	Skeena	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2009	15
		PSARC paper: Skeena sockeye LRPs	Science - Area	December, 2011	19
22	Skeena	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2009	15
		Report to Certifier: Skeena chum management plan.	Science - Area	December, 2011	20
23	Nass	WSP Strategy 4 Implementation: revised IFMP	FAM, Science - Area	May, 2011	21
		PSARC paper: Nass chum LRPs	Science - Area	December, 2011	22
24	Fraser	Bycatch update, Report to Certifier	FAM - Area	May, 2012	18
25	Fraser	Report to Certifier: Sakinaw program update	FAM, Science - Area	September, 2010	5
		Report to Certifier: Cultus program update	FAM, Science - Area	December, 2010	9
		Revised IFMP: Fraser sockeye fisheries	FAM, Science - Area	May, 2012	8
26	Fraser	Report to Certifier: Harvester compliance	FAM - Area	December, 2010	23
27	Fraser	Resource Assessment Framework	FAM, Science - Area	May, 2008	24
		Revised IFMP: Fraser sockeye fisheries	FAM, Science - Area	May, 2012	8
28	Fraser	Report to Certifier: Cultus program update	FAM, Science - Area	December, 2010	9
29	Fraser	Report to Certifier: First Nation fisheries	TAPD	December, 2010	25
30	Fraser	Refer to conditions 17, 24			
31	Barkley	Refer to condition 20			
32	Barkley	Report to Certifier: Harvester compliance	FAM - Area	December, 2010	26
33	Barkley	Revised IFMP: Barkley sockeye fisheries	FAM, Science - Area	May, 2012	12
34	Barkley	Report to Certifier: First Nation fisheries	TAPD	December, 2010	25
35	Skeena	Revised IFMP: Skeena sockeye fisheries	FAM, Science - Area	May, 2012	15
35a	Skeena	Refer to condition 13a			
35b	Skeena	Refer to condition 13a			
35c	Skeena	Report to Certifier: selective fishing practices	FAM, Science - Area	December, 2010	27
35d	Skeena	Revised IFMP: Skeena sockeye fisheries	FAM, Science - Area	May, 2012	15
36a	Skeena	Report to Certifier: First Nation fisheries	TAPD	December, 2010	25

	Unit	Deliverable	Lead	Timeline	Item
36b	Skeena	Report to Certifier: selective fishing practices	FAM, Science - Area	March, 2010	27
36c	Skeena	Report to Certifier: Catch monitoring framework	Science - Area	December, 2011	14

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 sockeye certification will be met through implementation of the policy. Actions and rationale for actions to meet these conditions are described below.

Principle 1 Conditions:

There are several conditions common to all four fishery units that require defining limit and target reference points and conservation units for target stocks. These are:

Condition 5
Certification is conditional until the Conservation Units have been defined for Fraser sockeye using the methods described in Holtby and Ciruna (2007) and LRP's for each Fraser sockeye conservation unit are defined and peer reviewed. (Fraser Condition #1.5).

Condition 6
Certification is conditional until the Management Units have been defined for Fraser sockeye and the management agency defines the TRP's for each Fraser sockeye management unit taking into account the productivity of target and non-target stocks within each management unit. (Fraser Condition #1.6).

Condition 8
Certification is conditional until the management agency defines the LRP's for the target stocks and the management agency provides documentation that fisheries have not resulted in escapements that approach or are below the LRP in more than one year in a period of the most recent 5 cycle years, for any of the target sockeye stocks. The intent for this condition is to resolve the effects of fisheries, not other factors, on the stock and to recognize that the Fraser River sockeye undergo cycles so that these cycles must also be taken into account when examining whether the stocks are being maintained above LRPs. (Fraser Condition #1.8).

Condition 11
Certification will be conditional until a LRP has been defined for Henderson Lake and there is no significant scientific disagreement regarding this LRP. (Barkley Sound Condition #1.3).

Condition 12
Certification will be conditional until evidence has been provided that the productivity of non-target stocks was considered when the interim TRP was defined for Somass sockeye. (Barkley Sound Condition #1.4).

Condition 14
Certification will be conditional until the management agency provides direct evidence that the productivity of non-target stocks has been taken into account when setting the TRP for the target Babine stock. (Skeena Condition #1.2).

Condition 16
Certification will be conditional until LRP's have been defined for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye. (Nass Condition #1.2).

To satisfy these conditions DFO will fully implement 'Strategy 1' of our WSP. 'Strategy 1' of the WSP requires standardized monitoring of wild salmon status, including identification of upper and lower benchmarks to represent biological status and guide harvest decisions. Implementing this strategy requires identification of Conservation Units (CUs)[6] for salmon: the scale at which the WSP aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. There are various definitions of lower and target reference points in relation to resource management. In the context of the WSP, The lower benchmark (LRP) will be established at a level high enough to ensure there is a substantial buffer between it and being considered at risk of extinction by COSEWIC. As defined in the WSP: "the buffer will account for uncertainty in data and control of harvest management. There is no single rule to use for determination of the lower benchmark. Rather, it will be determined on a case by-case basis, and depend on available information, and the risk tolerance applied…." The upper benchmark (TRP) will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.

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.	Workshop, January 2009 Finalized methodology: October, 2009
Define LRPs for each target stock (CU)	Apply criteria and methods of Holt et al. (*in prep*) to specific CUs.	Through December, 2011
Define TRPs for each target stock (CU) and corresponding harvest strategy	Recognizing TRPs inherently involve trade-offs, determine TRPs through participatory decision-making (co-management) – see below.	Through May, 2012

[6] A Conservation Unit (CU) is defined by the policy as, "a group of wild salmon sufficiently isolated from other groups that, if lost, is very unlikely to re-colonize naturally within an acceptable timeframe (e.g., a human lifetime or a specified number of salmon generations)."

Principle 2 Conditions:

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:

Condition 19
Certification will be conditional until Limit Reference Points or their equivalent have been defined for Fraser sockeye salmon stocks, and recovery plans have been developed and implemented for stocks harvested in Fraser sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. (Fraser Condition 2.3)

Condition 20
Certification will be conditional until Limit Reference Points or their equivalent have been defined for Barkley Sound sockeye salmon stocks, with particular reference to Henderson Lake sockeye, and recovery plans have been developed and implemented for stocks harvested in Barkley Sound sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. (Barkley Sound Condition 2.1)

Condition 21b
Certification will be conditional until Limit Reference Points or their equivalent have been defined for Skeena sockeye salmon stocks, and recovery plans have been developed and implemented for stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. (Skeena Condition 2.1b)

Condition 22
Continued certification of the Skeena sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plan must include procedures for determining the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon. (Skeena Condition 2.2)

Condition 23
Certification of the Nass sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks that are below the LRP and that spawn in the Nass or its tributaries. Such a plan must have clear procedures to determine the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery. (Nass Condition 2.1)

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 recovery 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. For these two populations, the maximum allowable exploitation rates have been set in recent years of 12 and 20%, respectively. Recovery programs 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.

The 80% scoring guidepost for Indicator 2.3.1 under the sockeye assessment tree requires that the management system "has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks." All BC sockeye fisheries received conditions related to this guidepost. However, it is our opinion that this scoring guidepost does not reflect the intent of the MSC standard.

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-species target species considered under the guidance of performance indicator 2.1.1." 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 non-target stocks, DFO will:

- Implement 'Strategy 1' of the WSP: Define LRPs and TRPs for non-target stocks (CUs) and monitor their status. The objective for fishery management shall be to maintain CUs above their LRPs 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 upper 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 LRPs or their equivalent for Fraser River, Barkley Sound, Skeena and Nass sockeye CUs. A rebuilding plan consistent with the WSP will have been developed and implementation underway within 2 years for stocks harvested in fisheries targeting Fraser River, Barkley, Nass and Skeena sockeye that are below their LRPs. For Barkley Sound this will include consideration for Henderson sockeye. On the Skeena and Nass Rivers the proposed rebuilding plan will include measures to recover chum salmon stocks that are below their LRP 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 recognized 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 Principle 2 conditions for MSC certification of BC sockeye fisheries. DFO will report on progress of this work plan to the MSC certifying body by December, 2010.

Action	Description	Timeline
Define LRPs for non-target stocks (CUs)	Apply criteria and methods of Holt et al. (*in prep*) to specific CUs.	Through December, 2011
Implement WSP Strategy 4: Design and implement a fully integrated planning process for salmon conservation.	Define a regional framework for integrated planning.	December, 2010
Implement WSP Strategy 4: Develop fishery-specific integrated management plans.	Initiate local integrated strategic planning processes to develop integrated management plans for salmon CUs that will: - Define LRPs for target and non-target stocks - Define precautionary harvest strategies and decision rules - Determine rebuilding strategies - Define performance measures	Barkley Sound WSP Pilot (complete December, 2011) Skeena Watershed Process (compete December, 2011) Nass Watershed (complete December, 2011) Fraser Watershed (complete December, 2011)
Implement WSP Strategy 5: Annual Performance review	Annually review and report on performance of fishery and management system against defined performance measures for salmon conservation.	Starting 2012 for CU status measures and fishery performance review indicators.

Principle 3 Conditions:

There are several conditions common to all four fishery units related to objective setting and implementation of the Precautionary Approach. Many of these conditions are somewhat redundant with the conditions applied for Principles 1 and 2 because they deal specifically with the mixed-stock fishery problem. That is, the harvest and rebuilding of non-target stocks below or near their LRPs. These are:

Condition 25
Certification will be conditional until the management agency provides a clear commitment to implement recovery action plans for Cultus and Sakinaw sockeye (Fraser Condition #3.2).

Condition 26
Certification will be conditional until the management agency provides clear evidence that measures are being implemented to encourage harvesters not to exceed catch targets or exploitation rate limits (Fraser Condition #3.3).

Condition 28
Certification will be conditional until the management agency provides TRP's for the Cultus sockeye salmon stock, a clear indication of the commitment to implement the Cultus Sockeye Recovery Plan, and an assessment of the probability of recovery and the timing for recovery for Cultus sockeye. (Fraser Condition #3.5).

Condition 31
Same as Condition 20. (Barkley Sound Condition #3.1).

These conditions will be met in part through implementation of the WSP, particularly Strategy 4, as described above. Strategy 4 requires development of an integrated strategic plan for salmon management that clearly states conservation, habitat and ecosystem objectives. Moreover, strategy 5 requires annual review of the plan's ability to meet these objectives. For Barkley and Skeena sockeye fisheries, Strategy 4 and 5 will be implemented over the next 3 years. For Fraser sockeye fisheries, Strategy 5 will be implemented over the next 3 years.

In addition, over the next two years, DFO will be revising the format for Integrated Fisheries Management Plans (IFMPs). The new 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. Development of these IFMPs will require many of the gaps identified in the conditions to be addressed.

Other Conditions General to all Units

Research Planning

Three of the fishery units faced 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 27
Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks, and takes into consideration socioeconomic factors and anticipated changes to fisheries. (Fraser Condition #3.4).

Condition 33
Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem,

with emphasis on non-target stocks, and takes into consideration socioeconomic factors and anticipated changes to fisheries. (Barkley Sound Sockeye Condition #3.3).

Condition 35d
Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks (e.g. Skeena summer-run steelhead), and takes into consideration socioeconomic factors and anticipated changes to fisheries. (Skeena Condition #3.1d).

The requirement to include ecosystem values and objectives in planning process is an element of the WSP. It is also an element of the new IFMP template described above that will be implemented for salmon fisheries starting in 2012. 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 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. Once LRPs are developed for each CU, they will be integrated into the assessment framework. The Fraser sockeye assessment framework will serve as a template for other CUs.

Observes legal and customary First Nation rights

Three of the fishery units faced the same general MSC condition regarding providing evidence that the management agency has identified aboriginal and treaty rights and that these issues are being addressed through an effective consultation or negotiation process. Whether an aboriginal right exists and the nature, extent and scope of that right is group and fact specific. The existence of aboriginal rights is generally established through litigation involving extensive historical and anthropological evidence or through historic or modern treaties.

Condition 29
Certification will be conditional until the management agency provides evidence that First Nation issues regarding aboriginal and treaty rights have been identified and these issues are being addressed through an effective consultation or negotiation process. (Fraser Condition #3.6).

Condition 34
Same as Condition 29. (Barkley Sound Condition #3.4).

Condition 36a
Same as Condition 29. (Skeena Condition #3.2a).

Treaty-making with aboriginal peoples has a long history in Canada. The Crown began entering into treaties with aboriginal groups in the early 1700's, which continued until the 1920's. These are referred to as "historic treaties". In the 1970's, treaty-making resumed resulting in "modern treaties" which are generally more complex and detailed than "historic treaties". "Modern treaties" continue to be negotiated in various parts of Canada.

In 1982, section 35 was added to the Constitution of Canada. Section 35 provides "constitutional protection" to aboriginal rights and rights under both "historic treaties" and "modern treaties". The Supreme Court of Canada has held that the "constitutional protection" of aboriginal rights and treaty rights means that any infringement of such a right must be justified.

The Supreme Court of Canada has also held that aboriginal rights to fish for "food, social and ceremonial" purposes have priority, after conservation, over fishing for commercial or recreational purposes. From a Canadian perspective, it is important to distinguish between an aboriginal right to fish for food and an aboriginal right to fish for "livelihood". The proposed Performance Indicators under this category merge these two distinct concepts in the same criteria.

In other words, the Government's legal duty to consult with aboriginal groups can arise even where aboriginal rights have only been asserted and not yet legally proven. Whether an aboriginal right exists and the nature, extent and scope of that right is group and fact specific. The existence of aboriginal rights is generally established through litigation involving extensive historical and anthropological evidence or through historic or modern treaties.

Determining the nature, extent and scope of "historic treaty" rights can also present challenges. The wording in "historic treaties" can be difficult to interpret. For instance, the wording of the fishing right in the "Douglas Treaties" entered into in the 1850's in British Columbia provides that the aboriginal groups who were signatories have the right "to carry on our fisheries as formerly".

Although section 35 of the Constitution of Canada contains a general statement that all existing aboriginal and treaty rights are "recognized and affirmed", the challenges described above can make it difficult to "recognize" what specific aboriginal rights may belong to a particular aboriginal group and or their exact nature and scope. Regardless of this difficulty, as noted above, the Government's duty to consult with an aboriginal group may arise even where aboriginal rights have only been asserted and are not yet legally proven.

In order to meet this condition DFO will provide a report summarizing how the management system addresses issues regarding aboriginal and treaty rights related to the sockeye salmon fisheries. This report will be provided by December 2010.

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MSC Principle 1

Fraser River Sockeye

Condition 1
Certification is conditional until a review of the run timing and harvest rates for Sakinaw sockeye has been completed and the fisheries management plan is consistent with the goal of minimizing the harvest rate on Sakinaw sockeye (Fraser Condition #1.1).

The assessment of timing and harvest rates based on run reconstruction techniques has been completed. Advice for fisheries management has been provided and the fisheries management plan is consistent with the advice as documented in 2007& 2008 South Coast Salmon IFMP. In particular the guidepost 80 "information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks" is met. For this reason we believe that we have met or exceeded the 80 scoring guidepost and therefore this condition should be removed.

A report summarizing this information will be made available to the appropriate MSC certifying body for their review by September, 2010.

Condition 2
Certification will be conditional until a rigorous review has been completed to confirm that the indicator stocks reflect the status of the other stocks within each management unit (Fraser Condition #1.2).

Canada's Wild Salmon Policy (June 2005) and its implementation over the next few years requires the identification of Conservation Units (CUs), conservation benchmarks and monitoring systems to assess status of individual CUs. The current state of each CU within management units will be evaluated to assess status in order to meet the WSP objective of maintaining biodiversity. The management of Fraser River sockeye now routinely uses state-of-the-art DNA stock identification techniques. This reduces the uncertainty in stock composition estimates of CUs in each management unit. For example, Cultus Lake sockeye are severely depressed and cannot be sampled representatively in mixed stock fisheries. The choice of indicator stocks to represent the Cultus Lake sockeye has been agreed upon by the Pacific Salmon Commission and the Fraser River Panel Technical Committee.

To satisfy this condition DFO in conjunction with Pacific Salmon Commission staff will summarize existing information on choice of indicator stocks used to reflect the status of other stocks within each management unit. This information will be provided in a written review to the MSC certifying body by June, 2010.

Condition 3
Certification is conditional until the harvest rate analysis for Sakinaw sockeye has been updated using the best data available and appropriate fisheries management actions are consistent with the goal of reducing harvest rates for Sakinaw sockeye and rebuilding this depleted stock (Fraser Condition #1.3).

Reconstructed estimates of recent harvest rates on Sakinaw sockeye have been completed. Actions have been taken to protect Sakinaw sockeye and estimates of harvest rates have declined substantially in recent years.

This information will be made available to the appropriate MSC certifying body for their review by September, 2010.

Condition 4
Certification is conditional until a review of the relative productivity of Sakinaw sockeye has been completed and the fisheries management plan is consistent with the estimated productivity and goal of rebuilding the Sakinaw sockeye stock (Fraser Condition #1.4).

Estimates of relative productivity for Sakinaw sockeye have been completed. Estimates of marine survival rates in recent years have been very low. Harvest rate reductions in conjunction with enhancement and habitat improvements have been implemented by DFO in an attempt rebuild Sakinaw sockeye.

This information will be made available to the appropriate MSC certifying body for their review by September, 2010.

Condition 7
Certification is conditional until the management agency provides a clear commitment to implement the recovery plan for Cultus sockeye and evidence that fisheries management actions are consistent with the recovery goals for Cultus sockeye (Fraser Condition #1.7).

A conservation strategy has been completed for Cultus Lake sockeye (http://www.pac.dfo-mpo.gc.ca/species/salmon/cultus_sockeye_cs/documents/Cultus_Conservation_Strategy_Feb08_e.pdf.). Specific actions are already underway to recover Cultus sockeye Lake sockeye. They include control of exploitation through conservation-oriented fishing plans, population assessment, a captive breeding project, research on the cause of early migration and high pre-spawn mortality, assessment of littoral habitat and the Columbia Valley aquifer, an investigation of adult migratory timing using acoustic tag, studies on the impact of predation and control projects for pike minnow and Eurasian water milfoil, and awareness materials including a brochure for the general public.

DFO has already demonstrated a clear commitment to implement a rebuilding plan for Cultus Lake sockeye with fishery management actions that are consistent with the rebuilding goals for Cultus Lake sockeye that are identified in the conservation strategy. A report summarizing how DFO actions are consistent with the rebuilding goals for Cultus sockeye will be developed. This report will be made available to the appropriate MSC certifying body for their review by December, 2010.

Barkley Sound Sockeye

Condition 9
Certification will be conditional until an assessment is completed regarding the adequacy of the strontium marking approach to identify the effect of the Henderson Lake enhancement efforts on non-enhanced stocks.

This 80% scoring guidepost for this indicator was only partially met: "there are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the un-enhanced fish stocks."

Hatchery operations ceased for Henderson sockeye in brood year 2007. Therefore, this indicator is no longer relevant. Regardless, in the last few years of production, strontium marking and later calcein marking allowed the portion of hatchery production to be estimated.

These results will be published in a PSARC stock assessment research paper February, 2010. Any future enhancement of this stock will be accompanied by marking and assessment protocols to monitor the impact of enhancement.

Condition 10
Certification will be conditional until a more reliable escapement estimates are available for Henderson Lake sockeye.

This 80% scoring guidepost for this indicator was only partially met: "fishery independent indicators of abundance are available for the non-target species harvested in this fishery."

Since the MSC 2005 assessment, several upgrades were made to the Henderson Lake sockeye assessment program for both juvenile and adult monitoring. The counting fence structure was upgraded in the summer of 2005; panels were improved and a floating structure was put in place to reduce breach events. As well, the mechanical counters were upgraded to pulsar counters and observer calibrations were conducted regularly to validate the pulsar counts. To back up the fence operation, swim surveys of Clemens Creek were reinstated to estimate escapement through the AUC method. As it turns out, the swim surveys are the more reliable method due to continued breach events of the fence structure. We are now relying on these estimates and annually survey the system about 6 times per year.

Details of the assessment program will be reported in a PSARC stock assessment research paper February, 2010. Future efforts at a directed counting operation will likely involve use of hydro-acoustic technology (i.e. a 'DIDSON' counter) as opposed to a counting fence.

<u>Skeena Sockeye</u>

Condition 13
Certification will be conditional until a peer reviewed (e.g. PSARC) assessment of the impact of production from Pinkut and Fulton spawning channels on wild sockeye stocks

has been completed and the TRPs and LRPs have been clearly defined for the un-enhanced sockeye stocks. (Skeena Condition #1.1).

DFO commits to providing a peer reviewed assessment of the impact of production from the Babine enhanced production on wild Skeena sockeye stocks in a PSARC reviewed stock assessment paper and TRPs and LRPs have been defined for Skeena sockeye CUs (December, 2011).

Condition 13a
Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries. (Skeena Condition #1.1a).

DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to develop methods to estimate steelhead impacts from the Skeena sockeye fisheries.

A catch monitoring framework will be developed by December, 2011

Condition 13b
Certification is conditional until the management agencies implement the escapement and fall fry monitoring plans for Skeena sockeye as defined in the Core Stock Assessment Review for North and Central Coast salmon stocks or a similar scientifically defensible program to address this key information gap. (Skeena Condition #1.1b).

DFO will use the existing core stock assessment program to develop and implement a plan for monitoring sockeye escapements. The program will be developed in cooperation with the FN interests in the watershed and may include direct visual escapement surveys, weir counts, and mark recapture programs for adults or hydroacoustic lake surveys to identify juvenile abundance. The Skeena Fisheries Commission has been conducting hydro acoustic estimates in recent years, and DFO will continue to cooperate in planning and funding of these surveys. The program will be described in PSARC reviewed stock assessment paper (December, 2011)

Condition 13c
Certification is conditional until the management agencies have implemented the programs necessary to provide periodic assessments of the relative productivity for each Skeena sockeye CU or justification for the use of currently monitored populations as indicator stocks. (Skeena Condition #1.1c).

DFO commits to providing periodic assessments of the relative productivity for Skeena sockeye CU's, or representative indicators. Our experience has been that the productivity of the sockeye systems are relatively stable, and will place priority on assessments of systems for stocks of concern, those most susceptible to climate change impacts or subject to recent habitat perturbations.

The relative productivity will be reviewed in a PSARC stock assessment paper (December, 2011).

Condition 14
Certification will be conditional until the management agency provides direct evidence that the productivity of non-target stocks has been taken into account when setting the TRP for the target Babine stock. (Skeena Condition #1.2).

As an interim measure for the 2009 fishing season DFO adopted a precautionary management objective of reducing the Canadian commercial exploitation rate on Skeena sockeye to begin rebuilding individual stocks of concern by maintaining on average, a Canadian commercial exploitation rate in the range of 20 to 30%. This represents a reduction of 30 to 50% from recent decade averages. This range was consistent with the advice provided in the Skeena ISRP (Independent Science Review Panel).

DFO also supports Recommendation # 1 of the ISRP, "There is a need to confront the major trade-off decisions that are implied by the Wild Salmon policy and the impacts of mixed-stock ocean fisheries on Skeena stocks. There should be an explicit public decision about the loss of biodiversity (number of weak stocks allowed to remain overfished or at risk of extinction) that is deemed acceptable and changes required to fisheries in order to achieve particular harvest objectives." Resolving this issue will be the central focus of the Skeena Watershed Process over the next few years.

Nass Sockeye

Condition 15
Certification will be conditional until annual escapement estimates are computed for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye. (Nass Condition #1.1).

DFO will use the current core stock assessment program to develop and implement a plan for monitoring the escapement of sockeye stocks targeted in fisheries. DFO intends to continue monitoring escapements to the dominant Meziadin stock using direct counts at the fishway. For the other lake rearing stocks (Fred Wright, Damdochax, Bowser), an escapement monitoring program will be developed in cooperation with the FN interests in

the watershed and may include direct visual escapement surveys, stock specific escapement estimates derived from Nisga'a fishwheel DNA analysis, scale pattern analysis from Nisga'a fishwheel biological samples, and/or hydroacoustic lake surveys to assess juvenile abundance as an indirect measure of spawning success.

Stream-type sockeye stocks comprise a small component of the Nass aggregate sockeye stock and currently two systems are monitored by FNs for escapements using visual survey methods (Brown Bear and Gingit). DFO intends to continue to support these programs and as part of the overall Nass escapement monitoring plan will examine the feasibility of using fishwheel DNA analysis to develop annual estimates of the stream-type sockeye stocks (these are a single CU under the WSP). A technical workshop will be convened in 2009 to develop an overall Nass escapement monitoring plan. The resulting monitoring plan will be provided to the Certifier by December, 2010.

Condition 16
Certification will be conditional until LRP's have been defined for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye (Nass Condition #1.2).

In addition to the development and implementation of an overall Nass sockeye escapement monitoring plan described above and consistent with the regional approach and schedule for LRP development, DFO will work cooperatively with the First Nation interests in the watershed to develop Nass sockeye LRP's. Initially the discussions are expected to focus on the existing lake productivity assessments (to indicate capacity) for non-Meziadin sockeye stocks, and stock recruit analysis for Meziadin.

Nass LRPs will be defined and reviewed by PSARC by December, 2011.

MSC Principle 2

Fraser Sockeye

Condition 17
Continued certification of the Fraser sockeye salmon fishery is contingent upon providing reliable and defensible estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. See also Condition 1, 3 and 4 regarding Sakinaw sockeye, and the need to be able to identify and understand the impact of fish released from a supplementation program to assist in the recovery plan of Sakinaw sockeye and to be able to detect impacts on natural spawning produced returning adults. (Fraser Condition 2.1)

Programs are in place to estimate the number of sturgeon and steelhead encountered in fisheries directed at Fraser River sockeye. 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. In addition, several test-fisheries are conducted in the fishery area, which provide independent data on the presence and scope of any sturgeon and steelhead by-catch issues. Improving estimates of fishery impacts on these species would require the implementation of an on-board observer program to

provide direct, validated, observations of encounters of steelhead and sturgeon. With sufficient funding, implementing an observer program would be feasible for fisheries with larger vessels. However, fisheries using smaller vessels (e.g. FN Economic Opportunity fisheries and approximately a third of the commercial fleet)) could not accommodate on-board observers. These fisheries could potentially be monitored with on water roving observers an approach which was piloted in the 2007 Area E chum fishery. New in 2007 Area E commercial fisheries also had census-based catch reporting programs, which should meet the 100% reporting requirement for sturgeon releases.

Monitoring data to estimate the impact of Fraser River sockeye fisheries on sturgeon was not available in 2009 because there was no Area E Commercial Sockeye Fishery. Delayed delivery of a May 2012 report based on 2010 and 2011 fisheries monitoring is contingent on having commercial fisheries in 2010 and 2011.

For consideration, to address the potential impacts on sockeye fisheries on sturgeon, an alternative approach could be to use Albion, Cottonwood and Whonnock sturgeon encounters as a proxy.

To satisfy this condition DFO will develop a two year program (e.g. modelling, test fishery expansion, census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on steelhead and sturgeon beginning in 2010. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed in May 2012 and provided to the Certifier.

Condition 18

Fraser Sockeye Salmon Condition #2. Certification of the Fraser sockeye salmon fishery is contingent upon developing and implementing a risk assessment of the Sakinaw Lake recovery strategy that will include the following items: 1) examination of the risk of differing temporal harvest rates on returning run and its implication on the probability of the recovery of the stock; and 2) refinement and peer review of run reconstruction analysis for Sakinaw sockeye. (Fraser Condition 2.2)

Generic run reconstruction techniques are well developed and have been peer review by DFO's Pacific Scientific Advice Review Committee (PSARC). Uncertainty in the output of run reconstruction depends on the quality of input data and parameters. Refinement of key data inputs in the run reconstruction of Sakinaw sockeye have been completed (see Condition 1). The WSP also requires monitoring systems of CUs to assess status. Annual monitoring of the spawning escapements to Sakinaw sockeye is continuing to assess current rebuilding progress. Rebuilding has been severely impacted by prevailing low marine survival rates.

DFO will complete a risk assessment of the Sakinaw Lake sockeye rebuilding plan and will assess implementation options within two years.

Barkley Sound Sockeye

Condition 20

Certification will be conditional until Limit Reference Points or their equivalent have been defined for Barkley Sound sockeye salmon stocks, with particular reference to Henderson Lake sockeye, and recovery plans have been developed and implemented for stocks harvested in Barkley Sound sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery.

These 80% scoring guideposts for this indicator were only partially met: "The management system includes assessment of plans for the rebuilding of non-target stocks to levels above established LRPs; The management system has a reasonable (>60%) probability of achieving long-term rebuilding of depleted non-target stocks; Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that rebuilding is occurring."

Management actions to meet Condition 20 are discussed in the general section above, including the work plan for developing reference points and decision rules for management of Area 23 sockeye populations. While provisional reference point and decision rules already exist, these will be reviewed and potentially revised through implementation of DFO's WSP planned for Area 23 starting late 2008.

Notwithstanding WSP implementation, the current stock status of Henderson Lake sockeye is likely not depleted. In each of the last two years (2007, 2008), escapement has been estimated at over 10,000 based on swim surveys. While the biological LRP is not yet defined, it is likely well below 10,000. Moreover, we now know that the counting fence operation is a poor indicator of abundance. Unfortunately, it was the sole source of escapement estimates during the very low period of observations from 2001 to 2005. It was likely escapement was higher than the fence estimates, however anecdotal observations from spawner observations do suggest the abundance was low during this period.

We are also working to improve the estimates of harvest rate on Henderson origin sockeye. All fisheries have been sampled for DNA stock composition analysis since 2006. However, even given our catch sampling efforts, it is statistically difficult to estimate harvest rate directly due to the relative rarity of Henderson sockeye in the fishery. In 2004, a deterministic run-reconstruction was submitted to the MSC assessment team. This run reconstruction was based on conservative assumptions and suggested the average harvest rate of Henderson sockeye was less than 15%. Over the last two years, an independent scientific authority was contracted (Dr. Marc Labelle) to estimate harvest rate parameters for Henderson sockeye using an alternative dynamic simulation model.

Results from this simulation are similar to those of the run reconstruction and will be reported in the stock assessment research paper to be submitted to PSARC in October, 2009. LRPs will be defined for Barkley sockeye stocks and a report submitted to Certifier by December, 2011.

Skeena Sockeye

Condition 21a

Same as new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries. (Skeena Condition #2.1a).

DFO in cooperation with the Province of BC will develop a program for evaluating the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to develop a method to estimate steelhead impacts in the Skeena sockeye fisheries.

A catch monitoring framework will be presented to PSARC for review in December, 2010.

Condition 21b

Certification will be conditional until Limit Reference Points or their equivalent have been defined for Skeena sockeye salmon stocks, and recovery plans have been developed and implemented for stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. (Skeena Condition 2.1b)

As an interim measure for the 2009 fishing season DFO adopted a precautionary management objective of reducing the Canadian commercial exploitation rate on Skeena sockeye to begin rebuilding individual stocks of concern by maintaining on average, A Canadian commercial exploitation rate in the range of 20 to 30%. This represents a reduction of 30 to 50% from recent decade averages. This range was consistent with the advice provided in the Skeena ISRP (Independent Science Review Panel).

DFO also supports Recommendation # 1 of the ISRP, "There is a need to confront the major trade-off decisions that are implied by the Wild Salmon policy and the impacts of mixed-stock ocean fisheries on Skeena stocks. There should be an explicit public decision about the loss of biodiversity (number of weak stocks allowed to remain overfished or at risk of extinction) that is deemed acceptable and changes required to fisheries in order to achieve particular harvest objectives." Resolving this issue will be the central focus of the Skeena Watershed Process over the next few years.

Condition 22

Continued certification of the Skeena sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plan must include procedures for determining the impact of the existing fishery management system on these

stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery.

DFO will develop a chum rebuilding plan for Area 4 chum included chum spawning in the Skeena River and its tributaries.

Management measures to reduce the impacts of the Skeena sockeye fishery on chum has been ongoing, and significant changes have been made to the Skeena gillnet and seine fisheries. Time and area closures and selective fishing measures are used to reduce chum impacts.

DFO supports the SISRP report recommendation 6:
"Chum salmon stocks appear to be severely depressed and should be protected by avoiding late season ocean fishery openings and targeted fisheries of any kind."

Retention of chum salmon was not permitted by seines or gillnets in Skeena commercial fisheries in 2009. DFO will continue to revise the IFMP to take a more precautionary approach to chum concerns in the Skeena sockeye fishery.

Monitoring and compliance of these release fisheries will remain an important component of the rebuilding plan for chum.

LRPs will be developed for Skeena chum populations and provided for PSARC review by December, 2011.

Nass Sockeye

Condition 23
Certification of the Nass sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks that are below the LRP and that spawn in the Nass or its tributaries. Such a plan must have clear procedures to determine the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery.

DFO will work cooperatively with the FN interests in the area to develop a chum rebuilding plan for Area 3 chum included chum spawning in the Nass River and its tributaries.

Chum rebuilding has been an ongoing concern for DFO and significant changes have been made to the Nass area gillnet and seine fisheries over the past several decades. Time and area closures are the primary method used to reduce chum interceptions in fisheries directed at sockeye and pink salmon. Retention of chum salmon was not permitted by seines in Area 3 in 2009 and gillnet fisheries are currently requested to release live chum. More stringent measures for chum are under consideration, as most chum encountered by gillnets are currently retained. An important point is that the majority of the chum encountered in the Area 3 fishery does not originate from Area 3 which complicates management of the fishery. DFO, with contributions from Alaska has developed an

extensive chum DNA baseline for North Central BC and some coverage for SE Alaska. We are currently analyzing Canadian Area 3 and 4 commercial fishery samples to better understand the harvest impacts on Area 3 chum. There is a linkage between the fisheries impacts on Nass and Skeena chum, and the Nass and Skeena rebuilding planning processes will need to be coordinated.

The primary objective of a Nass Area rebuilding plan for chum is to halt the decline in chum abundance and ensure the aggregate escapement for each of the three Wild Salmon Policy conservation units (Portland Canal-Observatory, Portland Inlet, and Lower Nass) are in the amber zone or higher. To achieve this objective, non-retention regulations for chum are being considered for all Area 3 fisheries. Monitoring and compliance of these release fisheries will be an important component of the rebuilding plan for chum.

A Nass Area chum rebuilding plan will include a stock monitoring plan to evaluate rebuilding against goals. The Nisga'a Fisheries Program continues to monitor escapements of chum salmon to the lower Nass River using fishwheels, escapements to the Kincolith River, and conducted a pilot chum telemetry study in the lower Nass in 2008, as a first step towards better understanding the timing and habitat uses of specific lower Nass chum stocks. DFO monitors the escapement of chum salmon to Area 3 streams using visual surveys and will use the core stock assessment program to guide future chum escapement monitoring.

The development of escapement benchmarks (LRP) for the Area 3 chum aggregates in each conservation unit will be an important aspect of a chum re-building strategy. Analytical approaches to determining LRPs for chum are not well developed and much work needs to be done in this area. In the meantime, DFO will identify interim benchmark LRPs and rebuilding targets for Nass Area 3 chum. In 2010, the Nass Joint Fisheries Management Committee will review the current Nisga'a Treaty escapement goals for Nass Area chum and align those with the requirements of the Wild Salmon Policy.

In addition, it is important to note that, although the Kincolith CEDP hatchery does provide some small-scale enhancement of Kincolith River chum, large-scale enhancement is not proposed at this time as part of the chum rebuilding plan. Should harvest restrictions be found to not be sufficient to enable Area 3 chum stocks to be sustained in the amber or higher zone, DFO will review the role enhancement and other habitat-related measures might play at that time. In addition, should scientifically sound enhancement or habitat restoration opportunities be identified for Area 3 chum in the future, these will be reviewed by DFO.

LRPs will be developed for Nass chum populations and provided for PSARC review by December, 2011.

Additional measures to reduce the Nass sockeye fishery impacts on Nass chum were incorporated in to the 2009 IFMP.

MSC PRINCIPLE 3

Fraser Sockeye

Condition 24

Certification will be conditional until a clear set of management objectives has been defined and found to be consistent with MSC criteria and measures are taken to reduce the bycatch of sturgeon and improve the monitoring systems used to estimates sturgeon bycatch. (Fraser Condition #3.1).

Measures are already in place to reduce sturgeon impacts in the commercial, recreational, and First Nation fisheries in the Fraser River. All commercial Area E, recreational, and First Nations commercial fisheries are mandatory non-retention, and sturgeon releases are included in catch reports from fishery participants. For the First Nation FSC fishery, catch is reported either through a census-based program (which should have 100% reporting), or a creel survey, which will generate a sturgeon release estimate within +/- 20%. New for 2007 Area E commercial fisheries also had a census-based catch reporting program, which should meet the 100% reporting requirement for sturgeon releases. Sturgeon releases from the recreational fisheries are estimated with a creel survey, which will have some error associated with it. As mentioned previously, several test-fisheries are conducted in the area providing an independent indicator of the presence and scope of any by-catch issues.

Monitoring data to estimate the impact of Fraser River sockeye fisheries on sturgeon was not available in 2009 because there was no Area E Commercial Sockeye Fishery. Delayed delivery of a May 2012 report based on 2010 and 2011 fisheries monitoring is contingent on having commercial fisheries in 2010 and 2011.

For consideration, to address the potential impacts on sockeye fisheries on sturgeon, an alternative approach could be to use Albion, Cottonwood and Whonnock sturgeon encounters as a proxy.

To satisfy this condition DFO will develop a two year program (e.g. modelling, test fishery expansion, census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on steelhead and sturgeon beginning in 2010. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed in May 2012 and provided to the Certifier..

Condition 30

Same as Condition 17 and 24. Certification will be conditional until the management agency provides reasonable estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. (Fraser Condition #3.8).

Duplication of Condition 17 and 24 on Sturgeon. With respect to Steelhead, any releases from commercial, recreational, or First Nations fisheries would be accounted for through the same catch estimation process that is used to estimate sturgeon releases. Additionally,

observer programs have been utilized in order to estimate the impact upon steelhead of fall commercial chum fisheries, and some chum-directed First Nations Economic Opportunity fisheries (beach seines). The time-frame for generating estimates of sturgeon and steelhead catch (and releases) varies by fishery, but all fisheries will have estimates available within a month of the fishery occurring. Most fisheries will have these estimates available within a few days.

To satisfy this condition DFO will develop a two year program (e.g. census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on sturgeon beginning in 2009. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed in May, 2011.

Barkley Sound Sockeye

Condition 32
Certification will be conditional until the management agency provides clear evidence that measures are being implemented to discourage harvesters from exceeding catch targets or exploitation rate limits.

This 80% scoring guidepost for this indicator was only partially met: "the management system includes a program to create incentives for harvesters not to exceed target catches or exploitation rates."
The assessment team incorrectly assumed that there are no defined allocations for Barkley Sound sockeye. The Barkley sockeye management table (attached) defines allocations at various run sizes for First Nation, Sport and Commercial fisheries. Incentives are provided to harvesters to discourage over-harvest. Probably the most important incentive is our co-management initiative that allows harvesters flexibility in fishing plans and technical input through participation in the 'Area 23 Harvest Committee'. Because this is a table of peers (fishers from different sectors: First Nation, Sport, Commercial), harvesters are accountable and face pressure from other stakeholders to harvest according to manageable fishing plans. This committee has been in operation since 2005. The Somass Joint Technical Working Group, which also started in 2005, includes local First Nations biologists and fishery managers, who contribute to in-season decision-making regarding run forecasting. Since the inception of these co-management processes, no harvest sector has exceeded their allocation. In 2007 when the return was very low and below forecast, harvesters voluntarily curtailed their fisheries in season. In 2008, when the pre-season forecast was below the fishable abundance, harvesters agreed to delay (and eventually abort) harvest plans.

A report describing compliance of harvesters in the Barkley sockeye fishery will be provided to the Certifier by December, 2010.

Skeena Sockeye

Condition 35
Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem,

with emphasis on non-target stocks and takes into consideration socioeconomic factors and anticipated changes to fisheries.

In addition to the more generic response provided above, a Skeena Watershed Process will be developed to provide a forum to help meet this condition. A socio-economic review of Skeena salmon fisheries was released in late October 2008, and will be used to inform a Skeena Watershed Process.

Research plans will be incorporated into a revised IFMP for the Skeena fishery by May, 2012.

Condition 35a

Same as new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries. (Skeena Condition #3.1a).

Condition 35b

Similar to new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries and escapement and stock status for Skeena steelhead stocks. (Skeena Condition #3.1b).

DFO will develop a program for evaluating the impacts of the Skeena sockeye fisheries on steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and B.C. Ministry of Environment (MOE), and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts.

A program to estimate steelhead escapement for the watershed and for major steelhead stocks was initiated by MOE in 2008, in cooperation with DFO. Part of this study is to evaluate components of this estimation procedure to inform a steelhead escapement program planned for 2009.

MOE is expected to take the lead in an evaluation of Steelhead stock status, with DFO providing support as required.

The MOE initiated pilot studies in 2008 to address Skeena steelhead stock status and escapement (MOE 2008). These studies included funding to: extend DFO's Skeena test fishery past its typical late August ending date; carry out steelhead bio-sampling from the post August test fishery for genetic analysis; conduct acoustic tagging to assess the suitability of acoustic telemetry to monitor the distribution of steelhead spawners within the Skeena River; and hire a full time steelhead management biologist for the Skeena Region Ministry office to assist with steelhead project management, quality control and delivery.

A catch monitoring framework will be developed by December, 2010.

Condition 35c
Certification is conditional until the management agencies and the terminal gillnet fisheries demonstrate their commitment to implement selective fishing and handling techniques that have been shown to increase the post-release survival of non-target species. (Skeena Condition #3.1c).

This challenge is expected to be a particular focus of Skeena watershed discussions. There has been extensive research over the last 15 years to evaluate selective harvest approaches. Many of these have been implemented, resulting in very significant changes to commercial fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets. These programs will continue to be evaluated and implemented. Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery.

A report will be provided to the Certifier by March, 2010 describing selective fishing measures and outcomes.

Condition 35d
Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks (e.g. Skeena summer-run steelhead), and takes into consideration socioeconomic factors and anticipated changes to fisheries. (Skeena Condition #3.1d).

In addition to the more generic response provided above, the Skeena Watershed Process will provide a forum to help meet this condition. A socio-economic review of Skeena salmon fisheries was released in late October 2008, and is currently being reviewed as will be used to inform the Skeena Watershed Process. A "habitat" subcommittee has been formed and as a first step has initiated a mapping project to be completed by the spring of 2009, intended as a public information tool on salmon habitat, land use and ecosystem factors.

DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate steelhead catch in the Skeena sockeye fisheries.

Research plans will be incorporated into a revised IFMP for the Skeena fishery by May, 2012.

Condition 36b
Certification will be conditional until there is a clear commitment from the management agency and fishers to identify and implement selective fishing techniques that are

consistent with the goal of reducing the catch of non-target species, especially steelhead. (Skeena Condition #3.2b).

There has been extensive research over the last 15 years to evaluate selective harvest approaches. Many of these have been implemented, resulting in very significant changes to commercial fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets. These programs will continue to be evaluated and implemented. Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery.

A report will be provided to the Certifier by December, 2010 describing selective fishing measures and outcomes.

Condition 36c

Certification will be conditional until there is a clear commitment from the fishers participating in Skeena sockeye fisheries to provide sufficient information for managers to derive reliable estimates of the catch and discards of steelhead and other non-target species. (Skeena Condition #3.2c).

DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts.

A catch monitoring framework will be developed by December, 2011.