

Independent Assessment of British Columbia Salmon Fisheries for Fraser Sockeye, Barkley Sound Sockeye and Skeena River Sockeye.

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Disclaimer: The Sierra Club of BC is pleased to have this opportunity to contribute our perspective to the assessment of three significant Canadian sockeye salmon fisheries. Due to time constraints, this review is incomplete and has yet to be fully reviewed by the SCBC. This document should be considered a draft. Changes and additions to this review will be forwarded as time and opportunity permit.

Introduction:

In reviewing this information and considering the criteria set for this review, I feel it is only fair for me to lay out some of my own biases and constraints. I am trained as a fisheries manager and worked with DFO in that capacity for many years. I have spent most of my career managing fisheries for Fraser sockeye or assessing Fraser salmon stocks. I am generally unfamiliar with the specifics of Barkley sound or Skeena sockeye salmon populations or their fisheries. Because time available was a significant factor in this review, I have dealt with the Fraser in as much detail as possible, and will provide further discussion of Barkley sound and Skeena fisheries if time and opportunity permits.

Barkley sound and Skeena sockeye fisheries share with the Fraser the same mixed stock /weak stock concerns, and the same stock assessment/non-target stock status concerns. In the case of the Skeena in particular, a significant and unique concern for the impact of enhanced production on the status of wild Skeena sockeye must be addressed by this assessment. As a general comment, DFO is improving their consultation processes, and does an excellent job of enforcing and a credible job of regulating and monitoring fisheries. The ability of DFO and the management system to make appropriate trade offs in balancing the interests of stock conservation, species at risk, and upper river First Nations against the interests of commercial and sport harvesters who access mixed stocks in the ocean is a source of ongoing concern. DFO's record in addressing salmon stocks listed under COSEWIC speaks for itself.

The criteria are generally clear, but I am not confident that I have applied all the criteria as intended by the MSC. I am unclear concerning the applicability of some criteria to BC sockeye fisheries. I have reviewed the MSC Principles and criteria, and I have attempted to organize my comments for Fraser sockeye under these heading. I have tried to clearly describe significant problems related to the management of the fishery under each Principle and criteria. In all cases, further comment may be provided by the MCC at a later date, and where comments are provided, these comments may be expanded.

I have reviewed the Draft wild Salmon Policy (WSP). The WSP is DFO's blueprint for sustainable fisheries, and their operational definition of conservation. The Draft WSP is

still a work in progress, but based on DFO's current consultation plan the WSP's goals, guiding principles and objectives are unlikely to change dramatically.

"DFO will be consulting on the draft Wild Salmon Policy through early March 2005. The policy's goal, guiding principles and objectives were established in previous consultations with First Nations and stakeholders therefore this consultation will focus on the Wild Salmon Policy's five implementation strategies. While the Department would appreciate receiving your comments on any aspect of the strategies, we provide particular questions below that we would like you to consider." http://www-comm.pac.dfo-mpo.gc.ca/pages/consultations/wsp/consultques_e.htm

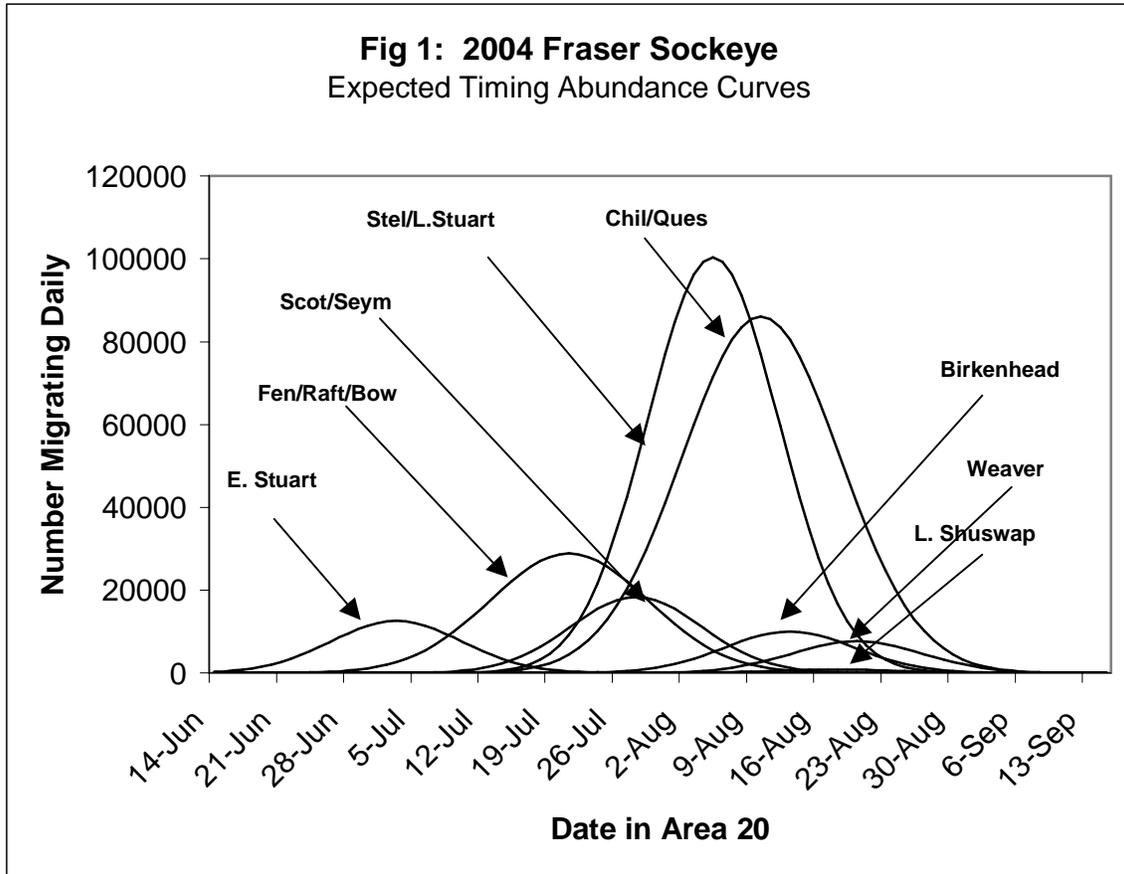
The marine conservation caucus has significant concerns regarding the fundamental principles and commitments made by DFO in the Wild Salmon Policy. I will limit my comments to the harvest management provisions of the WSP, although habitat and habitat protection concerns are significant, they are outside my area of expertise.

I am also concerned that the extensive use of 'Pers Comm' citations to document compliance with important management criteria cannot be verified or effectively assessed in most cases. 'Pers Comm' citations were used 40 times in the Fraser sockeye assessment alone (16 times under principle 1, 10 times under Principle 2, and 14 times under principle three). This is an impediment to rigorous evaluation.

Fraser Sockeye

Fraser sockeye are managed as four timing aggregates or Management Units (MU's) based on the timing of the aggregates migration through coastal waters and into the Fraser. Within each timing group there are many spawning populations. DFO has proposed in the wild salmon policy to identify Conservation Units or CU's within each timing aggregate. These CU's will be genetically distinct, locally adapted populations very similar to (or the same as) the Designated Units or DU's assessed by COSEWIC. For all practical purposes CU's and DU's will be considered 'species' of salmon under Canadian law and are eligible for protection under SARA. Each CU is comprised of one or more spawning populations or demes. In assessing Fraser sockeye fisheries against the MSC Criteria, I consider all sockeye harvested in sockeye fisheries as belonging to the Target 'species'. I consider Fraser stocks or CU's belonging to the timing aggregate that is the primary focus of the fishery as 'target stocks' (or target CU's). I consider Fraser sockeye belonging to timing aggregates other than the aggregate that is the primary focus of the fishery and non-Fraser sockeye harvested in Fraser sockeye fisheries as non-target or incidentally harvested stocks (or CU's). Fraser fisheries are managed based on the abundance of the timing aggregate or management unit (MU), and for this purpose, all component stocks or CU's that belong to the same timing aggregate or MU will be considered as target stocks for fisheries designed to harvest the aggregate.

With the possible exception of early Stuart sockeye, the migration timing of the described Fraser sockeye aggregates or MUs, overlap significantly each and every year (Figure 1).



Fisheries for the first part of the strong Mid-summer aggregate are planned with the certain knowledge that early summer sockeye will be harvested in significant numbers. It is sometimes difficult to know which MU's and which stocks or CU's a particular fishery is targeting, because early fisheries targeting on summer runs can occur at or near the peak of abundance for early summer runs and often harvest very significant numbers and proportions of early summer sockeye. The same situation occurs with mixtures of mid summer and late sockeye in approach areas. It may be misleading in some cases to consider harvests of early summer and late summer stocks during planned fisheries for summer sockeye as incidental to a fishery targeting summer sockeye.

The run timing groups of Fraser sockeye are somewhat arbitrary. Birkenhead sockeye might easily be considered a summer run rather than a late run, While Scotch and Seymour might be considered as Summer runs rather than early summer runs. I personally consider the target stocks in the case of Fraser sockeye to be those Fraser stocks or Conservation Units that make up the abundance being fished. It is a matter of policy and perspective, but in the end, the measure of management success is the health of the component stocks.

In this review I am focusing on the effects of our harvest and management on sockeye biodiversity. The Canadian COSEWIC process is now defining the population units that are eligible for assessment under COSEWIC and for listing and protection under SARA. COSEWIC defines these reproductively isolated and locally adapted populations as Designatable Units or DU's. Each DU is made up of one or more spawning populations or demes. Within DFO's new Wild Salmon Policy, the authors talk of Conservation Units (CU's) which are equivalent to DU's. For the most part it is understood that the sockeye populations that rear in the same lake are likely part of a common CU, provided that spawning timing or other factors do not result in substantial reproductive isolation. Early sockeye and late run sockeye that share the same lake may be separate 'CU's, but this decision will ultimately be based on the extent to which the timing components to the same lake are genetically unique (reproductively isolated).

Fraser River Sockeye

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 stocks 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 Criterion 1.1

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.

Our interpretation of MSC Criterion 1: The performance indicators listed under Criteria 1 focused on the adequacy of the information used to manage the fisheries and stocks. For our assessment, we have organized the performance indicators into the three sub-criteria: 1) the definition of the stock units for each fishery; 2) the information available on the harvests, escapement, biological characteristic, and productivity; and 3) the management goals for each stock unit. As in the evaluations of other fisheries, the effect of the fishery

on the associated ecological community will be primarily dealt with under Principle 2. However, the 100% level for indicators related to management goals under Principle 1 cannot be achieved unless information is collected on the associated ecological community and used in setting management goals.

Subcriterion 1.1.1 Scientifically defensible stock units have been defined and the geographic distribution of these stocks are known.

The intention of this sub-criterion is to evaluate whether the definition of the stock units are clear and appropriate for each species harvested in the fishery.

Indicator 1.1.1.1: The stock units are well defined for the purposes of conservation, fisheries management and stock assessment.

Response: The major stock groups of Fraser sockeye are generally well defined, but early and late sockeye include a small but significant contribution from so called miscellaneous stocks. For the purposes of management and conservation, the role of miscellaneous stocks is unclear. Miscellaneous stocks are not generally considered when setting escapement goals, but particularly when abundant, miscellaneous stocks are considered in assessing in-season abundance and regulating fisheries to achieve these goals. For example, in 2004, the escapement goal for early summer sockeye was reduced from 400,000 to 310,000. Upper Adams sockeye and Chilliwack sockeye were considered miscellaneous stocks, and were not considered when this goal was set. Since the miscellaneous stocks are not included in the development of the escapement goal, the in season abundance and escapement of these stocks past mission should not be considered as contributing to meeting the goal (otherwise the effective goal for the aggregate is reduced by the abundance of the miscellaneous stocks. If the goal for all stocks excluding the miscellaneous stocks is 310,00, then the abundance of the miscellaneous stocks should not be considered when managing abundance to meet the escapement goal. This is a significant issue since escapement to miscellaneous early summer stocks has exceeded 125,000 spawners in recent years and these stocks can contribute significantly to the escapement in any given year. Excluding miscellaneous stocks in setting the goal but including them in assessing in season abundance and compliance with the escapement goals is inconsistent and ambiguous and detrimental to the management of the aggregate and individual CU's within the aggregate.

In this light, there is some significant uncertainty or ambiguity in the description of both the early summer and late sockeye groups for the purposes of management and conservation. In my view the 100 scoring Guideposts have not been met, and only one of the 80 scoring guideposts has been met.

100 Scoring Guidepost

- There is an unambiguous description of each stock unit, including: its geographic location, run timing, details on all the component stocks, and rationale for its definition.

- The rationale for each stock unit is clear with regard to conservation, fisheries management and stock assessment requirements.

80 Scoring Guidepost

- The stock units are well defined and include details on the major component stocks.
- The rationale for each stock unit for the target species is clear with regard to conservation, fisheries management and stock assessment requirements.

60 Scoring Guidepost

- The majority of stock units are defined.
- The rationale for the majority of stock units for the target species is clear with regard to conservation, fisheries management and stock assessment requirements.

Indicator 1.1.1.2: There is general scientific agreement that the stock units are appropriate.

Response: The Fraser River Panel is not a scientific panel, and their opinion on this matter does not address the indicator. The Fraser Panel Technical committee is a scientific committee, and DFO's submission asserts that there is general agreement among the members that the stock unit definitions are appropriate, but chapter 4 paragraph 9 of the Pacific Salmon Treaty (as referenced by DFO) does not speak to the position of the FPTC members concerning their agreement with the stock units (management units) under consideration, and so does not adequately address the indicator.

In general there is an understanding within the scientific community that stocks grouped for management purposes should share common risk factors and biological characteristics (productivity, vulnerability to fisheries). For example, early summer sockeye are distributed throughout the Fraser (Nadina and Bowron in the upper Fraser, Gates Creek in the mid Fraser, Fennell and Raft in the North Thompson, Upper Adams, Seymour and Scotch Creeks in the Shuswap, Eagle R. and Anstey R., in the south Thompson, Chilliwack, Nahatlatch Lake and River and Pitt river in the lower Fraser, and Taseko lake in the Chilko Drainage). The early summer aggregate contains about 14 genetically distinct CU's, distributed throughout a wide range of geo-climatic zones within the Fraser, and three of these stocks are in decline (Scotch has declined by 31%, Seymour has declined by 67% and Fennell has declined by 44% during the last 12 years). I think this is evidence that this stock group is far from ideal from the point of view of stock management and conservation. I do not agree that Fraser stock units are appropriate, nor do I believe that there to be 'general scientific agreement' that the Management Unit is appropriate.

100 Scoring Guidepost

- The stock units for target species have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee.
- There is general agreement among regional fisheries scientist outside the management agency that the stock units are appropriate.
- There is general scientific agreement regarding the stock units for non-target species

80 Scoring Guidepost

- There is general agreement among regional fisheries scientist within the management agency that the stock units are appropriate for target species.
- There is no significant scientific disagreement regarding the stock units used by the management agency to formulate management decision for the fishery.

60 Scoring Guidepost

- There is general agreement among regional fisheries scientist within the management agency that the majority of stock units are appropriate for target species.

Indicator 1.1.1.3: The geographic range for harvest of each stock unit in the fishery is known.

Response: This is true of Fraser sockeye stock units, but not true for all non-Fraser sockeye stock units harvested primarily in Fraser sockeye fisheries.

One of the 100 scoring guideposts is met, two of three of the 80 are met, and the 60 scoring guidepost is not met (due to over harvesting of and decline of inside non Fraser sockeye stocks).

100 Scoring Guidepost

- The geographic range for harvests of each stock unit in the fishery is estimated and documented each year.
- The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions.

80 Scoring Guidepost

- The geographic range for harvests of target stocks is defined.
- The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks.

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

60 Scoring Guidepost

- 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.

Response: I believe this is the case for Fraser sockeye

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.

Response: As DFO points out, the ‘indicator stocks’ in the Fraser are the larger stocks and account for much of the return abundance. I agree with DFO’s comment that Fraser sockeye are not managed with ‘indicator stocks’ in the manner that some coho or chinook stocks are managed. That said, there are more productive stocks within each aggregate that dominate in the forecasts, contribute a larger proportion of the in season abundance and escapement, and that generally perform better than the less productive stocks in the aggregate. The early summer stocks are an example of the consequences of managing large stock aggregates with highly variable production as part of a single aggregate. If by indicator stocks we understand that the major Fraser sockeye populations (with defined Stock Recruit relationships,) are used to set management strategies for the entire timing aggregates, then considerable debate remains. I am unaware that PSARC has addressed the indicator stock issue for Fraser sockeye.

Depending on the interpretation of this indicator, as few as two of the 100 scoring guideposts and one of the 80 guideposts are met.

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 Scientific Advice 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.
- The relationships between indicator stocks and stocks of interest are assessed every three to five years.

80 Scoring Guidepost

- There is general agreement among regional fisheries scientists within the management agency that the status of indicator stocks reflects the status of other stocks within the management unit.
- There is no significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery.

60 Scoring Guidepost

- There is no significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery.
- There is a scientific basis for the indicator stocks used in the management of the fishery.

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.

Response: As DFO correctly points out, the harvest of Weaver sockeye is directly implicated in the over harvest and decline of Cultus sockeye. There is no marking program to distinguish Weaver sockeye. The harvest rate set in part to harvest abundant Weaver sockeye returns does adversely affect unenhanced late run sockeye within the same MU.

In the example of Weaver sockeye, only one of the 100 scoring guideposts is met, none of the 80 scoring guideposts are met, and only one of the 60 scoring guideposts is met

100 Scoring Guidepost

- Fisheries targeting enhanced stocks are geographically removed from unenhanced stocks and separate terminal harvest areas are established for these fisheries.
- Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.
- There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the enhanced component of the run and this data is used in regulation of the fishery.

80 Scoring Guidepost

- 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.
- 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.

60 Scoring Guidepost

- 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.
- 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.

Subcriterion 1.1.2 The monitoring and assessment of fisheries and stocks is adequate for fisheries managers to maintain the high productivity of the target stocks and associated ecological community relative to its potential productivity.

The foundation for the management of most salmon fisheries is information on fishery harvest and escapements. Long-term (>10 yrs) monitoring of specific stocks is generally required to compute estimates of productivity. For some target species, additional information on fish size and age is required. The relative importance of each type of information will vary across fisheries and the species harvested.

Indicator 1.1.2.1: Estimates exist of the removals for each stock unit.

Response: While the removals of most Fraser sockeye stocks are assessed, there is almost no assessment of the removals of non-Fraser non-target sockeye populations harvested primarily by Fraser sockeye fisheries.

For example: PSARC recently assessed the status of ‘Inside Sockeye Stocks’: those adjacent to the Strait of Georgia, North-Eastern Vancouver Island and Johnstone Strait. The harvests of these 13 conservation units are incidental to net fisheries directed at Fraser sockeye in Johnstone Strait and Strait of Georgia. Although the total harvest of sockeye from all stocks is known for these fisheries, the removals of these 13 CU’s are not directly estimated. Because these removals are not estimated, DFO is unable to reliably assess the status and threats to these CU’s.

“The authors concluded that fishing mortality is a major factor influencing stock status but that other risk factors such as poor marine survival could not be ruled out. Because run timing is thought to overlap with Fraser sockeye, the ‘inside’ stocks are likely intercepted in Johnstone St. fisheries. (Proceedings for PSARC Salmon sub-committee, December 6 and 7, 2004)”.

One of these CU's, Sakinaw sockeye, have been listed by COSEWIC as endangered, but Canada has decided not to protect this CU's under SARA. I refer the reviewers to the Sakinaw COSEWIC Status report, and to Dobson and Wood (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, C. Wood).

Two of the 100 scoring guideposts are met, two of the 80 scoring guideposts are met, two of three 60 scoring guideposts are met.

100 Scoring Guidepost

- Catch estimates are available for all fisheries in Canadian waters that harvest the target and non-target stocks harvested in the fishery being evaluated.
- Mortality rates are available for the fish released or discarded during the fishery.
- Catch estimates are available for fisheries outside Canadian waters that harvest the stocks that are the target of the fishery being evaluated.

80 Scoring Guidepost

- Catch estimates are available for all target stocks harvested in the fishery.
- Catch estimates are available for non-target stocks where the catch of the non-target stock may represent a significant component of the harvest of that stock.
- Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years.

60 Scoring Guidepost

- Catch estimates for the majority of target stocks are available.
- Catch estimates are available for non-target stocks where the catch of the non-target stocks may represent a significant component of that stock.
- Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years.

Indicator 1.1.2.2: Estimates exist of the spawning escapement for each stock unit.

Response: While the escapement of Fraser stocks is generally well assessed, the same is not true of other non-target sockeye stocks. In the example above (Indicator 1.1.2.1) of the recent assessment of inside sockeye stocks harvested by Fraser sockeye net fisheries in Johnstone Strait, the authors considered the escapement time series of 12 of 13 stocks to be unreliable. Five CU's had reliable recent data, but even recent data for 7 of 13 CU's was considered as unreliable by the authors. The only stock where the escapement time series was considered reliable was Sakinaw, and this stock is listed as endangered by COSEWIC.

None of the 100 scoring Guideposts are met, one possibly two of the 80 scoring guideposts are met, and only one of the two 60 scoring guideposts are met.

100 Scoring Guidepost

- Estimates are available for the annual escapement for each stock unit harvested in the fishery.
- In-season escapement data are collected for all stock units and used to regulate the fishery.

80 Scoring Guidepost

- Estimates are available for the annual escapement of each target stock harvested in the fishery.
- Fishery independent indicators of abundance are available for the non-target species harvested in the fishery.
- In-season escapement data are collected for the target stocks and used to regulate the fishery.

60 Scoring Guidepost

- Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation.
- Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock.

Indicator 1.1.2.3: The age and size of catch and escapement have been considered, especially for the target stocks.

Response: Scoring Guideposts are met

100 Scoring Guidepost

- Annual monitoring programs collect data on the age and size of the catch and escapement for target and non-target stocks where there is a clear scientific basis for collecting these data.

80 Scoring Guidepost

- Periodic monitoring programs collect data on the age and size of the catch and escapement for target stocks, and for non-target stocks where the fishery harvests may represent a significant component of the harvest of those non-target stocks.
- There is a scientific basis for the frequency of the sampling program to collect age and size data where there is a clear scientific basis for collecting these data.

60 Scoring Guidepost

- The information on age and size of catch and escapement is adequate, where there is general scientific agreement that these data are important to assess the status of the stocks or adjust fisheries management decisions For example: information on the age distribution of pink salmon harvests would not be considered important for stock assessment or fisheries management decisions where as age information would be important for the assessment and management related to most chinook and sockeye fisheries. Monitoring programs should be in place to detect changes in the size of the fish harvested for each salmon species.

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 non-target stocks.

Response: In the case of Fraser stocks I generally agree. There are however, no harvest guidelines in place to protect the 13 inside non-target sockeye stocks that are harvested during fisheries for Fraser sockeye. DFO has no process to protect inside co-migrating sockeye populations that are clearly at risk. No risk assessment has been conducted to assess the impacts of alternative harvest strategies for most non target non-Fraser stocks.

The 100 scoring guideposts are not met, one 80 scoring Guidepost is met, one of the 60 scoring guideposts is met.

100 Scoring Guidepost

- Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known.
- Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for both the target and non-target stocks.

80 Scoring Guidepost

- There is adequate information to identify the harvest limitations and production strategies required to maintain the high productivity of the target stocks.

- There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks.
- The harvest limitations for target stocks take into consideration the impacts on non-target stocks and the uncertainty of the productivity for these stocks.

60 Scoring Guidepost

- The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks.
- The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks.

Subcriterion 1.1.3 Management goals have been set and are appropriate to protect the stocks from decline to their Limit Reference Point or operationally equivalent undesirable low level of abundance.

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.

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

Response: I question that the escapement objectives set for Fraser stock aggregates are the operational equivalent of limit reference points (since CU’s within the aggregate can decline to extinction without necessarily triggering harvest restrictions on the CU, provided that the aggregate escapement is at goal). TRP’s or their equivalent have not been set for most individual CU’s within each aggregate. As a result, conservation units can decline within an aggregate even though the aggregate is meeting or exceeding the escapement goal. No TRP’s or equivalents have been set for most individual non-target non-Fraser sockeye populations harvested in fisheries for Fraser sockeye.

None of the 100 scoring guideposts are met, one of the 80 scoring guideposts is met, and I seriously question if the 60 scoring guidepost is met.

100 Scoring Guidepost

- The Limit Reference Point for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee.
- There is general agreement among regional fisheries scientist outside the management agency that the LRP's are appropriate.
- There is general scientific agreement regarding the LRP's for non-target species.

80 Scoring Guidepost

- There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries.
- There is no significant scientific disagreement regarding the LRP's used by the management agency to formulate management decision for the fishery.

60 Scoring Guidepost

- 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.

Indicator 1.1.3.2: Target Reference Points or operational equivalent have been set.

The Target Reference Point (TRP) or operational equivalent set by the management agency has been defined above as “the state of a fishery and/or a resource, which is considered desirable. Management action, whether during a fishery development or stock rebuilding process, should aim at maintaining the fishery system at its level.”

Response: The purpose of a TRP is to prevent the long term decline of stocks or CU's in order to maintain genetic diversity and protect stock structure. I question if the escapement goals set for the four timing aggregates of Fraser sockeye are the operation equivalent of TRP's. In the last three cycles or 12 years, under the current management approach and with these “TRP equivalents” in place, the entire Early Stuart aggregate has declined by 73%, three of 14 CU's in the early summer aggregate have declined, one of the four major summer runs (late Stuart) has declined by 43% (and failed to meet escapement goals of food fish needs in 2003 despite the fact that the entire aggregate exceeded the escapement goal by a wide margin), and several late stocks are in trouble including the Cultus.

None of the 100 scoring guideposts are met, none of the 80 scoring guideposts are met, and at best one (but I think none)) of the 60 scoring guideposts are met.

100 Scoring Guidepost

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

- There is general agreement among regional fisheries scientist outside the management agency that the TRP's are appropriate.
- The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.

80 Scoring Guidepost

- There is no significant scientific disagreement regarding the TRP's used by the management agency to formulate management decision for the fishery.
- The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks.

60 Scoring Guidepost

- There is general agreement among fisheries scientist within the management agency that the TRP's are appropriate for the target stocks.
- Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed.
- The management agency has taken into account the relative productivity of non-target stocks when setting the TRP's for the majority of target stocks.

MSC Criterion 1.2

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.

Our interpretation of MSC Criterion 1.2: This criterion refers to “populations” where our indicators and evaluation criteria refer to stocks or stock units. The evaluation under this criterion will assess the degree to which the management strategy is designed to keep targeted stocks from becoming depleted, and to promote recovery if they become depleted. Note that this has already been partially assessed under Subcriterion 1.1.3.

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.**

Response: Other than rebuilding an aggregate when the aggregate escapement goal is not met, DFO has no clear strategy for protecting and rebuilding individual stocks or CU's that decline consistently within an aggregate where the aggregate goals are still being met. See my earlier comments under 1.1.3.1 and 1.1.3.2. It is not true that stocks or CU's within an aggregate are allowed to recover to TRP before commercial harvest is

permitted. This is only true for the timing aggregate. DFO's response states "artificial enhancement may be used to supplement rebuilding measures".

One or none of the 100 scoring guideposts are met, neither of the 80 scoring guideposts are met, one of the 60 scoring guideposts is met.

100 Scoring Guidepost

- There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery.
- Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks.
- The management agency does not use artificial propagation as a substitute for maintaining or recovering wild stocks.

80 Scoring Guidepost

- In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks with 3 reproductive cycles.
- Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks.

60 Scoring Guidepost

- 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.

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.

In contrast to Indicator 1.2.1, which evaluates the strategy for stock recovery, this indicator evaluates the current status of the target species or stocks, and the basis for being reasonably certain about their status. The Scoring Guideposts are arranged hierarchically, so that evaluation of the current status depends on the assessment, which in turn depends on data and knowledge about the stocks and the fishery

Response: DFO states that a 'majority' of Fraser river stock groups are above the LRP or operational equivalent, but again, the issue is the health of the component CU's or stocks must be addressed. Managing a timing aggregate to an aggregate escapement goal is not equivalent to managing the CU's that make up the aggregate to ensure that each CU remains above the TRP. See my earlier comments on the status of Fraser sockeye stocks (CU's).

One of the 100 scoring Guideposts was met, one of the 80 scoring guideposts is met, both of the 60 scoring guideposts are met.

100 Scoring Guidepost

- There is general agreement among regional fisheries scientist outside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.
- Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks.

80 Scoring Guidepost

- There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible.
- Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.

60 Scoring Guidepost

- There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible.
- Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks.

[MSC Criterion 1.3](#)

[Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.](#)

Our interpretation of MSC Criterion 1.3: The effects of fishing on the “reproductive capacity” of the target stocks have already been partially assessed under criterion 1.1 and 1.2. Criterion 1.3 considers specific concerns about impacts of fishing on age, size, sex and genetic structure of stocks. Because genetic structure is very difficult to determine in most exploited fish stocks, impacts on component stocks (i.e. the stocks that comprise a stock unit) are used as a proxy at the 80 scoring level. Also included in this indicator is

an assessment of the management agency's ability to identify and manage the potential impact of enhanced stocks on un-enhanced stocks.

Indicator 1.3.1: Information on biological characteristics such as the age, size, sex and genetic structure of the target stocks is considered prior to making management decisions and management actions are consistent with maintaining healthy age, size, sex and genetic structure of the target stocks.

Response: Cultus Sockeye are a target stock of Fraser sockeye fisheries. This stock is at extreme risk of loss of genetic integrity due to small populations size. This population is at risk of extinction and is still fished at significant rates, DFO has exceeded the harvest objectives for Cultus sockeye in each of the last four years, in some years by a wide margin. Two of three 100 scoring guideposts are met. Two of three 80 scoring guideposts are met,

100 Scoring Guidepost

- There is comprehensive knowledge of the effect of fishing on biological characteristics such as the age, size, sex and genetic structure of the target stocks and the impact of changes in these factors on the reproductive capacity of the target stocks.
- Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.
- Enhanced fish are identified and managed as separate target stocks.

80 Scoring Guidepost

- The knowledge of the effect of fishing on biological characteristics such as the age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the target stocks.
- Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex and genetic structure of all target stocks.
- The management system includes provisions to minimize any adverse impacts to the genetic structure of un-enhanced stocks that may be due to the enhancement of other stocks.

60 Scoring Guidepost

- The knowledge of the effect of fishing on the biological characteristics such as age, size, sex and component stocks is adequate to detect threats to the reproductive capacity of the majority of target stocks.

- Management actions are consistent with maintaining healthy target stocks relative to biological characteristics such as age, size, sex or genetic structure for the majority of target stocks.
- The management system includes provisions to minimize the major adverse impacts for the majority of un-enhanced stocks that may be due to the enhancement of other stocks.

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. The criteria and indicators developed are limited to the impacts of fishing operations and the response and effectiveness of the regulatory system to impacts external to the commercial fishing operations, such as other harvests, climate change, and habitat degradation. We acknowledge that forces other than commercial fishing may result in a fishery being unsustainable, and that these may be anthropogenic or natural forces. This certification process addresses the impact of commercial fishing on the harvested stocks and the ecosystem, and the response of fishers and managers to changes in external environmental factors.

MSC Criterion 2.1

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.

Intent

In the certification of the Alaska salmon fishery, the performance indicators listed under Criteria 1 focused on the adequacy of the information used to assess non-target discards and the effects of harvests on associated ecosystems. For our assessment, we have reorganized the Alaskan performance indicators into two indicators that reflect impacts on marine systems (bycatch and biomass removal) and on freshwater systems (adequacy of escapements in maintaining the ecosystem and integrity of watersheds). These indicators are: 1) the adequacy of management plans, data collection and monitoring of directed marine fisheries on by-catch; 2) the adequacy of escapement objectives to address the freshwater ecosystem concerns. The degree to which the information is collected in the management of the fisheries under Principle 1 will apply for determining if this criterion is adequately addressed and will influence the evaluation scores.

Indicator 2.1.1: The management plan for the prosecution of the marine fisheries provides a high confidence that direct impacts on non-target species are identified.

The intent of this measure is to ensure that the management plans for the fisheries require collection of adequate data to address direct impacts of fishing on non-target species.

Response; I agree with DFO's assessment. Two of three 100 scoring guideposts are met, while the 60 and 80 scoring guideposts are met.

100 Scoring Guidepost

- A monitoring program exists that provides estimates of bycatch that meet statistical criteria acceptable to external reviewers.
- All historic monitoring data is readily available to stakeholder groups and external reviewers.
- Quantities of gear lost are recorded, and the impacts of lost gear on target and non-target species have been researched and accurate projections of impacts have been completed.

80 Scoring Guidepost

- A monitoring program exists that provides estimates of bycatch.
- In known problem areas of high bycatch, there is an ongoing monitoring program.

60 Scoring Guidepost

- Data on bycatch in the majority of the fisheries are available to determine impacts on non-target species.

Indicator 2.1.2 The management system includes measures to reduce marine ecosystem impacts.

For salmon fisheries, the primary concerns related to marine ecosystem impacts are related to the bycatch of non-salmon species and the removal of large numbers of the target salmon species.

Response; I agree with DFO's assessment

100 Scoring Guidepost

- A risk assessment of by catch concerns has been conducted as part of developing the management plan.
- The effect of the fishery on the marine ecosystem has been explicitly addressed in the management plan.
- Research has been conducted on marine piscivores that utilize the target species to ensure that commercial harvests do not present significant risks to the populations of these piscivores.
- Where conflicts exist between the harvest of fish and ecosystem concerns based on their removal, the balance achieved has been the subject of an open review by stakeholders.
- This information is presented in documents that are made available to stakeholders.

80 Scoring Guidepost

- The effect of the fishery on the marine ecosystem has been addressed by the management system.
- Where problems are identified, fisheries managers make adjustments to reduce impacts on non-target species.
- Where conflicts exist between the harvest of fish and ecosystem concerns based on their removal, the balance achieved has been made known to stakeholders through publicly available information sources.

60 Scoring Guidepost

- The management system does include measures to reduce marine ecosystem impacts to achieve management objectives.
- The management system has a history of responding to bycatch mortality problems and has procedures that are followed to limit bycatch.

Indicator 2.1.3 **Research efforts are ongoing to identify new problems and define the magnitude of existing problems, and fisheries managers have a process to incorporate this understanding into their management decisions.**

The intent of this measure is to ensure that a research program has been established to evaluate historic and new data to identify future problems. It is also necessary to have an established management process that will ensure research conclusions can quickly be transparently incorporated into future management activities associated with prosecuting the fishery.

Response: I agree with DFO's assessment

100 Scoring Guidepost

- There is detailed knowledge of the relationship between the fishery and the marine ecosystem impacts or ongoing research is attempting to identify if such problems exist.
- The management agency has a proven history of incorporating new research findings into management plans.
- The management agency has a proven history of closing fisheries when bycatch mortality problems arise.
- The management agency has supported the development of more selective fishing practices.

80 Scoring Guidepost

- There is ongoing research of previously identified problems areas to determine if bycatch reduction measures are effective.
- When new problems are identified, the management plans require a new monitoring program be instituted to determine the effectiveness of bycatch reduction measures.
- The management plan allows for between season assessment and institution of new controls on the fishery or stakeholder consultation following the identification of bycatch problems or ecosystem related impacts.
- The management agency has a proven history of successfully arbitrating stakeholder concerns when balance between fish harvests and ecosystem concerns have arisen.

60 Scoring Guidepost

- The management agency collects or plans to collect data on bycatch problems or ecosystem concerns.
- There are procedures established to incorporate any knowledge obtained about bycatch problems into management actions.
- The management agency responds to data provided on bycatch problems by entities outside of their agency.

Indicator 2.1.4 The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.

The intent of this is to encourage the collection of information and data that can be used to address freshwater ecosystem concerns. It is our intent that future reviews of Pacific Salmon certification demonstrate that the information developed from these research programs on ecosystem requirements, such as aquatic system nutrient requirements and piscivore food requirements are incorporated into the management system.

Response: While I agree in general with DFO's response, we have a ways to go in understanding some ecosystem effects and incorporating these into management. I believe it is fair to say that we do not in general make any allowance for the needs of those animals that eat salmon or carcasses, and assume that the escapement goals intended to manage yield are adequate to meet these needs. The impacts of carcass deposition on the growth and survival of terrestrial plants and animals is not well understood.

One 100 scoring guidepost is true while the other is partially true. The 80 and 60 scoring guideposts are met.

100 Scoring Guidepost

- There is research to determine tradeoffs of fish harvests with ecosystem concerns such as providing for sustainable populations of dependent components of the aquatic ecosystem.
- Results and conclusions from research are made available to stakeholders.

80 Scoring Guidepost

- Ongoing research is supported to determine the impacts of carcass on freshwater ecosystem processes and identify any tradeoffs between harvests and freshwater ecosystem concerns.
- The management system provides for the communication of research results to managers so that the results can be used in the development of escapement goals for meeting freshwater ecosystem needs.

60 Scoring Guidepost

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

[MSC Criterion 2.2](#)

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

Intent

This criteria focuses on direct mortality of the prosecuted fisheries on non-target species and the adequacy of the management units of the target species to ensure significant sub-components of the target species are adequately protected to provide for a reasonable expectation of sustainability of these components and their contribution to the genetic diversity of the target population. The impacted species of concern are expanded beyond that of the Alaska Criteria to ensure icon species, such as marine mammals, bears, coastal wolves, and eagles, are adequately protected from direct or indirect impacts of the fisheries (we define icon species as any species of particular public interest that does not qualify under the terms 'endangered, threatened, or protected'). These impacts may be identified at the population and community level. We also address the issue of harvests of fish stocks that have been created or enhanced through fisheries enhancement activities, such as fish hatcheries and spawning channels. Our concern is that the production or harvest of enhanced stocks does not affect the sustainability of natural spawning stocks by adversely impacting the genetic structure of the wild fish. The enhanced component of fish stocks are assumed to be addressed as separate stocks using the indicators and guidelines listed.

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.**

The intent of this measure is to ensure that the management system incorporates available knowledge and considers the impacts of the fishery on biodiversity issues. This indicator includes the impacts of enhanced fishery harvests on these issues.

Response: As discussed, Fraser sockeye fisheries are a dominant factor in the general decline and poor stock status of inside sockeye populations. Of this group, only the Sakinaw is now listed by COSEWIC, but the prospect for recovery is very poor. Cultus remains at considerable risk, and harvest objectives are higher than desirable for the recovery of Cultus sockeye, and in every case in the last four years these harvest limits set by DFO for harvest of Cultus sockeye were exceeded. Fraser sockeye fisheries pose a significant risk to the biodiversity of both target and non-target socks. DFO's understanding of the impacts of Fraser fisheries on inside sockeye stocks is marginal, and limits the effective regulation of these fisheries. Impacts of sockeye fisheries on endangered White Sturgeon are commonly harvested in Fraser sockeye fisheries, but impacts have not been assessed.

Two of four 100 scouring guideposts are met, two of the 80 scoring guideposts are met, and two of three 60 scoring guideposts are met.

100 Scoring Guidepost

- A risk assessment has been conducted, based on current knowledge of direct and incidental mortalities from the fishery, to ensure the fishery does not pose a significant threat to the biodiversity of the target or non-target species.
- Stock composition including enhanced component, is known within Fishery Management Units with the likelihood of harvest of endangered, threatened, protected, or icon species has been estimated.
- Time and area of migrations of weak year classes, sub-stock or population components are known.
- The management system contains provisions to reduce harvests based on biodiversity concerns of affected endangered, threatened, protected or icon species, or weak year classes, of stocks, including the enhanced components, of the targeted species.

80 Scoring Guidepost

- The fishery has been monitored and the stock composition is assessed with a special effort to determine presence of rare, endangered, protected, or icon species.

- The management agency has a history of incorporating new research into management as new research data on impacts of fisheries on biodiversity become available.
- The fisheries management system includes provisions for harvest reduction when biodiversity concerns are identified for target or non-target species.

60 Scoring Guidepost

- 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.

MSC Criterion 2.3

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

Intent

Are reductions in fish abundance caused by human activity, unrelated to the directed harvest, considered in the management plan and in the establishment of escapement goals? If so, is the management system sufficiently robust to accommodate the long term recovery of depleted populations and ensure that directed or by-catch harvests, including harvests on enhanced fisheries, do not present significant risks to the long term sustainability of these populations.

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)

Response: LRP's for non-target stocks have generally not been established. Recovery of non-target inside sockeye stocks has never been addressed except for Sakinaw sockeye. In the case of Sakinaw sockeye the impact of Fraser sockeye fisheries is not well understood, and DFO has not made provisions for restrictions to Fraser sockeye fisheries to enable the recovery of this stock, or other depleted inside sockeye stocks. PSARCS recommendations concerning the timing of Sakinaw sockeye through Fraser sockeye fisheries in Johnstone Strait have not been fully implemented. Recovery of both Sakinaw and Cultus sockeye remains highly uncertain particularly in light of Canada's decision not to protect these stocks under SARA.

Two of five 100 scoring guideposts are met, two of 80 scoring guideposts are met, two of 60 scoring guideposts are met.

100 Scoring Guidepost

- The management plans and escapement goals have been shown to have a high (>80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis.
- Historic data have been thoroughly examined to ensure fisheries restoration objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the “moving baseline” syndrome.
- Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.
- Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee.
- The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks.

80 Scoring Guidepost

- The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs.
- Objectives for recovery have at least some consideration of historic documents on stock abundance.
- The management system has a reasonable (>60%) probability of achieving long-term recovery 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 recovery is occurring.
- Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans.
- The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks

60 Scoring Guidepost

- The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks.
- The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.
- The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks.

MSC PRINCIPLE 3

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

MSC 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.

For the purposes of this section, the management system is defined to mean all public sector entities with responsibility for managing salmon in British Columbia, including Fisheries and Oceans Canada (FOC), the Pacific Salmon Treaty (PST), and Pacific Salmon Commission (PSC), in addition to scientific assessment groups such as Pacific Scientific Advice Review Committee (PSARC) and other governmental entities that provide advice to managers.

Some indicators under Principle 3 appear to overlap with indicators under Principles 1 and 2, however, Principles 1 and 2 are concerned with the outcomes of a management system respecting the fact that the resources are maintained at the desired levels of abundance, while Principle 3 is concerned with evaluating whether all of the processes for reaching management objectives are in place.

Management System Criteria

MSC Criterion 3.1

The management system has a strategy for management that clearly defines long-term objectives for managing the impact of fishing on target species, non-target species and the ecosystem; the objectives are consistent with a well- managed fishery and MSC principles and criteria; and the management strategy includes provision for the effective implementation of measures to attain these objectives.

Intent:

The objective regarding this criterion dealing with Management Systems is to compare the Fisheries and Oceans Canada management system for British Columbia salmon, as detailed in the Integrated Fisheries Management Plan for British Columbia Salmon, and elsewhere, with the standards for a well-managed fishery as defined in the MSC Principles and Criteria for Sustainable Fishing. Particularly important is whether the management system has clearly defined objectives and goals that incorporate currently evolving standards for responsible fisheries management with respect to conservation of the species, regard for the ecosystem to which they belong, transparency of the management process and recognition of the impact of the fishery on social, cultural and economic issues.

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

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.**

Response: The profound and largely unmanaged impact of Fraser sockeye fisheries on inside sockeye stocks has been discussed. The issue of whether there is adequate monitoring of all catches is of considerable importance. Commercial fisheries are adequately managed, however within the Fraser and outside of the Fraser there are persistent concerns regarding the quality of catch monitoring in First Nations food social and ceremonial fisheries. At the inquiry into the problems with sockeye management in 2004 (Williams inquiry, now ongoing) DFO assessment biologist have testified under oath that they can no longer place confidence intervals around catch estimates for many FSC fisheries in-River. (Timber Whitehouse, Pers Comm.)

Two of the four 100 scoring Guideposts are met, three 80 scoring Guideposts are met and the remaining one is partially met, and the 60 scoring guideposts are met.

100 Scoring Guidepost

- Management objectives are clearly defined for all of the target stocks and are consistent with the MSC criteria for a well-managed fishery.
- Harvest rates and escapement goals are precisely set for each target stock unit in the fishery, as qualified by relevant environmental factors.
- Target Reference Points and Limit Reference Points are clearly defined and documented for each target stock unit in the fishery.
- Harvest controls are effective with respect to the attainment of management objectives for each target stock unit in the fishery.
- The management system provides estimates for all catches, landings and by-catch.

80 Scoring Guidepost

- Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery.
- Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors.

- Harvest controls are precise and effective for major target stocks or target species in the fishery.
- The management system provides estimates for all major catches, landings, and bycatch.

60 Scoring Guidepost

- Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks.
- Harvest controls are effective for the majority of the fisheries on target stocks.
- The management system provides for the estimation of catch, landing, and bycatch for the majority of the fisheries.

Indicator 3.1.2: The management system provides for periodic assessment of the biological status of the target species and the impact of fishing.

I generally agree with DFO's response, except that I question how responsive DFO is to conservation concerns. Problems with the early river entry and high pre-spawn mortality began in 1995, and the decline of Cultus sockeye was already chronic at that point. Action to address the decline of Cultus only began in earnest in 2001.

100 Scoring Guidepost

- There is an annual assessment or update of the status of stocks for each major target stock unit in the fishery.
- When results of the assessments or updates indicate that there has been a substantial change in the status of the stocks, this new information is made available to stakeholders in conjunction with the implementation of changes to management measures.
- Reports on the methodologies used for the assessments are published on a regular basis in peer-reviewed journals and PSARC, and/or the appropriate PSC committee regularly reviews the technical analyses for the assessments.

80 Scoring Guidepost

- Assessments or updates of the status of the stocks for the major target stock units are made on a periodic basis, dependent upon the level of exploitation.

- Results of assessment and updates of the status of the stocks are made available to stakeholders in a timely fashion.
- Reports on the methodologies used for the assessments are published in non-peer reviewed reports, and PSARC or the appropriate PSC committee reviews the technical analyses for the assessments.

60 Scoring Guidepost

- Assessments or updates of the status of the stocks for the majority of the target species are made for major fishing regions within the fishery.
- Results of assessment or updates of the status of the stocks are made available to stakeholders.
- Technical analysis and methodologies used for the assessments are published or distributed to stakeholders. .

Indicator 3.1.3: The management system includes a mechanism to identify and manage the impact of fishing on the ecosystem.

Response: The most significant ecological issue for commercial net fisheries for salmon, beyond harvest of endangered and threatened species, is biomass removal. DFO has no mechanism for monitoring or adjusting fisheries to ensure that sufficient Fraser sockeye are available to provide for the needs of animals that prey on pacific salmon (ie Orcas, seals, sea lions etc.). That said, overall abundance of Fraser sockeye is generally increasing.

None of four 100 scoring guideposts have been met. One of the 80 scoring guideposts is met, and the 60 scoring guidepost is met.

100 Scoring Guidepost

- Monitoring systems are in place to detect the impact of fishing on the ecosystem.
- Where potential impacts of fishing on the ecosystem have been identified, the management system has clear and well-defined objectives for evaluating and managing the impact of the fishery on the ecosystem.
- Control mechanisms are used to minimize impacts of fishing on the ecosystem.
- There is sufficient evidence to indicate that when used, control mechanisms are adequate for meeting the management objectives.

80 Scoring Guidepost

- The management system includes mechanisms to identify and evaluate the impact of fishing on the ecosystem.
- Control mechanisms are used to minimize impacts of fishing on the ecosystem.

60 Scoring Guidepost

- 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.

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.

Uncertainty always exists in estimates of the status of a stock, and technically it is not generally possible to determine the accuracy of the assessments. This uncertainty results from sampling and measurement error, limited understanding of the biology of the fish being modeled, error in model assumptions, and an inability to model all of the important processes that affect the dynamics of the stock. It can also arise as a result of changing fishing technology. However, some idea of the uncertainty can be detected or measured through sampling theory, by lack of fit of the model being used, or by sensitivity analysis.

Response: DFO does not always manage in a precautionary manner, or use the best scientific advice. The harvest of endangered late runs in 2003 is one example. DFO and the Fraser panel fished aggressively based on highly uncertain in season run size assessments. The Fraser panel was warned by members of the Technical Committee that reasonably foreseeable circumstances could lead to significant over harvest of late stocks of concern. This advice was ignored. When late runs did enter the river early (as they had every year for 8 years) and when the late run turned out to be smaller than the early assessments indicated (a common and not unexpected occurrence in Fraser sockeye management) the resulting impacts exceeded the 15% ceiling by a wide margin. There are other examples. In fact I will argue that the Fraser Panel (which is primarily comprised of commercial harvesters) has not always managed in a precautionary manner in recent years. For example, the impact of Fraser sockeye fisheries on late runs and Cultus sockeye have exceeded the objective set by DFO each year for the past four years.

Two of four 100 scoring guideposts are met, three of the 80 scoring guideposts are met, and three of the 60 scoring guideposts are met.

100 Scoring Guidepost

- The management system provides for the routine assessment of the level of uncertainty in the information collected for management and establishes management controls to address these uncertainties using the best available scientific information and a precautionary approach. .

- The management system implements research efforts to address data gaps.
- For newly developing fisheries for which there is very limited data and information, the management system implements controls on the development of the fishery that are precautionary in nature.
- The management system always quantitatively evaluates the effect of implementation uncertainty (the tendency for actual harvest rates or escapements to differ from those intended by the management regulations) on the effectiveness of the proposed management actions.

80 Scoring Guidepost

- The management system provides for some assessment of the level of uncertainty in the information collected for management and establishes management controls which take into account these uncertainties, using the best available scientific information and a precautionary approach.
- In situations when precautionary measures are necessary to manage the fishery, the management system calls for increasing research efforts in order to fill data and information gaps.
- In most cases where there are newly developing fisheries, the management system implements controls on the development of the fishery that are precautionary in nature.
- The management system considers the effect of implementation uncertainty on the effectiveness of most of the proposed management actions.

60 Scoring Guidepost

- The management system for the majority of newly developing fisheries is consistent with a precautionary approach.
- The management system considers the effect of implementation uncertainty on the effectiveness of the majority of the proposed management actions.

Indicator 3.1.5: Management response to new information on the fishery and the fish populations is timely and adaptive.

Intent: The management system should be timely and adaptive i.e., new information used by the management system to initiate new management measures or to update and/or improve current management measures in a timely fashion, because characteristics of the fishery can change and/or the natural system can show reduced or increased productivity over time.

Response: Delay and lack of effective control in addressing Cultus and late run issues is a concern here. I am of the opinion that DFO took action on Cultus and other late stocks reluctantly, and their performance in meeting late run harvest objectives (set by DFO) support this point of view. DFO is generally reluctant to specifically address the status of either weaker individual target CU's, or incidental impacts on non-target stocks or CU's in their management plans for major aggregates.

100 Scoring Guidepost

- The management system provides a mechanism for rapid adjustments to be made to its management programs.
- When new information or findings support altering the management and conservation programs (such as stock recovery plans), there is evidence to demonstrate that such adjustments are made within 6 months of obtaining the new information.

80 Scoring Guidepost

- The management system provides a mechanism for responding to unexpected changes in the fishery.
- When new information or findings support altering the management and conservation programs, adjustments are made within 12 months of obtaining the new information.

60 Scoring Guidepost

- For the majority of cases there are provisions for making timely adjustments to the management program, and when they are made the lag time is not so great as to result in the adjustments being ineffectual.

Indicator 3.1.6: The management system provides a process for considering the social and economic impacts of the fishery.

I agree with DFO's assessment generally. There is some debate concerning how well defined the process for considering First Nations interests really is. Within the Fraser, First Nations are constantly dissatisfied with the extent to which their views are considered. Fraser First Nations are generally well informed of DFO's intentions, but their needs or interests are not always accommodated in the management plan, and this is particularly true of First Nations in terminal areas of the Fraser. Conservation concerns that result from aggressive management of commercial fisheries often lead to problems with specific First Nations addressing their Food, societal and ceremonial needs.

The costs of managing commercial fisheries are born by Canadian Taxpayers and might be considered a direct subsidy.

Two of four 100 scoring guideposts are met. The remaining 60 and 80 scoring guideposts are met.

100 Scoring Guidepost

- There exists a formal and well-defined process to consider, over the short and long term, the views, customs, and interests of indigenous peoples who depend on fishing for their food or livelihood.
- There is a formal and well-defined process to consider, over the short and long term, the impact of the fishery on coastal communities that are closely tied to the fishery.
- There are no direct subsidies to the fishing industry.
- The management system regularly seeks and considers input from stakeholders in an effort to understand and address socioeconomic issues related to the fishery.

80 Scoring Guidepost

- The management system regularly undertakes to consider the views, customs and interests of indigenous peoples whose livelihood or food are dependent on the fishery.
- The management system regularly takes into consideration the impact of the fishery on coastal communities that are closely tied to the fishery.
- There are no subsidies to the fishing industry that would lead to unsustainable fishing or ecosystem degradation.
- The management system regularly undertakes measures to understand the socioeconomic impacts resulting from the management of the fishery.

60 Scoring Guidepost

- The management system more often than not considers the views, customs, and interests of indigenous peoples who depend on fishing for a livelihood or food.
- More often than not the management system considers the impact of the fishery on coastal communities that are closely tied to the fishery.
- For the majority of the fisheries there are no subsidies that threaten sustainable fishing.

- More often than not, the input of stakeholders is sought by the management system.

Indicator 3.1.7: The management system provides decision makers with useful and relevant information and advice for managing the fishery.

Response: I agree with DFO's assessment. All scoring guideposts have been met.

100 Scoring Guidepost

- The management system provides decision makers with a range of alternatives for achieving the objectives of management, including risk assessments for each alternative.
- All management decisions are based on useful and relevant information and advice that is provided through the management system.
- The management system, whenever possible, provides information to decision makers within a time frame that permits management controls to be determined before they need to be taken.

80 Scoring Guidepost

- The management system provides managers with a range of alternatives for management.
- Management decisions consistently rely on useful and relevant information provided within the system and there is not a record of decisions going against the information provided.

60 Scoring Guidepost

- The majority of management decisions rely on data, useful and relevant information, or advice provided through the management system.
- Risk assessments are considered in formulating important management decisions.

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

Response: I generally agree with DFO's assessment of this criterion. The selective fishing policy started out well, and was truly innovative. Unfortunately, structural rigidity in the allocation framework has smothered any recent attempts to open selective fisheries to harvest strong stocks while addressing conservation concerns for co-migrating stocks of concern. The failure of DFO to really consider options for terminal harvests is the root cause of continuing over fishing of weak stocks in mixed stock ocean fisheries. There are

at present no effective incentive for commercial harvesters to develop more selective fishing practices, nor are there effective disincentives not to exceed allocations or harvest limits. In 2004 all three proposals for selective/terminal commercial fisheries (Thompson chinook, Chilliwack lake sockeye, lower Fraser chum) were rejected by DFO and commercial harvesters. In 2004 commercial harvesters exceed the TAC for Fraser sockeye by a wide margin. The commercial fleet profited greatly and there is no formal disincentive, other than the poor returns in four years because escapement goals were not met.

100 Scoring Guidepost

- The management system has formal procedure for providing social and economic incentives to stakeholders in the fishery to develop and utilize sustainable fishing practices, particularly the development of selective fishing gear and practices that lead to improved conservation.
- The management system creates strong incentives for harvesters to not exceed target catches or exploitation rates
- The stakeholders in the fishery regularly avail themselves of the opportunity to utilize these incentives.
- Evidence provided by the management system demonstrates that such incentives have contributed to improved conservation.
- The management system continually attempts to understand the impact of their decisions on social and economic factors affecting the stakeholders in the fishery and regularly takes action to mitigate the impacts on stakeholders.

80 Scoring Guidepost

- The management system regularly considers the use of social and economic incentives to the stakeholders in the fishery, which are designed to facilitate the development of fishing gear and practices that can lead to sustainable fishing.
- The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates.
- Evidence demonstrates that the stakeholders in the fishery have used such incentives.
- The management system attempts to understand the impact of their management decisions on social and economic factors affecting the major stakeholders in the fishery and takes action to lessen the major impacts on stakeholders.

60 Scoring Guidepost

- The management system provides for the use of social or economic incentives to ensure sustainable fishing.
- The management system attempts to understand the impact of its decisions on social and economic factors affecting the stakeholders in the fishery and is responsive to requests to reduce these impacts.

MSC Criterion 3.2

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

Under this criterion we are interested in evaluating whether there is a research component to the management system that is sufficiently broad in scope to include all target species and other components of the ecosystem that may be impacted by fishing, and which provides for the acquisition of information and data to support scientifically- sound management actions, and whether the research is timely, open to review by peers and stakeholders in general, and is adequately funded.

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.**

Response: Despite chronic under funding and continuing reductions in funding of stock assessment programs in the pacific region, the assessment of Fraser sockeye stocks is still fairly reliable. Changes proposed in the near future will reduce stock assessment activities further, and will lead to less reliable sockeye escapement estimates in the Fraser. DFO's assessment of non Fraser non-target stocks harvested primarily in Fraser sockeye fisheries (inside sockeye) is inadequate by DFO's own admission. For example, the following quote from the most recent proceedings of the PSARC Salmon Subcommittee report to the regional executive of DFO....

“The authors noted that the quality and consistency of escapement data provided in the paper was generally poor and that there was insufficient data to estimate lake spawning capacity and assess stock status relative to benchmarks of capacity (i.e.SMSY).”

“The Subcommittee expressed concern regarding the long term declines in abundance of many of the ‘inside’ sockeye stocks. Of the thirteen populations examined, three show serious declines in escapement and are now critically low, and four are at low abundance and/or declining; while three appear to be stable, and three cannot be assessed because of inconsistent data. The three stocks demonstrating the most serious declines are the most southerly located and of particular concern.”

The one Conservation Unit in this stock group with reliable data is the Sakinaw, which is listed as endangered by COSEWIC. My point here is not that science branch is failing to do the best possible stock assessments with the available data, but that important data needs (to reliably assess stock status and impacts of fisheries) are chronically unaddressed due to lack of funds.

Four of seven 100 scoring guideposts are met, seven of eight 80 scoring guideposts are met, and both 60 scoring guideposts are met.

100 Scoring Guidepost

- The management system incorporates a research component that considers relevant data and information needs for formulating management strategies for all target species, and also information leading to an understanding of the dynamics of the ecosystem including data on the catch, landings and discards of non-target species.
- The framework for research includes investigations dealing with socioeconomic impacts of the fishery.
- The research plan responds in a timely fashion to unexpected changes in the fishery.
- Funding is secure and sufficient to meet long-term research needs.
- There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general.
- Research results form the basis for formulating management strategies and decisions.
- Research is regularly published in peer review journals and/or is reviewed by PSARC or the PSC.

80 Scoring Guidepost

- The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species.
- The research plan addresses concerns related to the impact of the fishery on the ecosystem.
- The research plan addresses socioeconomic issues that result from the implementation of management.
- The research plan is responsive to changes in the fishery.

- Funding is adequate to support short-term research needs.
- There is progress in understanding the impact of the fishery on target and non-target species.
- Research results are utilized in forming management strategies.
- Research is reviewed by PSARC or PSC, or other appropriate and technically qualified entities.

60 Scoring Guidepost

- Research provides for the collection of catch statistical and biological data for the target species.
- There has been useful research on the impact of fishing on target and non-target species taken in the fishery, and on the ecosystem in general.

Indicator 3.2.2: Research results are available in a timely fashion to interested parties, and there is a mechanism for periodic review of the content, scope and results of the research plan.

Response: tracking changes to DFO funding envelopes is difficult at best, and is generally not considered part of the routine consultation activity of the department. DFO budgets are in constant state of decline, and this affects every area of DFO's responsibility including enforcement, management and stock assessment. Funding information can be obtained, but I do not consider the DFO budget allocation process or the assessment of impacts from these cuts to be part of a transparent process.

The 60 and 80 scoring guideposts are met, and three of four 100 scoring guideposts are met.

100 Scoring Guidepost

- There is a formal and codified arrangement for annual stakeholder review of the content and scope of research plans and results, including matters related to its funding, which is open and transparent.
- There is a formal and codified arrangement for peer review of ongoing research
- The management system regularly incorporates into the research plan recommendations emanating from these reviews.
- Research results are made available to all interested stakeholders on a regular basis and in a timely manner.

80 Scoring Guidepost

- The management system provides for periodic reviews by stakeholders in the fishery, of the content and scope of research, including funding requirements.
- There are periodic peer reviews of ongoing research.
- Inputs from these reviews are used by the management system to modify research plans.
- Research results are available to interested parties on a regular basis.

60 Scoring Guidepost

- While there are no formal arrangements for stakeholder research review, such reviews are held on a periodic basis for the majority of the research plans and/or results.
- While there are no formal arrangements for peer review of ongoing research, such reviews are periodically conducted for the majority of ongoing research plans and/or results.
- The majority of research results are available to interested parties.

MSC Criterion 3.3

The management system allows for transparency with respect to its operational details, including a consultative process that provides for the incorporation of information and data from stakeholders in the fishery related to matters of a social, cultural, economic and scientific nature.

The objective here is to evaluate whether the management system is open and transparent with respect to all interested parties and whether the views of stakeholders are considered in formulating management strategies.

Indicator 3.3.1: Provides for a consultative process that is open to all interested and affected stakeholders, which allows for their input on a regular basis into the management process.

Response: I generally agree with DFO's assessment of this indicator.

All scoring guideposts are met.

100 Scoring Guidepost

- The management system provides a formal arrangement for the direct participation of all interested and affected stakeholders from both the public and private sectors, on matters of a social, cultural, economic and scientific nature.
- The management system provides timely, advanced notice of meetings at which there can be stakeholder participation.
- The management system does not exclude any interested and affected stakeholder from the consultative process.
- The management system addresses the interests of all interested and affected stakeholders.

80 Scoring Guidepost

- The management system provides for the regular participation of most interested and affected stakeholders on matters of a social, cultural, economic and scientific nature.
- The management system generally provides notice of meetings at which there can be stakeholder participation.
- The management system does not usually exclude involvement of any interested and affected stakeholder.
- The views of most interested and affected stakeholders are regularly considered in the formulation of management strategies.

60 Scoring Guidepost

- The majority of interested and affected stakeholders are provided with a forum for input into the formulation of management plans and measures.

[MSC Criterion 3.4](#)

The management system implements measures to control levels of exploitation in the fishery.

Sub-Criterion 3.4.1: The management system has provisions for controlling levels of exploitation to achieve the escapement and/or harvest rate goals for target stocks, and for the setting of harvest limits for non-target

species, when there is information indicating such limits are necessary.

Under this sub-criterion the issue of whether the management system provides for mechanisms such as closed areas, no take zones, and closed dates and times for placing controls on fisheries to ensure that objectives related to exploitation levels and escapement are achieved is evaluated.

Indicator 3.4.1.1: Utilizes methods to limit or close fisheries in order to achieve harvest and/or escapement goals, including the establishment of closed areas, no-take zones, and closed dates and times when appropriate.

Response: I generally agree with DFO's assessment of this indicator. As previously noted, one of the four target stocks aggregates of Fraser sockeye is in significant long term decline (early Stuart) and late sockeye are declining on most cycle lines particularly in the upper Fraser. Significant CU's within the other timing groups are in serious long-term decline. Objectives are not always achieved, and in the case of Cultus sockeye they have never been achieved.

Three of five 100 scoring guideposts are achieved, while the 80 and 60 scoring guideposts are achieved.

100 Scoring Guidepost

- The management system provides a formal and codified system to achieve harvest and/or escapement goals for target stock units and, as appropriate, non-target species of fish.
- The management system provides a formal and codified mechanism for establishing closed areas, no-take zones, and closed dates and times for any areas of the fishery.
- Management sets exploitation and escapement levels designed to maintain the target stock units at levels of abundance that can sustain high productivity.
- There is no evidence provided by the management system to indicate that, as a result of fishing, target stock units are in serious decline or degradation of the ecosystem is occurring.
- Measures are currently implemented to achieve these objectives.

80 Scoring Guidepost

- Harvest rates and/or escapement levels designed to achieve target goals are regularly implemented.
- The management system provides for the establishment of closed areas, no-take zones and closed dates and times.
- Controls are set to maintain or restore target species to high productivity levels, and in a manner that does not contribute significantly to ecosystem degradation.
- Measures that limit harvest rates and set escapement goals are implemented when necessary.

60 Scoring Guidepost

- Harvest rates and/or escapement goals for the majority of the target stocks are effective in halting declines in stock abundance caused by the fishery.
- Established harvest and/or escapement goals for target stocks consider the impact of the fishery on the majority of the non-target species, and on the ecosystem generally.

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

Response: While DFO does work to maintain timing aggregates at productive levels, the status of individual target stocks or CU's are not assessed now, and may not be assessed under the new Wild Salmon Policy. The following is from the Draft WSP now undergoing consultation:

“Individual sockeye CUs will not normally be managed separately, nor will each CU be assessed on an annual basis. For example, CUs that migrate together and face similar risk factors may continue to have their common risk factors jointly managed.

Amber status is also not a desirable state for most conservation units. While a CU in the Amber zone is not at immediate risk of loss, there will be a degree of lost production. Still, this situation may be acceptable for lower productivity CU's – particularly those that share risk factors with other more productive units”

The 100 scoring guideposts are not met, the 80 scoring guideposts are mostly met, while the 60 scoring guideposts are met.

100 Scoring Guidepost

- The management system has a formal and codified mechanism, which is adequate for restoring depleted target stocks to the TRP or equivalent high level of abundance, as qualified by relevant environmental factors.
- The mechanism includes strict guidelines for restoring these depleted populations within a certain time frame are formalized by the management system.

80 Scoring Guidepost

- The management system includes measures, which are adequate to restore depleted populations of target stock to the TRP or equivalent high level of abundance as qualified by relevant environmental factors.
- A time schedule for restoration, which considers environmental variability, is determined by the management system.

60 Scoring Guidepost

- The management system includes measures for restoring the majority of depleted populations of target stock to the TRP or equivalent high level of abundance.

Sub-Criterion 3.4.2: The management system incorporates measures to ensure that its objectives regarding the conservation of the stocks under its purview and the impact of the fishery on the ecosystem are carried out.

Two major issues are dealt with under this topic. One examines whether the management system includes provisions to determine whether there is adequate enforcement of the measures established for achieving the objectives of management. In these evaluations, compliance is considered to be the result of adequate enforcement mechanisms by the management system and education with respect to providing clear and timely information to the fishing industry regarding such measures. The other examines whether the management system includes adequate monitoring of the fishery so as to evaluate the performance of the fishery with regard to the policies and objectives of management.

Indicator 3.4.2.1: The management system includes compliance provisions.

Response: I generally agree with DFO's assessment. However, the Williams inquiry into the problems encountered in managing Fraser sockeye in 2004 is now underway. I have heard considerable evidence that enforcement problems may have contributed to the problems encountered in 2004. This information and testimony is on the public record (and is taken under oath), and transcripts will be available for review in the next few weeks.

Two of four 100 scoring guideposts are met, while All scoring guideposts are met.

100 Scoring Guidepost

- The management system provides for a formal arrangement, such as a compliance committee or a staff review team on compliance, to review the effectiveness of enforcement.
- Education and enforcement procedures are implemented and applicable rules are consistently applied.
- Enforcement actions are effective in achieving the objectives of management.
- There are no infractions being consistently committed in the fishery.

80 Scoring Guidepost

- The management system includes compliance provisions that are effective for the fisheries.
- Infractions, which result in adverse impacts on the status of the stocks or on the ecosystem, are rare.

60 Scoring Guidepost

- The management system includes compliance provisions that are effective for the majority of the fisheries.

Indicator 3.4.2.2. The management system includes monitoring provisions.

Response: I agree with DFO's assessment. All scoring guideposts are met.

100 Scoring Guidepost

- The management system incorporates a formal, effective program for monitoring the fishery, which fully evaluates the performance in terms of whether the regulations are resulting in the intended harvest rates and/or escapements, and achievement of objectives regarding impacts on the ecosystem caused by the fishery.
- Monitoring is comprehensive, and includes all relevant components of the fishery
- Results are reported widely on a regular and timely basis.

80 Scoring Guidepost

- The management system incorporates an effective monitoring program, which evaluates the performance of the fishery relative to management goals and policies.

- Monitoring is broad in scope, and results are available to the majority of the stakeholders.

60 Scoring Guidepost

- The management system includes provisions for a monitoring program to evaluate the performance of the majority of the fisheries against its policies and objectives.

MSC Criterion 3.5

The management system provides for regular and timely review and evaluation of its performance, and for appropriate adjustments based on the findings of these reviews and evaluations that are consistent with the objectives of the program.

The objective under this criterion is to evaluate whether the management system has an effective mechanism for reviewing performance vis-à-vis the objectives and policies of the management programs. An effective mechanism would include both internal and external reviews, and, when appropriate, the recommendations from the reviews would be incorporated into the management of the fishery. Also, the issue of whether the management system provides a mechanism for resolving disputes emanating from such reviews, or any other sources, is evaluated.

Indicator 3.5.1: There is an effective and timely system for internal review of the management system.

Response: I agree with DFO's assessment. All scoring guideposts are met.

100 Scoring Guidepost

- The management system provides for continuing internal review that is broad in scope, effective, and timely.
- The review process and results are made available to all stakeholders.

80 Scoring Guidepost

- The management system includes provision for an internal review that is conducted periodically as the need arises.
- The results of the review are made available to interested stakeholders.

60 Scoring Guidepost

- The management system provides for internal review of its performance, and when available, review results are made available to the majority of interested stakeholders.

Indicator 3.5.2: There is an effective and timely system for external review of the management system.

Response: External reviews of DFO's management are common, but not part of any formal system that I am aware of. External reviews of management took place in 94, and 2002 and 2004 and generally resulted from the perception of profound management problems. The results of any review are made available to the public.

Two of three 100 scoring guideposts and two of three 80 scoring guideposts are met. The 60 scoring guidepost is met.

100 Scoring Guidepost

- The management system provides for one or more independent experts to review at least bi-annually all of the important components of management performance.
- The format and standards of the review are established with input from outside the management system.
- Provision is made for making public the review results.

80 Scoring Guidepost

- The management system provides for a review of management performance by one or more independent experts at least once every five years.
- The format and standards of the review are established within the management system.
- Review results are made available to the public.

60 Scoring Guidepost

- The management system is open to external review at least once every 10 years.

Indicator 3.5.3: There is a mechanism for incorporating into the management system recommendations resulting from the review process.

Response: this is a contentious issue. In April of 2002, a Review of Fraser sockeye management in 2002 made 14 recommendations, and all 14 recommendations were

accepted by the Minister. Most of the recommendations made were slowly and often only partially implemented, leading to a great deal of frustration. You can visit the URL below and consider the recommendations proposed and the current progress in implementing these recommendations. The Marine Conservation Caucus has made a series of complaints to DFO in this regard. .

http://www.pac.dfo-mpo.gc.ca/comm/pages/release/bckgrnd/2003/bg004_e.htm

Neither of the 100 scoring guideposts is fully met, while the 80 and 60 scoring guideposts are generally met.

100 Scoring Guidepost

- The recommendations from internal and external reviews are always acted upon and, where appropriate, incorporated into the management system.
- The management system provides for a report to all interested stakeholders describing how it acted on the recommendations of these reviews.

80 Scoring Guidepost

- The recommendations from internal and external reviews are usually, but not always, used to make changes to the management system.

60 Scoring Guidepost

- 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.

Indicator 3.5.4: There is an appropriate mechanism for resolving disputes.

Response: As DFO says, “the mechanisms for resolving disputes is in a state of flux.” In fact, the Minister's authority is absolute, and the Minister's decision is final. Disputes are resolved, but not always in a way that leaves the parties to the dispute feeling that their views have been heard and considered. In a number of cases, DFO is developing management boards like the Integrated Harvest Management committees that will attempt to resolve disputes or conflicts through consensus, but failing consensus, the dispute will be decided by the Minister.

None of the 100 or 80 scoring guideposts are met, while the 60 scoring guidepost is met.

100 Scoring Guidepost

- The management system has a formal and codified mechanism for resolution of disputes arising as a result of the fishery.

- Affected parties routinely use the dispute resolution mechanism.
- The dispute resolution mechanism is unbiased and fair respecting all disputing parties.

80 Scoring Guidepost

- The management system has a dispute-resolution process for resolving significant disputes.
- The dispute resolution mechanism is available for use by affected parties, but is not routinely used.
- The dispute resolution mechanism does not discriminate against any disputing party.

60 Scoring Guidepost

- There is a mechanism for resolving disputes that is provided for by the management system.

MSC Criterion 3.6

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

In this section we attempt to evaluate the management system with regard to whether it manages the fishery in a manner that is consistent with Canada's commitments under relevant international treaties and agreements, and with domestic laws and regulations that pertain to the fishery. In this context we also evaluate whether the management system is in conformity with the legal and customary rights of First Nations peoples, as established by treaties with those peoples, the Canadian Constitution, and other applicable instruments.

Indicator 3.6.1: The fishery is not operated in a unilateral manner in contravention to international agreements.

For the purposes of this Indicator, only treaties and conventions which the government of Canada has signed, ratified or otherwise is a High Contracting Party to, shall apply.

Response :In general I agree with DFO's assessment, but I have reservations concerning DFO's compliance with the convention on biodiversity related to the failure to adequately protect stocks at risk of extinction under SARA..

100 Scoring Guidepost

- When the stocks of fish under the authority of the management system are also under the authority of an international treaty to which the Government of Canada is a party, treaty obligations are respected, and actions by the management system are coordinated with the recommendations of the treaty organization.
- All measures taken within the management system are in compliance with relevant international treaty obligations.
- The management system does not undertake unilateral exemption from any treaty obligation pertaining to the fishery.

80 Scoring Guidepost

- The management system does not willingly act in contravention to any international treaty obligations pertaining to the fishery.
- The management system does not knowingly undertake unilateral exemption from any treaty obligation pertaining to the fishery.
- Evidence indicates any inadvertent action with regard to the contravention of any international treaty obligations by the management system is rare.

60 Scoring Guidepost

- The management system is in compliance with the majority of international treaty recommendations dealing with the fishery.

Indicator 3.6.2: **The fishery is carried out in a manner consistent with all relevant domestic laws and regulations relevant to the fishery.**

Response: I agree with DFO's assessment.

100 Scoring Guidepost

- The management system conducts annual assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have confirmed full compliance with these laws and regulations.

80 Scoring Guidepost

- The management system conducts at least bi-annual assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have confirmed that none of the violations that have occurred would result in failure to achieve the objectives of the management plan.

60 Scoring Guidepost

- The management system conducts periodic assessments of the fisheries compliance with relevant domestic laws and regulations, and these assessments have not identified any violations that would result in failure to achieve the objectives of the management plan.

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

This is a difficult indicator to address because there is little agreement between DFO and First Nations concerning the scope and nature of Aboriginal rights and title as it relates to fish. Some First Nations in the upper Fraser have complained that they are not able to harvest the food they need. It must be understood that most First Nations do not wish to identify a simple quantum of fish necessary to meet their food needs, since food needs change over time. Nevertheless, this is a serious issue within the Fraser. I urge the review team you to talk to chief Thomas Alexis of the Tl'azt'en band, or Fred Fortier, Chair of the Secwepmec Fisheries commission, or Marcel Shepert, chair of the Fraser River Aboriginal Fisheries Secretariat.

The following is a quote from a letter sent from Chief Doug Kelly of the Soowahlie band to the Minister Thibault of Fisheries and Oceans on July 18 (long after fisheries had begun for Fraser sockeye). This letter speaks to consultation and respect for the rights of First Nations. :

“I am chief of the Soowahlie Band of the Sto:lo First Nation. We live on Cultus Lake, and have harvested Cultus Lake sockeye for thousands of years; in fact we owe our very existence as a people to the return of Cultus sockeye salmon.

The protection of Cultus sockeye was a central issue in the conflict leading to the 2002 Fraser Sockeye Review, which resulted in 14 recommendations. As Minister, you accepted all of these recommendations, and we were assured that we would be consulted concerning fishing plans for our fish, and that our fish would be specifically protected in fishing plans for 2003. I draw your attention to recommendation 4, concerning the required elements of the IFMP, and recommendation 5, concerning IFMP issues for 2003. A science based risk assessment must be part of all Integrated Fisheries Management Plans (IFMP) (recommendation 4), and we also expect that **“there will be consultations on the management objectives for Cultus Lake and Sakinaw sockeye in 2003, relating to both fishing and habitat protection”** (recommendation 5). There have been no consultations with Soowahlie Band, and no such risk assessment framework has been prepared by your department, despite the fact that the Species at Risk Act (SARA) has been proclaimed into law, and the Council On the Status of Endangered Wildlife in Canada (COSWEIC) has confirmed its emergency listing of our sockeye salmon as endangered.

We understand that your department is considering harvesting between 18% and 25% or more of Late Fraser sockeye in 2003, and that the South Coast Integrated Fisheries Management Plan outlining these plans is on your desk awaiting your signature. Irrespective of the 2002 Sockeye Review, or any other process, Soowahlie Band has a right to understand the risks of fishing on Cultus sockeye, and a right to know precisely how your department assessed the risks and benefits of alternative fishing options on our stocks for the 2003 fishing season. We ask that this information be provided to Soowahlie Band and that Soowahlie band be given a reasonable time to review and understand the information *before any fishing takes place that might affect Cultus sockeye.* “

I have first hand knowledge of this matter, and to my knowledge, no such information was provided to Chief Kelly.

100 Scoring Guidepost

- The management system is in compliance with all major legal and customary rights of First Nation peoples that are impacted by the fishery.
- The management system includes processes for consultation with First Nations peoples on the impact of the commercial fishery on their food, social and ceremonial fisheries.

80 Scoring Guidepost

- 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.
- The management system includes processes for providing information to First Nations peoples on the major impacts of the commercial fishery on their food, social and ceremonial fisheries.

60 Scoring Guidepost

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

[Fishery Operations Criteria](#)

[MSC Criterion 3.7](#)

[Fishing operations make use of gear and fishing practices that limit ecosystem impacts.](#)

The intention regarding this criterion relating to fishery operations is to evaluate the degree to which the management system is capable of implementing responsible fishing

practices. The understanding here regarding responsible fishing practices refers to the criteria defined in the MSC, Principle 3.B., Operational Criteria 12-17, and with those sections of the FAO Code of Conduct for Responsible fishing dealing with the conduct of fishing practices by the fishing industry.

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.

Response: I generally agree with DFO's assessment of this indicator, but after a very promising start, the implementation of selective fishing gear in Fraser sockeye fisheries has been very slow, and largely ineffective.

100 Scoring Guidepost

- There are requirements in the management system to reduce the capture of non-target species, which include:
 - Controlling the use of gear types and fishing practices that result in significant catches of non-target species or undersized individuals of target species, and/or
 - Implementing closed seasons and no-fishing zones during times and in areas where the probability of making significant catches of non-target species or undersized individuals of target species is high, and
 - Holding education programs for the fishing industry and other relevant stakeholders to make them aware of the benefits of using fishing techniques and gear that minimize the catch of non-target species or undersized individuals of target species.
- Taking into consideration natural variability in population abundance and the possibility of declining abundance resulting from heavy exploitation, the management system can demonstrate the effective use of these methods by fishers by the existence of downward trends in the catches of non-target species.
- The management system creates incentives to decrease the catch of non-target species (e.g. by providing more fishing time for vessels achieving certain standards for reducing such catches).

80 Scoring Guidepost

- Through educational programs for members of the fishing industry and other relevant stakeholders, the management system discourages the use of gear types and fishing practices that result in high catches of non-target species or undersized individuals of target species, and encourages them to avoid fishing in areas identified to have high concentrations of non-target species or undersized individuals of target species.

- Taking into consideration natural variability in population abundance, there is evidence that the capture and discard of non-target species or undersized individuals of target species is trending downward, or is at a level of exploitation that has been determined by management to be acceptable.
- Fishers generally conduct their fishing activity in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.

60 Scoring Guidepost

- 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.

Indicator 3.7.2: Prohibits the use destructive fishing practices, such as poisons and explosives.

I agree with DFO's assessment of this indicator.

100 Scoring Guidepost

- The management system prohibits fishing practices that utilize poisons or explosives, or other such devices that damage or destroy physical, chemical, and/or biological features or characteristics of the areas where such practices are prosecuted.
- Evidence can be provided by the management system that such destructive practices are not currently being employed in the fishery.

80 Scoring Guidepost

- The management system can demonstrate that destructive fishing practices, such as poisons or explosives, are not currently being used in the fishery.

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- The management system prohibits or discourages the use of destructive fishing practices.

Indicator 3.7.3: Minimizes operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.

Response I agree with DFO's assessment of this indicator.

100 Scoring Guidepost

- The management system has a formal program to reduce operational waste in the fishery, with the long-term goal of eliminating such waste.
- The program is effective, as reflected by reduced incidents of operational waste.
- The management system has a formal program in which they work with the fishing industry and other relevant stakeholders to promote the proper handling of catch.

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- The management system has a program that sets guidelines for reducing operational waste.
- The management system encourages the fishing industry and other relevant stakeholders to promote programs for the proper handling of catch.

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- There is a program to reduce operational waste.

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.

Response: I agree with DFO's assessment of this indicator

100 Scoring Guidepost

- The majority of fish harvesters and processors are in compliance with management requests for the collection of data on catches and discards of non-target species and undersized individuals of target species.
- Continued improvement in the quality and quantity of catch and discard data is evident.

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- 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.

60 Scoring Guidepost

- 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.

Indicator 3.7.5: Implements fishing methods that minimize adverse impacts on habitat, especially in critical zones.

Response: I agree with DFO's assessment of this indicator.

100 Scoring Guidepost

- The management system has a formal program to identify and document the impact of the fishery on habitat, and implements measures to restrict gear and fishing practices that have been shown to adversely affect habitat.
- The crews of fishing vessels comply with such measures and thereby avoid damaging the habitat.
- There is no evidence of continued impacts of fishing on habitat.

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- The management system undertakes measures to identify and document the impact of the fishery on habitat and to set guidelines for reducing habitat impacts.
- Fish harvesters are encouraged to follow the guidelines for reducing habitat impacts.

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- 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.