

Independent Review of Nass River Sockeye Fishery Performance Measures



Prepared for:

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Introduction

The Marine Stewardship Council (MSC) is presently undertaking an independent evaluation of British Columbia commercial salmon fisheries. The applicant for certification, the BC Salmon Marketing Council and the Department of Fisheries and Oceans (DFO), have completed self-evaluations of fisheries management performance for the major BC sockeye fisheries. As part of the certification process, these evaluations are being reviewed by independent Fisheries Scientists. The present report provides an external review of the performance measures for Nass River sockeye.

During the external review, evaluation focused on the DFO classification of the performance of the fishery management system according to the MSC criteria¹. The review undertook to ensure that the DFO classification is accurate in light of the available information. The review also evaluated the adequacy of existing information for sockeye management to ensure that data gaps were identified by DFO.

DFO rated sockeye management performance according to a MSC scoring system that includes 100, 80 and 60 scoring guideposts. The 100 guidepost is the highest mark any fishery could be expected to receive. The 80 guidepost indicates the level of acceptable performance. The 60 guidepost indicates the minimum threshold allowable in an MSC evaluation.

Criteria were rated as follows

- Green – the requirements of the guidepost have been met
- Red – the requirements of the guidepost have not been met
- Orange – the requirements of the guidepost partially have been met
- Black – the requirements of the guidepose are not applicable to the Nass sockeye fishery

For the external review of Nass sockeye, where the 100 scoring guidepost was justifiably met no further review was undertaken on the 80 and 60 guideposts. If the 100 guidepost was not achieved then the 80 guidepost was evaluated. Likewise where the 80 guidepost was not achieved, the 60 guidepost was evaluated. During evaluation of the scoring guideposts, information was scrutinized to determine whether a lower ranking was more appropriate, based on available scientific information.

A systematic evaluation of the 47 criteria begins on p. 5. A summary of results is provided on p.2.

¹ Chaffee, C., K. English, J. Joseph and D. Schmidt. 2003. MSC Evaluation of BC Salmon Fisheries: units of certification, performance indicators and scoring guidepost. Scientific Ceritifcation Systems.

Summary of Results

I was in agreement with 37 out of 47 DFO evaluations, disagreed strongly with one of them, and partially disagreed with 9 of them.

I disagreed strongly with the following indicator:

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

DFO describes selective fishing and co-management as programs that provide incentives for sustainable fishing. While beneficial, they can hardly be described as incentives. In reality there are no incentives and the primary motivation for commercial fishers is to harvest as many fish as rapidly as possible.

There were 9 evaluations where I partially disagreed with DFO including:

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

Nass sockeye migration rates and residence times are based on tagging studies carried out in 1982-83 – this information needs to be updated. Supporting documentation provided for chinook and coho is not relevant for sockeye.

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.

Sockeye indicator stocks are not used, and information presented for coho is not relevant.

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.

Management has defined an escapement goal for Meziadin Lake (160,000 spawners) but has not produced similar goals for the other sockeye stocks.

1.1.3.1: Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.

LRPs exist however mechanisms for in-season application are not well-developed. There would be a significant time lag between the appearance of a weak run, and its protection via management measures designed to keep it above its LRP.

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

TRPs are available but have not been reviewed by PSARC. The description of the draft Wild Salmon Policy does not provide adequate support for this indicator.

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

Preliminary research efforts, mostly undertaken in other watersheds, do not permit analysis of trade-offs, determination of impacts between fish harvests and freshwater ecosystem impacts. Nor do they permit understanding the adequacy of existing escapement goals for meeting freshwater ecosystem needs. This is an important area where focused research is required to determine these relationships.

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

DFO monitoring systems are in place for monitoring impacts on the fishery, and only secondarily on the ecosystem. There are no mechanisms explicitly designed to manage ecosystem impacts.

3.4.2.2: The management system includes monitoring provisions.

Discussion is provided on frameworks, allocation policy, and responsibilities but there is no clear description of ongoing monitoring activities for Nass sockeye. While data is undoubtedly collected, the reporting of the results cannot be determined from the information provided.

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

While this is not entirely relevant for Nass sockeye, elsewhere in BC (e.g. Fraser River), recommendations from sockeye fisheries inquiries have only been partially implemented.

Although my analysis resulted in lower scores for these latter 9 indicators than assigned by DFO, MSC certification criteria are still met (greater than 60 scoring grade, on average).

A handwritten signature in black ink that reads "David Levy". The signature is fluid and cursive, with "David" on top and "Levy" on the bottom, slightly overlapping.

MSC Indicator	DFO Evaluation
<p>1.1.1.1</p> <p>The stock units are well defined for the purposes of conservation, fisheries management and stock assessment.</p>	<p>100 Scoring Guidepost</p> <p>There is an unambiguous description of each stock unit, including: its geographic location, run timing, details on all the component stocks, and rational for its definition.</p> <p>The rationale for each stock unit is clear with regard to conservation, fisheries management and stock assessment requirements.</p>
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Stock identification in the Nass system has been verified by DNA analysis (Beacham and Wood 1999); lake stocks and tributary aggregates form discrete management units. Sockeye tend to stray less than other salmon species. Sockeye run timing is known from DNA analysis of Nisga'a fish wheel samples. Stock units are well-defined. <p style="text-align: center;">Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.1.2</p> <p>There is general scientific agreement that the stock units are appropriate.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>There is general agreement among regional fisheries scientists outside the management that the stock units are appropriate.</p> <p>There is general scientific agreement regarding the stock units for non-target species.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> PSARC process has shown that stock units are appropriate. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
1.1.1.3 The geographic range for harvest of each stock unit in the fishery is known.	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.
Sierra Club Reviewer Evaluation	
<ul style="list-style-type: none"> • Migration route and residence time information is dated (1982-83) and needs updating (ref. 21). • Information presented on coho (refs. 22, 23, 24) and chinook (refs. 25,26) is irrelevant. • Reference is made to monitoring of Nisga'a harvest of Nass sockeye in ocean and in-river fisheries. This does not include other offshore marine commercial sockeye harvests. • “Stock identification is determined via <u>any</u> scale or DNA samples” – this does not mean that they are actually analyzed on a systematic basis. By implication the geographic range is not estimated on an annual basis. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.1.4</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>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.</p> <p>There is general agreement among regional fisheries scientists outside the management agency that the indicator stocks are appropriate.</p> <p>The relationships between indicator stocks and stocks of interest are assessed every three to five years.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Reference is made to coho indicator stocks (refs. 28,29); this is highly inappropriate. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.1.5</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>Fisheries targeting enhanced stocks are geographically removed from unenhanced stocks and separate terminal harvest areas are established for these fisheries.</p> <p>Times and areas have been identified where the majority of enhanced fish migrate through the general fishery.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <p>Not applicable – no enhanced sockeye stocks in the Nass watershed.</p>	

MSC Indicator	DFO Evaluation
1.1.2.1 Estimates exist of the removals for each stock unit.	<p>100 Scoring Guidepost</p> <p>Catch estimates are available for all fisheries in Canadian waters that harvest the target and non-target stocks harvested in the fishery being evaluated.</p> <p>Mortality rates are available for the fish released or discarded during the fishery.</p> <p>Catch estimates are available for fisheries outside Canadian waters that harvest the stocks that are the target of the fishery being evaluated.</p>
Sierra Club Reviewer Evaluation	
<ul style="list-style-type: none"> • Very good catch information due to Pacific Salmon Treaty and Nisga'a Treaty requirements. • Excellent quality First Nation catch information. • Recreational harvest is insignificant. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.2.2</p> <p>Estimates exist of the spawning escapement for each stock unit.</p>	<p>100 Scoring Guidepost</p> <ul style="list-style-type: none"> • In-season escapement data are collected for all stock units and used to regulate the fishery. • Estimates are available for the annual escapement for each stock unit harvested in the fishery. <p>80 Scoring Guidepost</p> <ul style="list-style-type: none"> • Estimates are available for the annual escapement of each target stock harvested in the fishery.
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • First point is inaccurate – DFO evaluation states: “Escapement data for other Nass sockeye Lake systems are not collected every year.” In practice, sockeye management attention focuses on the Meziadin Lake stock, the largest in the Nass River. This stock is reliably assessed, but the smaller stock aggregates are not. This would be problematic under the future (draft) Wild Salmon Policy. • Juvenile sockeye surveys (ref. 43) cannot be used as a reliable proxy for adult escapement estimates and fishery management purposes (at best they provide rough pre-season indicators). • Reference is made to recent (1994) developments (ref.40) that indicate the potential for stock-specific in-season abundance estimates; this doesn't mean they are obtained in practice. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.2.3</p> <p>The age and size of catch and escapement have been considered, especially for the target stocks.</p>	<p>100 Scoring Guidepost</p> <ul style="list-style-type: none"> • 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. <p>80 Scoring Guidepost</p> <ul style="list-style-type: none"> • 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.
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Monitoring takes place “periodically” but no description is provided on the actual frequency. • Periodic monitoring programs are in place collecting information on age and size of <u>other species</u> in the ocean fisheries catch: this is irrelevant for the sockeye assessment. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.2.4</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <ul style="list-style-type: none"> • Scientifically defensible productivity estimates (eg, stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known. • 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. <p>80 Scoring Guidepost</p> <ul style="list-style-type: none"> • 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.
<h3 style="text-align: center;">Sierra Club Reviewer Evaluation</h3> <ul style="list-style-type: none"> • Productivity estimates are based on juvenile assessments, not stock:recruitment analysis (refs. 46,47). The juvenile studies are based on lake capacity estimates and assume no spawning habitat limitation. • Historical fishery performance information gives information on target stock productivity, but is less useful for non-target stocks. • Management focuses on providing sufficient escapement, not on biological productivity. • Reference is made to coho and steelhead as “non-target” stocks; no consideration is given to non-Meziadin Lake sockeye stocks. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.3.1</p> <p>Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>There is general agreement among regional fisheries scientists outside the management agency that the LRPs are appropriate.</p> <p>There is general scientific agreement regarding the LRPs for non-target species.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • LRP's are based on escapement which is only measured accurately post-season. LRP's need to be based on in-season estimates that are collected in near real-time. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>1.1.3.2</p> <p>Target Reference Points or operational equivalent have been set.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>There is general agreement among regional fisheries scientist outside the management agency that the TRPs are appropriate.</p> <p>The TRPs for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Response references the future Wild Salmon Policy which may or may not be implemented at some future date (WSP has been in draft since 2000). • TRPs have not been reviewed by PSARC. • Absence of expressions of concern from provincial scientists is largely irrelevant since the province is not involved in sockeye management. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
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.	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.
Sierra Club Reviewer Evaluation	
<ul style="list-style-type: none"> • Nass sockeye have clearly defined LRP and TRPs. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>1.2.2</p> <p>Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points for the target stocks.</p>	<p>100 Scoring Guidepost</p> <p>There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery.</p> <p>Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks.</p> <p>The management agency does not use artificial propagation as a substitute for maintaining or recovering wild stocks.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Nass sockeye are presently at high and stable levels of abundance. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>1.3.1</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>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.</p> <p>Enhanced fish are identified and managed as separate target stocks.</p> <p>80 Scoring Guidepost</p> <p>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 stocks.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Compared to other species, there are smaller variations in age and size so management is simplified. Reference is made to terminal fisheries (at the Meziadin fishway) to protect weak sockeye stocks, but no reference is given for non-terminal fisheries. Stocks of Nass sockeye are arguably the “healthiest” sockeye populations in BC. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>2.1.1</p> <p>The management plan for the prosecution of the marine fisheries provides a high confidence that direct impacts on non-target species are identified.</p>	<p>100 Scoring Guidepost</p> <p>A monitoring program exists that provides estimates of by-catch that meet statistical criteria acceptable to external reviewers.</p> <p>All historic monitoring data is readily available to stakeholder groups and external reviewers.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Non-reporting of by-catch would undermine the validity of by-catch monitoring results. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>2.1.2</p> <p>The management system includes measures to reduce marine ecosystem impacts.</p>	<p>100 Scoring Guidepost</p> <p>A risk assessment of by-catch concerns has been conducted as part of developing the management plan.</p> <p>The effect of the fishery on the marine ecosystem has been explicitly addressed in the management plan.</p> <p>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.</p> <p>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.</p> <p>This information is presented in documents that are made available to stakeholders.</p> <p>80 Scoring Guidepost</p> <p>The effect of the fishery on the marine ecosystem has been addressed by the management system.</p> <p>Where problems are identified, fisheries managers make adjustments to reduce impacts on non-target species.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> By-catch of non-salmon species is minor. Interceptions of other weak stocks and other species of salmon can be a significant concern. Reduction in non-target stock interception is supported by a vague statement: "<i>In recent years, the fleet has adopted a range of fisheries management strategies aimed at reducing impacts on non-target stocks while still allowing for the harvest of more abundant stocks, e.g. Meziadin Lake sockeye.</i>" The effectiveness of the strategies cannot be evaluated. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>2.1.3</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The management agency has a proven history of incorporating new research findings into management plans.</p> <p>The management agency has a proven history of closing fisheries when by-catch problems</p> <p>The management agency has supported the development of more selective fishing practices.</p>
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • DFO has a proven history of restricting fisheries when conservation concerns are identified. • The response blurs the distinction between research and monitoring. • Between DFO Science Branch and PSARC, there is a strong research capability to support Nass sockeye fisheries management, as required. <p style="text-align: center;">Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>2.1.4</p> <p>The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>Results and conclusions from research are made available to stakeholders.</p> <p>80 Scoring Guidepost</p> <p>Ongoing research is supported to determine the impacts of carcasses on freshwater ecosystem processes and to identify tradeoffs between harvests and freshwater ecosystem</p> <p>60 Scoring Guidepost</p> <p>The management system supports research efforts to understand the adequacy of existing escapement goals for meeting freshwater ecosystem needs.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Preliminary research efforts, mostly undertaken in other watersheds, do not permit analysis of trade-offs, determination of impacts between fish harvests and freshwater ecosystem impacts. Nor do they permit understanding the adequacy of existing escapement goals for meeting freshwater ecosystem needs. This is an important area where focused research is required to determine these relationships. DFO partially meets criteria (orange ranking) within the scoring guideposts. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>2.2.1</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>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.</p> <p>Time and area of migrations of weak year classes, sub-stock or population components are known.</p> <p>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 component, of the targeted species.</p> <p>80 Scoring Guidepost</p> <p>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.</p> <p>60 Scoring Guidepost</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Reference to the Wild Salmon Policy draft is inappropriate until DFO indicates its intention to adopt it (has been in draft for 5 years). <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>2.3.1</p> <p>Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRP (Limit Reference Points).</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>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.</p> <p>Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.</p> <p>Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Stock Assessment Review Committee or the appropriate Pacific Salmon Commission technical committee.</p> <p>The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks.</p> <p>80 Scoring Guidepost</p> <p>The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks.</p>
<h3>Sierra Club Reviewer Evaluation</h3> <ul style="list-style-type: none"> As witnessed elsewhere in BC where sockeye conservation concerns have been identified (e.g. Cultus Lake sockeye, Sakinaw Lake sockeye), DFO does not always react swiftly to assist stock recovery. However, the Nass sockeye population is probably the least prone in BC to decrease below established LRP. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.1</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>Management objectives are clearly defined for all of the target stocks and are consistent with the MSC criteria for a well-managed fishery.</p> <p>Harvest rates and escapement goals are precisely set for each target stock unit in the fishery, as qualified by relevant environmental factors.</p> <p>Target Reference Points and Limit Reference Points are clearly defined and documented for each target stock unit in the fishery.</p> <p>Harvest controls are effective with respect to the attainment of management objectives for each target stock unit in the fishery.</p> <p>The management system provides estimates for all catches, landings and bycatch.</p> <p>80 Scoring Guidepost</p> <p>Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> DFO does a good job of defining management objectives and adjusting harvest rates of Nass sockeye to meet those objectives. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.2</p> <p>The management system provides for periodic assessment of the biological status of the target species and the impact of fishing.</p>	<p>100 Scoring Guidepost</p> <p>There is an annual assessment or update of the status of stocks for each major target stock unit in the fishery.</p> <p>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.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> DFO and the Nisga'a annually undertake comprehensive stock assessment and catch monitoring of the sockeye fishery. There is open public access to fishery information and dissemination in Nisga'a and DFO fishery reports. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.3</p> <p>The management system includes a mechanism to identify and manage the impact of fishing on the ecosystem.</p>	<p>100 Scoring Guidepost</p> <p>Monitoring systems are in place to detect the impact of fishing on the ecosystem.</p> <p>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.</p> <p>Control mechanisms are used to minimize impacts of fishing on the ecosystem.</p> <p>There is sufficient evidence to indicate that when used, control mechanisms are adequate for meeting the management objectives.</p> <p>80 Scoring Guidepost</p> <p>The management system includes mechanisms to identify and evaluate the impact of fishing on the ecosystem.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> DFO activities have more to do with managing impacts on the fishery, rather than the ecosystem The mechanisms for identifying impacts are incidental to other objectives. Therefore, the 80 scoring guidepost is downgraded to orange. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.4</p> <p>When dealing with uncertainty, the management system provides for utilizing the best scientific information available to manage the fishery, while employing a precautionary approach.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The management system implements research efforts to address data gaps.</p> <p>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.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> The quote on p. 11: “Many reports on the Nass have been drafted” is misleading and refers to reports (ref.20) on freshwater ecology that are only peripherally related to managing the fishery. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
3.1.5 Management response to new information on the fishery and the fish populations is timely and adaptive.	<p>100 Scoring Guidepost</p> <p>The management system provides a mechanism for rapid adjustments to be made to its management programs.</p> <p>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.</p>
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Mechanisms have been developed for pre-season, in-season and post-season assessments of Nass sockeye. Nass sockeye populations are presently high and stable and stock recovery plans have been unnecessary. <p style="text-align: center;">Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.6</p> <p>The management system provides a process for considering the social and economic impacts of the fishery.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>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.</p> <p>There are no direct subsidies to the fishing industry.</p> <p>The management system regularly seeks and considers input from stakeholders in an effort to understand and address socioeconomic issues related to the fishery.</p> <p>80 Scoring Guidepost</p> <p>The management system regularly takes into consideration the impact of the fishery on coastal communities that are closely tied to the fishery.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> First Nations interests in the fishery are well-supported by virtue of the Nisga'a Treaty which defines sockeye harvests and participation in fisheries management. Coastal community interests are addressed through informal processes. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.7</p> <p>The management system provides decision makers with useful and relevant information and advice for managing the fishery.</p>	<p>100 Scoring Guidepost</p> <p>The management system provides decision makers with a range of alternatives for achieving the objectives of management, including risk assessments for each alternative.</p> <p>All management decisions are based on useful and relevant information and advice that is provided through the management system.</p> <p>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.</p> <p>80 Scoring Guidepost</p> <p>The management system provides managers with a range of alternatives for management.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Reference is made to a Fraser sockeye review and an Action Plan for future implementation. For Certification, implementation is more relevant than planning. Some of the listed web-sites contain general DFO fisheries information but no specific information on Nass sockeye. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.1.8</p> <p>The management system provides for socioeconomic incentives for sustainable fishing.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The management system creates strong incentives for harvesters not to exceed target catches or exploitation rates.</p> <p>The stakeholders in the fishery regularly avail themselves of the opportunity to utilize these incentives.</p> <p>Evidence provided by the management system demonstrates that such incentives have contributed to improved conservation.</p> <p>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.</p> <p>80 Scoring Guidepost</p> <p>The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates.</p> <p>60 Scoring Guidepost</p> <p>The management system provides for the use of social or economic incentives to ensure sustainable fishing.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Selective fishing and collaborative management are well-developed however they are not incentives, in themselves, for sustainable fishing . • Until a quota system is adopted, viable incentives for harvesters to limit catches do not exist. In fact, there are no target catches and Nass sockeye fisheries are regulated by means of openings and closures. This provides partial lack of management control of the fishery. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>3.2.1</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The framework for research includes investigations dealing with socio-economic impacts of the fishery.</p> <p>The research plan responds in a timely fashion to unexpected changes in the fishery.</p> <p>Funding is secure and sufficient to meet long-term research needs.</p> <p>There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general.</p> <p>Research results form the basis for formulating management strategies and decisions.</p> <p>Research is regularly published in peer review journals and/or is reviewed by PSARC or the PSC.</p> <p>80 Scoring Guidepost</p> <p>The research plan addresses socio-economic issues that result from the implementation of management.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Agree with DFO evaluation (red on 100 scoring guidepost) that the research framework does not adequately deal with socio-economic impacts. This topic is not addressed by the 80 and 60 scoring guideposts. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.2.2</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>There is a formal and codified arrangement for peer review of ongoing research.</p> <p>The management system regularly incorporates into the research plan recommendations emanating from these reviews.</p> <p>Research results are made available to all interested stakeholders on a regular basis and in a timely manner.</p> <p>80 Scoring Guidepost</p> <p>The management system provides for periodic reviews by stakeholders in the fishery, of the content and scope of research, including funding requirements.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • A strong library of internet resources provide the necessary communication functions. • DFO maintains a strong research orientation backed up by excellent scientists within the Science Branch. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.3.1</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The management system provides timely, advanced notice of meetings at which there can be stakeholder participation.</p> <p>The management system does not exclude any interested and affected stakeholder from the consultative process.</p> <p>The management system addresses the interests of all interested and affected stakeholders.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • DFO has well-defined consultation processes. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.4.1.1</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>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.</p> <p>Management sets exploitation and escapement levels designed to maintain the target stock units at levels of abundance that can sustain high productivity.</p> <p>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.</p> <p>Measures are currently implemented to achieve these objectives.</p>
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Nass sockeye harvests are controlled primarily by means of closures in space and time. These measures are effective as witnessed by the healthy status of Nass sockeye resources. <p style="text-align: center;">Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.4.1.2</p> <p>Provides for restoring depleted target species to specified levels within specified time frames.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The mechanism includes strict guidelines for restoring these depleted populations within a certain time frame are formalized by the management system.</p> <p>80 Scoring Guidepost</p> <p>The management system includes measures that are adequate to restore depleted populations of target stock to the TRP or equivalent high level of abundance as qualified by relevant environmental factors.</p> <p>A time schedule for restoration, which considers environmental variability, is determined by the management system.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Stock restoration is not a concern for Nass sockeye. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.4.2.1</p> <p>The management system includes compliance provisions.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>Education and enforcement procedures are implemented and applicable rules are consistently applied.</p> <p>Enforcement actions are effective in achieving the objectives of management.</p> <p>There are no infractions being consistently committed in the fishery.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • DFO conservation and protection activities appear to be effective for Nass sockeye <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.4.2.2</p> <p>The management system includes monitoring provisions.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>Monitoring is comprehensive, and includes all relevant components of the fishery.</p> <p>Results are reported widely on a regular and timely basis.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Discussion is provided on frameworks, allocation policy, and responsibilities but there is no clear description of ongoing monitoring activities for Nass sockeye. While data is undoubtedly collected, the reporting of the results cannot be determined from the information provided. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
3.5.1 There is an effective and timely system for internal review of the management system.	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.
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Part of an annual process of the Pacific Salmon Commission. <p style="text-align: center;">Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.5.2</p> <p>There is an effective and timely system for external review of the management system.</p>	<p>100 Scoring Guidepost</p> <p>The management system provides for one or more independent experts to review at least bi-annually all of the important components of management performance.</p> <p>The format and standards of the review are established with input from outside the management system.</p> <p>Provision is made for making public the review results.</p> <p>80 Scoring Guidepost</p> <p>The management system provides for a review of management performance by one or more independent experts at least once every five years.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> General auditing/evaluations are periodically undertaken by the Government of Canada for salmon management over a broad geographical scale, but reviews have never been undertaken for Nass River sockeye in particular. This could be informative as a case study for a successfully managed sockeye population. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.5.3</p> <p>There is a mechanism for incorporating into the management system recommendations resulting from the review process.</p>	<p>100 Scoring Guidepost</p> <p>The recommendations from internal and external reviews are always acted upon and, where appropriate, incorporated into the management system.</p> <p>The management system provides for a report to all interested stakeholders describing how it acted on the recommendations of these reviews.</p>
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • This is not always the case – witness the 1992 and 1994 Fraser sockeye reviews and the partial lack of compliance with recommendations. This is a more serious issue during periods or situations where sockeye are scarce. This is not the case for Nass sockeye. <p>Conclusion: Disagree with DFO rating however, evaluation is above MSC threshold.</p>	

MSC Indicator	DFO Evaluation
<p>3.5.4 There is an appropriate mechanism for resolving disputes.</p>	<p>100 Scoring Guidepost</p> <p>The management system has formal and codified mechanisms for resolution of disputes arising as a result of the fishery.</p> <p>Affected parties routinely use the dispute resolution mechanism.</p> <p>The dispute resolution mechanism is unbiased and fair respecting all disputing parties.</p> <p>80 Scoring Guidepost</p> <p>The management system has a dispute-resolution process for resolving significant disputes.</p> <p>The dispute resolution mechanism is available for use by affected parties, but is not routinely used.</p> <p>The dispute resolution mechanism does not discriminate against any disputing party.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> Most disputes in sockeye fisheries are policy issues. Resolution has more to do with policy reform than dispute-resolution. In general DFO has adequate dispute resolution mechanisms for local sockeye fisheries. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.6.1</p> <p>The fishery is not operated in a unilateral manner in contravention to international agreements.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>All measures taken within the management system are in compliance with relevant international treaty obligations.</p> <p>The management system does not undertake unilateral exemption from any treaty obligation pertaining to the fishery.</p>
<p>Sierra Club Reviewer Evaluation</p> <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
3.6.2 The fishery is carried out in a manner consistent with all relevant domestic laws and regulations relevant to the fishery.	100 Scoring Guidepost The management system conducts annual assessments of the fisheries compliance with and regulations, and these assessments have relevant domestic laws confirmed full compliance with these laws and regulations.
<p style="text-align: center;">Sierra Club Reviewer Evaluation</p> <p style="text-align: center;">Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
3.6.3 The management system provides for the observation of legal and customary rights of First Nation peoples.	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.
Sierra Club Reviewer Evaluation	
<ul style="list-style-type: none"> • In many BC sockeye watersheds the above statements are false. However in the Nass where there is a Treaty covering much of the watershed, the DFO rating is correct. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.7.1</p> <p>Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch.</p>	<p>100 Scoring Guidepost</p> <p>There are requirements in the management system to reduce the capture of non-target species</p> <p>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.</p> <p>The management system creates incentives to decrease the catch of non-target species (eg. by providing more fishing time for vessels achieving certain standards for vessels achieving certain standards for reducing such catches).</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • Reference to SARA is misleading. In 2004 less than 50 sockeye returned to Cultus Lake (Fraser River stock); the stock was not SARA-listed due to high socio-economic costs. This does not engender confidence that SARA is a strong instrument for sockeye protection. • Where there is an acute conservation crisis, selective fishing practices are replaced by fishing closures. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.7.2</p> <p>Prohibits the use destructive fishing practices, such as poisons and explosives.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>Evidence can be provided by the management system that such destructive practices are not currently being employed in the fishery.</p>
Sierra Club Reviewer Evaluation	
Conclusion: Agree with DFO rating.	

MSC Indicator	DFO Evaluation
<p>3.7.3</p> <p>Minimizes operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc</p>	<p>100 Scoring Guidepost</p> <p>The management system has a formal program to reduce operational waste in the fishery, with the long-term goal of eliminating such waste.</p> <p>The program is effective, as reflected by reduced incidents of operational waste.</p> <p>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.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • There are various codes, laws, principles and guidelines presented, but no information on the actual volume of operational waste. • Based on the operating methods of commercial and First Nation fishers, it is not expected that this operational waste will present a large problem in the Nass watershed. <p>Conclusion: Agree with DFO rating.</p>	

MSC Indicator	DFO Evaluation
<p>3.7.4</p> <p>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.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>Continued improvement in the quality and quantity of catch and discard data is evident.</p>
Sierra Club Reviewer Evaluation	
Conclusion: Agree with DFO rating.	

MSC Indicator	DFO Evaluation
<p>3.7.5</p> <p>Implements fishing methods that minimize adverse impacts on habitat, especially in critical zones.</p>	<p>100 Scoring Guidepost</p> <p>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.</p> <p>The crews of fishing vessels comply with such measures and thereby avoid damaging the habitat.</p> <p>There is no evidence of continued impacts of fishing on habitat.</p>
<p>Sierra Club Reviewer Evaluation</p> <ul style="list-style-type: none"> • By virtue of the way the fishery is operated (gillnetters, seiners, trollers, fish wheel), habitat impacts are not a big issue. <p>Conclusion: Agree with DFO rating.</p>	

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