Pacific Fisheries Resource Conservation Council
Conseil pour la conservation des ressources halieutiques du pacifique

Pacific Fisheries Resource Conservation Council (PFRCC) 22 February 2005 Review Comments on DFO's:

A Policy Framework for Conservation of Wild Pacific Salmon [Draft] December 2004

Preamble:

The Council:

The Pacific Fisheries Resource Conservation Council (PFRCC) was established in 1998 to provide advice to the Governments of Canada and British Columbia and to the public on matters dealing with the conservation of Pacific fish populations, specifically salmon and steelhead, and their freshwater and ocean habitat.

The Council is chaired by Hon. John A. Fraser. Council members are: Mr. Mark Angelo, Ms. Mary-Sue Atkinson, Mr. Murray Chatwin, Ms. Merrill Fearon, Dr. Paul LeBlond, Dr. Jeffrey Marliave, Ms. Marilyn Murphy, and Mr. Marcel Shepert. Ex officio members are Dr. Richard Beamish representing DFO and Mr. Arnie Narcisse of the BC Aboriginal Fisheries Commission. Short biographies of Council members as well as Council reports are available on the Council website at www.fish.bc.ca.

Members of the PFRCC are pleased to see that a new and thoroughly revised draft of the Wild Salmon Policy has become available for comment. The PFRCC welcomes the formulation of a Policy that will enhance the protection of wild salmon populations and their habitats. Because of its makeup the PFRCC is able to offer independent and objective comments from a wide variety of perspectives. Our comments are organized into three sections.

Section 1 presents our views on a series of questions about the need for the Wild Salmon Policy (WSP) and what it should state and do as follows:

- Why is a Wild Salmon Policy required?
- What should the Wild Salmon Policy state?
- What should the Wild Salmon Policy do?
- How should the Wild Salmon Policy do it?

Section 2 presents our analysis of what the WSP actually does state and do.

Section 3 presents our comments about how DFO has attempted to resolve the many dilemmas it faced in drafting the Policy.

Section 4 presents our summary recommendations for the finalization of this important Policy.

1. The PFRCC's perspective on a Wild Salmon Policy

1.1 Why is a Wild Salmon Policy required?

Wild salmon and steelhead and their habitats in British Columbia and the Yukon are threatened by the continuing loss and degradation of habitat, the excess harvesting of fish, the development of net-pen aquaculture, our over-dependence on artificial propagation, and the lack of adequate resources for stock assessment, fisheries management including monitoring and enforcement, and basic biological research. Recent events, such as the sea-lice infestation in the Broughton Archipelago and the handling of the endangered Cultus and Sakinaw sockeye populations have eroded public confidence in the ability of DFO to protect wild salmon.

A clear policy statement affirming the priority of wild Pacific salmon and steelhead, accompanied by feasible implementation plans is needed to restore public confidence, clarify choices, and increase certainty in decision-making not only about fisheries but about enhancement, aquaculture and habitat as well.

1.2 What should it say?

All policy statements should be clear, succinct, and very much to the point in providing guidance to the bureaucracy in administering the law and the intentions of Parliament, meeting the expectations of First Nations, providing service to stakeholders, and citizens, and demonstrating a commitment to the people of Canada to a high level of care for their public resources.

This Council is very concerned that the public has lost confidence in the ability of DFO to provide a sufficient standard of care for wild Salmon, surely one of Canada's most important renewable natural resources. Council members think that many of the perceived problems with Pacific salmon are due more to a loss of confidence in DFO as custodian of the resource than to the state of the resource itself. The inability of DFO to deal satisfactorily with such issues as:

- the apparent impacts of net-pen aquaculture on pink salmon in the Broughton Archipelago,
- repeated embarrassments of "missing" Fraser sockeye,
- recent decisions not to list Cultus Lake and Sakinaw Lake sockeye under the Species at Risk Act,
- the failure of the "No Net Loss" Habitat Policy of DFO as habitat compensation is not fully effective at offsetting losses and areas such as the Fraser River watershed and the east coast of Vancouver Island continue to see unabated habitat losses, and
- the confusion between the federal and provincial governments over jurisdiction and accountability for nearly everything related to salmon and salmon habitat, which has done little to convince the public that DFO is doing an adequate job in looking after the wild Pacific salmon resource.

A Wild Salmon Policy must **put wild salmon first. If the Policy says this and demonstrates how it would be done it** would help to conserve the resource and restore public confidence that DFO is a responsible steward.

1.3 What should the Wild Salmon Policy do?

The PFRCC thinks that the Wild Salmon Policy should do these things:

1. The Policy should clearly state that the conservation of wild salmon and their habitats throughout the resource management process is of the highest priority to the government and to DFO.
2. The Policy should clearly commit DFO to providing the necessary resources to ensure that the conservation mandate of the Department for wild Pacific salmon and their habitats is fulfilled.
3. The Policy should clearly commit DFO to demonstrating to the citizens of Canada the highest standard of care for wild Pacific salmon.
4. The Policy should provide clear guidance to the bureaucracy and commitments to First Nations, the public, stakeholders and on all matters crucial to the conservation of wild salmon and their habitats.
5. The Policy should commit DFO to undertaking periodic independent audits of the success or failure of the implementation of the Wild Salmon Policy.

The Policy should be characterized by:

- Clarity and simplicity in setting goals and objectives.
- Consistent leadership by DFO in acknowledging the difficulties of managing a complex common property resource and in attempting to find solutions based on open consultation with First Nations, stakeholders and the public.
- Demonstrable commitment - clear improvements in habitat and stock conservation practices and results to be achieved in set times.
- Improved and functional partnership with the province in habitat and aquaculture issues.
- Dedication of appropriate staff and budgetary resources for implementation.

1.4 How should it do it?

A policy such as the Wild Salmon Policy must be more than a very general statement of intent. The Policy should be characterized by clarity, simplicity, leadership, partnership and most importantly demonstrable commitment. The Council thinks that the Policy can have those characteristics only if it provides the structure and details outlined below.

The Policy should begin with one clear and succinct definition of conservation and should consistently hold to that definition throughout the Policy.

The Policy should provide a clear description of what is being conserved by providing:

- A definition of wild salmon; and
- A description of the population structure of the different salmon species sufficient for the public to understand the intentions and commitments of the Policy to “conserve” wild salmon.

The Policy should provide a clear description of how First Nations, stakeholders and the public can monitor progress of DFO towards the goal and objectives of the WSP by committing to develop:

- A scheme for monitoring the abundance (catch and escapement) of wild salmon that is consistent with their population structure;
- A comprehensive set of conservation and fisheries benchmarks derived from the best fisheries and conservation science available;
- A feasible approach to designating status relative to those benchmarks;
- A scheme for documenting all actions that were contemplated and undertaken in response to changes in status.
- A scheme for the timely and full public reporting of all of this information in a manner that is clear and understandable to the public, stakeholders and First Nations.

All species of Pacific salmon are dependent to some extent on freshwater aquatic habitats that are connected to the ocean. This dependency brings them into contact with people and often into conflict with our other uses of the same aquatic and adjacent terrestrial habitats. The Council recognizes that many aspects of resource development fall under provincial jurisdiction and consequently that protection and stewardship of salmon habitat is best done as a collaborative undertaking of provincial, territorial and federal governments. It is also obvious that without habitat there can be no wild salmon. The Wild Salmon Policy must therefore:

- Strongly reaffirm the critical importance of identifying, proactively protecting, restoring and rehabilitating freshwater, estuarine, coastal and marine habitats necessary for the conservation of wild Pacific salmon. DFO must become a staunch protector of habitat.

To demonstrate recognition of the critical importance of protecting salmon habitat the Wild Salmon Policy should commit DFO to develop:

- A scheme for the identification, inventorying and sustained monitoring of the availability and condition of salmon habitats throughout the range of wild Pacific salmon in Canada.
- An approach for designating the status of salmon habitat relative to benchmarks that reflect all aspects of the goal of the Policy and not simply fisheries production targets.
- A scheme for documenting all actions that were contemplated and undertaken in response to changes in habitat status.
- A scheme for the timely and full public reporting of all of this information.
- A scheme for obtaining meaningful and positive involvement of all levels of government in the goal of protecting, rehabilitating and restoring salmon habitats.

During the public consultations on the first draft of the Wild Salmon Policy held in the summer of 2000, respondents clearly indicated to DFO that the Policy should incorporate “ecosystem values”. By this the respondents meant that DFO must incorporate into all decisions made about fisheries and aquatic habitats the needs of all species that are dependent on salmon, such as killer whales, bears, and eagles, and the need to enable and maintain the roles that salmon play in aquatic and terrestrial ecosystems, such as importing elemental nutrients from the ocean. The WSP should therefore commit DFO to develop:

- A scheme for identifying what ecosystem values involving wild salmon are important to Canadians,

- A feasible approach for determining the impacts on those values of all human activities that affect them including fisheries, habitat developments, and climate change.
- Clear and practicable standards of performance sufficient to enable the public, stakeholders and First Nations to assess the management of specific ecosystem values.
- A scheme for the sustained monitoring of specific ecosystem values,
- A scheme for the timely and full public reporting of all of this information, and
- A feasible approach to incorporate consideration of those ecosystem values into all resource management decisions.

The Wild Salmon Policy was promised over six years ago and is approaching five years since the public consultation on the first draft of the Policy. In that period public concerns over the potential impacts of both net-pen salmon aquaculture and salmonid enhancement on wild Pacific salmon have grown considerably. To deal with those concerns the Wild Salmon Policy should commit DFO to:

- Pursue with urgency a scientifically based investigation of the impacts on wild Pacific salmon, both potential and realized, of both net-pen aquaculture and enhancement;
- Resolve the conflicts that have arisen over DFO's roles as both the promoter of aquaculture and custodian of the wild Pacific salmon resource.
- Develop a feasible approach for the sustained monitoring of the impacts of both net-pen aquaculture and salmonid enhancement on wild Pacific salmon and on ecosystem values.
- Develop a scheme for the timely and full public reporting of all information related to the impacts of net-pen aquaculture and salmonid enhancement on wild stocks.
- Develop a scheme to integrate salmonid enhancement activities into a conservation-based resource management plan for wild Pacific salmon rather than the simpler fish production and fisheries plan.

2. The PFRCC's Summary Analysis of what the WSP states and does

The Wild Salmon Policy is a long and complicated Policy statement and this presents considerable difficulties in writing a response. Should the response be a very general critique or should the response be a detailed, almost line-by-line critique? These are tough questions to be sure and ones that have no good answers. The PFRCC has approached this dilemma, by first, thoroughly examining the Policy and herein, in more summary form, identifying:

1. How well the Policy delivers on what the Council considers the essentials of a policy, as outlined in section 1 above. We do this in section 2.1.
2. How well the document is likely to deliver on what itself commits to as the essentials of a Wild Salmon Policy. We do this in section 2.2.
3. Additional strengths and shortcomings of the Policy and how to address them. We do this in section 2.3.

2.1 Does the Wild Salmon Policy meet Council's requirements?

In Section 1.3 the Council suggested five very general requirements of the WSP. These five general requirements are listed below along with an assessment of whether the WSP meets the requirements and how well it meets them.

General requirement #1 (from section 1.3): The Policy should clearly state that the conservation of wild salmon and their habitats throughout the resource management process is of the highest priority to the government and to DFO.

Analysis and recommendations for change:

- The draft WSP does attempt to meet this requirement. The first principle (page 12) clearly states that the conservation of wild salmon and their habitats is the first priority in decision-making. However, this seemingly clear statement is weakened in several crucial ways.
- First, the definition of conservation is ambiguous. There are three conservation definitions in the document. In Council's view the most troubling definition is "wise use of wild salmon and their habitats" with no reference to the future. This simplistic definition of wise use is out-of-date and inconsistent with modern concepts of conservation. Given later references in the document to socio-economic considerations both stock success and failure could be characterized as a successful implementation of a "wise use" Policy. As this definition appears to stand, Council fears that for the greatest present gain one could end up forfeiting all future benefit.
- In the Council's view the most acceptable definition is within the glossary of the Policy and is **"the protection and wise use of the salmon and their habitats for the long-term health and productivity of wild populations, and for present and future social and economic values"**. This is the approach taken in other jurisdictions such as Manitoba. It is also consistent with DFO's own "New Directions" Policy statement of 1998[1], where principle 5 states *"The long term productivity of the resource will not be compromised because of short term factors or considerations – tradeoffs between current harvest benefits and long term stock well-being will be resolved in favor of the long term"*.
- **Council recommends the document be modified with the term wise use eliminated and the definition within the glossary or New Directions document adapted.**
- Most worrisome, is that the first principle is completely undercut by the third principle, the commitment to make balanced decisions. The statement "Social, economic and biological considerations will together guide decisions on salmon, their habitats, and their ecosystems" implies rather strongly that the actual priority in resource management is not conservation as the Council would define it. Nor is it consistent with the "New Directions" Policy statement of 1998[2], and especially principle 1: "*Conservation of Pacific salmon stocks is the primary objective and will take precedence in managing the resource"*.

[1] http://www-comm.pac.dfo-mpo.gc.ca/publications/allocation/st9808e.htm

- **Council supports the long-term socio-economic uses of the resource but believes this can only be accomplished by putting precedence on conservation. Otherwise we feel the resource could dwindle away. Accordingly the Council recommends the document be revised along those lines.**

General requirement #2 (from section 1.3): The Policy should clearly commit DFO to providing the necessary resources to ensure that the conservation mandate of the Department for wild Pacific salmon and their habitats is fulfilled.

Analysis and recommendations for change:

- The WSP document states that the implementation of the WSP must be accomplished within the Department's current fiscal realities.
- DFO has not analysed or at least not reported how much the assessment, monitoring, reporting, communication and decision-making strategies that are proposed in the WSP will cost, regardless of whether one considers total or incremental costs. A cursory analysis of all of the commitments made in the Policy strongly suggests that more money and people, and not less, will be required.
- The fiscal reality within DFO over the past couple of years has seen double digit percentage reductions in operational funding and these reductions are expected to continue in 2005/06 and probably beyond.
- Hence either the Policy cannot be implemented or its implementation will severely impact other important Departmental programs. This is unacceptable.
- **The Council recommends that the full cost of implementation be estimated and that incremental costs be included in a Treasury Board submission for necessary resources to implement the WSP.**

General requirement #3 (from section 1.3). The Policy should clearly commit DFO to demonstrating to the citizens of Canada the highest standard of care for wild Pacific salmon.

Analysis and recommendations for change:

- The Policy has most of the necessary elements to deliver on this requirement from a strictly technical point of view. Explicit descriptions of the resource (population structure), the capacity to sustain harvest (benchmarks), some statement of the minimal preservation requirements (biodiversity), and the minimal habitat requirements are all commitments of the WSP.
- The WSP makes many commitments to improve the level of care provided for wild Pacific salmon. In most cases those commitments are laudable. However, the PFRCC can only reserve judgment on whether the WSP will actually lead to improved care. Commitments to improve the monitoring of salmon populations, their habitats, and their ecosystems do not provide a high standard of care by themselves. That standard can only be achieved if all of information and knowledge is used in such a way that goals are reached.
- Insight into the level of care offered by the WSP can be obtained by considering the fact that management is geared to Conservation Units (CU's). For sockeye the usual

definition of a CU as the populations within a single lake will mean an improved level of monitoring and management. In contrast, the assessment and management of pink, chum, coho and chinook will be focused to a coarser level (CUs instead of the individual runs). The Policy is unclear about the level of care that will be given to populations let alone individual runs of 4 of the 5 species of salmon. Clearly the loss of runs to some rivers is deemed acceptable within the CU approach to management but there is no clarification of how many rivers can be lost or how many adjoining rivers can be lost. Would there be instances within a CU where DFO would determine that it is not appropriate to put an individual run at risk? We ask: how would DFO responds to the loss of all pink salmon runs in the Broughton Archipelago (which would be a portion of a larger CU); under the guidance of this Policy? Under the guidance of this Policy how would DFO act to prevent the incremental loss of small sockeye CUs of no economic value? Under the guidance of this Policy how will spiritual and ecosystem values be incorporated into balanced decisions?

- **The Council recommends more clarification on how individual runs of salmon will be impacted by the Policy. Without such clarification one cannot assess the level of care or whether the Policy is better or worse than the status quo.**

General requirement #4 (from section 1.3): The Policy should provide clear guidance to the bureaucracy and commitments to the public, stakeholders and First Nations on all matters crucial to the conservation of wild salmon and their habitats.

Analysis and recommendations for change:

- The WSP makes some strong assertions about what it provides in claiming to transform the Department's approach to managing Pacific salmon, their habitat, and dependent ecosystems and to represent a new way of doing business.
- The WSP does commit the DFO Science to adjust its current management units to better represent the population structures of salmon and to devise a couple of benchmarks for the "Conservation Units." However, the WSP allows the department to extend the commitments of protection under the WSP from demes to aggregates of CUs whenever it is expedient to do so (page 30 sidebar). However, because principle 3 allows the purposeful[2] loss of CUs, a probable scenario explicitly acknowledged on page 31 (top) of the WSP, DFO has no bottom line for preservation. As CU's get more and more imperiled the socio-economic benefits more and more outweigh the current value of preservation.
- **The Council recommends clearer guidance on decision making and a shift in balance to preservation of a CU and its long-term value as opposed to a short term "balanced" socio-economic decision. Where DFO believes a loss is appropriate we believe there should be a stringent check in the system and we recommend modifying the Fisheries Act to require DFO to pass a regulation in such cases.**

[2] The loss is expected and could be avoided but for some reason the necessary actions are not taken, perhaps because they are too expensive.

- The WSP does speak to the importance of habitat and ecosystem integrity. However, the WSP gives no specific guidance to DFO other than to take the habitat requirements of wild salmon into consideration. The Policy directs DFO to focus on the protection of important habitat, which makes sense but we caution that important habitat such as a spawning site is only important so long as upstream impacts are managed to not dewater, flush-out or sediment and cement over the downstream spawning bed. The Policy gives the impression that not all habitats are worthy of protection whereas all habitat should be protected albeit it makes sense to vary effort to habitat value.
- **The Council recommends the document firmly recommit DFO to protecting all habitat using various tools such as effective guidelines for less important habitat and more in depth review of proposals that could impact important habitat.**
- The WSP direction concerning ecosystem values is vague, appears to focus on narrow ecosystem measurements and arguably entirely misses the need to incorporate ecosystem values, such as the value of salmon to riparian environments, grizzly bears etc. into decision making.
- The bulk of the WSP proposes the collection of more information about salmon, the amount and condition of habitat, the integrity of ecosystems and climate change and instructs the bureaucracy to somehow integrate this additional information into resource management. The Policy provides little in the way of direction on how to utilize such information to conserve salmon.
- The WSP does commit DFO to improved communication with the public, stakeholders and First Nations.
- The WSP also proposes to increase the involvement of the public, stakeholders and First Nations in fisheries management decisions by providing them with a process to formulate recommendations to the department.
- While the commitments made in the WSP are generally positive, the PFRCC sees little evidence to support the claim of wholesale transformation to a new way of doing business.

General requirement #5 (from section 1.3): The Policy should commit DFO to undertaking periodic independent audits of the success or failure of the implementation of the Wild Salmon Policy.

- The Policy calls for three progressive levels of performance review.
- The fundamental need to review whether the Policy is achieving what was intended is also recognized.
- The Policy is silent on who should conduct the audits. This is a concern to Council as there would be more public confidence in the Policy and hence DFO's stewardship of the resource if an independent review took place.
- **The Council recommends that the fundamental review or audit of how well the Policy is achieving its goals should be left to an independent body as this would enhance the public's faith in the process.**

2.2 How well does the Policy deliver what it says it will?

In providing a comprehensive approach to achieving its goal of restoring and maintaining wild salmon for our perpetual use and enjoyment DFO commits (pages 1-8) to general "deliverables". The PFRCC provides its assessment of how well the WSP articulates these deliverables and whether the WSP provides adequate guidance to DFO staff tasked with delivering them. Deliverables and comments follow:

1. The WSP will describe a framework to conserve wild Pacific salmon in the sense of the protection and sustainable use of salmon and their habitats, both for the long-term health and productivity of wild populations and for the maintenance of present and future social and economic values. (Page 2, sidebar).

- The one essential element missing from the WSP is an unequivocal and clear reaffirmation of principle 5 of the New Directions Policy statement, which is essentially that when push comes to shove, the long-term interests of wild salmon come first. That is to say, that conservation comes before short-term socio-economic expediency.

2. The WSP will define the geographic or genetically distinct populations of salmon and the habitats and ecosystems necessary to protect their biodiversity.

- A definition of the units of biodiversity that will be protected under the WSP, the so called bottom line, is essential to the Policy. The WSP (pages 13-15, 18-19) does a credible job of explaining what conservation units are and why they are important to the maintenance of biodiversity.
- The WSP acknowledges that demes and populations will on occasion be lost due to natural and human activities but that such losses do not imply extirpation of the CU. The possibility of loss poses a dilemma to DFO for two reasons. First, few will be willing to accept the loss of their local spawning population regardless of its significance to the viability of the CU to which it is a member. In anticipation of such NIMBYism, DFO concedes that specific types of attention (maintenance & restoration) will be extended to demes (page 30 sidebar). More clarification is required of how populations will or will not be protected under the Policy.

3. The WSP will propose an approach to effectively meet the challenge of protecting habitat and maintaining habitat for the long-term health of Pacific salmon populations (text page 4 middle).

- The approach for protecting and maintaining habitat as presented in the action items for strategy 2 (pages 22- 24) is essential to the Policy because its goal is the protection and maintenance of salmon and their habitats. The approach is not effective.
- The WSP states that its goal of maintaining salmon habitat can be achieved if there is good scientific information, timely measures to prevent habitat disruption, and compliance with regulations. The Policy's stated reliance (at least in part) on regulations under the habitat provision (Section 35) of the Fisheries Act is disingenuous given that to date no regulations have been passed even though the ability to do so had been on the books for roughly 30 years. Nor is it acknowledged that DFO is often no longer able to

systematically find out about many developments before the fact given the breakdown in the province led referral system, whereby DFO formerly heard about proposed works.

- The second omission is an acknowledgement that most of the competing habitat uses are not under DFO jurisdiction and therefore, that compliance and planning exercises need the involvement and support of the province or territory and other levels of government. With the realization that the federal Fisheries Act forbids direct and indirect damage to fish habitat and authorizes the federal minister to take any necessary measures to prevent such damage, the thoughtful critic of the Policy is bound to ask – is there anything in the new approach that can help in a situation where habitat loss and damage is rampant in the face of powerful federal powers to prevent and reverse it?
- The first step of the approach is to develop generic standards for habitat sensitivity by species and life history. There is a considerable literature on this topic resulting from over 30 years of intensive study and the general nature of critical habitats is well known. It is unclear from the WSP what the nature and significance of "habitat sensitivity" are. The commitment to identify sensitive habitats sounds good but is this commitment to identify habitats sensitive to disturbance or habitats where some (unspecified) level of disturbance will have the largest impacts on some (unspecified) aspect of salmon production or productivity? The determination of sensitivity is claimed to assist in assessing risk to wild salmon production. Production is a very narrow definition of the relationship between wild salmon and habitat and misses the concept of protecting the productive capacity of habitat so that stocks have the ability to rebuild. Furthermore, the statement begs the question of risk from what?
- The second step of the approach is to develop indicators of habitat quality and quantity. The text on this step represents nothing more than a commitment to attempt such development and while critics of the Policy must concede that this is a positive step, there remain considerable technical challenges to developing useful indicators beyond such measures as temperature, discharge, and sediment transport. These technical challenges stem from two sources. First, the elucidation of simple relationships between such environmental variables and fish production has been difficult. Successes have invariably been possible only in locations where there are at least two decades of detailed fish and environmental data collection. There are just a few of such studies in the Pacific NW. Second, the interactions between fish and habitat occur on a very fine scale while most habitat and fish measurements apply to much larger scales. For example, the effects of winter storms on salmon survival are highly site-specific and small-scale. These are not effects that can be readily predicted from readily obtained environmental data.
- The third and fourth steps of the approach both involve the development of a habitat monitoring program for the "key" indicators identified in step 2. Even assuming that such indicators can be developed, step 3 poses enormous but unrecognized technical and financial challenges. There are very, very few temperature monitoring stations in BC associated with salmon streams and there are entire regions (like the CC) with none at all. Discharge monitoring stations are expensive to develop and maintain and are almost always situated in areas where water supplies are being monitored for domestic and agricultural uses (i.e., highly disturbed sites). To suggest that "riparian functions" and

invertebrate densities as potential indicators is a flight of fancy—the general use of such highly localized, highly variable, labor intensive and abstract indicators is not feasible.

- The fourth step proposes long-term monitoring of habitat status with the primary purposes of identifying changes in habitat conditions and to assess the effectiveness of regulatory decisions and rehabilitation measures. While this commitment sounds reasonable (i.e., straight forward and practicable) the authors unfortunately ignore reality. The interactions between the environment, habitat and fish are very complex. This complexity has meant that prediction and explanation have proven elusive. The most powerful way of developing understanding and predictive power is through controlled experiments. Unfortunately the execution of controlled experiments where economic values are put at risk is seldom allowed.
- The fifth step involves the promotion of better linked data systems and more integration of planning and monitoring across all stakeholders. This has been a consistent message for many years. The continued need for such integration, data sharing and communication suggests that the institutional and political impediments are considerable. The WSP doesn't address those impediments and makes no suggestions for improvement.

4. The WSP will address the risks to wild salmon of enhancement (p.5, first paragraph)

- Enhancement, especially hatchery, activities can impact wild salmon in three distinct ways: increased exploitation rates, genetic introgression and ecological/competitive impacts. It is therefore, essential that the WSP deal with these impacts to assure Canadians that the impacts on wild salmon are given precedence over socio-economic benefits of hatcheries.
- On page 30 the roles of enhancement are discussed. The text in this sidebar strongly suggests that the primary role of enhancement will be to maintain (i.e., prevent extirpation) of individual populations or demes that are importance to communities or First Nations in situations where the CU as a whole is not at risk. This commitment contradicts the general intent of the WSP, which is to maintain diversity by protecting CUs. This statement comes perilously close to sanctioning the use of enhancement in situations where exploitative use is threatened by a weak "stock". The majority of such situations have been the result of increased exploitation rates driven by enhanced components (e.g. Babine Lake sockeye, Strait of Georgia coho), that cannot be sustained by wild populations. Under the guidance of the WSP, the practice of maintaining high exploitation rates through enhancement supplementation could readily continue.
- The second specific reference to enhancement is in Action Step 5.4 (pages 33-34). In this section there is a renewed commitment for enhancement to adhere to current guidelines and practices, which are assumed to provide sufficient protection for wild salmon. This assumption remains a contentious one. Enhancement planning will focus on priority projects which are defined as those that target CUs in the red or amber zone. This declared strategy puts DFO in the interesting position of advocating the use of enhanced (i.e., non-wild) salmon to maintain and restore wild salmon that are not only at some risk of extirpation but also those that are not at levels of sustainable production. In situations where the CU is in the green zone enhancement projects become of lesser priority, except

possibly where cessation of enhancement reduces socio-economic benefits or enhancement is required to mitigate local effects (previous point).

5. The WSP will guide regulatory actions for aquaculture (p.6 second paragraph)

- Aquaculture is reviewed under the habitat provisions of the Fisheries Act which relate to habitat loss and waste discharge. There are no specific provisions of the Fisheries Act that would allow denial of permits or revocation of permits based on suspicion of increased risk of disease such as levels of sea lice.
- This broader review including issues such as sea lice can currently only take place where the Canadian Environmental Assessment Act (CEAA) is triggered. CEAA is not always triggered and hence the PFRCC is unsure of how such risks would be dealt with.
- DFO practice regarding the possible impacts of net-pen aquaculture on salmon has so far failed to adopt a precautionary approach.
- The Policy does make the statement that protection of wild salmon remains the first priority (p.5 near bottom). However, this Policy does not contain any details how the Policy will alter or modify that pre-existing and preeminent priority.
- The sidebar on page 34 goes so far as to state that corrective actions will only be undertaken where a CU is threatened by aquaculture. This causes Council great concern.

6. The WSP will define the specific "elements" of wild salmon that should be "preserved" (p.7 text at bottom)

- This statement is essential to the Policy because a definition of the population components that should be preserved to accomplish the overall goal of protecting wild salmon is central to the Policy goal.
- No definition of an "element of wild salmon" is given in the Policy—is it a deme, a population, a CU or something else?
- Assuming that the population elements that should be preserved are CUs then the Policy is clear on what these are. However, the Policy does not define what "sub-elements" should be preserved. In other words, how many demes can be lost from a population and how many populations lost from a CU before the CU itself has not been preserved?
- The direction that this Policy statement offers is weak. The use of the word "should" rather than "will" is a statement of intent rather than one of commitment. Furthermore, commitment is explicitly excluded because the Policy allows that come CUs will be lost but that this loss is consistent with "wise use".

7. The WSP will comment on the nature and appropriateness of wild use "limits"

- Strategies are predicated on appropriate and timely responses to changes in abundance at the CU level. Significance of measured changes will be determined through the use of two benchmarks, one indicating increased risk of extirpation and one indicating abundance that supports maximum long-term sustainable harvest. This component of the WSP is essential.

- Is a benchmark the same as a reference point? Reference points have five attributes: the actual state of the resource, a future state of the resource, an action to be taken (or not taken), time to reach the future state and a probability of reaching that state within the stated time. The nature of a benchmark is not fully discussed but it clearly does not involve any notion of change given a specified action and only vague notions of time and probability. Instead, a benchmark appears more similar to a performance indicator than a reference point. In the first draft these same values were labeled reference points. The switch is not explained and is potentially confusing.
- Restriction of benchmarks to two reveals preoccupation with avoidance of extinction and human use. Habitat, ecosystem, and non-consumptive human values (e.g. spiritual) are not considered. Benchmarks of such things as habitat capacity are only mentioned peripherally. This is a serious deficiency.
- The technical discussion of the MSY and salmon production relationships contains a major error. MSY for salmon is most definitely **not** the "largest average catch that can be continuously taken from a stock under existing environmental conditions." Although this statement was made by Ricker (1975) he had immediately followed it with the qualification that variability in recruitment induces variability in yields. Similarly the maximum sustainable exploitation rate is less than the value given in the Policy.
- Many of the problems in chinook, coho and sockeye are due to excessive stock specific exploitation rates in highly mixed stock fisheries (e.g. interior Fraser coho, interior Skeena coho, lower Georgia Strait chinook, Cultus Lake sockeye.) The problems caused by mixed stock fisheries have been understood for at least 25 years. This draft does not fully recognize the problem nor, save for vague references to socio-economic considerations, clarify how appropriate limits to exploitation will be set.

8. The WSP will identify an appropriate process for making management decisions.

- The PFRCC has suggested that the main problem with salmon is that the public has lost confidence in DFO as custodian of the resource. The WSP addresses that loss of confidence by outlining a new and better management system that is transparent, open, inclusive and respectful and is better informed with more and better quality information. Thus, improvement to the decision making process should be seen as the major contribution of the WSP.
- Different types of management decisions (e.g. long-term vs. pre-season planning and operational vs. strategic) are made at different times (e.g. pre-season and in-season), at different spatial scales (e.g. regional, stock-specific, fisheries specific), for different periods (e.g. fishery, season, annual). The Policy deals with strategic or long-term planning decisions in strategy #4 and with annual pre-season and operational decisions in the annual cycle of government in strategy #5.
- Appendix 3 contains a brief and confusing consideration of top-down vs. bottom-up strategic planning mechanisms. This contribution obfuscates the necessity of planning at the local or CU scale to achieve CU-based objectives.
- The steps outlined in strategy 4 (page 29-30) seem logical but the details given are confusing. For example, in step 1 somebody will develop "specific key priorities" to be

addressed using information on the status of CUs, habitats and ecosystems and input from stakeholders. What is a specific key priority? Who will decide if a priority is key or not? One of the central problems with current decision making is that the range of alternatives presented to decision makers is often limited, unimaginative or explicitly tailored in anticipation of what the decision will be. How will step 2 produce a wider range of alternatives? Performance indicators are to be developed in step 3. Surely these indicators will have been developed outside of this planning approach before planning begins and will be applied regionally. Step 4 proposes that the expected effects of the alternatives developed will be evaluated relative to status quo fisheries. What are status quo fisheries and why are they considered acceptable benchmarks? What is the point of developing benchmarks and other hallmarks of objective and principled decision making if the true benchmark will be the costs and benefits relative to the status quo? Will habitat and ecosystem alternatives be evaluated against a status quo fishing plan? How will those evaluations be done?

- Strategy 5 outlines the annual cycle of assessment, planning and review. There are important commitments to increasing openness, communication of information and rationales for decision. There are commitments to develop decision rules to be applied in-season.

- The WSP appears to make commitments to be more inclusive and open in developing long-term (strategic) priorities and short-term (annual) priorities and plans, however, there are no indications of substantive procedural changes to decision making apart from commitments to improve the availability of information and communication.

- No new management approach is presented for the mixed-stock fishery problem (see comment under #7 immediately above). This represents a significant retraction over the last draft on the Policy.

2.3 What are the additional technical strengths and shortcomings of the Wild Salmon Policy and how can the shortcomings be addressed:

- The definition of “wild salmon” needs clarification. **The definition should be modified to read:** "Wild salmon are those that have spent their entire life cycle in the wild and originate from parents that were also produced by natural spawning and continuously lived in the wild."

- The definition of conservation, as mentioned previously, should be clarified and include **long-term** protection of the resource as we note above. In the Council’s view the most acceptable definition is within the glossary of the Policy and is **“the protection and wise use of the salmon and their habitats for the long-term health and productivity of wild populations, and for present and future social and economic values”**. Without such a definition Wild Salmon will not be put first contrary to public expectations.

- The descriptions of multi-populations CUs are vague and the commitments of DFO to individual populations within such CUs are unclear as noted above. While it may not be reasonable to go to extraordinary lengths to protect small populations very similar to their neighbors within the CU there are “in-between” situations where runs are important (as defined by various measures) but still not equivalent to a CU. **The Policy should spell**

out how the strength of measures employed for sub-CU salmon groups will be decided.

- The requirement to specify at least two benchmarks per CU is commendable. However, the implied definition of a benchmark as a particular abundance of spawners is simplistic. Consequently, Council recommends that a full definition of a benchmark[3] be provided and that the responsibility for defining values for all of the components of benchmarks should be clearly assigned. Of particular concern to Council is that the Policy does not offer any guidance on the incorporation of societal values into either of the mandatory reference points.
- The need for identification, inventory and monitoring is recognized but the significance of the need for sustained monitoring is not. The PFRCC is concerned that DFO is not sufficiently committed to long-term monitoring and does not have the resources to carry out this activity.
- An effective approach for designating the status of salmon habitat relative to benchmarks that reflect all aspects of the goal of the Policy and not simply fisheries production targets is an essential requirement of the Policy.
- The habitat sections of the WSP focus on freshwater rearing habitats. Other than a few perfunctory references to large river, estuarine and near-shore marine habitats, the importance of protecting, maintaining and restoring habitat for all life stages of salmon is not sufficiently emphasized.
- The Council has noted that the habitat components of the Policy emphasize more coordination, more cooperation, more integration and more discussion. These have been consistent components of habitat policy for at least two decades. The Council is concerned that the Policy lacks sufficient guidance to the DFO bureaucracy **to get on with the real job of protection, rehabilitation and restoration.**
- A scheme for obtaining meaningful and positive involvement of all levels of government in the goal of protecting, rehabilitating and restoring salmon habitats is essential. DFO cannot protect habitat nor can it undertake proactive planning without the full cooperation of other levels of government. This need has been recognized for a long time but the Policy is silent on this fact. The Council recommends that a strong commitment to communicate within a defined time and that progress towards cooperation be an integral part of the performance monitoring of the Policy.
- The PFRCC is concerned that the interest in ecosystem values will be channeled solely into monitoring programs designed to improve forecasting. While those efforts could be worthwhile they will not address ecosystem values and too narrowly constrain societal values. The lack of specifics suggests to the PFRCC that the Department of Fisheries & Oceans is uncertain how to proceed on the question of ecosystem values. The Department has had little experience in incorporating anything but fish production values and direct social and economic values into the management of the fisheries. The PFRCC

[3] A benchmark is a value of a system property (e.g. a specific spawner abundance) such that a particular value of the same or some other system property (e.g. extirpation) will result within a specified period of time (20 years) with a specified probability (e.g. 9 times out of 10) if a particular action is taken (or not taken) (e.g. double the current average annual catch). Scientists must be given values for all but the first property because the second through fifth properties embody ethical or "societal" values.

suggests that DFO involve other federal departments in conservation, such as Environment Canada, that could bring much needed experience in dealing with non-consumptive values in designing a conservation policy.

- Fisheries that depend on enhanced production can precipitate conservation problems. DFO is currently dealing with at least three separate conservation issues where mixed-stock fisheries played a significant role: Skeena wild sockeye; interior Fraser; and Strait of Georgia coho and West Coast Vancouver Island chinook. Enhancement can lead to increased abundances of fish and more intense fisheries that the wild populations cannot sustain[4]. There are some expensive but partial solutions to some of these problems (e.g. hatchery-mark only fisheries, continuous monitoring of catch composition, moving fisheries into terminal areas) but other than a mention of mixed-stock fisheries as a hypothetical risk there is no mention of how the new management approach will produce a comprehensive solution to mixed-stock fisheries. The Policy should be explicit on how conservation benchmarks, biodiversity, the impacts of enhancement and the management of mixed-stock fisheries will be tied together as part of an effective revision of the management system.

- The inexorable result of enhancement is the replacement of wild fish by hatchery fish. This occurs simply because hatchery stocks are on average more productive than wild stocks and some hatchery fish inevitably spawn in the wild. The speed with which the replacement occurs is determined by the relative productivities of wild and hatchery stocks, by the scale of enhancement and by the extent of density-dependent survival in the ocean. The conditions within the Strait of Georgia may induce a rapid shift. The magnitude of coho enhancement around the Strait of Georgia is large. For the past 15 years or so marine survival of coho entering the Strait of Georgia has been low and during more than half of those years wild fish barely replaced themselves while releases of hatchery fish continued largely unchanged. There is some evidence, although it is not yet conclusive, that enhancement can exceed the capacity of the ocean to produce salmon is not limitless and during a period of low marine survival that has prevailed for most of the past 15 years it is possible that the carrying capacity of the Strait of Georgia has been exceeded. The replacement of wild coho by hatchery coho has occurred throughout the southern US and the Strait of Georgia, where perhaps 80% of the coho in these waters are now from hatcheries but there has been no increase in the total number of coho in the ocean. From the perspective of the fishing public this might not be such a bad thing but from the perspective of conserving biodiversity it is a disaster in the making. The WSP briefly acknowledges this as a hypothetical problem but is entirely mute on how to deal with it. This threat to biodiversity should be met by DFO investigating the potential interactions as priority. If such investigation demonstrates that this is, in fact a problem, then the Council recommends that its resolution should favor the conservation of wild salmon as a priority.

[4] This is the classic mixed-stock fisheries problem.

- There is no apparent recognition that significant impacts have or could occur due to either enhancement or aquaculture. Impacts that might occur from enhancement will be handled with careful monitoring [of what was not specified] and with prescribed procedures but these measures have been in place for some time now with no evaluation of their effectiveness. The Policy does not address the potential impacts of aquaculture on wild salmon. No research is mentioned.

3. The dilemmas of conservation

DFO faced several daunting dilemmas in crafting a conservation policy that would be acceptable to most.

3.1 Dilemma #1—Walking the talk and the definition of conservation.

Conservation is something that everybody supports provided that somebody else gets to do the conserving and it doesn't cost us much or anything at all. Witness our demands that Brazil preserve its Amazonian rainforest. Yet consider how much of the Great Plains prairie we preserved or how much old growth rainforest there is in the lower mainland. Conservation means different things to different people, from yearning for Eden to making sure a client can catch a big one. Preservation of a remnant species might be viewed as a disaster by one and as a glorious success by another, depending on their perspective. Finding a definition of conservation that would be appeal to a broad segment of their target audience was the first dilemma DFO grappled with. The term conservation is variously described with no clarity that it means conserving for long-term benefits. Rather than clearly state that wild salmon have priority and that decisions involving the long-term security of the resource and short-term economic gain would always favor the long-term (principle 5 of the New Directions Policy), the WSP now states that all decisions must be "balanced" and one is left confused as to whether a long-term approach is being taken or not. Regardless of the meaning of balance, the PFRCC notes that spiritual and ecosystem values are not explicitly considered.

3.2 Dilemma #2—The Tragedy of the Commons.

The fate of common property resources throughout history has not been a happy one-temperance is simply not part of our nature. This is by far the most difficult of the dilemmas faced by DFO.

It is probably unfair to expect DFO to find the solution that has eluded mankind for thousands of years. Interestingly, DFO's only commentaries on the problem are first to remind us that just because Pacific salmon are a common property resource don't expect open or equal access to it (sidebar page 11) and then to emphasize the need to respect the discretionary decision-making of the Minister. We agree that, under the Canadian constitutional form of governance, the Minister must retain discretion but would have liked to seen the need for the Minister to openly approach the public, via passage of a regulation, whenever a decision is taken that compromises the long-term viability of a CU.

The WSP does commit the Department to setup a new process where" *resource management decisions will be made in an open, transparent, and inclusive manner*" to "*build consensus on the most appropriate management approach and … facilitate understanding of the final management decision*" (page 29, 3rd paragraph). The new planning process could provide this improved understanding of decisions taken.

3.3 Dilemma #4—Expecting answers to questions you don't know how to ask

A third dilemma for DFO appeared when the Department concluded that "societal" values must be reflected in all decisions taken under the guidance of the WSP (see principle 2, page 12). What is a societal value? How would such values be integrated into resource management decisions? How can we distinguish between societal values and the personal values of DFO staff?

The WSP is completely mute about this dilemma. However, the PFRCC assumes that the recent decision not to legally list Cultus Lake sockeye illustrates DFO's pre-WSP solution. The question is, and is one that should be answered by DFO: would a different decision have been taken under the Policy?

3.4 Dilemma #4—Conservation is a state of mind not of nature.

Conservation isn't so much a technical problem as an ethical one. There really is no such thing as an unhealthy ecosystem or an ecosystem without integrity and there are no universal answers to the question of how much biodiversity is enough, how many bears or killer whales should there be, or what chance of extirpation is acceptable. All of these very important questions are, at their root, questions of values. Who gets to decide the answers and even more importantly who gets to frame the questions?

The fourth dilemma faced by DFO is the problem of finding answers to questions that have no answers. This dilemma is closely related to the dilemma #2, the tragedy of the commons. The technical solution of the Policy is to have its scientists provide benchmarks for salmon, for habitat, for ecosystems and for enhancement and aquaculture (although for the last two fields benchmarks are termed operational guidelines or practices).

The PFRCC would like to stress that answers to such questions of how much diversity is enough and how many bears should there be are not scientific questions and scientists alone should not to told to provide the answers.

3.5 Dilemma #5—Promise the moon and hope someone has a rocket.

A fifth dilemma appears when the feasibility of implementing such a Policy is examined. DFO is in a tight financial bind. There have been large reductions to the operational budgets in the past few years and more are expected. Wild salmon are only one of many species managed by DFO and the conservation concerns with salmon are far from the most severe. Much more is known about salmon than is known about any of the non-commercial marine species. What this means is that additional resources for salmon are unlikely to be forthcoming and that the WSP will be implemented within a shrinking budget envelop.

DFO has produced an ambitious Policy that makes numerous commitments to improve the management of wild Pacific salmon. The various elements of the Policy will be difficult to implement without significant new resources. The dilemma now facing the Department is what activities will be stopped to enable implementation of the WSP. The Policy provides no guidance on this matter to those charged with its implementation.

4. PFRCC Summary Recommendations

The PFRCC thinks that the Wild Salmon Policy is an important step toward best practice in the assessment and management of Pacific salmon. In particular, the PFRCC thinks that the operational definition of groups of populations (runs) for which there will be clear objectives, understandable performance measures and increased public accountability for managers are very positive steps forward. The willingness of DFO to consider changes in the management process to make decisions more accessible and decision makers more accountable is also commendable. The PFRCC recognizes however that the Wild Salmon Policy is very much a work in progress and although on balance DFO has done a credible job in resolving the challenges and dilemmas of crafting the policy there are several deficiencies that could be remedied to significantly further improve the management of this important resource. The PFRCC also recognizes that there is an urgent need not only to adopt a policy but to get on with the challenges of implementing the necessary reforms. Therefore, the PFRCC recommends that the Wild Salmon Policy be finalized with urgency taking into account our recommendations and in particular the following key recommendations.

1. The policy must use a technically sound definition of “wild salmon” of the form we suggest and it should make it clearer that Wild Salmon come first.

2. The policy must use a single definition of conservation throughout and that definition should be entirely consistent with the goal of the Policy. The Council recommends that the glossary definition “The protection and wise use of the salmon and their habitats for the long-term health and productivity of wild populations, and for present and future social and economic values.” is appropriate as is DFO’s definition in their New Directions policy document which also emphasizes the need to protect the long-term viability of salmon populations. The term “wise use” as it presently appears in the text of the Policy has no reference to future values, inadequately weighs the non-consumptive values of salmon and could too easily be viewed as favoring expedience. The Council fears that such a definition could lead to the forfeiture of all future benefits for the greatest present gain.

3. The PFRCC anticipates that the public will remain confused about what populations (demes, runs, sub-populations, populations, groups of populations and CUs) will be protected and which won’t and how DFO will go about making such decisions. Although the PFRCC recognizes that it would be very difficult to explicitly detail every possible situation there is a need for greater clarity on these issues. The PFRCC therefore, suggests that an addendum to the Policy explain how past and current conservation situations (e.g. Sakinaw and Cultus sockeye, interior Fraser coho, Skeena wild sockeye, Strait of Georgia/Lower Fraser coho, lower Straight of Georgia chinook, Okanagan chinook) would have been addressed differently had the WSP been in force. In those discussions it would be particularly helpful if DFO outlined at what stage in the decision making would societal values have been considered and how those considerations would have been made.

4. During the public consultations following the release of the first draft of the WSP the need to improve habitat stewardship for the benefit of salmon and the need to incorporate ecosystem

values were both clearly conveyed to DFO. Neither of those directions from the public are adequately dealt with by the Policy. On habitat issues the draft WSP promises more talk but little concrete action and on ecosystem values DFO only acknowledges that it doesn't know how to address ecosystem values but makes no suggestions about how it might try to do so. To be effective the WSP must effectively deal with habitat preservation, protection, rehabilitation and restoration and guide the incorporation of ecosystem values into the overall management of the salmon resource. Effective cooperation and collaboration between all levels of government must be fostered to deal with the many habitat issues and DFO should engage Canadians on the integration of ecosystem values into fisheries management regardless of species. The WSP should be an effective starting point for both of these important initiatives.

5. Salmon enhancement and aquaculture are undeniably permanent fixtures of the economy of Pacific Canada. Both activities are inextricably tied to the conservation of wild Pacific salmon and much more needs to be done to ensure that both activities are done in a way that does not have severe and deleterious effects on wild salmon. The PFRCC is on record as supporting both enhancement and aquaculture provided that both activities are done "right" with due consideration given to the conservation of wild salmon. The WSP should therefore deal in a more explicit and forthright way with the potential impacts on wild salmon caused by enhancement and aquaculture by committing DFO to undertake the necessary research to address potential impacts, by utilizing new knowledge to refine the management of these resources and by incorporating performance reviews of both activities as part of the regular reviews of the WSP.

6. The goal of the WSP is an ambitious one but it is of critical importance to Canadians on the Pacific coast. An important commitment made in the WSP is to a variety of performance reviews. The PFRCC commends this proposal and recommends that there be regular but independent audits of the effectiveness of policy implementation as well as of stock, habitat and ecosystem status. An independent body reporting to government would be ideally suited to carrying out such audits. The result of such audits could be recommendations to modify the WSP to improve its effectiveness. Accordingly, the PFRCC thinks that a commitment to include the making of such recommendations would be a useful addition to the audit procedures outlined in the Policy.

7. Finally, the PFRCC is very concerned that DFO does not have the necessary resources to implement and more importantly to sustain the programs and activities promised by the policy. This is undoubtedly a concern that will be shared by many Canadians. The resolution of funding issues is not only critical to the success of the policy in promoting its goals but also will speak clearly of the true commitment of DFO to conserve wild salmon. Consequently, the funding issue must be aggressively resolved and in such a way that other important functions carried out by DFO are not jeopardized. Failure to resolve the funding issue might be taken as a lack of commitment on the part of DFO to wild salmon; a situation that will ultimately doom this initiative to failure.