COMMISSION OF INQUIRY INTO THE DECLINE OF SOCKEYE SALMON IN THE FRASER RIVER

In the matter of Her Excellency the Governor General in Council, on the recommendation of the Prime Minister, directing that a commission do issue under Part I of the *Inquiries Act* and under the Great Seal of Canada appointing the Honourable Bruce Cohen as Commissioner to conduct an inquiry into the decline of sockeye salmon in the Fraser River.

REPLY SUBMISSIONS ON BEHALF OF THE CONSERVATION COALITION: COASTAL ALLIANCE FOR AQUACULTURE REFORM, DAVID SUZUKI FOUNDATION FRASER RIVERKEEPER SOCIETY, GEORGIA STRAIT ALLIANCE, RAINCOAST CONSERVATION FOUNDATION, WATERSHED WATCH SALMON SOCIETY, AND MR. OTTO LANGER

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I. General

1. These reply submissions are endorsed by the Conservation Coalition with the sole exception of the Coastal Alliance for Aquaculture Reform which endorses only those aspects of this Reply that deal with Aquaculture issues.

2. Where we do not reply to particular points, this should not be taken as support of the position taken by another participant in these hearings. Instead, the scope of the submissions and limited time require us to be selective in what we have replied to.

3. As a general comment, PPR's undertaken for this Commission should not be given any greater weight than any other evidence. In fact, many of the PPRs are severely lacking. In this regard, we point to Appendix B of our submissions, which highlighted the serious inadequacies of the PPR entitled: *Aquaculture Regulation in British Columbia*.

4. At paragraphs 43 – 44 and 284(5), Canada submits that instilling confidence and trust in management is key to ensuring sustainable fisheries. We agree that confidence and trust in management is key, but that DFO is failing to ensure such confidence and trust for a number of reasons that include: failing to operate transparently; failing to undertake adequate research in priority areas; failing to effectively regulate industry, including by undertaking insufficient enforcement and compliance monitoring; failing to adequately fund conservation programs often at the expense of funding industry programs particularly in the area of aquaculture. Moreover, confidence and trust are undermined when DFO takes on a mandate to promote the aquaculture industry, including its unsustainable reliance on open-net cage aquaculture.

5. At paragraph 337, Canada notes that there is increasing complexity and uncertainty in sockeye salmon, including a discernible greater variation in returns. We agree that various factors, including climate change, are contributing to the uncertainty and variability of sockeye salmon returns. We support the notion underlying paragraph 338 of Canada's submissions-that in the face of increased uncertainty and variability, a more precautionary approach to harvesting is required. However while we support this notion, we disagree that DFO fisheries managers have, in fact, implemented a more precautionary approach to managing fisheries.

(a) <u>Causes for the Decline</u>

6. At paragraph 29 Canada submits that there is consensus emerging that biophysical changes in the marine environment stand out as the most strongly inferred factors explaining the pre-2010 decline. In reply we submit firstly that the long-term productivity of sockeye salmon may still be in decline, so that it is inaccurate to reference the "pre-2010 decline".

7. At paragraph 298 Canada sets out the findings of a Pacific Salmon Commission workshop which found, *inter alia*, that freshwater and marine pathogens are an important contributor

to the decline and that diseases are likely made worse by natural and anthropogenic stressors.

8. We strongly support some of the major findings of this workshop as expressed in paragraph 300 of Canada's submissions, namely that multiple causal mechanisms are operating simultaneously, and that their impacts can work synergistically to cause even greater harm. We would add that despite the known threat of cumulative impacts, Canada is currently not adequately assessing cumulative impacts in any of its management areas. This is a critical failing that undermines the entirety of Canada's risk assessment regimes.

9. Nonetheless, the findings of this workshop should not be accepted in their entirety. For example, we submit that the PSC workshop's conclusion that there is little likelihood of contaminants being an important contributor to the decline should be reassessed in light of the evidence presented by Dr. Peter Ross (June 14, p. 6, ll. 27 – 36), and based on the fact the evidence underlying this finding is deemed "poor" (see Table 5.2, pg. 82 of Canada's submissions).

10. Additionally, throughout their submissions the Province submits that Freshwater ecology is not likely the cause of declining Fraser sockeye (see page 3, for example). In reply we submit that while likely not the primary cause of declining Fraser sockeye, cumulative freshwater ecology impacts, including habitat degradation, is contributing to the long term decline, and the protection of freshwater habitats is crucial to diversity and the resilience of salmon generally.

(b) <u>Sound Science</u>

11. At paragraph 34 Canada states that it has planned and conducted a wide range of scientific investigations into the most likely sources of Fraser sockeye population variability. In reply we submit that Canada, particularly the DFO, have not conducted adequate research as required by an effective and responsible regulator respecting the most likely sources of population variability. In this regard, Exhibits 616A and 1371 point to three likely causes of the decline: (i) Food availability in marine environments; (ii) Disease; and (iii) Harmful Algal Blooms (HABs). Despite recognizing these three factors as likely causes for the decline, DFO is doing virtually no research in any of these areas.

12. Moreover, with respect to disease, there is conflicting evidence on the extent to which that research is currently being fostered within DFO.

13. At paragraphs 445 – 451 Canada addresses priority-setting in scientific research. Specifically, at paragraph 450 Canada submits that it is appropriate and acceptable for governments to re-examine priorities, including science priorities, in light of strategic outcomes and funding constraints. In reply we submit that research priorities in the Pacific region must be directly informed by the WSP generally, and by priority CU's in particular.

II. Aquaculture

14. In general, the submissions of Canada, the Province and the BCSFA significantly understate the level of risk posed by the net-cage finfish aquaculture industry. For example, at paragraph 672, Canada submits that the key findings of the Project 5 Technical Reports are that, overall, salmon farms pose no significant threat to Fraser sockeye and salmon farms have not caused the decline in Fraser River sockeye productivity. In reply we submit that this is inaccurate. In this regard, Dr. Dill concluded: "[o]pen net pen aquaculture, as currently practiced in British Columbia, has the potential to create problems for wild salmon populations…" (*Technical Report 5D, Impacts of salmon farms on Fraser River sockeye salmon: Results of the Dill investigation*, p. 1).

15. Further, at paragraph 681, Canada submits that disease outbreaks have not occurred on farms in the past nine years, and only rarely before then. In reply we submit this is clearly contradicted by the evidence. Both Drs. Korman and Connors discuss fish health events (i.e. disease events) occurring on salmon farms every year since 2003. Dr. Korman notes in his report that "an annual average of 30 fish health events that indicated the presence of high risk diseases to sockeye salmon (Furunculosis, infectious hematopoietic necrosis virus, bacterial kidney disease, and Vibrio), were reported by industry." (Korman, *Technical Report 5A, Summary of Information for Evaluating Impacts of Salmon Farms on Survival of Fraser River Sockeye Salmon,* p. ii)

16. Additionally, the BC Salmon Farmers Association ("BCSFA") submit on page 1 of their written brief that given the wide variation in the 2009 and 2010 returns, any effect by salmon farms on wild stocks "would have been easily detected" by the four authors of the various Project 5 Technical Reports. In reply we submit that this is directly contradicted by the Project 5 reports themselves. In this regard, Dr. Dill wrote that, largely as a result of the very short time series available for analysis, the data provided were insufficient in both quantity and quality to allow a rigorous analyses of answering these questions with certainty (*Technical Report 5D, Impacts of salmon farms on Fraser River sockeye salmon: Results of the Dill investigation*, p. 1, 4). Dr. Connors noted the stark difference in returns from 2009 and 2010 would provide a powerful contrast, but that at the time of writing his report, he did not have the data from 2010 since the responsible agencies were still processing samples (Connors, *Technical Report 5B, Examination of relationships between salmon aquaculture and sockeye salmon population dynamics*, p. 2).

17. Along with understating the risks of net-cage salmon farming, the benefits of this industry are over emphasized. For example, at page 76, paragraph 3 the Province submits that farmed salmon is responsible for creating 6,000 jobs. The Province does not cite any evidence for this claim. In reply we submit that a study undertaken for the Provincial *Special Committee on Sustainable Aquaculture* found that the industry supports an equivalent of

1,500 full-time jobs. This is the only published study publicly available that has assessed the number of jobs created by the salmon farming industry (*Special Committee on Sustainable Aquaculture: Final Report, Volume One,* May 2007, p. 11). Moreover, while some job creation is to be commended, a far greater number of jobs rely directly and indirectly on wild salmon, and we submit that open-net aquaculture is contributing to declining productivity of salmon, thereby eliminating some of these jobs, and putting the remainder at great risk.

18. At paragraph 105 the BCSFA provides various evidentiary support for the proposition that the industry has rigorous biosecurity and best management practices in place, and it further submits that a number of witnesses support the notion that salmon farms can coexist with wild salmon. In reply we submit that a review of the cited evidence does not support the proposition claimed. In this regard, none of the witnesses cited speak to best management practices. Rather, Dr. Dill states that *if* managed properly and proactive steps are taken to reduce harmful impacts, only *then* can Fraser sockeye coexist with salmon farms (August 29, p. 101, l. 44 – p. 102, l. 8). In our submission, reducing harmful impacts requires removal of net-cage salmon farms and a shift to closed-containment systems (Exhibit 1561, *Salmon Aquaculture Dialogue - Working Group Report on Salmon Disease*, pgs. 66 – 68).

19. In general, the submissions of Canada, the Province and the BCSFA respecting aquaculture should be given little weight, particularly in light of the recent detection of Infectious Salmon Anaemia virus ("ISAv") in B.C., which is addressed in greater detail below.

(a) <u>Siting</u>

20. At paragraph 662 Canada submits that in 2003, DFO implemented revisions of the siting criteria for salmon farms. This is inaccurate. In reply we submit that the siting guidelines developed by the Province have not been revised since 2001, that they are not mandatory thus not "implemented", and they do not adequately protect wild salmon from the risks posed by net-cage farms. Moreover, the evidence cited by Canada does not support their submission as Gavin Last gave evidence describing the criteria as "a kind of…initial assessment" (August 30, p. 48, l. 45 – p. 29, l. 4).

21. At page 80, paragraph 15 the Province submits that prior to December 2010, the Province ran a comprehensive health management program for salmon aquaculture. In reply we dispute the claim that the program was comprehensive, and submit that Gareth Porter's independent audit of the management of salmon aquaculture in B.C. found serious deficiencies with the provincial management regimes including a failure to ensuring adequate distances from salmon rivers which receive a low score of 1 out of 10 (Exhibit 1631, *Audit of the Management of Salmon Aquaculture for the Protection of Wild Salmon in BC*, p. 9). Moreover, the underlying siting policy resulting in B.C.'s low score remains in place to this day.

22. At pgs. 47 – 53 the Aquaculture Coalition sets out strong evidence supporting a failure to adequately assess potential disease transfer, as well as proximity to migratory routes (see also Exhibit 1629, *Transport Canada-Canadian Environmental Assessment Act, (Dunsterville*)); (Exhibit 1630, *Transport Canada-Canadian Environmental Assessment Act, (Conville Bay)*). We support these submissions by the Aquaculture Coalition.

(b) *The Canadian Environmental Assessment Act*

23. At paragraph 667 Canada submits that the new aquaculture regime will carry forward a number of aspects of the provincial regime, including environmental reviews. In reply we submit that this is incorrect. Prior to taking over regulation of the aquaculture industry following the *Morton* decision, Canada through the DFO and EC had conducted environmental reviews of aquaculture facilities under the *Canadian Environmental Assessment Act* (CEAA) that was triggered by the requirement by a finfish farm to obtain an authorization to impact fish habitat pursuant to Section 35(2) of the *Fisheries Act.* But with the new federal *Pacific Aquaculture Regulations*, Canada has stated that it does not intend to conduct reviews under CEAA. In our submission, the movement away from pre-screening aquaculture activities is contrary to the precautionary principle, as well as a move away from the goals and objectives of the WSP.

(c) Sea Lice

24. At paragraph 147 the BCSFA submit that Fraser River sockeye salmon are relatively resistant to *Lepeophtheirus salmonis*. The BCSFA cite transcript references to support this claim, but do not refer to any published scientific, peer-reviewed articles. The BCSFA also rely on the fact that sockeye salmon smolts migrate when they are larger than 0.7 grams. In reply we submit that the claim that Fraser River sockeye salmon are relatively resistant to *Lep. salmonis* is unsupported in evidence and in published science (see for example Ex. 1476). Moreover, the underlying basis of the BCSFA's claim, namely that due to being larger than 0.7 grams sockeye smolts are resistant to *Lep. salmonis*, is based on laboratory studies which may not mirror what is happening in nature (September 6, p. 41, l. 46 – p. 42, l. 24); (Exhibit 1785, *Morbidity-Mortality Effects of Sea Lice on Juvenile Salmon Workshop*, p. 14 – 24). A precautionary approach should not place reliance on speculation as a basis to avoid conservation measures.

25. At paragraph 75 the BCSFA submits that certain precautionary measures presently in place in B.C. could be reassessed in light of "new" scientific knowledge that sea lice are not a significant threat to salmon. In reply we submit this is a spurious claim, as there is no "new" science supporting this claim. Presumably, the BCSFA are intending to rely on the paper cited throughout their submissions published by Dr. Marty et al. entitled *Relationship of Farm Salmon, Sea Lice and Wild Salmon Populations* (Exhibit 1555, *Relationship of Farm Salmon, Sea Lice and Wild Salmon Populations*). A rebuttal to Dr. Marty et al.'s paper has

been recently published and is in evidence (Exhibit 1556, *Effects of Parasites from Salmon Farms on Productivity of Wild Salmon*).

26. For their part, at pages 136 – 144, paragraphs 147 – 160, the Province submits that the Commission should rely on the Dr. Marty et al. paper and not the Dr. Krkosek et al. response, while criticizing the latter for, *inter alia*, using an improper power analysis and making improper assumptions regarding early sea lice levels. In reply we submit that the criticisms leveled by the Province against the Krkosek et al. paper come down to disputes between scientists who are practising in different scientific disciplines. The Krkosek paper approaches the issue of sea lice as an ecosystem based issue, whereas Dr. Mary approaches the problem more from the aspect of statistics. The differences between them are best left to be played out in the context of science via publishing journal articles, and not through this Commission. Specifically, the Province has not set out sufficient basis for this Commission to support the Dr. Marty et al. paper and find that sea lice from salmon farms do not negatively impact wild salmon populations, notwithstanding the published criticisms of this paper (Exhibit 1556, *Effects of Parasites from Salmon Farms on Productivity of Wild Salmon*) and the global weight of scientific evidence (Exhibit 1571, *Predation Intensifies Parasite Exposure in a Salmonid Food Chain*). Instead, we submit the Commission should make a finding of fact that sea lice from open-net salmon farms may pose a risk to wild salmon populations generally, and to the Fraser River sockeye salmon population in particular.

27. Furthermore, at pages 145, paragraphs 161 – 166 the Province suggests that there is uncertainty whether sea lice can act as a vector for disease transfer. Similarly, at paragraphs 162 – 171 of its submission the BCSFA suggest that the evidence shows that sea lice do not act as an effective disease vector. In reply, we submit that this is incorrect and the weight of scientific evidence supports the fact that sea lice can act as a vector. In this regard, we submit that Mark Costello's review of global sea lice science is particularly useful (Exhibit 1571, *Predation Intensifies Parasite Exposure in a Salmonid Food Chain*). In addition, at page 30, Table 1 in Technical Report 5D, Dr. Dill summarizes the scientific basis respecting various diseases that have the potential to be vectored (carried) via sea lice, which includes ISA (*Technical Report 5D, Impacts of salmon farms on Fraser River sockeye salmon: Results of the Dill investigation*). In short, there is scientific evidence that sea lice can act as vectors and transfer various diseases, including ISAv. This supports the fact that net-cage salmon aquaculture results in a significant risk to wild salmon populations.

28. At paragraph 150, the BCSFA submit that while there are studies demonstrating sub-lethal effects from sea lice, a recent study suggests only the smallest pink salmon are impacted. The BCSFA further criticize Dr. Orr for failing to adequately set out the limitations of a particular study that Dr. Orr based his evidence upon. In reply we submit that there is strong scientific evidence for the potential significant risk of sea lice having sub-lethal effects on salmon (*Technical Report 5D, Impacts of salmon farms on Fraser River sockeye salmon: Results of the Dill investigation*, p. 32); (Exhibit 1785, *Morbidity-Mortality Effects of Sea Lice on Juvenile Salmon Workshop*, pgs. 24 – 28).

(d) Fallowing

29. At pages 90 – 94, paragraphs 42 – 47, the Province submits that there is no evidence to support that fallowing is an effective management tool. For their part, at paragraph 122 the BCSFA submits that there is evidence that fallowing has no effect on wild salmon populations. In reply, we submit that the Province and BCSFA are ignoring significant scientific evidence when making this submission, including a review paper by Dr. Costello which states:

> The evidence that salmon farms are the most significant source of the epizootics of sea lice on juvenile wild salmonids in Europe and North America is now convincing (Heuch et al. 2005; Costello 2006; Krkosek et al. 2006b, 2007a,b, in press; Todd 2006). Farms may contain millions of fishes almost year round in coastal waters and, unless lice control is effective, may provide a continuous source of sea lice, although the amount of infestation pressure will vary over time owing to seasonal and farm management practices (e.g., fallowing). (Exhibit 1571, *How Sea Lice from Salmon Farms May Cause Wild Salmonid Declines in Europe and NA and Be a Threat to Fishes Elsewhere*, p. 6)

30. In our submission, given farmed fish are a potential source of pathogens and sea lice, removal of farmed fish from net-pens (i.e. fallowing) will reduce the amplification and potential spread of pathogens and sea lice. Moreover, the BCSFA make their submission relying entirely on the work of Dr. Dick Beamish. In our submission, Dr. Beamish's evidence should not be relied upon, particularly given the criticisms of his work presented throughout this Commission (Exhibit 1341, Dill et al., *Comment re Beamish et al (2007) A Proposed Life History Strategy for the Salmon Louse in the Subarctic Pacific*); (Exhibit 1342, *Memo from B Hargreaves re Nov 20 2003 Meeting with BC and BCSFA on Preliminary Sea Lice Results*).

(e) Diseases

31. At paragraph 316, Canada references the evidence of Dr. Kyle Garver and stresses the need to avoid speculation in disease management. In reply, we submit that the complexity of disease management and the recent discovery of ISAv in B.C. highlight that a precautionary approach is necessary for disease management, and even potentially speculative problems should be treated and managed as real risks to wild salmon.

32. At paragraph 321, Canada notes that Dr. Miller's genomic research is continuing, but that science cannot go faster than research and facts will allow. In reply we submit that DFO must commit sufficient resources and support to assist Dr. Miller in her crucial research.

(f) Infectious Salmon Anaemia virus (ISAv)

33. The recent positive testing results for ISAv in B.C. salmon have undermined much of the submissions from Canada, the Province and the BCSFA, including their recommendations.

With respect to the detection of ISAv in B.C., on October 17th, 2011, Dr. Richard Routledge of Simon Fraser University publicly reported that the European strain of ISAv was detected in two juvenile sockeye of 48 salmon sampled from Rivers Inlet in the Central Coast of B.C. The diagnosis of ISAv was made by Dr. Frederick Kibenge from the official World Organization for Animal Health (OIE) Reference Laboratory for Infectious Salmon Anemia in P.E.I. This laboratory is one of only two worldwide that are designated by the OIE to test for ISAv. The documents supporting the above have not yet been made proper exhibits in this Commission, and, in our submissions, must be made so as they are relevant and necessary for this Commission.

34. As stated above, a number of submissions of Canada, the Province and the BCSFA have been undermined by the detection of ISAv in B.C. In this regard, at paragraph 680 Canada submits that overall, the evidence suggests that fish farms do not pose a significant health risk to wild stocks. Further, at paragraph 315 and 674, Canada submits that there has been no documented introduction of non-endemic pathogens into the province. Similarly, at page 76, paragraph 4, the Province submits that the manner in which salmon aquaculture is practised in B.C. creates a low overall risk to the environment. Then, at page 111, paragraph 91 the Province submits that the Commission should come to the conclusion that ISA is not present in B.C. For their part, the BCSFA submits, *inter alia*, that risk posed by the aquaculture industry is minimal and all diseases affecting aquaculture facilities are naturally occurring and endemic to B.C.

35. In reply we submit that the recent detection of ISAv in B.C. completely undermines these claims. Instead, it is very likely that commercial salmon farming has already introduced ISAv into B.C. Moreover, the consistent understatement of risk respecting disease transfer from aquaculture activities has – unfortunately – been exposed. As a result of the detection of ISAv in B.C., DFO's entire risk assessment framework has been shown to be inadequate and must be reassessed.

36. At paragraph 277, the BCSFA submit that the weight of evidence suggests vertical transmission of ISAv does not occur. In reply we submit this is incorrect. Instead, the weight of science has found that vertical transmission of ISAv is a real possibility, and that aquaculture farms in Chile likely contracted ISAv via imported eggs (Exhibit 1483, *Can we get the upper hand on viral diseases);* (Exhibit 1502, *ISA Virus in Chile: Evidence of Vertical Transmission*). In fact, the salmon farming industry's own documents recognize vertical transmission of ISAv through fish embryos (Exhibit 1687, *Preventive Fish Health Work*, p. 28).

37. Also supporting the fact that ISAv can be vertically transmitted, Dr. Christine MacWilliams, a noted expert in ISAv, testified that if ISAv were to be detected in B.C. (which it now has been) she would presume the disease was imported, and that there was a breakdown in biosecurity (August 23, p. 47, l. 42). Further, Dr. Dill notes that recent science supports the fact that, despite claims to the contrary, it is very likely that ISAv was transmitted to Chile via imported eggs (*Technical Report 5D, Impacts of salmon farms on Fraser River sockeye*

salmon: Results of the Dill investigation, p. 25). In our respectful submission, the Commission should prefer published science on this issue, certainly above a single 'report' paid for by the industry. In addition, given that there was an opportunity for all parties to test the opinion of Dr. Dill through cross-examination, his evidence should be preferred over any untested evidence.

38. At paragraph 285, the BCSFA seem to submit that the risk of transmission of ISAv to B.C. is higher from migrating wild fish than from imported eggs. The BCSFA seems to base this submission on a quote from Dr. Mark Sheppard. In reply we submit that the evidence set out above clearly supports the potential risk of vertically transmitting ISAv via egg importation. In addition, with their submission the BCSFA implicitly recognize that ISAv can be horizontally transferred, which is of additional concern.

39. In our submission, there is a real risk that ISAv can be vertically transmitted via salmon eggs; there is an additional concern that ISAv can be transmitted horizontally; there is a strong possibility that the farmed fish in Chile contracted ISAv via egg importation; and most importantly, the recent detection of the European strain of ISAv in B.C. suggests that this disease was very likely transmitted via the salmon farming industry.

40. Furthermore, at paragraph 668 Canada submits that DFO has a high degree of confidence that import controls effectively prevent the introduction, via egg or sperm imports, of disease into Canada. In reply we once again submit that the weakness of Canada's risk assessment regime respecting disease has been exposed. As a result, Canada must immediately initiate a comprehensive, multi-party and publicly transparent investigation into the detection of ISAv in B.C. The need for a multi-party investigation has been expressed by the United States.

41. Moreover, the this Coalition recommends the following immediate actions necessary to assess and counter the risk of ISAv to Fraser River sockeye salmon and the coastal ecosystems which rely on them:

    x.1. DFO and the Canadian Food Inspection Agency (CFIA), in cooperation and collaboration with the US National Oceanic and Atmospheric Administration (NOAA) and the US National Aquatic Animal Health Task Force, should immediately initiate comprehensive, independently-audited testing of wild salmon, farmed salmon, herring and pilchard in Canadian and US Pacific waters to determine the extent of the disease. Methods and results should be verified by the OIE Reference Laboratory for Infectious Salmon Anemia in Prince Edward Island. This should commence immediately irrespective of progress on the recommendations in x.4, below.

    x.2. Immediately cull all farmed fish and prevent restocking in any farm site where fish test positive for ISAv.

x.3. Conduct the testing necessary to track the source of the disease, specifically including the role, or risk, that salmon farm production facilities, hatcheries and egg supply processes may have had in spreading Infectious Salmon Anaemia to wild populations.

x.4. DFO and CFIA must immediately convene a workshop of international experts to assess the issue and transparently report to Parliament and the public within six months both the findings and the plan developed to address this threat. Key elements should include lessons learned from other jurisdictions (Chile, Scotland, Norway, Maine and Eastern Canada) and:

(i) Establish Infectious Salmon Anaemia research objectives, in collaboration Provincial and First Nations governments and the with the Government of the United States, and pacific state governments.

(ii) An understanding of the prevalence of Infectious Salmon Anaemia in both wild and aquaculture salmonid populations throughout B.C. and the Yukon, as well as Alaska, Washington, Oregon, California, and Idaho.

(iii) An assessment of key risk factors for Fraser sockeye (and other salmonids) susceptibility to ISAv including, but not limited to, genetics, geography, oceanography and proximity to aquaculture.

(iv) Potential transmission pathways between infectious and uninfected salmonid populations.

(v) Options for management strategies to rapidly respond to potential Infectious Salmon Anaemia outbreaks in both wild and aquaculture populations, including hatcheries. The likelihood of management strategies to effectively contain the disease should be assessed and reported.

(vi) A collection and quality assessment of available baseline data on disease in farmed and wild populations, including baseline data from national, sub-national and First Nations jurisdictions and the elements of the salmon aquaculture production system regulated by senior governments (egg importation, broodstock facilities, production hatcheries and grow out cages).

(vii) An assessment of Canada and Provincial disease surveillance and testing program gaps, methodological flaws and other shortcomings, including an audit of sampling and lab protocols against OIE standards.

x.5. Fast-track the development of closed containment systems for salmon aquaculture and present a firm, expedited timeline for phasing out all open net-cage operations.

III. Wild Salmon Policy

42. At paragraphs 359 – 363 of its submissions, Canada notes a number of important aspects of the WSP including: recognition that protecting biodiversity is key to protecting salmon; Conservation Units represent irreplaceable genetic lineages; and the protection of habitat is key to the protection of salmon diversity. We support these points and add that the WSP sets out specific measures that, if implemented, will better protect fish habitat and thereby salmon populations. These aspects of the WSP support our Recommendation i.1 that a specific person should be assigned as WSP champion so as to better ensure its implementation.

43. At paragraph 354, Canada notes that the *Convention on Biological Diversity* was a major driver for the WSP. We agree with this submission and add that implementation of the WSP will further the goals and objectives of the *Convention on Biological Diversity*.

44. This Coalition further agrees with Canada's submission at para. 366 that a precautionary approach demands that actions not be postponed as a result of scientific uncertainty. We disagree with Canada's submission at paragraph 370 that although precautionary in nature, the WSP deliberately avoids setting out specific status values to achieve, nor dictate management actions when low status levels are reached. In reply, we submit that the WSP does in fact set out specific status values to achieve and precautionary management actions to implement once a Conservation Unit is assessed in the Red zone. In this regard, the WSP specifically intends to ensure CU's are relatively abundant and that Red zone status is avoided (WSP Ex. 8; pgs. 17). Moreover, the WSP specifically states that CU's assessed in the Red zone will be identified as priority, and both short term and long term actions will be implemented for their protection (WSP Ex. 8; pgs. 17, 26). This supports Conservation Coalition Recommendations i.7 and i.8 that a recovery planning process be initiated for Fraser Sockeye CU's assessed in the Red zone, and that where there is insufficient data to assess the status of a CU it should be considered Red zone and thereby a priority CU.

45. Canada submits at para. 396 that currently there is not a methodology to combine status indicators and thereby assess CU status. In reply, we note that the work of Dr. Grant has preliminarily assessed Fraser sockeye CU's, and that only 5 of 36 Fraser sockeye CU's are known to be in the green zone (Exhibit 1915, *Evaluation of Uncertainty in Fraser Sockeye WSP Status Using Abundance and Trends in Abundance Metrics*). These preliminary assessments must trigger DFO management actions for Red zone CU's. In other words, DFO must not delay implementing protection measures for CU's that are preliminarily assessed in the Red zone, including CU's for which insufficient data is available, and must not delay protection planning until more or better scientific information is obtained.

(a) Implementation Generally

This Coalition notes and responds to the following submissions made by Canada on the general implementation of the WSP:

46. At paragraph 33, Canada submits that DFO has implemented the principles of the WSP in its everyday management of the salmon resource. Further, at paragraphs 391 – 392, Canada submits that a number of separate documents, including annual work plans, collectively make up the WSP implementation plan. In reply we submit that a stand-alone WSP implementation plan must be created, and note that the WSP explicitly states that an implementation plan will be developed that will stipulate what tasks are required, how they will be performed, and when they will be completed (WSP, Exhibit 8; p. 35). We note Conservation Coalition Recommendation i.1, that a WSP champion be designated, and that this persons' initial task is to create a stand-alone WSP implementation plan.

47. At paragraph 383, Canada notes that the WSP states that it will be implemented within DFO's existing resource capability, and that implementation is complex and will take time. In reply we note Conservation Coalition Recommendation i.5, and recommend that by December 2012 Canada assess the amount of additional resources necessary to implement the WSP.

48. At paragraphs 384 – 389, Canada discusses oversight and leadership related to implementation of the WSP. In short, Canada references various Committees and positions and suggests that these collectively ensure accountability of WSP implementation. In reply, we submit that disparate Committees and personnel tasked with implementation of aspects of the WSP, often along with numerous other competing tasks, have failed to ensure either implementation or accountability. Further, several of the Committees and positions that Canada cites no longer exist. Accordingly, this supports Conservation Coalition Recommendations i.1 and i.3, that a specific WSP champion be designated, and that any performance-based pay structure in the Pacific Region be calculated based on WSP implementation targets and meeting recovery targets of CU's assessed as in the Red zone.

49. At paragraphs 84 and 197, Canada notes that the Regional Director General is the primary decision-maker in the Pacific Region with the authority and operational responsibility for implementation of DFO policies. In reply we submit that the central importance of the WSP to the sustainable management of the Pacific salmon fishery necessitates that the RDG him or herself, or a person who reports directly to the RDG, must be tasked with WSP implementation.

50. At paragraphs 425 – 427, Canada submits that a number of important methodologies have been developed with respect to prioritizing CU's based on status and that, to date, the DFO has not prioritized CU's and plans to re-initiate this process once the Grant et al. paper is complete. In reply we submit that a precautionary approach demands an immediate (or preliminary) prioritization of Fraser River sockeye CU's based on the work of Dr. Carrie Holt (Exhibit 197). Specifically, management of Fraser River sockeye CU's that were preliminarily assessed as Red zone, and those for which insufficient data is available to make an assessment, must be immediately prioritized. This in turn will ensure that recovery plans, data acquisition and monitoring plans, and both short and long term integrated strategic plans are developed for potentially at-risk CU's. Further, this supports the Conservation

Coalition's Recommendation i.7 that by December 2012, all Fraser River sockeye CU's be assigned status, with CU's lacking sufficient data to quantify status assigned as Red zone; and Recommendation i.8 that by December 2013 a recovery planning process for Red zone CUs be initiated.

This Coalition makes the following concluding responses to submissions made by Canada regarding the WSP:

51. At paragraph 438, Canada sets out a number of initiatives that it submits amounts to implementation of the WSP in terms of harvest management. In reply, we submit that although some of these initiatives further the goals and objectives of the WSP, they are not a substitute for implementation of the WSP itself. The WSP, through Strategies and Action Steps, sets out a number of specific measures that will be implemented to meet particular goals and objectives. These specific measures have not been implemented by the DFO despite an explicit commitment by DFO to do so. Regardless of how unrealistic this initial deadline was, we submit that the abject failure to implement any element of the WSP one year beyond this date supports the need for accountability as well as Conservation Coalition Recommendations i.1 – i.11.

(b) <u>Strategy 1 – Monitoring Wild Salmon Status</u>

52. At paragraph 404 Canada submits that although no CU-specific monitoring plan has been developed to date, DFO does monitor the majority of Fraser sockeye CU's. In reply we submit that *some* monitoring for *most* Fraser sockeye CU's is entirely inadequate. CU specific monitoring plans are required to ensure *comprehensive* monitoring of CU's. To date, no Fraser sockeye CU has been assigned to a WSP status zone despite preliminary scientific assessment indicating that only five Fraser sockeye CU's are sufficiently healthy to warrant Green zone status (Exhibit 1915, *Evaluation of Uncertainty in Fraser Sockeye WSP Status Using Abundance and Trends in Abundance Metrics*) Moreover, in order to effectively manage Fraser sockeye, at a minimum there must be *some* monitoring of *all* Fraser sockeye CU's. Much of the monitoring of Fraser sockeye currently occurs through FRSSI, and therefore is not conducted at the CU-level. As a result of this inconsistency, FRSSI should be abandoned and CU-specific monitoring, as well as CU-specific status assessments and management plans, must be implemented.

(c) <u>Strategy 2 – Monitoring and Assessment of Habitat Status</u>

53. At paragraphs 411 – 412, Canada notes that implementation of Strategy 2, and effectively monitoring and assessing habitat status, is a very expensive undertaking. We acknowledge this submission and submit that Strategy 2 must be implemented as a priority regardless of cost. Furthermore, we submit that Canada's submission supports this Coalition's Recommendation i.5 that by December 2012, DFO conduct an assessment of the true cost of implementing the WSP, particularly Strategies 1, 2 and 3. Once this assessment is

completed, the government of Canada must allocate the necessary resources, which may be upwards of $30 million.

54. Additionally, we note that the methodology developed to assess habitat specifically accounted for the cost of collecting the necessary baseline data and undertaking ongoing monitoring (Exhibit 175, *Canada's Policy for Conservation of Wild Pacific Salmon - Stream, Lake and Estuarine Habitat Indicators*). Therefore, while the cost of monitoring and assessing habitat will always be a concern, it is not an excuse for DFO to avoid monitoring at levels required by the WSP.

(d) Strategy 3 – Ecosystem Values and Monitoring

55. At paragraphs 376 – 379 and 417 – 422, Canada discusses Strategy 3 and while noting the complexity of ensuring ecosystem values are incorporated into management decisions, Canada submits that human activities which the DFO manages must "eventually" be conducted in a manner that takes ecosystem status into account. In reply we agree that ensuring Strategy 3 is achieved will be difficult, and submit that because of this complexity additional precaution is needed. For example, minimum escapement levels must recognize the role salmon play in ecosystem services, and, while accounting for uncertainty, ensure sufficient escapement to nurture a healthy ecosystem. In addition, we submit that vague assurances of eventual implementation are insufficient. Timelines for the implementation of the WSP generally, and Strategy 3 in particular, are required.

(e) Strategy 4 – Integrated Strategic Planning

56. At paragraph 424, Canada notes there has been considerable external engagement of stakeholders with respect to WSP implementation, including Strategy 4. In reply we submit that external engagement is not a substitute for the long-term strategic plans called for in Strategy 4. In fact, Strategy 4 sets out specific elements that should inform strategic plans and planning processes respecting CU's or groups of CU's including setting abundance targets, recommending management actions for protection, and establishing timelines and setting priorities (WSP, Exhibit 8; pg. 24). Thus, general external consultation including consultations regarding Strategy 4 generally is not a substitute for implementation of integrated strategic plans and planning processes with respect to particular CU's or groups of CU's.

IV. Commercial Fishing

57. At paragraphs 176 – 177 Canada notes that four Panels currently provide advice respecting implementation of the *Pacific Salmon Treaty* and that the membership of these panels reflects a wide array of interests, including, in some cases, environmental interests. Canada further submits that these Panels establish annual fishing plans based upon conservation concerns and co-migrating stocks. In reply we submit that environmental groups enjoy only observer status on these panels, and the structure is heavily weighted towards commercial

and recreational fishing interests. As a result, the Panels established pursuant to the *Pacific Salmon Treaty*, including the Fraser River Panel, do not adequately take conservation and co-migrating stocks into account.

58. At paragraph 217, Canada notes that the first priority of the *Selective Fishing Policy* is avoidance of non-targeted species. In reply we submit this priority supports a movement to selective fisheries, including terminal fisheries, and therefore requires active promotion by DFO of this conservation measure, including through adequate funding of pilot projects and reinstating PICFI funding.

59. At paragraph 560, Canada submits that conducting fisheries in terminal areas is consistent with the objectives of the WSP and the protection of weaker stocks. We support this submission.

60. At paragraphs 340 – 344, Canada discusses pre-season forecasting and makes two main points: (i) increasing complexity and variability should result in less reliance on pre-season forecasting; and (ii) pre-season forecasts nonetheless provide valuable information. We support both of these submissions and add that, as a result, DFO must be more precautionary when establishing harvest rates and must emphasize improved in-season data collection.

61. At paragraphs 479 and 708 – 709, Canada addresses the Fraser River Sockeye Spawning Initiative (or FRSSI) and submits that the approach taken in that model is compliant with the precautionary principle and the WSP. In reply we submit that FRSSI is not compliant with either a precautionary approach or the WSP, as it continues to set harvest rates based on aggregates rather than CU's. The result of using FRSSI is a failure to consider the status of many sockeye CU's. Furthermore, the use of FRSSI fails to ensure that at-risk CU's are not overfished, and fails to adequately consider the declining productivity of Fraser sockeye salmon. Accordingly, FRSSI should be abandoned.

(a) <u>Specific Response to Submissions of the Commercial and Recreational Fishing Participants</u>

62. There is very little that this Coalition can support or agree with in the written submissions from West Coast Trollers Association (Area G) and the United Fishermen and Allied Workers' Union ("Area G"), the BC Fisheries Survival Coalition and Southern Area E Gillnetters Association ("Area E") and the BC Wildlife Federation and BC Federation of Drift Fishers ("BCWF"). This Coalition does agree with some of the submissions of Area D Salmon Gillnet Association and Area B Harvest Committee (Seiners) ("Areas D and B") with regard to Aquaculture and some aspects and recommendations that arise from the lack of funding for DFO but cannot support many of its submissions on harvesting or the Wild Salmon Policy.

63. In answer to the submissions of Area G, we urge the Commissioner to reject the arguments contained therein in their entirety. Much of our reply submission to Area G counters the legal argument that they have developed. We submit that their legal argument that there is

no constitutional basis for conservation is a selective rendition and account of the law. The argument runs counter to the express wording of many of the cases that are relied upon. The authors have chosen extracts from the cases and have attempted to weave phrases that mention sustainability in an argument that suggests that sustainability can be achieved without conservation. Many of the other statutes cited are selectively filtered. For example in paragraph 19 there is a reference to the preamble in the Oceans Act. Conservation is highlighted in the Preamble to the Act but is ignored for the purpose of the submission. It is this treatment of the law in a very selective fashion that causes this Coalition to suggest to the Commissioner that their submission that there is no foundation for conservation as it is applied in the Wild Salmon Policy is both ill conceived and misguided.

64. The basic premise of Area G's submission is that "The purpose of the *Fisheries Act* and other federal statutes and treaties is to provide yield (harvest benefits) not conservation of fish per se." We submit that this premise is untenable and is in direct conflict with the *Fisheries Act* as well as with jurisprudence at all levels of Canadian Courts.

65. Area G places heavy reliance on the *MacMillan Bloedel* decision of the BC Court of Appeal (discussed later in this Reply). This decision has been severely criticized and will not likely stand up to legal challenge.

(b) <u>Conflict with the *Fisheries Act*</u>

66. Section 43 of the *Fisheries Act* grants the Governor in Council the authority to make regulations to carry out the purposes and provisions of the Act. Section 43 specifically distinguishes the conservation and protection of fish from the management of fisheries:

> **43.** The Governor in Council may make regulations for carrying out the purposes and provisions of this Act and in particular, but without restricting the generality of the foregoing, may make regulations
>
> (a) for the proper management and control of the sea-coast and inland fisheries;
>
> (b) respecting the conservation and protection of fish;

67. The explicit contrast between the management of fisheries and the conservation and protection of fish created through subsections (a) and (b) of Section 43 conflicts with Area G's assertion that the *Act*'s purpose is not to conserve fish per se. Specifically subsection 43(b) indentifies the conservation and protection of fish as its own distinct goal.

68. The language of section 43 establishes that the enumerated goals under the section 43 are related either to purposes or provisions of the *Act*. Under section 43, the subsections are examples of the "foregoing". The "foregoing" means the "purposes and provisions of the Act". Thus, through the language of section 43 Parliament is asserting that the conservation and protection of fish is related to either a purpose of the *Act* or a provision of the *Act*. The

question then becomes: Is the conservation and protection of fish related to a purpose or a provision of the *Act*?

69. If the conservation and protection of fish is contained in a provision of the *Act*, then at minimum, the conservation and protection of fish would be related to a provision of the *Act*. The extension of this argument would be that all the provisions of a statute are meant to promote the purposes of the legislation. Thus under the *Act* if there are provisions respecting the conservation and protection of fish, it is strongly arguable that the protection and conservation of fish is a purpose of the *Act*.

70. Alternatively, if the conservation and protection of fish is not contained in any relevant provisions, then the conservation and protection of fish must be interpreted as relating to an implied purpose because the *Act* contains no express mention of the *Act*'s purposes and Parliament does not draft legislation with moot language.

71. There are several provisions in the *Act* that specifically address the conservation and protection of fish.

72. As cited above, Section 43 of the *Act* identifies the conservation and protection of fish as an enumerated ground of regulation making power.

73. Section 61 of the *Act* provides a mechanism to compel commercial fisheries to provide information relating to "to the proper management and control of fisheries or the conservation and protection of fish".

74. Section 79.2 of the *Act* provides the court with the jurisdiction to require a person convicted of an offence under the *Act* to pay to her Majesty "an amount of money the court considers appropriate for the purpose of promoting the proper management and control of fisheries or fish habitat or the conservation and protection of fish or fish habitat."

75. All three provisions distinguish the protection and conservation of fish from the management of fisheries. All three provisions also contemplate the conservation of fish as fish per se – as distinct from fisheries yield or harvest benefits.

76. Further to these arguments the Act in several places uses the words: "fish habitat or fish or the use by man of fish" (see ss. 4 and 34(1)(a) and (b)). The legislatures deliberately distinguished between conservation or damage to fish and the use of fish by man. While the use of fish by man is a purpose of the *Act* , the use of fish by man is clearly not the only purpose of the *Act*. In contradiction to the assertion by Area G, the *Act* contemplates the protection of fish and fish habitat as independent purposes from the use of fish habitat for use by humans.

(c) <u>Case law Considering the Constitutional Aspect of "Fisheries"</u>

77. Area G argues in paragraph 10 of its submissions that in *Northwest Falling,* Martland J. "left open the question whether federal power extended to "fish" that had no connection with a "fishery" that was of economic, recreational or cultural value to humans". Their statement is misleading. Martland J. clearly affirms that there are both situations where the federal power will extend to fish outside of a fishery and times when the federal power will so extend. Martland J.'s reasons are predicated upon a Constitutional division of powers in the context of that time frame. In many of the cases cited by Area G, *Northwest Falling* included, courts were attempting to balance the federal fishery power with provincial powers such as property and civil rights. The courts noted situations where the regulation of fish is clearly within provincial powers (canneries and internal labour relations). These cases must be viewed in context as the law with respect to division of powers evolved from watertight compartments to necessary incidental and federal paramountcy, to collaborative federalism which is the present thinking of most modern jurisprudence.

78. In *Northwest Falling* Martland J. upholds s. 33 of the Act (now Section 36) on the basis that "…the definition of "deleterious substance" ensures that the scope of s. 33 (2) is restricted to a prohibition of deposits that threaten fish, fish habitat or the use of fish by man" (para 20). This language echoes the legislative language that identifies each of the elemental aspect of fisheries. Here Martland J. implicitly notes that the *Act* is *intra vires* because the definition of "deleterious substance" now, as opposed to the provision dealt with in *Fowler*, relates to aspects of "fisheries". These aspects include fish, fish habitat, and the use of fish by man.

79. Area G cites *R. v. MacMillan Bloedel* (1984), 50 B.C.L.R. 280 (*Bloedel*) as further support for its position. In *Bloedel*, the majority of the BC Court of Appeal distinguished between "fisheries" and fish bearing streams that do not constitute part of "fisheries". The BC Court of Appeal accepts the reasoning from the county court in the same decision. Area G relies on the majority of the Court of Appeal's acceptance of the county court reasoning to justify its position that a fishery must have a value to humans. As shown below, *Bloedel* is a poorly decided decision that is inconsistent with subsequent Supreme Court of Canada jurisprudence and has been distinguished and severely criticized in subsequent case law.

80. In *Bloedel*, the county court judge's reasoning that a fishery must contain a commercial or sporting value to constitute a "fishery" under s. 91(12) of the Constitution is based on the following misquoted passage in *Northwest Falling*:

> The charges laid in this case do not, however, effectively bring into question the validity of the extension of the reach of the subsection to waters that would not, in fact, be fisheries waters.

81. The passage is erroneous because it places a period after "fisheries water". The importance of the period placement will be addressed shortly. The county court judge's inference is as follows:

> The charges involved waters frequented by fish, and hence I infer that Martland J. contemplated the existence of waters with fish in them which did not constitute fisheries.

82. However the full and correct passage from Martland's judgment in *Northwest Falling* is as follows (at bottom of page 300):

> The charges laid in this case do not, however, effectively bring into question the validity of the extension of the reach of the subsection to waters that would not, in fact, be fisheries waters "or to substances other than those defined in paragraph (a) of subsection 33 (11)". The charges relate to diesel fuel spilled into tidal waters.

83. Note that the insertion of the period in the trial judge's decision after the words "fisheries waters" reduces the status of the potential challenges to the legislation Martland J. was contemplating. Martland J. was simply noting that based on the facts at bar, there was no reason to consider the appellant's far reaching assertion that the *Act* was a coloured attempt to regulate the provincial sphere of pollution control. Since the pollution at bar was into tidal waters, Martland J. was simply stating that he need not consider the appellant's more far reaching argument.

84. The county appeal court judge in *Bloedel* never mentions the passage from *Northwest Falling* where Martland J. enumerates the elemental aspects of "fisheries" (Fish, fish habitat, and uses by man). The county court judge does not consider the equivalent language in the *Act* or the *Act's* distinction between fish and fisheries management at s. 43 of the current *Act.*

85. In *Bloedel,* the BC Court of Appeal simply accepts the reasoning of the county court judge and fails to address Martland J.'s enumerated aspects of fisheries or the relevant statutory context. The ratio in *Bloedel* is:

> s. 31 (now s. 35) of the Fisheries Act should be restricted to fisheries. In this case a fishery was not affected by the logging practices of the defendant since the fish in Russell Creek did not constitute a fishery as that term has been defined by the Supreme Court of Canada in *R. v. Fowler*, supra."

86. Based on this statement, *Bloedel's* ratio is that a "fishery" is a fishery as defined by *Fowler* – and by this, the majority means the county court's interpretation of *Fowler.*

87. Further undermining Area G's reliance on *Bloedel* is the county court judge's explicit uncertainty in his own ruling. The county judge stated that "[t]he issue in this case is one which, with respect, I think will have to be settled by the Supreme Court of Canada.". It is clear from this statement that the trial judge was far from convinced in his own inference.

The Supreme Court of Canada refused leave to appeal the BC Court of Appeal Decision in *Bloedel*.

88. It is our submission that the SCC in *Fowler* did not propose to exhaustively define "fishery". The Court in *Fowler* accepts the definition of "fishery" as articulated in *Reference as to the Constitutional Validity of Certain Sections of the Fisheries Act*, 1914 (*Reference*).

89. In *Reference* the Court states:

> In Patterson on the Fishery Laws (1863) p. 1, the definition of a fishery is given as follows:
>
> > A Fishery is properly defined as the right of catching fish in the sea, or in a particular stream of water; and it is also frequently used to denote the locality where such right is exercised.
> >
> > In Dr. Murray's New English Dictionary, the leading definition is:
> >
> > > The business, occupation or industry of catching fish or of taking other products of the sea or rivers from the water.
>
> The above definitions were quoted and followed by Chief Justice Davey in *Mark Fishing v. United Fishermen & Allied Workers Union,* at pp. 591 and 592. Chief Justice Davey at p. 592 added the words:
>
> > The point of Patterson's definition is the natural resource, and the right to exploit it, and the place where the resource is found and the right is exercised.

90. Patterson's definition identifies four aspects of a "fishery": 1) The resource, 2) the right to exploit the resource, 3) the location of the resource, and 4) the location where the right of exploitation occurs. The "resource" of a fishery is the fish *qua* fish, not the fish qua "use by man" or harvest yield.

91. *Reference* also notes that there are other definitions. At no point in *Reference* does Newcombe J., or any other justice, attempt to definitively settle the definition of "fishery". The definitions used by Newcombe J. are simply used to discredit the possibility that the 1919 *Fisheries Act* could be used to regulate canning activities within a province. Thus, clearly there are situations where "fish" fall outside the rubric of a "fishery", but that only occurs when a provincial head of power comes into play.

92. Further, in *Northwest Falling*, the Supreme Court of Canada's discussion of *Fowler* implicitly accepts that fish and fish habitat are divisible aspects of fisheries, just like the use of fish by humans:

> The situation in this case [(*Northwest Falling*)] is different from that which was considered in *Dan Fowler v. Her Majesty The Queen, a* judgment of this Court recently delivered. That case involved the constitutional validity of subs. 33(3) of the *Fisheries Act* and it was held to be *ultra vires* of Parliament to enact. Unlike subs. (2), subs. (3) contains no reference to deleterious substances. It is not restricted by its own terms to activities that are harmful to fish or fish habitat. The basis of the judgment in the *Fowler* case is set out in the following passage:
>
> > Subsection 33(3) makes no attempt to link the proscribed conduct to actual or potential harm to fisheries. It is a blanket prohibition of certain types of activity, subject to provincial jurisdiction, which does not delimit the elements of the offence so as to link the prohibition to any likely harm to fisheries.
> >
> > In my opinion, subs. 33(2) was *intra vires* of the Parliament of Canada to enact. The definition of "deleterious substance" ensures that the scope of subs. 33(2) is restricted to a prohibition of deposits that threaten fish, fish habitat or the use of fish by man. (at Page 301)

93. This interpretation of *Fowler* requires fish to be an independent elemental aspect of a fishery because of the use of the three qualifiers: Fish, fish habitat, and the use of fish by man. If the Court in *Northwest Falling* did not consider fish or fish habitat to be independent of the use of fish by man, the court would not have used the extra qualifications. The parallel discussion of *Fowler*'s "fishery" and "fish, fish habitat or the use of fish by man" shows the implicit acceptance by the Supreme Court of Canada that a fishery in *Fowler* contemplates these three elemental aspects.

94. To the extent the *Bloedel* decision stands for the proposition that a fishery must contain a "fish having a commercial value, or perhaps a sporting value", *Bloedel* is *per incuriam*.

95. In *R. v. BHP Diamonds Inc.*, 2002 NWTSC 74 (*BHP*), Justice Richard directly criticizes *Bloedel* and refuses to follow the majority's decision. In essence, Richard J. makes the same points as articulated above. He notes that the passage in *Fowler* relied on by the county court judge in *Bloedel* was obiter and dealt with the facts of the argument presented by the appellant. Richard J. states:

> The charges laid in this case do not, however, effectively bring into question the validity of the extension of the reach of the subsection to waters that would not, in fact, be fisheries waters. (at p.300)
>
> [Nor do the charges in the present case.]
>
> [53] It is this <u>obiter</u> comment which appears to have encouraged the majority in *M^{ac}Millan Bloedel (1984)*. The majority took the view that

> Martland J. contemplated the existence of waters with fish in them that did not constitute fisheries. **I disagree that that is a reasonable interpretation of the language used by Martland J. in the judgment as a whole.** [Emphasis added]

96. Richard J.'s interpretation of *Fowler* and *Northwest Logging* is far more cogent than the court in *Bloedel* and in our respectful submission the correct interpretation. Richard J.'s interpretation is essentially summarized at paragraph 54:

> [54] In *Northwest Falling* Martland J. reiterated what he had said in *Fowler* a month earlier — that the federal power in relation to fisheries is concerned with the protection and preservation of fisheries as a public resource. And he added that protection was to be extended to each component of that resource:
>
> > Shellfish, crustaceous, and marine animals, which are included in the definition of "fish" by s.2 of the Act, are all part of the system which constitutes the fisheries resource. The power to control and regulate that resource must include the authority to protect all those creatures which form a part of that system. (At p.300)

97. Richard finds a complete answer to the *Bloedel* argument in the Supreme Court of Canada's *Northwest Falling* decision where Martland J. states "In essence, the subsection seeks to protect fisheries by preventing substances deleterious to fish entering into waters frequented by fish. This is a proper concern of legislation under the heading of "Sea Coast and Inland Fisheries" (*BHP* at para 51).

98. In *R. v. Brown*, (1997) 23 C.E.L.R. (N.S.) 227, the Ontario Court of Justice also states that the majority in *MacMillan Bloedel* wrongly interpreted *Northwest Falling*:

> the majority interpretation in *MacMillan Bloedel Ltd.* does not commend itself to me because it wrongly interprets *Northwest Falling Contractors Ltd.* The fact that the Supreme Court of Canada refused leave to the Crown to appeal *MacMillan Bloedel Ltd.* goes no distance in lessening the persuasive effect of Craig, J.A.'s judgment in that case.

99. In *R. v. Sapp* 2004 BCPC, McKinnon J. feels bound by *MacMillan Bloedel* despite finding the statements in *BHP* to be persuasive:

> 57 However persuasive these and other decisions might be in light of changing understanding of environmental complexities when considering the legislative authority of Parliament under s. 92(12) of the *Constitution Act 1867* in respect of seacoast and inland fisheries, and when construing resource and conservation legislation generally, I am bound by *MacMillan Bloedel*.

100. In *R. v. Zuber*, (2004) 122 C.R.R. (2d) 82, Powel J. notes the reasoning in *BHP* persuasive and also notes that the *Bloedel* majority has rarely been followed (See para 33).

101. The jurisprudence on the fisheries power under the Constitution is easily misinterpreted. The fact that most cases consider fisheries in the context of commercial disputes necessarily gives these cases a commercial "human-centric" standpoint. However, on a close reading of the cases, it is apparent that the fisheries power includes the power to regulate the fish *qua* fish. The passages that Area G focuses on are de-contextualized and fail to account for the larger picture that the cases were dealing with.

102. The unanimous decision of the Supreme Court of Canada in *Ward v. Canada (Attorney General)*, 2002 SCC 17 (*Ward*) further reinforces that fisheries includes fish as a divisible aspect of fisheries. After reviewing the judicial history of the interpretation of "fisheries" under the Fisheries Act – including *Robertson*, *Northwest Falling, Comeau's Sea Foods Ltd.,* and *Gulf Troller's Assn* - Chief Justice McLachlin states at paragraph 41:

> These cases put beyond doubt that the fisheries power includes not only conservation and protection, but also the general "regulation" of the fisheries, including their management and control. They recognize that "fisheries" under s. 91(12) of the *Constitution Act, 1867* refers to the fisheries as a resource; "a source of national or provincial wealth" (*Robertson*, *supra*, at p. 121); a "common property resource" to be managed for the good of all Canadians (*Comeau's Sea Foods*, *supra*, at para. 37). The fisheries resource includes the animals that inhabit the seas. But it also embraces commercial and economic interests, aboriginal rights and interests, and the public interest in sport and recreation. [Emphasis added]

103. This passage again clearly distinguishes between economic and commercial activities and other activities that fall under the fisheries rubric. The unanimous court notes that the fisheries resource includes "the animals that inhabit the sea". The definition in *Ward* is inclusive, not exclusive.

104. Chief Justice McLachlin cites with approval the following passage from G*ulf Trollers Assn. v. Canada (Minister of Fisheries and Oceans)*,

> 16 The power conferred on Parliament in s. 91(12) of the Constitution Act, 1867, is not qualified, in my understanding, by any inherent condition that it be used to pursue some specific objectives and not others. Parliament may manage the fishery on social, economic or other grounds, either in conjunction with steps taken to conserve, protect, harvest the reserve or simply to carry out social, cultural or economic goals and policies.

105. Thus the Fisheries power can clearly be used to simply carry out "social, cultural or economic goals and policies". Conservation and protection of the fish is well within the

mandate of Canada and to argue otherwise flies squarely in the face of existing jurisprudence that is conveniently absent from the submissions of Area G.

(d) <u>Other Issues in Area G's submissions</u>

106. The submission of Area G is also dependent upon the concept of Maximum Sustained Yield and would seek to introduce this term into the WSP. Later they refer to the Larkin model and the delayed density effects upon succeeding generations of salmon. It is worthwhile to put these remarks into context. Dr. Larkin had an wonderful sense of humour and lamented the passing out of vogue of the concept of MSY with these words (found in Exhibit 412):

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

107. MSY is a concept that is important in the context of a sustainable fishery. In the WSP sustainability is guiding principle 3 that ranks below conservation and aboriginal fishing. The submission of Area G would seek to displace the ranking system currently in the WSP with the sole concept of sustainability.

108. The concept of sustainability is a key one and one that this Coalition supports. We are all striving to get to a world where the Fraser sockeye fishery is a sustainable commercial fishery. However sustainability must be seen as a practice that extends to all conservation units, and the aggregation of CU's into the present run timing groups causes a problem. From a biological perspective with a focus on biodiversity it does not make sense to allow for harvesting of a few strong CU's if the net effect is extirpation of the CU's that are mixed in with the fishery. Such a situation is not sustainable since the genetic lineage of all CU's should be protected to ensure survival of the species as a whole.

109. Furthermore in the submission of Area G, there is heavy reliance upon the work and testimony of Dr. Carl Walters and his approach to adaptive management. Some of the references in paragraphs 77, 105 and 119 are to a text that was not put to Dr. Walters nor to any witness and this Coalition questions the probative value of such evidence since it has not been expressly exhibited in the usual manner.

110. Contrary to the submissions of the commercial fishing sector the evidence of Dr. Walters was not uncontroverted. His approach was not the one taken by Dr. Peterman and where there are dissimilarities, Dr. Peterman's evidence is preferable.

111. The submissions in paragraphs 113-114 of Area G's written brief, further take the Commissioner's science advisor, Dr. Levy, to task and suggest that he is biased. Without taking a position on this point, this Coalition strongly submits that counsel for Area G should have raised the allegation of bias long before raising it in final submissions. Moreover if this submission is to carry any weight, a formal application is the route to determine whether there is bias or a reasonable apprehension of bias. It is improper, with respect, to raise such allegations in argument without the benefit of any substantial evidentiary footing. Such a submission in our view is entirely disrespectful to the Commission and its process. Finally bias cannot simply be presumed merely because a scientist has authored a report for a party other than the commercial fishing sector.

112. There is noticeable similarity in the submission of the commercial fishing sectors (Area G, Area D and B and the BCWF most notably seem to have carved their argument from the same grain of wood) in their reliance upon the concept of delayed density dependence as a cause for the long term and short term decline in Fraser Sockeye. This argument is essentially without foundation. The only significant run that was shown to have possibly declined due to this phenomenon was the Quesnel run. Delayed density dependence and over escapement was expressly rejected by the vast number of scientists who testified at the inquiry as a cause for the 2009 decline and the long term decline in Fraser Sockeye. Thus this submission has little merit and ought to be rejected outright by the Commissioner.

113. Likewise the Submissions of Area E have little merit to them. The premise that the decline in Fraser Sockeye is due to illegal over fishing (termed poaching in its submission) by the aboriginal fishing sector is in our view patently wrong and moreover dangerously close to racist sentiment that should have no place in this inquiry.

114. The submission of the BCWF places heavy reliance upon the public right to fish. This Coalition would remind the Commissioner that the public right to fish also embodies the public's right to continue to fish. As such the recreational fishery must acknowledge conservation as the keystone to ensuring that the public right to fish is one that can be enjoyed into perpetuity. Otherwise the right will be lost to all Canadians whether they want to fish or simply want to know that the fish exist.

115. With regard to the submissions of Area D and B, this Coalition generally supports the argument that DFO is underfunded and that budgetary constraints-particularly with respect to implementation of the WSP- have significantly contributed to the slowness of its implementation.

116. However while we support recommendation **i a** on page 74 of the submission- "That DFO receive the necessary funds to carry out a full implementation of WSP, including being provided with the financial resources to: a. protect and restore habitat where necessary", we cannot support the scrapping of the WSP if the funds are not forthcoming from Treasury Board. Similarly we can support recommendation **i** on page 75 on harvest –"That adequate funding be provided to DFO to ensure accurate enumeration and assessment of stock for purposes of harvest management."- but not the other 3 recommendations listed under that heading.

(e) <u>Response to Written Submissions of First Nations Participants</u>

117. This Coalition generally supports much of the argument and recommendations from the various First Nations groups ("FN's") that participated in this inquiry with regard to cooperative-management of the Fraser sockeye fishery.

118. We accept the submissions that FN's have constitutionally protected rights by virtue of s. 35 of the *Constitution Act 1982* and that the Federal and Provincial Crown have an obligation to consult with FN's whose aboriginal fishing rights may be infringed by proposed activities.

119. This Coalition joins with and supports the recommendations of the various FN groups that call for greater transparency and more involvement of FN's in decision making.

120. All of the members of this Coalition supports the following specific recommendations from the First Nations Coalition's submissions:

121. Para 96: Recommendation: "DFO, in collaboration with other governments (the Province and First Nations) and researchers (universities, ENGOs and industry) should create a central salmon database."

122. Para 241: Recommendation 2: "DFO should prioritize POST sampling and DNA program at Mission Hydroacoustic facility, Johnstone Strait and Discovery Passage in order to better assess FRSS migration, distribution and survivability, including potential bottlenecks."

123. Para 341: The <u>third</u> recommendation in this section calls for DFO Science to develop protocols with FN's and industry to ensure access to fish samples, transparency of data and research and ensure monitoring of fish health in open net-pen farms.

124. The <u>fourth</u> recommendation (pg 117) calls on DFO to continue to fund Dr. Miller-Saunders' and Dr. Garver's genomics research, including on wild and farmed fish.

125. Para 498: Recommendation: "An interdepartmental, multi-stakeholder research and science program should be developed that incorporates climate change, cumulative impacts and ecosystem-based approaches to science."

126. Para 873: Recommendation: “DFO must meaningfully consult with FNs on all proposed aquaculture regulations, policies and licence conditions. Industry should pay for such consultations.”

127. Since as noted above one of our members, CAAR, wishes only to engage at the level of Aquaculture then the other members of our Coalition would support the following specific recommendations of the First Nations Coalition:

128. Para 51: Recommends DFO use an Ecosystem-based framework to manage human activities including fisheries that fulfils its commitments under the CBD and the WSP.

129. Para 132: Recommendation: “DFO should prioritize the collection of essential baseline information on habitat values, pressures and forecasts along the entire migratory route of FRSS. This work should be coordinated with the requirements of Strategy 2 of the WSP and must actively engage FNs.”

130. Para 544: Recommendation 2: “DFO Science should develop clear protocols with FNs for the better and timely exchange of information and concerns related to salmon, in particular FRSS, including the application and integration of TEK to improve ecosystem understanding and research.”

V. Habitat

131. At paragraph 363, Canada notes that the Wild Salmon Policy explicitly recognizes habitat and that ecosystem integrity is a key component of salmon diversity, and therefore this must be taken into account in the management of fish and fish habitat. We support this submission and add that the WSP sets out explicit measures to better protect habitat and ecosystems, and that implementation of the WSP is therefore critical to the protection of habitat, and ultimately the protection of salmon diversity. Further, and as stated above, DFO has made very limited progress with respect to the habitat elements of the WSP, namely Strategy 2.

132. At paragraph 607, Canada cites DFO’s National Compliance Framework which states, *inter alia*, that experience has shown that fishery officer presence in the fishery is the best deterrent to illegal fishing. In reply we submit that the same is true for all activities in the fishery, including disturbance and destruction of fish habitat, and the simple presence of fishery officers in the field or stream is among the best enforcement mechanisms. This supports Conservation Coalition Recommendation v.2 that DFO provide sufficient funding to allow for a credible presence of fishery officers.

133. At page 158, the Province submits that the *Riparian Areas Regulations* (or RAR) is not a primary factor in the long term decline of the productivity of Fraser River sockeye salmon. In reply we submit that although likely not a primary factor in the decline, ensuring healthy

riparian habitat is a key component of salmon health generally, and Fraser River sockeye in particular. This is especially important for sockeye salmon given that sockeye are particularly sensitive to thermal stress and riparian vegetation is a factor in lowering water temperature.

134. Additionally, at paragraph 700, Canada recognizes that protection of riparian habitat, particularly under RAR, is dependent on the will of local governments, many of which are currently far more interested in development than protecting fish habitat. In reply we support this submission and add that Canada cannot abdicate its responsibility with respect to habitat, particularly when there is an acknowledgement that local governments are often more interested in development than with protecting fish habitat.

135. At page 188, the Province submits that gravel removal has not been a contributor to the decline of the Fraser River sockeye salmon. In reply we submit that gravel reaches in the Fraser River may very well be key habitat for genetically important and distinct sockeye salmon (Rosenau, June 16; pgs. 26 – 28; lines 38 – 2), and should therefore be protected.

136. At page 184, the Province cites evidence to indicate that there are gaps in monitoring, but that DFO will not be increasing monitoring efforts at this time. In reply we submit that absent effective monitoring, DFO will be unable to ensure the effective protection of fish habitat generally, and protect gravel reaches in particular.

(a) Administration over Sections 35 and 36 of the *Fisheries Act*

At paragraph 129, Canada notes that although section 36 of the *Fisheries Act* is administered by Environment Canada, the Minister of Fisheries and Oceans remains ultimately responsible and accountable for this provision. In reply we submit that although we concur that the Minister of Fisheries and Oceans is responsible for section 36, the current split in its administration results in the Minister not being sufficiently accountable.

VI. Climate Change

137. At paragraph 295, Canada recognizes the major threat posed by climate change, and cites the SFU Statement from Think Tank of Scientists (Ex. 11) in this regard. We support this particular Statement, as well as the finding that climate change poses a long-term severe threat to Pacific salmon.

138. Nonetheless, throughout their submissions, both Canada and the Province seem to suggest that climate change is the cause of decline, yet it is beyond our collective capability to do anything about it(see for example, paragraph 276).

139. At paragraphs 347 – 351, Canada references that broad-scale environmental factors, such as climate change, have a greater impact on salmon abundance than (other) anthropogenic

factors. In reply, we once again support the fact that climate change is a severe long-term threat to salmon and specifically support paragraph 351 of Canada's submissions - that climate change will result in greater uncertainty and fisheries managers must account for this. In addition, we say that the threat posed by climate change cannot be divorced from additional environmental stressors that enhance the threat posed by climate change. For example, as a result of climate change the integrity of riparian fish habitat may become even more important to protect, given that it helps to regulate temperature. Thus, in the face of climate change, we submit that DFO must be more vigilant in protecting and mitigating those factors that are within human control, instead of pointing to factors that are beyond human control.

140. Further, we submit that this Commission should make particular findings with respect to the threat posed by climate change to Fraser River sockeye and recommend that the federal government show commitment to addressing climate change and take serious measures to mitigate the threat it poses to Fraser sockeye salmon.

VII. Marine

141. At paragraph 468, Canada, quoting Dr. Laura Richards, submits that DFO does not need to do "absolutely everything" when it comes to science. At paragraphs 475 – 476, Canada further submits that it has conducted some marine research, though the work is difficult and expensive. In reply we submit that though marine research can be difficult and expensive, DFO has a responsibility to do adequate science in areas within its jurisdiction, including the marine environment.

(a) Contaminants

142. At paragraph 301 Canada notes that the 2010 PSC Workshop found contaminants in the Fraser River/Strait of Georgia to be either "unlikely" or "very unlikely" important contributors to the 2009 return. In reply we refer to our written submissions at 100 and the testimony of Dr. Peter Ross.

(b) Harmful Algal Blooms

143. We support Canada's admission at paragraph 312 that Harmful Algal Blooms (or HAB's) may have contributed to the long-term decline of Fraser sockeye; and that this issue requires additional study (see also Exs. 616A and 1371). In reply we submit that Canada is not adequately studying the threat of HAB's.

144. At paragraph 36, the BCSFA argues that the role of salmon farms in creating HAB's is infinitesimal compared with natural processes. In reply we submit that there is no basis to accept this submission, largely because Canada has failed to adequately study this threat.

Moreover, the evidence supports the role of salmon farms in contributing to the growth of HAB's (see our final submissions at para. 41).

VIII. Additional Matters

Responsibility to Protect Fisheries

145. At para. 114, Canada notes that although it lacks a proprietary interest in fisheries in non-tidal waters, it retains the right to preserve, protect and manage fisheries in those waters. We concur, and further submit that Canada actually retains a responsibility to preserve, protect and manage these fisheries.

Food Availability

146. At paragraphs 182 – 183, Canada references the *North Pacific Anadromous Fish Commission* whose members include Canada, Japan, Republic of Korea, Russia and the U.S. We reply that this Commission may be an ideal venue for Canada to discuss the topics of food availability.

147. At paragraph 277, Canada notes that development and population growth are particular issues that can impact Fraser sockeye. We agree.

Long term Monitoring

148. At paragraph 630, Canada submits that long term monitoring must be conducted by DFO as outside stakeholders, including universities, may not be interested in longer term monitoring of stocks. We support this submission.

PICFI

149. At paragraph 650, Canada notes that a major component of the Pacific Integrated Commercial Fisheries Initiative (or PICFI) was promoting enhanced accountability. In reply we submit that PICFI supported a number of initiatives that promoted a sustainable fishery, and therefore funding should be renewed.

Documents

150. At pages 79 – 80, the Aquaculture Coalition references the 'treasure trove' of documents that have been produced to this Commission, which amount to approximately 600,000. All members of the Conservation Coalition strongly support the Aquaculture Coalition's suggestion that these documents be maintained, and made publicly available. While some exceptions surely exist, the vast majority of documents disclosed to the Ringtail database should be publicly available. In this regard, the vast majority are from DFO and other federal departments. These documents are by their nature public in the sense that they emanate from departments which are intended to serve the public interest. The public has the right to know how its interests are being protected or, in some cases, neglected.

151. Moreover, if history has taught us anything, DFO will be independently audited again. The next audit will benefit greatly from this collection of documents – which is inevitable should DFO treat this Commission's recommendations as they have treated recommendations in the past: that is agreeing to implement parts of some, disagreeing with others and refusing to implement them, and simply ignoring others.

All of which is respectfully submitted this 3rd day of November, 2011.

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T. Leadem, QC
Counsel for the Conservation Coalition

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Judah Harrison
Counsel for the Conservation Coalition

Appendix A: Summary of Recommendations

(a) Recommendations Respecting the Wild Salmon Policy

i.1. Immediately assign a senior DFO manager (who directly reports to the RDG) with the exclusive responsibility of WSP implementation (WSP champion). Performance measures for the position must be integrated with WSP implementation targets. Make the WSP champion's initial task the completion and publication of a WSP implementation plan to be completed by December 2012.

i.2. Assign DFO staff specific implementation tasks with timelines, to be overseen by the WSP champion.

i.3. Assign a substantial portion, or all, of the performance-based pay structure of the Pacific Region RDG to WSP implementation targets and meeting recovery targets of conservation units identified to be in the Red Zone.

i.4. Allocate at least $2.5 million annually over the next three years to support the coordination and administration of WSP implementation.

i.5. By December 2012, assess the amount of resources necessary to complete baseline CU, habitat and ecosystem assessments for Strategies 1, 2 and 3 (likely to be a minimum of $30 million). Allocate the necessary funding to ensure completion of preliminary habitat and ecosystem assessments, with status relative to benchmarks, by December 2013.

i.6. Require annual public reporting on the status of Pacific salmon relative to Strategies 1 – 3, along with progress on the WSP implementation plan.

i.7. By December 2012, assign all CUs to Red, Amber or Green zones, consistent with the CU benchmark methodology. CUs lacking enough information to quantify status should be assigned Red Zone status, and thereby identified as a priority CU.

i.8. By December 2013, a recovery planning process for all Red Zone CUs must be initiated. Regional grouping (e.g., watershed scale) of recovery planning efforts in areas where multiple Red Zone CUs should be undertaken to maximize efficiency and support implementation of integrated planning (Strategy 4).

i.9. By December 2012, host workshops with stakeholders on the application of the WSP to DFO management decisions, including but not limited to: aquaculture permitting, habitat authorizations and CEAA assessments.

i.10. By December 2012 undertake a science-based and multi-stakeholder process to evaluate and apply the goals and intent of the WSP to the DFO Salmon Enhancement Program

i.11. By December 2014, conduct an independent audit of WSP implementation.

(b) Recommendations Respecting DFO Organizational Structure

ii.1. Examine the role of science in decision making and ensure its independence through the establishment of an independent body such as the now defunct National Fisheries Research Board of Canada

ii.2. Ensure that decision making occurs in as transparent a fashion as possible by suggesting that Ministers must give full reasons for decisions such as the listing of CUs under SARA

(c) Recommendations Respecting Fisheries Management

iii.1. Protect all depleted, threatened or endangered (i.e. red) CUs from overfishing by mandating maximum total exploitation rates at of 10% or less for those CUs, until recovery plans are implemented and exploitation rates are scientifically demonstrated to be consistent with recovery.

iii.2. Ensure that lowered exploitation rates for threatened or endangered (i.e. red) CUs do not unduly restrict fisheries on identifiable CUs with harvestable surpluses by transferring fishing effort to terminal areas and more selective gear types. This action will have the added benefit of reducing reliance on run size forecasts at the 'aggregate level' which has been chronically unreliable .

iii.3. Facilitate the transfer of fishing effort to terminal areas and more selective gear types:

(i) Re-establish a selective fishing policy and program that provides support for the development and/or expansion and management of in-river fisheries using selective gear (e.g. beach seines, fish wheels, fish traps, dip nets), preferential provision of quota to highly selective marine gear types (e.g. tooth tangle nets), as well as management and marketing.

(ii) Recommit funding for a minimum of 5 years to the PICFI process with the explicit priorities of transferring licences from the least selective (e.g., marine) to the most selective (e.g., river tributaries) First Nations fisheries and providing processing capacity for terminal selective First Nations fisheries.

(iii) Ensure that the Fraser Sockeye Chapter of Pacific Salmon Treaty is renegotiated in the next two years to support CU level objectives, thereby ending the entrenchment of aggregate stock management and overfishing of weak CUs.

iii.4. Meet all conditions for Marine Stewardship Council certification of B.C. sockeye and pink salmon fisheries within the required, agreed-upon timelines (Grout, January 24, p. 15, ll. 21 – 43).

iii.5. Mandate a minimum of 50% independent observer coverage (camera or onboard monitors) by 2013 in all salmon fisheries where non-target species are encountered.

iii.6. Canada should commence multilateral discussions with salmon producing nations of the North Pacific aimed at identifying and minimizing hatchery production impacts to wild salmon populations.

(d) Recommendations Respecting Aquaculture

iv.1. Remove all open net-cages from B.C. waters. Begin with removal of open net-cage farms on the Fraser sockeye migration routes presently located in narrow and confined channels, including Nodales, Okisollo, Hoskyn and Cardero Channels in the Discovery Islands region. Prioritize removal of all open net-cage farms on the key sockeye migration routes by not permitting re-stocking after the current grow out is completed.

iv.2. Restore the regulatory primacy of DFO and remove its mandate to promote the aquaculture industry. Shift any promotion or marketing of the industry to another government department.

iv.3. Mandate an immediate halt to any new farm sites, expansion of existing farm sites and/or increased production of the net-cage salmon farming industry in B.C. Halt approvals of replacement sites and direct poorly located farms seeking replacement sites to move to closed containment systems.

iv.4. Eliminate all public funding of the open net-cage aquaculture until the primary conservation measures, including the WSP, are fully implemented and funded. Mandate all future public funding of the aquaculture industry to be solely for conservation purposes. Support the development of a closed containment aquaculture industry through government investment, tax incentives and permitting while transitioning the industry out of net-cages and into closed systems. Re-direct public funds supporting net-cage aquaculture to the development and implementation of closed containment technology. Ensure all aquaculture activities that have the potential to negatively impact Fraser sockeye are immediately removed and transitioned to closed systems.

iv.5. Adopt the precautionary approach to all permitted industrial activities taking place in Fraser Sockeye habitat. Increase compliance monitoring and enforcement activity, and undertake comprehensive peer-reviewed research into the impacts of open-net cage salmon aquaculture on wild fish stocks, focusing primarily on fish health.

iv.6. Immediately halt DFO's and the Canadian General Standard Board's efforts to certify net-cage reared farmed salmon as organic.

iv.7. Extinguish all licences, and recommend the province extinguish all tenures, without compensation, of farm sites that have not been in active use for over 12 months.

iv.8. Ban the importation of salmon eggs into Canada.

(e) Recommendations Respecting Habitat

v.1. For enhanced effectiveness and accountability, the administration of the habitat protection and water quality provisions of the *Fisheries Act* (i.e. sections 35 and 36) must be administered

by a single agency. Return responsibility of administering section 36 of the *Fisheries Act* back to DFO.

v.2. DFO must be adequately funded to effectively protect habitat. This means sufficient funding to allow for the presence of fisheries officers, as well as sufficient resources to conduct the necessary research and audits. DFO should abandon any public funding of industry until it meets its core conservation protection mandate.

v.3. EPMP should be abandoned and the Minister of Fisheries and Oceans should direct staff to recommit to habitat compliance monitoring and enforcement. Further, an independent audit of the effectiveness of EPMP in meeting the goals of the WSP and 'no net loss' should be immediately undertaken.

v.4. DFO management should commit to an honest and objective assessment of the resources required to implement the habitat components of the WSP, as well as to actually achieve 'no net loss'.

v.5. DFO must, as a priority, implement Strategy 2 of the *Wild Salmon Policy*, and it should receive adequate and immediate funding accordingly. In addition, a high-level 'champion' should be tasked with ensuring implementation of Strategy 2.

v.6. Local field staff, in association with a prosecutor, must have independent authority to determine when a *Fisheries Act* violation occurs, as well as when charges should be laid. Proper training and guidelines should be developed in this regard.

(f) <u>Recommendations Respecting Gravel</u>

vi.1. Gravel mining, and the large scale harmful alteration of fish habitat, must cease in the Fraser River system until a sound scientific assessment is produced showing such removals are necessary for flood-management, and part of a comprehensive environmental management plan for that section of the Fraser River,

(g) <u>Recommendations Respecting Contaminants</u>

vii.1. Reinstate the Toxic Chemical Research Program at DFO. Ensure that DFO Pacific Region employ a fish toxicologist, and conducts research respecting the impacts of toxics on fish generally and sockeye salmon in particular.

vii.2. Return responsibility of administering section 36 of the *Fisheries Act* back to DFO.

vii.3. Enhance monitoring for contaminants, including looking at cumulative impacts of multiple contaminants from multiple sources in the natural environment. Ensure wastewater effluent is monitored for presence of contaminants, and not limited to biological measures.

vii.4. Expand risk assessments respecting contaminants to address the multiple chemicals currently present in the natural environment, rather than assessing a single contaminant in isolation. Acknowledge the shortcoming of guidelines that assess individual contaminants in isolation.

(h) Recommendations Respecting Marine Spills

viii.1. Establish a formalized structure which ensures environmental impacts of marine spills are adequately considered.

(i) Recommendations Respecting Temperature, Flow and Hydroelectricity

ix.1. BC Hydro's Water Use Planning process has proven valuable for planning around hydro projects and would be a good model for balancing ecosystem values with independent power projects (Orr, September 15, p. 66, ll. 23 – 36).

ix.2. Groundwater is a critical component of salmon habitat, and the federal government should take steps to regulate it in the face of provincial inaction. Alternatively, the province should proceed with the Water Act modernization, including mandatory measures to protect water flows.

(j) Recommendations Respecting the Detection of ISAv in BC

x.1. DFO and the Canadian Food Inspection Agency (CFIA), in cooperation and collaboration with the US National Oceanic and Atmospheric Administration (NOAA) and the US National Aquatic Animal Health Task Force, should immediately initiate comprehensive, independently-audited testing of wild salmon, farmed salmon, herring and pilchard in Canadian and US Pacific waters to determine the extent of the disease. Methods and Results should be verified by the OIE Reference Laboratory for Infectious Salmon Anemia in P.E.I. This should commence immediately irrespective of progress on the recommendations in 4, below.

x.2. Immediately cull all farmed fish and prevent restocking in any farm site where fish test positive for ISAv.

x.3. Conduct the testing necessary to track the source of the disease, specifically including the role, or risk, that salmon farm production facilities, hatcheries and egg supply processes may have had in spreading Infectious Salmon Anemia to wild populations.

x.4. DFO and CFIA must immediately convene a workshop of international experts to assess the issue and transparently report to Parliament and the public within 6 months both the findings and the plan developed to address this threat. Key elements should include lessons learned from other jurisdictions (Chile, Scotland, Norway, Maine and Eastern Canada) and:

(i) Establish Infectious Salmon Anemia research objectives, in collaboration Provincial and First Nations governments and the with the Government of the United States, and pacific State governments.

(ii) An understanding of the prevalence of Infectious Salmon Anemia in both wild and aquaculture salmonid populations throughout British Columbia and the Yukon, as well as Alaska, Washington, Oregon, California, and Idaho.

(iii) An assessment of key risk factors for Fraser sockeye (and other salmonid) susceptibility to ISA including, but not limited to, genetics, geography, oceanography and proximity to aquaculture.

(iv) Potential transmission pathways between infectious and uninfected salmonid populations.

(v) Options for management strategies to rapidly respond to potential Infectious Salmon Anemia outbreaks in both wild and aquaculture populations, including hatcheries. The likelihood of management strategies too effectively contain the disease should be assessed and reported.

(vi) A collection and quality assessment of available baseline data on disease in farmed and wild populations, including baseline data from national, sub-national and First Nations jurisdictions and the elements of the salmon aquaculture production system regulated by senior governments (egg importation, broodstock facilities, production hatcheries and grow out cages).

(vii) An assessment of Canada and Provincial disease surveillance and testing program gaps, methodological flaws and other shortcomings, including an audit of sampling and lab protocols against OiE standards.

x.5. Fast-track the development of closed containment systems for salmon aquaculture and present a firm, expedited timeline for phasing out all open net-cage operations.