APPENDIX I.

Review of DFO and Other Studies Examining the Achievement of a No Net Loss of Habitat

by Otto E. Langer R.P. Bio **March 21, 2008**

Canada's National Fisheries Habitat Policy was implemented in 1986. It outlined an overall objective of a 'net gain' (NG) in the productive capacity of Canada's fish habitats supported by a principle of achieving a 'no net loss' (NNL) of the existing productive capacity of fish habitats in the fishery waters of Canada.

Although in 1986 this was a big step forward to try and curb the 'minimize losses' type of approach, it was slow to implement and was most often applied in a hit and miss and inconsistent manner. For example, the Fraser River, Northern BC and Yukon Division took an approach of applying the NNL philosophy as early as 1983 especially in the Lower Fraser River. However, that approach was not applied to Yukon placer mining due to the social and political considerations of the day. In other areas of Canada, NNL was most often not applied until well after 1986.

This important new policy outlined an approach to deliver upon the intent of the habitat provisions of the Fisheries Act passed into law in 1976. Unfortunately, no concerted effort was made to monitor the effectiveness of this new policy until well into the 1990's. The first significant effort made to determine if DFO was achieving a NNL was allowed under the new resources made available in Canada's Green Plan's Fraser River Management Plan (FRAP). Although many of the studies were of course tied into the Fraser River and its estuary, some of the assessments included other parts of British Columbia and eventually studies included other areas of Canada. Also, a separate study was conducted by the Province (MELP) that examined the effectiveness of BC Government fish compensation and development projects.

Below is an annotated summary of most of these various studies. Under specific summaries, I have added my comments to put this study into its proper temporal, spatial and socio-political context. Studies are presented in a chronological sequence.

(1) S. Inglis, P. Thomas and E. Child. 1995. <u>Protection of Aquatic and Riparian on Private Land – Evaluating the Effectiveness of Covenants in the City of Surrey, 1995.</u> DFO-FRAP. Vancouver

An evaluation of the Province of BC covenants in protecting stream side habitat and riparian areas on private property. Although 96% of property owners indicated they were concerned about protecting streams, overall human development encroachments into the covenant protected riparian zone was 75%. This violation rate in stream riparian areas were there were no BC covenants to protect the stream was no better than on properties

with protective covenants in place. The value of present protective covenant approach, especially without fencing, is questioned. Lack of enforcement is a major issue.

(2) G. Hartman and M. Miles. 1995. Evaluation of Fish and Habitat Improvement Projects in BC and Recommendations on the Development of Guidelines for Future Work. Fisheries Branch. BC MELP. Victoria BC.
This study looked at 97 projects built before and after 1985. Most projects were built to mitigate the impacts of industrial development (logging- 25%, urban – 15%, agriculture – 13%, flood protection – 9%, highways – 8%, riparian – 5%, industrial roads- 5%) across BC. Most mitigation structures were built to offset the impacts of gravel loss, sedimentation, channelization, and loss of large woody debris. Most projects were monitored for a median time period of two years and few were monitored for more than seven years. Fifty other projects were to be included in the assessment but the information on their status was not available. 55% of the projects were rated as successful but the fishery value of the projects generally diminished with time. Mitigation works such as in-stream boulder clusters and off-channel wetlands were comparatively unsuccessful. Most successful projects included projects such as barrier removal and restoration of riparian habitat. These results are similar to that found in Alaska and Washington states. Major recommendations related to need to improve technical and administrative processes related to project design, construction and evaluation. Also better training and data recording over a longer assessment is essential. Data was often missing for unsuccessful projects.

(3) R. Kistritz. 1996. Habitat Compensation, Restoration and Creation in the Fraser River Estuary – Are we Achieving a No Net Loss of Fish Habitat? Fisheries and Aquatic Sciences Manuscript Rpt 2349. DFO, FRAP, Vancouver.
Approximately 100 industrial projects that harmed habitat in the 1983 to 1993 period were examined to determine if replacement habitat achieved a NNL. In addition, projects that restored or developed habitat to achieve a Net Gain were also assessed. Habitats were categorized as sub-tidal, mudflats, marshes and riparian. The concept of NNL was not applied to sub-tidal habitats so the loss of that habitat was substantial including the building of other habitat on that habitat. A NNL was not achieved on mudflat and sandflat compensation projects because compensation projects did not adequately replace lost habitat. In marshes a NNL was achieved in brackish marshes but not in salt marshes. The NNL principle did not achieve success with riparian replacement habitat. Study recommended a more rigorous process of project approval, construction and monitoring. Records for this assessment were scattered and often incomplete.

(4) G. Hartman and M. Miles. 1997. Jones Creek Spawning Channel – Post Failure Analysis and Management Recommendations. DFO. FRAP. Vancouver.
The world's first successful spawning channel was built in 1954 at Jones Creek to maintain a run of 5000 adult pink salmon as a result of the construction of an electric power dam on the upstream lake. The spawning channel's success dwindled as time passed due to sedimentation of the channel. This sedimentation was greatly accelerated

by logging road construction and logging in the watershed. Restoration increased egg survival by placement of clean gravel to the channel. However; in 1996 massive series of slides and consequent debris torrents destroyed the channel. Efforts to mitigate sediment transport into the stream failed. The spawning channel was abandoned and it is expected that stabilization of the watershed will take several decades. This early application of NNL could have been an ongoing success providing better channel maintenance took place and protection of the watershed, the supply of clean water for the channel, was not largely ignored. Records for the channel and watershed were scattered and often missing.

OEL Comment: This study demonstrates the classic cumulative effects syndrome that most often will destroy the habitat and fishery in a waterway. It is death by a thousand cuts. Here DFO and BC Hydro put significant effort into maintaining habitat downstream of the hydro dam but largely ignored the cumulative impacts of over 50 years of road building and excessive logging that harmfully altered the stream and destroyed the spawning channel.

(5) J. Millar et al. 1997. **Urban Referral Evaluation – An Assessment of the Effectiveness of the Referral Process for Protecting Fish Habitat 1985 – 1995**. **MELP Victoria and DFO FRAP Vancouver.**
A comprehensive examination of habitat protection referrals for five creeks in southern BC was undertaken by file review, aerial photography and on-site inspections. The level of compliance to DFO and MELP stream protection specifications for the five creeks ranged from 15 to 40%. Minor non-compliance ranged from 4- 27%. Significant non-compliance ranged from 25 - 64%. Recommendations to improve this poor performance include the need for a better regional approach, more monitoring, better enforcement., a more consistent approach and a greater direct role for local governments to protect streams.

(6) Quadra Consulting. 1997. Urban Stream Protection Restoration and Stewardship in the Pacific Northwest. – Are we Achieving Desired Results? Quadra Consultants for DFO. FRAP. Vancouver.
This workshop brought together a large number of stream protection practitioners from Washington State and British Columbia. It is obvious that significant losses of fish habitat and fishery values are occurring in urban streams. Few local governments have made a commitment to protect streams. Since the Province is in charge of local government in BC it should take a lead to develop or require effective riparian protection. Presently there is inadequate political will to protect urban streams. Building replacement habitat often does not work in that urban development alters the watershed thereby undermining the habitat creation processes. Despite better riparian protection in Washington over that in BC, watershed change is still causing the loss of urban streams. Engineering solutions will not work to adequately protect streams. Restoration is not a substitute for protection. Should stream protection be more successful, public stewardship group must reach a new level of effectiveness, especially in city halls.

(7) Precision Consultants. 1997. **Wild, Threatened, Endangered and Lost Streams of the Lower Fraser Valley – Summary Report. DFO - FRAP Vancouver, MELP Victoria**

This is a summary report of studies of the status of 779 historic streams in the Lower Fraser Valley. Streams were assessed using expert panels, literature and the most up to date mapping. Assessed threats included riparian loss, stream bank change, impermeable area, flow diversion, water quality issues, logging, other urban impacts, and miscellaneous impacts including agricultural impacts. Due to human development in the past 130 years, 117(15%) of those streams are completely lost. Of the surviving streams, 375(57%) are in an endangered status, 181(27%) are threatened and only 106(16%) are still consider to be in a wild state. The greatest threats were due to urban development, riparian loss, water quality, stream bank and channel alteration and miscellaneous impacts.

(8) Quadra Consultants. 1997. No Net Loss of Habitat – Assessing Achievement. DFO - FRAP. Vancouver.

This study is the outcome of a large workshop involving DFO and BC MELP staff. Evaluation of our success in achieving a NNL was summarized based on case histories and discussions of experienced habitat practitioners. The projects reviewed and project outcomes were classified as; 1) major linear projects (project impacts are scattered and we are not achieving a NNL, 2) major site specific projects (impact areas smaller, more resources to do this work - are probably achieving a NNL), 3) urban development (progress being made but not achieving a NNL) and 4) rural settlement developments (not doing basin wide assessments\need effective planning\incurring a net loss of habitat). Overall conclusions indicated the need for watershed protection and the need to address cumulative effects. Information bases have to be improved with BC-DFO cooperation. Need comprehensive habitat mapping, cooperation with the Province and local governments, better aquatic protection legislation and the setting of long term priorities. There is an important need for greater stewardship and a better habitat-fishery officer team approach to improve enforcement. Staff felt they did not have the resources to do the job and had to be able to say "no" to harmful developments. The Habitat Policy allows habitat to be negotiated away and departmental leaders often did not support a more diligent approach. Staff needed new skills and more accountability was needed to allow achievement of NNL.

(9) O. E. Langer. 1998. **Status of Habitat and Habitat Protection in BC and the Yukon – Presentation to the PFRCC Nov. 1998. DFO. Vancouver**.

This graphic presentation and summary report to the PFRCC concluded that DFO was doing better than in the past but was still at a point of "slower net loss". The work is very complex and pressure on habitat loss is directly related to human population increases. To do the job more effectively DFO needs better tools, cooperation, jurisdictional integration

and real partnerships. Our society must adopt a conservation ethic and as part of that DFO has to promote greater stewardship.

(10) Dovetail Consulting. 1999. **An Evaluation of DFO Involvement in Land and Resource Management Planning (LRMP) in BC**. **DFO. Vancouver**.
To offer a higher level of proactive protection for fish habitats DFO put significant effort into working with the Province and other stakeholders in regional land use planning exercises (Land Resource Management Plans - LRMPs). Confusion of jurisdiction of the BC Forest Practices Code and DFO habitat needs prevented an effective planning from taking place. The planning process most often did not allow the adoption of a watershed approach. Overall DFO staff felt DFO did not have strategic objectives in place, little support from management and inadequate resources and training to do the job. DFO was unable to recover fish and habitat data that was stored in BC data systems as part of a data sharing agreement. Planning is very human resource intensive. Also the process forced DFO staff to negotiate away protection needs of fish contrary to the requirements of the Fisheries Act. The overall effort was unsuccessful in offering a greater level of protection to streams and lakes within each planning area considering the considerable effort required in the LRMP exercise.

(11) O. E. Langer, F. Heitkamp and M. Farrell. 1999. 'Human Population Growth and the Sustainability of Urban Salmon Streams in the Lower Fraser Valley' in Sustainable Fisheries Management – Pacific Salmon. E. Knudsen Ed. Lewis Pub. New York.
This chapter indicates that human population growth and resultant urban sprawl is having a devastating impact on salmon streams in the Lower Fraser Valley of BC. Despite DFO urban land development guidelines and a policy of NNL, significant losses of habitat was still occurring. Compliance to guidelines is poor. To reverse these losses a societal rethinking of population growth and urban sprawl is necessary. A new conservation strategy is required. Recommendations include the need for a continuation of senior government stewardship programs that are making improvements. Also, enforce existing legislation and adopt new laws that take an ecosystem or watershed approach to protecting stream values. Better inventory is needed and non-compromised streams must have enhanced protection. Effective cooperation and joint priority setting between the agencies for a consistent approach is essential and is still inadequate.

OEL Comments: Despite this and other studies recommending the maintenance of a successful stewardship program to protect urban streams, DFO and the Province cut all of these programs in 2002. Other recommendations have not been acted on other than an ongoing BC lead joint effort with DFO to protect riparian stream zones. This approach has given rise to a Streamside Directive and then a controversial Riparian Areas Regulation. These two different approaches will cause more work and an inconsistent approach even along a single stream.

(12) O. Langer. 2000. The Cumulative Impacts of 140 Years of Human Development on Lower Fraser Valley Streams. In 'Cumulative Environmental Effects Management'. A. Kennedy Ed. AAPB. Calgary

This paper summarizes results of Lower Fraser Valley stream studies and concludes that the NNL policy principle greatly slowed the impacts but the ongoing impacts of authorized and unauthorized works are having a significant negative cumulative impact on streams. Projects do not have a high level of compliance with specified stream protection requirements. Due to the multitude of continuous impacts the agencies do not have the legislation or resources to achieve a NNL. Due to ever increasing human populations and development, streams will continue to be lost in the urban environment. To improve upon this negative record better public education, watershed planning, project review, monitoring, audits and a consistent and effective enforcement program is required.

(13) D. Harper and J. Quigley. 2000. No Net Loss of Fish Habitat: An Audit of Forest Road Crossings of Fish-Bearing Streams in BC, 1996-1999. Can. Tech. Rpt. of Fish. and Aquatic Sc. 2319. DFO. Vancouver.

Forty six stream crossings were inspected in BC to assess the effectiveness of the BC Forest Practices Code in protecting salmon values in streams on Vancouver Island and North Central BC. Stream crossings resulted in impacts at all crossings by direct loss of stream habitat in culverts, sedimentation, riparian loss and in obstruction of fish migration. Considering that 3000-6000 stream crossings are built each year in BC, this results in the loss of habitat equivalent to a significant salmon stream each year.

(14) G3 Consulting. 2000. No Net Loss of Fish Habitat – An Audit of Coastal Log-Handling Facilities in BC 1994-1999. DFO. Vancouver.

Forty five log handling sites were evaluated along the BC coast. The study showed that an inconsistent approach had been adopted by each management area in DFO. Data files were inadequate for proper evaluation. Like for like compensation was not that effective.. Although this should be considered more of a NG approach, better NNL results were achieved when compensation habitat was supplied as restoration of historic lost sites. BC Government (Small Business Programs) actions were often non- compliant with the intent of the Fisheries Act and in the achievement of NNL.

OEL Comment. The dependence of others in cooperative agreements (formal or unformal) to protect fish habitat can often lead to confusion, buck passing, lack of accountability and will undermine the ability of DFO to enforce the Fisheries Act. Despite DFO denials, such agreements do undermine the powers of the Act and the DFO Minister. This project was similar in approach to the Vancouver Island Gas Pipeline Project. Despite numerous habitat violations, DFO was not able to enforce the Fisheries Act due to officially induced error or due diligence arguments. The same problem was seen in the Vancouver Island Highways Project summarized below.

15). B. Harvey and M. MacDuffee. 2002. Ghost Runs: The Future of Wild Salmon on the North and Central Coast of BC. Raincoast Conservation Soc. Victoria, B.C.
This report has several contributing authors and the overall conclusions indicate declining salmon runs in the streams of this central and northern part of coastal BC and the extinction of some runs in smaller streams. Impacts are due to over fishing and habitat impacts and losses and since 1990 impacts from climate shifts. Declines in wild runs have been masked by poor data collection and hatchery and spawning channel production. Salmon farming is seen to be a threat to BC wild salmon and risk assessment, a precautionary approach and the development of non – salmon farm protected areas is needed. There is a lack of manpower in MOE and DFO and a negative attitude in those agencies to the enforcement of the habitat provisions of the Fisheries Act. A cooperative approach is stressed by the agencies but the Forest Practices Code does little to better protect fish habitat from the impacts of logging. As of 2002 there is virtually no active enforcement policy in BC for Fisheries Act violations relating to improper logging practices.

16). T. Chestnut. 2002. A Review of Closed Bottom Stream Crossing Structures (Culverts) on Fish Bearing Streams in the Kamloops Forest District, June 2001. Cdn. Man. Rpt. of Fish and Aq. Scineces 2602. DFO Kamloops. BC.
This study, similar in nature to case study 13 above, reviewed 31 culverts installed on fish bearing stream to determine whether Fisheries Act habitat requirements were met. Only one culvert met juvenile fish passage needs and maintenance of habitat. Two others were likely to pass fish but did not maintain associated stream habitat.. Fish passage and habitat maintenance needs were rarely achieved. It is concluded that closed bottom culverts have a negative impact on fish habitat. It was recommended that culverts generally be replaced with open bottom structures i.e. bridges to protect fish and fish habitat. Problem culverts should be replaced.

17) G. Williams and O. Langer. 2002. Review of Estuary Management Plans in British Columbia. Cdn. Man. Rpt. of Fish. and Aquatic Sc. 2605. DFO Vancouver. BC.
Although this was not a NNL type review it did review the 9 estuary management plans that were or were about to be put in place on the BC coast. The Fraser River Estuary Management Plan (FREMP) provided the most comprehensive plan and is serviced by significant resources over many year of development, implementation and evaluation. A key to the success of this plan was its development with the harbour authorities and other levels of government. A simple system of designating habitats as red (no development), yellow(some habitat value –NNL required) and green (little habitat so apply good environmental design practices) has worked well and was one of the first applications of the NNL philosophy(see summary 3 above). Many of the other plans are based on this system. The Campbell River plan has worked well but largely due to the investment of significant money into buying habitat to assure its protection. One of the older plans, the Cowichan Estuary Plan, was developed under BC law and jurisdiction and has been awkward to manage and was not deemed to be as successful as FREMP.

(18) D. Tripp and W. Grant. 2002. The Effectiveness of the Interagency Approach Used to Achieve No Net Loss of Fish Habitat at Selected Stream Crossings on the Vancouver Island Highway Project. DFO. Vancouver.
This study evaluated the process and outcome in protecting over 200 stream crossings in a 300 km highway project on Vancouver Island as based on the examination of eight drainage system case histories. A complex arrangement was put in place between DFO, MELP and Ministry of Transportation and Highways (VIHP) and their contractors to achieve a NNL of habitat in this large project. The relationships in this project were at times strained in that many habitat perturbations took place including severe sedimentation of some streams. Habitat harm was usually due to multiple breaches of the agreed upon protocol to assure a NNL of fish habitat. Enforcement by DFO was almost non-existent due to the confusion caused by this complex partnership and working protocol intended to protect fish habitat.

(19) O. E. Langer, 2005. Environmental Hazards and Conflicts Threatening Fish Habitat in the Lower Fraser River and its Estuary – A Fisheries Perspective. Two Roosters Books. Vancouver.
This paper provides a lay person review of habitat issues in the Lower Fraser River (LFR) from Hope to Steveston, BC. It gives a watershed perspective and then breaks the LFR into four bio-geomorphic reaches i.e. Hope to Jones Creek, Jones Ck. to Chilliwack, Chilliwack to New Westminister and Fraser Estuary reach. Observations related to habitat threats are discussed for each reach. Necessary actions to mitigate those impacts are outlined. General conclusions indicate the need for regulators to: relate to the river as an ecosystem and not manage each unit in isolation; address the threat from alien species; develop a management program that acknowledges significant past losses and address restoration needs; protect remaining riparian habitat; protect the key gravel deposits subject to new mining pressures; relate to the many new estuarine developments such as Roberts Bank, BC Ferries and airport expansion which will irreversibly harm the estuary; excessive sand dredging which undermines the building of habitat; relate to the ever increased volume of effluents and above all, enforce the Fisheries Act.

(20) Birtwell, I., S. Samis, and N. Khan. 2005. Commentary on the Management of Fish Habitat in Northern Canada – Information Requirements and Policy Considerations Regarding Diamond, Oil Sands and Placer Mining. Can. Tech. Rpt. Fish. Aquat. Sci. 2607.
Although this report is based on Canada's northern habitats, it covers Yukon issues and is directly applicable to many areas of BC where mines and similar developments have proposed to fill in lakes or other habitat as part of mine development. The study concludes that damage to fish habitat is pristine areas of Canada is occurring and escalating and there is no assurance that habitat compensatory and restorative measures will be effective in meeting the NNL requirements. The study raises the question – what is fish habitat in remote areas?

OEL Comment: Although the paper indicates the need for much more research and data relating to habitat and mitigation in the north, that argument can also be used to obtain better information for fish and fish habitat in southern waters. The paper concludes that an escalating net loss is occurring in the north. This is no different than what is happening in the south due to more development and human population pressures.
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(21) R. Gibson, R. Haedrich and C. Wernerheim.2005. Loss of Fish Habitat as a Consequence of Inappropriately Constructed Stream Crossings. Fisheries 30(1) American Fish. Soc.
This study was necessitated by the decline in Atlantic salmon. This study evaluated 4 bridges and 47 culverts on the newly constructed 210 km segment of the trans - Labrador Highway. Fifty three percent of culverts obstructed fish passage. This weak compliance with Fisheries Act related guidelines was the result of poor design and installation and poor monitoring and no enforcement.

OEL Comment: This is a Newfoundland-Labrador study but as in the BC studies, it indicates that the issuance of guidelines for provincial highway or other authorities to follow that will not give rise to good compliance with Fishery Act needs. Also the lack of monitoring and enforcement to assure compliance is sadly lacking. What these studies fail to note is whether there was a requirement to correct culverts that harmfully altered habitat and what was the success of those restoration efforts. Unless the poorly designed culverts are replaced, efforts to mitigate the impacts of poorly placed culverts is usually not that successful.

(22). D. Harper and J. Quigley. 2005. A comparison of the Areal Extent of Fish Habitat Gains and Losses Associated with Selected Compensation Projects in Canada. Fisheries 30(2). American Fish Soc.
This study examined 10 studies from 1996 to 2002 that evaluated 103 compensation projects across Canada to determine the degree of compliance with no net loss requirements. Most projects related to estuarine and riverine in-channel projects. It was mainly urban development and forestry activities that harmed habitat and caused the need for compensation works. Overall, 64% of the projects were determined to have resulted in a no net loss of productive capacity. Fifty percent of the projects resulted in compensation habitats being built at less than a 1:1 replacement ratio. Study recommended the need for a better data system to evaluate audits in the future.

OEL Comments: This study obviously indicates a better than expected success rate but it has to be appreciated that many of the compensation projects have not been subject to many years of natural forces of nature to determine their long term success. Also when one accepts compensation at less than a 1:1 ratio there is a net loss of overall habitat and living space for fish. One has to determine if that is a successful application of NNL. This is one of the issues with the concept of productive capacity versus requiring replacement of equal habitat. In the Fraser Estuary DFO pioneered the use of a 2:1 replacement ratio to compensate for lag time in newly created habitat functioning and to guard against

natural losses of newly constructed habitat in often unnatural bio-hydrological environments.

(23). D. Peterson, A. Wood and J. Gardner. 2005. An Assessment of DFO's Pacific Region's Effectiveness in Meeting its Conservation Mandate. David Suzuki Found. Vancouver.

This study is based on a review of other assessments, literature, interviews, and a panel of selected experts. Although it examines case examples relating to a cross section of DFO's entire mandate it does have sections relevant to habitat including chapters on SARA(sockeye), marine protected areas, salmon aquaculture(sea lice) and freshwater habitat. The overall conclusion is that DFO's record for protecting freshwater and marine habitats is weak and is inadequate to achieve a NNL. Further there are indications that it is becoming weaker. A number of recommendations are made to improve upon DFO's performance.

24). M. Rosenau and M. Angelo. 2007. Saving the Heart of the Fraser – Addressing Human Impacts to the Aquatic Ecosystem of the Fraser River, Hope to Mission, British Columbia. PFRCC. Vancouver.

This study addressed issues related to the gravel reach of the Lower Fraser River between Hope and Mission, BC. The study concludes that the gravel beds, essential spawning and rearing areas and riparian habitats are not being adequately protected. In the last 10 years the process of irreparable damage is escalating in this sensitive and very productive fish habitat area. The study recommends special protection needs for this key habitat by all levels of government. A comprehensive habitat management plan is needed for this area. A program to restore past losses is needed and above all an enhanced enforcement program is essential in that past enforcement efforts have been lax.

OEL Comment: This section of the Fraser River has been subjected to some of the greatest habitat perturbations allowed anywhere in this area over the past 50years. Using an EPMP approach as advocated under the new DFO habitat protection program, millions of salmon eggs and fry were destroyed here in 2006. The habitat destruction was allowed by poor pre-project studies and next to no biological evaluations, poor monitoring, no enforcement and above all was implemented through a partnership with those that have little interest in conserving fish habitat. DFO in partnership agreement with the Province has again allowed a similar program in this reach of the river to take place in 2008. Despite great public interest and concern about the impacts of these projects, they are not transparent or accountable to the public. Projects of this nature should be at least exposed to a public review panel under CEAA. Projects of this nature are continuing to destroy any trust the public has in DFO and its ability to do its job to deliver upon the intent of the Fisheries Act and the NNL policy.

(25) David Suzuki Foundation. 2007. High and Dry – An Investigation of Salmon Habitat Destruction in BC. Vancouver.

This report examines nine recent projects that have compromised habitat in BC including logging, gravel removal and urban development. This report shows that the new EPMP approach by DFO to better protect habitat is failing. Inadequate staff presence in the field allows fewer investigations and a greatly reduced level of enforcement than in the past. Too few resources and a reluctance to use enforcement as a key tool to protect habitat is high-lighted by this study. Further when habitat loss problems are identified by the public they are rarely acted upon by DFO. DFO relates to public complaints with a curtain of silence.

(26) O. E. Langer. 2007. <u>Major Impacts on British Columbia Fish and Fish Habitat and Human Activities that Cause Those Impacts</u>. PFRCC. Vancouver.
This paper reviews major habitat attributes that are threatened by human activity, summarizes the industrial sectors and activities that cause harmful impacts, and makes a series of conclusions. At present the greatest habitat concerns are cumulative watershed impacts, climate change, riparian loss, and low stream flows. The greatest present industrial threats are due to urbanization and forest harvesting. Recommendations emphasize the need to address climate change and effective ecosystem management. Improved performance in habitat protection must not depend upon self regulatory schemes and governments must make a sincere move towards joint conservation strategies and more critical review of projects including cumulative impacts. Reduced enforcement will result in greater habitat losses. The paper questions DFO's ability to deliver upon its new EPMP approach of better protecting habitat..

SUMMARY:

One of the first comments that DFO will make in response to an Auditor Generals report is that the data is old and that DFO has acted upon many of the recommendations. Most often is more of a cover or defense so as to not having to admit that the agency is not doing an adequate job of conserving habitat. Here, DFO can equally say that these studies are out of date and with the 'new' Environmental Protection and Management Program (EPMP 2004), the program has been designed to overcome the weaknesses outlined in the above studies.

The reality is that DFO has not properly evaluated what has worked well and what has not worked to protect habitat and developed a program around that assessment. The public have requested transparency in an approach to a new program initiative which to date seems to really based on resource shortages and wishful thinking.

The above studies, done between 1995 and 2007 are up to date and outline the challenges that DFO and others are up against to develop a program that will achieve a 'no net loss' of habitat or its productive capacity. In fact since 2002-2003, DFO has cut many programs such as a comprehensive public watershed stewardship program, reduced enforcement and eliminated a unit within DFO that evaluated the success of DFO habitat protection efforts. In discussion with many habitat staff from different areas of the region, staff have advised that the challenges are greater now than 10 years ago and their success

in achieving a better degree of NNL cannot be accomplished with the confusion of the new organizations, present management and the policies and resources of the present.

Although some changes have been noted in the new DFO EPMP initiative, it is not proven that they can be implemented with existing resources. Many of the more common conclusions and recommendations found in most of the above 24 papers are not being acted upon for a number of reasons.

The above studies generally outline the following general conclusions and/or recommendations that DFO and others must act on if we are to ever achieve a NNL of fish habitat.

1. Despite improvements in habitat protection over the past 20 years, present losses are unacceptable and NNL is not being achieved.

2. New methods to attempt to better protect habitat through industrial stewardship and self compliance are high risk and unproven.

3. There is a desperate need to address global climate change and low stream flows.

4. New approaches/tools and laws are needed to address cumulative impacts and ecosystem/watershed management.

5. A more critical analyses of projects and strategies is needed to design proper protection (e.g. from mines, fish farming, riparian loss) strategies and works.

6. Better tools and strategies are needed to control the losses associated with multitudes of small impacts that most often cause large cumulative impacts.

7. Need much better riparian zone protection. The BC SSD (directive) and RAR (regulation) is yet to be evaluated.

8. Need effective tools and more urgent action to prevent alien species introductions.

9. Need for comprehensive public and industrial stewardship programs to foster a conservation ethic.

10. Need an aggressive program to set joint priorities on sensitive habitats and pursue watershed and site specific restoration as set out in habitat management plans..

11. Human population growth and infrastructure development correlates with greater habitat loss.

12. A new way of thinking is required to create a conservation ethic to reverse losses due to constant human population and associated economic growth.

13. Agencies must have better habitat data records and greater expertise in technical and management positions.

14. A balanced approach to protect habitat (mapping, awareness and stewardship, project review, monitoring and evaluation and enforcement) is still elusive.

15. Complex jurisdictions, confused jurisdictional agendas, non-ecosystem laws and poor government cooperation undermine basic habitat protection.

16. Programs and agreements to promote cooperation and joint inter-agency approaches are yet to be made to work effectively other than is isolated cases.

17. Proactive planning on a regional scale has yet to contribute to achieving a NNL except in isolated local management plans.

18. It is obvious that a stronger government will (e.g. in DFO and BC Fisheries) to take appropriate action to achieve a NNL is essential at this time.

19. Government must be open and transparent, learn to consult and be more accountable when it comes to habitat protection issues.

20. Above all, most strategies to protect habitat are often wasted unless an assertive compliance/enforcement program is implemented.

Otto E. Langer R.P. Bio
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