



PACIFIC FISHERIES RESOURCE CONSERVATION COUNCIL
Conseil pour la conservation des ressources halieutiques du pacifique

ANNUAL REPORT 2009

Pacific Fisheries Resource Conservation Council

MARCH 2010

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PFRCC. 2010. Annual Report 2009. Vancouver, BC: Pacific Fisheries Resource Conservation Council.

For further information about this document and about the Pacific Fisheries Resource Conservation Council (PFRCC), contact:

Pacific Fisheries Resource Conservation Council

290-858 Beatty Street
Vancouver, BC V6B 1C1
CANADA

Telephone 604 775 5621

Fax 604 775 5622

www.fish.bc.ca

info@fish.bc.ca

Printed and bound in Canada

ISBN 1-897110-64-2

Cover photo credit: Fred Seiler



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

March 2010

The Honourable Gail Shea
Minister of Fisheries and Oceans
Government of Canada
House of Commons
Ottawa

The Honourable Barry Penner
Minister of Environment
Province of British Columbia
Legislative Assembly
Victoria

Dear Ministers:

On behalf of my colleagues in the Pacific Fisheries Resource Conservation Council, I am pleased to present you with our eleventh annual report. It addresses several crucial issues and topics related to wild Pacific salmon, and it provides our perspectives on the status of salmon stocks and their freshwater and ocean habitats.

As you will note, we carried out an extensive program of reports and associated activities on your behalf as providers of public information and strategic advice. We completed several projects that were initiated in the previous year, as well as others that focused on immediate issues, such as the problems of Fraser River sockeye. For our 2009 activities, we concentrated our limited resources on a relatively small number of crucial initiatives, particularly Salmon Strongholds and the Strategic Issues Overview.

Our Council acknowledges the exceptional contribution of Dr. Paul LeBlond who retired in March after serving as a member since the Council's inception and for more than three years as Chair. We thank Diane Lake for her contribution in managing several key projects and supporting our work on an interim basis, and we welcome and appreciate the dedicated efforts of Malcolm Longmore who joined us in March to serve as the Council's Managing Director.

Along with my fellow members of the Council—John Fraser, Mary Sue Atkinson, Jeff Marliave, Marilyn Murphy, Marcel Shepert, Jeff Marliave and Dick Beamish—I look forward to continuing to work with you and your departmental officials, particularly to address the strategic issues we identified in our recent overview report.

Yours sincerely,

Mark Angelo
Chair



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

Mars 2010

L'honorable Gail Shea
Ministre des Pêches et des Océans
Gouvernement du Canada
Chambre des communes
Ottawa

L'honorable Barry Penner
Ministre de l'Environnement
Province de la Colombie-Britannique
Assemblée législative
Victoria

Madame et Monsieur les Ministres,

Au nom de mes collègues du Conseil pour la conservation des ressources halieutiques du Pacifique, je suis heureux de vous présenter notre 11^e rapport annuel. Dans celui-ci, le Conseil aborde de nombreux sujets d'importance capitale liés au saumon sauvage du Pacifique et offre son point de vue sur l'état des stocks de saumon ainsi que sur les habitats marins et dulçaquicoles de ce poisson.

Comme vous le remarquerez, nous avons exécuté un vaste programme de rapports et d'activités connexes en votre nom, en tant que fournisseurs de renseignements publics et de conseils stratégiques. Nous avons mené à terme de nombreux projets qui avaient été lancés l'année dernière. En 2009, nous avons concentré nos ressources limitées sur un nombre relativement restreint de projets d'importance capitale, en particulier les « bastions du saumon » et l'aperçu des enjeux stratégiques.

Les membres de notre Conseil tiennent à souligner la contribution exceptionnelle de M. Paul Leblond, qui a pris sa retraite en mars après avoir agi en tant que membre depuis la création du Conseil ainsi que trois ans en tant que président. Nous remercions également Diane Lake qui nous a aidés à gérer les nombreux projets clés et qui a soutenu notre travail de façon intérimaire, et nous souhaitons la bienvenue à Malcolm Longmore qui s'est joint à nous en mars en tant que directeur général du Conseil et qui a déployé d'incroyables efforts depuis.

Nous serons heureux de poursuivre notre collaboration avec vous, en particulier en ce qui a trait aux enjeux stratégiques dont nous avons récemment fourni un aperçu.

Veillez agréer, Madame et Monsieur les Ministres, l'expression de mes sentiments distingués.

Mark Angelo
Président
Conseil pour la conservation des ressources halieutiques du Pacifique

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. SALMON STOCKS AND HABITAT OVERVIEW.....	2
1.1 Status, Conditions and Trends	2
1.2 Emerging Challenges	3
1.3 Council's Transition and Agenda	4
2. COUNCIL REPORTS AND INITIATIVES.....	6
2.1 Fort Langley and Sechelt Public Meeting Reports.....	6
2.2 State of the Salmon Conference	6
2.3 Responsible Fishing Report.....	7
2.4 Landscape Level Habitat Report	7
2.5 Meeting with Senior DFO Officials	8
2.6 Northern BC and Yukon Rivers Report.....	8
2.7 Annual Report 2008.....	9
2.8 Haida Gwaii / Queen Charlotte Public Meetings Report	9
2.9 Salmon Stronghold Concept Report.....	10
2.10 Southern BC Salmon Stock Status Update Report	10
2.11 Water Resources for Salmon Report	11
2.12 Brochure on Water Resources for Salmon.....	11
2.13 Wild Salmon Policy Initiative	12
2.14 Nisga'a Public Meetings Report.....	12
2.15 Workshop on Fraser River Sockeye.....	12
3. APPENDICES	14
3.1 Council Members and Staff	14
3.2 Council Publications.....	15

EXECUTIVE SUMMARY

The Pacific Fisheries Resource Conservation Council continued in its eleventh year to serve as strategic advisors to the federal and British Columbia government ministers responsible for fisheries protection and renewal. Members of the Council provide information and recommendations to ministers and the public on the state of wild salmon and steelhead stocks and their freshwater and ocean habitats.

The Council was highly productive in 2009, publishing more reports in the past year than it had in the preceding two years combined. The Council also served as a sponsor of innovative projects, such as the pilot project for the Salmon Strongholds Partnership in the Harrison basin, and science events to advance technical knowledge and public understanding and to improve salmon conservation practices.

Wild salmon are increasingly defying predictability, and their declines in many instances remain a cause for serious concern. The shockingly low returns of Fraser River sockeye in 2009 served as a high-profile example of conditions and trends that have too-often unexpectedly and negatively impacted British Columbia's wild salmon and steelhead populations in the past decade.

This year's background reports of the Council on stocks in the southern region and in the northern and Yukon rivers shed additional light on the increasing variability in some areas and the trend of exceptionally slow recovery of some stocks, such as southern area coho, in spite of long-term fishing limitations and other traditional methods to promote salmon recovery.

The Council's reports on habitat reinforced awareness of the declining conditions in some crucial salmon and steelhead habitat related to changing hydrological regimes and deteriorating ecological conditions in many areas. More extensive and inclusive land use planning was emphasized in the Council's reports as the means to cope with conflicting demands for water resources and access. The Salmon Stronghold approach was noted for its potential to deal effectively with the protection of British Columbia's most productive salmon and steelhead habitat, as an essential supplement to the Wild Salmon Policy's approach.

The community meeting reports continued to reflect the widespread public dissatisfaction with the effort of governments to maintain salmon habitat and fortify wild salmon populations. The perception observed by the Council members is that British Columbians have considerably higher expectations of salmon protection than government agencies are willing or able to deliver.

The Council's strategic overview report provided a compendium of perspectives contained in the many reports and other publications of more than a decade. It presented a synthesis of past advice, and put forward brief priority recommendations related to the key emerging issues and challenges to wild Pacific salmon.

The Council pursued its ambitious work program in 2009 with limited resources due to severe budget cuts and the continuation of several membership vacancies, some of more than three years. The Council members and government officials continue to investigate further ways in which measures can be taken to improve efficiency and productivity of their report-writing while fulfilling the Council's public information and ministerial advisory mandate.

1. SALMON STOCKS AND HABITAT OVERVIEW

In line with its mandate, the Pacific Fisheries Resource Conservation Council provides an annual report on its activities and output. This report serves the worthwhile purpose of reviewing and summarizing the key findings, observations and recommendations contained in background papers and other Council publications produced in the 2009 calendar year.

The Council's terms of reference specify its assigned role to serve as an independent body to provide advice to the Minister of Fisheries and Oceans Canada, British Columbia Minister responsible for fisheries and environmental protection and the public on matters dealing with the conservation of Pacific fish populations (specifically salmon and steelhead) and the status of their freshwater and ocean fisheries habitat in British Columbia.

Among the issues the Council is asked to consider are:

- conditions in freshwater and marine ecosystems;
- stock conservation and enhancement programs;
- habitat restoration, protection and improvement;
- fisheries conservation objectives;
- research programs;
- stock and habitat assessments; and
- integrating scientific with local and traditional knowledge.

The Council's recommendations have been meant to provide an unbiased overview perspective on long-term strategic issues and priorities related to wild Pacific salmon and steelhead. In the 2009 calendar year, the Council produced a record twelve reports on an array of stock and habitat issues, in addition to sponsoring two fisheries science events and initiating the Salmon Strongholds pilot project.

1.1 STATUS, CONDITIONS AND TRENDS

While stock status remains a crucial consideration in the Council's work, much more is generally known now and made available to the public by government agencies than was the case ten years ago. Consequently, the Council has gradually shifted its agenda and workplans to more directly address salmon and steelhead habitat issues. It was recognized that it was important to identify habitat vulnerability, especially in terms of human impacts on salmon spawning, rearing and migration. The topics of hydrology, water temperatures and fish passage were not, in the Council's view, being given sufficient attention in the studies and research programs of government agencies and universities.

The Council initiated reports on stock status for both northern and southern regions, leading to new reports in 2009. Its background paper on southern area stocks was a follow-up to work done seven years ago to provide an overview of conditions and trends. It confirmed that salmon stocks were relatively stable until 1990, when environmental conditions began to disrupt the patterns of productivity. Problems related to marine survival, particularly for Fraser River sockeye, have been identified in several instances in the past decade, particularly in 2005 and 2009. The slow recovery of coho in the southern region, in spite of rigorous fishing restrictions and freshwater habitat project investment, has been a frustration for fisheries managers. The contrast of high pink returns in the Fraser River and exceptionally low escapement for pinks on the West Coast of Vancouver Island has been a matter of further concern.

1. SALMON STOCKS AND HABITAT OVERVIEW

These trends that appeared to be related to the marine phase of the salmon lifecycle were the subject of the Council's letters to the Minister of Fisheries and Oceans Canada in 2002, citing the severity of the declines and urging a combined ocean research and management program to deal with them.

The innovative report on salmon stock status in the Arctic-draining northern British Columbia and Yukon rivers and watersheds presented a perspective on the relatively small numbers of stocks present in the region. Little is known about the status of stocks in the region, primarily because there has been little commercial fishing and related harvest data, and because of the absence of formal assessment. The prospect of more habitable conditions for pink salmon in the Arctic is related to the expectation that climate change will favor that species.

The Council had commissioned a report more than four years ago to explain the stock status of steelhead in British Columbia. Regrettably, the author delayed the preparation of the report several times, and the Council finally gave up any expectation that the report would ever be presented. This situation has meant that, in recent years, the Council has not been able to obtain a clear sense of the status of steelhead stocks beyond the limited data and analysis made available to the public. Based on that scant information, it is obvious that steelhead populations remain severely and persistently depressed in several areas of British Columbia, and recovery programs are not getting the anticipated results in productivity.

The predominant salmon conservation issue in 2009 was the shock of poor returns of Fraser River sockeye that had, until the start of the season, been predicted to be abundant. The high expectations of a banner year were followed by bitter disappointment when the sockeye returns were only a small fraction of the expected ten million.

For the past several years, the Council has monitored the Fraser River sockeye which have experienced low productivity and returns. The problems of early migration and premature mortality for sockeye, associated to some extent with a parasite, were identified earlier in this decade in relation to significant new causal factors. It was small consolation in 2009 for pink returns in the Fraser River to be relatively abundant, as they had been in previous years during the past decade.

The Council was a co-sponsor in December 2009 of the science workshop looking at conditions and causes of decline for the Fraser River sockeye run, and will be involved in further investigations in the coming year. The work of the judicial inquiry into the Fraser River sockeye will be taking up to 16 months to provide its findings, and is expected to initiate its own research program to support its analysis.

1.2 EMERGING CHALLENGES

The continuing loss of salmon habitat has been especially worrisome for the Council, and the subject of several studies and reports that have attempted to identify ways for human population growth to be accommodated without compromising salmon and steelhead populations.

The need to revise the British Columbia Water Act has become more urgent as the competition for access to water resources in rivers, streams and groundwater has grown even more rapidly than expected. While the water conservation measures included in the provincial government's Living WaterSmart program are beneficial in slowing demand for water, more fundamental changes are needed to provide specific assurance that fish will be given priority where the rationing of water is becoming severe.

A significant challenge is to move the salmon and steelhead conservation agenda towards preventive measures and initiatives to reinforce the work of fisheries management agencies. The Council has been impressed by the North American Salmon Stronghold Partnership approach to protect salmon and steelhead habitat, and has invested in the initial stages of adapting the concept to accommodate Canadian circumstances. Salmon

Strongholds can provide an important supplement to the Wild Salmon Policy by identifying and protecting the most crucial salmon habitat in watersheds and basins across the province. The encouragement of Canadian participation in a pan-coastal Salmon Stronghold Partnership could draw together the resources of British Columbia with Alaska and other Pacific states to share experience and work together towards the protection and restoration of salmon and steelhead populations. In cooperation with the Wild Salmon Center in Portland, the Council is playing a catalytic role in enabling leadership for implementation of the Salmon Stronghold Partnership in Canada.

The Council has taken a strong position that an ecosystem-based approach to wild salmon management could offer substantial advantages over the single-species and area management models that have been limited by their emphasis on immediate life history factors and have not adequately accounted for the impacts and interaction of environmental matters such as trophic levels, food and inter-species predation. This will require a shift in research towards emphasizing much broader biological monitoring and the modeling of ecosystems as crucial management initiatives, and a better sense of the conditions of natural variability affecting salmon and steelhead. Exploration and discovery resulting from these initiatives will lead to paradigm shifts that, more than just having more tools, will enable success with ecosystem-based management.

A further challenge is to establish adaptation strategies for wild Pacific salmon that respond to the consequences of climate change. The patterns of water runoff, food availability and extremes of water temperature fluctuations affected by climate change call for research to get a better understanding of the sensitivity of salmon and steelhead stocks to new and detrimental conditions.

In most respects, the unrelenting loss of salmon habitat is a direct result of growing human population and the needs that create demand for natural resources and activities such as access to water, flood protection projects, and in-stream extractions of gravel and other sediments. Conservation advocates have, regrettably, been ineffective in many instances in putting forward a convincing case or lobbying effectively for the interests of salmon and steelhead. While British Columbians are sympathetic to the interests of wild salmon and steelhead, they have not generally been willing to face the difficult decisions involving trade-offs between environmental and economic values. The treatment of wild salmon and steelhead in government, in public debates and in decision-making needs to be bolstered by stronger public willingness to stand up for the salmon resource and assign greater value and commitment to it.

The Council has identified the pressing need in salmon and steelhead conservation to shift towards the concept of sustainability as a primary guide and objective. The task of restoring salmon populations in some instances, protecting them in others, and coping with the unpredictability of nature and unintended human consequences in ecosystems is far beyond the current government and volunteer resources available for those tasks. It will only be through making the public more aware of salmon and steelhead values, and more willing to act and invest in effective protection and restoration for the future, that realistic conservation goals will be achieved.

1.3 COUNCIL'S TRANSITION AND AGENDA

The Council has worked with Fisheries and Oceans Canada officials to identify potential changes in the key organizational structures that contribute to effective conservation programs. Specifically, there are different organizational arrangements needed for the Council to function more effectively into the future.

Discussions have taken place between federal and provincial government officials to consider their possible involvement in what was originally envisioned to be a jointly funded Council. However, the likelihood of provincial participation is not strongly anticipated in the current situation of fiscal restraint.

1. SALMON STOCKS AND HABITAT OVERVIEW

Any new mandate or organizational structure for the Council would be expected to ensure that it remains independent, with a capacity to set its own agenda and operate at arms-length from government agencies, and able to address its issues without undue influence by departmental officials, lobby groups or fisheries stakeholders. The Council would have to report to ministers, not to fisheries agency officials, with arrangements to ensure direct access, frank dialogue and commitments for timely consideration of advice and provision of substantive responses. The Council would continue to focus on salmon and steelhead conservation from a long-term sustainability perspective.

Initial discussions have taken place with the Pacific Salmon Foundation to investigate the possibilities of having it serve as an organizational platform for the Council. At the same time, other alternative management and administrative arrangements would be considered.

For 2010, the Council has expressed its clear preference for a continuation of the current organizational structure in order to develop and pursue an effective workplan for the year.

In early 2010, the Council has scheduled the release of two significant reports. The first will be the report presenting the findings of the scientific evaluation of the Harrison Basin to determine how it would rank in terms of the criteria for salmon productivity established by the North American salmon Stronghold Partnership. It may serve as the basis to determine whether or not the Harrison Basin could or should qualify to become Canada's first Salmon Stronghold.

The other Council report due to be released in early 2010 is the Advisory presenting a summary of the findings and recommendations contained in reports spanning the preceding eleven years. The Council will focus in that report on five priority action items for federal and provincial ministers. The report will serve as a compilation organized around primary themes of stock status, freshwater habitat, ocean conditions and resource management.

2. COUNCIL REPORTS AND INITIATIVES

In 2009, the Council published an array of reports on stock and habitat status and provided additional publications on salmon and steelhead conservation issues. The large output for the year was, in part, due to a backlog of reports initiated in 2008, but only completed and delivered in the current year.

The productivity of the Council was undermined to some extent by the budget reductions that curtailed several activities and may severely limit the output of studies, reports and event sponsorship in 2010.

2.1 FORT LANGLEY AND SECHELT PUBLIC MEETING REPORTS

The Council published summaries of the proceedings from its public meetings held the preceding year in two communities—Fort Langley and Sechelt—where fisheries conservation has a particularly high profile. Previous public meetings had been held in 24 coastal and inland communities during the past seven years. Their purpose has been to permit a sharing of information and ideas about natural and human influences on wild salmon, as well as to gather and compile local knowledge to help shape the Council's advice to government ministers.

The resulting report entitled *What's Happening to Wild Salmon in Your Community? What the Council Heard: Fort Langley and Sechelt Public Meetings: March 3 and 5, 2008* deals with the concerns that participants expressed about several current problems and possible local solutions.

Both public meetings were well attended by an array of individuals affiliated with stewardship, sport fishing, community, hatchery, First Nations and other organizations. There were 60 participants in Fort Langley and 68 in Sechelt, reflecting the considerable level of interest in the current issues and future of Pacific salmon.

In both communities, freshwater habitat protection was overwhelmingly the key issue and leading concern. Participants described the damage and threats to salmon from urbanization, logging, industry and agriculture. Threads of the discussion among participants were particularly about ineffective legislations, lack of regulatory enforcement and declining resources, leadership and will at all levels of government to protect wild salmon.

Inadequate water management and impacts of large-scale projects to divert water or remove gravel were described as serious concerns. Falling water tables and increasing water extraction have been observed, and appear to be instrumental in low flows and dry streams in some areas.

The adoption of ecosystem-based management, expansion of stewardship activity, and more rigorous regulatory enforcement were cited as essential measures for salmon protection in both regions.

2.2 STATE OF THE SALMON CONFERENCE

The Council was pleased to be among the sponsors of the *State of the Salmon Conference*, February 2-5, 2009 in Vancouver, organized by the Wild Salmon Center and Ecotrust. The event brought together more than three hundred scientists, fisheries managers, students and conservation advocates from countries and jurisdictions across the Pacific Rim.

The three-day international conference was co-chaired by Dr. Brian Riddell, head of the Pacific Salmon Foundation, and featured Mark Angelo as the featured speaker at the closing plenary session. Mark's comments focused on the importance of building innovative salmon conservation solutions and implementing new ideas, such as Salmon Strongholds, in ways that work more cooperatively.

The conference covered an array of topics addressed in scientific papers, panel discussions and question-and-answer sessions. An informative poster session permitted new research and programs to become more widely known. Speakers and attendees from Russia, Japan, Canada, Korea and the United States met with the goal of helping one another accelerate the adoption of best management practices and protection strategies.

The Council's support for the conference enabled more extensive participation by Canadians in the event, and demonstrated the Council's commitment to advance knowledge exchange among Pacific salmon stakeholders.

The Council's sponsorship of this event, along with the cooperative work in the North American Salmon Strongholds Partnership, has contributed to the establishment of a solid working relationship with the Wild Salmon Center and set the stage for future joint initiatives.

2.3 RESPONSIBLE FISHING REPORT

A background paper prepared for the Council suggests ways to improve British Columbia's salmon fishing activity and ensure that it satisfies a combination of objectives, particularly fisheries conservation and ecosystem protection. The report entitled *Responsible Fishing in Canada's Pacific Region Salmon Fisheries* was authored by Elmar Plate, Robert Bocking and Karl English to serve as a reference and source of policy options for the Council members.

The report describes *responsible fishing* as an activity conducted to benefit fairly all the people involved in the fishery, without causing unacceptable changes in fish populations and their ecosystems. It suggests incentives to provoke changes in fishing practices, especially to deal with mixed-stocks in ocean and river fisheries. One of these suggested ways is to transfer the harvest of allowable catch to terminal areas in rivers to help reduce mixed-stock fisheries. Another would be to improve training in fish handling techniques and expansion of selective fishing methods.

A particularly valuable aspect of the report is its explanation of the four factors that have constrained the fishing industry from adopting responsible practices more quickly—mixed stock harvesting conditions, structure of commercial fishing competition, economic conditions, and difficulties in achieving compliance and enforcement.

The authors suggest that selective fishing can be applied to all sectors of the commercial fishery, including purse seining, gill netting and troll fishing, as well as to First Nations and recreational fishing. They cite several examples of the successful experience of innovators in applying responsible fishing approaches and transforming practices.

2.4 LANDSCAPE LEVEL HABITAT REPORT

By taking a broadly-encompassing perspective of freshwater salmon habitat, fisheries managers, scientists and regulators could better understand and cope with the effects of activities including forestry, agriculture and urbanization.

The background paper entitled *Landscape-Level Impacts to Salmon and Steelhead Stream Habitats in British Columbia*, authored by Marvin Rosenau and Mark Angelo of the British Columbia Institute of Technology, presents a comprehensive look at salmon environments from the viewpoint that includes various geologies, hydrological regimes and ecological conditions. It points out how human activities have profoundly changed the features along many waterways, often to the detriment of fish populations that exist within these broad geographic areas.

The report explains why the old ways of viewing salmon and steelhead habitat from simply instream or riparian perspectives in nature are incomplete, and why the whole landscape influencing water and fish must be incorporated into fisheries management. For the definition of landscapes, the geographic areas are considerably larger than those described as a watershed, in order to encompass large contiguous patterns of physical, biological and land-use characteristics.

The authors suggest that regionally-inclusive land use planning should be adopted to enable ecosystem conditions to be more fully addressed. They call for the incorporation of ecosystem values into the Agricultural Land Reserve to recognize and accommodate the needs of salmon and steelhead. They also provide valuable and timely analysis and advice on three important habitat topics: management of rainwater, control of landscape-level landslides, and measures to deal with the pine beetle infestation.

In addition, the authors recommend that British Columbia should appoint an independent expert panel to review mechanisms to protect and preserve environmental viability in urban environments.

The report states that landscape-level purchases of property in some strategically key locations may be the only way to maintain the water flows and suitable spawning and rearing conditions, and thereby avoid the loss of crucial salmon populations. Because of the cost of such purchases or curtailment of development, the involvement of several levels of government and participation of other contributors would be required for such endeavors.

2.5 MEETING WITH SENIOR DFO OFFICIALS

The Chair and Vice Chair of the Council met in late March with Paul Sprout, Director General of DFO Pacific Region and other senior departmental officials to discuss the upcoming year's workplan and priorities for salmon conservation. It was explained that the Council was in the process of completing and publishing several reports that had been initiated in the past year.

The discussion confirmed the Council's three primary policy initiatives for the year: leading a stakeholder project related to the Wild Salmon Policy; assisting in the implementation of the North American Salmon Stronghold Partnership in Canada; and producing an overview report on strategic priorities for salmon conservation.

The DFO officials were told that the Council's current focus was on issues related to salmon habitat and the protection of vulnerable stocks.

The Council participants were told that DFO's discussions were underway with the Provincial Government to develop joint sponsorship or a revised administrative arrangement for a salmon conservation advisory organization that might be a reformatted Council or a new entity. The decisions concerning the Council's future could be made within the coming months and might take effect at the fiscal year end.

2.6 NORTHERN BC AND YUKON RIVERS REPORT

While the Pacific coastal area is generally the focus of public attention for wild salmon, there are salmon populations in the northern British Columbia and Yukon rivers that are tributaries to the Mackenzie River running into the Arctic. Chum salmon have been the only species with successful spawning populations in the region, although other species have been documented in these watersheds.

The background report entitled *Pacific Salmon in Canada's Arctic Draining Rivers, With Emphasis on Those in British Columbia and Yukon* was produced for the Council by a group of experienced scientists. It was

commissioned to document what is known about Pacific salmon in this isolated and generally overlooked region. It was the last in a series of regional reports on the status of salmon stocks in British Columbia.

The authors suggest that an effect of climate change in that region is expected to be more hospitable conditions for salmon. The situation was described by Council Chair Paul Leblond: "As climate change warms the north, we will likely see greater numbers of chum in the Canadian Arctic and possibly pink salmon as well, but regular monitoring is now needed to track these changes."

However, even in the event of significant warming in the region, conditions are not likely to be adequate to support the development of coho, chinook or sockeye populations. The report looked mainly at the Liard River watershed and chronicled the chum salmon that migrate in rivers for up to 2,000 kilometers before reaching the ocean.

2.7 ANNUAL REPORT 2008

The annual report for 2008 marked the Council's tenth anniversary. It reviewed the discussion paper and findings from a workshop that identified the next decade's trends, emerging issues and primary challenges in Pacific salmon conservation.

The Council members pointed out that over the past decade governments and other organizations, such as the Pacific Salmon Foundation and Wild Salmon Center, had become more extensive and reliable providers of public information about the status of wild salmon stocks. Consequently, the role of the Council in reporting on stock status had considerably diminished.

In recent years the Council deliberately shifted the emphasis in its reports and advice to ministers towards freshwater habitat and ocean conditions. Rather than duplicate the work increasingly done by others in scrutinizing population status, the Council produced ground-breaking work in topics such as the development of salmon habitat status indicators.

In that annual report, the Council also pointed out the persistent lag in the application of knowledge from fisheries science to immediate problems of conservation and stock management. The Council members suggested that DFO in particular should be investing in projects that bring together scientists and fisheries managers to find joint science-based solutions. It also pointed out the overwhelming bias in funding salmon research projects towards those with immediate economic benefits, rather than those with environmental and conservation values.

2.8 HAIDA GWAI / QUEEN CHARLOTTE PUBLIC MEETINGS REPORT

In October, the Council published the synopsis of the discussion that took place in November 2008 public meetings in Haida Gwaii. The report entitled *What's Happening to Wild Salmon in Your Community? What the Council Heard: Haida Gwaii / Queen Charlotte Islands Public Meetings* was based on information and comments that emerged in the meetings held in the communities of Masset and Skidegate.

Participants in both communities identified their priority issues as being the impacts of sport fishing and declining local economic benefits from the salmon resource. The most significant underlying conservation concern was that wild salmon stocks in Haida Gwaii are declining and under threat from a growing array of pressures. The situation is that wild salmon in the region have been undermined by poor fisheries management and unsustainable fishing practices.

The primary topics raised by participants included high catch-and-release mortality and the scale and intensity of sport fishing in parts of the region. A recurring theme was the lack of funding for stock assessment to determine stock trends and enable preventive measures to head off severe declines.

Among the new and emerging threats to wild salmon in Haida Gwaii are proposed oil and gas development, impacts from shipping associated with the expanded port of Prince Rupert, independent run-of-the-river power projects, and fish farms.

2.9 SALMON STRONGHOLD CONCEPT REPORT

In mid-2008, the Council decided to explore innovative long-term salmon habitat strategies, and identified the potential of the Salmon Strongholds approach as a way to supplement and reinforce existing salmon and steelhead conservation efforts. The Council commissioned a report to investigate whether or not Salmon Strongholds would be applicable and beneficial in Canada.

The resulting report entitled *Applying the Salmon Stronghold Concept in Canada* was authored by Ken Beeson who has served as the Council's policy advisor for more than ten years. The report reviewed the experience of the North American Salmon Stronghold Partnership in the United States. It explained the habitat prevention and restoration activities that are enabled by the Partnership. And, it pointed out the economic dimensions in terms of the cost savings that could be achieved by investment in preventive measures to avoid salmon stock crises and emergency programs.

Salmon Strongholds involve assessing and ranking the most crucial, high-productivity salmon habitat, and ensuring that special attention is given to those areas in the form of habitat protection, prevention and restoration measures. Too often, the most crucial salmon producing areas have been taken for granted, and their vulnerability to severe declines has not been understood. Salmon Strongholds calls for protecting the best, first—including habitat from headwaters to oceans.

The report identified the areas of similarity and contrasts in the regulatory, funding and jurisdictional systems of the two countries, and chronicled issues that needed to be addressed for the Salmon Stronghold approach to be implemented in Canada.

Based on the report's recommendations, the Council announced on June 24th that it would sponsor a pilot project in the Harrison area to introduce the Salmon Stronghold approach in Canada. Mark Angelo explained: *"This idea originated in Canada a decade ago, but so far has only been implemented in the US Pacific North West. We believe that implementing the Salmon Stronghold concept in Canada would have significant benefits to the long-term viability of wild salmon and steelhead populations."*

2.10 SOUTHERN BC SALMON STOCK STATUS UPDATE REPORT

In the latter part of 2008, the Council commissioned a report to update the information and findings contained in a 2002 report on Pacific salmon in the crucial areas of southern British Columbia. The report was intended to identify any major shifts in productivity or emerging issues in salmon conservation.

Fisheries biologist Marc Labelle authored the background paper *Status of Pacific Salmon Resources in Southern British Columbia and the Fraser River Basin*, explaining that it presented information taken from several source and provided by field surveys and analysis.

While the report did not draw comprehensive conclusions about the status of the various stocks across the region, it presented perspectives on local conditions and trends observable since the 2002 report. It provided evidence of important conditions, such as the endangered status listing for Interior Fraser River coho and the slow pace of rebuilding for coho generally in the Fraser River.

The report explained how salmon management continues to be hindered by voids in data and an absence of essential information. Without reliable knowledge of factors such as historical exploitation, escapement, habitat conditions and ocean survival rates, the status of many salmon stocks in the region is largely guesswork.

The report deals with the five salmon species, but does not review steelhead status. It provides a valuable reference for fisheries managers in assembling the information in forms not otherwise available to them.

2.11 WATER RESOURCES FOR SALMON REPORT

The challenges of ensuring adequate freshwater ecosystems for salmon, among the many claims of water users, led the Council members to commission a study that would inform their assessment of British Columbia's "Living Water Smart" program and produce options for the Council to consider recommending for priority government action.

The Council background report *Freshwater for Fish and People: Moving Towards "Living Water Smart"* was prepared by consultants Mark Nelitz, Tannis Douglas and Murray Rutherford.

The report cited the experience of other countries where water shortages and controversies have already become severe. It presented the lessons for British Columbia from the experience of others, and suggested how the array of policy tools could be applied to suit British Columbia's unique conditions and needs.

A number of firm regulatory measures were suggested by the report's authors, as well as suasion and incentives to encourage voluntary responses from water users. The report explained the legislative framework for streams and groundwater, and the requirements for the consideration of fish in current legislation and regulatory practices of both the federal and provincial governments.

The report drew attention to the immediate need to deal fairly and equitably with the growing competition among water users, and establishing a firm recognition of the need to accommodate fish within an updated legal and regulatory framework.

2.12 BROCHURE ON WATER RESOURCES FOR SALMON

Public awareness is an essential ingredient for effective action to make better use of British Columbia's water resources and enable adequate water quality and quantity for wild salmon. As a contribution by the Council to help achieve that objective, a brochure entitled "Freshwater for Fish and People" was produced and widely distributed.

In two previous years, the Council had produced brochures and related advertisements for wide public distribution to raise public awareness of topical salmon issues: climate change impacts and pine beetle damage to salmon habitats.

The brochure drew its information and themes from the *Freshwater for Fish and People: Moving Towards "Living Water Smart"* background paper, but presented it in terms of how British Columbians could act as responsible individuals and community members to deal with emerging freshwater problems that affect salmon.

2.13 WILD SALMON POLICY INITIATIVE

The background report entitled *Developing a Wild Salmon Policy Review Framework* was commissioned by the Council to offer the perspectives of conservation community stakeholders about the ways in which the implementation of the Wild Salmon Policy should be evaluated and improved. The report authored by Dr. Julia Gardner was based on a series of interviews and discussions with informed individuals, and produced several ideas for the program's evaluation.

The report was intended to obtain and present the views of only a limited segment of the fisheries and conservation stakeholder community—mainly those not otherwise directly involved in the Wild Salmon Policy and its on-going activities. Their views were recognized as reflecting a limited number of organizations and viewpoints, rather than being widely representative.

An outcome of the project was a list of ten components to build into a review framework, including criteria for the identification of performance measures and an effective public engagement strategy, with particular reference to involvement by First Nations communities.

The report cited the expected concern of many stakeholders about the slow pace of the Wild Salmon Policy's implementation and the uncertainty about whether or not the policy is making a difference. They generally acknowledged the need for the Policy to satisfy many different interests and accommodate divergent conservation perspectives.

2.14 NISGA'A PUBLIC MEETINGS REPORT

In November, the Council issued a brochure highlighting the salmon conservation initiatives in the Nass River in northern British Columbia. The brochure entitled *The Nisga'a Fisheries Management Program: A Model for Sustainability Under Stress* explained the findings of the Council in the previous year's meetings in the region.

The brochure describes the local stock assessment and conservation programs involving collaboration among fisheries agencies to ensure that the management systems are rooted in traditional values that take the long view for sustainable fisheries. The initiatives in the region provide valuable lessons for other fisheries management programs to ensure that environmental values will prevail.

The Council found that the Nisga'a commercial fisheries include communal and individual sale fisheries, in a model that seeks to balance sustainability with economic benefits for local communities. This has contributed to broad buy-in and compliance from local stakeholders even when local fisheries must be curtailed to meet conservation targets.

2.15 WORKSHOP ON FRASER RIVER SOCKEYE

In December, the Council co-sponsored a three-day science workshop with Simon Fraser University to investigate the conditions and factors contributing to the poor returns of Fraser River sockeye in 2009. While this sockeye stock collapse is to be reviewed in an eighteen-month judicial review, the Council felt that the circumstances called for better understanding and evidence-based consideration of the measures that could be taken in the coming year, at least on an interim basis.

In his role as co-chair of the workshop, Mark Angelo explained that the participating scientists agreed that the problem of reduced productivity of the Fraser sockeye occurred after the juvenile fish began their migration toward the sea. Emerging from the workshop were four recommendations, mainly involving the expansion of research programs. The participants suggested a more extensive assessment program for Fraser sockeye

2. COUNCIL REPORTS AND INITIATIVES

juveniles and comparisons of trends in abundance and survival of various stocks and species to determine whether or not there are shared stressors linked to changes in productivity.

The succinct two-page summary entitled “Adapting to Change” (available on the Council’s website) explained that workshop participants also identified the value of increased Canadian research related to the marine coastal environment and climate impacts.

As part of the workshop, a public meeting was held on the evening of the third day, open to anyone interested in the issues. It was exceptionally well-attended, and the discussion advanced public awareness and understanding of the causes and contributing factors in the decline of the Fraser River sockeye. A follow-up event sponsored in part by the Council will be held in the latter part of March to deal further with the questions raised in the workshop and public meeting.

3. APPENDICES

The mandate of the Pacific Fisheries Resource Conservation Council is to provide information and strategic advice to fisheries ministers and the public on ways to ensure the sustainability of wild Pacific salmon and steelhead populations and their freshwater and ocean habitats. The Council members represent an array of perspectives and experience related to wild salmon, and work on a consensus basis to develop public-interest positions and recommendations.

3.1 COUNCIL MEMBERS AND STAFF

Mark Angelo chairs the Council and heads the Rivers Institute at the British Columbia Institute of Technology. Known across North America for his work as a river conservationist, habitat expert and educator, he was awarded Canada's first National River Conservation Award.

The Honourable John A. Fraser is one of Canada's outstanding leaders in environmental and conservation issues. He is a former federal fisheries and environment minister, and served as Canada's Ambassador for the Environment.

Mary Sue Atkinson is one of British Columbia's active streamkeepers and serves as a dedicated salmon advocate, with a special interest in coho conservation.

Dr. Jeff Marliave is a scientist who has worked in several senior positions at the Vancouver Aquarium, and leads an extensive marine research program.

Marilyn Murphy has had extensive involvement in the recreational fishery through various sector and community organizations and continues to be a strong advocate for both the protection and sustainable use of wild salmon.

Marcel Shepert leads the Fraser River Aboriginal Fisheries Secretariat and serves on several panels and advisory bodies involved in wild salmon conservation.

Dr. Dick Beamish is Senior Scientist at Fisheries and Oceans Canada, involved in several innovative fisheries-related research projects. He is an ex-officio member of the Council.

Malcolm Longmore serves as Managing Director of the Council, and has a wide range of experience based on his previous roles as an educator and public servant in several government departments.

3.2 COUNCIL PUBLICATIONS

All of the reports and other publications listed below are accessible in their entirety and précis form on the website of the Pacific Fisheries Resource Conservation Council at www.fish.bc.ca.

Annual Report 1998–1999 (PFRCC, released June 1999)

Freshwater Habitat (Background paper authored by Dr. Marvin Rosenau and Mark Angelo, June 1999)

Salmon Stocks (Background paper authored by Dr. Carl Walters and Josh Korman, June 1999)

Fraser River Sockeye (Background paper authored by Dr. Rick Routledge and Ken Wilson, June 1999)

Coast-Wide Coho (Background paper authored by Dr. Rick Routledge and Ken Wilson, June 1999)

Climate Change and Salmon Stocks (Conference Proceedings Summary, October 1999)

Annual Report 1999–2000 (PFRCC, released May 2000)

Water Use Planning: A Tool to Restore Salmon and Steelhead Habitat in British Columbia Streams
(Background paper authored by Dr. Marvin Rosenau and Mark Angelo, May 2000)

***Review of the Coho and Chinook Salmon Sections of the “Agreement Under the Pacific Salmon Treaty”
Between Canada and the United States, dated 30 June 1999*** (Background paper by Dr. Randall Peterman
and Brian Pyper, May 2000)

***Sand and Gravel Management and Fish-Habitat Protection in British Columbia Salmon and Steelhead
Streams*** (Background paper authored by Dr. Marvin Rosenau and Mark Angelo, May 2000)

State of Salmon Conservation in the Central Coast Area (Background paper by Allen Wood, May 2000)

The Wild Salmon Policy and the Future of the Salmonid Enhancement Program (Council Advisory, June 2000)

Salmon Conservation in the Central Coast (Council Advisory and Background paper by Allen Wood, March 2001)

A Crisis in Fisheries Education (Council Advisory, September 2001)

***The Role of Public Groups in Protecting and Restoring Freshwater Habitats in British Columbia, with a
Special Emphasis on Urban Streams*** (Background paper authored by Dr. Marvin Rosenau and Mark Angelo,
September 2001)

Annual Report 2000–2001 (PFRCC, released December 2001)

Annual Report 2001–2002 (PFRCC, released October 2002)

The Protection of Broughton Archipelago Pink Salmon Stocks (Council, Advisory, November 2002)

***Making Sense of the Salmon Aquaculture Debate: Analysis of Issues Related to Netcage Salmon Farming
and Wild Salmon in British Columbia*** (Background report prepared by Julia Gardner, David L. Peterson,
Allen Wood and Vicki Maloney, January 2003)

Wild Salmon and Aquaculture in British Columbia (Council Advisory, January 2003)

Annual Report 2002–2003 (PFRCC, released August 2003)

Conflicts Between People and Fish for Water: Two British Columbia Salmon and Steelhead Rearing Streams in Need of Flows (Background paper authored by Dr. Marvin Rosenau and Mark Angelo, September 2003)

The Salmon Aquaculture Forum: Discussion Paper on Practices & Findings (Background paper prepared by Kenneth Beeson and the Honourable John Fraser, December 2003)

The Salmon Aquaculture Forum: Briefing Note for Ministers (Background paper prepared by Kenneth Beeson and the Honourable John Fraser, December 2003)

Pacific Salmon Resources in Central and North Coast British Columbia (Background paper prepared by Dr. Brian Riddell, February 2004)

Salmon Conservation Challenges in British Columbia with Particular Reference to Central and North Coast (Council Advisory, February 2004)

Making Sense of the Debate About Hatchery Impacts: Interactions Between Enhanced and Wild Salmon on Canada's Pacific Coast (Background report prepared by Julia Gardner, David L. Peterson, Allen Wood and Vicki Maloney, March 2004)

Annual Report 2003 (PFRCC, released April 2004)

Does Over-Escapement Cause Salmon Stock Decline? (Technical paper prepared by Carl Walters, Paul LeBlond and Brian Riddell, April 2004)

Reality Stewardship: Survival of the Fittest for Community Salmon Groups (Background paper prepared for PFRCC and Vancouver Foundation by Brian Harvey and David Greer, April 2004)

The Evolution of Commercial Salmon Fisheries in British Columbia (Background report prepared by Stuart Nelson and Bruce Turris, December 2004)

Annual Report 2004 (PFRCC, released April 2005)

Perspectives on Salmon Enhancement and Hatcheries: What the Council Heard (PFRCC, May 2005)

Conflicts Between Agriculture and Salmon in the Eastern Fraser Valley (Background paper authored by Dr. Marvin Rosenau and Mark Angelo, June 2005)

Selection and Use of Indicators to Measure the Habitat Status of Wild Pacific Salmon (Background paper, February 2006)

Managing Pacific Salmon for Ecosystem Values: Ecosystem Indicators and the Wild Salmon Policy (Background paper, March 2006)

First Nations, Salmon Fisheries and the Rising Importance of Conservation (Background paper, April 2006)

The Evolution of Recreational Salmon Fisheries in British Columbia (Background paper, June 2006)

Feeling the Heat: Can We Help Salmon Survive? (Council pamphlet, June 2006)

Annual Report 2005 (PFRCC, released June 2006)

Implementing the Habitat and Ecosystem Components of the Wild Salmon Policy (Council Advisory, October 2006)

What's Happening in Your Community? What the Council Heard: Vancouver Island Public Meetings (PFRCC, released October 2006)

An Ecosystem-based Approach to Managing Salmon in Georgia Strait (Council Advisory, June 2007)

Annual Report 2006 (PFRCC, released June 2007)

Report on Habitat Threats: Major Impacts on British Columbia Fish and Fish Habitat and Human Activities That Cause Those Impacts (Background paper authored by Ottawa Langer, June 2007)

Helping Pacific Salmon Survive the Impact of Climate Change on Freshwater Habitats (Background paper authored by Essa Technologies Limited, September 2007)

Helping Pacific Salmon Survive the Impact of Climate Change on Freshwater Habitats: Case Studies (Background paper by Essa Technologies Limited, September 2007)

What's Happening to Wild Salmon in Your Community? What the Council Heard: BC Interior Public Meetings (PFRCC, released June 2007)

Saving the Heart of the Fraser: Addressing the Human Impacts to the Aquatic Ecosystem of the Fraser River, Hope to Mission, British Columbia (Background paper authored by Dr. Marvin Rosenau and Mark Angelo, November 2007)

What's Happening to Wild Salmon in Your Community? What the Council Heard: North Coast Public Meetings (PFRCC, released March 2008)

Mountain Pine Beetle: Salmon Are Suffering Too (Council pamphlet, March 2008)

Climate Effects on Pacific Salmon in the Ocean (Background paper authored by Dr. D.B. Preikshot, April 2008)

What's Happening to Wild Salmon in Your Community? What the Council Heard: Mid and Upper Fraser Public Meetings (PFRCC, released July 2008)

Annual Report 2007 (PFRCC, released July 2008)

Computer Modeling of Marine Ecosystems: Applications to Pacific Salmon Management and Research (Background paper authored by Dr. D.B.Preikshot, October 2008)

Public Summary—Computer Modeling of Marine Ecosystems: Applications to Pacific Salmon Management and Research (Public information paper authored by Dr. D.B. Preikshot, April 2008)

What's Happening to Wild Salmon in Your Community? What the Council Heard: Fort Langley and Sechelt Public Meetings (PFRCC, released January 2009)

Responsible Fishing In Canada's Pacific Region Salmon Fisheries (Background paper authored by Elmar Plate, Robert C. Bocking and Karl K. English, February 2009)

Landscape-Level Impacts to Salmon and Steelhead Stream Habitats in British Columbia (Background paper authored by Dr. Marvin Rosenau and Mark Angelo, March 2009)

Pacific Salmon in Canada's Arctic Draining Rivers, With Emphasis on Those in British Columbia and the Yukon (Background paper authored by J.R. Irvine, E. Linn, C. McLeod and J.D. Reist, March 2009)

Annual Report 2008 (PFRCC, released April 2009)

What's Happening to Wild Salmon in Your Community? What the Council Heard: Haida Gwaii / Queen Charlotte Islands Public Meetings (PFRCC, released April 2009)

Applying the Salmon Stronghold Concept in Canada (Background paper authored for the PFRCC by Kenneth Beeson, June 2009)

Status of Pacific Salmon Resources in Southern British Columbia and the Fraser River Basin (Background paper authored by Marc Labelle, July 2009)

Freshwater for Fish and People: Moving Towards "Living Water Smart" (Background paper authored by Marc Nelitz, Tanis Douglas and Murray Rutherford, July 2009)

Freshwater for Fish and People (Council pamphlet, July 2009)

The Nisga'a Fisheries Management Program: A Model for Sustainability Under Stress (Council pamphlet, November 2009)



PACIFIC FISHERIES RESOURCE CONSERVATION COUNCIL
Conseil pour la conservation des ressources halieutiques du pacifique

PREPARED FOR

Pacific Fisheries Resource Conservation Council
Suite 290, 858 Beatty Street, Vancouver, BC V6B 1C1
www.fish.bc.ca