

**FINAL DRAFT**

**IDENTIFYING PLANNING UNITS AND PRIORITIZING INTEGRATED  
STRATEGIC PLANNING INITIATIVES UNDER  
THE WILD SALMON POLICY**

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## Introduction:

Canada's Policy for the Conservation of Wild Pacific Salmon (WSP) was released by the Department of Fisheries and Oceans in May of 2005. The overall goal of the policy is to restore and maintain "healthy and diverse salmon populations and their habitats for the benefit and enjoyment of the people of Canada in perpetuity". Specific policy objectives supporting the achievement of this goal include: safeguarding the genetic diversity of wild salmon; maintaining habitat and ecosystem integrity, and; managing fisheries for sustainable benefits.

To achieve these ends the policy identifies six strategies and associated action steps. The first three strategies are aimed at standardizing the monitoring of wild salmon population, habitat and ecosystem status. These strategies are intended to provide information on the current conservation status of the different genetic components of the salmon resource ("conservation units" in the policy's terminology) and trends in overall resource health. Under strategy four, the policy then calls for this information to be used in the development of "integrated strategic plans" that will address the biological status of the resource including its habitat and ecosystem while considering the needs of people. These plans and the specific operational activities and targets identified within the plans are intended to guide annual program delivery under strategy five and provide a basis for ongoing review of progress and overall performance of the policy under strategy six.

Since the release of the WSP, implementation has been proceeding. In particular, considerable work has been undertaken under strategy 1 of the policy to delineate the various distinct elements of the wild salmon resource that should be the focus for conservation efforts. Also, additional work has been undertaken towards developing criteria and benchmarks for assessing wild salmon population, habitat and ecosystem status. Finally, one pilot project has tested on a preliminary basis the strategic planning procedures called for in strategy 4 of the policy. A further pilot project is in the initial stages of development.

This paper is intended to assist the Department with further implementation of the Wild Salmon Policy. In particular, the paper deals with implementation of the integrated strategic planning called for under strategy 4 of the policy. In many ways strategy 4 represents the heart of the policy. The first three strategies and associated action steps identified under Canada's Pacific Wild Salmon Policy involve the development of standardized information on the overall health of the wild salmon resource. While this is certainly important and is a necessary foundation for ultimately achieving resource conservation, it is how this information is to be used that is the central element of the policy.

Strategy 4 calls for this information to feed into open, multi-interest planning processes that use a structured procedure to develop comprehensive and integrated strategic plans for the

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wild salmon resource. These plans are intended to balance both the conservation needs of the resource and the interests of people at both local and regional scales.

To facilitate on the ground implementation of this element of the policy, two inter-related practical issues need to be addressed. First, the appropriate biological and geographic scope of the strategic planning efforts and second, how the resulting work load will be managed needs to be determined.

To assist in addressing these issues, the paper reviews in detail the intended purposes of the strategic plans and the descriptions of integrated strategic planning outlined under strategy 4 and related parts of the Wild Salmon Policy and other associated documents. Also, the results of ongoing work under policy implementation are considered. Through this the paper attempts to identify the biological and geographic scope of the planning structures needed in the longer term to achieve the objectives and the overall goal of the policy. The paper then looks at strategic planning through a more practical lens of what can be achieved in the shorter term in order to help create these planning structures. A number of priority initiatives are also suggested in order to move this element of policy implementation forward in a positive way.

## What needs to be conserved under the Wild Salmon Policy

The Wild Salmon Policy represents a high level strategic plan aimed at conserving Canada's Pacific wild salmon resources. The WSP encompasses a Vision for the wild salmon resource (reflected in its goal), a set of three strategic objectives aimed at achieving this Vision and a set of associated tactics (reflected in its six strategies).

The first strategic objective of the Wild Salmon Policy is to "safeguard the genetic diversity of wild salmon". A first key element of this is to identify the various components of genetic diversity that need to be safeguarded. Under Strategy 1, action step 1.1 of the policy calls for this to be done through the delineation of "Conservation Units" that consist of "one or more genetically similar interbreeding populations and have a defined geographic distribution".<sup>1</sup> These conservation units then form the ultimate target of conservation efforts under the Policy. Subsequent tactics including the monitoring and assessment of biological, habitat and ecosystem status are framed around these conservation units. Also, the more refined second level of strategic planning called for under strategy 4 of the policy is intended to directly address the biological, habitat and ecosystem status of these conservation units. Finally, subsequent operational planning and policy performance review are intended to be designed around and use these conservation units as a basis for progress accounting.

Work by Holtby et al ("Conservation Units for Pacific Salmon under the Wild Salmon Policy") has made significant progress towards identifying appropriate conservation units of Pacific salmon. This paper outlines a comprehensive methodology that characterizes the diversity of wild salmon along three major axes: ecology, life history and molecular genetics. Applying this methodology to Canada's Pacific salmon, the authors identify an estimated 420 distinct conservation units that need to be safeguarded under the WSP. The number of conservation units ranges significantly between species. For even year pink salmon there are 13 conservation units identified while for sockeye salmon 238 lake and river type conservation units are identified. (See Table 1) Within species, the defined geographic distribution of individual conservation units often varies widely in size.

Each of these conservation units represents a significant element of salmon diversity that the WSP seeks to conserve. Each conservation unit includes both populations and a defined geographic distribution that needs to be conserved. This requires conservation of the populations as well as the habitat and the ecosystem within each defined geographic distribution.

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<sup>1</sup> "Canada's Policy for the Conservation of Wild Pacific Salmon" – Page 16

**Table 1**  
**Conservation Units for Canada's Pacific Salmon**

Species	Number of Conservation Units
Pink Odd Year	19
Pink Even Year	13
Chum	39
Coho	43
Chinook	68
Sockeye-River	24
Sockeye-Lake	214
<b>Total</b>	<b>420</b>

Source: Holtby et al - "Conservation Units for Pacific Salmon Under the Wild Salmon Policy" – Page 72

It is for this reason that strategies one through three of the policy are focussed at the level of conservation units. If all are to be protected, then it is essential to have information on their current conservation status and changes in this status over time. Strategy one is intended to track the status of CU populations, strategy two is intended to track the status of the habitat on which these populations depend and strategy three is intended to eventually track the status of the ecosystem in which they are a part.

## What needs to be integrated in Wild Salmon Policy Planning

As noted above, the Wild Salmon Policy is itself a high level strategic plan for the conservation of Canada's wild Pacific salmon. However, the Policy explicitly recognizes that a high level strategic plan is really insufficient to achieve conservation of the wild salmon resource. The complex management problem represented by Pacific salmon needs additional subsidiary planning to proceed at a much more refined level if conservation is to be achieved.

In effect, because of the diverse geography and biology of wild salmon and the wide range of localized activities that can impact the resource, more detailed planning is needed at the scale of local areas. To be effective, conservation plans are required that are tailored to the specific biological circumstances of the different component populations and the geographic areas where these fish reside and migrate through.

Strategy 4 of the policy calls for information from strategies 1 to 3 to be used to produce "integrated long-term strategic plans to achieve the goal and objectives of the WSP".<sup>2</sup> More specifically the plans are described as needing to "integrate information on conservation unit and habitat/ecosystem status and:

- Specify long term biological status (targets) for conservation units and groups of conservation units;
- Identify recommended resource management actions to protect or restore salmon, their habitats and ecosystems in order to achieve the targets, and;
- Establish time frames and priorities for action."<sup>3</sup>

However, integration of information on resource status is only a starting point. The full vision of integration provided in the WSP is much more ambitious.

The goal and objectives of the WSP encompass two distinct elements. While the first relates to the restoring and maintaining the resource itself, the second element relates to people. The overall purpose of restoring and maintaining the resource is "for the benefit and enjoyment of the people of Canada in perpetuity". This is also more explicitly reflected in the strategic objective of "managing fisheries for sustainable benefits".

Consequently, a further key element of integration under the WSP is the integration of the social and economic interests of people with the conservation needs of the resource. This means that both consumptive and non-consumptive interests in salmon must be accounted for as well as biological considerations in establishing the targets and the time frames for their

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<sup>2</sup> "A Policy Framework for Conservation of Wild Pacific Salmon" – Page 26.

<sup>3</sup> "Canada's Policy for the Conservation of Wild Pacific Salmon" – Page 24.

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achievement within the plans. For example, First Nations cultural as well as subsistence and financial interests in salmon must be balanced within the plans. Also, more generally, commercial and recreational consumptive and environmental non-consumptive interests must be balanced within the plans.

A further key element of integration under the WSP is the integration of different types of information. Although science based information is intended to be the key element provided through strategies 1 through 3, the policy also identifies the need to supplement this with different types of knowledge from other sources. For example, Aboriginal Traditional Knowledge is explicitly acknowledged as important and was explicitly solicited in developing and defining the conservation units of the resource.

A final key element of integration relates to integration across the various stages of the salmon life cycle. The plans are described as encompassing all elements of the salmon life cycle “from the eggs in the gravel in parental generations’ to the eggs in the gravel produced by their offspring”.<sup>4</sup> This means that the plans need to reflect not only the interests of different harvesters and others with direct interests in the resource but must integrate these with watershed use and marine coastal area use as it relates to salmon. This anticipates integration with provincial government land, forest and water use planning processes as well as those of municipal and other local governments and agencies. In short, direct consumptive and non-consumptive interests in the salmon resource must, at least eventually, be integrated with the interests of other resource users that can both directly and indirectly impact on the health of the salmon resource through their activities.

Ultimately the policy calls for integrated plans that encompass fisheries, watersheds and marine areas throughout British Columbia and the Yukon and land and water use decisions that better support the needs of salmon.<sup>5</sup> At the highest level, all of these more localized plans need to be integrated in an overall plan for the resource. As noted in the policy “decisions made for each planning unit will collectively form the regional strategic plan for the management of fisheries and watersheds”<sup>6</sup>.

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<sup>4</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” - Page 24.

<sup>5</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” – Page 26.

<sup>6</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” – Page 47.

## How is integration to be achieved

In the longer term, the Policy envisages integration being achieved through a new planning structure. The Policy identifies bilateral consultations between Governments and First Nations as the foundation for this new structure. These consultations “will then need to be complemented by broader local and eventually region-wide input”<sup>7</sup>. The policy anticipates that these consultations will result in the establishment of local area planning committees for various sub-regions that can bring together all local First Nations governments, harvesters, community interests, local and regional government and other stakeholders. These committees would assess and analyze information and seek local consensus on such things as the long term biological targets for conservation units and for habitat and ecosystem status. The policy then envisages the various local interests and local plans being brought together in a region-wide forum “to confirm overall support and resolve any inconsistencies between local plans”<sup>8</sup>.

This very much reflects a “bottom up” approach to wild salmon planning that was initially described in an earlier consultation document on the WSP (see: “A Policy Framework for Conservation of Wild Pacific Salmon” – December, 2004). This document describes a geographically based local area planning structure that builds upwards through region-wide planning groups that provide advice for harvest management.<sup>9</sup>

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<sup>7</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” – Page 27.

<sup>8</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” – Page 29.

<sup>9</sup> “A Policy Framework for Conservation of Wild Pacific Salmon” – Appendix 3 – Pp 45-46.

## Implementation challenges

Attaining the level of detail in the plans and extent of integration in planning for salmon called for in the WSP is clearly challenging.

Most notably, local geographic area structures of the type and with the participation envisaged in the policy do not currently exist in most parts of the Pacific region. As noted in the policy, extensive consultations and extensive effort will be required to establish them.

A useful listing of some of the other challenges faced by the Department in achieving this ideal has been provided by Nelitz, Murray and Wieckovski in a report commissioned by the Suzuki Foundation (“Returning Salmon: Integrated Planning and the WSP in BC”).

There are data and information gaps for weaker/smaller conservation units that have not been historically monitored. Also, knowledge of ecosystem linkages is limited and appropriate ecosystem objectives are not generally established. These problems are compounded by issues of geography including the remoteness of many areas that makes it difficult and expensive to access. Addressing and filling these information gaps will take considerable time.

Other challenges identified by Nelitz et al that are significant in the context of this paper include 1) a lack of decision-making authority and 2) a lack of capacity.<sup>10</sup>

With respect to the first of these additional challenges, the Department of Fisheries and Oceans does not have blanket authority over all activities that can impact salmon. For example, the Department cannot unilaterally establish water or land use plans in the province. To be effective, the integrated plans described in the WSP inevitably require other governments and a number of other government agencies (outside of the Department of Fisheries and Oceans) that have a range of legal authorities that can impact salmon to be actively involved. At the same time, these governments and agencies do not have an explicit responsibility for salmon and cannot be forced to engage in planning or support plan implementation under the policy. Obtaining their productive involvement will need the planning process to link directly to their own priorities and responsibilities. Also, expecting strategic plans for wild salmon to substitute for other government agencies own internal planning processes and activities would be unrealistic. At best, strategic plans for wild salmon can help inform and be informed by these other plans.

With respect to the second additional challenge, integrated planning of the extensive scope described in the WSP will require significant time and resources to bring to fruition. Finding the

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<sup>10</sup> “Returning Salmon: Integrated Planning and the Wild Salmon Policy in BC” – Page 9.

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necessary planning time and resources within the context of other resource management priorities and limited budgets even within the Department of Fisheries and Oceans will be difficult. These difficulties are even more pronounced outside of the Department where First Nations, other harvesting groups and other interests often have only limited capacity and resources to engage in these types of planning efforts. Finally, finding the necessary resources and achieving the necessary level of commitment from other governments and government agencies that do not have explicit responsibility or concern over the salmon resource and have not been directly funded to deal with these issues will be the most challenging of all.

All of this speaks to a need to take a practical, efficient and incremental approach to strategic planning under the WSP.

Elements of this are explicitly recognized in the WSP. Action Step 4.1 of the policy calls for the establishment of an “interim planning process”.<sup>11</sup> This interim process envisages building on already existing planning processes related to salmon on both a more localized and regional scale. Specifically, it is noted that this interim process “will build on and expand the approach now used to develop IFMP’s (Integrated Fisheries Management Plans) for salmon”. The IFMP process uses both region-wide and more localized consultation processes (such as with commercial licence area committees and bi-lateral consultations with First Nations) to develop First Nations, commercial and recreational annual fishing plans. This Action Step also calls for the Department to establish “response teams” to provide advice on “priority” conservation units. These response teams would be drawn from local First Nations, already established local stewardship groups, local planning committees related to land and water and impacted commercial and recreational fishing interests. The response teams would be tasked with providing recommendations for re-building identified priority conservation units.

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<sup>11</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” – Page 26.

## **An appropriate geographic and biological scope for strategic plans**

Integrated strategic plans under the policy need to deal directly with the individual conservation units of the salmon resource that are the focus for conservation efforts. Also, WSP progress in achieving its goal and objectives needs to be tracked and documented in relation to these individual accounting units. While all of this seems to imply a need to develop plans for each of these distinct elements of the resource, strategic planning at this level of detail is largely impractical in both the short and even the long term and may also be inadvisable from a number of perspectives.

First, there will be inevitable inconsistencies if plans are developed at an overly disaggregated level. Independent plans for a number of different conservation units all resident within the same watershed or harvested in the same fisheries may reflect very different strategic directions. These inconsistencies would need to be resolved if plans are to be implemented. Second, planning in this highly disaggregated way is simply infeasible. A requirement to develop individual plans of the detail anticipated in the WSP for more than 400 conservation units is well beyond the available planning resources within government as well as the interest and energy of stakeholders and other parties to participate in any meaningful way.

In short, some way of amalgamating conservation units for planning purposes and reducing the number of individual planning initiatives that need to be undertaken is advisable. As stated in the policy there is a need “to bring together considerations of biology and geography in an organized way with social and economic considerations for practical and efficient planning and fully informed decision-making”<sup>12</sup>.

As noted above, in the long run the WSP anticipates this being accomplished through the establishment of local area planning committees for various sub-regions. Holtby et al’s methodology for identifying conservation units provides some possible guidance on the appropriate number and geographic scope of these local area committees.

The basis for the delineation of conservation units are the concepts of fresh water and marine adaptive zones (FAZ and MAZ). The underlying hypothesis is that “Pacific salmon populations found within each adaptive zone, whether it is in fresh water or the ocean, are more likely to be ecologically inter-changeable than with populations in different adaptive zones”<sup>13</sup>.

Fresh water adaptive zones for Pacific salmon were identified by the authors based upon a hierarchical ecological classification of fresh water ecosystems in British Columbia taken from

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<sup>12</sup> “Canada’s Policy for the Conservation of Wild Pacific Salmon” - Appendix 2 – Page 45.

<sup>13</sup> “Conservation Units for Pacific Salmon under the Wild Salmon Policy” – Page 10.

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“Ecological Aquatic Units for British Columbia” (Ciruna and Butterfield, 2005). Specifically, the second special scale in the hierarchy (Ecological Drainage Units) was principally used. Application of this methodology resulted in the delineation of 32 geographically discrete FAZ for Pacific salmon in British Columbia. A complete listing and a map of the FAZ identified by Holtby et al are provided in Appendix 1.

A similar methodology was applied to the ocean based upon the work of Augerot et al (1999). This resulted in the delineation of 12 Pacific salmon Marine Adaptive Zones on the Pacific coast with the same implications for transferability of salmon populations as the FAZ. Bringing together the FAZ and MAZ resulted in the delineation of 36 Joint Adaptive Zones (JAZ) for Pacific salmon in British Columbia.

The key feature of this approach is that the JAZ are the foundation for the subsequent delineation of conservation units. To quote Holtby et al:

“Pacific salmon Joint Adaptive Zones are the intersection of the fresh water and marine adaptive zones. They are an attempt at capturing the adaptive environment of Pacific salmon populations through their full life history. At this point in the analysis all populations that fall within a JAZ are considered a potential CU (except for lake rearing sockeye). This means that each JAZ contains at least one CU.”<sup>14</sup>

Subsequent further delineation of CU’s within each JAZ then proceeded through refinement of CU boundaries based upon genetic and life history variations.

The adaptive zones and in particular the fresh water adaptive zones identified in this work would seem an appropriate basis to eventually establish the local area planning committees anticipated by the WSP. For example, each FAZ represents a discrete geographic area that includes watersheds, rivers and streams that are by definition ecologically similar, likely need to be managed in similar ways and contain salmon populations that are “more likely to be ecologically inter-changeable”. From a socio-political perspective, these zones also likely accord well with First Nations traditional territories or at least encompass First Nations with similar interests and concerns related to salmon. Joint planning for all salmon species and for all conservation units of individual species within each adaptive zone could be facilitated in this way. Also the connection between the individual FAZ and identified Marine Adaptive Zones would provide an obvious linkage to appropriate marine area planning processes.

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<sup>14</sup> “Conservation Units for Pacific Salmon under the Wild Salmon Policy” – Page 15.

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This scale of planning also seems to accord well with the direction of the Province with respect to decision-making on natural resources within its areas of jurisdiction. The Province has recognized the need to shift from their current fragmented model of resource allocation to a more integrated and inclusive model based on ecosystem principles. This shift is reflected in the Province's "Living Water Smart" the water plan recently released by the BC Ministry of Environment (<http://www.livingwatersmart.ca>). This generally recognizes that the land and water base within watersheds provides a convenient way to look at ecosystems and a convenient base unit for better planning and integrating of resource demands, supply and protection. The plan calls for support to communities to do watershed management planning and for work with the private sector and communities to conserve and restore stream, wetland and waterway function and enhance some watersheds. This also links well with longer term provincial initiatives focussed on watershed governance that are collaborative "bringing all parties with interests in natural resource decision together in processes that are guided by a framework that is flexible and able to adapt to regional differences and circumstances"<sup>15</sup>.

In short, there is a reasonable likelihood of broad and active provincial engagement in salmon planning processes at the scale of freshwater adaptive zones.

Having stated the positive, it needs to be stated that this level of planning will not always accord well with the immediate and ongoing needs of the Department to plan for harvesting in the salmon fishery. Although there are some cases where commercial, recreational and First Nations food, social and ceremonial salmon harvesting is focussed on populations originating from within one adaptive zone, there are many instances where major fisheries are focussed on harvesting aggregates of conservation units that originate from multiple adaptive zones. For example, the north coast net fisheries for sockeye originating from the Skeena River watershed impact on numerous conservation units that originate from three different adaptive zones within the river. Similarly, the principal Fraser River sockeye salmon fisheries impact on populations from 9 FAZ within and outside of the River. The interests of fishers and others that are resident within each aquatic zone will not necessarily accord with those with a broader interest in the aggregate harvest. Integrating these broader interests into multiple plans developed at a FAZ scale will be problematic.

At the same time, ongoing changes particularly in the commercial salmon fishery, may at least partially resolve this problem. For a number of years the Department has been emphasizing a movement towards more terminal fishing under its New Direction Policy and its related Salmon Allocation and Selective Fishing policy initiatives. Also, under the more recent Pacific Integrated Fisheries Initiative (PICFI) there is a move towards share based management of the fishery. Share based management of fishing will require salmon harvest allocations to be

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<sup>15</sup> "Collaborative Watershed Governance Initiative: A Prospectus" – Page 1.

determined at a much more refined geographic scale than in the past. A specific proposal from some commercial fishers suggests that percentage shares of the allowable catch for each species be established by defined production areas along the coast.<sup>16</sup> This parallels some earlier work on the Wild Salmon Policy that suggested the establishment of planning units that would link together watersheds to the fisheries that affect them. A Policy Framework for Conservation of Wild Pacific Salmon identified 13 potential major watersheds and watershed groupings by geographic area along the Pacific coast that could be used as a basis to establish planning units for multiple salmon species.<sup>17</sup> (See Table 2)

**Table 2**  
**Suggested Fisheries Based Planning Units for Pacific Salmon**

Fisheries Production Areas	Target Species	Watersheds Included
Fraser River	All Species	Fraser, Thompson
South Coast Inside	All Species	Numerous
West Coast of Vancouver Island Outside	Chinook, Coho	Numerous
Somass River	Sockeye, Chinook, Coho	Somass
WCVI Inside	Sockeye, Chum, Chinook, Coho	Nitinat/Nootka Sound
Central Coast	All Species	Numerous
Skeena River	All Species	Skeena
Nass River	All Species	Nass
Queen Charlotte Islands	All Species	Numerous
Yukon River	Chum, Chinook, Coho	Yukon
Taku River	All Species	Taku
Alsek River	Sockeye, Chinook	Alsek
Stikine River	All Species	Stikine

Source: "A Policy Framework for Conservation of Wild Pacific Salmon" – Page 48.

<sup>16</sup> Commercial Salmon Advisory Board Committee on Options for Review and Evaluation (SCORE) Report – Pages 17 and 37.

<sup>17</sup> "A Policy Framework for Conservation of Wild Pacific Salmon" – Page 48.

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This early proposal suggests amalgamating planning for the conservation units (and implicitly the FAZ) within major river basins and watersheds such as the Nass, the Fraser and the Skeena. Also, the Central Coast is suggested as one planning unit. This would generally amalgamate for planning purposes the conservation units within four FAZ identified by Holtby et al including Hecate Lowlands, North Coastal Streams, Rivers/Smith Inlets and Bella Coola – Dean Rivers. However, in other cases, the proposal suggests planning at a scale well below the FAZ level. For example, the Somass watershed on the West Coast of Vancouver Island is suggested as a planning unit for sockeye, chinook and coho salmon conservation units originating from this geographic area. This is only a small component of a single West Vancouver Island FAZ identified by Holtby et al.

In summary, in order to practically implement the strategic planning called for in the Wild Salmon Policy an appropriate way of amalgamating conservation units for planning purposes is required. This is needed in order to facilitate internal consistency in plans for individual conservation units and to manage the number of planning efforts. These planning units still need to be fundamentally based on the conservation units of the resource that are the focus for conservation efforts and for ultimately tracking policy performance over time. These planning units also need to reflect and facilitate the extensive integration of biological, social and economic interests called for in the policy.

Establishing local area planning committees at the geographic scale of freshwater adaptive zones (as identified by Holtby et al) has much to recommend itself. Habitat, ecosystem and other conservation issues for salmon within these local areas are likely to be similar and susceptible to the development of consistent management prescriptions. Planning at this scale will also likely have considerable resonance for First Nations, local government and communities and perhaps for the Provincial government. In short, broad based local participation is likely that will substantially improve integration of social and economic interests in the local area and improve the range of actions that can be planned and ultimately taken to conserve the resource.

However, while planning at this scale will sometimes work well to integrate the full range of harvesting interests, this is unlikely to be the case for major watersheds and river systems along the coast and more generally where major fisheries impact on production from numerous adaptive zones. Harvest planning will sometimes need to proceed at a broader geographic scale. Salmon fishing in major watersheds will never be entirely terminal in the sense of focussed solely on local populations originating within individual FAZ. In these cases, any fishing except at the very headwaters will inevitably harvest mixed populations some of which originate elsewhere.

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All of this speaks to a need to create for some areas of the province a strategic planning structure under the WSP that encompasses two levels or tiers: a first level encompassing a number of local area committees that are primarily focussed on habitat and ecosystem related planning at the scale of freshwater adaptive zones and a second level that is primarily focussed on broader harvest planning at the scale of major watersheds and coastal areas.<sup>18</sup> The relationship between these two levels will be important. Harvesting plans developed at the local level of a FAZ cannot be expected to fully reflect the interests of fishers from outside the FAZ while harvesting plans developed in a broader regional forum cannot be expected to fully reflect the interests of fishers and others within a local area. Neither level can be given ultimate responsibility in the matter. Both levels will need to inform the other's deliberations and some means of finding consensus or resolving differences will be required.

The following table cross references the freshwater adaptive zones identified by Holtby et al (see Appendix 1) with an adaptation of the fisheries production areas proposed as planning units in "A Policy Framework for Conservation of Wild Pacific Salmon". This suggests that there are 10 geographic areas of the province (8 of which are trans-boundary areas) where a one tier local area planning structure may be adequate under the WSP including the West Coast of Vancouver Island and the Queen Charlotte Islands. This also suggests 5 other geographic areas of the province (including most of the coastal area of British Columbia) where two tiered planning under the WSP will likely be required in the long term including the Fraser and Skeena Rivers, South Coast Inside, the Central Coast and (to a lesser extent) the Nass River.

An alternative way of looking at this is that the strategic planning called for under the WSP could ultimately require that 32 local area committees be established at the level of FAZ. Ten of these, including eight in trans-boundary areas, may be stand alone committees for integrated planning purposes. However, 22 of the local area committees (in the Nass, Skeena, Central Coast, South Coast Inside and the Fraser River areas) will likely always need to be supplemented by and linked to harvest planning committees organized on a broader coastal area or watershed scale. Five specific fisheries production areas are suggested for this level of planning.

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<sup>18</sup> Both would also need to be linked to appropriate marine area planning processes.

**Table 3**  
**Potential Planning Units Under**  
**The Wild Salmon Policy**

<b>Freshwater Adaptive Zones*</b>	<b>Fisheries Production Areas**</b>	<b>Tier Two WSP Planning?</b>
Boundary Bay; Lower Fraser; Lillooet; Fraser Canyon; Middle Fraser; Upper Fraser; Lower Thompson; South Thompson; North Thompson;	Fraser River	Yes – at the level of the Fraser Drainage
South Coastal Streams; East Vancouver Island; Homathko-Klinakini Rivers;	South Coast Inside	Yes – at the level of South Coast Inside
West Vancouver Island;	Somass River; Nitinat/Nootka Sound;	No – production area planning can be incorporated in tier one planning
Rivers-Smith Inlets; Bella Coola – Dean Rivers; North Coastal Streams; Hecate Lowlands;	Central Coast	Yes – at the level of Central Coast
Queen Charlottes	Queen Charlottes	No
Lower Skeena; Middle Skeena; Upper Skeena;	Skeena River	Yes - at the level of the Skeena River
Lower Nass – Portland; Upper Nass;	Nass River	Yes – at the level of the Nass River
Unuk River	Unuk River	No
Lower Stikine	Stikine	No
Whiting River	Whiting	No
Taku	Taku	No
Lynn Canal	Lynn Canal	No
Alsek	Alsek	No
Teslin Headwaters	Teslin	No
Lower Liard	Liard	No

## Getting there from here

The previous section focussed on the new planning structure that may need to be created in the long run to fully achieve the fully integrated planning required by the wild salmon policy. The policy itself recognizes that creating this new structure will take considerable time. The policy also suggests that in the short term an interim process should build on and expand existing planning processes related to salmon. This section turns to consider what can be specifically achieved in the short run to move things forward in a productive way.

At present, there are numerous existing planning processes and initiatives related to salmon at various geographic scales and for a variety of purposes.

Some of these are focussed at very local levels and on very specific initiatives. For example, Species at Risk Act recovery and action planning initiatives are focussed on specific biological units deemed to be at risk. Also, there are Watershed-Based Fish Sustainability Planning (WFSP) initiatives that focus on a number of specific smaller watersheds throughout the region including the Chilliwak and Bonaparte Rivers and the Kispiox and Lakelse watersheds. A number of other local processes are indirectly related to salmon. For example, a Cowichan Basin Water Management Plan was developed by a round table of local interest groups. Also, a Nootka Coastal Land Use Plan was developed by a similar group of local interests in the area of Nootka Sound.

One element of a short term strategy to implement strategic planning under the WSP could be to build on these existing local processes to create the local area committees necessary under the WSP. For example, the local participants in already established WFSP initiatives could be encouraged (perhaps through funding support) to take leadership in expanding the scope of their planning activities beyond the local area to encompass the associated FAZ. Alternatively, the Department could itself take the lead in establishing local area planning committees at the scale of the FAZ within areas where local initiatives are already in place using the existing planning structure both as a base and a model. Either approach would provide strong encouragement to the participants in these existing local processes by endorsing their efforts. Also, in time, best practices from these initiatives could help to guide the eventual establishment of local area planning committees for FAZ in other parts of the province where they do not presently exist.

Establishing local area planning structures throughout the province particularly where there is no pre-existing local initiatives will undoubtedly take considerable time. However, there are good opportunities to build more extensively and immediately on existing local processes in at least two areas of the province.

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First, on the west coast of Vancouver Island, an Aquatic Management Board (AMB) has already been established ([www.westcoastaquatic.ca](http://www.westcoastaquatic.ca)) The membership of the AMB is comprised of representatives from federal, provincial, Nuu-chah-nulth First Nation and local governments together with a broadly representative group encompassing commercial, recreational and First Nations harvesting, processing, tourism, environmental, labour and aquaculture interests. The area of interest of the AMB almost exactly matches the West Vancouver Island FAZ identified by Holtby et al. The range of interests represented on the AMB almost precisely covers the range of interests required by the local area committees that are anticipated under the WSP. In addition, the AMB has already shown its strong interest in participating in local area strategic planning related to salmon. In January 2007, the Board released for public consultation a draft “Wild Salmon Strategy” that would be a useful starting point for the development of a comprehensive strategic plan for the salmon resources of the West Vancouver Island FAZ. Using the AMB to lead the pilot development of a comprehensive integrated management plan for salmon at the scale of the WCVI FAZ should be a clear priority.

Second, under the Nisga’a Treaty, planning processes related to Nass River salmon that include Nisga’a, federal and provincial government participation have been in place for some time. A joint fisheries committee considers matters related to the harvesting and enhancement of salmon resources and other matters. Building on these established processes to create a local area planning committee tasked with developing a comprehensive strategic plan for Nass River salmon could be fairly straightforward. Commercial fishing interests related to Nass River salmon are relatively discrete and identifiable. Although there may be some challenges related to the Upper Nass due to other First Nations interests in this area, these may be resolvable through discussion. Building on these existing local planning processes to pilot development of an integrated management plan for Nass River salmon could be an additional priority.<sup>19</sup>

Other existing planning processes related to salmon are focussed at a broader geographic scale. For example, the integrated fisheries management planning process for salmon is aimed at developing comprehensive annual First Nations, commercial and recreational fishing plans. Similar but even broader processes between Canada and the United States relate to implementation of the Pacific Salmon Treaty.

A second element of a short term strategy to implement strategic planning under the WSP could involve building down from these existing higher level processes. Current IFMP processes

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<sup>19</sup> A strategic plan developed for the salmon resources of the entire Nass River would encompass two FAZ identified by Holtby et al (Lower Nass – Portland and Upper Nass). As such, this would usefully test planning structures and procedures for major drainage basins and river systems that encompass multiple FAZ.

largely aim at establishing allowable catches and fishing arrangements for the upcoming fishing season. This could be supplemented with new initiatives aimed at providing longer term i.e. multi-year decision rules for determining harvest levels from specific drainage basins and major watersheds.

A pilot strategic planning initiative already undertaken for Fraser River sockeye salmon illustrates this approach. Under the Fraser River Sockeye Spawning Initiative (FRSSI), the Department brought together First Nations (from both within and outside of the watershed), commercial fishers, recreational fishers, non-government environmental association members as well as provincial and federal government agency staff in a workshop setting. Using the structured decision-making process recommended in the WSP, workshop participants were engaged in developing guidelines for setting escapement and exploitation targets for Fraser River sockeye. This effort encompassed approximately 30 distinct lake based sockeye conservation units as well as an additional 7 river-type conservation units based upon the methodology of Holtby et al.

The overall results from this planning pilot were promising. The main product of this initiative is a long term approach for setting escapement targets and exploitation rates for four different run timing groups of Fraser River sockeye. More specifically, the approach specifies for each run timing group:

- A low run size below which no fishing except for stock assessment purposes should occur;
- An intermediate range of run sizes where a fixed escapement target and declining allowable mortality (including harvest related mortality) rate should apply;
- A higher run size at and above which a maximum total allowable mortality (including harvest related mortality) rate of 60% should apply.

These escapement targets and exploitation rates were developed through detailed computer simulations of the impacts of a wide range of alternative escapement and exploitation rate scenarios 48 years into the future. The results of the simulations were then compared based upon their performance relative to both biological and socio-economic performance indicators developed through the multi-party workshops. The selected approach was essentially judged best able to protect the component conservation units within the run timing groups in relation to low escapement benchmarks while stabilising the total harvest across all fishing sectors in aggregate.<sup>20</sup> As such, it very much reflects the integration of biological, social and economic considerations that is intended by the WSP.

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<sup>20</sup> For more detail see: "Collaborative Development of Escapement Strategies for Fraser Sockeye: Summary Report 2003-2008" – Pestal, Ryall and Cass – Canadian Manuscript Report of Fisheries and Aquatic Sciences 2855 - 2008

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Most importantly, the FRSSI initiative has helped to focus harvest planning for Fraser sockeye onto a longer term perspective. The plan does not relate to a single season but reflects an overall approach to harvesting that encompasses the full range of potential run sizes. This is a substantial and useful extension of the current IFMP planning process beyond current year considerations that fits well with the direction of the WSP.

The FRSSI does not fully achieve the vision of integration presented in the WSP. It included only limited participation by the Province and there was effectively no participation by municipal or regional district governments within the Fraser watershed. Also, although knowledgeable First Nations persons participated in the plan's development, they did not do so as representatives of First Nations governments'. Consequently, FRSSI does not effectively integrate broader use of resources within the Fraser basin and is almost entirely focussed on harvest management initiatives. However, the plan developed may directly encourage the establishment of more localized planning infrastructure within the watershed and represents a sound basis for discussion with local interests within the Fraser basin as appropriate local area committees are established over time. It also meets a long term need for a comprehensive approach to fisheries planning and management related to the Fraser drainage area. As such, it starts to develop the planning structure required to meet the longer term integrated planning needs of the WSP.

Consequently, another suggested short term priority is to extend FRSSI type planning to other salmon species and to other major river systems and drainage areas (such as the Skeena River, South Coast Inside and the Central Coast regions) that encompass numerous freshwater adaptive zones contributing to multiple major fisheries. In these areas harvest planning at this geographic scale will be needed longer term under the WSP. Initiating this type of planning will anticipate this need and directly contribute to implementation of strategy 4.

## Summary and conclusions

This paper has reviewed the overall intent of the Wild Salmon Policy and the specific role that Strategy 4 of the policy (Integrated Strategic Planning) is intended to play in achieving its goal and objectives. In order to implement this element of the policy, clarity is needed on the appropriate biological and geographic scope of planning efforts and how the overall work load will be controlled and managed.

The planning units used in implementation and ultimately the strategic plans produced will need to address the individual conservation units of the resource. However, planning at the level of more than 400 individual conservation units is not practical. Some way of amalgamating these units for planning purposes will be required in order to facilitate internal consistency and manage the number of planning efforts.

A fundamental criterion for amalgamating conservation units for the development of integrated plans under the policy should be similarities in adaptive environment. It is suggested that establishing planning units at the scale of freshwater adaptive zones would be an appropriate way to proceed. This would imply the long term need to establish 32 local area planning committees at the level of the FAZ identified by Holtby et al. One short term priority for the Department under this criterion should be to opportunistically build on and expand existing smaller local area planning processes such as WFSP initiatives to encompass the surrounding freshwater adaptive zones.

A further suggested priority for the Department under this criterion is the early development of a comprehensive example of an integrated strategic plan as called for in the policy. This would be useful to clarify both the process and the output anticipated from strategic planning under the WSP, assist in identifying pitfalls and problems and illustrate the potential value of planning. This will help to provide guidance to the planning efforts and encourage more general participation in the development of the necessary planning infrastructure throughout the province.

From the perspective of obtaining an early example, the west coast of Vancouver Island has much to recommend itself. The necessary planning infrastructure (in the form of an existing Aquatic Management Board) and necessary local interest in engagement in salmon planning are largely in place. Also, fishing interests for salmon populations originating from the west coast Vancouver Island FAZ are more readily identifiable and susceptible to integration into a single level integrated planning process than in many other areas. It would seem to be the geographic area of the province where it is most feasible to develop a comprehensive example of a plan fairly quickly. The Nass River is an additional area where it may be possible to advance comprehensive strategic planning for salmon fairly readily.

In many parts of the province it will take considerable time to develop and establish the necessary local area committees. Also, in parts of the province where there are major fisheries that impact many conservation units originating from multiple Freshwater Aquatic Zones, local planning at the level of FAZ will never work well to fully integrate harvest management

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considerations. In these instances there will be a long term need to supplement local area planning with additional planning at the level of major watersheds and watershed groupings. Where these second tier planning structures are necessary they will need to focus primarily although not exclusively on long term decision rules for harvesting of conservation units originating from the appropriate FAZ aggregates.

In recognition of this, a further short term priority for the Department should be to extend FRSSI type fisheries planning initiatives to other species on the Fraser and other parts of the coast (such as the Skeena River, South Coast Inside and the Central Coast) where they are likely to be needed longer term. Since these initiatives would be focussed on harvest planning which is more directly under the Department's control, these could proceed well in advance of the establishment of local area committees in these areas. In fact, these planning initiatives may directly assist to encourage the establishment of appropriate local area committees within the watersheds or coastal areas. Although it is suggested in this paper that these may ultimately be established at a FAZ scale in order to ensure participation of the full range of local interests needed for fully integrated planning, it is possible that local circumstances may result in more aggregated local structures in some areas.

Proceeding in this way in the short term should allow the Department to immediately advance planning for salmon along the lines called for in the Wild Salmon Policy. More importantly, in the long term, it should enable the Department to proactively evolve the new planning structures required by the Wild Salmon Policy.

## Appendix 1. Freshwater Adaptive Zones of British Columbia

Table 51. The number, descriptive name and acronym for each of the 32 Freshwater Adaptive Zones (FAZ) in British Columbia. The FAZ index increases with latitude. The mean coordinates are of the SEDS sites within each FAZ.

FAZ	FAZ acronym	FAZ code	number of sites	mean latitude	mean longitude
Okanagan	OK	1	1	49.06	-119.51
Boundary Bay	BB	2	12	49.06	-122.67
Lower Fraser	LFR	3	145	49.28	-122.18
Lillooet	LEL	4	18	50.28	-122.70
Fraser Canyon	FRCany	5	20	49.61	-121.47
Middle Fraser	MFR	6	263	51.18	-122.97
Upper Fraser	UFR	7	45	53.65	-120.89
Lower Thompson	LTh	8	21	50.32	-120.99
South Thompson	STh	9	81	50.91	-119.18
North Thompson	NTh	10	48	51.70	-119.70
S Coastal Streams	SC	11	253	50.24	-124.93
E Vancouver Island	EVI	12	128	49.59	-125.03
W Vancouver Island	WVI	13	321	49.58	-126.14
Hesquotika - Khasaklani Rivers	HK	14	6	51.06	-125.25
Rivers-Smith Inlets	RSH	15	31	51.61	-127.10
Bella Coola - Dean Rivers	BCD	16	41	52.38	-126.51
Queen Charlotte	QCI	17	250	53.01	-131.98
N Coastal Streams	NC	18	125	53.35	-128.42
Hecate Lowlands	HecLow	19	290	52.97	-129.11
Lower Skeena	LSK	20	114	54.46	-128.79
Middle Skeena	MSK	21	121	55.10	-127.25
Upper Skeena	USK	22	22	56.43	-127.45
Lower Nass - Portland	LNR-P	23	78	55.00	-129.81
Upper Nass	UNR	24	24	56.05	-129.01
Uyak River	UYUR	25	2	56.35	-130.74
Lower Stikine	LSik	26	19	57.21	-131.43
Whiting River	Whitng	27	1	58.18	-133.20
Taku	Taku	28	19	58.75	-132.76
Lynn Canal	Lynn	29	4	59.66	-136.04
Aleak	Aleak	30	9	59.81	-137.31
Techin Headwaters	TechHW	31	4	59.72	-132.32
Lower Liard	Liard	32	1	59.52	-124.07

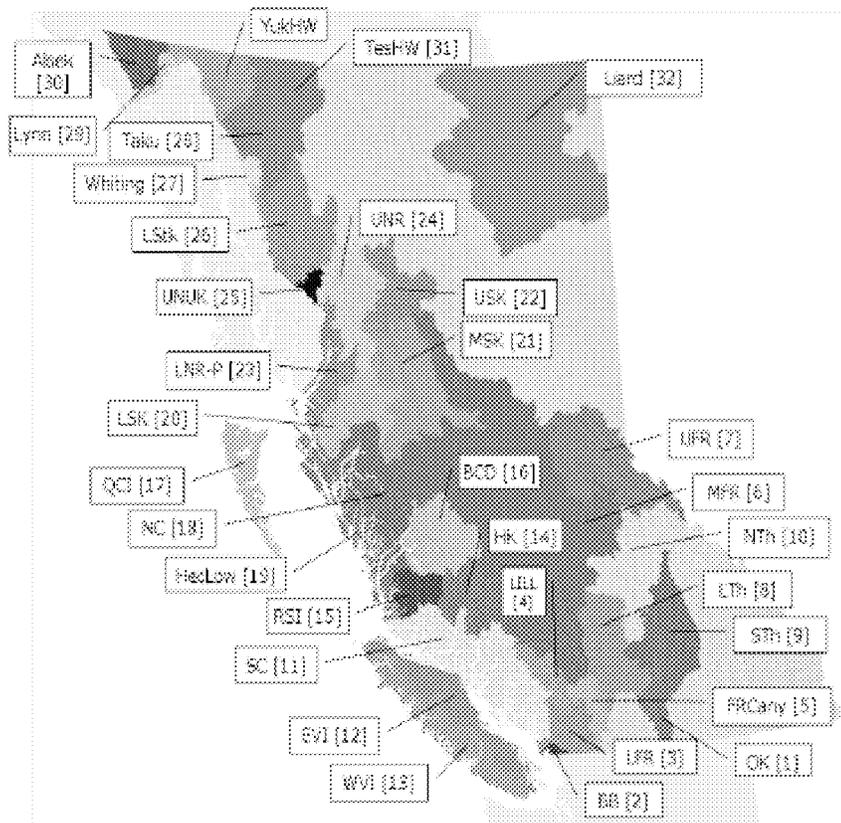


Figure 76. Map of British Columbia showing the Freshwater Adaptive Zones (FAZ) from Table 50.

Source: Holtby et al - "Conservation Units for Pacific Salmon under the Wild Salmon Policy"

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