Chapter 10 • Wild Salmon Policy

My Terms of Reference require me to address the future sustainability of the Fraser River sockeye fishery. *Canada's Policy for Conservation of Wild Pacific Salmon* (2005) (known as the Wild Salmon Policy, or WSP) is of particular relevance in this assessment because it was developed to change the approach of the Department of Fisheries and Oceans (DFO) to conservation and management of the resource.

The previous chapters of this Report have addressed various components of management relevant to Fraser River sockeye, including the organization of the department, applicable policies, management of the harvest, and management of fish habitat. The Wild Salmon Policy (see Appendix B) has been put forward as a new approach to integrate all these components and to provide guidance and focus for DFO as it manages all the Pacific salmon. Although the focus of this Inquiry was Fraser River sockeye, the WSP applies to all Pacific salmon species, many (if not all) of which coexist at some point in their life cycles with Fraser River sockeye. This chapter will necessarily focus on the Wild Salmon Policy as it relates to Fraser River sockeye, but the challenges and issues raised will at times reflect the application of the policy in a more general way.

The June 24, 2005, press release announcing the policy quotes Minister Geoff Regan as saying, "The Wild Salmon Policy significantly transforms the management and conservation of wild salmon, their habitats and dependent ecosystems."[1] Claire Dansereau, deputy minister, described the Wild Salmon Policy as an essential policy for DFO, "a priority policy on the West Coast," and DFO's "guiding document for the management of Fraser sockeye."[2] Pat Chamut, former assistant deputy minister, described the policy this way:

> [T]he Wild Salmon Policy is probably one of the few things that actually meets the definition of transformative. It is fundamentally changing the management of wild salmon … I've dealt with management of Pacific salmon since probably 1985 through till I retired in one form or another, and it was always fraught with inevitable conflict and debate over what are we

> trying to conserve? How much are we trying to conserve? And how are we going to do it?
> …
> [I]t really lays to rest a longstanding issue about what we're trying to conserve. And I'm absolutely convinced that the policy with the way it defines conservation, the way it defines … how sustainable use will be achieved and how we're going to proceed in terms of an integrated, strategic sort of watershed plan, I think it is transformative. I believe it is a very strong policy that provides a good foundation for the department to meet its objectives for Pacific salmon.[3]

According to Susan Farlinger, regional director general, Pacific Region, the Wild Salmon Policy is "the most explicit description of what [DFO] means when it says conservation is the highest priority of [DFO] ... it is something that sits at the centre of the other policies because it defines for us how we intend to or want to implement our first priority, which is conservation." It expresses "how we're going to implement the Precautionary Approach for salmon."[4] For further discussion of the precautionary approach, see Chapter 3, Legal framework.

The Wild Salmon Policy sets out an integrated approach to the management of wild salmon on the Pacific coast, including the gathering of information relating to salmon and salmon habitat and planning for conservation and harvest. Its goal is stated to be "to restore and maintain healthy and diverse salmon populations and their habitats for the benefit and enjoyment of the people in Canada in perpetuity."[5] The WSP sets out six strategies, all of which are to be implemented by specific action steps:

Strategy 1:	Standardized monitoring of wild salmon status
Strategy 2:	Assessment of habitat status
Strategy 3:	Inclusion of ecosystem values and monitoring
Strategy 4:	Integrated strategic planning
Strategy 5:	Annual program delivery
Strategy 6:	Performance review

In this chapter I discuss the efforts made by DFO to implement the policy, the challenges faced by DFO in implementation, and the impact of implementing the policy on Fraser River sockeye and the sustainability of the fishery. The challenges related to the WSP include incomplete implementation; lack of funding to implement the policy; reliance on reductions in harvest rate to protect stocks at risk, without exploring alternative measures such as habitat restoration; and lack of socio-economic considerations in integrated planning.

The Wild Salmon Policy originated in DFO's New Directions suite of policies of the late 1990s and early 2000s.[6] As described in Chapter 4, DFO overview, New Directions set out Canada's conservation mandate for Pacific salmon, and the Wild Salmon Policy became a key component of that mandate. *A New Direction for Canada's Pacific Salmon Fisheries* (New Directions Policy, October 1998) states, as Principle 1, that "[c]onservation of Pacific salmon stocks is the primary objective and will take precedence in managing the resource," and continues as follows:

> The new conservation ethic involves ensuring that adequate numbers of salmon spawn each year, that successful reproduction takes place and that genetic diversity is maintained. Effective conservation of salmon also requires that harvest management be integrated with production management on a watershed basis. Habitat and enhancement planning should complement harvest management and ensure escapement goals are consistent with the productive capacity of the habitat.
>
> Ultimately, conservation goals must be established at levels that optimize productive capacity and benefits to the people of Canada. To accomplish these goals integrated watershed plans will be prepared in consultation with public stakeholders.
> …
> This document sets out the broad policy direction associated with a new approach to the Pacific salmon fisheries. Based on this direction, a detailed set of operational policies for the management of the salmon resource will be developed. Consultations with the public, communities and stakeholders will now begin. The Government of British Columbia will be included in this process. These policies will cover the full range of activities involved in the management of the resource, including salmon allocation, selective fishing, and a wild fish policy.[7]

DFO also described the development of the Wild Salmon Policy as its response to criticisms set out in

reports from the Office of the Auditor General in 1997, 1999, 2000, and 2004. In Chapter 20 of the 1999 report, entitled *Pacific Salmon: Sustainability of the Fisheries*, one of the recommendations stated that DFO should "facilitate the application of the precautionary approach to salmon fisheries management by establishing catch levels and conservation limits for individual stocks or groups of stocks."[8] DFO responded:

> This recommendation is consistent with the Wild Salmon Policy now under development by the Department. The policy, which is based on the precautionary approach, will establish escapement levels and target harvest rates that will ensure long-term sustainability. This work goes hand-in-hand with the requirement to establish conservation units and will be a central feature of departmental science input to fisheries management.[9]

Similar recommendations were made in a previous audit in 1997, and in subsequent audits in 2000 and 2004.[10]

I also heard evidence on how the Wild Salmon Policy helped to maintain biodiversity within the species. Dr. Brian Riddell, former division manager, Salmon Assessment and Freshwater Ecosystem Division, Science Branch, DFO Pacific Region, was one of the early authors of the policy. In his testimony, he spoke of the importance of biodiversity in Pacific salmon: "[I]t's that diversity of Pacific salmon that allows them to widely utilize the habitat[;] it provides both the opportunity for maximizing production throughout all the habitat, as well as provid[ing] the genetic diversity required for adaptation through time."[11] Dr. Riddell's evidence complements that of Mike Lapointe, chief biologist, Pacific Salmon Commission, who described the importance of biodiversity by analogy to an investment portfolio:

> In terms of why it's important, a whole host of reasons. But primarily because these stocks do have different traits, and those traits may confer them some survival advantage to particular environmental factors or other factors that affect them. It's very much analogous to ... a stock portfolio. If you have some populations that do better in some circumstances than others, then having a very diverse portfolio means that your group of populations is much more likely to persist in the event that there is some set of environmental factors that would threaten their existence. A good example would be something like climate change. Some of these populations may very well be more robust to warmer temperatures in adverse conditions than others ... From a species sustainability perspective, diversity is definitely an advantage.[12]

According to Dr. Riddell, there is "no question that diversity in Pacific salmon is essential for their continuance and for sustainable benefits," and that the Wild Salmon Policy developed from an evolving awareness of the importance of protecting biodiversity.[13]

In testimony relating to Technical Report 9, Climate Change, one of the co-authors, Dr. Scott Hinch, provided an example of a benefit of maintaining biodiversity. He said that some salmon stocks may have already reached their evolutionary capacity to adapt to climate change, raising the question as to whether efforts should be made to conserve such stocks. He also said, however, that it was "paramount to protect as many populations as possible, because we don't know what environmental conditions are going to change ... in all the different life stages, and there will be some populations that may be able to cope particularly well."[14]

Dr. Riddell outlined how the period from 1980 to 2000 saw major changes in scientific thinking about the importance of biological diversity in resource management.[15] These two decades represented a significant period of reassessment in fisheries science, with changes to salmon fisheries developing especially since the mid-1990s. It featured new international treaties – the Pacific Salmon Treaty (1985) and the *Convention on Biological Diversity* (1992) – as well as key scientific developments and major environmental events. Such changes "occurred with a broadening development of Canada's salmon enhancement program and associated debates, listings of Pacific salmon under the *Endangered Species Act* in the United States, the development of wild salmon policies and recovery programs in Washington State, Oregon, and California, and the heightened debate between users within Canada under the Pacific Salmon Treaty," as well as "increasingly vocal environmental concerns about biodiversity and ecosystems."[16]

In his testimony, Dr. Riddell identified three principles that he believed needed to be

incorporated into managing salmon diversity. First, because evolution is a continuous process, the adaptability of salmon must be maintained. Second, salmon genetic diversity develops in the context of habitat and ecological diversity, and the connections among salmon, habitats, and ecosystems are natural and required. Third, maximizing salmon production and salmon diversity are consistent objectives, and management debates about the "trade-off" between these values are actually about the rate of use, and not total production.[17]

Dr. Riddell was asked whether he agreed that the degree of biological diversity that should be conserved was a question for society, rather than a purely scientific question. He replied that, although he would have a primarily biological perspective, the Wild Salmon Policy acknowledges other perspectives in its integrated planning process (Strategy 4), where "[t]here are choices to be made in how much of the diversity will be sustained at what cost."[18]

In discussing Cultus Lake sockeye, Dr. Carl Walters, professor of applied ecology and fisheries population dynamics at the University of British Columbia, noted that, where smaller, vulnerable stocks – for example, Cultus Lake sockeye – are harvested together with big stocks, a trade-off decision has to be made "whether it's worth trying to protect these small stocks, the small and unproductive stocks."[19]

The Wild Salmon Policy expressly states that all decisions and activities pertaining to the conservation of wild Pacific salmon will be guided by the following four principles:

> Principle 1 – Conservation – Conservation of wild Pacific salmon and their habitats is the highest priority in resource management decision-making ...
>
> Principle 2 – Honour Obligations to First Nations – Resource management processes and decisions will honour Canada's obligations to First Nations ...
>
> Principle 3 – Sustainable Use – Resource management decisions will consider biological, social, and economic consequences, reflect best science including Aboriginal Traditional Knowledge (ATK), and maintain the potential for future generations to meet their needs and aspirations ...
>
> Principle 4 – Open Process – Resource management decisions will be made in an open, transparent and inclusive manner.[20]

Figure 1.10.1 from the Wild Salmon Policy usefully illustrates its guiding principles, strategies, objectives, and ultimate goal.

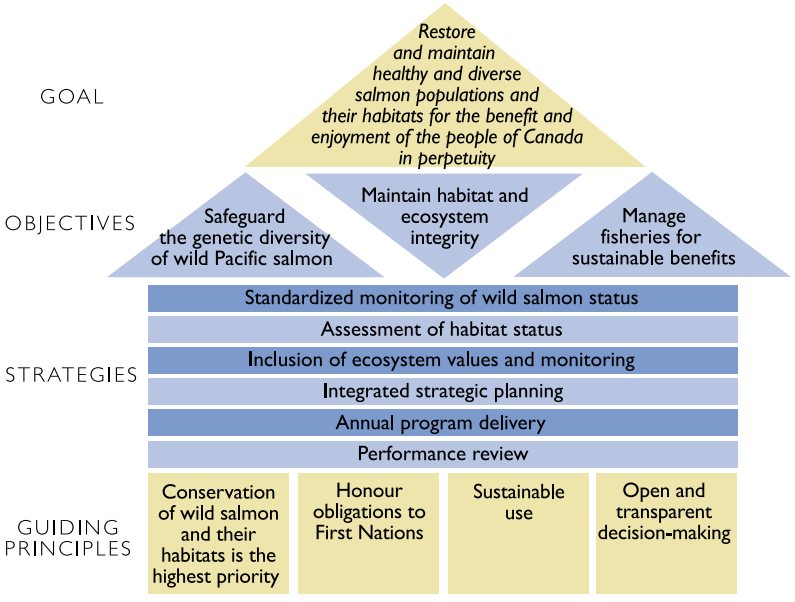

Figure 1.10.1 Overview of the Wild Salmon Policy

Source: Exhibit 8, p. 8.

Development of the Wild Salmon Policy

Development of the Wild Salmon Policy began in DFO's Science Branch in the Pacific Region.[21] Mark Saunders, former WSP coordinator and current head, Salmon Assessment and Freshwater Ecosystems (SAFE), DFO Science, became involved with developing the WSP in April 2003, when he was posted to the Policy Branch as the WSP coordinator, a position he held until 2007. With Mr. Saunders's appointment, DFO established a cross-sectoral WSP development team, with some direction from a WSP steering committee of regional directors. The team included Dr. Jim Irvine, research scientist with DFO Science; Dr. Riddell; Sandy Fraser, from Fisheries and Aquaculture Management (FAM); Andrew Thomson, the lead on aquaculture issues; and Carol Cross, from the Oceans, Habitat and Enhancement Branch (OHEB).[22] Ms. Farlinger, then regional director of OHEB, was also involved, working closely with Mr. Chamut later in the development of the policy.[23]

In January 2004, at the request of the deputy minister, Mr. Chamut was appointed as a special advisor on the WSP. For the next 18 months, he worked in the Pacific Region to finalize the development of the policy.[24] He noted that, during development, he served as a "focal point," responsible only for the Wild Salmon Policy and able to dedicate all his time and effort to it, supported by a team of people.[25]

Mr. Saunders said it was important to have somebody in a position of authority tasked with finalizing the WSP.[26] He outlined a range of contentious issues in 2003: what to conserve; what level of biodiversity DFO would commit to manage and protect; how to apply the precautionary approach, including whether DFO should be prescriptive or should move toward non-prescriptive benchmarks; and the definition of conservation.[27]

A key challenge was to determine the process for making trade-offs between biological and conservation objectives, and between social and economic objectives. DFO needed to identify "when social and economic considerations would come into play on varying ends of the spectrum of abundance" and to consider situations where, because of the high costs and the social and economic impact, "there may be a rationale for not opting to continue or make large effort[s] to maintain a conservation unit."[28] In the final Wild Salmon Policy, DFO moved to a sustainable-use principle that was aimed simultaneously at achieving both conservation and economic goals.[29]

Defining "conservation"

The WSP development team agreed on the need to ensure that a wild salmon policy protected the genetic diversity of Pacific salmon. In Mr. Chamut's words, "[T]he basic goal of protecting genetic diversity was one that did need to be embraced and did need to be the cornerstone of the policy," while still allowing for socio-economic considerations.*

Dr. Riddell explained that the scientists involved in developing the policy were concerned not only with conservation. They realized that "you can't have sustainable use without sustained resources, and conservation comes first in terms of having a healthy natural resource base … that's the fundamental goal of the Wild Salmon Policy, so that you have a healthy resource base upon which you can have multiple uses, not just fishing."[30]

Clarifying the definition of "conservation" and its practical application to salmon fisheries was a critical focus of First Nations' input. Mr. Chamut said that First Nations had strong views on this issue because conservation is important in their communities and also because Canadian courts have prioritized conservation over First Nations'

* Bill C-38, *An Act to implement certain provisions of the budget tabled in Parliament on March 29, 2012 and other measures,* received royal assent on June 29, 2012. As discussed further in Volume 3, Chapter 3, Legislative amendments, Bill C-38 amends the *Fisheries Act* to focus on the protection of fish that support commercial, recreational, or Aboriginal fisheries. This focus on fisheries, as opposed to conservation, may signal a change of direction from the understandings developed during the conception and drafting of the WSP, as discussed in detail in the next sections of this chapter. If all Pacific salmon are included within the definition of "fish that support commercial, recreational or Aboriginal fisheries," the impact on the WSP may be felt primarily in the changes to habitat protections, as discussed in Chapter 3. If fisheries are defined at the Conservation Unit level (which will be discussed in the following section), the changes to the Act may be contrary to the protection of genetic diversity, the "cornerstone of the policy." Transcript, November 30, 2010, p. 15; December 1, 2010, p. 50; see also Exhibit 8, pp. 9–12.

right to harvest fish for food, social, and ceremonial purposes. He testified that, without a clear definition of conservation, "talking broadly about our responsibility and our mandate being conservation, it's meaningless without actually defining … what it is you're trying to conserve and at what level you're trying to conserve it."[31]

The definition of conservation was debated within the WSP development team throughout the spring of 2005.[32] Mr. Chamut set out two alternatives in an email of March 29, 2005: a definition of conservation that excluded sustainable use, based on a proposal by Dr. Riddell, and a definition that included sustainable use, one more consistent with an earlier draft policy from December 2004.[33] Mr. Chamut explained that the two alternatives reflect

> a basic discussion about how do you define conservation and how that pertains to sustainable use … We received an awful lot of comments from a lot of different groups that are involved or interested in the fishery and one of the concerns that was expressed was that there was seemingly a conflict in the policy between conservation and use.[34]

In the end, the development team decided to define conservation separately from and without reference to sustainable use. Mr. Chamut testified that this decision was a fundamental issue informed by input from a variety of groups, and he concluded by stating: "[W]e wanted to be absolutely clear that conservation was the top priority and it wasn't going to be compromised for meeting sustainable use objectives."[35]

The terms "conservation" and "sustainable use and benefit" are both defined in the policy:

> *Conservation*. The protection, maintenance, and rehabilitation of genetic diversity of species and ecosystems to sustain biodiversity and the continuance of evolutionary and natural production processes.[36]
>
> *Sustainable Use and Benefit*. The use of resources in a way and at a rate that does not lead to their long-term decline, thereby maintaining the potential for future generations to meet their needs and aspirations. Sustainable use refers to consumptive uses of biological resources. Sustainable benefits, on the other hand, derive from a broader range of consumptive and non-consumptive resource uses.[37]

These definitions were not accepted by all resource users, as I discuss below.

Conservation Units

Another fundamental question for the WSP development team was the level of salmon diversity DFO should commit to manage and conserve. The department decided to protect a level of biodiversity called a Conservation Unit (CU), defined in the WSP as "[a] group of wild salmon sufficiently isolated from other groups that, if extirpated, is very unlikely to recolonize naturally within an acceptable timeframe."[38]

Dr. Riddell testified that a CU is a genetic lineage that, if lost, would be irreplaceable.[39] In the context of sockeye, most evidence suggests that, once lost from a habitat, sockeye production cannot be restored, as sockeye have genetically developed for specific lake systems. Efforts at transferring a new sockeye population into a habitat previously used by a different sockeye population have been largely unsuccessful. "Essentially," he said, "each sockeye CU is irreplaceable."[40]

According to Dr. Riddell, there are three important points about the definition of CUs:

> The major premise of the policy is that the genetic similarity within conservation units is greater than between them. Secondly, that the diversity within the conservation units provides a means to recolonize local spawning populations or demes that may become extirpated within a conservation unit. Thirdly, that the spatial size and spatial scale of conservation units are very different between species, largely reflecting the specific species' genetic structure and their history.*

* On this third point, he noted that pink salmon are at one end of the spectrum, with little genetic diversity and only 13 CUs encompassing all their distribution in British Columbia, while lake-rearing sockeye salmon are at the opposite extreme, with more than 200 genetically discrete CUs. See Transcript, November 29, 2010, p. 11.

By capturing both the genetic diversity between populations and the connectedness between populations within certain geographic landscapes, the Conservation Unit concept is thought to provide "insurance" against habitat impacts. Ensuring a healthy CU is "by far the best sort of management plan to allow re-colonization of that habitat."[41]

Dr. Riddell agreed that the populations within CUs are critical, especially for First Nations. He explained that, for this reason, the Wild Salmon Policy created the "joint obligation of management for production levels of abundance, and the distribution of fish amongst spawning streams."*

In cross-examination, Dr. Riddell was asked about the degree to which small CUs truly contribute to overall abundance. He stated that there was a "continuous range" in which small CUs contributed, and that the lakes that support small populations are fundamentally small, with limited spawning areas. He added, however, "that the fundamental promise of the Wild Salmon Policy is that these small populations have other values, and this is the reason why they were sustained."[42]

Dr. Irvine explained that both the *Species at Risk Act* (SARA) and the WSP acknowledge the importance of diversity within the taxonomic species of sockeye salmon. He said, "[I]n developing the Wild Salmon Policy we attempted to align the conservation units as much as practicable with the minimum unit that could be listed under the *Species at Risk Act.*"[43]

Biological status and strategic planning

Mr. Chamut acknowledged a tension between DFO's Science Branch and Fisheries and Aquaculture Management in the development of the Wild Salmon Policy, and more generally on conservation issues.[44] A July 16, 2003, email from Paul Sprout, former regional director general, Pacific Region, to Dr. Laura Richards, regional director, Science, Pacific Region, described the differences between Science and other branches in the region arising from "confusion around SARA and the Wild Salmon Policy and uncertainty over DFO direction relative to conservation and fisheries economic development."[45] In June 2003, Mr. Chamut's draft presentation to the minister stated, "[T]here is a need to agree on a process and roles for managing risks and reaching decisions on contentious issues related to co-migrating stronger and weaker stocks."[46]

By December 2004, DFO appeared to have resolved this debate internally, for the purpose of the Wild Salmon Policy, through three key developments, which I discuss in more detail below:

- a decision to adopt "benchmarks" for biological status, in Strategy 1, rather than conservation limits or reference points;
- the development of a strategic planning process in Strategy 4; and
- a decision to confirm that the minister has a limited discretion, constrained by process and transparency, to refuse to conserve a Conservation Unit in extraordinary circumstances.[47]

Benchmarks rather than reference points

A "reference point" is a term used to describe a fisheries management objective in relation to the assessment of a particular stock (or CU). The terms "limit reference point" and "target reference point" are relevant to this discussion. Drawing on the Fishery Decision-Making Framework Incorporating the Precautionary Approach (Fishery Decision-Making Framework), Dr. Carrie Holt, a research scientist at Pacific Biological Station, described reference points as intersections between stock status and harvest removal rates.[48] Figure 1.10.2 illustrates the concept of reference points.

The Fishery Decision-Making Framework was created after the Wild Salmon Policy was finalized, but the illustration of reference points it contains is useful in understanding the debate around reference points which shaped the development of the policy. Reference points are determined in

* Transcript, December 1, 2010, pp. 108–9. See also Wild Salmon Policy (Exhibit 8, p. 16), which states: "Since the requirements and needs of First Nations and others may be at finer geographic scales than some CUs, management objectives to address these may be recognized in Strategy plans (Strategy 4)."

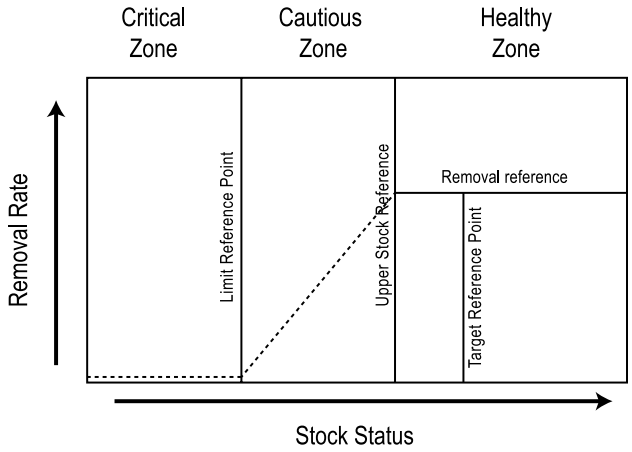

Figure 1.10.2 Reference points used in fisheries management

Source: Exhibit 185, p. 4.

relation to where fisheries management decisions will change. In contrast, benchmarks, as ultimately developed in the policy, are determined in relation to biological status only.[49]

I discuss benchmarks and zones of biological status in more detail in relation to Strategy 1 later in this chapter. In short, the WSP contemplates each CU being assessed and located within one of three zones: green, amber, or red. Green represents the healthiest populations, moving through amber to red, which represents weak populations. The benchmarks are the intersections between the zones, with the upper benchmark describing the point between green and amber, and the lower benchmark describing the point between amber and red. Figure 1.10.3 illustrates how benchmarks relate to biological status.

Dr. Irvine explained that the Strategy 1 benchmarks, as conceived by the WSP development team, were intended to be based on two main types of information – abundance and distribution:

> Now the types of information that were used, the two most important ones that we identified in the policy were the number of fish within a conservation unit, and their distribution. And so when you're thinking about the health of a group of fish, if you think of a watershed, you think about the fish in that watershed, if that was a conservation unit. You obviously want to have a certain number of animals. But you also want to have them distributed throughout that watershed. So you don't want to have all your eggs in one basket. So it's really talking about the abundance and their distribution. So those are the primary means by which to identify ... the lower benchmark and the upper benchmark.[50]

The lower benchmark "was deliberately established at a point above or at a healthier stage than when a population or a CU or a designatable unit would be considered endangered under the *Species at Risk Act*."[51] Dr. Riddell concurred that the lower benchmark was designed to include a buffer above this conservation limit.[52]

Dr. Irvine said the lower and upper benchmarks in Strategy 1 were not the same as limit and target reference points that direct salmon management decisions. Instead, reference points for management would be developed through integrated

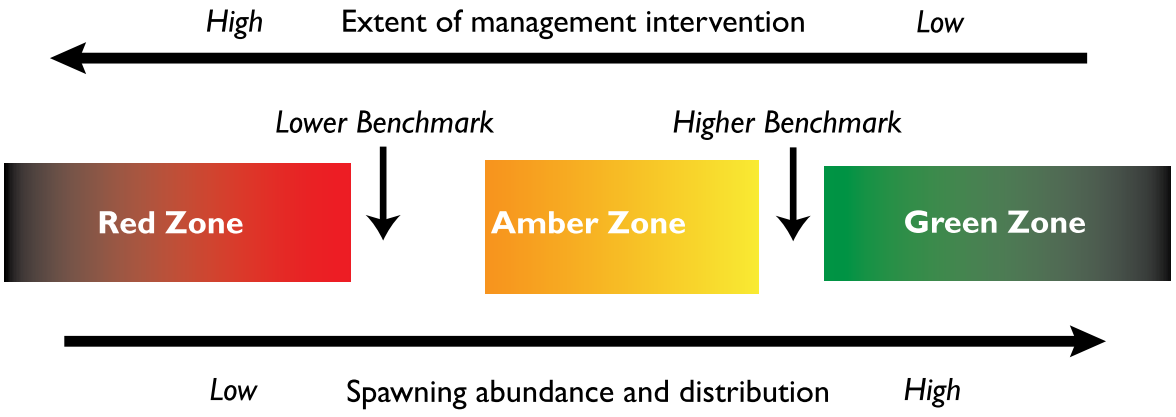

Figure 1.10.3 WSP benchmarks and biological status zones

Source: Exhibit 8, p. 17.

planning under Strategy 4.[53] He explained that, in developing Strategy 1 of the policy,

> [DFO] used the term "benchmark" rather than "reference point" simply because reference points are often associated with societal values. And by using the term "benchmarks" in Strategy 1, we were not precluding the use of the terms "target reference points" and "limit reference points" in Strategy 4. But it's important to understand that Strategy 1 is about the biological status of the resource and not … necessarily to changes in fisheries management.[54]
> …
> [A] target reference point is more of a fishery management objective. So where is it that you would like that population to be. And so for instance you may decide that your objective for a particular group of fish is to maximize economic opportunities from that fishery. You might decide that your objective is to maximize catch, which is quite different than the economic gains. Or you might decide that your objective is simply to prevent that group of fish from going extinct. So those are three very different targets. So what we tried to do in Strategy 1 is separate out the science from the management. And so the higher benchmark was attempted … it would be at a point at which the population would achieve maximum yield. The lower benchmark was deliberately precautionary, so that it was set at a point above which COSEWIC [Committee on the Status of Endangered Wildlife in Canada] or *Species at Risk* would consider listing a population as endangered. So it's just a biological status of a group of fish which would then feed into the decision-making process along with other information on the habitat that the fish lived in, their ecosystem, and of course social concerns and economic considerations.[55]

Mr. Saunders said that, initially, DFO scientists wanted to set "hard and fast" conservation limits, before evolving to the use of benchmarks in the policy. DFO eventually decided that the Science Branch would identify benchmarks as "advice" rather than as a decision.[56] Mr. Chamut and Mr. Saunders said the debate about the use of benchmarks versus reference points was, at least in part, about whether to adopt a more prescriptive precautionary approach to fisheries management, represented by reference points, or a more flexible approach, represented by benchmarks.[57]

Dr. Riddell described the tension around the use of benchmarks rather than reference points as occurring between the Pacific Region and national headquarters. In describing the resolution, he focused on the innovation of adopting two benchmarks – including a lower benchmark for the first time in Pacific salmon management. He testified that "one of the big disagreements with Ottawa … had to do with how the policy was integrating precaution. The point we had to get across is that the two benchmarks, instead of having just a single benchmark, was the really significant change in implementing precaution under the Wild Salmon Policy."[58] Including a lower benchmark, he said, "was a major development of the policy. This is where the significant protection or conserving biodiversity would take place."[59] The lower benchmark included a buffer to protect a CU from reaching a point of significant risk of extinction. The buffer was intended to provide space for food, social, and ceremonial harvesting and for environmental and management uncertainty and error, thereby incorporating a precautionary approach.[60] Dr. Riddell said that the Wild Salmon Policy's use of a lower benchmark, rather than a limit reference point, was a way to ensure that stocks weren't driven down to the level where they might not recover.[61]

The adoption of CU benchmarks rather than more prescriptive reference points was important in achieving internal consensus on the Wild Salmon Policy within DFO. Dr. Irvine gave evidence that "the debate about CU benchmarks versus reference points was difficult, and took more than a year to resolve internally in developing the WSP."[62] In his view, the policy's use of the term "benchmarks" rather than "reference points" was deliberate and is important. The WSP terminology sought to make clear that no specific fishery, habitat, or cultivation management implications were associated with either lower or upper benchmarks. Identification of Strategy 1 benchmarks is intended to be a scientific exercise – to ensure that decision making and planning are informed by a biological assessment of CU status.[63]

Likewise, Mr. Saunders described the difference between benchmarks and limit reference points as a subtle but important difference. He testified

that, "from a management perspective, there is no limit reference point" within the Wild Salmon Policy that directs if a CU hits a certain status point, such as the red zone, fishing will stop. Mr. Saunders acknowledged that the policy does prescribe action based on the Conservation Unit's biological status, but he noted that "the only action that's prescribed in the Wild Salmon Policy at that lower benchmark is to say that we will develop a plan to move us out of that Red Zone."[64]

A strategic planning process rather than operational guidelines

The second significant development, conceived by the WSP development team as a way to avoid operational guidelines or other prescriptive mechanisms in the policy, was an integrated strategic planning process. This process was intended to separate the assessment of biological status (Strategy 1) from the trade-offs that must be assessed in planning for conservation and sustainable use (Strategy 4).

Mr. Chamut said that a prescriptive policy with decision rules and explicit conservation targets would have been a mistake. Instead, the Wild Salmon Policy envisions that management every year will be guided by an integrated strategic plan, which, in his view, is a more robust and consultative process than the previous one in which DFO simply identified escapement targets.* Mr. Chamut felt that Strategy 4 was the most challenging and complex aspect of the policy for DFO, and also difficult for others to understand.[65]

Fisheries management decision making is supposed to take place during the integrated planning process in Strategy 4. Stakeholders and First Nations can bring their perspectives to the attention of DFO and work with DFO to develop harvest strategies and recovery strategies through an integrated planning process. The process was conceived as a way to bring together information on the status, habitat, and ecosystems of the CUs (strategies 1, 2, and 3) to inform long-term planning by local communities, stakeholders and First Nations.[66]

Allowing the minister to limit active measures in exceptional circumstances

A third development was intended to confirm the different roles used in resolving the tension between conservation and management flexibility.† The concluding language in Strategy 4, Action Step 4.2, confirms and informs the minister's discretion in approving strategic plans:

> The Minister of Fisheries and Oceans is accountable to Parliament for the conservation of fisheries resources. Accordingly, strategic plans for salmon conservation and sustainable use will be subject to final approval by the Minister of Fisheries and Oceans. The Minister may reject plans or elements of plans because they do not adequately conserve wild salmon. Alternatively, in exceptional circumstances, where recommended management actions are assessed to be ineffective, or the social and economic costs will be extreme, the Minister of Fisheries and Oceans may decide to limit the extent of active measures undertaken. The new planning process described above is expected to minimize the need for such decisions, but this possibility should be recognized. The rationale for such decisions will be clearly explained. In addition, any cumulative effect of these decisions will be closely monitored.[67]

Mr. Chamut clarified the distinction between the Strategy 4 planning process and the decision-making responsibility, emphasizing that "the ultimate decision is inevitably made by the Minister." He added that "if there is consensus within these regional watershed planning groups as to what to do in terms of a strategic long-term plan for management of a series of conservation units in a geographic area, if consensus is reached, I would think that that would be sufficient reason for the Minister to want to – very, very rarely, if ever – to intervene and reject that particular advice."[68]

* For a discussion of the current process for setting escapement targets, see Chapter 5, Sockeye fishery management.

† Bill C-38, *An Act to implement certain provisions of the budget tabled in Parliament on March 29, 2012 and other measures,* received royal assent on June 29, 2012. As discussed further in Volume 3, Chapter 3, Legislative amendments, Bill C-38 contains a new section of the *Fisheries Act* which allows the minister of fisheries and oceans to enter into agreements, arrangements, or transactions with a variety of entities for the purposes of the Act. It also provides that cabinet can declare that certain provisions of the Act do not apply in a province. It is unclear how this provision will have an impact on the final approval of the minister of fisheries and oceans under Action Step 4.2.

He also described the process by which salmon management decisions would be made, and the criteria and considerations that would inform them:

> [T]he obvious priority within the Wild Salmon Policy is conservation of genetic diversity of wild salmon. But there is a process by which decisions are made. They're not necessarily going to be based just on biological considerations, and there is a process by which social and economic considerations can be made when we're talking about plans to protect or rebuild or conserve a particular CU. But … there's a continuum of concern. If you're dealing with a conservation unit that is at very low abundance and it's in that so-called red zone … then the primary considerations that will be made about what to do with that CU will most often be biological. As you move up into greater degrees of abundance and … less threats to the well-being of the conservation unit, then increasingly … social and economic considerations will be an important part of whatever decision is taken. So there is this continuum. The intent of the policy that biological factors are going to be the primary considerations when the stock is at risk, with the one exception … where it will make it extraordinarily difficult to be able to conserve a conservation unit, or if … efforts to conserve it are going to fail or be excessively costly. That's then a matter that would be considered for a decision by the Minister after consultation in a full and open process that looked at the issue of the biological status, the costs and consequences of the decision.[69]

Grand Chief Ken Malloway of the Stó:lō Tribal Council suggested in his evidence that there is still some controversy over this part of the policy. He described it as the "notwithstanding clause," his "number one concern with the Wild Salmon Policy."[70]

Counsel for participants requested confirmation from DFO witnesses that a consultative process would take place before any such ministerial decision was made. Mr. Saunders thought there would be consultation but did not recall this provision being explicit in the policy itself.[71] According to Mr. Chamut, the policy requires the minister's decision to be made openly and transparently, and, he added, "[Y]ou can take from that that it will involve consultation and the minister will be making sure that it's not done with the stroke of a pen."[72]

Consultation on the Wild Salmon Policy, 2004–5

The draft Wild Salmon Policy was released for public consultation on December 17, 2004.[73] Over the next six months, DFO made intensive efforts to consult with First Nations, stakeholders, and the public. DFO staff reviewed 246 written submissions in 2005, which they documented, responded to, and considered in making extensive revisions to the policy.[74]

In 2005, DFO formed two large multi-interest dialogue forums, one for First Nations alone and the second for everyone, including First Nations, and held meetings to review the text of the draft policy in detail.[75] DFO held three multi-stakeholder sessions, and one for First Nations, in March and April 2005.[76] Following these sessions, DFO revised the draft policy and circulated it for further comment.[77]

Mr. Saunders testified that the WSP "is one of the first policies that I believe was developed in such an open and transparent fashion." He said that "there was a high degree of understanding of this policy and engagement in its development with First Nations and stakeholders." He emphasized that the WSP development team carefully considered all input in revising subsequent drafts, made significant changes based on input after the stakeholder sessions, and provided a rationale when input was not adopted.[78]

Through consultation, DFO heard the "pretty much universal" concern about inadequate resources for implementation as well as a "very strongly-held view by a number of individuals" that DFO lacked the will to implement the policy. Given these concerns, Mr. Chamut said he felt strongly that it was important to build the five-year performance review requirement into the policy (Strategy 6, Action Step 6.2).[79] He agreed that First Nations' and other groups' distrust of DFO's ability to implement the Wild Salmon Policy was alleviated by DFO's commitment to an independent review within five years. He testified that this Strategy 6 requirement was one of the final revisions "because it was probably one of the most strongly held views that came out of the very last forums that we had

just before finalizing the policy." He described it as a "very late, but a very, very important component to the policy."[80]

DFO committed to prepare and release an implementation plan for the Wild Salmon Policy, which would define tasks and timelines, in the fall of 2005.[81] Mr. Chamut said this additional plan was important "to try and give some confidence to people that there would be some immediate action that would be taken in order to make sure the policy was being implemented."[82]

Mr. Chamut told me about the relationship between available funding and the anticipated implementation timeline. He said there were adequate resources to implement the Wild Salmon Policy in a phased manner over roughly a five-year period. Although he thought it would be possible to implement the WSP within existing resources, in his view it might require making certain senior officials specifically responsible for WSP implementation.[83] Both Dr. Irvine and Mr. Saunders testified that at the time the policy was being developed, they thought it would take longer than five years to implement.[84]

A May 16, 2005, briefing to Minister Regan identified some First Nations' concerns about WSP implementation.[85] Mr. Saunders said that First Nations wanted confirmation that they would be involved in bottom-up, bilateral processes in their communities around Conservation Units and habitats.[86] He prepared a memorandum to the deputy minister, following the policy's release, which stated that the release of the WSP was in large measure due to three factors: a successful consultation process that engaged First Nations and others, an agreement that First Nations would have a significant role in WSP implementation, and an understanding that the focus for the remainder of the calendar year would include "completion of a detailed implementation plan through consultation with FNs [First Nations] and other salmon interests."[87]

Mr. Chamut and Mr. Saunders both testified that, during development of the policy, First Nations were particularly concerned that there would be appropriate governance and decision-making structures for implementation, that the Wild Salmon Policy would honour the Crown's obligations and not infringe rights, and that there would be adequate capacity for implementation.[88]

Additional views of conservation and appropriate focus of management

Early in this Inquiry, Rob Morley, vice-president of the Canadian Fishing Company and a member of the Fraser River Panel (see Chapter 5, Sockeye fishery management), expressed an opinion on conservation that differed from the one articulated in the Wild Salmon Policy. In commenting on the definitions of conservation and sustainable use in the policy, Mr. Morley said that, although they were reasonable working definitions, in his view "conservation includes use as part of its definition" and that DFO's approach in dividing conservation and sustainable use was "untenable."[89]

I am mindful, in this context, of the submissions of counsel for the West Coast Trollers Area G Association and the United Fishermen and Allied Workers' Union, who urge me to recommend that the Wild Salmon Policy be eliminated and replaced with a simpler method of determining an appropriate level of harvest for the fishery while avoiding any unreasonable and genuine risk of extirpation.[90]

Christopher Harvey, counsel for the West Coast Trollers Area G Association and the United Fishermen and Allied Workers' Union, made forceful submissions to me to the effect that the purpose of the *Fisheries Act* and other federal statutes and treaties is to provide yield (harvest benefits), not conservation of the fish per se. These participants urged me to reject the suggestion that conservation, rather than the provision of sustainable yield for present and future generations, is the primary and overriding consideration for fisheries managers. The B.C. Wildlife Federation and the B.C. Federation of Drift Fishers generally agreed with these submissions. Mr. Harvey said: "The statutory mandate requires DFO to focus on yield and on conservation insofar as it is supportive of use. So conservation is a supportive goal rather than a goal in itself. It's not the decline of genetic diversity that led to this Commission. It's the decline of the fishery."[91]

Findings

I do not agree that the *Fisheries Act* directs the Department of Fisheries and Oceans (DFO)

to subordinate conservation to the harvest of salmon.* One primary purpose of conservation is the long-term sustainability of the fishery, and, on the evidence before me, it is clear that sound conservation policies are necessary for a sustainable fishery. Moreover, the benefits of conservation are not limited to sustaining fisheries. I find that Canada's international commitments and the *Oceans Act* confirm the primacy of the federal government's conservation responsibilities. Indeed, the *Oceans Act* highlights conservation, based on an ecosystem approach, to be of "fundamental importance to maintaining biological diversity and productivity in the marine environment." The *Oceans Act* also states that "Canada promotes the wide application of the precautionary approach to the conservation, management and exploitation of marine resources in order to protect these resources and preserve the marine environment."[92]

I find that the four priorities contained in the Wild Salmon Policy, which include conservation and sustainable use, are consistent with the approach set out in the relevant statutes and treaties informing the work of DFO and appropriate to the sustainability of the fishery. I agree with David Bevan, associate deputy minister, and Susan Farlinger, regional director general, Pacific Region, in their characterization of the Wild Salmon Policy as an expression of the precautionary approach in the context of Pacific salmon.[93]

The findings and any related recommendations are discussed in Volume 3 of this Report.

Implementation of the Wild Salmon Policy

I heard evidence on the pace of implementation of the Wild Salmon Policy, the progress made in implementing it, and whether DFO developed an appropriate implementation plan for the policy.

Mr. Sprout, regional director general during the first five years of the policy, said that implementation was more complex than had been anticipated. In his view, DFO was naive and overly optimistic about how easily it could implement the various action steps. He said that a top-down approach to dictating Conservation Units or integrated management was not a sustainable concept today and that DFO requires time to reconcile the views of all the stakeholders.[94] Ms. Dansereau said that, given the state of knowledge at the beginning of implementation, neither the resources nor the timelines were realistic.[95]

Ms. Farlinger identified the following issues as influencing the pace of WSP implementation: financial resources, the time needed to do the underlying technical work to identify CUs and their benchmarks, evolving science, data availability, and the impact of the policy on stakeholders.[96] She also noted:

> I think the pace at which we've been able to bring people up to the same level of understanding, that is, collect the data and information, implement catch monitoring standards across the board to develop that trust I talked about earlier, they aren't happening with sufficient speed, either of them, to give people a kind of confidence they need to have to come together and ... provide the kind of integrated advice that they need to.[97]

Dr. Richard Beamish, retired research scientist and head, Salmon Interactions Group, Pacific Biological Station, also noted: "Implementation of the policy requires a significant commitment to better monitoring and support for science. Under the conditions of reducing budgets, this is a major issue."[98]

Dr. Riddell testified that WSP implementation seemed to have lost momentum in the last couple of years.[99] On strategies 1–3, he said that the slow pace of implementation may have resulted in large part from early technical challenges, in particular the need to define the Conservation Units under Strategy 1. Under Strategy 2, he said that habitat assessment methodological work had proceeded

* Bill C-38, *An Act to implement certain provisions of the budget tabled in Parliament on March 29, 2012 and other measures,* received royal assent on June 29, 2012. As discussed further in Volume 3, Chapter 3, Legislative amendments, Bill C-38 amends the *Fisheries Act* to focus on the protection of fish that support commercial, recreational, or Aboriginal fisheries. As discussed above and in Volume 3, Chapter 3, the impact of this new focus on Fraser River sockeye is not known.

quickly in the first two years, but implementing habitat monitoring did not seem to be proceeding as quickly. Finally, he said Strategy 3 (inclusion of ecosystem values and monitoring) needed greater effort from DFO.[100]

Implementation plan

The section of the Wild Salmon Policy called "Implementation: Making It All Work" anticipates and addresses some implementation challenges:

> The adoption of a wild salmon policy is an important, long-awaited objective, but not an end in itself. Once it is adopted, attention must shift to implementation. The WSP requires acceptance of new ways of doing business and introduces a number of new program obligations. To ensure its commitments are met, an implementation plan will be prepared after the policy's finalization. This plan will stipulate what tasks are required, how they will be performed, and when they will be completed. On completion, the plan will constitute the Department's commitment to meeting its responsibilities for salmon conservation.[101]

The requirement for an implementation plan was added to the policy on the eve of its adoption, in the spring of 2005. DFO senior officials made many commitments, internally and externally, that the department would draft, consult on, and release a detailed implementation plan. In delivering a briefing to Minister Regan on the draft policy on May 16, 2005, Larry Murray, then deputy minister, and Mr. Chamut advised of the new "commitment to preparation and release of [a] plan for implementation." They further advised the minister that this implementation plan would include tasks and timelines and would be released that fall.[102]

Mr. Sprout characterized three documents, produced in August and September 2005,[103] as collectively meeting DFO's obligation to create a WSP implementation plan: "[T]hat collection of the strategic work plan, the work plans themselves, [and] the results-based accountability management framework is the Implementation Plan."[104] He emphasized that these three documents contained the necessary elements of any implementation plan: objectives, tasks, actions, deliverables, deadlines, responsibilities, and a budget.[105]

The third of these documents was dated September 20, 2005, and entitled "Wild Salmon Policy Implementation Workplan – Results-based Management and Accountability Framework – Draft" (Draft RMAF).[106] The Draft RMAF set out a number of deliverables, with completion dates, all related to the task "Development of WSP Implementation Plan":

- On September 13, 2005, a meeting of the WSP Implementation Team "to review Workplan and discuss Implementation Plan."
- In early October 2005, "Draft Implementation Plan."
- In late October 2005, "Meeting of WSP FN [First Nations] and Multi-interest Fora to review draft Implementation Plan."
- In late November 2005, "WSP Implementation Plan."[107]

The Draft RMAF differentiates between a work plan and an implementation plan. Mr. Sprout acknowledged that annual staff work plans were meant to guide DFO's actions toward meeting the implementation plan.[108]

The Draft RMAF anticipates that DFO would consult First Nations and others on a draft implementation plan.[109] On December 7–8, 2005, DFO held a First Nations forum and a multi-stakeholder forum. Although DFO staff discussed implementation planning generally with attendees, there is no evidence in the meeting minutes or the summary report that DFO disclosed any document that was a draft of an implementation plan.[110]

Members of DFO's Wild Salmon Policy Implementation Team noted that, in addition to these forums, there were other meetings with First Nations and stakeholders on WSP implementation.[111] However, none of the numerous exhibits describing DFO's various WSP meetings held between 2006 and 2010 mentions consultation on any document described as a draft implementation plan.

When asked about the commitment by Mr. Sprout in April 2005 to consult First Nations on an implementation plan, Mr. Saunders acknowledged that no implementation plan exists:

> I don't have a clear recollection of ever landing on a finalized document that would have had the plan. It was more of a continuous engagement and notification of the sort of work that was ongoing … and results, and then another round of what we would be doing in subsequent years. So I don't recall a specific long-term … if you're asking for … a five-year plan, I don't recall anything like that.[112]

Ms. Farlinger was asked whether there has ever been a WSP implementation plan. She suggested that, while there used to be an implementation plan, it was no longer in effect; instead, there was a "current timetable" for WSP implementation. I received no other evidence about the "current timetable" to which Ms. Farlinger alluded, unless she was referring to the 2011–12 draft internal staff work plan.[113]

Ms. Farlinger could not provide any indication of what WSP tasks would be implemented within the next two or five years.[114] She pointed to two types of documents setting out expectations: the annual staff work plans and the Marine Stewardship Council (MSC) Action Plan.* Beyond these plans, she said she would have to speculate about anticipated timelines for WSP implementation.[115]

I also heard evidence that no comprehensive costing exercise was performed by DFO in anticipation of the implementation of the Wild Salmon Policy. In April 2002, the National Policy Committee considered the Pacific Region's proposal for such a policy and directed that DFO staff "develop a cost strategy, including science needs, for the WSP."[116]

In 2008, Rebecca Reid, regional director, OHEB, assisted by Heather Stalberg, a senior DFO biologist, did make efforts to advocate for WSP funding for the branch. They met with Ian Matheson, national director general of the Habitat Management Program, and made a detailed pitch for the continuation of funding to implement DFO's obligations under Strategy 2.[117] However, it appears that their request was not accepted at the national level.

Mr. Sprout was not aware that the region ever assessed the costs of fully implementing the policy. He was unaware of the costing work by Ms. Stalberg and Ms. Reid in relation to Strategy 2. He had not submitted any cost estimate or proposal on WSP implementation to national headquarters before the policy was approved, except for the proposal developed by the regional director of policy in 2005, and that proposal secured the region some initial incremental funds for full implementation of the WSP.[118]

Ms. Farlinger testified that DFO did an annual WSP costing exercise for planning purposes; however, she agreed that full implementation costs had not been estimated. She said the costing focus is on what is required to fund the next step in implementation and, because "the work is evolving as we're going along," it is not possible to budget for WSP implementation.[119]

The need for a WSP implementation plan, setting out how and by when DFO will implement the policy, became increasingly evident to me during the final witness panel. At that time, the deputy minister, the associate deputy minister, and the regional director general all presented me with their interpretation of what is meant by the "implementation" of the Wild Salmon Policy. In essence, these witnesses suggested that WSP implementation is largely achieved through DFO considering the intent, spirit, and principles underlying the policy when making regulatory decisions and recommendations to the minister.

Ms. Dansereau was asked if DFO was fully committed to implementing the policy. She said that the WSP was an essential policy and a priority policy on the West Coast. However, she also clarified that DFO was committed to implementing the policy's "intent":

> Yes, absolutely, to the intent of the Wild Salmon Policy and whether or not we are able to meet some of the deadlines in there, I don't know because some of them were developed in the absence of science, and we are working at trying to get the answers to be able to set realistic timelines, but yes … it is our guiding document for the management of Fraser sockeye, and that would not be so if it weren't a priority.[120]

* DFO created this longer-term action plan to support MSC certification, including elements of WSP implementation. I discuss DFO's MSC Action Plan, and how it indicates the feasibility and desirability of a longer-term WSP implementation plan, later in this chapter in the section on the intersection between WSP implementation and MSC certification of the Fraser River sockeye fishery.

When asked if DFO has ever assessed what it will cost to implement the policy, Ms. Dansereau said:

> [I]'m having trouble with the word, "implement," in the context that it's being used here. The Wild Salmon Policy … guides decision making to the most senior level inside the Department and even though all of the subparts of the Policy haven't reached their full fruition … that doesn't mean it's not being implemented. We don't have everything done as we said we would in here, but the guiding principles are the guiding principles by which we make decisions.[121]

Ms. Dansereau further explained what she meant by "implementation":

> [W]hat I meant was if I look at the principles, which, to me, a policy should be much more about principles than it should be about specific targets and timelines for implementation because if I was writing this today, I would separate some of the parts of this out and call those one[s] policies, and I would call some of the other pieces that are more specific, with targets and timelines, I would call those a program, and they would be treated quite differently. But the guiding principles, conservation, honouring obligations to First Nations, open process, sustainable use, those are principles that guide our decision making today.[122]

Ms. Farlinger suggested that WSP implementation equates to making decisions that reflect the spirit of the policy. She set out the types of DFO regulatory activities that she believed had reflected the policy's intent, concluding:

> So I think there are a broad suite of ways in which the Policy is being implemented. If you look at the strategies set out on page 17 of the Policy, are every one of those done? No, they are not, but the [effect of] regulation and the decisions that are made, and the Science priorities and the work we have done in habitat and integrating ecosystem into decisions all take us in the direction of the intent of the Policy. So that's really the only way I could describe how it's being implemented.[123]

She also stated that the policy was implemented through DFO's harvest management decisions. She said that every one of strategies 1 through 6 was very ambitious, and information gathered under the strategies would inform the annual fishing plan under Strategy 5. In this respect, DFO was said to be "operating consistently with the policy."[124] Similarly, Mr. Bevan said that DFO had implemented the policy through DFO's move to weak stock management.[125]

In contrast to the evidence of these DFO witnesses, Jeffery Young of the David Suzuki Foundation replied in the negative when asked if DFO is managing the fishery in a manner consistent with the policy's objectives:

> To answer the question plainly, no, I don't think they are. I think there are efforts to conserve certain stocks at certain times using some sort of effort, whether that's timing or area closures, those types of things. This is largely, I'd say, consistent with approaches that they've taken in the past. But in terms of actually understanding the CUs that are caught in a fishery, what their status is relative to a benchmark, and explicitly managing the fishery to be consistent with recovery plans for CUs below their benchmark, no, that's not happening.[126]

I agree that DFO's work in relation to Pacific salmon should be informed by the spirit and intent of the Wild Salmon Policy. However, implementation of the policy must go further.

Notwithstanding the evidence that the Wild Salmon Policy has not been fully implemented, a number of steps have progressed since the policy was announced in 2005.

Strategy 1: Standardized monitoring of wild salmon status

Strategy 1 requires a systematic organization of all Pacific salmon into geographically, ecologically, or genetically distinct populations termed Conservation Units that allow for monitoring of abundance and distribution of salmon within those units over time.[127] Other strategies are based on the definitions and indicators from Strategy 1. Implementation of Strategy 1 is therefore crucial to the success of the WSP.[128]

Strategy 1 includes three action steps. Action Step 1.1 is to identify CUs. Action Step 1.2 is to develop criteria to assess CUs and identify benchmarks to represent biological status. Action Step 1.3 is to assess and monitor the status of CUs.

Dr. Irvine identified the key DFO staff working on Strategy 1. For the identification of Conservation Units under Action Step 1.1, the key staff member was Dr. Blair Holtby of DFO Science, assisted by Dr. Kristy Ciruna of Nature Conservancy Canada. For the creation of the CU benchmark methodology under Action Step 1.2, the key staff member was Dr. Carrie Holt, a research scientist with the Pacific Biological Station, working with Dr. Holtby, Dr. Riddell, and Al Cass, head of the Centre for Science Advice, DFO Science, Pacific Region, and former chair of the Pacific Scientific Advice Review Committee.[129] Dr. Holt told me that, in December 2010, a Strategy 1 Oversight Group was created to bring together scientists, managers, and stock assessment staff, to give updates and to assist with developing tools for benchmark selection and status assessments.[130]

By 2008, DFO had identified CUs for all salmon in British Columbia.[131] A paper written by Dr. Holtby and Dr. Ciruna established a methodology for the identification of CUs and suggested a provisional list of all BC salmon CUs. This paper was published by the Centre for Science Advice, Pacific (CSAP), in 2008.[132] Completion took longer than expected largely because the number of CUs identified was greater than anticipated. Dr. Holtby and Dr. Ciruna identified 420 salmon CUs, including 238 sockeye CUs, of which 31 were Fraser River lake-type CUs and seven were Fraser River river-type CUs.[133] The number of CUs is expected to fluctuate over time as new information reveals that CUs should be amalgamated or split.[134] The paper described various metrics to assess spawner abundance, trends in abundance, and productivity.[135] Dr. Holt testified that "our hope is to provide assessments on all four or five of these metrics and assumptions, provide information for all, so you can get the whole story and then provide that so that managers can then decide how they want to prioritize among those [CUs]."[136]

As new information became available, Dr. Holtby and Dr. Ciruna revised the list of Fraser River sockeye salmon CUs.[137] The WSP provides that changes to the list of CUs will be made through the CSAP (formerly the Pacific Scientific Advice Review Committee [PSARC]) peer-review process. A 2010 draft paper written by DFO's Sue Grant and others identifies 26 assessable CUs, 10 tentative CUs for which additional research is required, and five CUs to be removed from the original CU list (Grant Draft 2010).[138] The request for scientific advice that led to this draft paper notes that DFO Stock Assessment flagged several of the CUs as attributable to opportunistic spawning sites only rather than to persistent populations.[139] Dr. Holt testified that, of the five populations proposed for removal from the list of Fraser River CUs, two populations were incorrectly identified as CUs based on clear mistakes, while three other populations are uncertain.[140]

Canada submitted that the preliminary WSP status assessment by Ms. Grant and her co-authors "should not be relied on to inform management actions in the interim because the assessments of status that it contains may change during the ongoing peer review process."[141] In September 2011, Dr. Richards, confirmed that the August 25, 2011, revision of Grant Draft 2010 was the authors' "close to final" draft (Grant Draft 2011).[142] She testified that this draft provides, in "exhaustive detail," information on the biological status of individual Fraser River sockeye CUs according to WSP status zones, although it notes "some uncertainty about what the status is." While Grant Draft 2011 might not answer every question about the status of Fraser River sockeye CUs, Dr. Richards said that science operates in this incremental way and that DFO can always do further work in the future.[143] She testified that, between the earlier version (Grant Draft 2010) and the later Grant Draft 2011, "the content of the paper has not really changed substantively. There are some differences in the paper in terms of the way the figures were portrayed, but fundamentally, the same results are being given in both versions of the paper."[144]

In Grant Draft 2011, the status of each stock is presented across a range of benchmarks, and no final status summary is presented. Using trends in abundance, Grant Draft 2011 states that 15 CUs are in the red zone in terms of recent abundance trends, while four CUs are in the red zone when looking at the long-term trend.[145] While Grant Draft 2010 states that seven Fraser River sockeye CUs are consistently poor in status – in the red zone (Takla-Trembleur-EStu, Bowron-ES, Nathatlatch-ES, Taseko-ES, Cultus-L, Widgeon [river-type], and Kamloops-L),

Table 1.10.1 List of Fraser River sockeye CUs as set out in Grant Draft 2011

Current	*De Novo* (new)	Validation Required	Extirpated	Removed (no longer CUs)
1 Anderson-Seton-ES	1 North Barriere-ES[2]	1 Cariboo-S(extirpated?)	1 Adams-ES	1 Boundary Bay
2 Bowron-ES	2 Seton-L	2 Francois (First Run)-ES (extirpated?)	2 Alouette-ES	2 Carpenter Lake
3 Chilko-ES[a]		3 Francois (Second Run) – ES (extirpated?)	3 Coquitlam-ES	3 Fraser Canyon
4 Chilko-S[a]		4 Indian/Kruger-ES (extirpated?)	4 Fraser-ES	4 Haywood Lake
5 Chilliwack-ES		5 Middle Fraser (River-Type)	5 Kawkawa-L	5 Thompson (River-Type)
6 Cultus-L		6 Upper Fraser (River-Type)	6 Momich – ES	6 Stuart-Early Stuart
7 François-Fraser-S			7 North Barriere-ES[2]	
8 Harrison (D/S)-L			8 Seton-S	
9 Harrison (U/S)-L				
10 Harrison River (River-Type)				
11 Kamloops-ES[b]				
12 Lillooet-Harrison-L				
13 Nadina-François-ES (new-mixed CU)				
14 Nahatlach-ES				
15 Pitt-ES				
16 Quesnel-S				
17 Shuswap-ES				
18 Shuswap Complex-L				
19 Takla-Trembleur-EStu				
20 Takla-Trembleur-Stuart-S				
21 Taseko-ES				
22 Widgeon (River-Type)				

CU, Conservation Unit; D/S, downstream; U/S, upstream; S, Summer; ES, Early Summer; L, Late; EStu, Early Stuart

[a] Kamloops-ES does not include extirpated populations upstream of the previous dam on Barriere River, which are now part of the North Barriere-ES (extirpated) CU; hatchery transplants in the North Barriere system, after dam removal, have produced new growing populations, now identified as the North Barriere-ES (*De Novo*) CU.
[b] Chilko-ES and Chilko-S are aggregated for CU assessment purposes; these data sets cannot be disaggregated.

Source: Reproduced from Exhibit 1915, p. 2.

Grant Draft 2011 states that only three Fraser River sockeye CUs were determined to be in the red zone across all abundance metrics (Bowron-ES, Taseko-ES, and Cultus-L).*

The list of Fraser River sockeye Conservation Units given in Grant Draft 2011 is set out in Table 1.10.1.

In relation to Action Step 1.2, DFO has completed work in 2009 to develop a method for establishing benchmarks. However, the method has not been adopted and no benchmarks have been established for any Fraser River sockeye CU.[146] A paper by Holt and others published following CSAP review identifies four classes of indicators: abundance, trends in abundance, distribution, and fishing mortality relative to productivity and distribution. It proposes that these four criteria better capture population status than abundances alone.[147] The paper identifies quantifiable metrics and candidate benchmarks for the abundance and fishing mortality indicators. The two candidate benchmarks are evaluated using a simulation model.[148] Distribution metrics were not included because the historical monitoring data were not extensive and consistent enough to allow the authors to understand if populations had been expanding, contracting, or changing their distribution within a Conservation Unit.[149]

Where and how CU status benchmarks are set can have significance to First Nations in a number of ways. If CU status indicators are limited to abundance and exclude distribution, then a Conservation Unit with rapidly shrinking distribution may be deemed healthy, but a First Nation may lose the ability to fish it locally. First Nations have repeatedly emphasized to DFO that CUs must be assessed in terms not only

* Each CU is identified by run-timing group: EStu – Early Stuart; ES – Early Summer; S – Summer; L – Late.

of abundance but also of distribution, to ensure that individual communities have access to fish.[150]

Marcel Shepert, coordinator of the Upper Fraser Fisheries Conservation Alliance (UFFCA) and also a member of the Fraser River Panel and a participant in the Integrated Harvest Planning Committee (IHPC), testified that there had been no engagement by DFO with Upper Fraser River First Nations or their technical staff on DFO's development of CU benchmarks. Although the WSP states that the determination of lower benchmarks requires consultation with First Nations and others affected by this choice, Mr. Shepert stated that benchmark development under Strategy 1 lacked the meaningful input that First Nations had sought during the policy's development.[151]

As of the December 2010 hearings, DFO had not determined how to combine information across metrics – where one CU was assessed in the green zone for one criterion and the red zone for another. In December 2010, Dr. Holt said that DFO Science had not decided what the final approach would be but expected it to be a topic for a Canadian Science Advisory Secretariat (CSAS) paper in 2011.[152]

Benchmarks are likely to change every year as new information becomes available.[153] Both Grant Draft 2010 and Grant Draft 2011 apply the methodology developed by Holt and others to Fraser River sockeye.[154] They describe upper and lower benchmarks for 18 Fraser River sockeye CUs as examples of the methodology for establishing benchmarks.[155] Dr. Holt testified that technical challenges, especially delimiting CU-specific data from data historically collected on aggregate stocks, have delayed implementation of Action Step 1.2.[156]

Action Step 1.2 also provides that, within the red zone, there will be a level of abundance that cannot sustain further mortalities due to fishing or habitat change. This level remains to be determined. Dr. Holtby is developing a rapid assessment methodology.[157] This work, which remains in draft, may be "in line with" the WSP requirement to determine a minimum abundance level.[158]

As discussed above, during development of the policy, there was a debate within DFO over whether to use reference points, a common tool in fisheries management, or a different metric based on biological considerations. The issue came up during the hearings in relation to the implementation of the Wild Salmon Policy and with respect to MSC certification – a topic discussed below. As such, there is some value in revisiting the policy and the evidence on what was intended in Action Step 1.2.

The WSP states, "Benchmarks identify when the biological production status of a CU has changed significantly, but do not prescribe specific restrictions."[159] This statement was explained by Dr. Irvine:

> [W]ithin the Wild Salmon Policy Strategy 1, we're dealing with biological benchmarks, which relate to the biological status of the resource. Limit reference points and target reference points invoke other types of information, additional types of information, and they are appropriate management targets and limits, but Strategy 1 is dealing with the biological status of the resource ... [A]nd essentially, when you think of the status of a population, it's like a line with an infinite number of points along it. The lower benchmark and the upper benchmark are specific points along that biological status line.[160]

The benchmarks are intended to be established, on a case-by-case basis, as follows:

> The lower benchmark between Amber and Red will be established at a level of abundance high enough to ensure there is a substantial buffer between it and any level of abundance that could lead to a CU being considered at risk of extinction by COSEWIC.
> ...
> The higher benchmark between Green and Amber will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.[161]

The number of spawners necessary to provide the maximum sustainable yield (MSY) is considered in relation to both the upper and lower benchmarks, but MSY is only one of a number of considerations when establishing the benchmarks.*

* Exhibit 8, p. 18. "Maximum sustained yield," as used in the policy, is equivalent to "maximum sustainable yield." For further discussion of this concept, see Chapter 5, Sockeye fishery management.

As explained in the policy, biological considerations are the primary drivers for management of CUs in the red zone; broader considerations of biological, social, and economic issues come into the management of CUs in the amber zone; and social and economic considerations are the primary drivers for management of CUs in the green zone.[162]

In the hearings, I found some confusion between the evidence of Ms. Farlinger and Mr. Bevan, on the one hand, and that of the scientists involved in implementing Strategy 1, on the other, in relation to whether benchmarks are equivalent to reference points. The evidence of the scientists involved in developing the policy, including Dr. Irvine and Dr. Riddell, was that benchmarks were different from reference points. In evidence relating to implementation of the policy, however, this distinction between reference points and the policy's treatment of benchmarks was not apparent. Both Ms. Farlinger and Mr. Bevan asserted that the policy incorporates Canada's international law commitments to implement the precautionary approach. Ms. Farlinger expressly compared the policy to the Fishery Decision-Making Framework Incorporating the Precautionary Approach, which adopts reference points for management.[163] In explaining why this Fishery Decision-Making Framework was conceptually "very closely aligned with the Wild Salmon Policy," she emphasized its use of reference points:

> [T]here is a point below which there will be no fishing … there is an area between that point and a point of healthy fisheries in which fisheries will be restricted in order to support rebuilding of the stocks. And then over that healthy stock size, there is a point where fishing will be able to go on in a less constrained manner, not completely unconstrained, but less constrained.[164]

Mr. Bevan referred to the precautionary approach and the role of the Wild Salmon Policy in implementing it for Pacific salmon. Asked about the need to incorporate CU benchmarks into management, he answered that incorporating Fraser River sockeye CUs and their "limit references" was the basic element of the precautionary approach.[165] He also agreed that limit reference points are intended to constrain harvesting through decision rules. However, under cross-examination, he distinguished the precautionary approach in international fisheries law as a poor fit for Pacific salmon, noting that it was designed for "normal marine fish populations and doesn't necessarily fit as well in its design concept to an anadromous fish stock." In particular, he distinguished the concept of maximum sustainable yield in the *UN Fish Stocks Agreement* as inapplicable to, and "risky" for, Pacific salmon. He added that, in applying the precautionary approach to Pacific salmon, DFO must consider not only risks to salmon productivity but risks posed to the ecosystem too.[166]

Dr. Holt testified that the policy incorporates the precautionary approach in directing that DFO should not rely on uncertainty in the data or in scientific knowledge to delay action. In particular, the WSP accounts for uncertainty by allowing for a substantial buffer between the lower benchmark and a level that would be considered at risk by COSEWIC. However, she also said that the policy's use of benchmarks does not equate to the use of reference points for harvest management, as required by DFO's national Fishery Decision-Making Framework.[167]

The Fishery Decision-Making Framework, Dr. Holt explained, requires the delimitation of reference points and mandates a direct relationship between a low stock status and harvest removal rates. In contrast, the WSP Strategy 1 biological benchmarks "are not directly linked to a removal rate." Rather, where a CU is in the red zone, the policy will "trigger immediate consideration into possible management actions to reduce probabilities of extinction, but doesn't specify a specific removal rate."[168] In her view, "[I]f a CU falls below a lower benchmark under the WSP, this is meant to trigger management concerns to identify what the response should be but is not intended to dictate a specific action or outcome."[169]

Action Step 1.3, which requires assessment and ongoing monitoring of the status of CUs, has not yet begun in earnest. However, Dr. Irvine stressed that DFO has been monitoring the status of Fraser River sockeye CUs for more than 50 years through its regular stock assessment activities.[170]

Timber Whitehouse, area chief of the Fraser River Salmon Stock Assessment Program, who is responsible for the enumeration of Fraser River sockeye spawning escapements, stated that "the

way we enumerate fish has always addressed CU requirements. The resolution to which we count goes well below the CU level ... There's about 340 distinct spawning sites."[171] He said that stock assessment activities have always been well aligned with the WSP and support its delivery: "The way the sockeye are counted allows you to roll the escapement data up to the level of CU."[172]

Dr. Riddell noted that DFO will require adequate in-season assessments to ensure that CUs are managed to meet the lower benchmarks and that major recovery efforts are not necessary.[173] The WSP envisions a formalized monitoring plan that features CU-specific monitoring, both intensive and extensive, with reference to the upper and lower benchmarks and three status zones.[174] Currently, DFO does not have such a plan.[175]

During the December 2010 hearings, Dr. Holtby was developing a CU stock assessment framework. I heard that the development of this framework is one of the key elements required to proceed with Action Step 1.3 because it would both describe the assessment approach and help prioritize where work is most urgently needed.[176]

Findings

I have considered the evidence I heard and reviewed the text of the policy itself. I am satisfied that the Wild Salmon Policy (WSP) is intended to establish lower benchmarks that are different from limit reference points, as that term has been described by Dr. Jim Irvine; Susan Farlinger, regional director, Pacific Region; and David Bevan, associate deputy minister. Although the lower benchmark requires management action, it does not prescribe the management action to be followed. According to the WSP, the management action to address Conservation Units below the lower benchmark in the red zone is to be developed under Strategy 4.

Strategy 2: Assessment of habitat status

Strategy 2 is intended to identify the habitats necessary for the conservation of wild salmon and to assess changes in their status over time, thereby complementing DFO regulatory and compliance programs and improving the department's capacity to monitor and protect habitat proactively. Once indicators on a watershed scale are selected to assess the quantity and quality of habitats, benchmarks are to be developed to reflect the desired values of each key indicator (see Chapter 6, Habitat management, for details of these compliance and monitoring programs).[177]

Michael Crowe, section head, Habitat Management Program, OHEB, BC Interior, described the key components of fish habitat:

> We consider riparian areas part, a critical part of the habitat. They are actually a component of the habitat in that they contribute shade, which moderates temperatures, there is leaf litter and other nutrient drops that the fish depend upon. The trees that fall become cover and change channel structures, provide direct cover, as well as maintaining the channel shape, sediment quality, controlled groundwater ... so essentially we manage riparian areas as a critical component of fish habitat.
> ...
> There would be water quality parameters, that would be part of fish habitat. But essentially, the life cycle of the fish, the fish are dependent on different habitat units throughout their life cycle, so part of that would be the freshwater stream component, the freshwater lake component, both the in-shore transitional period when ... they first emerge but there's a habitat requirement for the deep water portions of lakes, as well. Then there's the migratory habitat which is essentially where they need to transfer to the marine environment, as well as migrate back up as adults; therefore, we're interested and ... we're protecting those critical migratory routes, the estuary piece, as they are transitioning to the marine environment, as well as the marine habitat. But for the streams and lakeshores, we consider the riparian areas to be an integral part of that habitat.[178]

Strategy 2 includes four action steps. Action Step 2.1 provides for the documentation of habitat characteristics. Action Step 2.2 provides for selection of habitat indicators and development of benchmarks for habitat assessment. Action Step 2.3 addresses monitoring and assessing habitat status. Action Step 2.4 provides for the establishment of

linkages to develop an integrated data system for watershed management.[179]

The ongoing implementation of Strategy 2 has been led by OHEB.[180] From November 2005 to March 2009, OHEB maintained the WSP Habitat Working Group (HWG), which was responsible for developing and implementing an approach to Strategy 2 and included staff from Science and OHEB.[181] The HWG was chaired by Ms. Stalberg, who was the dedicated full-time Strategy 2 coordinator from July 2006 to January 2009, when the position was terminated.[182] Ms. Stalberg described the membership of the HWG as having representatives from multiple levels of management with expertise in multiple disciplines within the department and OHEB.[183] Since early 2009, OHEB has made limited contributions to implementing the WSP. As of 2010, an OHEB representative again sat on the WSP Implementation Team; Melody Farrell, a habitat management official with regional headquarters, is responsible for implementing Strategy 2.[184]

As regional director from 2007 to 2010, Ms. Reid oversaw OHEB's contribution to WSP implementation and received direct reports from Ms. Stalberg on Strategy 2. Ms. Reid testified that, although the intention is to implement Strategy 2 completely, in the absence of new funding, it is being done in an incremental way. With respect to the Fraser River watershed, she said that a complete costing analysis for Strategy 2 implementation had not been done, but that implementation would require millions of dollars.[185] In contrast to FAM, which has particular employees assigned to tasks in DFO's internal annual work plans, the 2011–12 draft WSP work plan does not identify any particular OHEB staff accountable for implementing Strategy 2.[186]

In Chapter 6, Habitat management, I review in detail the current policies and work of the Habitat Management Program in relation to Fraser River sockeye. The work of this program is largely focused on assessment of individual projects. Although the program has tools and objectives that would complement WSP and assist in implementing it, such as the 1986 Habitat Policy (including habitat inventory assessments and habitat restoration and development goals), as well as effectiveness and fish habitat health monitoring, none of them have been pursued with the rigour required to make meaningful contributions to implementation of the WSP or the 1986 Habitat Policy.

In testifying about OHEB's progress in implementing Strategy 2, many DFO witnesses identified challenges, which included a "disconnect" between WSP and the Habitat Management Program. In a 2008 presentation to the national director general of the Habitat Management Program, Ms. Stalberg attributed the problem to the fact that the Habitat Management Program's mandate does not include Strategy 2 work, and, further, that OHEB does not have the necessary funding or staff to carry out the work.[187]

Ms. Reid, in addressing the result of this presentation, said that, nationally, the view was that OHEB had failed to make a strong case to situate the WSP within the Habitat Management Program but that, operationally, OHEB continued to do Strategy 2 work. She described the disconnect as one of scale: the WSP habitat indicator work is at an ecosystem scale, while the work of the habitat practitioners is project by project.[188] I note, however, that the work of DFO's Habitat Management Program is broader than project-specific review.* During the hearings on habitat management, DFO witnesses, including Ms. Reid, pointed to WSP habitat indicators as important in measuring whether the No Net Loss objective of the 1986 Habitat Policy is being met.[189]

In his testimony, Mr. Saunders described the "struggle" to make the national Habitat Management Program recognize the WSP as a component of, and compatible with, that overall program.[190] Ms. Reid spoke of the internal debate about whether OHEB ought to be doing Strategy 2. However, she said it is simply a matter of resourcing the activity and, once the department agrees it is important (specifically habitat status indicator work) and commits the necessary funding, decisions will be made about who actually does the work.[191] She said that an assessment of what is required to fully implement Strategy 2 is required.[192]

Mr. Sprout stated that an increase in resources to OHEB would be "very helpful" to better implement the WSP. He said that OHEB finds it difficult to

* Bill C-38, *An Act to implement certain provisions of the budget tabled in Parliament on March 29, 2012 and other measures,* received royal assent on June 29, 2012. As discussed further in Volume 3, Chapter 3, Legislative amendments, Bill C-38 amends the habitat protection provisions in a way that may have an impact on DFO's use of an ecosystem approach.

cope with the workload it already has, and to assign staff to WSP Strategy 2 work is particularly challenging.[193] In September 2011, Ms. Farlinger said that a review and renewal of the Habitat Management Program to address the overall workload and resource challenges was under way and that they would address issues that are preventing the full implementation of the WSP.[194]

Ms. Stalberg described the two-tier approach the HWG developed for delivering Action Step 2.1. First, an overview report is prepared for each Conservation Unit. Second, where an overview report has identified issues that require further examination within a priority CU, a habitat status report is prepared.[195] She described the overview report as a "brief overview of the watersheds within a CU where the population of fish would exist, the general threats to the population within a CU, or habitat-related threats."[196] She explained that the habitat status report goes into much more detail, including the population of fish, life history requirements for each life stage, limiting factors, and highly productive habitats for each life stage, as well as monitoring, conservation efforts done to date, and any recommendations. Ms. Stalberg explained that multiple sources are used to prepare a habitat status report, including both published and unpublished literature, local ecological knowledge, and Aboriginal technical knowledge.[197]

In 2005–6, DFO piloted both overview and habitat status reports to test the format and the structure of the reports.[198] However, Mr. Saunders explained that DFO has not implemented the reports operationally.[199]

Mr. Saunders and Paul Ryall, former lead, Salmon Team, DFO, could not confirm whether any habitat status reports had been completed within the Fraser River watershed.[200] DFO witnesses said this result was due to funding and workload issues. Ms. Reid noted that considerable time and investment were required to develop the methodology for the work and, once that was done, the amount of funding available to do the actual work decreased "quite considerably," leaving only a "small amount of money left to start habitat status indicator work." She said the funding went from approximately $300,000 per year to $50,000 per year. The HWG therefore chose to start with a few watersheds where it thought it could work most effectively with partners. Unless there is a reallocation of funding, Ms. Reid said she is not optimistic that OHEB will have the resources to complete this work over the next couple of years.[201] Neil Schubert, head of the Freshwater Ecosystems Section, DFO Science, and co-chair of the Cultus Sockeye Conservation Team, told me that, although habitat status reports would be useful, OHEB's very limited budget prevents it from completing this exercise.[202]

Mr. Young said that the absence of habitat assessments to date has resulted in "a lack of information coming from that strategy that would then be useful to either CU planning for recovery, for example, or applying that information to other habitat responsibilities of the Department."[203]

Work under Action Step 2.2 has been focused only on habitat indicators in freshwater environments.[204] A 2009 peer-reviewed paper, *Canada's Policy for Conservation of Wild Pacific Salmon: Stream, Lake and Estuarine Habitat Indicators*, written by Ms. Stalberg and others, documents the methodology DFO used to identify Strategy 2 habitat indicators, metrics, and benchmarks for freshwater environments and provides a proposed list of indicators considered useful for describing salmon habitat condition or "man-made" stressors on those habitats.[205] Mr. Young called this work excellent.[206]

The habitat indicators developed in the 2009 paper are not being actively used on a general operational basis in the BC interior. Jason Hwang, area manager, OHEB, BC Interior, noted that, although there have been pilot exercises to test or validate these indicators, mobilizing this work would take considerable effort, given the scale of geography and the complexity of indicators. He does not see an opportunity to do it in the near future. Mr. Hwang testified that the tool seems reasonable and functional, and that an important next step would be to gather baseline habitat data in order to determine whether habitat objectives (such as those under the 1986 Habitat Policy) are being met.[207] As well, Mr. Young expressed concern that the habitat assessment methodology was not being implemented, with only a small number of habitat assessments actually conducted to date.[208]

In a presentation made on December 16, 2010, DFO staff advised the Operations Committee, a steering committee created in the region to deal with a number of "change initiatives," including the WSP, that Action Step 2.2 habitat indicators

were finalized but that DFO lacked resources to develop habitat benchmarks.[209] The benchmarks are intended to reflect the desired values for each key indicator. They reflect DFO's stated intent to protect and restore habitats on a preventive basis, before populations decline in response to degraded habitats.[210] Staff also advised the Operations Committee of significant perceived "gaps" in the implementation of Action Step 2.2. These gaps included the lack of collection of habitat status information and of monitoring the health of freshwater and marine habitat, the need for "better linking [of] habitat management strategies to harvest and salmon assessment (Strategy 4)," a lack of resources to monitor habitat status, and the need to engage partners on monitoring. The presentation also stated that habitat status monitoring is not a priority for the national Habitat Management Program.[211]

DFO has yet to identify nearshore marine and marine habitat indicators. Ms. Stalberg testified that it was simply a matter of workload and timing that only freshwater and estuarine indicators have been completed; the intention is to move forward with nearshore marine indicators.[212] I heard evidence of a lack of knowledge in DFO around the marine environment for Fraser River sockeye, as I discuss in more detail in Chapter 6, Habitat management, and in Volume 2. These knowledge deficiencies have an impact on the implementation of the WSP.

Mr. Crowe stated:

> Essentially, the Habitat Management Program objective is to protect and conserve fish and fish habitat, so essentially we are trying to deliver the key objective of the policy which is the conservation of wild salmon stocks or conservation units.
>
> With regards to Wild Salmon Policy processes, the habitat component is really dependent on having, under Strategy 2, a very good inventory of habitat values based on assessment studies and understanding of indicators and overall habitat condition. We essentially don't have a lot of that basic information. So while we're working towards the spirit and intent of WSP, I would say we're not doing it directly within the manner that WSP envisions or intends.[213]

Action Step 2.3 commits DFO to conduct ongoing habitat monitoring to provide four key inputs to guide salmon habitat management. It should identify

- important habitat in need of protection to maintain salmon productivity;
- habitat risks and constraints that are adversely affecting that productivity;
- areas where habitat restoration or rehabilitation would be desirable to restore or enhance productivity; and
- investigations needed to fill information gaps.*

Under Action Step 2.3, the department has hired an outside contractor to develop a monitoring framework, with David Carter, regional monitoring lead, Habitat Monitoring Unit, OHEB, as a reviewer.[214] Mr. Carter testified that the Habitat Monitoring Unit is currently not using Strategy 2 habitat indicators.† He said that the unit would have the ability to use some of the physical status indicators (such as temperature), but that capacity would be an issue. He also said he had been told that the Habitat Monitoring Unit will likely incorporate WSP habitat monitoring into its work. Although WSP habitat monitoring has not been raised with him at the national level, he testified that there has been more of an ecosystem-based approach at the national level, which "sounds very familiar to some of the strategies within WSP."[215]

I heard evidence from DFO witnesses suggesting that the disconnect between the WSP and OHEB is most prevalent with respect to Action Step 2.3 environmental monitoring. Mr. Carter noted that environmental monitoring under the WSP is based on the watershed and the status of that watershed, while under Habitat Compliance Modernization the monitoring has been on a project-by-project basis.[216] Ms. Stalberg testified that the 1986 Habitat Policy does not include OHEB delivering Strategy 2

* Exhibit 8, p. 21. As stated at p. 22 of the policy, these inputs are intended to guide both integrated strategic planning and annual operational plans for habitat management, including compliance and regulatory functions. See also Chapter 6, Habitat management.

† The Habitat Monitoring Unit has 12 people and includes monitoring staff, biologists, and technicians in each area, all of whom report to Mr. Carter with regard to monitoring. See Chapter 6, Habitat management.

environmental monitoring, nor is OHEB set up to carry out such work.[217] She went on to note that, with the 1986 Habitat Policy under review, it would be helpful to embed references and opportunities to support environmental monitoring.[218] However, similar to the overlap between WSP habitat indicators and the 1986 Habitat Policy mentioned above, I note that the 1986 Habitat Policy should overlap with the WSP environmental monitoring through the 1986 Habitat Policy's habitat monitoring implementation strategy. Although OHEB is focused on project-by-project monitoring, the 1986 Habitat Policy also requires effectiveness and fish habitat health monitoring, but this work is not currently being done.[219] For further discussion of the 1986 Habitat Policy, see Chapter 6, Habitat management.

Ms. Stalberg noted that the WSP calls for an evolution and transition in the delivery of programs, so it depends on support from interested partners to help facilitate the shift.[220] She also said that the pace of implementation is currently based on resourcing, and, as any additional funding will most likely be gained nationally, Strategy 2 monitoring must fit within the national agenda.[221]

Both Ms. Farlinger and Mr. Saunders testified that, in order to fulfill Strategy 2 monitoring, it is necessary to engage external partners.[222] Mr. Saunders noted that multiple parties, including the tens of thousands of streamkeepers throughout the province, the Salmon Enhancement Advisory Board, and First Nations communities, have expressed a strong interest in participating in this work.[223] Dr. Kim Hyatt, the DFO research scientist who is DFO's lead for ongoing development and implementation of WSP Strategy 3, gave his opinion that the degree to which WSP monitoring and assessments are successfully implemented will depend on the level of engagement with other levels of government and external parties, including NGOs.[224] Similarly, Mr. Young testified that external partners are necessary to fulfill the monitoring requirements under strategies 1 and 2 and that, in his view, maintaining the monitoring required is one of the key potential constraints within the department.[225]

Action Step 2.4 states that DFO, together with British Columbia and other partners, will "promote the design, implementation, and maintenance of a linked, collaborative system to increase access to information on fish habitat status."[226] Under this action step, the HWG developed a "WSP habitat web-mapping application." In 2008, OHEB requested a three-year funding commitment from the Regional Management Committee toward developing this application, but it was not provided.[227]

The application was launched in April 2009 and is accessible internally and to the public.[228] Ms. Stalberg explained that its purpose is to provide public access to CU maps so people can understand what a Conservation Unit is on a spatial scale. The application is electronic and provides information associated with each CU, including any overview and habitat status reports.[229] However, the presentation to the Operations Committee in December 2010 states that this web-mapping tool alone is inadequate as an "integrated data system" which could inform watershed management.[230]

Ms. Stalberg also said that OHEB has met with the province about data sharing, with a view to synchronizing efforts and improving efficiencies.[231]

Strategy 3: Inclusion of ecosystem values and monitoring

Strategy 3 is designed to provide scientific understanding and technical capacity to include ecosystem values in salmon management. It has two action steps, 3.1 and 3.2.

Action Step 3.1 provides:

> The Department will use existing data and expert advice to identify key indicators (biological, physical, and chemical) of the current and potential state of lake and stream ecosystems (diversity of organisms, rates of biological production, etc.). Within two years, an ecosystem monitoring and assessment approach will be developed and integrated with ongoing assessments and reporting on the status of wild salmon.[232]

Action Step 3.1 addresses the development of key indicators for lake and stream ecosystems, with a view to integrating an ecosystem monitoring and assessment approach into ongoing assessments and reporting. Action Step 3.2 is intended to link and integrate information on climate and ocean systems with freshwater monitoring to improve management. The Wild Salmon Policy calls for a two-year

period for Strategy 3 implementation.[233] That period expired more than five years ago.

Strategy 3 development and implementation has been largely led by two DFO scientists, Dr. Hyatt and Dr. Irvine.[234] Dr. Hyatt testified that he has been the major conceptual developer of the ecosystem monitoring and assessment framework under Action Step 3.1 and that he spent 30 percent of his time on the Barkley Sound pilot (see below), 20 percent on the WSP Implementation Team, and the remaining 50 percent on research that informs ecosystem-based management of wild salmon.[235] Dr. Irvine testified that he has been principally involved in the implementation of Action Step 3.2 as the co-chair of the Fisheries and Oceanography Working Group, which publishes the annual *State of the Pacific Ocean* reports. He said that he spends about 40–45 percent of his time on Strategy 3 implementation.[236]

Dr. Irvine testified that limiting factors in implementing Strategy 3 (as well as the WSP generally) include lack of strong leadership and direction from senior management within the region and uncertainty as to how particular aspects of the WSP are to be implemented, including how strategies relate to each other.[237] Dr. Hyatt discussed the complications of overlapping jurisdiction. He said that, in certain watersheds, the province and the federal government have shared authority over operational ecosystem units. In international waters, the North Pacific Anadromous Fish Commission has shared authority on the high seas. Also, as I discuss further in chapters 3, Legal framework, and 5, Sockeye fishery management, Canada's Pacific Salmon Treaty with the United States requires a partnership arrangement to address ecosystem integrity within transboundary waters. Dr. Hyatt said that joint action is required in many of these zones in order to make headway in identifying Strategy 3 objectives and also in regard to the indicators of ecosystem integrity within each of these zones.[238]

DFO witnesses were hesitant to give a definitive answer as to when the implementation of Strategy 3 would be complete. Dr. Hyatt testified that Strategy 3 will be "a long time in development, in testing, and in refinement, because it challenges the department to do things that historically it has not seen as its mandate." In addition, he said, there is not a single point at which Strategy 3 will be implemented because the process will be ongoing for as long as the WSP is in place. He noted that certain aspects of ecosystem-based management are already incorporated in the management of wild salmon, some of which were initiated before the WSP. Managing wild salmon according to an ecosystem-based approach is, he said, not an "all or nothing proposition" but one that happens incrementally and becomes increasingly complex and informative as you go forward. The implementation of Strategy 3 has also been influenced by the implementation of other strategies in the WSP. Dr. Hyatt explained that the CU methodology and actual identification of Conservation Units must be specified before Strategy 3 freshwater and marine ecosystem units can be identified. Although the WSP acknowledges interdependencies among the strategies, the writers of the WSP, in his view, did not envision "just how interdependent these strategies would be."[239]

The Barkley Sound pilot is a program to refine and test strategies 1 through 5. Over 2010, Dr. Hyatt worked on the Barkley Sound pilot to demonstrate how Strategy 3 can be implemented in a way that is both informative and affordable.[240] This pilot is funded by different sectors within DFO, and Dr. Hyatt testified that, because of capacity and financial issues, these sectors have not been able to commit resources to accelerate the pilot.[241] He said that many lessons relating to policy development and on-the-ground implementation of Strategy 3 have been learned from the Barkley Sound pilot, which was not expected to be completed by the end of 2011. He also said that no end date has been identified for the pilot, noting that, if the pilot continues with the allocated existing resources, it will be a long time before completion.[242]

Dr. Hyatt developed a conceptual framework for Strategy 3 and presented it to the Operations Committee on October 8, 2009. Its purpose was to provide a framework with the necessary definitions and key elements required to move forward in implementing this strategy.[243] Dr. Hyatt testified that the committee was satisfied with the concepts and gave approval to move forward with the actual implementation.[244] The concept includes a five-step approach to Action Step 3.1 to develop the ecosystem objectives and indicators:

- step 1, to define operational ecosystem units;
- step 2, to determine the reference state;
- step 3, to identify sector-specific ecosystem-based management objectives;

- step 4, to develop indicators; and
- step 5, to develop a monitoring plan.[245]

Although the rudiments of an ecosystem monitoring and assessment approach have been created, the approach had not been finalized as of December 2010.[246] Mr. Saunders testified that progress had been made with respect to Action Step 3.1, noting that there has been a substantial amount of consultation and that the department was working toward preparing a discussion paper. He did not know when this work would be completed.[247] Similarly, Dr. Irvine testified that, although the development of operational ecosystem objectives had yet to be developed into a scientific publication, work has been done on their development, such as Dr. Hyatt's work on the Barkley Sound pilot and in the Okanagan. He said that the operational ecosystem objective work has been focused on various sectors, including enhancement and aquaculture.[248]

With respect to Action Step 3.1, Dr. Richards testified that there is ongoing work nationally on the issue of ecosystem indicators, noting in particular the CSAS national review meetings planned on indicators for freshwater systems. She remarked on the huge body of science and scientific debate around determining indicators, and she observed that this work has been challenging.[249] Mr. Shepert said that, although the Upper Fraser River First Nations have a deep interest in developing Strategy 3 ecosystem indicators, DFO appeared to have made little progress on these indicators, which "just seem to languish somewhere."[250]

Dr. Hyatt's Strategy 3 implementation approach is not being applied to Fraser River sockeye. In December 2010, staff advised the Operations Committee that work was under way to develop ecosystem objectives and indicators for Barkley Sound.[251] However, there is no evidence before me that ecosystem monitoring and assessment, under Action Step 3.1, have been implemented for Fraser River sockeye or their ecosystems.

Action Step 3.2 is intended to link and integrate information on climate and ocean conditions with freshwater monitoring to improve knowledge of production dynamics and salmon management. This step also contemplates continuing co-operation internationally and domestically to assess the magnitude and spatial scale of changes in climate and ocean conditions, including the requirement of large-scale monitoring programs.[252]

Dr. Irvine explained the work of the Fisheries and Oceanography Working Group, a multidisciplinary group that includes scientists from within the department, various universities, other governmental departments, and the US Pacific Northwest. He said that the working group meets annually to discuss how research by the various members is interrelated. In addition, each year it publishes the *State of the Pacific Ocean* report.[253] This report provides an annual snapshot of conditions in the Pacific Northwest and links the physical, chemical, and biological perspectives of the ocean to the ecology of the fish community.[254]

With respect to Action Step 3.2, Dr. Irvine said that the goal is to improve DFO's ability to link changes in the marine environment to changes in the survival and production of Pacific salmon. He noted that it has been beneficial to work with oceanographers in addressing Step 3.2. Dr. Irvine also said that members of the Fisheries and Oceanography Working Group are in regular contact with the IHPC (which gives an annual outlook on the status of salmon), in order to integrate information on climate and the ocean into the salmon management and assessment process. Although the work of the Fisheries and Oceanography Working Group and the *State of the Pacific Ocean* reports are significant steps in the process, Dr. Irvine said they are not sufficient to implement Action Step 3.2.[255]

With respect to the implementation of Action Step 3.2, Mr. Saunders testified that there has been great uncertainty in linking the high-seas and open-ocean conditions to productivity of salmon. Although this area has recently advanced rapidly, he said, it is still very much under development. Mr. Saunders also described advancing technologies, such as satellite imagery, which have facilitated the understanding of real-time information on changing conditions collected by hundreds of drifting sensors that are now located in the North Pacific.[256]
Dr. Irvine said DFO must do a better job of incorporating information from the marine environment in understanding salmon survival and prediction of unusual events, such as those that occurred with the Fraser River sockeye in both 2009 and 2010.[257] He agreed with Dr. Hyatt that the process of implementing Strategy 3, including Action Step 3.2, will go on for as long as DFO is managing salmon.[258]

Strategy 4: Integrated strategic planning

Strategy 4 contemplates integrated strategic planning for management of Pacific wild salmon, as set out in the introductory text:

> The purpose of Strategy 4 is to develop long-term strategic plans for CUs and groups of CUs and their habitat subject to common risk factors. These plans will account for their biological status and provide recommendations on salmon conservation that reflect the interests of people at local and regional levels. Strategies 1, 2 and 3 will provide information on the status of the CUs, their habitat and the ecosystem as inputs to the planning process. However, strategic plans need to integrate this information and:
>
> - Specify long-term biological targets for CUs and groups of CUs that ensure conservation and sustainable use;
> - Identify recommended resource management actions to protect or restore Pacific salmon, their habitats, and ecosystems in order to achieve these targets; and
> - Establish timeframes and priorities for action.[259]

Strategy 4 describes the outcomes of strategic plans:

> The preferred long-term outcomes of the plans will be healthy habitat and ecosystems and CUs above their higher benchmarks. But as a minimum, the plans must be capable of maintaining and restoring all CUs above their established lower benchmarks with an acceptable degree of certainty within a defined time frame.[260]

As discussed in further detail below, Strategy 4 includes two action steps to achieve the goal and objectives of the policy: an interim process for management of priority CUs (Action Step 4.1) and a fully integrated strategic planning process for salmon conservation and management (Action Step 4.2).

Mr. Chamut said the Wild Salmon Policy was intended to inform all components of fisheries management, including in-season management. When the WSP was under development, he had anticipated that with the WSP, it "would definitely not be the *status quo* when it comes to managing the resource on an annual basis." He envisioned that, under the policy, DFO would rebuild Conservation Units at a low abundance. He thought that would require changes to the way fisheries were conducted, including seasonal closures, moving fisheries from outer coastal areas into more terminal areas, and fishing more selectively.[261] In his view, DFO cannot have the policy and also continue to manage Pacific salmon fisheries as it has done in the past.[262]

A panel of four witnesses testified specifically on Strategy 4 and integrated strategic planning under the Wild Salmon Policy: Mr. Saunders, Mr. Ryall, Mr. Morley, and Mr. Young. In addition, I heard evidence touching on Strategy 4 and its implementation through witnesses at other points in the Inquiry.

It was clear to me, as I listened to the evidence throughout this Inquiry, that Strategy 4 is a critical part of the Wild Salmon Policy. It has not been adequately implemented, and this lapse has given rise to many of the frustrations I heard about DFO's commitment to the policy.

Mr. Young described Strategy 4 as a key component of the WSP.[263] Mr. Morley said Strategy 4 is

> really the guts of the Wild Salmon Policy. It's where the rubber hits the road. All this stuff preceding that is really just – it's not where you sit in the red or the yellow or the green zone. It's what you do about it when you're there and that's all about Strategy 4.[264]

Ms. Farlinger similarly testified that Strategy 4 is "where the nub of it is, where the hard work is."[265]

Mr. Saunders explained that the purpose of Strategy 4 is to address how conservation and biodiversity issues will be integrated with other social and economic interests, to talk about the implications of options, and to find a "net positive result in all three accounts, ecological, social and economic."[266] Using the five-step process in Appendix 2 of the WSP, and subject to final approval by the minister of fisheries and oceans, resource users, First Nations and stakeholders would work to build consensus on escapement targets or other management actions. Dr. Riddell said the groups that want to have input into long-term strategic plans for salmon, under Strategy 4, include the provincial government, municipal governments,

First Nations, and community groups.[267] To this list I would add commercial and recreational harvesters.

Witnesses generally agreed that the implementation of Strategy 4 is contingent on first having information arising from strategies 1, 2, and 3.[268] Mr. Young explained that operational management consistent with the Wild Salmon Policy has been delayed by a lack of information from strategies 1–3:

> Without having conservation units defined with benchmarks and an understanding of the status relative to those benchmarks … you don't have essentially the core information you need to then decide what to do, particularly about those CUs below the lower benchmark … *So without that information, you're quite limited, I guess, in terms of what you can really do consistently with the Wild Salmon Policy.* [Emphasis added.][269]

Dr. Riddell was especially concerned by the slow pace of implementing Strategy 4. He noted that the longer it "languishes," the less enthusiasm stakeholders have for the change it entails. While Dr. Riddell saw Strategy 4 as a potentially effective management framework, he said it needs to move forward more quickly for people to appreciate its value.[270] Mr. Young agreed, emphasizing that the information gathered under strategies 1 and 2 would be "of great value to proceeding with Strategy 4 planning."[271] Dr. Riddell said the policy could not be effectively implemented without commitment to Strategy 4.[272]

Mr. Ryall testified that DFO had meetings specific to Strategy 4 with First Nations and others – for example, meetings on the Fraser River Sockeye Spawning Initiative (FRSSI, discussed in detail below and in Chapter 5, Sockeye fishery management), some meetings in the Skeena watershed, and the Barkley Sound public meetings.[273] Briefing materials presented by DFO staff to regional management in April 2011 asserted that there had been significant internal and external engagement around strategic planning.[274]

Mr. Morley testified, however, that there had not been any meetings with DFO on implementing Strategy 4, other than "a couple of the cases they call pilots of implementation being the Skeena watershed process and the FRSSI process, but no real general discussion about how this should happen."[275] Mr. Young agreed with Mr. Morley, though he noted that environmental groups had met with DFO to discuss their own publications on Strategy 4.[276]

The Strategic Directions Committee (SDC), a subset of the Regional Management Committee, met on April 14, 2011, to discuss Strategy 4. This committee is chaired by the regional director general and its members are drawn from senior management in the Pacific Region, including regional directors from FAM, Science, and operational branches, and area directors.[277] The information presented to the SDC and the log of that meeting, together with witnesses' answers to questions about that information, contribute to my understanding of the current state of progress on Strategy 4.[278]

Action Step 4.1 is described as an interim process under the Wild Salmon Policy. It requires that, for priority CUs, DFO will bring together "response teams," which are proposed to include First Nations and various local and regional interests. In collaboration with DFO, response teams will gather and consider information from all sources and provide recommendations aimed at rebuilding priority CUs beyond their lower benchmark. This response team process is to be used until DFO creates a new planning structure for the development of long-term strategic plans under Action Step 4.2.[279] The requirement to form response teams has been acknowledged by DFO staff in efforts to implement Strategy 4. For example, in 2007, DFO regional management was advised that, "[w]hile the Department does not have the information and capacity to immediately form Response teams and develop plans for all Priority CUs, the Department must begin to take action."[280]

Between 2006 and 2011, DFO staff made efforts to resolve the issue of identifying priority CUs and, on several occasions, brought the issue to the attention of regional management.[281] These efforts, which typically identified at least some Fraser River sockeye CUs, including Cultus Lake and Early Stuart CUs, did not appear to be based on an assessment of biological status conducted under Action Step 1.3, such as the preliminary status assessment in Grant Draft 2010.[282]

By June 2011, DFO had still not identified any priority CUs, despite having at least three assessments showing that a number of Fraser River sockeye CUs had critical or poor status.[283] The 2011 SDC Action Log says that discussion on the identification of priority CUs should happen at SDC "at a later date" and build "on work underway by FAM and Science to develop draft list of priority CUs

(e.g. Science 'synoptic assessment')."[284] As shown by FAM's April 2011 Briefing Note to the SDC, a key item for the committee's discussion was the question: "Is there support for identifying high 'priority CUs' as envisioned under Action Step 4.1 and the proposed longer-term approach?"[285]

Mr. Saunders said that DFO does give attention to various "stocks of concern" in the development of its Integrated Fisheries Management Plans (IFMPs), through the Salmon Stock Outlook, and in research.* He concluded: "[D]o we prioritize works and actions related to CUs? Yes, we do. Have we specifically identified priority CUs as identified in the Policy? No, we have not." Mr. Saunders said that it was absolutely DFO's intention to identify priority CUs.[286]

According to Mr. Saunders, DFO and First Nations had many discussions about the words in the Wild Salmon Policy that required DFO to consult with First Nations and bring together the various interests from existing processes to provide recommendations for protection and restoration of priority CUs.[287] However, Mr. Morley and Mr. Young both said they had never been consulted on the process for identifying priority CUs.[288] Mr. Ryall was unsure whether DFO intended to consult on the identification of priority CUs, and Mr. Saunders was not aware of any plan to do so.[289]

At the time of the hearings, a number of CUs had been identified and assessed as having red or amber or "poor status" by various DFO scientists, as well as by the authors of Technical Report 3, Freshwater Ecology.[290] Mr. Saunders agreed that work could now begin to identify priority CUs from the lists.[291] Mr. Ryall, however, was struck by the differences among the lists and preferred a scientific review of the various potential lists to produce a single determinative list.[292]

The Cultus Lake CU has not been identified as a priority CU under the WSP. Nevertheless, attention has been paid to this population for some time, predating the WSP. I discuss the Cultus Lake CU in some detail in Chapter 11, Cultus Lake, as an example of planning for a population at risk. In relation to Step 4.1, I heard evidence about the Cultus Sockeye Recovery Team as an example of what such a process could look like.

Witnesses debated whether the FRSSI planning process or the Cultus Sockeye Recovery Team were forms of Step 4.1 planning. Mr. Ryall initially testified that FRSSI was a team akin to the response teams required under Action Step 4.1, though he later conceded that the FRSSI process is not a response team for any particular CU.[293] Mr. Young and Mr. Morley did not agree that FRSSI could be considered a response team under Action Step 4.1.

Mr. Young testified that "[m]y interpretation of a response team from Strategy 4 in the Policy is to deal specifically with CUs of concern." In his view, the closest thing to a response team would be "some of the elements that came together around Cultus, although that wasn't really a Wild Salmon Policy–based initiative, and it also doesn't really fully meet the definition of [a] response team."[294] Mr. Morley said, "I would totally agree with Jeffery [Young]'s characterization of the response teams, and I wouldn't call the Skeena Watershed process or FRSSI a, quote, response team." He agreed that "Cultus could be looked at that way, but again nothing formal with respect to the Strategy 4 of the Wild Salmon Policy, for sure."[295]

DFO witnesses identified certain current planning processes as relevant to the implementation of Strategy 4. The WSP says that interim procedures for strategic planning (Action Step 4.1) will build on the approach used to develop IFMPs for salmon.[296] In evidence before me, FRSSI, the IHPC, and the IFMP were all discussed as potential forums for the integrated planning required under Step 4.2 (see Chapter 5, Sockeye fishery management).

Current planning processes in the context of the WSP

In Chapter 5, Sockeye fishery management, I discuss in detail the escapement planning model known as FRSSI, the IHPC, and the IFMP. Although I do not repeat the discussion of these processes here, I note that each of them has a role in harvest planning and, as such, has relevance to the implementation of the WSP. I also note that the policy states that interim procedures for strategic planning will build on the approach used to develop IFMPs for salmon.[297] Similarly, the WSP (under Strategy 5) notes that annual fisheries management measures will be identified in IFMPs and that input on decision rules for harvesting will be sought from First Nations and the IHPC.[298]

* Transcript, June 3, 2011, p. 7. For full discussion of IFMPs and the Salmon Stock Outlook document (Exhibit 947), see Chapter 5, Sockeye fishery management.

FRSSI and the use of aggregate Conservation Units

Conservation Units are the scale at which a stock's status is assessed under the WSP, but the WSP does not demand that all decision making for fisheries, habitat, or enhancement be made at the CU level. Indeed, the policy contemplates aggregates of CUs for planning purposes:

> Planning choices made at the aggregate level with respect to habitat, enhancement, and fisheries management measures will effectively translate into impacts on and targets for each of the individual CUs within the aggregate. However, the plan for each individual CU will reflect full consideration of the impacts on all other CUs within the aggregate.
> …
> Some planning units will encompass components of CUs and some will encompass groups of CUs subject to one or more common risk factors. The number and scale of these planning units will facilitate practical and efficient planning for wild salmon.
> …
> The Wild Salmon Policy will not preclude fisheries operating on population aggregates that include numerous CUs, but increased attention to all of the units within the aggregate will likely require significant changes to current management practices.[299]

As discussed in Chapter 5, Sockeye fishery management, harvest planning of Fraser River sockeye has historically been implemented with respect to four run-timing groups. These groups were established for fishery management purposes and consist of populations of Fraser River sockeye which return to the Fraser River at similar times.[300] The four run-timing groups are made up of the 19 sockeye stocks monitored by DFO, the Pacific Salmon Commission (PSC), and PSC's predecessor, the International Pacific Salmon Fisheries Commission (IPSFC). The 19 stocks do not necessarily correspond with the CUs, as identified in Grant Draft 2011, Table 2, and as set out here as Table 1.10.2.

Table 1.10.2 The 22 CUs and their corresponding stock names

	CU Name	Corresponding Stock Name
	Current	
1	Anderson-Seton-ES	Gates
2	Bowron-ES	Bowron
3	Chilko-ES[a]	Chilko
4	Chilko-S[a]	Chilko
5	Chilliwack-ES	Miscellaneous Early Summers
6	Cultus-L	Cultus
7	François-Fraser-S	Stellako
8	Harrison (D/S)-L	Miscellaneous Lates
9	Harrison (U/S)-L	Weaver
10	Harrison River (River-Type)	Harrison
11	Kamloops-ES	Raft and miscellaneous Early Summers
12	Lillooet-Harrison-L	Birkenhead
13	Nadina-François-ES (new-mixed CU)	Nadina
14	Nahatlach-ES	Miscellaneous Early Summers
15	Pitt-ES	Pitt
16	Quesnel-S	Quesnel
17	Shuswap-ES	Scotch and Seymour and miscellaneous Early Summers
18	Shuswap Complex-L	Late Shuswap
19	Takla-Trembleur-EStu	Early Stuart
20	Takla-Trembleur-Stuart-S	Late Stuart
21	Taseko-ES	Miscellaneous Early Summer
22	Widgeon (River-Type)	Miscellaneous Lates
	De Novo (New)	
23	Seton-L	Seton
24	North Barriere-ES	Fennell and miscellaneous Early Summers

CU, Conservation Unit; D/S, downstream; U/S, upstream; S, Summer; ES, Early Summer; L, Late; EStu, Early Stuart

[a] Chilko-ES and Chilko-S are aggregated for CU assessment purposes; these data sets cannot be disaggregated.

Source: Reproduced from Exhibit 1915, p. 3.

An extensive data set has been collected since the days of the IPSFC in relation to these 19 stocks, and these data have formed the basis of pre-season planning, escapement planning, and in-season harvest management to the present day. As discussed in Chapter 5, Sockeye fishery management, the historical data collected in relation to the 19 stocks are used for the productivity analysis in pre-season forecasting, FRSSI, and other models. To determine the productivity of a population, both the escapement data and the catch data are required. Catch data are estimated based on stock analysis from test fishing and sampling at specific points on the return migration of the salmon. Information from test fisheries in the marine area and at Mission are also critical in managing the in-season harvest because it allows fishery managers to understand the composition and size of the sockeye runs returning to the Fraser River. In marine test fisheries, only 0.5 to 1 percent of the run is sampled, and at Mission only 10–15 percent of the run is sampled.[301] Therefore, the chance of sampling all CUs before they reach their spawning grounds is extremely low.[302] This method of sampling therefore poses a challenge to managing harvest at the CU level in a mixed-stock fishery.

Dr. Riddell said that "conservation units are not going to change our management process fundamentally." He said the Wild Salmon Policy would result in little change to in-season management, including test fisheries and the use of run-timing groups, except that assessment criteria would now relate to CUs. Rather, he emphasized that the major change in management under the policy was its requirement to interlink assessing and monitoring salmon diversity, habitats, and ecosystems.[303]

Witnesses were asked if they would recommend a move away from managing aggregates to managing at the CU level. Mr. Shepert said that the Fraser River Panel's practice of analyzing Fraser River sockeye based on stock aggregates is inconsistent with the policy and that aggregate-based management is failing to conserve Upper Fraser River sockeye CUs.[304] He added that First Nations had "spent a lot of time talking about FRSSI but that also comes with its own suite of issues and problems," and that FRSSI's "fundamental flaw" was its continued use of stock aggregates.[305] Similarly, the First Nations Coalition urged me in its submissions to recommend that DFO "develop the data to dis-aggregate the 19 forecasted stocks, so that individual CUs can be considered and forecasts can be better aligned with that of the WSP."[306]

Mr. Young said that there are opportunities to manage at an aggregate level, but that the aggregates must be assessed to determine whether the fishing pressure is the same across all Conservation Units in the aggregate, to ensure that all component CUs are adequately protected.[307] Dr. Riddell testified that, although harvest decisions will be made at the aggregate level, the consequences of fishing at an aggregate level must be assessed at the CU level because "component conservation units will respond differently to different fishing pressures."[308] Mr. Morley, using Cultus Lake as an example, expressed caution that, if exploitation rates are dramatically reduced across run-timing groups to protect CUs in the red zone, it could mean the end of fisheries in the approach areas, leaving fisheries only in the areas beyond the spawning grounds of the CUs at risk.[309]

As discussed earlier in this Report, FRSSI is a harvest management tool, comprising both a computer model and a consultative process. It is designed to set escapement goals for the four run-timing groups currently managed by DFO and the PSC. Using data from the 19 stocks, the FRSSI model simulates, 48 years into the future, the application of different escapement strategies to each run-timing group and tracks the performance of these escapement strategies against certain defined performance measures.[310] Key performance measures include the probability of a population not meeting an escapement benchmark (avoiding low spawning abundance), the probability of the realizable harvest being less than 1 million fish (described as a socio-economic indicator), and the probability of a four-year average of spawners being lower than a particular benchmark for abundance.[311]

FRSSI uses a form of stock-specific escapement benchmark in assessing performance indicators. Benchmarks used in the FRSSI process are called "interim benchmarks," to distinguish them from the CU benchmarks contemplated by the Wild Salmon Policy. The intention is that these FRSSI benchmarks will be reviewed for consistency with the Wild Salmon Policy benchmarks when they are established.[312]

Once the FRSSI model has been run with the different escapement strategies, the impact of those different strategies on the performance indicators is intended to be discussed with stakeholders, primarily in the IHPC process and bilaterally between DFO and First Nations. Ultimately, a choice is made as to which escapement strategy will be chosen for each run-timing group, and this choice is implemented in the IFMP.

There appeared to be some confusion among witnesses and participants as to how the WSP and the FRSSI benchmarks relate to harvest decision rules. Whether FRSSI uses the current interim benchmarks or in the future uses WSP benchmarks, those benchmarks do not determine the harvest rule for any given stock or CU. The benchmarks are an input into the model, and the model creates probability scenarios that will result from proposed escapement strategies. The decision as to what escapement strategy will be used follows discussion of the probability scenarios and is implemented in the IFMP through incorporation of the total allowable mortality (TAM) rules. As such, the WSP benchmarks are distinguished from reference points, in that the benchmarks do not dictate a specific fishery decision. The TAM rules are more similar to the concept of reference points as the TAM rules describe what fishery decision will be taken at a specific run size.

The confusion between WSP benchmarks and harvest decision points was seen in the submission of the West Coast Trollers Area G Association / United Fishermen and Allied Workers' Union (UFAWU), which urged me to recommend "[t]hat the WSP upper benchmark be applied as an upper limit in a manner similar to the application of the upper limit in Alaska so as to mitigate the pronounced decrease in productivity resulting from escapement that exceeds carrying capacity."[313] The current maximum harvest limit results not from the WSP upper benchmark but rather from the TAM rule, which sets a maximum mortality rate at 60 percent of the run, or from constraints resulting from weak stocks co-migrating with stronger stocks.

Ms. Farlinger characterized FRSSI as a WSP pilot intended to determine "potential interim reference points for Fraser stocks based on existing information."[314] Mr. Cass argued that FRSSI "met the test" of a WSP pilot, and Mr. Ryall said that FRSSI was a pilot for implementing Strategy 4.[315] Mr. Ryall noted that FRSSI used the five-step planning procedure set out in Appendix 2 of the WSP.[316] He continued:

> [I]t's my view that the FRSSI process does represent a Wild Salmon Policy implementation and why do I say that? Is it perfect? No. That's not my testimony. It's not perfect and it doesn't encompass everything ... I would agree with Mr. Young and Mr. Morley that it doesn't include the habitat and ecosystem parts, but it includes a very important part of Wild Salmon Policy which is specifying biological targets for conservation units and groups of conservation units to ensure conservation and sustainable use.[317]

Mr. Young disagreed with Mr. Ryall. In addition to his view that FRSSI does not focus on the recovery of specific priority CUs, he stated:

> With respect to FRSSI and the management of the Fraser sockeye fisheries I do not see the four timing aggregates as consistent with that definition of a management unit [under the WSP] for a number of reasons. One is that ... it is not reflective of the component CUs; two, assignment of the stocks that are used in that, I think, is problematic. I think it's fairly loosely associated with timing. I think there's some stocks that are kind of misassigned ... and that as a result exploitation rates targeting on one management unit do not result in a consistent impact on component CUs or the stock CUs there, so that's one problem.[318]

Mr. Morley generally agreed with Mr. Young and said that FRSSI is "focused really on harvest management and clearly not comprehensive in the way the Wild Salmon Policy would indicate you should be planning under Strategy 4."[319]

Dr. Riddell stated that FRSSI's "current spatial structure doesn't take into account fully the conservation units of Fraser sockeye," but he said that, once CUs and CU benchmarks were in place, it would be just an analytical adjustment. However, he noted that FRSSI, by changing harvest rates, already does take into account some issues of mixed-stock conservation and protection of biodiversity.[320] Concerns with respect to the adequacy of FRSSI relate in many cases to measures not fully evaluated

by the model and include direct inputs with respect to freshwater habitat status, marine habitat, and detailed socio-economic analysis.

Mr. Morley said he has requested that evaluations of the value of "forgone" harvest form part of the FRSSI deliberations. He explained that FRSSI stakeholders had also requested that, rather than FRSSI's 60 percent total allowable mortality rate on populations, DFO consider alternatives of "some kind of maximum fixed number of spawners in any one system" on which to base an analysis of the biological, social, and economic impacts.[321] Mr. Morley stated that "the way in which socioeconomic analyses have been done within FRSSI is not adequate with respect to what I would expect to see under Strategy 4."[322]

Mr. Cass testified that the FRSSI model "melded well with the intent of the Wild Salmon Policy." He noted that, when the WSP was released, the FRSSI model was recognized as meeting the "standards" of the WSP, specifically with respect to Strategy 1. It also adhered to Appendix 2 of the policy, in that it was designed to be "open and transparent, consistent and involve stakeholders and user groups … as well as environmental groups that had an interest in the resource."[323]

Ms. Stalberg said she had generated an information piece for FRSSI setting out the way that habitat status might be incorporated into it, but that she did not know if DFO had ever integrated habitat status information into Strategy 4 planning and decision making so as to protect salmon habitat.* Mr. Cass testified that FRSSI does not currently incorporate habitat status and productivity information, except indirectly in that spawner recruitment figures will be partly dependent on the habitat, given that habitat capacity is at the very root of the stock recruitment analysis.[324] Ken Wilson, a consulting fisheries biologist and a member of the Fraser River Panel, testified that productivity changes related to habitat damage or loss may already be reflected within the data set used in the FRSSI model, but that the model does not incorporate assumptions about future habitat improvements.[325]

In Mr. Cass's view, DFO should be open to change the direction of FRSSI if necessary. If habitat, for instance, ought to be incorporated, he suggested that such recommendations be considered.[326]

IFMP and IHPC relationship to Strategy 4

The IFMP implements the harvest strategies developed through the FRSSI and IHPC processes. Mr. Ryall referred to the IFMP when questioned about DFO's implementation of Strategy 4.[327] Mr. Ryall said that DFO was already addressing weak stocks in harvest management by reducing harvest rates in marine waters and the Lower Fraser River and setting clearer decision rules within the annual IFMP.[328] He thought the IFMP would continue to identify stocks of concern rather than CUs and to implement harvest management decision rules.[329] He also believed that the long-term goals and objectives found in integrated strategic plans "are going to work themselves into the Integrated Fishery Management Plans which are currently on an annual basis." He speculated that IFMPs could become multi-year documents.[330]

Barry Rosenberger, area director, BC Interior, DFO, and Canadian chair, Fraser River Panel, PSC, said that planning processes under the WSP would be implemented largely within DFO's existing processes, which would need to be adapted.[331] Jeff Grout, salmon resource manager, Salmon Team, DFO, agreed that it would be for DFO managers of the resource to weigh conservation issues and socio-economic issues under the policy.[332]

Mr. Ryall initially suggested that the multi-stakeholder, harvest-focused IHPC was one forum where Strategy 4 planning could occur. He testified that the IHPC is not the only place where such discussions occur; they also occur bilaterally with First Nations around the development of the IFMP. He agreed that First Nations, in most cases, do not participate in the IHPC. Ultimately, he appeared to agree that the IHPC is an advisory body, rather than an integrated planning process as contemplated under Strategy 4.[333] Mr. Young said that the IHPC is limited to harvest issues, and the implementation

* Ms. Stalberg also testified that, before January 2009, when her WSP tenure ended, DFO had not started discussing how the impact of aquaculture on habitat might be incorporated into integrated strategic planning under Strategy 4. The WSP Habitat Working Group that Ms. Stalberg coordinated until January 2009 was not engaged in aquaculture issues. See Transcript, December 8, 2010, pp. 18, 50; and Exhibit 181, p. 1.

described in the Wild Salmon Policy may have to take place in another type of forum.[334]

Mr. Young said that the IFMP and FRSSI were not comprehensive in considering stakeholder concerns relating to habitat and ecosystem components.[335] In his view, the IFMP also needs to identify WSP conservation objectives and priorities more clearly, and the process needs improved representation from First Nations.[336]

Dr. Riddell testified: "The conservation units are the new stocks. These are the units of geographic production of salmon that need to be at the basis of all the integrated harvest planning discussions."[337] The IHPC is only one component of implementing the WSP. It is not a replacement for the long-term strategic planning for salmon required by the policy, which will bring in affected people, including the province, municipal governments, First Nations, and community groups.

Findings

Based on the evidence I heard, I find that current analytical techniques under the Fraser River Sockeye Spawning Initiative (FRSSI) do not allow fisheries to be managed at the Conservation Unit (CU) level in the marine areas or, indeed, in most mixed-stock fisheries in the mainstem of the Fraser River. It may be that, in the future, techniques will be developed that will allow for harvest management at a resolution as fine as CUs, but such techniques are not available today or in the foreseeable future.

I accept the testimony of Paul Ryall, former lead, Salmon Team, DFO; Jeffery Young of the David Suzuki Foundation; Dr. Brian Riddell, former division head, Salmon and Freshwater Ecosystems, DFO Science; and Rob Morley, vice-president, Canadian Fishing Company, that FRSSI, the Integrated Harvest Planning Committee (IHPC), and the Integrated Fisheries Management Plan (IFMP) are not intended to represent the long-term planning envisioned under Strategy 4. Having said so, I find that these processes are valuable tools in managing the yearly harvest and are not inconsistent with the Wild Salmon Policy.

A planning model for Strategy 4

Action steps 4.1 and 4.2 contemplate a new integrated planning model involving First Nations as well as the province, municipalities, and stakeholders in making plans with respect to salmon habitat, health, and harvest. The Wild Salmon Policy states that the two keys to success for a new planning structure are a high degree of support and participation by First Nations at all levels, and a high degree of support and involvement of governments at local and regional levels. Achieving these goals "will require strong efforts by the Department and others to build the necessary political will and commitment for these other levels of government to support and participate in the planning process."[338]

DFO has not yet created either a draft framework for a long-term integrated planning process or draft guidelines or a template for integrated strategic planning. On May 26, 2011, DFO staff proposed that "draft guidelines and templates for strategic plans" be finalized by the fall or winter of 2011.[339] Similarly, the April 14, 2011, Strategic Directions Committee log states that FAM will "lead work with the Areas and other sectors to develop a template / tools to support integrated planning under Strategy 4 (e.g. common agreement on the DFO deliverable(s) for the pilots and future WSP planning processes)."[340] DFO has not yet initiated consultation with First Nations and others on a proposed longer-term planning process.[341]

Mr. Ryall testified that Sandy Fraser, a retired DFO employee, engaged by DFO on WSP implementation, proposed a template for a Strategy 4 strategic plan in a 2007 report.[342] According to Mr. Ryall, this template was "not meant to be prescriptive" but was "meant to be a guide of how one would develop an integrated strategic plan."[343] Non-governmental witnesses were asked if they had seen any such template for strategic planning from DFO. Mr. Morley answered that, in his view, the best template for strategic planning is found in the Wild Salmon Policy, Appendix 2, which sets out a structured five-step planning procedure. He described this template as straightforward and succinct.[344] Mr. Young agreed with Mr. Morley that Appendix 2 provides clear guidance and recommended that it be revisited to ensure that current efforts were consistent with it.[345]

DFO staff presented their annual WSP update and proposed annual work plan to the Operations Committee or the Strategic Directions Committee in 2008, 2009, 2010, and 2011, and in each year they

noted the need to develop an integrated planning framework and strategic guidance document for Strategy 4.[346] Over these four years, no such frameworks or guidance documents were created.[347] Neither Mr. Morley nor Mr. Young had seen or been consulted on any regional framework for integrated planning under Strategy 4.[348] Most recently, FAM advised the SDC that Strategy 4 implementation is challenged by the "lack of a clear or consistent governance structure for integrated planning processes."[349]

Bruce Reid, regional manager, OHEB, testified that a planning initiative known as the Integrated Oceans Management Plan of the Pacific North Coast Integrated Management Area (PNCIMA) developed integrated planning at a much larger scale than that anticipated under Strategy 4. However, in his view, "there will be either ecosystem objectives or specific strategies for monitoring and developing indicators that may have application at a smaller scale, such as the conservation unit level scale," and the governance model developed for that planning initiative may have some useful lessons for Strategy 4 integrated planning strategies.[350]

In addition, Mr. Crowe pointed to the Shuswap Lake Integrated Planning Process as being useful in implementing the Wild Salmon Policy over time. He described it as a vehicle for coordinating and trading off the values of different parties, as well as collecting inventory and assessment information necessary to improve decision making.[351] For a description of the SLIPP, and of PNCIMA, see Chapter 6, Habitat management.

Mr. Saunders said that establishing a collaborative governance mechanism under Strategy 4 to allow numerous governments to work together would not be a minor undertaking. In his words: "It's not one MOU [memorandum of understanding]." Despite these challenges, he stressed that moving forward on Strategy 4 integrated planning was absolutely essential.[352]

According to Mr. Ryall, the FRSSI process over the last few years used the planning model set out in Appendix 2 to the Wild Salmon Policy, and DFO learned from implementing that process. Addressing how the process could be improved, he said that steps 1–3 under the planning model could be separated from the others and addressed with technical people. The outputs from that process could then be brought to a larger group of technical and non-technical people for steps 4 and 5.[353]

Mr. Morley had a similar view: steps 1–3 should be completed by technical teams, he said, primarily with people from DFO but also with input from First Nations and groups if they have information to contribute to the technical elements. Such a process would allow for options to be developed and the consequences of options to be evaluated. Then, at steps 4 and 5, all stakeholder groups could be brought together to discuss the implications of these options.[354] According to Mr. Morley:

> [A]ll of the major stakeholders should be kept out of it, and the only inputs at the initial steps would be technical inputs addressing some of the Strategies 1, 2 and 3, as well as some input from groups with respect to how you would evaluate the variety of potential benefits … from different management approaches. So evaluation methods for First Nations or recreational or commercial kind of fisheries, and evaluations of other environmental benefits, input on that technique. But that the essential drafting the elements of … a plan and laying out management alternatives, and habitat management alternatives could be done largely with technical teams much quicker and efficiently. And we would actually probably be in a position today where we'd have, having had this Policy around now for six or seven years, that we would actually have the scope of a whole variety of plans in place already, in my opinion.[355]

Mr. Morley was of the view that a more streamlined approach, as he described above, would be welcomed by the stakeholders who were burdened with too many meetings.

A socio-economic framework / guidance for use in Strategy 4 planning

One issue that was raised often in the course of this Inquiry, and highlighted in final submissions by many participants, was the need for improved socio-economic information in decision making. Strategy 4 is the place where planning is done, which accounts for socio-economic factors combined with all biological factors, and in response to input from all affected parties and levels of government.

In briefing materials and work plans in 2010 and 2011, DFO recognized the need for a decision-making framework that guides the integration of social, economic, and biological indicators under Strategy 4.[356]

With respect to social or economic frameworks to be used in WSP integrated strategic planning, Mr. Ryall said he had seen a draft national policy, dating perhaps to 2008, which listed "three tiers of social and economic analysis."[357] However, this document was not produced, and it does not appear to match any documents on the list of socio-economic reports that Canada says are relevant to Fraser River sockeye.[358] Moreover, Mr. Ryall did not say that this apparent draft policy is specific to or informed by the Wild Salmon Policy.

Ms. Farlinger testified that a socio-economic study specific to the Barkley Sound pilot had been done. She also stated that economic analysis is required in developing IFMPs, and that such analysis is under way for some but not all IFMPs.[359] She noted that an economic analysis had been done in relation to the gillnet fleet in the Skeena River, but acknowledged that there was a greater demand for socio-economic reports than for the studies that had been done to date.[360] Ms. Farlinger also agreed generally that, in going forward with WSP implementation, socio-economic studies would be carried out through IFMPs on specific Conservation Units.[361] However, she could not confirm if any such economic analyses had been completed for any Fraser River sockeye CU.[362]

Witnesses testified about aspects of socio-economic guidance related to Strategy 4. Mr. Morley said that FRSSI is not adequate to address socio-economic issues under Strategy 4.[363] In his opinion, DFO needs to do a more explicit evaluation of the financial costs and benefits as well as the social implications of the various management scenarios that are available. He said that economists need to be included in the process, and a professional evaluation of the socio-economic impact should be done to allow the stakeholders to quantify the impact on income and the social and environmental benefits. He stressed the need for a consistent technical evaluation, which could be done each year, going further than receiving opinions from stakeholders.[364]

Kathy Scarfo, president of the West Coast Trollers Area G Association, also talked about the need for stakeholders and DFO to be able to assess the impact of different measures. She gave the example of the Cultus Lake CU:

> If forgoing 25 million Fraser River sockeye to protect 200 Cultus is actually effective, then that's a cost / benefit analysis that we need to do, and we need to recognize that. We need to be able to say, we, as the Canadian government, gave up 25 million sockeye, worth however much they are, because we want to protect those 200. But the general public should then also be able to say, "Was that really effective?" Did cutting back the commercial fishery actually really do anything for Cultus? Or would we be in a better situation to harvest 25 million sockeye, maintain an exploitation rate that does not do incredible harm or irreversible harm to that stock group, and actually invest the money where the actual problem is.[365]

Mr. Morley commented that Exhibit 403 (A Framework for Socio-Economic Analysis to Inform Integrated Fisheries Management Planning and Fish Harvest Decisions, DFO Draft April 2008) had not been brought to his attention by DFO but would be "an excellent start in looking at some of the things the department should be doing in both objective-setting process in terms of spawning objectives, as well as evaluating different management plan alternatives."[366]

DFO witnesses were asked if DFO had analyzed or considered the socio-economic implications of food, social, and ceremonial (FSC) fisheries in relation to the Wild Salmon Policy. Mr. Saunders answered, "[I]n general the social values in our integrated planning that we've attempted haven't been well-understood or reflected." He agreed that this deficiency is one of the considerations to be folded into WSP strategic planning. He added that it would be useful to complete a foundational document on the general socio-economic approach to be used under the WSP.[367]

Witnesses also said that DFO lacks adequate in-house capacity to conduct social or economic analyses relevant to long-term planning. Mr. Morley outlined his previous experience working for DFO as director of planning for the Salmon Enhancement Program (SEP), where he had a multidisciplinary, in-house technical team of

biologists, scientists, economists, sociologists, and engineers involved in developing and evaluating a comprehensive draft plan for the SEP. The plan was then exposed to external advisory processes and consultations before being finalized.[368]

Mr. Saunders said that the economics capacity within DFO's Policy Branch had significantly increased, though he could not speak definitively on this capacity and was unsure if it was sufficient. He did not believe DFO had capacity on what he called the social side.[369] Mr. Ryall noted that, as of 2006, DFO did not have internal economic capacity but had recently added economists to the Policy Branch.* He agreed with Mr. Saunders that "the social ones are going to be a challenge and we'll be looking externally."[370] Specifically in the context of Strategy 4, however, Dr. Irvine testified that he felt very strongly that DFO needs more internal capacity in resource economics and in evaluating social alternatives.[371]

I examine in some detail the efforts made with respect to the Cultus Lake CU, including the socio-economic analysis done in relation to it (see Chapter 11, Cultus Lake). My review of the Cultus socio-economic analysis has relevance for socio-economic work to be done under the Wild Salmon Policy.

The importance of planning that integrates the interests of First Nations and all stakeholders has been highlighted in external reports. In March 2009, the David Suzuki Foundation and the Watershed Watch Salmon Society published a report entitled *Knowledge Integration in Salmon Conservation and Sustainability Planning: Towards Effective Implementation of the Wild Salmon Policy, Strategy Four*.[372] Mr. Young said that, in preparing this report, these organizations hired Dr. Julia Gardner to "look at how best to potentially bring together different perspectives and stakeholders and interests around the issue of integrated planning as required under the Wild Salmon Policy."[373] In May 2008, the Skeena Independent Science Review Panel released a report on the management of anadromous salmon in the Skeena Watershed.[374] It contained the following recommendation:

> There is a need to confront the major tradeoff decisions that are implied by the Wild Salmon Policy and the impacts of mixed-stock ocean fisheries on Skeena stocks. There should be an explicit public decision about the loss of biodiversity (number of weak stocks allowed to remain overfished or at risk of extinction) that is deemed acceptable and changes required to fisheries in order to achieve particular harvest objectives. Such a decision should be based on tradeoff relationships that can now be estimated from historical data on escapement trends and exploitation rates, as shown by the examples provided in this report.[375]

Mr. Morley and Mr. Young generally agreed with this recommendation.[376] Dr. Walters also referred to the need to make trade-off decisions when considering the impact of protecting weak stocks that co-migrate with strong stocks.[377]

Strategy 5: Annual program delivery

Under Strategy 5, there are four action steps, each of which requires annual operational activities or annual plans that implement a Strategy 4 strategic plan. Action Step 5.1 requires DFO to assume a leadership role in assessing the status of Conservation Units and populations. Action steps 5.2–5.4 require, in turn, planning and implementing annual fisheries, habitat management activities, and enhancement activities.[378]

DFO and non-governmental witnesses suggested that aspects of Strategy 5 could be implemented now, even though strategies 1–4 are not yet fully implemented. Mr. Young suggested that DFO could create and report to the public on an "annual plan," which stakeholders could rely on and evaluate, even before completion of strategies 1–4. Mr. Saunders said that, as DFO made progress on strategies 1–3, it would be possible to start implementing some aspects of Strategy 5. Moreover, as Mr. Ryall testified, DFO clearly does have work under way to plan and conduct annual fisheries as anticipated by Action Step 5.2.[379]

* Mr. Ryall noted that, in 2008, DFO hired a contractor to provide an economic analysis of Skeena salmon fisheries (Transcript, June 3, 2011, pp. 13–14). See also Exhibit 949, a report by Counterpoint Consulting entitled *Economic Dimensions of Skeena Watershed Salmon Fisheries*.

Strategy 6: Performance review

Strategy 6 of the Wild Salmon Policy mandates performance review, to determine what is and what is not working so as to encourage continuous improvement over time.[380] Under Strategy 6, there are two levels of evaluation: annual review and a five-year independent review.

Action Step 6.1 commits DFO, in consultation with First Nations and others, to conduct annual post-season reviews of work-plan implementation for stock assessment, fishing, habitat, and enhancement.[381] Given my findings that DFO has not, to date, created any integrated strategic plan under Strategy 4 or implemented such a strategic plan through annual operational planning under Strategy 5, the department has not yet had the opportunity to implement Action Step 6.1.

Action Step 6.2 requires an independent review of the success of the WSP in achieving its broad goals and objectives within five years of its adoption.[382] As noted above, the last-minute addition of this requirement played an important role in providing assurance that DFO was committed to implementing the policy. However, by June 2010, DFO had not ensured that an independent review had commenced, let alone been conducted.

On April 14, 2011, following a series of internal meetings and consultations from 2009 to 2011, DFO staff sought direction from the Operations Committee on its proposed evaluation framework for the review.[383] Shortly thereafter, DFO issued a Statement of Work with set terms of reference for the review and hired a contractor (Gardner Pinfold) to perform it.[384] The final report of the independent review, *Performance Review of the Wild Salmon Policy*, was released in September 2011 and marked as an exhibit in this Inquiry.[385]

Gardner Pinfold relied in large part on the testimony and evidence called in this Inquiry. Perhaps unsurprisingly, their conclusions on the WSP are generally consistent with the observations I make in this Report.

Findings

I am not satisfied that the annual Wild Salmon Policy (WSP) work plans approved by the Operations Committee meet the requirement for post-season reviews under Action Step 6.1 developed in consultation with First Nations and other stakeholders. When the Operations Committee approves annual WSP work plans, it simultaneously reviews the progress made on the previous fiscal year's work plan. These are strictly internal documents created to guide the work of Department of Fisheries and Oceans (DFO) staff in different sectors. First Nations and others are not involved in any review of DFO's internal work plans. Further, these WSP work plans do not set out any operational, on-the-ground activities or targets, such as the rehabilitation of specific habitats or setting fisheries exploitation rates, nor does the annual review of those work plans involve any review of whether operational targets were achieved.[386]

Consultation and partnerships in the implementation of the WSP

Consultation on policy implementation

I heard evidence on the extent of consultation DFO has engaged in with external partners, First Nations and stakeholders in the implementation of the Wild Salmon Policy. Ms. Farlinger referred to existing fishery management consultation processes and sporadic meetings on particular topics.[387] Mr. Saunders advised that the last large forum held with First Nations or stakeholders on WSP implementation occurred in March 2008.[388] A WSP forum in the fall of 2009 did not take place as planned.[389]

Mr. Ryall produced for this Inquiry a Meeting Inventory Description and a spreadsheet entitled "Inventory of Meetings Related to Fraser Sockeye Planning and WSP Implementation" (together, meeting inventory).[390] The purpose was "to compile an inventory of meetings (bilateral and multi-interest) related to Fraser River sockeye planning, WSP implementation, and other integrated planning processes" from June 2005 to March 2011, where discussions likely referred to or were relevant to WSP implementation.[391] The inventory includes information about meetings organized by DFO, as well as meetings where DFO employees were simply invited to participate or attend, and internal DFO meetings that excluded First Nations and stakeholders.[392]

Only a small subset of the listed meetings falls into the category of "WSP Implementation." Other categories include IHPC meetings, sector-specific engagement meetings, various multi-interest engagement meetings, and CSAP peer-review meetings.[393] Even within the category of meetings labelled "WSP Implementation," many of the meetings relate to FRSSI or the Skeena Watershed Initiative, and not all these meetings were focused on WSP implementation.[394]

Neil Todd, operations manager for the Fraser River Aboriginal Fisheries Secretariat (FRAFS), attended the second day of a FRAFS workshop on October 14, 2010. To his knowledge, and contrary to the page in the meeting inventory that lists meetings between DFO and the FRAFS, WSP implementation was not discussed in any substantive way at that workshop and was not on the agenda.[395] Mr. Shepert was likewise referred by counsel to a page in the meeting inventory listing meetings with the Upper Fraser Fisheries Conservation Alliance (UFFCA). Contrary to the meeting inventory, he testified that DFO had not had any substantive discussions with the UFFCA on WSP implementation.[396]

Since 2005, three meetings between DFO and British Columbia have touched on the WSP. Only one of these meetings is stated in the meeting inventory to relate to WSP implementation. The other two meetings are annotated as "updates" by DFO staff.[397] With regard to one of the two updates, a meeting on October 23, 2009, Mr. Ryall clarified that DFO was "providing an update" to provincial staff on the department's WSP implementation efforts and that it was not a "working meeting."[398] The Barkley Sound WSP pilot appears to be an exception because it features engagement with the province facilitated through two non-governmental organizations.[399]

Findings

Based on witnesses' testimony and the meeting inventory, I find that many of the meetings listed in the meeting inventory prepared by the Department of Fisheries and Oceans (DFO) did not specifically or substantively address Wild Salmon Policy implementation. Rather, I view the inventory as a list of various meetings held or attended by DFO related to Pacific salmon fisheries and conservation generally. I am unable to put any significant weight on this document as a record of DFO consultation on the implementation of the WSP.

Partnerships

I received no evidence of formal agreements between DFO and any of its potential partners – the Province of British Columbia or First Nations governments or stakeholders – governing the implementation of the Wild Salmon Policy. Nor is there any evidence of an overarching DFO strategy or plan aimed at involving First Nations, other governments, and stakeholders in WSP implementation.

I asked Ms. Farlinger if it was realistic for DFO to share its program responsibilities with its partners. She said she thought that the collaboration objective was still realistic. She believed that there had been significant advances, noting the Barkley Sound pilot and the Integrated Salmon Dialogue Forum. She also thought that DFO has made significant progress, in the last five years, in talking about Fraser River sockeye with First Nations.[400]

"[T]here are many people out in British Columbia that are involved in community groups, for example, that could assist the Department in collecting habitat data, or identifying habitat issues," according to Dr. Riddell. He added that DFO staff "knew we had to be more involved with the Province because they have much of the terrestrial habitat information that could be used."[401] In Dr. Riddell's words, while there was no question that DFO scientists have the scientific capacity, the scientists were directed to other activities beyond WSP implementation, such that DFO "can also use external help so that we reach completion within a reasonable timeframe."[402] He said that, with the progress on implementation to date, DFO might now be more willing to start working with external groups to conduct the technical analyses and to implement monitoring on the ground. However, he noted that the need remained for DFO oversight, to ensure the use of standardized monitoring approaches and maintain its "overall management responsibility."[403]

Dr. Riddell referred to the Skeena Watershed Initiative, which has WSP implementation as its primary objective. The initiative seems to be driven by external parties, with DFO as a partner rather than

taking the lead. It gives DFO technical assistance on defining CU benchmarks and working on habitat issues, and it is piloting Strategy 4 watershed planning (the Skeena Watershed Initiative is also discussed below in the section on Strategy 4 implementation).[404] For this governance effort, the Pacific Salmon Foundation had sought the involvement of a wide selection of stakeholders and all user groups, and attempted to have an open, transparent process.* However, Dr. Riddell said that there "have been issues … in terms of who is allowed to be represented" in the watershed governance process, conceding that "we're having growing pains in terms of full active involvement" with participants. He described it as an advisory process, with recommendations going to DFO.[405]

Mr. Young said that some opportunities under strategies 1 and 2, and perhaps Strategy 3, to redirect monitoring effort both within and without the department had probably not been fully explored. He emphasized that monitoring "is one of the key potential capacity constraints within the Department." Like Dr. Riddell, he noted that, even if it secured assistance from external partners, DFO would still have to play a key coordinating role.[406]

Mr. Sprout emphasized that DFO could not conserve wild Pacific salmon on its own, without involvement of the province, First Nations, and stakeholders. He said that integrated strategic planning was not the responsibility of DFO or federal agencies; rather, "[W]e need to create watershed processes that are led by those agencies who have responsibility and the legal responsibility for management of water and the use of land, and … those watershed processes need to look at planning human development."[407] Mr. Sprout stated that "the federal policies don't get at those issues." I note that this statement is difficult to reconcile with the express language of the Wild Salmon Policy, which speaks of the important but supporting role of other levels of government: "[T]here will need to be a high degree of support and involvement of Provincial, Territorial and local government at both local and region-wide levels of the structure … This will require strong efforts by the Department and others to build the necessary political will and commitment for these other levels of government to support and participate in the planning process."[408]

In addition, Mr. Sprout noted that the province and regional districts would have to decide whether they would lead integrated strategic planning processes to address threats to Pacific salmon, such as climate change and various habitat impacts, and that the federal government "can only be a participant in those processes; it's not going to be able to lead."[409] Mr. Ryall and Mr. Saunders agreed that DFO holds some, but not all of the policy or management "levers" over water or other aspects of fish habitat.[410] Mr. Sprout stated that others with "jurisdictional responsibilities" should lead watershed-based planning processes. He went on to say that any recommendations that I make on integrated planning for salmon conservation "will have to be looked at by parties who are not federal," because this activity would involve matters outside DFO jurisdiction.[411] Again, this proposition does not square with the clear levers over fish and fish habitat found in sections 35 and 36 of the *Fisheries Act*. Although the overlapping jurisdiction of the province may make the department's habitat work more challenging, DFO does hold levers and is directed to take a lead role in integrated planning through Strategy 4 of the Wild Salmon Policy.†

Partnerships with the province

Dr. Riddell recalled that DFO gave the province two briefings before the public consultations on the draft Wild Salmon Policy but that the department did not invite the province's direct involvement in drafting the policy. In his view, it was more important for the province to be involved in implementing the Wild Salmon Policy – particularly strategies 2, 3, and 4 – than to be actively involved in developing it.[412] Although a senior provincial official expressed concerns to Mr. Sprout in late 2003 or 2004 that a wild salmon policy might have significant implications for how fisheries are conducted, the province endorsed the policy when it was approved in June 2005.[413] Mr. Sprout and Ms. Farlinger said that, after 2005, they had not heard of any reservations or concerns held by the province with respect to the policy.[414]

* For a description of the Pacific Salmon Foundation, see PPR 11, Habitat Enhancement and Restoration, p. 51.

† Bill C-38, *An Act to implement certain provisions of the budget tabled in Parliament on March 29, 2012 and other measures,* received royal assent on June 29, 2012. As discussed further in Volume 3, Chapter 3, Legislative amendments, Bill C-38 contains a new section of the *Fisheries Act* which allows the minister to enter into agreements, arrangements, or transactions with a variety of entities for the purposes of the Act.

In a 2006 letter on WSP implementation, the Pacific Fisheries Resource Conservation Council (PFRCC) encouraged DFO to enter formal agreements with the province for data access and sharing. Minister Loyola Hearn responded, "DFO staff in the Pacific Region are currently working with provincial colleagues to share data and are working toward the creation of a formal agreement to cover this ongoing activity."[415]

Ms. Farlinger did not mention any joint or collaborative activities aimed at WSP habitat monitoring or integrated watershed planning. She did, however, note the existence of various non-WSP agreements with the province, the sharing of data, oceans planning activities, operational fisheries planning activities, and the *Riparian Areas Regulation*.[416]

Mr. Sprout also gave examples of federal-provincial co-operation in "various other organizational arrangements" outside of the context of WSP implementation. He discussed a few "leadership initiatives" – the Integrated Salmon Dialogue Forum and the Fraser River Salmon and Watersheds Program (FSWP).* The FSWP was given $10 million by DFO, half of which was in-kind support and the other half new funds obtained through a Treasury Board submission. The FSWP funds are not administered by DFO: rather, DFO granted these funds to the Pacific Salmon Foundation and the Fraser Basin Council, non-profit groups, to administer and fund various projects related to salmon conservation which were proposed by stewardship groups and First Nations.[417] However, I heard no evidence that these programs were ever specifically tasked with implementing any WSP strategies or action steps.

Mr. Ryall said that there were discussions between DFO senior management and the province "around a host of activities, and one of those being Wild Salmon Policy" and "various ways of interacting with the Province on … implementation," although no specifics were provided.[418] Mr. Saunders could not provide any details on engagement with the province on WSP implementation but noted some "working level" engagements between DFO and provincial scientists. He suggested that a key area for partnership, and a focal point for integration, was the FSWP.[419]

Mr. Saunders testified that the need for collaboration was "a big subject under Strategy 4," one that requires DFO to do more to establish a governance mechanism to allow four orders of government to work together.[420] Dr. Hyatt said that, although working-level engagements had value in advancing WSP objectives, they fell "far short of the broad scale integration of effort envisaged under various sections of the WSP," such as Action Step 4.2 (integrated strategic planning). Better linkages were needed to overcome the currently fragmented state of information and data systems, held by a variety of federal and provincial agencies, of relevance to WSP implementation.[421]

Dr. Hyatt emphasized that DFO should pursue collaboration on the Wild Salmon Policy with the province. He recommended that Canada and British Columbia negotiate a formal bilateral agreement, or set of agreements, to actively collaborate on WSP implementation. In his view, "without that kind of joint action, Wild Salmon Policy … will face insurmountable difficulties."[422]

Mr. Sprout said that, over time, the province's capacity to participate in initiatives related to WSP implementation, such as watershed planning processes, had diminished. His staff advised him that, while the province had previously co-operated and shared workload on habitat conservation activities, increasingly it lacked the resources or capacity to contribute.[423] Mr. Sprout added that, notwithstanding the province's capacity issues, he believed that, generally, DFO and British Columbia worked relatively well together.[424]

Partnerships with First Nations

Although all four guiding principles under the Wild Salmon Policy are relevant to First Nations, Principle 2 is specific to them. It requires that Canada's resource management processes and decisions honour Canada's obligations to First Nations.

Correspondence in evidence shows that Fraser River First Nations sought to have DFO identify WSP implementation opportunities for First Nations, including tasks that First Nations could carry out on the ground and leadership roles.[425] Mr. Saunders said that there are different levels of understanding on WSP technical issues within First Nations communities, and DFO needs to consider how to engage with First Nations at a local community level. He said he understood from First Nations that it was important

* For a full description of the FSWP, see PPR 11, Habitat Enhancement and Restoration, pp. 53–54.

to them to stay involved in the implementation of the policy. Mr. Saunders agreed that clearly articulated Tier 1, 2, and 3 processes* would be helpful in the implementation of the policy.[426]

Mr. Shepert testified that First Nations had broadly supported the WSP in its development and liked it "in concept." Overall, in his view, DFO's lack of engagement with First Nations in WSP implementation was very concerning.[427]

The third "guiding principle" of the Wild Salmon Policy states that resource management decisions will reflect best science, including Aboriginal traditional knowledge (ATK).[428] The policy provides that the delineation of Conservation Units will include ATK, and that detailed reports on priority CUs will consider and incorporate ATK, where available.[429] In meetings with First Nations from 2005 to 2007, DFO sought input on how DFO should identify and include ATK in identifying CUs, characterizing habitat, and developing ecosystem indicators.[430] In 2006, DFO developed a proposal with the BC Aboriginal Fisheries Commission for guidelines concerning the use of ATK in fisheries management in the Pacific Region. However, Mr. Saunders said that, after that organization disbanded, "we just never had a good opportunity to put that proposal back on the table again."[431]

After Mr. Saunders left the WSP coordinator position in March 2007, DFO's interest in this issue appears to have waned. First Nations continued to raise the need for incorporating ATK into WSP implementation, including at a WSP Forum in March 2008.[432] The WSP Implementation Team did not reach a decision on this issue in 2008 or 2009. On December 15, 2009, the team decided to refer the issue to regional management.[433]

In 2010, the Strategic Directions Committee rejected the idea of a WSP-specific approach to ATK. While acknowledging that ATK is specific to particular circumstances, the committee relied on the existence of less salmon-specific guidance materials, suggesting that the guidelines of the *Species at Risk Act* could be "more broadly applicable to determining ATK."[434] In reporting back to the WSP Implementation Team, Lisa Wilson, the current WSP coordinator, advised that there was no support from regional management for a WSP-specific project on how to include ATK in WSP implementation.[435]

Funding for WSP implementation

Earlier in this chapter, I discussed DFO's failure to create a WSP implementation plan, or even to estimate the cost of implementation. Below I turn to the issue of the funding that was provided for the implementation of the Wild Salmon Policy. The WSP addresses resource issues for implementation:

> First, implementation must be accomplished within DFO's existing resource capability and will be phased in over time.
> …
> Full implementation will not be achieved overnight. Establishing the management and consultation process, and allowing it to mature, will take time. The completion of scientific work to define Conservation Units, establish benchmarks, and design new assessment systems will depend on the availability of data and scientific capacity. In addition, the policy introduces new challenges for the conduct of ongoing programs, and ultimate success depends on effective delivery of the Department's research, enforcement, and Aboriginal programs. *All of these activities, ongoing and new, must be accomplished within the envelope of available funding.* [Emphasis added.][436]

Mr. Chamut testified that, when he was asked to take on the WSP development role in the region, "there was never any discussion about the cost of implementing the Wild Salmon Policy." To the contrary, he stated that the minister "was not given any suggestion that it was going to take a large investment of money and, in fact, quite the reverse; it was expected the policy would be implemented with existing funds."[437]

Similarly, in a November 24, 2004, email, Dr. Richards wrote: "I recognize that we will be under pressure to proceed at a rate faster than current resources permit. I think we should push back and try to do this within existing resources."[438] Mary Hobbs, regional director, Policy, replied to Dr. Richards's email:

* For an explanation of Tier 1, 2, and 3 processes, please see Chapter 5, Sockeye fishery management, in the sections on DFO advisory processes and on Aboriginal fishing policies and programs.

> While the policy itself is designed to be implemented within the existing resource capability of regional programs, it requires a change in the way business is carried out. Because of this there are a number of specific start up costs associated with implementing the policy. These fall into three broad areas and include: integration, consultation and discrete work required to launch the WSP. To integrate habitat, watershed and fish production decision making requires an internal and external cultural shift in thinking, planning and managing. Support is needed to jump start the cultural shift. Support is also needed to build processes and begin to deliver capacity building skills internally and externally. Consultation will be required for key pieces of work that underpin operational implementation – e.g. conservation units, social and economic framework. Discrete pieces of work include documenting key habitats for salmon species, developing indicators and benchmarks for habitat quantity and quality; developing indicators to monitor freshwater ecosystems; biological risk assessment of enhanced fish on wild salmon are required.[439]

Dr. Irvine agreed it was a "challenging situation" to be asked to implement a new policy relying on existing funds.[440]

Although the policy stated it was to be implemented with existing funds, Mr. Chamut confirmed that, at the beginning of June 2005, he was involved in trying to cobble together some WSP implementation money from various sources in DFO, so the funds could be announced by the minister later in June.[441] His email of June 1, 2005, says, "I think the key to getting the Policy adopted will be to secure some money to attach to implementation."[442] He contacted colleagues in Ottawa to "get them to provide money from their internal budgets, which I was able to do."[443] This amount included new funds to be provided from the operational relief submission, as well as small contributions from each sector.[444]

Mr. Bevan acknowledged that DFO did provide "seed money" to start implementation. He said that the policy was "overly ambitious and unrealistic" to require certain scientific work under Strategy 1 without additional funds – in particular, its requirement "to identify all of the CUs and to set down limit reference points and other specific targets ... to help inform management."[445]

The June 24, 2005, news release announced DFO's adoption of the Wild Salmon Policy, and Minister Regan committed $1.1 million in funding "for its implementation and related salmon science." It confirmed that $400,000 of the $1.1 million was derived from new funds that the minister had announced the week before.[446]

DFO did assign some new, incremental funds to WSP implementation. These funds flowed through the Departmental Management Committee to the assistant deputy ministers to the Pacific Region. Mr. Sprout confirmed that these funds were modest and had eroded in the years since 2005.[447] Ultimately, DFO allocated $700,000 of this funding for WSP implementation, and the remainder went to salmon science related to the 2005 Williams Report on Fraser River sockeye.[448] The 2011 Performance Review by Gardner Pinfold (Gardner Pinfold 2011) includes the annual budgets for WSP from 2005–6 to 2010–11. It is set out here as Table 1.10.3.

Table 1.10.3 WSP annual budgets (in thousands of dollars)

Year	Science	Fish management	Habitat	Policy	Total	Full-time equivalent
2005–6	400	200	100	0	700	
2006–7	400	200	100	0	700	
2007–8	310	200	284	70	864	
2008–9	300	240	329	55	924	7
2009–10	245	200	28	55	528	7
2010–11	222	295	38	0	555	13

Source: Reproduced from Exhibit 1992A, p. 20.

The numbers in Gardner Pinfold 2011, as set out in Table 1.10.3, are reliable, based on the whole of the evidence I received, except that the evidence for 2010–11 was presented as a range, and the numbers in Table 1.10.3 are the upper limit of that range.

In testimony, Ms. Dansereau did not agree with a suggestion put to her that DFO lacks sufficient money to implement the WSP, saying, "I've said many times that I think we are adequately funded to do our work." However, she immediately qualified this answer in two ways. First, her view appeared to be that DFO was adequately funded to continue WSP implementation at its current pace: "I think, given the resources that we have, the implementation is moving to the best of our ability." Second, she said more money could be helpful.[449]

Ms. Dansereau confirmed that the WSP had not been discussed by the Departmental Management Committee (DMC) or its successor (for a brief explanation of the DMC, see Chapter 4, DFO overview). She said that, as a national policy implemented in the Pacific Region, issues related to its implementation would be considered by regional management.[450] Ms. Dansereau and Mr. Bevan also confirmed that the policy had not been considered by senior management at the national level since being approved in 2005.[451]

Ms. Farlinger indicated that "any change in how DFO does business requires the injection of new financial resources,"[452] including the possibility of reallocation or reassignment of existing resources.[453] In her view, it was still possible for DFO to implement the policy within existing resources, giving as an example the fact that DFO "relies on the WSP in making difficult harvest management decisions."[454] Ms. Farlinger testified that regional management attempted – when staff had the choice – to make resources available for WSP implementation.[455]

Mr. Saunders acknowledged that the requirement to implement within existing resources has dictated the pace of WSP implementation and prejudiced its expeditious implementation.[456]

Mr. Sprout offered two recommendations aimed at ensuring sufficient WSP funding. First, he urged against any further reduction to the department's stock assessment capacity. Second, he recommended that new resources be directed toward OHEB to advance WSP implementation.[457]

On June 17, 2010, DFO staff briefed the Operations Committee on the resource challenges faced in implementing the Wild Salmon Policy. One stated challenge was that "WSP is a regional priority that has limited influence in budgeting / priority setting exercises undertaken nationally."[458] Ms. Farlinger did not agree or disagree with this statement, saying it "could be debated." The other resource challenges identified by staff were that "[r]esources to leverage and capitalize on collaborative opportunities are limited"; "[t]he foundational science elements of the WSP strategies require a significant investment of resources from within existing budgets"; and "[p]riority CUs have not been identified." Ms. Farlinger explained that regional directors worked with their national colleagues to put together program budgets, which included funds for WSP implementation. She said that it is the job of the regional directors to fight for a budget based on regional priorities for their section, which may have limited influence nationally.[459]

Currently, annual funds targeted to WSP implementation are provided ad hoc for the short term. WSP funding, in a given fiscal year, is pulled together only after that fiscal year has already commenced. Funds are requested and allocated following the annual WSP work plan and budget proposal, typically in a decision made by the Operations Committee in the late spring or early summer.[460] Mr. Sprout testified that the Pacific Region has received annual WSP funds that are incremental to its regular budget, but this funding has decreased over time.[461] Other evidence suggests that WSP funds are largely pieced together annually from contributions from the branches within the region. These contributions are reallocated from existing budgets, primarily by the Science and FAM branches.[462] In the first years of WSP implementation, OHEB also made contributions, but they dwindled notably after 2008.[463]

WSP implementation does not currently follow DFO's activity-based accounting system. Ms. Farlinger confirmed that WSP implementation does not fall within DFO's normal Program Activity Architecture, described in Chapter 4, DFO overview, from which DFO's programs and program budgets flow.[464] Instead, WSP funding comes from different individual programs – provided that the branches are willing to contribute. Mr. Saunders testified that DFO does not provide any targeted funding for WSP consultation. If DFO wished to hold a WSP forum, for instance, the branches would

have to reallocate resources from existing budgets.[465] Ms. Dansereau said that if WSP implementation requirements were part of a DFO program, they would attract "targeted money." She added that this approach would be a different way to manage implementation.[466]

Obviously, the ad hoc nature of WSP funding makes the implementation of the policy's obligations less certain and stable than for normal, budgeted program activities. In hearings in June 2011, despite being well into the year, Mr. Saunders could not advise me of the amount budgeted for WSP implementation in the 2011/12 fiscal year because of uncertainty surrounding the federal budget. Nor could he estimate the funds that may be allocated in coming years.[467]

This funding uncertainty has sometimes resulted in DFO's failure to implement WSP action steps. In October 2008, for example, the Operations Committee rejected OHEB's request that other regional branches provide three years of funding to populate and maintain the WSP web-mapping application Habitat staff had developed in partial fulfillment of the Action Step 2.4 requirement to develop an integrated data system for watershed management.[468]

Several DFO scientists recommended more dedicated financial support for WSP implementation.[469] However, with the exception of information from the Strategy 2 costing exercise by Habitat staff, I did not receive any estimate from DFO of the funds needed to ensure WSP implementation.*

I received several ballpark estimates from non-governmental witnesses, including a former DFO Science manager, of what it might cost to implement the policy over the next few years. The financial estimates provided by Dr. Riddell and Mr. Young were based on previous reviews of the adequacy of DFO's funding for WSP implementation as well as on recent conversations. Like DFO witnesses, they connected the slow pace of WSP implementation in part with funding limitations. As I discuss below, both witnesses distinguished between a short-term funding infusion for foundational or "core" WSP implementation, which they estimated at between $2.5 million and $3 million per year, and long-term funds to support the ongoing assessment and monitoring of CU status, habitat, and ecosystems.

Mr. Young testified that the David Suzuki Foundation initially understood that DFO would provide at least two, if not three, years of funding at around $1 million per year. Based on the implementation experience of those early years, the foundation assessed that the annual million "wasn't sufficient on its own just to support the implementation function, the coordination function." Rather, the foundation, through Mr. Young, recommended "a number closer to $3 million a year." Mr. Young added that such funding "would only be useful if it truly came with a mandate to apply and implement the Policy."[470]

Dr. Riddell's evidence on funding requirements was similar to Mr. Young's. He testified that additional resources would be necessary for "a short, intense period of catch-up, so that we can actually really start evaluating how to implement the Policy and what conservation units require special attention." In his view, approximately $2.5 million per year was required, over a couple of focused years of WSP implementation, to prepare to implement the policy on the ground. He derived this $2.5 million per year estimate from talking to people about what would be needed to pull together a concerted, short-term scientific effort to assist DFO in the technical implementation of strategies 1, 2, and 3, before DFO could move onto management and planning processes.[471] Dr. Riddell also agreed with Mr. Young that, in the long term, the policy's commitments to monitoring habitat and taking account of ecosystem indicators, under strategies 2 and 3, would likely require additional funds on an ongoing basis.[472]

Some DFO witnesses acknowledged that long-term monitoring and assessment under the Wild Salmon Policy would be costly to implement.[473] However, DFO managers tended to discount the costs of ongoing monitoring and assessment under strategies 1, 2, and 3. Mr. Saunders said that whether WSP implementation would become more expensive as DFO commenced monitoring and assessing CU status was a "very difficult question to answer," and that it depended on whether DFO decided to seek "a full

* For some outcomes of the Strategy 2 costing exercise, see Exhibits 126, 127, 144, and 147. Also refer to my discussion of Strategy 2 implementation earlier in this chapter.

suite of information on absolutely every conservation unit." Implying that the degree to which CU assessment was necessary is not a function of the policy itself, he said that the extent and cost of assessment depended "on what advice is required to support fisheries management." Mr. Saunders conceded that DFO does not currently have the resources to assess the status of all CUs in the Fraser River watershed or to implement full monitoring of ecosystem status.[474]

Ms. Farlinger said that, as DFO moves toward full implementation and the policy is more operational, the direct costs of WSP implementation would decline. When it was suggested to her that this statement was wishful thinking, she replied that First Nations and others would assist DFO with WSP monitoring and would provide funding. However, she clarified that she was not saying that assessment and monitoring would not be expensive. Rather, she believed that the money would be found in different ways, either within existing DFO operational budgets or from partners.[475]

Dr. Riddell saw the possibility of some relief from funding challenges in partnership opportunities, saying he hoped that DFO would be willing to work with external groups to conduct the actual monitoring. He acknowledged that, without control over monitoring methods, this more "widely dispersed" approach could put WSP implementation at risk and, therefore, DFO would need to maintain management responsibility over external monitoring. In his view, non-governmental funding should be welcome for credible, short-term technical assessments or monitoring. However, he cautioned that government should continue to maintain reliable long-term stock assessment data and focus on "having a legacy of good quality data for assessment."[476]

In the context of funding WSP implementation, I also heard cautions against redirecting funding toward Fraser River sockeye and away from other existing programs, including stock assessment for other salmon species. With limited budgets, the priority given to Fraser River sockeye, particularly in the dominant cycle year, has had adverse consequences for the assessment of other salmon populations.[477] Funding limitations on salmon assessment and monitoring are worse elsewhere in British Columbia than they are for Fraser River sockeye.[478]

In addition to funding challenges, I heard evidence from DFO's WSP Implementation Team that the Pacific Region suffers from a lack of adequate human resources to implement the WSP. Dr. Holt believed that a lack of human resources at DFO was the largest challenge to WSP implementation.[479] To remedy this deficiency, she felt that "it would be advantageous to have resources to build capacity at DFO over the long-term, as opposed to just short-term money for an individual project here or there to do more of a quick-fix."[480] Ms. Stalberg echoed this statement, saying that DFO needed to focus on "longer-term resourcing versus just a quick injection of funding."[481] Additional funding would support more people within DFO to deliver WSP implementation. Conversely, if the region was limited to existing resources, she was not sure there could be a change in the delivery of the policy.[482] Dr. Hyatt noted that, when staff transitioned to and from the WSP Implementation Team, implementation activities could languish: a lack of capacity, he said, and the staff's growing workloads meant that WSP implementation absorbed a lot of their time.[483] Finally, Dr. Irvine noted the need for "additional scientific capacity, youthful capacity," within DFO, particularly on habitat and ecosystem work. He also strongly urged that, beyond capacity in the natural sciences, "the Department needs to have more capacity with regard to things like resource economics [and] evaluation of social alternatives," which is particularly important for Strategy 4.[484]

Wild Salmon Policy implementation and Marine Stewardship Council certification

Marine Stewardship Council certification

As explained to me, the Marine Stewardship Council (MSC) is an organization that evaluates and certifies fisheries as well managed and sustainable.[485] The objective of the MSC is to promote sustainable fisheries through the use of eco-labelling on MSC-certified fish products in

the marketplace, with a view to encouraging consumer demand for fish products originating from certified sustainable fisheries. Entities interested in particular fisheries can seek an evaluation from an accredited certification body using the MSC Principles and Criteria for Sustainable Fishing. Successful assessment yields a certification that is valid for five years, with annual surveillance requirements.[486]

In 2001, the BC Salmon Marketing Council, on behalf of the commercial salmon industry and acting as the "client" group, submitted four BC sockeye fisheries to the MSC for assessment, including one targeting stocks returning to the Fraser River.[487] The certification process was protracted, and in June 2010, the Canadian Pacific Sustainable Fisheries Society took over the role of client.[488] DFO, as the fisheries regulator, worked closely with the assessment team during the certification process.[489]

By December 2004, DFO staff had linked the Wild Salmon Policy to efforts to seek MSC certification for BC salmon.[490] In a memorandum dated May 27, 2005, seeking a decision adopting the Wild Salmon Policy, Minister Regan was advised that the policy was connected to MSC certification and that "[t]he absence of a WSP will retard progress in gaining Marine Stewardship Council certification for salmon, a key objective of the commercial fishing industry."[491]

I have examined the MSC certification process because it is a useful comparison with the progress made on implementation of the WSP generally. In addition, I wanted to address the relationship of reference points in the MSC process to WSP benchmarks.

In July 2010, the independent certifier Moody Marine Ltd. certified the four BC sockeye fisheries as sustainable. However, reflecting concerns expressed by stakeholders, certification was made conditional on DFO meeting numerous conditions within a five-year time frame.[492]

On December 21, 2009, DFO finalized its Action Plan to Address Conditions for Marine Stewardship Certification of British Columbia Sockeye Fisheries (Fraser River, Barkley Sound, Nass River, Skeena River) (DFO's MSC Action Plan).[493] DFO's MSC Action Plan is the nexus between the MSC certification conditions and the Wild Salmon Policy.

DFO's MSC Action Plan was developed by FAM. It was drafted by Mr. Ryall, with input from some DFO Stock Assessment and Science staff. It was not approved by the Regional Management Committee or the Operations Committee. Rather, it was approved by Ms. Farlinger as the regional director of FAM and by Mr. Sprout as the regional director general, before Mr. Ryall sent it to the certifier.[494]

There was no consultation with the WSP Implementation Team before Mr. Sprout approved DFO's MSC Action Plan. As the manager of the SAFE Division of Science, Mr. Saunders viewed the document and gave some input on it during its preparation, and he approved aspects of it.[495] Neither he nor Mr. Ryall, both members of the team in 2009, brought the draft or final MSC Action Plan to the team's attention. In fact, none of the DFO Science staff who testified on WSP implementation had ever seen the document before their preparation for this Inquiry.[496]

MSC certification conditions related to WSP implementation

MSC certification is conditional on the implementation of aspects of strategies 1 and 4 of the WSP. For Fraser River sockeye, DFO's MSC Action Plan sets out the specific WSP-related deliverables through which it would meet the MSC conditions, with the accountable DFO sector and timelines for each deliverable.[497] It assumes that there will be no additional resources to implement DFO's MSC Action Plan but indicates that the assumption may be re-evaluated if it proves flawed.[498] When asked if DFO had looked at the assumption that existing resources are adequate, Ms. Farlinger testified that DFO was implementing its MSC Action Plan "within departmental resources at the moment." She predicted that DFO would be able to fulfill those conditions over five years within departmental resources.[499]

The specific "Conditions Relating to Implementing DFO's Wild Salmon Policy" for all four BC sockeye fisheries are set out in DFO's MSC Action Plan.[500] The key conditions that have deliverables expressly related to the policy are summarized in Table 1.10.4.

Table 1.10.4 MSC conditions relating to implementing the Wild Salmon Policy

Condition	*Sockeye unit*	*DFO deliverable*	*Accountable sector*	*Deadline*
General condition	All certified sockeye	WSP Strategy 1: PSARC paper defining CUs (Holtby and Ciruna 2008)	Science – Region	October 2008
General condition	All certified sockeye	WSP Strategy 1: PSARC paper with "reference points" methodology (Holt et al. 2009 and Holt 2009)	Science – Region	October 2009
General condition	All certified sockeye	WSP Strategy 4: Regional Framework for Integrated Planning	FAM – Region	December 2010
General condition	All certified sockeye	WSP Strategy 4: Report to Certifier on Integrated Planning	FAM – Region	December 2010
Condition 5 – define LRPs for Fraser River sockeye CUs	Fraser River sockeye	WSP Strategy 1: PSARC peer-reviewed paper defining Fraser River sockeye CU LRPs	Science – Area	December 2011
Condition 8 – meet LRPs for Fraser River sockeye target CUs	Fraser River sockeye	WSP Strategy 1: PSARC peer-reviewed paper defining Fraser River sockeye CU LRPs	Science – Area	December 2011
Condition 6 – define management units and TRPs	Fraser River sockeye	WSP Strategy 4: a revised IFMP	FAM, Science – Area	May 2012
Condition 19 – develop, implement recovery plans for CUs below their LRPs	Fraser River sockeye	WSP Strategy 4: a revised IFMP	FAM, Science – Area	May 2012

CU, Conservation Unit; FAM, Fisheries and Aquaculture Management; IFMP, Integrated Fisheries Management Plan; LRP, limit reference point; MSC, Marine Stewardship Council; PSARC, Pacific Scientific Advice Review Committee; TRP, target reference point; WSP, Wild Salmon Policy

Source: Compiled using data from Exhibit 159, pp. 2–3.

Although there were some subtle differences, the witnesses who testified about the MSC certification conditions generally agreed that it was useful and important that DFO had committed to specific timelines for meeting its WSP-related deliverables.[501] Mr. Ryall explained that DFO did so to create a work plan that was deliverable, with the workload staggered over five years. However, he also stated that "things do change" and that "overall, to me it's a guide, and our commitment is to meet these within those five years."[502] As of September 2011, Ms. Farlinger expressed confidence that DFO could satisfy the MSC conditions for Fraser River sockeye over the five-year time period.[503] Mr. Ryall said that DFO's MSC Action Plan "was not intended as an implementation plan for the Wild Salmon Policy."[504]

DFO's MSC Action Plan treats WSP lower benchmarks as limit reference points

To maintain MSC certification for Fraser River sockeye, DFO must "fully implement" Strategy 1 – that means implementing all of Strategy 1 for all Fraser River sockeye CUs.[505] DFO's MSC Action Plan includes a table summarizing the DFO deliverables said to be specific to WSP Strategy 1 (Strategy 1 Table) – and is included here as Table 1.10.5.

In essence, the first three rows of the Strategy 1 Table break down Condition 5 of the MSC certification. Condition 5 provides: "Certification is conditional until the Conservation Units have been defined for Fraser sockeye using the methods described in Holtby and Ciruna (2007) and LRP's [*sic*] for each Fraser sockeye conservation unit are defined and peer reviewed."[506] There is, however, a disconnect between the WSP use of upper and lower benchmarks and the MSC requirement that DFO establish target and limit reference points (LRPs).

Ms. Farlinger confirmed that Condition 5 required DFO to define limit reference points for each individual Fraser River sockeye CU.* She said that this use of LRPs in Condition 5 was equivalent to WSP lower benchmarks, although she understood that "there is a distinction because one is a trigger for a management action and one is a biological measure." Ms. Farlinger agreed that "there probably is some debate about which is which."[507] In her testimony, she commonly referred to "limit reference points" and not to lower benchmarks.[508]

Target reference points (TRPs) and WSP upper benchmarks are also sometimes conflated in DFO's MSC Action Plan, although the document is inconsistent in this respect. On the one hand, the Strategy 1 Table (Table 1.10.5) suggests that TRPs are to be determined not through science but through "participatory decision-making (co-management)."[509] Under the policy, such participatory planning and management would commence under Strategy 4. On the other hand, DFO's MSC Action Plan elsewhere states that, in defining LRPs and TRPs for non-target stocks (CUs) and

Table 1.10.5 DFO deliverables specific to WSP Strategy 1

Action	Description	Timeline
Identify Conservation Units	Paper defining conservation units regionally for all salmon species based on biological criteria (Holtby and Ciruna, 2007)	Paper reviewed and approved by PSARC, published 2008
Develop Standardized Assessment Criteria	Paper defining general methodology for determining reference points for salmon populations and assessment criteria (Holt et al, *in prep)*	Workshop, January 2009
	Workshop to facilitate application of methods in Holt et al.	Finalized methodology: October 2009
Define LRPs for each Target Stock (CU)	Apply criteria and methods of Holt et al (*in prep)* to specific CUs	Through December, 2011
Define TRPs for each Target Stock (CU) and corresponding harvest strategy	Recognizing TRPs inherently involve trade-offs, determine TRPs through participatory decision-making (co-management) – see below.	Through May, 2012

CU, Conservation Unit; LRP, limit reference point; PSARC, Pacific Scientific Advice Review Committee; TRP, target reference point

Source: Reproduced from Exhibit 159, p. 5.

* Without Ms. Farlinger's clarification, DFO's MSC Action Plan would appear internally inconsistent, as Condition 19 provides that certification is conditional until LRPs or their equivalents are defined for Fraser River sockeye salmon "stocks," rather than CUs. See Exhibit 159, p. 6; Transcript, December 9, 2010, p. 75.

monitoring their status, DFO is implementing the WSP Strategy 1.[510]

Mr. Bevan agreed that CU status benchmarks under the WSP must be incorporated into DFO fisheries management and decision making. He explained that this inclusion was the "basic element of the precautionary approach": it requires DFO Science to "identify where the limit references are" under the Wild Salmon Policy, even though this work is complex and difficult.[511]

However, as I discuss above, before this Inquiry, members of the WSP Implementation Team did not agree with the characterization of WSP benchmarks as reference points. At that time, Dr. Irvine, Dr. Holt, and Dr. Hyatt had not been provided with a copy of DFO's MSC Action Plan, either in draft or in final form. They had never been informed of the deliverables related to WSP implementation contained in it.[512] Dr. Irvine was concerned that DFO's MSC Action Plan equates WSP lower benchmarks with LRPs, and upper benchmarks with TRPs. He explained that "the drafter of the [MSC] Action Plan did not appear to understand the difference between WSP biological benchmarks and management reference points."[513] Dr. Holt was likewise referred to the Strategy 1 Table, which expressly refers to her scientific work. The Strategy 1 Table (Table 1.10.5) states that, in order to "define LRPs for each Target Stock (CU)," DFO will "apply criteria and methods of Holt et al (*in prep*) to specific CUs" by December 2011.[514] Dr. Holt disagreed with this characterization of her work under Strategy 1 and said that her work has been on lower benchmarks, and not on limit reference points, as suggested in DFO's MSC Action Plan.* Agreeing with Dr. Irvine, she testified that "this document confuses these two items, and they shouldn't be confused."[515]

FAM fisheries manager Mr. Grout was also referred to the Strategy 1 Table. He confirmed that, to meet the condition, DFO is to "define LRPs," but DFO was in the process in the Grant papers (Grant Draft 2010 and Grant Draft 2011, discussed above) of defining WSP lower benchmarks for many Fraser River sockeye CUs. However, when asked about the MSC condition that DFO "define TRPs," Mr. Grout said that the MSC requirements to define LRPs and TRPs "may or may not" refer to DFO's work to define lower and upper WSP benchmarks for Fraser River sockeye CUs, and that they may instead refer to "the specific management reference points outlined by the Management Decision Rules."[516]

Dr. Riddell confirmed the tension in MSC certification regarding how to apply limit reference points, adopted under UN FAO (United Nations Food and Agriculture Organization) standards, to Pacific salmon. Dr. Riddell said that, as of June 2011, MSC was beginning to recognize the utility of applying a lower benchmark, which created more security for a stock, instead of "getting down to a limit reference point" where a stock was severely depressed and may not recover.† In his view, the MSC's use of the precautionary approach in international fisheries instruments was the main challenge for Pacific salmon certification: "[T]he UN FAO description of a limit reference point is the key stumbling block." Dr. Riddell said that the MSC was considering "the issue of how you are going to explain to UN FAO that the limit reference point that is being used at the certification for Pacific salmon is not the same as how they use it elsewhere."[517]

While DFO scientists and managers on the WSP Implementation Team do not have a common understanding of the management implications of WSP lower benchmarks, they all share the view that WSP benchmarks should not automatically be equated to reference points. Their view appears to conflict with the views of DFO senior management. This controversy is also evident in exhibits. DFO scientists raised their concerns with the "misrepresentation" of WSP benchmarks in DFO's MSC Action Plan at the WSP team meeting on March 29, 2011.[518] They recommended that the language used in the department's MSC documents be clarified to avoid confusion.

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* Dr. Holt explained that "LRPs are generally more prescriptive than WSP benchmarks[,] which are not intended to direct a specific management action like a harvest control rule. Rather, lower benchmarks under the WSP are intended to reflect biological status." See Exhibit 182, p. 1.

† Mr. Young testified that updates to the methodology used by the MSC are being considered, with the MSC now recognizing the need to protect biodiversity and discussing Canada's Wild Salmon Policy as a model for that. See Transcript, June 1, 2011, pp. 83–84, 95–96.

DFO's Status Update on MSC certification conditions for the May 2011 audit

In May 2011, Mr. Ryall prepared, with staff input, a document entitled "Summary of Key MSC Certification Deliverables and Their Status for Sockeye" (DFO Status Update).[519] This document provides his opinion of the status of DFO's deliverables for meeting MSC certification conditions, indicates who in DFO is accountable, and states the timeline.[520]

According to the DFO Status Update, Mr. Saunders is accountable for delivering on MSC conditions 5 and 8, which require a WSP Status Assessment paper defining "limit reference points" for Fraser River sockeye CUs.* It is clearly a matter of controversy between FAM, on the one hand, and, on the other, DFO scientists working on WSP implementation whether it is appropriate to deem biologically determined benchmarks under WSP Strategy 1 to be equivalent to management reference points. Mr. Saunders worked directly with Mr. Ryall in preparing the DFO Status Update, and he asked Dr. Arlene Tompkins, head of Salmon Stock Assessment and chair of the Stock Assessment Coordinating Committee, to ensure that stock assessment area chiefs were consulted.[521] However, members of the WSP Implementation Team, including Dr. Irvine, Dr. Hyatt, and Dr. Holt, were not involved in preparing the DFO Status Update.[522]

The DFO Status Update characterizes the Grant paper as being about LRPs, despite the testimony of Dr. Holt, a co-author of the paper, that her work does not address LRPs.[523] The DFO Status Update also references a pre–peer review May 2010 draft of Dr. Michael Bradford's publication on the Status of Cultus Lake Sockeye Salmon, despite the fact that, by May 2011, this draft paper had been published in a final, peer-reviewed version. Dr. Bradford, a DFO research scientist, was not informed that DFO was providing his paper in support of MSC certification.[524]

Findings

I agree with the testimony of Paul Ryall, former lead, Salmon Team, that the Department of Fisheries and Oceans' (DFO's) MSC Action Plan was not intended to be an implementation plan for the Wild Salmon Policy (WSP). The MSC Action Plan does not fully address Strategy 4, nor does it address strategies 2 or 3. Thus, while it is clear that DFO's MSC Action Plan contains key WSP deliverables and timelines, for Fraser River sockeye it is not exhaustive.

DFO's MSC Action Plan clearly demonstrates the feasibility and utility of the department adopting a long-term WSP implementation plan with timelines, as is expressly required by the Wild Salmon Policy.[525] A plan would ensure that DFO implements the WSP strategies not addressed by Marine Stewardship Council (MSC) certification conditions.

Additionally, I view the confusion between benchmarks in the WSP and limit reference points (LRPs) in DFO's MSC Action Plan as having implications for how DFO will implement the WSP for Fraser River sockeye Conservation Units in the future. If WSP lower benchmarks identified by DFO scientists are to be treated as LRPs in order to meet MSC sustainability requirements, this treatment has implications for current escapement planning. Rather than allowing harvest planning to take place at Strategy 4, as intended by the WSP, the Strategy 1 benchmarks will effectively set the harvest decision point. That is contrary to the policy and may have the effect of requiring DFO to curtail fisheries at the point a stock enters the red zone without the benefit of the socio-economic and habitat impact analysis required in Strategy 4.

As previously noted, LRPs are set at a lower number than the more precautionary lower benchmarks under the WSP. If WSP lower benchmarks are treated as equivalent to LRPs, then, given the intentionally more precautionary nature of WSP lower benchmarks, the trigger to curtail fishing will be above the point when there is an immediate threat of extirpation.

* Exhibit 969, p. 1. Although Mr. Saunders is expressly made accountable for some deliverables for MSC certification in the DFO Status Update, his witness summary states that he is not directly involved in DFO's work on MSC certification, apart from being asked whether his staff at Science are able to meet the needs of DFO's Action Plan. See Exhibit 101, p. 5.

Finally, the development of the MSC Action Plan and, later, the DFO Status Update highlight a lack of integration and oversight in DFO's internal governance and administration of the Wild Salmon Policy. Fisheries and Aquaculture Management (FAM) officials submitted these two documents without input from those DFO scientists knowledgeable about and engaged in Strategy 1 implementation or from those DFO scientists whose ongoing work on WSP benchmark methodology and WSP status assessments is mentioned in the MSC Action Plan. FAM is not responsible for any Strategy 1 activities; to date, Science has been responsible for Strategy 1 implementation.

This situation also underlines the inadequacy of the current WSP governance model within DFO, as discussed below. In this instance, FAM made commitments on Strategy 1 implementation to the fishing industry and to MSC without consulting those responsible for Strategy 1 implementation.

DFO's governance approach to the Wild Salmon Policy

DFO acknowledged that the Wild Salmon Policy would likely require organizational changes. In 2005, the Williams Report on Fraser River sockeye recommended that DFO's Pacific Region reassess its core mandate with respect to Pacific salmon management "and devise a management or organizational structure that best supports that mandate."[526] In its response to the Williams Report, DFO said:

> In the longer term, changes related to new initiatives (e.g. Pacific Fisheries Reform, Wild Salmon Policy implementation) will likely require a review of organizational structures. Any changes related to these activities will have to consider the broad DFO mandate, including structure at both the national and regional levels.[527]

Since June 2005, however, DFO has not changed its accountability structures in relation to the policy.[528]

DFO's internal governance structure for WSP implementation

Mr. Sprout said that there was no one senior official in national headquarters with responsibility for WSP implementation. He said this responsibility was distributed across DFO's national sectors, including Science, Fisheries and Aquaculture Management, and Policy.[529] He also said that it would have been a normal practice for him to advise the assistant deputy ministers of the Pacific Region's interest in advancing WSP implementation and to try to convince them to provide financial and moral support.[530] He did not identify any formal mechanism whereby the region reports on WSP implementation, either to national headquarters or to Parliament.

According to Mr. Sprout, if the WSP is to be successfully implemented and become part of DFO's organizational culture, it must be supported by national headquarters, including at the ministerial level.[531] In describing accountability structures for the policy to me, Ms. Farlinger did not mention any national headquarters officials – the deputy minister, the assistant deputy minister, or any other top people.[532] Apart from the example of briefing a minister on a fishing plan, neither Ms. Farlinger nor Mr. Sprout mentioned interactions at a ministerial level regarding the policy, not even strategies 1–3.[533]

Mr. Sprout and Mr. Saunders confirmed that, regionally, DFO did not create a management committee specific to the Wild Salmon Policy. Rather, it formed the Strategic Initiatives Steering Committee, which became the Operations Committee, to deal with a number of "change initiatives," such as the WSP. This committee included the regional director general, the associate regional director general and the regional directors, and the area directors as appropriate, and it provided senior managers with a forum to consider WSP implementation. Mr. Sprout said this committee was intended to respond to the WSP Implementation Plan.[534]

Ms. Farlinger said the regional director general is kept informed on WSP implementation through briefings to the Operations Committee.[535] A September 2010 briefing to the Operations Committee sets out that, since June 2005, overall direction and accountability rest with the regional

director general, supported by the Operations Committee and the Regional Management Committee.[536]

Dr. Irvine explained that there is an annual "standing meeting" between the WSP Implementation Team and the Operations Committee to develop the annual WSP work plan, and that, every six months or so, DFO staff make a presentation to the Operations Committee on various WSP implementation issues.[537] There is, however, no formal mechanism for the Operations Committee to provide detailed direction to the WSP Implementation Team. Rather, the discussions and decisions of the Operations Committee are informally transmitted to the WSP Implementation Team by the team members who attend the meetings.[538]

The WSP Implementation Team

A WSP Implementation Team has continually been in place since the summer of 2005, its membership changing from time to time. As of 2011, it still had no approved terms of reference. Mr. Saunders testified that the WSP Implementation Team has always been led by the WSP coordinator, who is from the Policy Branch.[539] Science, FAM, and OHEB typically have representatives, with the largest contingent coming from Science.

Ms. Farlinger's September 2010 presentation to the Operations Committee also indicates that, under the accountability structure in place since June 2005, DFO regional directors have been responsible for aspects of WSP implementation as follows:

- Policy Branch for inter-branch coordination and reporting;
- Science Branch for strategies 1 and 3;
- Oceans, Habitat and Enhancement for Strategy 2;
- Fisheries and Aquaculture Management for Strategy 4; and
- all branches for strategies 5 and 6.[540]

Testifying in December 2010, Dr. Irvine said that, in the previous year, the WSP Implementation Team appears to have had "a lot more direction."[541] Draft terms of reference for the team suggest that, by September 2010, DFO had designated a "lead" for each of strategies 1 through 4.[542] As Mr. Saunders explained, because departmental funds flow through the sectors, the lead for each strategy was associated with the responsible DFO sector.[543]

By May 2011, the draft terms of reference had been revised and were attached to a presentation to the Operations Committee on May 26, 2011.[544] The draft terms of reference briefly codify the roles and responsibilities of the WSP coordinator and Implementation Team, as well as the relationship between them and the Operations Committee. They confirm that the WSP Implementation Team "serves as the Region's forum to facilitate regional achievement of the WSP goal, objectives, and strategies." However, the team "is not a decision-making body." Rather, it "promotes" the coordination, integration, and implementation of the policy.[545]

Mr. Saunders confirmed that individual WSP implementation projects were undertaken, with DFO officials assigned to lead them. However, there were no formalized teams for each project.[546]

The WSP coordinator does not appear to have a leadership role but, rather, is assigned primarily administrative and support tasks, such as organizing monthly team meetings, identifying opportunities for integration of WSP implementation into other activities, coordinating information management, and maintaining the WSP website. The WSP coordinator is not accountable for WSP implementation efforts but is responsible only for documenting these efforts. The individual "Strategy leads" are made responsible for implementing the tasks set out in the internal annual WSP staff work plans.[547]

Operational responsibility and accountability for WSP implementation

Mr. Chamut testified that WSP implementation has to come from the regional director general (RDG) as a priority.[548] The deputy minister confirmed that the regional director general was the person responsible for WSP implementation, noting that this official is a "very senior person in the Department" who sits on the DMC and other national committees.[549] In the context of WSP implementation, the associate deputy minister also pointed to the RDG as the person "who is actually accountable for getting the things done in the region."[550]

Ms. Farlinger agreed that she was ultimately responsible for overseeing the operational side of policy implementation. She also confirmed that, at an operational level, it was her responsibility to ensure that the Pacific Region delivers programs consistently with DFO's policies.[551]

Mr. Sprout said that the regional director general does not provide operational direction on WSP implementation. Asked if the RDG had specific obligations on WSP implementation, he described the role as one of giving high-level strategic direction:

> I would describe the RDG's role as trying to provide strategic direction to those that would have more operational responsibility. And so strategic direction is things like trying to reconcile challenges, conflicts, grappling with budget, assigning responsibilities where … the responsibilities are diffuse, where, for example, a number of the strategies are assigned to branches. But frankly to deliver the strategy, you need the branches to be working together cohesively. So I'm operating … at probably the 30,000-foot level in terms of trying to provide the strategic direction.[552]

Mr. Sprout said that, when he was regional director general, he dealt with many officials about the policy, including the WSP coordinator and regional directors. He agreed that, in effect, all regional directors and all area directors held responsibilities for WSP implementation.* He said this governance structure was logical, noting that "the RDG isn't going to operationalize the Wild Salmon Policy."[553] In December 2010, Ms. Farlinger confirmed that, in her tenure as regional director general, there had been no changes to the organizational structure described by Mr. Sprout, although she also noted that DFO's recent reorganizations at the national level required that the Pacific Region review and re-evaluate its regional management committees, and that the region therefore expected to make adjustments to those committees.[554]

The exact responsibilities held by the area directors for WSP implementation have not been identified in evidence. In this respect, I note Mr. Saunders's evidence that many DFO employees have had little direct operational contact with the policy in the first five years of its implementation. Furthermore, DFO does not offer its staff training on the policy or its requirements.[555] It appears that, since at least September 2010, area offices have had a representative on the WSP Implementation Team.[556]

There is conflicting evidence on the role and responsibilities of the Policy sector in relation to WSP implementation. Mr. Sprout suggested that the regional director of Policy had overall responsibility for WSP implementation, saying that the WSP coordinator reported to the regional director of Policy and that the regional director of Policy reported to the regional director general.[557] Similarly, Mr. Saunders believed that the regional director of Policy "held overall responsibility" for WSP implementation.[558] He said that "the responsibility for the implementation of the Wild Salmon Policy, as it gets linked back to senior management, is through the policy branch."[559]

Ms. Farlinger, in contrast, described the role of the regional director of Policy as that of a coordinator, not a leader. While the "Region uses the Policy sector to organize and coordinate WSP implementation," she said, the "Regional Directors have responsibilities over their sectors' assigned WSP tasks."[560]

The draft terms of reference for the WSP Implementation Team also mention the Policy Branch largely in the context of the role of the WSP coordinator, a position that Mr. Sprout agreed was relatively junior. The terms of reference state that the Policy Branch "chairs meetings and provides logistical and administrative support."[561] In 2010, the Operations Committee considered ending the Policy Branch's responsibility for WSP coordination, but did not do so.[562]

No operational program to deliver the Wild Salmon Policy

Although the Wild Salmon Policy expressly introduces a number of new program obligations, DFO has not created a program to deliver them.

The distinction between policies and programs within DFO is discussed in Chapter 4,

* Mr. Saunders also confirmed that, through the Operations Committee, each regional director was recognized as having responsibility for the components that his or her sector was implementing. See Transcript, December 2, 2010, p. 47.

DFO overview. Ms. Dansereau and Ms. Farlinger acknowledged that, if the Wild Salmon Policy were supported by a program, it would have a budget.[563] Ms. Farlinger said that the WSP has been treated as a policy because its intention is to change how existing programs related to Pacific salmon are implemented.* However, she and Ms. Dansereau agreed that the WSP contains program components.[564]

Despite the fact that the Wild Salmon Policy includes many program components and the mechanism for an implementation plan to ensure that these program commitments are delivered, the former regional director general argued against creating a program to implement the policy. Mr. Sprout said that creating a WSP program may be counterproductive. He noted that WSP implementation requires a high degree of integration across a range of departmental activities and sectors and that the policy needs to be culturally embedded throughout the Pacific Region. Therefore, WSP implementation cannot be limited to one group or program. In Mr. Sprout's view, rather than create a program to implement the policy, it would be more pragmatic to "try to secure more incremental resources and have them committed and try to protect them."[565]

Gaps and overlaps in strategies 1, 2, and 3

With regard to strategies 1–3, although certain tasks clearly should be performed by individual branches within DFO, there still remains ambiguity, overlap, and gaps in the Pacific Region's accountability structures. I found Ms. Farlinger's evidence about which branches were responsible for which strategies confusing. In her September 2010 presentation to the Operations Committee, she states that the Science Branch is responsible for strategies 1 and 3, and OHEB for Strategy 2.[566] However, her evidence summary, which she adopted in oral testimony, presents a more complex, overlapping accountability, indicating that Science is responsible for input into strategies 1, 2, and 3, and that OHEB has operational responsibility for Strategy 2 and parts of Strategy 3.[567]

Ms. Stalberg spoke about the need to better integrate strategies 2 and 3. She noted that Strategy 2 indicators were not completed and could not be completed without input from Science Branch, and that strategies 2 and 3 could not be integrated until the Strategy 3 indicators were undertaken and a monitoring framework created.[568] Ms. Stalberg also said that OHEB stopped actively implementing Strategy 2 in 2009 because it was waiting for the Science Branch to catch up on Strategy 3.[569]

Mr. Sprout agreed that, for strategies 1–3, DFO needed co-operation and collaboration from all branches, rather than implementing the Wild Salmon Policy through institutional "silos." He recommended against DFO creating a program for implementation of strategies 1–3, as that could create a new silo.[570]

The need for stronger integration of strategies 2 and 3 is highlighted in the record. For example, in June 2009, DFO staff advised the Operations Committee that the Science Branch and OHEB were "co-leading revision of [a] methodology paper to determine habitat indicators." The Operations Committee was advised that "Science will participate with OHEB in the development of the Strategy 2 framework, with a focus on its interconnections to Strategy 3," and that this involvement "may include further refinements / revisions to the methodology paper."[571] However, when the department's WSP Habitat Indicators paper was published in late 2009, it was limited to freshwater and estuarine habitat indicators, with the marine habitat indicators to be produced by Science.[572] As of December 2010 when Ms. Stalberg testified, Science Branch had not produced marine habitat indicators.[573] It appears that the necessary discussion and integration between Science and OHEB on habitat and ecosystem indicators for freshwater and marine environments has not occurred, at least not at the pace expected in 2009.

Leadership challenges in implementing Strategy 4

Strategy 4 directs DFO to move away from a traditional fisheries management approach toward a more integrated watershed planning approach. Despite this change, FAM was assigned responsibility for Strategy 4 and has made little progress on

* Mr. Saunders also explained that, within DFO, WSP implementation would not normally be referred to as a program, because a DFO program is "a specific collection of activities that are part of an ongoing responsibility." See Transcript, December 3, 2010, pp. 31–32.

implementing either interim recovery planning or long-term strategic planning.

As regional director general and the former regional director of FAM, Ms. Farlinger explained that FAM had been assigned responsibility for Strategy 4 because its decisions "have much to do with bringing together the factors in the first three [strategies] of the policy to make trade-offs, decisions, bring[ing] in economic and social impacts in terms of the recommendations that the Strategy 4 process would then provide to the minister." She said that this kind of integration was the everyday work of FAM and that consultation is largely FAM's business.[574]

In April 2011, the Strategic Directions Committee received a presentation and discussion paper on the implementation of Strategy 4, which advised that "a number of gaps and challenges have been identified related to progress under Strategy 4"[575] including:

- DFO's role in leading or supporting planning initiatives is not always clear.
- DFO lacks internal coordination in some cases.
- DFO lacks a clear governance structure for implementing Strategy 4.
- DFO lacks a strategic plan or operational guidance for Strategy 4.[576]

Mr. Ryall testified that the intent of the presentation was to generate discussion and obtain direction from the committee on a governance structure for integrated planning processes.[577] However, the log of the April 14, 2011, meeting of the Strategic Directions Committee shows a decision to endorse the status quo: "Regarding internal coordination and integration of WSP and Strategy 4, it was agreed the Operations Committee will provide the guidance required from senior management as opposed to setting up a new system or committee."[578]

Dr. Irvine said that, without direction, WSP implementation could become rudderless, particularly given the complexity of the task.[579] He said DFO needs an integrated approach to WSP implementation, as in the Barkley Sound pilot.[580] In contrast to "integration," he used the word "sectorization" to describe the current approach to WSP implementation.[581] Dr. Irvine recommended that implementation

> become much more integrated and we should be going away from the action step by action step process. I feel that we should be focussing on one particular action step and that's Action Step 4.2. And Action Step 4.2 is basically the implementation of a fully integrated strategic planning process for salmon conservation … we should be looking at it almost from a top-down [perspective], at least from a Strategy 4 perspective. And then to try to determine what scientific information is required, so a little bit less stove piping [between strategies and sectors].[582]

A David Suzuki Foundation report on Strategy 4 states that there "has been more outreach regarding the WSP to outside groups than within DFO, resulting in a lack of clarity within the Department about the WSP intent and content and how it will play out on the ground."[583] Mr. Young said that the information gathered about CU status under the Wild Salmon Policy is intended to inform DFO's management decisions, but that WSP components had still not been integrated into habitat and fisheries management.[584] Dr. Riddell added that, in a large bureaucracy, communication is a challenge; although there have been many efforts to distribute WSP information throughout DFO and to get people on side, there were still "some areas and some individuals who have not bought in fully."[585]

Both internal and external assessments of DFO's performance on WSP implementation have identified governance challenges related to integration. In its presentation to the Operations Committee regarding performance criteria for the Strategy 6 review, under the heading "Gap Analysis Findings: Key Challenges / Gaps," the WSP Implementation Team identified governance challenges. They included the need for "[c]learly defined and agreed to accountability, roles and responsibilities for implementation," and "[i] ntegration across programs (inconsistent implementation / stovepipes)."[586]

Responsibility for WSP implementation

On May 3, 2005, before the WSP's approval by the minister, the Regional Management Committee (RMC) endorsed it and initiated the national approval process. The RMC Record of Meeting describes the following action to be taken: "[W]e need

to identify a champion on the implementation side to ensure the WSP is coordinated and followed up on."[587] However, Mr. Saunders and Ms. Dansereau confirmed that no WSP "champion" was identified, although Ms. Dansereau described Ms. Farlinger as the "guardian" of the policy.[588]

Mr. Chamut pointed to the importance of leadership at the most senior level to ensure that the Wild Salmon Policy was implemented. He said that leadership on implementation should start at the top with the deputy minister, who needs to be "acutely aware" of the policy's importance and ensure that people are accountable for its implementation.[589]

During the hearings, members of the WSP Implementation Team expressed frustration with the lack of oversight by senior management on WSP implementation. For example, Dr. Irvine identified a lack of leadership and direction from the regional director general and down the line of command as a "limiting factor" on WSP implementation. Although he had seen a significant improvement in 2010, which he credited to new people getting involved in the last year or so, leadership on WSP implementation in previous years was lacking.[590] I note that this perceived lack of leadership and direction appears to be particularly acute for Strategy 3. For example, until October 2009, the Operations Committee had never received any presentation or provided direction to staff on the details of Strategy 3 implementation.[591]

The deputy minister was asked if WSP implementation could be better advanced if DFO appointed a "czar of the Wild Salmon Policy." Ms. Dansereau answered that, for her, "the verdict is not quite in" as to whether DFO requires a senior official to champion the policy.[592] Mr. Bevan said that the regional director general was the one "who is actually accountable for getting the things done in the region."[593]

Mr. Chamut testified that the regional director general

> needs to identify someone that is going to really be accountable for pulling all the various bits and pieces within the region together to make this happen, because sometimes there are barriers between sectors, between fish management, between science, between habitat, and I think you need someone that sort of bridges all of those sectors to be able to lay down the priority and make sure that people are doing what they have agreed to do.

He said this would be a good role for an associate regional director general, and that this allocation of responsibility would emphasize that WSP implementation is a critical priority within the Pacific Region.[594] In his view, the best way to ensure WSP implementation is to give a senior official the authority, responsibility, and resources to supervise a team of people doing the work.[595]

Mr. Sprout agreed that "if he had a more senior person who was working cooperatively with the other regional directors to try to advance as best as possible with the resources the implementation of the WSP ... I think that that would have merit." He rejected the suggestion that the associate regional director general, who already has many responsibilities, should fill that position.[596] I took his view to be that this role should be to coordinate rather than to direct implementation. Ms. Farlinger was also open minded to the possibility of having someone at a higher level engaged in improving integration and implementation.[597]

Dr. Irvine testified that, because WSP implementation is complicated, it was important that DFO have "a committed and passionate champion." He said that, before 2010, senior leadership on WSP implementation was lacking.[598] He recalled the leadership provided by Mr. Chamut in galvanizing DFO staff to complete the policy and in securing the support of senior officials.[599]

Notably, in emphasizing a need to move away from a "stovepiping" approach where individual sectors focused on individual strategies, Dr. Irvine felt that WSP governance would need to take more of a "top down" perspective if DFO was to move forward to implement integrated strategic planning under Strategy 4.[600] This view conflicts with that of the regional directors general, who expressed caution about moving to an internal governance model where a senior official provides "top-down" direction – including, presumably, for integrated strategic planning.[601]

The view that DFO needs a regional official or senior WSP champion to lead WSP implementation was also held by Ms. Stalberg, Mr. Saunders, and Dr. Hyatt.[602] Mr. Saunders specifically raised the issue of where such a champion should lie within

the department. He emphasized that, for WSP implementation, because responsibility is divided among branches, a champion should be at a higher level than regional director – at the level of the regional director general or the associate regional director general.[603] Mr. Saunders was also receptive to the idea of having a facilitator to help the four orders of government work together, share technical information on the status of ecosystems, and engage in integrated planning.[604]

Mr. Young of the David Suzuki Foundation recommended stronger direction from higher levels within DFO and greater involvement from national headquarters on WSP implementation, with a firm connection between the region and national headquarters (NHQ) and direction from NHQ.[605]

In contrast, Dr. Riddell was less convinced of the need for a single WSP champion. He suggested that there should be a small, dedicated group of experts to drive WSP implementation forward.[606] Mr. Young agreed with Dr. Riddell that a core group of experts was necessary, but he disagreed that it would be sufficient.[607] Mr. Morley, for the commercial fishing sector, said that a lack of DFO leadership was holding back the integrated planning process.[608]

Findings

The Wild Salmon Policy (WSP) has been articulated as the means by which the Department of Fisheries and Oceans (DFO) will meet its obligation to protect and conserve wild salmon stocks on the Pacific coast. Susan Farlinger, regional director general, Pacific Region, described the WSP as "the expression of … the precautionary approach" as applied to salmon.[609] Every indication from the DFO witnesses who testified before me, and from ministerial statements in evidence before me, is that Canada is committed to the Wild Salmon Policy.

However, after seven years, DFO has not implemented the policy. It is being implemented at a much slower pace than DFO, First Nations, and stakeholders anticipated in 2005. The policy requires DFO to undertake some challenging new activities, particularly gathering new, Conservation Unit–specific information about biological status, habitats, and ecosystems and commencing new integrated planning processes. Some required WSP activities, such as habitat assessment and monitoring, have not even been started.

DFO senior management witnesses maintain that DFO is complying with the spirit and intent of the policy. However, it is difficult to accept that there is compliance when the evidence is that critical biological assessment work remains incomplete, in particular in relation to habitat, and that the heart of the policy, Strategy 4, remains unfulfilled. Without implementing the integrated planning component so critical to the policy, I do not agree that its intent is being realized. Instead, significant decisions have been made on a relatively uninformed basis.

In this Inquiry, for example, I heard about two ad hoc initiatives that may have a significant bearing on the future management of the fishery: terminal fisheries and share-based management. Neither of these initiatives was developed in a Strategy 4 process, and neither one appears to have been informed by a socio-economic analysis. These are the kinds of initiatives that Strategy 4 is designed to address to allow for integrated, transparent, and informed decision making.

Canada must complete the implementation of the Wild Salmon Policy. To do so effectively, DFO must develop a concrete plan for what needs to be done and complete a costing exercise to understand the real costs of implementation. Canada must provide sufficient funding to ensure that the policy will be fully implemented in a timely way, and DFO must put in place a management team with responsibility and authority to direct each sector to complete the tasks needed for implementation.

Having made these general findings, I now review in more detail specific aspects of the policy and its implementation.

Implementation of strategies 1–3

Although measurable progress has been made under strategies 1 and 2, this progress has largely been in developing the methodologies required to assess and monitor the status of salmon Conservation Units (CUs) and their habitats. Little progress has been made toward actually using these methodologies. Almost nothing has been done to assess or monitor CU habitat status under Strategy 2. For Fraser River sockeye CUs, there has been one limited, incomplete status assessment under Strategy 1. No discernible

management action was taken on this status assessment (including no recovery plan). There has been no demonstrable progress on implementing Strategy 3, as it applies to Fraser River sockeye. The WSP contemplates incorporating ATK where available in relation to Strategy 1, and it may also be helpful in implementing Strategy 2 and 3. However, DFO has not sought to incorporate ATK in assessments under any of Strategies 1, 2 or 3.

It is fundamental that DFO identify biological, precautionary, science-based benchmarks for status so that it can assess and monitor sockeye health and abundance. Benchmarks must be based on science, including ATK where available, and their identification should continue to be the responsibility of DFO Science.

In my view, a sharp sectoral division of strategies 2 and 3 between the Habitat Management Program and the Science Branch could cause both gaps and overlaps. This uneven distribution could, in turn, create inefficiency and delay, and a lack of clear accountability. There is overlap in the application of strategies 2 and 3, and efficiencies could be gained from their integration. Currently, DFO is pursuing separate methodologies for habitat and ecosystem indicators under strategies 2 and 3; the Strategy 2 methodology and indicators are complete for freshwater, but the Strategy 3 methodology is still in the developmental phase. To further both strategies, DFO could use a broader array of integrated indicators for freshwater and marine habitats – and begin actually assessing and monitoring the status and quality of Fraser River sockeye habitats. I heard evidence that there are large gaps in DFO's understanding of the marine environment. DFO must put a greater effort into developing its knowledge of marine habitats, as an essential component of strategies 2 and 3. In addition, greater coordination and linkages need to be developed between existing habitat programs, such as implementation of the 1986 Habitat Policy, and the implementation of strategies 1, 2, and 3.

No single sector at DFO has all the expertise to conduct biological status, habitat, and ecosystem monitoring, to design and implement strategic watershed planning, and to translate strategic plans into annual operational plans for fisheries and habitat management, and for enhancement. In the absence of a WSP implementation program with targeted funding, DFO regional management structured WSP governance around its existing sectoral "stovepipes." Yet this sectoral orientation runs counter to the underlying intent of the Wild Salmon Policy – that Pacific salmon conservation and management must be more integrated.

Strategy 4 implementation

Strategy 4 is about transparent and informed decision making, using the best available information. It requires a transparent process to ensure that DFO, the minister, and all interested parties understand the competing interests and how those interests are balanced. Although DFO may need to develop arrangements with First Nations, the province, and/or municipalities to achieve some of its long-range planning objectives, many decisions can and must be made by DFO in the first instance in relation to habitat and harvest.

Current implementation efforts for Strategy 4 have not included frank discussions with stakeholders, First Nations and government about the biological and socio-economic ramifications of future harvest and recovery planning decisions. DFO did pilot, through the Fraser River Sockeye Spawning Initiative (FRSSI), the "five-step integrated planning process" in Appendix 2 of the WSP.[610] However, although FRSSI is a useful tool in managing the harvest (and based on the evidence I received it appears to be flexible enough to be adapted to accept WSP benchmarks for CUs once those are determined), it is not adequate for the integrated planning envisioned in Strategy 4. Similarly, the Integrated Harvest Planning Committee (IHPC) and the Integrated Fisheries Management Plan (IFMP), while relevant to managing harvest, are not sufficient to meet that integrated planning objective. Seven years after the adoption of the Wild Salmon Policy, DFO has done little of the basic groundwork necessary to begin strategic planning for CUs. Apart from Appendix 2 of the WSP itself, DFO has not adopted a strategic planning procedure to consult with other levels of government, First Nations, and stakeholders.

The failure to implement Strategy 4 integrated planning raises the concern, expressed by many fishers who appeared before me, that the only lever DFO is using to address weak stocks is curtailing harvest, through the use of the harvest-planning

tools I have just described. As a result, the harvesters are left to bear the cost of preserving CUs through forgone harvest. The companion measures contemplated in Strategy 4, including restoration measures and habitat improvements, development planning, and other measures involving all levels of government, have not come to pass.

Overall, I do not see how DFO's actions since June 2005 appropriately recognize that establishing an integrated process for salmon management will "require extensive effort and cooperation between all levels of government and many different interests."[611] Beyond the official WSP pilot in Barkley Sound, DFO has made little progress on meeting the policy's direction that "broader and more direct linkages with First Nations governments, Provincial, Territorial and local governments need to be forged so that other land and water use activities and decisions better support the needs of salmon."[612] I have not heard that DFO has pursued the requisite "strong efforts by the Department and others to build the necessary political will and commitment for these other levels of government to support and participate in the planning process."[613]

I heard concerns expressed by DFO witnesses that the department had insufficient information and resources to begin implementing Strategy 4. Biological information will improve over time, but the process must begin with the information currently available. Similarly, the integrated planning process will improve over time, but the process must begin now, recognizing that it will be imperfect and will evolve as participants become more comfortable with the process. Arrangements with federal, provincial, municipal, and First Nations governments may take time to complete, but DFO must take the initial steps to develop such arrangements and continue to press to have them completed. Again, these tasks cannot delay integrated planning.

The essential components are now in place to begin the integrated planning process, recognizing that new information will be generated on a continuous basis and that decisions must be made with the best information available at any time. Mark Saunders, head of Salmon Assessment and Freshwater Ecosystems, DFO Science, testified that DFO is "at a tipping point in the implementation of the Wild Salmon Policy in that we've got the indicators for … habitat, we've got the benchmarks, we've got the conservation units."[614] It is now the time to act.

The precautionary principle holds that, where there are threats of serious or irreversible harm, DFO must not rely on a lack of full scientific certainty as a reason for postponing cost-effective measures to prevent environmental degradation. DFO should therefore focus on immediate implementation of the essential steps I have highlighted below – action consistent with the precautionary principle.

I have considered whether Strategy 4 should proceed in the manner currently envisioned, with an interim planning process followed by a fully developed integrated planning process. I am concerned that this two-step process will introduce further delays in the implementation of the crucial elements of Strategy 4. In my view, the crucial elements of Strategy 4 are

- presentation of the biological status of CUs and habitat developed under strategies 1–3;
- presentation of long-term harvest and recovery strategies developed in relation to the outputs from strategies 1–3;
- socio-economic analysis of competing strategies;
- consultation with governments, First Nations, and stakeholders as to the appropriate strategies to be adopted by DFO and others;
- an open, transparent decision by the minister if DFO does not recommend the recovery of any CU in the red zone;
- implementation by DFO of all plans within its jurisdiction; and
- completion of the necessary plans and agreements with federal, provincial, municipal, and First Nations governments to ensure that any recovery plans are implemented.

Action Step 4.2 envisions a determination by the minister if recovery of a CU in the red zone will not be pursued. Action Step 4.1, in contrast, envisions immediate recovery planning for all CUs in the red zone. In my view, these two action steps must be expressly reconciled. Recovery planning and implementation require commitments of time and resources. Given the controversies among the different sectors in relation to the protection and recovery of weak stocks, it is important that a transparent decision about recovery efforts be made for those CUs in the red zone. All strategic plans must be approved by the minister. The minister may reject plans

that do not adequately conserve wild salmon, and in exceptional circumstances the minister may limit the extent of active measures taken if the recommended management action is assessed to be ineffective or if the social and economic costs will be extreme. Such decisions must be made in an open and transparent way, so that all interested parties understand the basis for the decision.

During the hearings, senior managers referred to operational harvest decisions taken to protect weak stocks as being consistent with the spirit and intent of the WSP. I disagree. The WSP requires DFO to engage in strategic planning, considering the biological, social, and economic impact of such plans. It requires ministerial approval of not only harvest plans (the IFMP) but also conservation plans. I consider recovery, or response, plans to be a form of conservation plan which requires approval.

Strategy 4 planning must first be implemented in relation to CUs in the red zone. DFO must create response plans using the best information available at the time, and it cannot delay such planning because the "best available" status assessments have not gone through DFO's own internal review process. This planning must include an assessment of biological and socio-economic impacts, recognizing that current information is imprecise. The plans should be revisited on a regular basis to include new information and to assess the impact and effectiveness of the plans.

I am satisfied that the streamlined technical process described by Mr. Saunders and Rob Morley, vice-president of the Canadian Fishing Company, should be adopted to bring the biological information obtained through strategies 1–3 into the integrated planning process and to develop harvest and recovery strategies in relation to that biological information for consideration in the integrated process. These contemplated strategies would extend beyond the yearly planning currently done and include long-term plans for the fisheries, including proposals to move some or all of the harvest into terminal areas and to introduce a share-based fishery. I find that FRSSI is an adequate tool to develop escapement strategies for consideration and to develop total allowable mortality rules. DFO has indicated that FRSSI will continue to be improved over time, and I encourage the process to continue.

Once potential harvest and recovery strategies have been developed under the streamlined process described above, DFO must produce socio-economic analyses in relation to these strategies. In terms of the socio-economic analysis required for planning purposes, I recommend that DFO develop internal expertise in such analysis, and I am encouraged by the evidence that at least one economist has been hired in the department.

The socio-economic analysis developed in relation to the listing decision for Cultus Lake sockeye, described in detail in Chapter 11, Cultus Lake, highlights a number of important considerations for socio-economic information generated in WSP planning. In particular, socio-economic analysis should consider

- how the cyclic nature of certain CUs will affect harvest and conservation plans;
- how the unpredictability of Fraser River sockeye will affect harvest and conservation plans;
- whether CUs can be treated differently in either harvest or conservation plans;
- the impact on food, social, and ceremonial harvests for First Nations expected to be affected by harvest or conservation plans; and
- the impact on commercial and recreational fisheries from harvest or conservation plans.

As part of its integrated planning under Strategy 4, DFO must provide all socio-economic analysis to all participants in the process in a timely way. Similarly, DFO must disclose to all participants in the planning process the underlying data relied on, except to the extent such data are proprietary to a non-governmental entity.

I discuss recommendations to the IFMP elsewhere in this Report. I find that the IFMP is consistent with the WSP in relation to the implementation of yearly harvest decisions. These harvest decisions must be consistent with and informed by the long-term integrated strategic planning developed through Strategy 4.

Implementation planning

DFO must do more than implement the spirit and intent of the Wild Salmon Policy. The department had already codified guiding principles for salmon management in the New Directions Policy. The three key principles in that policy are conservation,

sustainable use, and improved decision making. These principles are reiterated in the WSP, with the added fourth principle of honouring obligations to First Nations. However, the three principles were not made operational in New Directions, and thus DFO made "a commitment to more clearly articulate detailed operational policies associated with these three themes." Specifically, DFO committed to develop a wild salmon policy.[615] Once approved, the WSP made these principles operational by requiring information gathering and decision making to focus on Conservation Units and by mandating an integrated planning process where participants would together identify specific conservation objectives and targets.

In my view, documenting DFO's commitments in a multi-year implementation plan setting out tasks and timelines in detail, along with the associated human and financial resources, is a fundamental requirement to implementing the Wild Salmon Policy. An implementation plan requires government to consider, and plan for, the human and financial resources likely to be necessary for implementation in the longer term. It provides government with clear deliverables and timelines. An implementation plan is required to measure performance and to ensure accountability.

I find that DFO has not developed an implementation plan as contemplated in the Wild Salmon Policy. I do not agree that DFO can properly implement the policy guided only by a series of short tables, proposed internally by mid-level staff to regional managers for work-planning purposes (not distributed to the public) and revised annually. It is my view that the WSP's strategies and action steps, whether scientific or otherwise, can and should be subjected to timelines. If Canada and DFO assigned WSP implementation activities clearly by priority, support, and leadership, and all to be completed within a certain schedule, I am confident that the department's scientists and managers would be up to the task.

Implementation costing and resourcing

I find that DFO has not tried to determine the cost of WSP implementation. It does not know the cost of the science needed to complete implementation, the cost of ongoing assessment and monitoring, or the cost of the planning processes under Strategy 4. Nor has it attempted to devise any long-term funding strategy. The sole exception to this finding is the work done by Heather Stalberg, senior biologist with the Oceans, Habitat and Enhancement Branch (OHEB), and Rebecca Reid, former regional director of OHEB, to estimate the cost of implementing Strategy 2 – work that DFO appears to have largely ignored.

Although a number of senior managers testified that the WSP could be implemented within existing budgets, I do not find this evidence convincing. Many of these same senior managers told me they were implementing the spirit and intent of the WSP. As already noted, I do not accept that to be adequate implementation. Adequate implementation goes further and will require additional funds.

Overall, I conclude that the implementation of the Wild Salmon Policy has been deprived of a reasonable funding commitment, in both the medium term and the long term. As a result, its implementation has been slow, inconsistent among branches, and ad hoc. Without adequate funding for the fundamental components of the Wild Salmon Policy, Canada is not able to meet the commitments it has made in the policy and by its acceptance of the precautionary approach.

I accept that some of the required resources can continue to be found in existing budgets; for example, stock assessment programs already support the status assessment of some metrics for some Fraser River sockeye CUs, and perhaps some of the required habitat assessment and monitoring can be done within the existing Habitat Management Program. Yet other resources – such as financial and human resources for monitoring and assessing the status of habitat under Strategy 2, or adequate habitat restoration under the Salmonid Enhancement Program – may not currently exist within DFO. Ideally, with DFO taking the initiative in the future to develop WSP monitoring partnerships, habitat monitoring resources may eventually be augmented by contributions, either funds or monitoring effort, by the province, First Nations, and others. However, DFO cannot rely primarily on contributions by other stakeholders to implement its policy obligations.

Governance for implementation

I find that the regional director general (RDG) has overall responsibility for implementation of the Wild Salmon Policy. However, the RDG has responsibility for all sectors and programs. Currently, there is no one senior official within DFO's Pacific Region responsible for providing operational direction on WSP implementation. Responsibility is dispersed through Science, Fisheries and Aquaculture Management, and OHEB. Moreover, as Mr. Sprout testified, the sectors share responsibilities for some strategies and aspects of WSP implementation. In this way, the lines of accountability for WSP implementation are weak and diffuse.

I find that the Policy Branch does not have responsibility for WSP implementation. The Policy Branch has responsibility for coordination, and this role is undertaken by a relatively junior employee, the WSP coordinator. A number of witnesses identified limitations on the "coordinator model" of WSP governance. Working at a relatively junior level within one sector, this person cannot exercise significant influence over the activities of other sectors, and indeed may lack influence over Policy's own regional director.

Given the fundamental need for integration, I am of the view that DFO requires a new senior manager to directly oversee WSP implementation – in effect, an "integrator." In order to achieve greater integration, direction, vision, and accountability, this official must transcend individual sectors and must be able to control and direct the use of the required financial and human resources. In short, the official should have overall operational responsibility for WSP implementation, including responsibility for financial resources directed at implementation and ongoing activities. Such oversight is particularly important to develop interim recovery and strategic planning processes and to ensure that they inform management decisions. It appears to me that an associate regional director general is likely in the best position to take on responsibility for WSP implementation, and a new position should be created for this role.

These findings and any related recommendations are discussed in Volume 3 of this Report.

Notes

1 Exhibit 102, p. 1.
2 Transcript, September 22, 2011, pp. 44–45.
3 Transcript, November 29, 2010, pp. 44–45.
4 Transcript, March 4, 2011, pp. 64, 66.
5 Exhibit 8, p. 8.
6 Exhibit 32; Exhibit 96, pp. 2–3; Paul Macgillivray, Transcript, November 1, 2010, pp. 68, 89–91.
7 Exhibit 32, pp. 5, 12–13.
8 Exhibit 730, p. 20.
9 Exhibit 14, p. 153.
10 Exhibit 88, pp. 1, 5–6.
11 Transcript, November 30, 2010, p. 3. See also Transcript, December 1, 2010, p. 69.
12 Transcript, October 25, 2010, pp. 70–71.
13 Transcript, November 29, 2010, p. 10; Transcript, December 1, 2010, p. 69.
14 Transcript, March 8, 2011, pp. 54–56. See also Exhibit 553, pp. 31–32.
15 See Exhibit 97, Dr. Riddell's presentation entitled "The Build-Up to Canada's Policy for Conservation of Wild Pacific Salmon (1980–2000)." This presentation includes an explanation of the scientific development of Conservation Units, which are discussed later in this chapter. See also Dr. Riddell's speaking notes for this presentation (Exhibit 98) and his testimony at Transcript, November 29, 2010, pp. 6–14.
16 Brian Riddell, Transcript, November 29, 2010, pp. 7–8; Exhibit 8, p. 43.
17 Transcript, November 29, 2010, pp. 9–10. See also Exhibit 97, p. 7.
18 Transcript, December 1, 2010, p. 28.
19 Transcript, February 9, 2011, pp. 38–39.
20 Exhibit 8, pp. 8–9.
21 Jim Irvine, Transcript, November 29, 2010, p. 51.
22 Exhibit 101, pp. 1–2.
23 Exhibit 100, pp. 2–3.
24 Pat Chamut, Transcript, November 29, 2010, p. 25; Exhibit 100, pp. 2–3.
25 Transcript, December 1, 2010, p. 117. See also Exhibit 101, p. 2, and Exhibit 103, p. 1, regarding the instrumental leadership role played by Mr. Chamut.
26 Transcript, December 1, 2010, pp. 115–16.
27 Transcript, November 29, 2010, pp. 38–39.
28 Mark Saunders, Transcript, November 29, 2010, pp. 38–39.
29 Exhibit 101, p. 3.
30 Transcript, November 30, 2010, pp. 79–80. See also Jim Irvine, Transcript, November 30, 2010, pp. 22, 42, and Exhibit 8, p. 8.
31 Transcript, December 1, 2010, p. 93.
32 Pat Chamut, Transcript, November 29, 2010, pp. 26–27.
33 Exhibit 92.
34 Transcript, November 29, 2010, p. 27.
35 Transcript, November 29, 2010, p. 28.
36 Exhibit 8, p. 38.
37 Exhibit 8, p. 40.
38 See Exhibit 8, pp. 10, 38.
39 Transcript, December 1, 2010, pp. 64–65.
40 Transcript, November 29, 2010, p. 11. See also Transcript, November 30, 2010, p. 10, and Transcript, December 1, 2010, pp. 65–66.
41 Brian Riddell, Transcript, November 30, 2010, pp. 10–11. See also Transcript, December 1, 2010, pp. 66–67.
42 Transcript, December 1, 2010, pp. 19–20.
43 Transcript, November 30, 2010, pp. 18–19.

44 Transcript, November 30, 2010, p. 83; Transcript, December 2, 2010, pp. 10–11.
45 Exhibit 85.
46 Exhibit 104A, p. 13
47 Exhibit 91, pp. 19, 26, 31.
48 Transcript, December 2, 2010, pp. 79–80. The Fishery Decision-Making Framework is Exhibit 185.
49 Jim Irvine, Transcript, November 29, 2010, p. 60, and November 30, 2010, p. 27.
50 Transcript, November 29, 2010, p. 59.
51 Jim Irvine, Transcript, December 2, 2010, p. 5.
52 Transcript, November 29, 2010, p. 38.
53 Transcript, November 30, 2010, p. 48.
54 Transcript, November 30, 2010, p. 27.
55 Transcript, November 29, 2010, p. 60. See also Exhibit 103, pp. 1–2.
56 Transcript, November 30, 2010, pp. 30–31, 80–81.
57 Exhibit 100, pp. 3–4; Exhibit 101, p. 2.
58 Transcript, December 1, 2010, p. 71.
59 Transcript, November 29, 2010, p. 37.
60 Exhibit 99, p. 4. See also Jim Irvine, Transcript, November 30, 2010, p. 18; Brian Riddell, Transcript, November 30, 2010, p. 17, and November 29, 2010, pp. 37–38.
61 Transcript, June 1, 2011, pp. 83–84.
62 Exhibit 103, p. 1.
63 Exhibit 103, pp. 1–2.
64 Transcript, November 30, 2010, p. 28.
65 Transcript, November 29, 2010, pp. 67–68; Transcript, December 1, 2010, pp. 10–11.
66 Mark Saunders, Transcript, November 29, 2010, p. 84. See also Brian Riddell, Transcript, November 29, 2010, p. 14, and Jim Irvine, Transcript, November 29, 2010, p. 54.
67 Exhibit 8, p. 29.
68 Transcript, December 1, 2010, p. 85.
69 Transcript, November 30, 2010, pp. 37–38.
70 Transcript, May 12, 2011, p. 81.
71 Transcript, November 30, 2010, pp. 103–4.
72 Transcript, November 30, 2010, pp. 104–5.
73 Pat Chamut, Transcript, November 30, 2010, p. 67. Exhibit 91 is the December 2004 draft entitled A Policy Framework for Conservation of Wild Pacific Salmon.
74 Exhibit 96, p. 5.
75 Jim Irvine, Transcript, November 29, 2010, p. 57; Exhibit 96, p. 5; Exhibit 100, p. 4.
76 Jim Irvine, Transcript, November 30, 2010, p. 82; Exhibit 96, p. 5.
77 Exhibit 93, p. 2; Exhibit 94, p. 2.
78 Transcript, November 29, 2010, p. 42. See also Jim Irvine, Transcript, November 29, 2010, p. 57.
79 Transcript, November 29, 2010, pp. 31–32. See also Transcript, November 30, 2010, p. 93.
80 Transcript, December 1, 2010, p. 115.
81 Exhibit 93, pp. 11, 16.
82 Transcript, November 29, 2010, p. 34. See also Transcript, November 29, 2010, p. 77.
83 Exhibit 100, p. 5.
84 Exhibit 103, p. 2; Mark Saunders, Transcript, November 30, 2010, p. 26.
85 Exhibit 93, pp. 4–5.
86 Transcript, December 1, 2010, p. 103.
87 Exhibit 123A is the memorandum to the deputy minister, and Exhibit 123B is the associated transmittal slip. Mr. Saunders testified that there was a typo in Exhibit 123A and that the references to June 24, 2004, should have been to 2005. See Transcript, December 1, 2010, pp. 100–1.
88 Transcript, December 1, 2010, pp. 106–7.
89 Transcript, October 28, 2010, p. 67. See also Transcript, October 28, 2010, pp. 78–79.
90 Written submissions of the West Coast Trollers Area G Association and the United Fishermen and Allied Workers' Union, p. 74.
91 Oral submissions of the West Coast Trollers Area G Association and the United Fishermen and Allied Workers' Union, Transcript, November 9, 2011, p. 6.
92 *Oceans Act*, SC 1996, c. 31, Preamble.
93 Transcript, September 23, 2011, pp. 55, 64–66.
94 Transcript, December 16, 2010, p. 35.
95 Transcript, September 23, 2011, p. 83.
96 Transcript, December 9, 2010, p. 55.
97 Transcript, September 23, 2011, p. 84.
98 Transcript, July 7, 2011, p. 56.
99 Transcript, June 1, 2011, p. 79. See also Transcript, June 1, 2011, pp. 89–91.
100 Transcript, June 1, 2011, pp. 78–80.
101 Exhibit 8, p. 35.
102 Exhibit 93, pp. 11–16.
103 Exhibit 170; Exhibit 135; Exhibit 109.
104 Transcript, December 9, 2010, pp. 42–44.
105 Transcript, December 9, 2010, pp. 45–46, 51–52.
106 Exhibit 109.
107 Exhibit 109, p. 20.
108 Transcript, December 9, 2010, pp. 42–43.
109 Exhibit 109, pp. 10, 20.
110 Exhibit 213; Exhibit 137B.
111 Jim Irvine, Transcript, December 2, 2010, p. 44. See also Mark Saunders, Transcript, November 29, 2010, p. 78.
112 Transcript, December 2, 2010, pp. 36–37.
113 Transcript, September 27, 2011, p. 21. See also Exhibit 964, the 2011–12 draft internal staff work plan.
114 Transcript, September 27, 2011, p. 23.
115 Transcript, March 4, 2011, pp. 12–13.
116 Exhibit 82, p. 2.
117 Exhibit 204; Heather Stalberg, Transcript, December 7, 2010, pp. 29–30, and December 8, 2010, p. 47.
118 Exhibit 244, p. 2; Transcript, December 9, 2010, pp. 40–41.
119 Transcript, December 9, 2010, p. 41, and September 27, 2011, p. 24.
120 Transcript, September 22, 2011, p. 45. See also Transcript, September 28, 2011, p. 105.
121 Transcript, September 22, 2011, p. 58.
122 Transcript, September 22, 2011, pp. 59–60.
123 Transcript, September 22, pp. 51–52.
124 Transcript, September 23, 2011, pp. 85–86.
125 Transcript, September 23, 2011, p. 83.
126 Transcript, June 1, 2011, p. 82. See also Exhibit 1217, p. 1.
127 Exhibit 8, p. 16.
128 Exhibit 183, p. 2; Kim Hyatt, Transcript, December 2, 2010, pp. 29–30.
129 Transcript, December 3, 2010, p. 69.
130 Transcript, December 7, 2010, pp. 3–4. See also Neil Schubert, Transcript, May 31, 2011, p. 83.
131 Exhibit 1992A, p. 27.
132 Exhibit 143.
133 Exhibit 143, pp. 276–89.
134 Kim Hyatt, Transcript, December 2, 2010, pp. 53–54.
135 Exhibit 184, pp. 29–32.
136 Transcript, December 7, 2010, p. 53.
137 Transcript, December 2, 2010, pp. 65, 73.
138 Exhibit 184, p. 2.
139 Exhibit 184, p. 166.
140 Transcript, December 2, 2010, p. 73.
141 Canada's reply submissions, pp. 69–70.
142 Transcript, September 22, 2011, p. 53. See also Exhibit 1915 (Grant Draft 2011).
143 Transcript, September 22, 2011, p. 56.
144 Transcript, September 22, 2011, p. 54.
145 Exhibit 1915, pp. 117–18.

146 Mark Saunders, Transcript, December 2, 2010, p. 55.
147 See the Holt paper entitled "Indicators of Status and Benchmarks for Conservation Units in Canada's Wild Salmon Policy" (Exhibit 153) and a companion document (Exhibit 154).
148 Carrie Holt, Transcript, December 2, 2010, pp. 77–79.
149 Carrie Holt, Transcript, December 2, 2010, pp. 58, 65–66; Mark Saunders, Transcript, December 2, pp. 57–58.
150 Mark Saunders, Transcript, December 8, 2010, p. 76.
151 Transcript, July 4, 2011, pp. 71–72; Exhibit 8, p. 17.
152 Transcript, December 7, 2010, pp. 3, 93.
153 Carrie Holt, Transcript, December 7, 2010, pp. 91–92.
154 See Grant Draft 2010 (Exhibit 184, p. viii) and Grant Draft 2011 (Exhibit 1915, p. vii).
155 Kim Hyatt, Transcript, December 2, 2010, pp. 56–57.
156 Transcript, December 2, 2010, pp. 28–29.
157 Exhibit 1972.
158 Carrie Holt, Transcript, December 2, 2010, pp. 28, 77, and December 7, 2010, p. 6; Mark Saunders, Transcript, December 7, 2010, pp. 8–9.
159 Exhibit 8, p. 17.
160 Transcript, December 3, 2010, p. 38.
161 Exhibit 8, pp. 17–18.
162 Exhibit 8, p. 17.
163 See Exhibit 185 (*A Fishery Decision-Making Framework Incorporating the Precautionary Approach*). The date this framework was published or released is not in evidence. From its content, it appears to post-date 2006. Mr. Bevan testified, however, that it dated to the early or mid-2000s. See Transcript, September 23, 2011, p. 62.
164 Transcript, December 16, 2011, p. 1.
165 Transcript, September 26, 2011, p. 88.
166 Transcript, September 27, 2011, pp. 74–78.
167 Transcript, December 2, 2010, pp. 79–80. See also Exhibit 185.
168 Transcript, December 2, 2010, pp. 79–80.
169 Exhibit 182, p. 1.
170 Transcript, December 7, 2010, p. 7. See also Mark Saunders, Transcript, December 2, 2010, pp. 50–60.
171 Transcript, February 2, 2011, p. 32.
172 Transcript, February 2, 2011, p. 81.
173 Transcript, February 2, 2011, pp. 62–63.
174 Exhibit 8, pp. 18–19.
175 Mark Saunders, Transcript, December 2, 2010, p. 59; Jim Irvine, Transcript, December 7, 2010, pp. 7–8.
176 Mark Saunders, Transcript, December 7, 2010, pp. 8–9.
177 Exhibit 8, pp. 20–21.
178 Transcript, June 7, 2011, p. 91.
179 Exhibit 8, pp. 20–22.
180 Brian Riddell, Transcript, November 29, 2010, p. 79.
181 Exhibit 148, p. 7.
182 Exhibit 176; Heather Stalberg, Transcript, December 2, 2010, pp. 24–25.
183 Transcript, December 3, 2010, pp. 6–7.
184 Heather Stalberg, Transcript, December 7, 2010, p. 34. See also Exhibit 168, p. 1, and Exhibit 963, p. 2.
185 Rebecca Reid, Transcript, April 5, 2011, p. 7.
186 Exhibit 964, pp. 1–3.
187 Exhibit 204, p. 7. See also Rebecca Reid, Transcript, April 4, 2011, pp. 40–41.
188 Transcript, April 4, 2011, pp. 41–42.
189 Rebecca Reid, Transcript, April 4, 2011, p. 15, and April 5, 2011, p. 7; Jason Hwang, Transcript, April 4, 2011, pp. 15, 27, 75; Dave Carter, Transcript, April 6, 2011, p. 34.
190 Transcript, December 2, 2010, pp. 60–61.
191 Transcript, April 4, 2011, p. 40.
192 Transcript, April 4, 2011, p. 26.
193 Transcript, December 9, 2010, pp. 81–82.
194 Transcript, December 9, 2010, p. 26. See also Transcript, September 27, 2011, p. 82.
195 Transcript, December 3, 2010, pp. 5–6.
196 Transcript, December 7, 2010, p. 10.
197 Transcript, December 7, 2010, pp. 11, 14.
198 Heather Stalberg, Transcript, December 7, 2010, p. 10. See also Exhibit 148, p. 21.
199 Transcript, June 3, 2011, pp. 53–54.
200 Transcript, June 3, 2011, pp. 53–54.
201 Transcript, April 5, 2011, p. 58.
202 Transcript, June 1, 2011, p. 20.
203 Transcript, June 1, 2011, p. 90.
204 Mark Saunders, Transcript, November 29, 2010, p. 84.
205 Exhibit 175. See also Exhibit 158, and Heather Stalberg, Transcript, December 7, 2010, pp. 20–22.
206 Transcript, June 1, 2011, p. 90. See also Transcript, June 1, 2011, p. 80.
207 Transcript, April 4, 2011, pp. 43–44, 75.
208 Transcript, June 1, 2011, p. 90.
209 Mark Saunders, Transcript, December 2, 2010, pp. 39–40; Exhibit 965, p. 29.
210 Exhibit 8, p. 21.
211 Exhibit 965, pp. 26–32.
212 Transcript, December 3, 2010, p. 4.
213 Transcript, June 8, 2011, p. 92.
214 Transcript, April 6, 2011, p. 52.
215 Transcript, April 6, 2011, p. 18.
216 Transcript, April 6, 2011, p. 17.
217 Transcript, December 3, 2010, pp. 49–50.
218 Transcript, December 7, 2010, p. 35.
219 Exhibit 260, p. 21.
220 Transcript, December 3, 2010, p. 50.
221 Transcript, December 7, 2010, p. 35.
222 Susan Farlinger, Transcript, December 9, 2010, p. 82; Mark Saunders, Transcript, December 3, 2011, pp. 50–51.
223 Transcript, December 3, 2011, pp. 50–51.
224 Transcript, December 3, 2011, pp. 47–48.
225 Transcript, June 1, 2011, pp. 93–94.
226 Exhibit 8, p. 22.
227 Exhibit 151, p. 1. See also Heather Stalberg, Transcript, December 3, 2010, p. 14.
228 Heather Stalberg and Mark Saunders, Transcript, December 3, 2010, p. 15.
229 Transcript, December 3, 2010, p. 13.
230 Exhibit 965, p. 29.
231 Transcript, December 2, 2010, p. 61.
232 Exhibit 8, p. 23.
233 Exhibit 8, pp. 22–23.
234 Jim Irvine and Kim Hyatt, Transcript, December 3, 2010, p. 29. See also Mark Saunders, Transcript, December 3, 2010, pp. 66–67.
235 Transcript, December 3, 2010, pp. 29, 70.
236 Transcript, December 3, 2010, pp. 25–26, 29.
237 Transcript, December 8, 2010, pp. 58–59.
238 Transcript, December 7, 2010, pp. 44–45.
239 Transcript, December 3, 2010, pp. 23–25.
240 Transcript, December 3, 2010, p. 20.
241 Transcript, December 8, 2010, pp. 61–62.
242 Transcript, December 3, 2011, p. 21, and December 8, 2010, p. 61. See also Exhibit 965, p. 13.
243 Exhibit 186; Kim Hyatt, Transcript, December 7, 2010, p. 39.
244 Transcript, December 3, 2010, pp. 19–20.
245 Exhibit 186, p. 7. See also exhibit 200, p. 4, and Kim Hyatt, Transcript, December 7, 2010, pp. 41–42.
246 Kim Hyatt, Transcript, December 3, 2010, p. 24.
247 Transcript, December 2, 2010, pp. 61–62.
248 Transcript, December 8, 2010, pp. 3–4.
249 Transcript, September 22, 2011, p. 57.
250 Transcript, July 4, 2011, pp. 71–72.
251 Exhibit 965, p. 30.

252 Exhibit 8, p. 23.
253 Transcript, December 3, 2010, pp. 25–26.
254 Transcript, December 3, 2010, pp. 25–26. See also State of the Ocean Reports for 2006 (Exhibit 1354), 2007 (Exhibit 1355), 2008 (Exhibit 1356), and 2009 (Exhibit 1326).
255 Transcript, December 3, 2010, pp. 25–26.
256 Transcript, December 3, 2010, p. 27.
257 Transcript, December 7, 2010, pp. 47–48.
258 Transcript, December 3, 2010, p. 26.
259 Exhibit 8, p. 24.
260 Exhibit 8, p. 24.
261 Transcript, December 1, 2010, pp. 96–97.
262 Exhibit 100, p. 3.
263 Transcript, June 3, 2011, pp. 30–31.
264 Transcript, June 3, 2011, p. 31.
265 Transcript, December 9, 2010, p. 29.
266 Transcript, November 30, 2010, pp. 30–31.
267 Transcript, June 2, 2011, p. 9.
268 Paul Ryall, Transcript, June 3, 2011, pp. 68–69; Susan Farlinger, Transcript, March 4, 2011, pp. 67–68; Exhibit 99, p. 4.
269 Transcript, June 1, 2011, p. 90.
270 Transcript, June 1, 2011, p. 79.
271 Transcript, June 1, 2011, pp. 79–80.
272 Transcript, June 1, 2011, pp. 77–78.
273 Transcript, June 3, 2011, pp. 31–32.
274 Exhibit 971, p. 1; Exhibit 951, p. 7.
275 Transcript, June 3, 2011, p. 32.
276 Transcript, June 3, 2011, p. 32.
277 Paul Ryall, Transcript, June 3, 2011, pp. 25–26.
278 See, for example, Exhibit 951; Exhibit 970; Exhibit 971; Paul Ryall, Transcript, June 3, 2011, pp. 14–15, 25–29; Mark Saunders, Transcript, June 3, 2011, p. 26.
279 Exhibit 8, pp. 25–26.
280 Exhibit 941, p. 2.
281 Mark Saunders and Paul Ryall, Transcript, June 2, 2011, pp. 67–69; Paul Sprout, Transcript, December 9, 2010, p. 41. See also Exhibits 238, 941, 943, 951, 970, and 971.
282 Exhibit 184.
283 Mark Saunders, Transcript, June 2, 2011, pp. 65–66, and June 3, 2011, pp. 7–8. See also Exhibits 184, 562, 572.
284 Exhibit 970, p. 2.
285 Exhibit 971, p. 2.
286 Transcript, June 2, 2011, pp. 65–66.
287 Transcript, June 3, 2011, p. 99.
288 Transcript, June 3, 2011, p. 28.
289 Paul Ryall, Transcript, June 2, 2011, p. 82; Mark Saunders and Paul Ryall, Transcript, June 3, 2011, p. 29.
290 See Exhibit 571, which summarizes the results of Exhibit 184 (Grant Draft 2010), Exhibit 572 (Pestal and Cass 2009, *Using Qualitative Risk Evaluations to Prioritize Resource Assessment Activities for Fraser River Sockeye*), and Exhibit 562 (Technical Report 3, Freshwater Ecology).
291 Transcript, June 3, 2011, pp. 102–3.
292 Transcript, June 3, 2011, pp. 101–2.
293 Transcript, June 2, 2011, pp. 73, 75.
294 Transcript, June 2, 2011, p. 73.
295 Transcript, June 2, 2011, pp. 73–74.
296 Exhibit 8, p. 26.
297 Exhibit 8, p. 26.
298 Exhibit 8, pp. 32–33.
299 Exhibit 8, pp. 26, 33.
300 Exhibit 1915, p. 16.
301 Mike Lapointe, Transcript, January 26, 2011, p. 87.
302 Rob Morley, Transcript, February 7, 2011, p. 59.
303 Transcript, November 30, 2010, pp. 13–14.
304 Transcript, July 4, 2011, pp. 70–73.
305 Transcript, July 4, 2011, pp. 72–73.
306 First Nations Coalition's written submissions, p. 269.
307 Transcript, June 2, 2011, p. 58.
308 Transcript, June 2, 2011, pp. 58–59
309 Transcript, June 3, 2011, p. 76.
310 PPR 5, p. 35.
311 Jeff Grout, Transcript, January 17, 2011, pp. 40–42, 45–46; Exhibit 322, p. 2.
312 PPR 5, p. 39. See also Al Cass, Transcript, February 7, 2011, p. 26; Jeff Grout, Transcript, January 17, 2011, p. 35; Exhibit 322, p. 8.
313 Written submissions of the West Coast Trollers Area G Association and the United Fishermen and Allied Workers' Union, p. 74.
314 Transcript, December 16, 2010, p. 29.
315 Transcript, February 7, 2011, pp. 30–31; Transcript, June 3, 2011, p. 8.
316 Transcript, June 3, 2011, p. 8.
317 Transcript, June 3, 2011, p. 37.
318 Transcript, June 3, 2011, p. 38. See also Transcript, June 1, 2011, p. 82.
319 Transcript, June 3, 2011, p. 33.
320 Transcript, June 1, 2011, p. 84.
321 Transcript, June 3, 2011, pp. 64–65.
322 Transcript, June 3, 2011, p. 33.
323 Transcript, February 7, 2011, p. 30.
324 Transcript, February 7, 2011, pp. 82–83; February 8, 2011, p. 69.
325 Transcript, February 7, 2011, pp. 83–84.
326 Transcript, February 8, 2011, p. 71.
327 Transcript, June 2, 2011, p. 83.
328 Transcript, June 2, 2011, pp. 97–98.
329 Transcript, June 2, 2011, p. 95.
330 Transcript, June 2, 2011, p. 79.
331 Transcript, January 21, 2011, p. 21.
332 Transcript, January 24, 2011, p. 42.
333 Transcript, June 3, 2011, pp. 104–6.
334 Transcript, February 11, 2011, pp. 55–56.
335 Transcript, June 3, 2011, p. 32.
336 Transcript, February 11, 2011, p. 53
337 Transcript, June 2, 2011, pp. 9–10.
338 Exhibit 8, p. 29.
339 Exhibit 962, p. 17.
340 Exhibit 970, pp. 2–3.
341 Exhibit 971, p. 2.
342 Transcript, June 3, 2011, pp. 15–16, p. 83. See also Exhibit 952, Mr. Fraser's report entitled *Identifying Planning Units and Prioritizing Strategic Planning Initiatives under the Wild Salmon Policy*.
343 Transcript, June 3, 2011, p. 37.
344 Transcript, June 2, 2011, p. 80.
345 Transcript, June 2, 2011, pp. 83–84.
346 See reports to the Operations Committee in 2008 (Exhibit 192, pp. 20, 41), 2009 (Exhibit 240, p. 16), 2010 (Exhibit 238, pp. 16, 19), and to the Strategic Directions Committee in 2011 (Exhibit 951).
347 Exhibit 1219, p. 3; Exhibit 1218, pp. 2–3.
348 Exhibit 1216, pp. 1–2; Exhibit 1217, p. 2.
349 Exhibit 951, p. 12.
350 Transcript, August 18, 2011, p. 8.
351 Transcript, June 8, 2011, p. 92.
352 Transcript, December 8, 2010, pp. 31–32.
353 Transcript, June 3, 2011, pp. 8–9.
354 Transcript, June 3, 2011, pp. 51, 93.
355 Transcript, June 3, 2011, p. 93
356 Exhibit 965, p. 31; Exhibit 964, p. 7; Exhibit 962, p. 17.
357 Transcript, June 2, 2011, p. 72.
358 Exhibit 950.
359 Transcript, December 16, 2010, p. 91.
360 Transcript, March 4, 2011, p. 34.
361 Transcript, December 16, 2010, p. 91.

362 Transcript, March 4, 2011, pp. 6–7.
363 Transcript, June 3, 2011, p. 33.
364 Rob Morley, Transcript, February 7, 2011, pp. 68-72.
365 Transcript, February 7, 2011, pp. 68-69, 71; Transcript, March 1, 2011, p. 30.
366 Transcript, February 7, 2011, pp. 71–72.
367 Transcript, June 3, 2011, pp. 97–98.
368 Transcript, June 3, 2011, p. 52.
369 Transcript, June 3, 2011, pp. 52–53.
370 Transcript, June 3, 2011, p. 13.
371 Transcript, December 8, 2010, p. 69.
372 Exhibit 224.
373 Transcript, June 2, 2011, pp. 41–43.
374 Exhibit 944.
375 Exhibit 944, p. 90.
376 Transcript, June 2, 2011, pp. 86–87.
377 Transcript, February 9, 2011, pp. 38–39.
378 Exhibit 8, pp. 32–33.
379 Transcript, June 3, 2011, pp. 46–47.
380 Exhibit 8, p. 34.
381 Exhibit 8, p. 34.
382 Exhibit 8, p. 34.
383 Exhibit 960, p. 3.
384 Exhibit 959.
385 Exhibit 1992A.
386 See WSP work plans for the following years: 2006–7 (Exhibit 195); 2007–8 (Exhibit 110); 2009–10 (Exhibit 225); 2011–12 (Exhibit 964).
387 Transcript, March 4, 2011, p. 8.
388 Transcript, December 8, 2010, p. 86. See also Exhibit 219.
389 Mark Saunders, Transcript, December 8, 2010, pp. 92–93; Exhibit 189, pp.1 and 2.
390 Paul Ryall, Transcript, June 2, 2011, pp. 88–89. See also Exhibit 945 (Meeting Inventory Description) and Exhibit 945A (Meeting Inventory Spreadsheet).
391 Exhibit 945, p. 1; Exhibit 945A, main page.
392 Exhibit 945, p. 1; Exhibit 945A, see link to "WSP Implementation – Wild Salmon Policy Workshops."
393 Exhibit 945A, main page.
394 Exhibit 945A, see links under "WSP Implementation."
395 Transcript, June 30 2011, p. 97.
396 Transcript, July 4, 2011, p. 71.
397 Exhibit 945A, main page, and link to "DFO–BC Processes."
398 Transcript, June 3, 2011, pp. 22, 92; Exhibit 967, p. 2.
399 Kim Hyatt, Transcript, December 3, 2010, pp. 41–42.
400 Transcript, September 23, 2011, p. 84.
401 Transcript, June 1, 2011, p. 92.
402 Transcript, June 1, 2011, p. 99.
403 Transcript, June 2, 2011, p. 19.
404 Brian Riddell, Transcript, June 1, 2011, p. 88.
405 Transcript, June 1, 2011, pp. 88–89, and June 2, 2011, p. 40.
406 Transcript, June 1, 2011, pp. 93–94.
407 Paul Sprout, Transcript, December 16, 2010, p. 64.
408 Exhibit 8, p. 29.
409 Transcript, December 16, 2010, pp. 89–90.
410 Transcript, June 3, 2011, pp. 29–30; Exhibit 951, p. 4.
411 Transcript, December 16, 2010, pp. 64–65.
412 Transcript, November 30, 2010, pp. 32–35.
413 Paul Sprout, Transcript, December 9, 2010, p. 78; Exhibit 95, p. 2.
414 Transcript, December 9, 2010, pp. 78–79.
415 Exhibit 140, p. 2.
416 Transcript, December 16, 2010, pp. 88–89.
417 Transcript, December 16, 2010, pp. 23–26.
418 Transcript, June 3, 2011, p. 92.
419 Transcript, December 3, 2010, pp. 40–41, 43–44.
420 Transcript, December 8, 2010, pp. 31–32.
421 Exhibit 313, p. 2. See also Transcript, December 8, 2010, pp. 30–31, and Transcript, December 3, 2010, pp. 41–42.
422 Transcript, December 3, 2010, pp. 42–43. See also Exhibit 183, p. 5.
423 Transcript, December 9, 2010, pp. 79–80, and December 16, 2010, pp. 87–88. See also Michael Crowe, Transcript, June 8, 2011, p. 27.
424 Transcript, December 16, 2010, p. 90.
425 See, for example, Exhibits 220, 220A, and 220B.
426 Transcript, December 8, 2010, pp. 77–78, 106.
427 Transcript, July 4, 2011, pp. 71–72.
428 Exhibit 8, p. 9.
429 Exhibit 8, pp. 16, 45. See also Jim Irvine, Transcript, November 29, 2010, pp. 64–65.
430 Exhibit 213, pp. 4–7; Exhibit 217; Mark Saunders, Transcript, December 8, 2010, pp. 73–74.
431 Transcript, December 8, 2010, pp. 94–96; Exhibit 222; Exhibit 223.
432 Exhibit 223.
433 Exhibit 237, p. 1. See also Exhibit 187.
434 Exhibit 201, pp. 7–8; Exhibit 239, pp. 5–6.
435 Exhibit 163, p. 2.
436 Exhibit 8, pp. 35–36.
437 Transcript, November 30, 2010, pp. 114–15.
438 Exhibit 229, p. 1.
439 Exhibit 230, pp. 1–2.
440 Transcript, December 1, 2010, p. 114.
441 Transcript, November 30, 2010, pp. 96–97.
442 Exhibit 120.
443 Transcript, November 30, 2010, p. 115.
444 Exhibit 121.
445 Transcript, September 23, 2011, pp. 83–84.
446 Exhibit 102.
447 Transcript, December 9, 2010, pp. 25–26.
448 Exhibit 170, p. 6; Hon. Bryan Williams, *2004 Southern Salmon Fishery Post-Season Review, Part One: Fraser River Sockeye Report* (2005).
449 Transcript, September 28, 2011, p. 70.
450 Transcript, September 22, 2011, pp. 45–46.
451 Transcript, September 22, 2011, p. 46.
452 Exhibit 245, p. 3.
453 Transcript, December 9, 2010, p. 13, and December 16, 2010, p. 86.
454 Exhibit 245, p. 3.
455 Transcript, December 16, 2010, p. 86.
456 Transcript, December 8, 2010, p. 56.
457 Transcript, December 16, 2010, p. 73.
458 Exhibit 238, p. 10.
459 Transcript, December 9, 2010, pp. 38–39.
460 See Exhibits 238 and 240.
461 Paul Sprout, Transcript, December 9, 2010, p. 25.
462 Mark Saunders, Transcript, December 8, 2010, p. 93.
463 Exhibit 238, p. 8; Exhibit 240, pp. 6, 8.
464 Transcript, December 9, 2010, p. 36.
465 Transcript, December 8, 2010, p. 93.
466 Transcript, September 28, 2011, p. 105.
467 Transcript, June 3, 2011, p. 54. See also Exhibit 956, p. 1.
468 Exhibit 236, p. 2. See also Exhibits 150 and 151.
469 Richard Beamish, Transcript, July 7, 2011, p. 56; Brent Hargreaves, Transcript, February 21, 2011, p. 63.
470 Transcript, June 1, 2011, p. 97.
471 Transcript, June 1, 2011, p. 98, and June 2, 2011, pp. 59–60.
472 Transcript, June 1, 2011, pp. 98–99.
473 Carrie Holt, Transcript, December 7, 2010, pp. 64–65; Heather Stalberg, Transcript, December 8, 2010, p. 22.
474 Transcript, December 3, 2010, pp. 46–47.
475 Transcript, December 9, 2010, pp. 37–38. See also Exhibit 238, p. 9.
476 Transcript, June 2, 2011, pp. 19–20.

477 Brian Riddell, Transcript, June 2, 2011, pp. 15–18. See also Karl English, Transcript, April 15, 2011, pp. 54–55, and Heather Stalberg, Transcript, December 8, 2010, pp. 64–65.
478 Brian Riddell, Transcript, December 1, 2010, p. 41.
479 Exhibit 182, p. 5; Transcript, December 3, 2010, p. 48; Transcript, December 7, 2010, pp. 65–66.
480 Transcript, December 7, 2010, p. 69.
481 Transcript, December 8, 2010, p. 65.
482 Transcript, December 7, 2010, p. 33.
483 Transcript, December 8, 2010, pp. 60–61.
484 Transcript, December 8, 2010, p. 69.
485 Jeff Grout, Transcript, January 21, 2011, p. 71.
486 Exhibit 343, p. 1.
487 Exhibit 343, p. 1.
488 Exhibit 343, p. 2.
489 Jeff Grout, Transcript, January 21, 2011, p. 71.
490 Exhibit 101, p. 5.
491 Exhibit 94, p. 3.
492 Exhibit 343, pp. 198–99.
493 Jeff Grout, Transcript, January 24, 2011, pp. 15–16. DFO's MSC Action Plan is found within Exhibit 343A (Appendix 6) and is also Exhibit 159.
494 Susan Farlinger, Transcript, December 9, 2010, pp. 73–74.
495 Mark Saunders, Transcript, December 3, 2010, pp. 36–37.
496 Transcript, December 3, 2010, p. 37.
497 Exhibit 101, p. 8; Jeff Grout, Transcript, January 24, 2011, p. 16; Exhibit 159, pp. 2–3.
498 Exhibit 159.
499 Transcript, September 26, 2011, p. 18.
500 Exhibit 159, pp. 4–11.
501 Susan Farlinger, Transcript, December 9, 2010, p. 77; Rob Morley, Transcript, March 15, 2011, pp. 6–7; Jeffery Young, Transcript, June 1, 2011, p. 101; Brian Riddell, Transcript, June 1, 2011, pp. 100–1.
502 Transcript, March 16, 2011, p. 57.
503 Transcript, September 26, 2011, pp. 17–18.
504 Exhibit 1218, p. 3.
505 Exhibit 159, p. 5.
506 Exhibit 159, p. 4.
507 Transcript, December 9, 2010, pp. 74–75.
508 Transcript, September 27, 2011, pp. 20–21.
509 Exhibit 159, p. 5.
510 Exhibit 159, p. 8.
511 Transcript, September 26, 2011, p. 88.
512 Transcript, December 3, 2010, p. 37. See also Exhibit 103, p. 6, and Exhibit 183, p. 6.
513 Jim Irvine, Transcript, December 3, 2010, pp. 38–39; Exhibit 103, p. 6
514 Exhibit 159, p. 5.
515 Transcript, December 3, 2010, p. 39.
516 Jeff Grout, Transcript, January 24, 2011, pp. 8, 17–18; Exhibit 159, p. 5.
517 Transcript, June 1, 2011, pp. 83 and 95.
518 Exhibit 956, p. 2.
519 Exhibit 969.
520 Transcript, June 3, 2011, pp. 23–24.
521 Exhibit 1219, p. 1.
522 Transcript, December 3, 2010, p. 37. See also Exhibit 103, p. 6, and Exhibit 183, p. 6.
523 Exhibit 969, p. 1; Carrie Holt, December 3, 2010, p. 39.
524 Exhibit 1218, p. 2; Exhibit 969; Exhibit 804.
525 Exhibit 8, p. 35.
526 Exhibit 14, p. 279.
527 Exhibit 14, pp. 279–80.
528 Exhibit 312, p. 9.
529 Transcript, December 9, 2010, p. 24.
530 Paul Sprout, Transcript, December 9, 2010, pp. 82–83.
531 Exhibit 244, p. 3.
532 Exhibit 312, p. 9.
533 Transcript, December 9, 2010, pp. 82–84.
534 Paul Sprout, Transcript, December 9, 2010, pp. 21–22; Mark Saunders, December 2, 2010, pp. 40–41.
535 Transcript, December 16, 2010, pp. 31–32.
536 Exhibit 312, p. 9.
537 Transcript, December 3, 2010, pp. 68–69.
538 Paul Ryall and Mark Saunders, Transcript, June 3, 2011, pp. 26–27.
539 Transcript, December 3, 2010, p. 66.
540 Exhibit 312, p. 9.
541 Transcript, December 8, 2010, p. 21.
542 Exhibit 168; Exhibit 963.
543 Transcript, December 3, 2010, pp. 66–67.
544 Exhibit 963; Exhibit 962, p. 2.
545 Exhibit 963, p. 1.
546 Transcript, December 2, 2010, pp. 40–41.
547 Exhibit 963.
548 Transcript, November 29, 2010, p. 73.
549 Transcript, September 22, 2011, p. 47.
550 Transcript, September 26, 2011, p. 98.
551 Transcript, September 23, 2011, pp. 57–58.
552 Transcript, December 9, 2010, pp. 20–21.
553 Transcript, December 9, 2010, pp. 21–23.
554 Transcript, December 9, 2010, p. 24.
555 Exhibit 101, p. 8.
556 Exhibit 168, p. 1. See also Exhibit 963, p. 2.
557 Transcript, December 9, 2010, p. 21.
558 Transcript, December 2, 2010, pp. 47–48.
559 Transcript, December 3, 2010, p. 66.
560 Exhibit 245, p. 2; Paul Sprout, Transcript, December 9, 2010, pp. 22–23.
561 Exhibit 963, p. 2.
562 Exhibit 238, pp. 1–2.
563 Susan Farlinger, Transcript, December 9, 2010, p. 29; Claire Dansereau, Transcript, September 28, 2011, p. 105.
564 Susan Farlinger, Transcript, December 9, 2010, p. 28; Claire Dansereau, Transcript, September 23, 2011, p. 54.
565 Transcript, December 9, 2010, pp. 30–32.
566 Exhibit 312, p. 9.
567 Exhibit 245, p. 3. See also Transcript, December 9, 2010, p. 10.
568 Transcript, December 7, 2010, pp. 27, 34–35.
569 Exhibit 181, p. 6; December 2, 2010, pp. 26–27.
570 Transcript, December 9, 2010, pp. 32–33.
571 Exhibit 240, p. 13.
572 Exhibit 175.
573 Heather Stalberg, Transcript, December 3, 2010, p. 4.
574 Transcript, December 9, 2010, pp. 12–13.
575 Exhibit 971, p. 2.
576 Exhibit 951, p. 12.
577 Transcript, June 3, 2011, pp. 40–42.
578 Exhibit 970, p. 2.
579 Transcript, December 8, 2010, p. 21.
580 Transcript, December 3, 2010, pp. 53–54; Exhibit 103, p. 6.
581 Transcript, December 3, 2010, pp. 55–56.
582 Transcript, December 8, 2010, p. 68.
583 Exhibit 937, p. 20.
584 Transcript, June 2, 2011, pp. 5–6.
585 Transcript, June 2, 2011, p. 6.
586 Exhibit 965, p. 11.
587 Exhibit 199, p. 2.
588 Mark Saunders, Transcript, December 2, 2010, pp. 47–48; Claire Dansereau, Transcript, September 26, 2011, pp. 97–98.
589 Transcript, November 29, 2010, pp. 73–74.
590 Exhibit 103, p. 5; Transcript, December 8, 2010, pp. 58–59.
591 Kim Hyatt, Transcript, December 3, 2010, p. 19. See also Dr. Irvine's evidence on Strategy 3 implementation at Exhibit 103, p. 5, and Transcript, December 8, 2010, pp. 58–59.

592 Transcript, September 26, 2011, pp. 97–98.
593 Transcript, September 26, 2011, p. 98.
594 Transcript, November 29, 2010, p. 73.
595 Exhibit 100, p. 5.
596 Transcript, December 9, 2010, pp. 85–86.
597 Transcript, December 9, 2010, p. 86.
598 Transcript, December 8, 2010, pp. 20–21. See also Exhibit 103, p. 6.
599 Jim Irvine, Transcript, December 3, 2010, p. 54.
600 Transcript, December 8, 2010, p. 68.
601 Transcript, December 9, 2010, pp. 84–86.
602 Heather Stalberg, Transcript, December 8, 2010, p. 34; Kim Hyatt, Transcript, December 8, 2010, pp. 34–35; Mark Saunders, Transcript, December 3, 2010, pp. 56–57.
603 Transcript, December 3, 2010, pp. 56–57.
604 Transcript, December 8, 2010, p. 35.
605 Transcript, June 1, 2011, pp. 99–100.
606 Transcript, June 2, 2011, pp. 6–7.
607 Transcript, June 2, 2011, p. 7.
608 Transcript, June 3, 2011, p. 50.
609 Transcript, September 23, 2011, p. 55.
610 Paul Ryall, Transcript, June 3, 2011, pp. 8–10.
611 Exhibit 8, p. 25.
612 Exhibit 8, p. 26.
613 Exhibit 8, p. 29.
614 Mark Saunders, Transcript, December 3, 2010, p. 51.
615 Paul Macgillivray, Transcript, November 1, 2010, pp. 90–91.