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Chair

Mr. Scott Simms

Standing Committee on Fisheries and Oceans

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[Translation]

• (1530)

[English]

The Chair (Mr. Scott Simms (Coast of Bays—Central—Notre Dame, Lib.)): Hello everyone, and good afternoon. Welcome to meeting 12.

We did pass a motion and the motion states, and the committee agreed, that the committee undertake a comprehensive study of the conservation, restoration, and socio-economic issues related to the Atlantic salmon in Canada, commencing on May 10, and that the committee report its findings to the House.

Subsequent to that, the committee invited senior officials from the Department of Fisheries and Oceans to brief the committee on the issues pertaining to Atlantic salmon in Atlantic Canada, which leads us to today.

We have our officials with us. First of all, it's good to see you once again. As a compliment to me for my constituents, you should probably tell us that you're sick of seeing us because you've been here now a few times, but it's good to see you back.

Now, to 10 minutes of opening statements. Will there be one of you or many of you involved in the opening statement?

Mr. Stringer.

Mr. Kevin Stringer (Senior Assistant Deputy Minister, Ecosystems and Fisheries Management, Department of Fisheries and Oceans): There'll be two of us. I'll make some very brief remarks and then we have the presentation. It is being circulated.

The Chair: Okay. Fantastic.

That will be you, Mr. Stringer, so go right ahead.

Mr. Kevin Stringer: Thank you very much for the invitation. We really do appreciate being here with the committee.

I'll start with introductions. My name is Kevin Stringer, assistant deputy minister for ecosystems and fisheries management, so on the management side. I have with me Trevor Swerdfager, the assistant deputy minister for ecosystem science, so the ADM science. Also with us is Bhagwant Sandhu, executive director, fisheries resource management; and Gérald Chaput, the one who actually knows about salmon, the coordinator for science advice in the Gulf region in Moncton, in the science branch.

Above all, I'd like to thank the committee for carrying out a study on wild Atlantic salmon in eastern Canada. It is an invaluable undertaking that will serve the department very well.

[English]

It really is a pleasure to support your efforts and, as requested, to provide you with some background information on the state of the Atlantic salmon stocks, the fisheries management efforts, and other issues related to Atlantic salmon.

We'll also, if you wish, provide some of DFO's initial thoughts on the recommendations of the minister's advisory committee on Atlantic salmon.

Atlantic salmon are important to the Atlantic economy.

[Translation]

Atlantic salmon spawn in more than 1,000 rivers throughout eastern Canada and are actively fished for food, and social and ritual purposes in the case of aboriginal communities, and as part of recreational fisheries in Atlantic Canada and Quebec.

These fisheries contribute some \$150 million to local economies across eastern Canada and generate nearly 4,000 full-time jobs, equivalent to approximately 10,000 seasonal jobs.

[English]

Atlantic salmon does contribute significantly to the economic livelihood of Atlantic Canadians, but they're also a very important part of the culture and contribute to a way of life. Atlantic salmon is often referred to as the king of fish, but stocks of wild Atlantic salmon have declined. In eastern Canada, the total abundance of Atlantic salmon at sea prior to marine exploitation has declined by nearly 70% since the mid-seventies.

We've responded in a number of ways, by reducing daily or season bag limits; mandatory catch and release fishing, especially of large salmon; closing of rivers where conservation limits were not met; restrictions on commercial fisheries to stop or minimize bycatch of Atlantic salmon, including requirements to modify fishing gear; and a moratorium on commercial fishing implemented throughout the nineties and, finally, completely in the year 2000.

In 2015 the ministerial advisory committee on Atlantic salmon provided advice on ways to help reverse the trends of declining returns. The committee had consultations across Atlantic Canada and met with some 78 different groups. Their final report was provided in 2015, with 61 recommendations. The recommendations align well and provide a program of work for the department, and align well with much of what we are doing and we are making progress on it. I'll be happy to speak about that later.

I will conclude my opening remarks here. However, we do have a presentation deck. I will just point out what's on the first slide, then I'll ask my colleague, Gérald Chaput, to walk you through it. It really does speak to where we're at with Atlantic salmon, the challenges we currently face, the bright hopes that we have in some positive areas, and the concerns we have in the areas further south. It also speaks to some of the management measures we have.

Slide 2 is really meant to support your work; provide background information on the state of the stocks, enforcement, science, international issues; and to start to speak to some of our initial response to the minister's advisory committee on Atlantic salmon.

With that I'll ask Gérald to walk you through the presentation.

Thank you.

•(1535)

[Translation]

Mr. Gérald Chaput (Coordinator, Centre for Science Advice, Gulf Region, Department of Fisheries and Oceans): Thank you, Kevin.

Thank you, Mr. Chair and members of the committee, for inviting us to discuss Atlantic salmon with you this afternoon.

[English]

We circulated a deck for you that presents some background information on biology, and then we get into the stock status, and then we touch on some of the fisheries that exploit Atlantic salmon in eastern Canada and elsewhere.

I'll walk you quite quickly through the deck and just give you some background. Atlantic salmon, we call it a salmon, but as I mentioned in the deck, it's really a trout. It's a *Salmo*. It's mostly closely related to brown trout. And it differs from Pacific salmon on the west coast in that it doesn't die after spawning. So that's the key difference between the two species. It's distributed in about 2,000 rivers in the North Atlantic. It's found in Europe, Russia, all the way to Canada, and the U.S.A. It's broadly distributed in the North Atlantic, and the last point is it's a freshwater fish. It does go to sea, but it requires rivers to spawn. If there were no fresh water and no healthy rivers, there would be no Atlantic salmon. The key point is it's an animal that requires healthy rivers throughout its distribution for sustenance.

The next slide just gives you a quick overview picture, a pictorial of the life history. Again, they spend about two to six or seven years in fresh water as juveniles. They grow very slowly, more slowly in the northern parts of Canada. And after they spend that amount of time they go to sea, and the reason they go to sea is because there is more food, they grow more quickly, there are more benefits to them to go to sea and they can spend one, two, or three years at sea before

they come back to the natal rivers to spawn. And of course the longer they spend in the ocean, the larger they come back. That has as an implication then for fitness and also for resource users who can access different types of fish, different sized fish.

Slide 5 gives you a snapshot of Atlantic salmon in eastern Canada. And the reason for that map is to show you that they're not all the same in eastern Canada. So in Newfoundland, for example, most of the salmon that come back from the ocean come back after spending one year at sea. They come back and they spawn. Contrast that with the maritime provinces and Quebec where a lot of the adults coming back to rivers can spend two years and sometimes three years at sea before returning to spawn. And there are differences in the proportion of females in those returns. There are differences in size, and there are differences in numbers of eggs being brought to the river.

So across eastern Canada, salmon is not really a salmon. There are differences in life history, differences in biology, and differences in characteristics across the rivers.

It's important we talk about management because that has implications for how we address certain declines and certain life histories across its range.

On slide 6, it's kind of a quick snapshot. This really is the overview of stock status. These are the populations that have been assessed by the Committee on the Status of Endangered Wildlife in Canada, COSEWIC. They define 16 groups of Atlantic salmon in eastern Canada. And you can see from the red where we have red circles or red shading, those are the populations that COSEWIC assess as endangered. The population's abundance is very low. There are important threats to these populations, so these are assessed by COSEWIC as endangered.

There is one population that is assessed as threatened on the south coast of Newfoundland. There are several populations that are of concern, we call them of special concern. That means we have to watch their status because they have declined and are facing some threats. Then there are most of the populations in Labrador and Newfoundland that are considered to be not at risk, that is that they are fairly healthy, still fairly abundant, and able to sustain some of the factors that are affecting other populations.

And that is really a snapshot of what we'll cover in the rest of the presentation. What is the status of Atlantic salmon in eastern Canada? That slide really gives you a good snapshot of what it is.

On slide 7, we touched on how many salmon are out there. We can actually reconstruct, we can calculate, how many fish were there across eastern Canada across all the regions before we exploited them at sea. How many fish are out there? As Kevin had alluded to, it's not a very abundant animal. There were never probably more than two million fish in the North Atlantic coming from Canada in terms of Atlantic salmon. Compare that with Pacific salmon where in some rivers like the Fraser we're talking about tens of millions of fish running up one river. There are six species that run up that river. It's very different in terms of abundance on the two coasts. It's still a very important species, but it doesn't play the same role in the environment that Pacific salmon plays.

You can see also, when we track the abundance back to 1971, that we see this important decline overall in terms of Atlantic salmon. There were close to two million in the 1970s, now we're talking about three-quarters of a million total. We're talking about a decline of about 60%. And the large salmon component, the ones that return to Quebec, the Maritimes, and Labrador, those three signature fish, have declined the most, or rather the grilse have declined substantially less.

•(1540)

What is behind the decline? Sea survival is a problem, and we know that because on several rivers we actually count juveniles going to sea, the smolts, and we count adults coming back. We have been doing that in the summer ever since 1970. You can see the patterns of return on slide 8. Those plots show you returns, and particularly for the rivers in Quebec and for the southern rivers in New Brunswick and the Maritimes, there has been a dramatic decline in survival rates. There used to be, let's say, a 5% or 6% return rate from the ocean. Now we're down to less than 1% in some cases.

So really, sea survival is a problem for these animals. They're going through this bottleneck currently in the ocean, and there are probably multiple reasons for that.

On slide 9 is another quick picture of the status. This is really a picture that shows you the recreational fisheries management that was in place in 2015. Where you see red circles, those rivers were closed to any fishing for Atlantic salmon for recreational purposes or by indigenous peoples. Where you see yellow, all the fisheries were catch and release only, no retention. Green was retention of only small salmon or grilse. And where there is purple, there was retention of both small and large, but large salmon right now can only be retained in the province of Quebec by recreational fishermen and only in 37 of 110 rivers.

In Atlantic Canada, of roughly more than 1,000 rivers where we believe salmon exist, in only 37 rivers can anglers currently keep a large salmon. All the other rivers are small salmon only, catch and release, or many of them are closed to fishing because of poor stock status.

On slide 10 it shows you a quick snapshot of the maritime provinces overview. There's a mistake on the map on the left. Prince Edward Island should be all yellow. That's my mistake really. It's all catch and release or rivers were closed. In the three maritime provinces in 2015, anglers could not keep salmon. They had to release them or they could not fish the rivers, primarily in the Bay of Fundy in Nova Scotia.

Slide 11 shows you Newfoundland and Labrador's status. Again, in this region anglers could keep small salmon only, no large salmon, pretty well throughout the region with a few exceptions, but stocks there are relatively healthier in terms of returns, and so the management reflects that, but they could only keep small salmon.

[Translation]

On slide 12, we have a look at the situation in Quebec.

Management and science for salmon in Quebec is delegated to the province. You'll notice that the region has experienced decreases.

From a management standpoint, as I mentioned earlier, there were 110 rivers in Quebec where recreational fishermen could fish salmon, but they could retain large salmon caught in just 37 of those 110 rivers.

In some situations, we can see that the condition of the population has improved slightly. In 2014, however, returns of large salmon in Quebec were lower than in previous years.

We know a lot less about the status of salmon populations in eastern Canada's northern region, mainly in the Ungava Bay area.

[English]

The next slides are about fisheries, where we're exploiting and who's exploiting salmon in eastern Canada.

On slide 13 you have the history of total catch of Atlantic salmon. You can see the maximum catch was a little over 2,500 tonnes and you can see the dramatic decline since 1992, continuing to 1998 and in 2000. That's because the commercial fisheries were successively closed in Newfoundland, then Labrador, and then finally the last ones in 2000.

The fisheries were closed in the maritime provinces in 1984. So the closures began in the mid-1980s and terminated in 2000.

Landings in 2015 of Atlantic salmon by all users were roughly about 130 tonnes, contrasted as I mentioned to 2,500 tonnes, the maximum in early 1970.

On the following slide is a breakdown of who's catching the salmon in Canada. There are three groups. We have indigenous communities throughout the Atlantic provinces, recreational anglers, and residents living in Labrador who have access to a food fishery for salmon.

I've also plotted the catches of Greenland on this graph. Greenland residents catch salmon in the north Atlantic, and they catch salmon originating from North America and Europe. You can see on the red line that these are the catches in Greenland, and that's the only fishery where catches are actually increasing over the last 10 years. That's because of the current management system in Greenland.

Basically, we have a sharing between recreational and indigenous communities in terms of catches and very small catches by Labrador residents.

Slide 15 shows you the share of the small salmon and large salmon. Why is this important? In Greenland, where they fish salmon, they fish entirely large salmon, the salmon that would return to Canada as two-sea-winter and three-sea-winter salmon.

•(1545)

The grilse don't go to Greenland, so they harvest entirely large salmon originating from both Europe and Canada.

St. Pierre and Miquelon, belonging to France, fish for Atlantic salmon off the coast of Newfoundland. The indigenous peoples catch mainly small salmon or grilse, but also large salmon. Recreational anglers catch predominantly small salmon or grilse. Very few large salmon are kept in the recreational fishery.

Catch and release in recreational fisheries is increasing in popularity. In 2015, anglers reported releasing about 71,000 Atlantic salmon. Roughly 90% of the large salmon that are angled are released, returned to the water. Almost 50% of the small salmon are returned to the water. So catch and release is a very common practice in recreational fisheries in eastern Canada, and it's done even in areas where people can retain salmon. It's simply a practice that people like and it's becoming more common throughout eastern Canada.

I want to conclude with the stock status of Atlantic salmon. This is taken from the report by the International Commission on the Exploration of the Sea. This is a committee that meets annually. It consists of scientists and biologists from North America and Europe. They pull together a report on the stock status of Atlantic salmon in the north Atlantic.

The total population of Atlantic salmon used to oscillate at about 1.5 million animals in the 1970s. Now it's declined dramatically to about 600,000 animals. This is an important drop. During the last 20 years, 1993 to 2014, there were a little over half a million animals in this region. It's a small population considering there are over 1,000 rivers in Atlantic Canada that produce salmon. The declines in abundance have been most severe in the southern regions of eastern Canada: the maritime provinces, the Bay of Fundy, the Atlantic coast of Nova Scotia. Those rivers have been closed to fishing by all user groups for over a decade. As you go further north, populations are healthier. There is a south-to-north climb in abundance and also in the health of the rivers. We see this relationship between geographic distribution and stock status.

There is continued low abundance of salmon in Canada, despite the significant changes in fisheries management. We've closed commercial fisheries, recreational fisheries, and even indigenous fisheries in some regions. Despite all those closures over the last 25 years, Atlantic salmon abundance has continued to decline. We think it is associated with poor marine survival. Even in places where the freshwater habitat is healthy, marine survival is a problem for these animals. That is the major constraint right now for Atlantic salmon.

I'll finish there. My apologies for taking a little longer than expected.

Mr. Kevin Stringer: Thank you very much, Gérald.

I'll be very quick on the last couple of slides.

Slide 18, I already spoke to this, the economic importance of this. The department gets how important this is to Atlantic Canadians. It really is a major part of the economy, a major part of people's livelihoods, and important to the culture, so we don't lightly put restrictions on when we do put restrictions on.

Given the scenario that Gérald has just outlined, slide 19 talks about some of the things that we have done. We have conservation objectives for key rivers. We have reduced daily limits in terms of what can be possessed, and what can be caught and what can be retained. We've established mandatory catch-and-release, especially of large salmon, in many areas where we are concerned. We've closed rivers particularly in areas that align with where COSEWIC has said, "This is now endangered." There has been a moratorium on commercial fishing since 2000. We've made investments through the recreational fisheries partnership program, and stakeholders have

made investments, in particular the Atlantic Salmon Conservation Foundation, into habitat protection. I'm happy to talk about some of that work as well.

The next slide speaks to the ministerial advisory committee. We talked about their four major meetings across Atlantic Canada. They met with 78 groups and made 61 recommendations. The department has reviewed each recommendation, analyzed it to determine what we are doing, what scientific evidence there is, and how we can advance it. It is important to note the report does not say, "This is the problem with respect to Atlantic salmon." It speaks to a program of work around a number of areas including management, international work, science research, predation studies, etc. It speaks to a broad set of issues. It certainly reflects the department's current activities, and we will be guided largely by it as we go forward.

A number of the recommendations have already been implemented. They did an interim recommendation on catch-release in the Gulf region, and a NASCO strategy seeking for Greenland to adjust their management strategy. We continue to advance on others.

Slide 21 speaks to some of the major pieces of the recommendations, all of which we continue to work on.

With that, we've taken some time. It is important to us, and we know it's important to you. We really welcome the opportunity to be here to answer your questions and assist in any way we can.

Thank you.

•(1550)

The Chair: Thank you, Mr. Stringer.

Thank you, Mr. Chaput.

There you have it. We'll go to seven-minute rounds for questioning, and we're going to start on the government side, and the man who brought forward this motion in the beginning, Mr. Finnigan. You're up for seven minutes.

Mr. Pat Finnigan (Miramichi—Grand Lake, Lib.): Thank you very much, Mr. Chair.

Thank you to the witnesses we have here today. I'm really happy that we can ask some questions and get some information. I thank you very much for the presentation.

I'm going to go right to a subject that's been on the front burner in the last days or weeks. I guess the acronym is CAST, or Collaboration for Atlantic Salmon Tomorrow. If my information is right, it's that we capture smolts, which is a very small-sized salmon, and we bring them into containers where we grow them to a size where they will have many more chances of making it to a large salmon, and you can correct me if I'm wrong. I know that DFO had some major concerns. As a matter of fact, just last week they had just about disallowed that practice, if I have it right, and I know there's been some negotiation on that, and now we're back into the 5,000 smolts.

Can we get some information as to, first of all, why we would try to slow down that conservation effort? What are the dangers associated with it? There are a lot of private funds that are being spent towards that, so I'd like to get more information as to why we are holding back on that practice, on that way of conservation?

Mr. Trevor Swerdfager (Assistant Deputy Minister, Ecosystems and Oceans Science, Department of Fisheries and Oceans): I'll preface my remarks by saying the Committee for Atlantic Salmon Tomorrow has put in a huge amount of effort already, as you've pointed out, with private funds and interests to advance salmon conservation. The department is extremely appreciative of that and looks forward to continuing to work with CAST as an ongoing activity.

The specifics of the proposal that you mentioned you've described quite accurately. The proposal is to bring smolts in out of the wild, capture them, and rear them for about 18 months. The logic is that when you put them back into the water in the wild, they'll be faster, stronger, more able to go to sea, and survive longer. Then they'll come back, spawn, and ultimately increase the numbers. That's the theory.

The practice is not yet proven. We don't have any experimental data to suggest that will work. We have a number of concerns. We are always concerned about fish going back to sea and their fitness for survival.

One of the points we've raised with CAST, and with others, is that when you take animals out of the wild and rear them in a hatchery, we think—but do not know for sure—that affects their fitness. By fitness we mean their ability to forage, thrive, and feed.

If you're a captive animal for 18 months, you're being fed and your diet is changing. Instead of feeding in the wild exclusively on fish, you're feeding on man-made feed, so the composition of your feed is changing. We know that certain behavioural changes occur while in captivity. We think there are slight genetic alterations that occur, as well.

When you put those fish back into the wild, they're not the same animal that came out of the water 18 months before. Our concern is to make sure that whatever goes back into the wild is not going to pose any risks whatsoever for existing wild salmon.

The comments and concerns we voiced back to the consortium that was advancing this project were along those lines. We said that before we proceed with a full-scale project of reintroduction, we would like to understand better what those risks are and how to make sure we can mitigate them to the extent they exist. We would like to conduct a smaller-scale experimental design, rather than going for a full-fledged reintroduction program.

Initially we refused the request to collect 5,000 smolts out of the wild with the idea of putting them back in. We have now approved a different proposal with a different experimental design that I could take you into, if you like. We are working with CAST scientists to figure out the experimental methodology going forward. We will wait and allow the experiment to run its course, because what's critical, as Kevin has mentioned, is the future of the species. We don't want to do anything at all that we think would put it at further risk than it already is.

•(1555)

Mr. Pat Finnigan: Thank you.

I would have other questions on that, but I want to move into the....

We've decided again this year to go with catch and release, and I have no problem with that. We know all rivers are not at the same level of health or good salmon returns. In my area of the Northwest Miramichi, for instance, the levels are quite low, whereas the southwest would be in better shape. There was talk at one time of doing some river-to-river management. Is that something you put off the table, or is that an approach that would work? I've had many questions from people along the river about this. Can you elaborate on that, please?

Mr. Kevin Stringer: I'll start, and Gérald may want to add to it.

It is one of the recommendations. The ministerial committee report asked us to take a look at that. Quebec has a system that largely does that. It's not inexpensive, it involves work with NGOs, and it is a complex system. In Newfoundland we have a river classification system, which is not river-to-river management, but it is not too dissimilar.

We're looking at that, and we need to look at that. One of the possibilities is to do a pilot project. Where you might be able to do some of it is in the larger rivers with significant numbers of salmon, significant players, and significant fishing to be able to take that on in one area.

The other thing to do is we can do it by management area. We could decrease the number of management areas. We do have about 1,000 rivers we're looking at. We have about 500 where we do conservation objectives. It's a challenge to go down to river-by-river management for 500 or 1,000 rivers, but it is possible to do it some areas. It is something we're looking at.

Gérald, do you want to add to that, or did we get it?

Mr. Gérald Chaput: I think it always is a question of scale, and I think in the Northwest Miramichi, which I know—and I'm glad I can place you now, Mr. Finnigan.... The Northwest Miramichi and the Southwest Miramichi are large enough rivers that there are enough fish, there are enough users, and there's enough capacity for assessments—because we do assessments now for the Northwest Miramichi—so that we could potentially think of a model to have river-specific management.

We certainly have to talk to the Province of New Brunswick that manages the recreational fishing licenses and that whole approach. In Quebec there's a model that works on river-specific management, but I think it takes a certain size and a certain capacity within the community to manage that kind of access. I think those are models that we will be looking at for the future.

It will require some discussion with the provinces, user groups, and first nations, but I think it's something we should aspire to.

•(1600)

The Chair: Thank you.

Mr. Sopuck, you have seven minutes, please.

Mr. Robert Sopuck (Dauphin—Swan River—Neepawa, CPC): Thank you.

I noticed in your report on page 20 you said that, “The report does not pinpoint any one reason for the declines”. I think that's completely wrong. We know why the fish have declined: too many of them are being killed; it's that simple.

I'm glad, Mr. Chaput, you said that the freshwater habitat quality is largely good, and I'm glad you referenced the recreational fisheries conservation partnerships program. Having fished some of those rivers myself, that assessment of the quality of the freshwater fish habitat is correct.

I want to focus on the issue of open ocean mortality. The only reason for open ocean mortality has to be predation. I can't see there being disease issues, temperature issues, or any of that kind of stuff. So I want to focus on two of the major predators on the Atlantic salmon, the striped bass and the seals.

I did a bit of research on the striped bass and the *ICES Journal of Marine Science* wrote a paper that said, “Moderate to strong correlations were found between estimates of striped bass abundance and the return of Atlantic salmon to three of the four major New England” streams.

In a study on the Merrimack, in Massachusetts, 48% of striped bass had smolts in their stomachs.

In the Miramichi, striped bass abundance has gone up, based on your department's studies in 2014, between 150,000 and 250,000. My understanding is that they were at one point a SARA-list species but now they've become superabundant.

Given their strong tendency to prey on Atlantic salmon smolts, and their vast abundance, why did you curtail the recreational fishery so severely last year when it was recommended to the department, at least by the committee that I was on, that a greatly expanded recreational fishery on the striped bass be allowed?

Mr. Kevin Stringer: I'll start on the decision on the recreational fishery, but I'll ask my colleagues to speak to the other issues that you raised.

Mr. Robert Sopuck: I don't have much time, and I have a few more questions.

Mr. Kevin Stringer: It was a species of special concern under the Species at Risk Act as assessed by COSEWIC, and then there seemed to be very significant growth. It is a fishery that we don't have a lot of information on, and we made a decision last year for two years. Last year we increased the season and the amount of time you could fish, so we allowed for more fishing last year than we had in the previous year.

The previous year was the first time we had opened it, and we were being cautious because it was a newly developing fishery.

Mr. Robert Sopuck: The regained catch last year, as I recall, was about 12,000 fish, out of an adult population of 250,000 fish, so the catch was extremely small in relation to the population of striped bass. I go back to the point about the intense predation on salmon smolts by striped bass, so I think the department missed the boat on that one.

Mr. Kevin Stringer: I hear you, and we've certainly heard from recreational fishers on it, but it was an expanded opportunity for fishing. There is not a lot of information about it.

The issue about the relationship between striped bass and salmon is one that we are looking into.

I'll ask Gérald to speak to that piece.

Mr. Gérald Chaput: I have two points.

One is that we know from some published studies and from research we've been conducting the last three years in Miramichi that some smolts are found in striped bass stomachs. We've done diet studies, we've looked at predation studies, and that work is being analyzed as we speak. It's not 48% of striped bass that have smolts in Miramichi; it's much less. We have some information presented in the recent reports we have on that.

Striped bass and Atlantic salmon co-evolved in Miramichi. After the ice age, after the glaciers retreated, those two species populated the rivers and they've been there together for thousands of years. So the idea that somehow one suddenly becomes a threat to the other is difficult for me to understand.

The second is that striped bass in the Miramichi cannot explain the decline of Atlantic salmon overall in eastern Canada, in Newfoundland, Labrador, Quebec. The striped bass in Miramichi may have a consequence on the Miramichi salmon but to say that it's behind the decline of the Atlantic salmon in eastern Canada doesn't fit.

Mr. Robert Sopuck: Fisheries biologists—and as you know, I'm one of them—always hide behind the idea that we never have enough information, and that's always an excuse not to act. I utterly reject that. DFO is a highly qualified department and sometimes you have to act.

In terms of the striped bass-salmon interaction, things are out of balance now without any human interaction. I would agree with you, Mr. Chaput, but right now the system is out of balance, so it is time to use the striped bass to help restore the balance. I would not say the striped bass are the sole reason for the decline, but they are a very large factor based on the numbers.

I want to talk again about recommendation 7.3 in the report of the advisory committee. It recommended a greatly increased catch of striped bass, and that's a recommendation obviously that the department did not accept.

In terms of seals, the report talked about a massive and growing seal population and, in the report conclusion 6.3, the report recommended allowing seal harvests and culls in other areas where they are clearly targeting wild Atlantic salmon. Did the department accept that recommendation? Given the issue of seals with regard to snow crab, cod, and other important species for people, is intensive seal management something that the department will be recommending in the near future?

• (1605)

Mr. Kevin Stringer: The department continues to be concerned about the number of grey seals.

Trevor, is the next assessment next year? Right, so there is another assessment coming. The last assessment said it was 505,000, and a generation ago it was 30,000. It really is an issue.

In terms of the relationship between grey seals and salmon, that's not as clear as it is between grey seals and cod. With cod we actually have science advice that they believe grey seals are actually impacting the recovery of cod, but that's not the case necessarily for salmon.

We continue to be concerned about grey seals. We continue to authorize a harvest. We continue to study and monitor the seal population, and if there is evidence of seals targeting Atlantic salmon, then we would get the appropriate science advice, but there is no short-term plan to address something like that at the moment.

The Chair: Thank you.

Mr. Donnelly, you have seven minutes, please.

Mr. Fin Donnelly (Port Moody—Coquitlam, NDP): Thank you to our witnesses for appearing in front of the committee for this interesting and important study.

Mr. Chaput, you mentioned that the decline from the 1970-71 to 2014 was around 60%. I'm just wondering if you can put that in context, say, compare that to the Pacific salmon or salmon in other countries. Is this a similar decline? Is this a greater decline for that same time period?

Mr. Gérald Chaput: I can speak to Atlantic salmon in Europe because I know from the work that's going on in Europe as well as through ICES that the declines have also been noticed in the European stocks of Atlantic salmon. We see the same pattern of decline where the southern populations, let's say, of Ireland, England, Wales, France, and all the way up to Scotland have declined much more dramatically than the populations in Finland, Russia, and Norway. We see the south to north decline. We see the decline of what they call the multi-sea-winter salmon. That has been more important there than the grilse decline, so it's much like we see in North America. Because they share a common north Atlantic environment, we see exactly the same pattern in terms of declines, perhaps not as severe in some European stocks as what we've seen for the North American population, but what we see on the North American side is mirrored on the European side.

On the Pacific side, I'm sorry, I don't have the background to tell you how important it is, but I think there have been declines there as well.

Mr. Kevin Stringer: We would generally say it's a similar approach, maybe not as severe in the Pacific. The one thing I'd note on the comparison on the Pacific—Gérald pointed to the different life processes—is they spawn more than once. That's enormously different, but the really striking thing is, during the 1970s when these were at their positive peak in numbers as far as we know going back, there were two million fish, and you know your average run of sockeye up the Fraser River is more than that, so it is quite remarkably different in terms of the number of fish that you're starting with. Declines may be similar, but there is a different circumstance.

Mr. Fin Donnelly: In its report, the advisory committee on Atlantic salmon presented 61 recommendations to DFO. How does

the department plan on implementing all of these recommendations? I would also add, how much investment would DFO need to implement all of the recommendations?

• (1610)

Mr. Kevin Stringer: I'll take that on.

I said earlier that we generally see this as a program of work that actually provides some guidance about focus, priority, etc. There's very little in here that we were not working on before,

In terms of how much it would cost, it would be a matter of how far, how fast. It really does speak to more science on this, more enforcement on that, these types of things, so it isn't saying you should have \$730,000 into this program. It's difficult to say that.

We are planning to come out with a specific response to the committee's report, but I can say, generally, the program of work they have outlined has been enormously helpful to the department, and it's something we've been proceeding on.

Mr. Fin Donnelly: When do you think you'll be coming out with that?

Mr. Kevin Stringer: I'll say soon.

Mr. Fin Donnelly: This year?

Mr. Kevin Stringer: I'll say yes.

Mr. Fin Donnelly: Okay, that gives us an idea. Thanks.

What's the current DFO budget devoted to wild Atlantic salmon science and management?

Mr. Kevin Stringer: It's a very difficult thing to do. I'll give you a number, but I am also going to preface it with this: how much of my time gets spent on Atlantic salmon, how much of a conservation and protection officer's time gets spent on Atlantic salmon when they're out doing a patrol is really difficult to say. From time to time, we have done a review of it. It may change after what we've seen in the budget, but most recent estimates from a few years ago are in the range of \$12 million to \$15 million.

Mr. Fin Donnelly: The discussion on ocean conditions, I think, is really important. I think that's shared on both coasts, and probably the Arctic as well, in terms of the fisheries. Do we need an increase in focus and resources for science, to look at that question of ocean science?

Mr. Trevor Swerdfager: Yes.

Mr. Fin Donnelly: I would say, from what I've read, that there has been a decrease over the last 10 years or so. I have a note here from the Atlantic Salmon Federation, Mr. Charles Cusson, that in his testimony to the committee last year he indicated that from 1985 to 2009, DFO's budget decreased by 75% relative to inflation; the actual amounts fell from \$24 million to \$12 million.

I hear what you're saying, yes, then I'm also interested.... Obviously, we need to resource up, but what are the issues specific to ocean management, ocean conditions, that we need to go after? Where would it be most efficient to put those resources?

Mr. Trevor Swerdfager: There are a couple of things. The reason I answered yes so quickly is that it's clear we need further investigation into this issue. That's just indisputable. When I say "we", it's not just the Department of Fisheries and Oceans, it's the ocean science community more broadly.

We know quite clearly that changing ocean conditions are significant. We know they are widespread, and we suspect strongly that they're affecting biological productivity of the oceans. Can we prove that categorically in a sort of linear relationship? Not yet.

A big part of our energy around the physical oceanography, chemical oceanography side of things, is trying to understand more effectively what changes are occurring in pH, temperature, salinity, currents, tides, those sorts of things. We know they're changing. We need to monitor them over a period of time.

Our investments are, and will continue to be, very much focused on understanding those trends, then figuring out how we link that back to an issue like Atlantic salmon.

One school of thought is that a major source of challenge for Atlantic salmon is that when these animals do go to sea, there are factors at play there that are causing them to either simply die and not return at all, or return in a poorer state of health, a poorer level of fitness, and so on. Can we prove that? No, we can't.

A big part of our focus, though, in our ongoing research is going to be to target that. While some people might see fish biology as the prime source of science priority, a big part of our emphasis is going to be on understanding the systems the fish swim in to try to figure out how that is affecting them, and tracing that back to population.

Mr. Fin Donnelly: Thank you.

The Chair: The bell says you're done. I apologize for the disturbance.

Mr. McDonald, for seven minutes.

•(1615)

Mr. Ken McDonald (Avalon, Lib.): I thought the bell was for time to wake up.

The Chair: That was more for me, Mr. McDonald.

Mr. Ken McDonald: Thank you, Mr. Chair.

Thank you for appearing. Some of you have been here before. We really appreciate you showing up.

Mr. Sopuck mentioned the seal population and its effect on salmon. The indication I got was that we really don't have the science to prove that they're a big predator on salmon, but they are a big predator on just about everything else, so I don't know why there wouldn't be a predation effect on the salmon.

To give you an example from my own riding, about a month or a month and a half ago, I happened to be driving past the actual mouth of a well-known salmon river in Salmonier in St. Mary's Bay, and two seals were there at the mouth of the river. I mean, they're not there for the nature of just being there. They're there for food. That's in an area that I'm very familiar with. My family comes from there. Years ago, you would never see seals in that area. It was unknown for a seal to be in that area, but now it's common to see seals there.

Obviously, to me, they are having an effect on the salmon population and other populations, but it seems that nobody will admit that they're a big problem for anything, because nobody wants to bite the bullet and actually say that we need a cull on seals. They're out there in the millions, but yet I think the take this year, or the quota, is somewhere around 400,000 to 425,000. That doesn't touch it. Nowhere near that gets taken, because there's no real value in it right now with the price of pelts and everything else.

When is DFO or the government going to take an aggressive approach to actually doing something about the seal population?

Mr. Kevin Stringer: I'll start. If anybody wants to weigh in, go ahead.

I think we'll acknowledge that they're not eating Volkswagens, as a former deputy once said.

Some hon. members: Oh, oh!

Mr. Kevin Stringer: The very specific relationship that has been shown is with southern Gulf cod. Science has determined that there actually is a clear relationship in terms of inhibiting the recovery of cod. If we're not seeing it that much in terms of salmon, there just aren't that many salmon to eat, right? We do know that they are eating fish.

I would say a couple of things. I will repeat what I said before. We continue to monitor. We continue to be concerned. We continue to establish harvest levels. But we also continue to work on the market, and we are hopeful that we are able to better establish.... We have funding in that to support groups to do it. The minister is constantly talking to other governments and going to fish expositions, seeking to develop a seal market.

There was a reasonable seal market. We had good numbers in terms of the seal harvest a number of years ago, not so much with grey seals, but certainly with harp seals. We had in the number of 400,000 a year. There were those types of numbers. It has dwindled significantly. Grey seals are a significant problem in the Gulf of St. Lawrence—no question. Part of the solution is to develop a harvest. We've actually approved some interesting types of harvest, but they're small-scale types.

We do continue to look at it, and we do continue to be concerned about it, but in terms of having a big plan for the short term, it's not there right now, and I'll tell you that.

Mr. Ken McDonald: We also mentioned illegal fishing as one of the problems. What is the extent of illegal wild salmon fishing in eastern Canada? Do you have any idea?

Mr. Kevin Stringer: Yes. In terms of enforcement, we do a lot of enforcement on it in Atlantic Canada, and certainly, one of the committee's recommendations was that we should be doing more and looking at guardians and partnering with local groups. That is something we will look at. We do it more in Newfoundland and Labrador, for some reason, than we do elsewhere, and they've suggested that we pick that up.

We do have a total of 61,000 hours that the various regions spend on looking at 6,000 fishers and 20,000 fishery sites. Do we actually know how much is being taken with that many fishers out there? The answer is no, but we do actually have to do an estimate in terms of unreported fishing to NASCO, the North Atlantic Salmon Conservation Organization. Canada, Scotland, and Norway, etc., are members of that.

We do an estimate. On the estimate of unreported harvests, they were, we estimated, 24 tonnes in 2013 and 21 tonnes in 2014. That's an estimate in terms of unreported, but it is very much an estimate, based on what our conservation and protection officers see.

•(1620)

Mr. Ken McDonald: In one of the graphs you showed in the deck you presented to us, the only one that has increased the taking of the larger salmon in any big way is Greenland.

What are we doing to talk to them and educate them about what it is doing to the stock?

Mr. Kevin Stringer: Yes, indeed. Greenland used to have a significant harvest years ago, and they stopped it. Then they started it, three or four years ago, and you will see that, as you point out, on that graph.

We have struggled, bit by bit, with the recreational community, with the aboriginal communities, and with others. You can see that graph coming down a little bit, and then all of a sudden the Greenland one goes up. That was disappointing.

They established what they call a factory harvest, which allows sale locally. Not only we, but the U.S. and others in the international community who are on NASCO, expressed concern.

We achieved something last summer—we will see what the results are—in terms of, effectively, getting a management regime, reporting, and a number of measures in place. Our minister has spoken to them, and the U.S. has spoken to them. We have worked on it together, and we will continue to pressure Greenland to bring its numbers down. They know the concern.

The Chair: Thank you, Mr. McDonald.

We are now going to go into a round of five-minute questions.

We go to Mr. Strahl.

Mr. Mark Strahl (Chilliwack—Hope, CPC): Thank you very much, Mr. Chair.

I would like to welcome some fine folks from my riding of Chilliwack—Hope here, watching us today in the gallery. It is nice to have. I promise I am always this well behaved.

Mr. Stringer, I think you mentioned the special report on wild Atlantic salmon in eastern Canada. I found it very interesting how similar the conclusions are, on a broad basis, to the Cohen inquiry, in that there is no smoking gun. There is encouragement to invest in science, monitor aquaculture, and consider habitat, human effects, climate change, and ocean temperatures.

One specific comment on page 4 says, "Scientists believe there is something going on in the ocean on a global scale that is affecting marine survival".

Quite frankly, it doesn't sound very scientific. While I think we would all agree that we need to...and DFO has an important science role, it seems a little in the abstract to focus on that.

Perhaps I could get your opinion or the department's view on habitat restoration as it pertains to the Atlantic salmon.

Mr. Sopuck is much too humble to talk about his role in creating the recreational fisheries conservation partnerships program, but this is something that—as I have certainly seen in my own riding—has had a major, tangible impact on salmon-rearing along the Vedder and Chilliwack rivers, for instance.

Could you talk about some of the projects that have been undertaken? Would you agree that perhaps that should be our...? The focus of DFO and government now is on specific habitat restoration, where we can see this is making a real difference on the ground.

Mr. Kevin Stringer: I'll start by saying the observation that the studies—we can call them studies—are similar in terms of no smoking gun, but looking at a program of work in all of these areas, and frankly, keeping our feet to the fire on all of those issues.... We do take that seriously.

I think both of them land on...there's something weird happening in the ocean that we should better understand, and at-sea mortality continues to be a bit of a great mystery.

Habitat protection, certainly, is one of the important components, and the investments in the recreational fisheries partnership program we believe is making a difference; \$4.8 million over the first number of years have gone into projects that would be an Atlantic salmon habitat. I'll give you just a couple of examples of the types of things.

One, for example, the Miramichi Salmon Association, not a huge amount of money, \$33,000 to create large, cool refuges. The issue is salmon return to the Miramichi in the summer months. It is warm, and they are constantly seeking out cool refuges, and this actually enabled a group to create some. That's the sort of thing that it does.

Another example is the Cheticamp River Salmon Association, \$61,000. This is because of logging practices, because of the way a particular bridge was built. The ripples and runs above and below the Cabot Trail bridge have widened, and in low tides or in low periods of water it is a barrier for those fish to get up the river and spawn. These funds helped put rocks in—it's very simple—actually adjusted that, and now they have a much easier way. It speaks to fish passage.

Those are the types of projects we're able to do with that funding. It's not just that funding. The conservation fund does it, the habitat stewardship program does it; and there are other initiatives that do it as well.

•(1625)

Mr. Mark Strahl: I have very little time left, but this issue appears to have been studied by government and fisheries committees in the Senate and here. We have looked at this before.

I don't really want to hear from the same 78 experts who just came through the minister's advisory committee. Is there an area, even if you don't have time to answer it...? I'm hoping we can identify gaps in our knowledge and not simply hear from the same folks again, the same solutions that haven't yet solved the problem. That's what I'm interested in hearing about.

Mr. Trevor Swerdfager: Quick suggestions. I know you have time issues.

What happens to these animals when they go to sea? The short answer is we don't know enough about that. There are some technology solutions and so on that need to be in place. But when they leave their streams, their bays, and so on, where do they go, and why don't they come back?

The second thing, you mentioned weird things happening at sea, not very scientific. Another way of putting it is we know for sure that ocean conditions are changing, we can see that over time. What we're struggling with is how you walk that back to an impact on, in this case, Atlantic salmon, or on your coast, other salmon.

If you look at habitat as a key factor, it's always better to have better quality and more habitat.

But the direct link to productivity and what happens to these animals when they leave their core habitat base, we're still struggling with that. More monitoring of the environment and more monitoring of ocean conditions, and then more effort on what that means to walk that back to the individual species, from our point of view, is critical.

The Chair: Okay. Thank you, Mr. Strahl.

I, too, would like to extend a welcome on behalf of the committee to our friends from Chilliwack. It's nice to see you.

Ms. Jordan, for five minutes, please.

Mrs. Bernadette Jordan (South Shore—St. Margarets, Lib.): Thank you so much to the panel for answering the questions. The problem with being sixth is that a lot of my questions have already been answered, but I'm sure I can come up with a few.

There are two things I'd like to focus on. Leading theories on what's causing marine life at sea.... We've said it's happening, but what is the main theory behind what's happening? Do we have any specifics?

Mr. Trevor Swerdfager: We have a couple. One is it is clear we know for sure temperature in the ocean is changing, both at the surface and below the surface; both at depth and in a variety of areas.

We also know that currents and tidal patterns are changing on all three oceans. We are fairly confident that is having an impact on a whole range of biodiversity, and not just Atlantic salmon.

Generally speaking, it's impossible to say it's a linear relationship. For some species it's good, and for some species it's not. So it's not a one-to-one, all good or all bad.

Why is it changing? A big part of that is around climate change. If we look, in particular, at the interaction between the atmosphere and the ocean surface, there we're seeing dramatic change. We can see it in phytoplankton availability, or lack thereof. We can see it in dispersion of nutrients, or lack thereof.

So we know that the system in which fish are swimming is changing significantly. Can we quantify that back yet to individual population level changes? We're struggling with that. A big part of our modelling work on the oceanographic side is trying to understand that a fair bit better. The prevailing theory is that it's ocean conditions that are changing, and when Atlantic salmon, for example, go to sea, that is causing them to return in smaller numbers than before. We don't have anything that suggests there's a massive predation problem or other anthropogenic sources of concern out there.

• (1630)

Mrs. Bernadette Jordan: Acid rain was mentioned in the advisory report. I'm wondering whether there is any long-term change in the acidity in the ocean that might be—

Mr. Trevor Swerdfager: There is not much in the ocean.

Mrs. Bernadette Jordan: No?

Mr. Trevor Swerdfager: The main impact of acid rain is in the spawning grounds.

Mrs. Bernadette Jordan: So it's the fresh water.

Mr. Trevor Swerdfager: Nova Scotia, for example, is an area particularly vulnerable to acid rain. We see changes in the nature and the quality of the spawning habitat of Atlantic salmon. This affects a whole variety of animals.

Mrs. Bernadette Jordan: You mentioned that when you take smolts and release them after 18 months, there is different genetic makeup, and they go up the rivers and spawn. Do you think that the hatcheries are the best way to try to reintroduce salmon stocks?

Mr. Trevor Swerdfager: We need to run experimental projects to answer that question properly. The advice we'll provide to our minister is that the science community is going to run a series of experiments on that very issue. We're going to find out what they say. We're going to generate our best scientific advice. In a couple of places, we are going to say we don't know the answer. So we will tell the minister that our advice is based on a certain level of confidence and that there are some unknowns. We will tell the minister what these are and how we propose to tackle them. We don't feel comfortable saying it's all marvellous or all horrible. People who gravitate towards those extremes are welcome to do so, but DFO science will not go there.

Mrs. Bernadette Jordan: How should the effectiveness of future stock enhancement programs be measured?

Mr. Trevor Swerdfager: The first part of the answer to that question has to be whether or not there will be future stock assessment programs. Let's assume that we jump over that question, and that's a big assumption. Part of what we're working on with the community is to design monitoring systems to respond to that very question. Part of it will turn on the fitness of the animals. There are ways you can measure that. Part of it will be just numbers. This many go out and do as many or more come back? Yes or no? Productivity can also be measured. So we have some metrics, but there is a fairly substantial jump to make first—whether or not we're even going to have a large-scale reintroduction or supplementation program in Atlantic Canada.

Mrs. Bernadette Jordan: There were 61 recommendations in the advisory committee report last year and only two have been acted on. Are there plans to go forward with more of the recommendations?

Mr. Kevin Stringer: I would say we've certainly acted on more than that. What we said we've specifically acted on were the interim recommendations in addition to the 61. These we formally said that we accepted. We're working on many of them and they are consistent with what we have been doing. We're being influenced by the recommendations, and we will do a response to them.

The Chair: Thank you.

Mr. Arnold.

Mr. Mel Arnold (North Okanagan—Shuswap, CPC): Thank you, Mr. Chair, and my thanks to all of you for being here today.

We've seen huge swings in our salmon populations on the west coast. They've been almost studied to death, but we still don't have any answers. You talked about ocean temperature changes. Have there been any correlations made between ocean temperatures, marine survival, and those huge swings we saw—from some of the lowest in history to a record in just a couple of years? I'm not aware of that big a swing in ocean conditions.

Mr. Trevor Swerdfager: You're talking about the Pacific Ocean?

Mr. Mel Arnold: Yes. Is that comparable to the east coast conditions?

Mr. Trevor Swerdfager: It's clear that changes in ocean conditions are slower and less predominant in the Pacific Ocean than in the Atlantic. We don't know why. The range of variation in conditions in the Pacific, with the exception of the Blob, is not as wide. Up and down the coast in British Columbia, we're not seeing as wide a level of change and therefore we don't attribute that to population change as much.

At this point, we know that adult survival of Pacific salmon is lower than it was in the past. Given that many of the conditions of the past are still the same, it is clear that things are changing. Your colleague said that "something weird is happening to the ocean". Of course, we need to come up with a better description than that. We know that the level of change in the ocean is significant, and we strongly suspect that this is having an effect on adult salmon survival. Can we prove that categorically through experimentation? No. A big part of what we're going to be doing in the next little while is developing a technology that we hope will allow us to figure out where these animals go. After they leave the strait or whatever, we

don't know what happens to them. We're hoping this will help us a fair bit.

•(1635)

Mr. Mel Arnold: On that tracking, is that similar to the POST project that was run off the west coast of B.C.?

I'm hoping to expand on that.

Mr. Trevor Swerdfager: Did you ask me that question before?

Mr. Mel Arnold: Yes, I did.

Mr. Trevor Swerdfager: It's an unusual reference, so I was wondering where you got that one from.

It is.

There are two things we're aiming to do. One is we're hoping to put more tracking devices on fish on both coasts. We are also seeing dramatic improvements in the technology for that. It is similar, sir, to the program you're referencing, but with much more developed technology and much stronger receivers.

As well, we're going to be in a much better position to use what historically we thought of as "other equipment", and that's oceanographical equipment to track some of these animals that we didn't think we could before.

Mr. Mel Arnold: We've seen with wildlife management, although with fish management not so much, that—the fish species that we're talking about, the Atlantic salmon—prey species can only be managed as part of overall predator-prey relationships.

Are you looking at those relationships, and looking at the prey management as part of the overall strategy, as well?

Mr. Kevin Stringer: What I would say—and I'll ask Trevor to add to this in terms of predator-prey relations—is that when you can't see it underwater, it's hard to notice exactly what's going on. It is a challenge.

We are seeking more and more to manage fisheries with an ecosystem approach and with understanding of the overall impacts of fisheries and of one stock on other stocks.

We have new bycatch rules. If you look at our integrated fisheries management plans, they will speak to the role of this fish in the ecosystem and the impacts on other fisheries. It is difficult to say, "for this area here is a total amount of tonnage of fish that you can take out, and there should be a mix".

We still manage stock by stock, but we are seeking to do so with an understanding about the impact of the removal of that stock on other stocks.

Mr. Mel Arnold: The reason I ask that is because there was a recent article on the survival rates of some of the salmon out of the Chilko system in B.C. When they have huge numbers migrating at once, they have a far better survival rate. I think that's roughly 90% versus 40% if they have low numbers.

We can assume that correlates to the fact there's still the same number of predators out there that would take the same gross number out, but that percentage in a smaller group would be much higher.

Mr. Kevin Stringer: That means more can get by, right?

Mr. Mel Arnold: Yes, so do we need to manage our predator species for the lower abundance that we have out there now?

Mr. Kevin Stringer: That's certainly a strategy. Looking at timing windows for fishing, and all those types of things, need to be taken into account.

The Chair: Thank you.

Mr. Morrissey, five minutes please.

Mr. Robert Morrissey (Egmont, Lib.): I want to follow up on Mr. Strahl's observations, and I'm a rookie to this format as it relates to the salmon industry.

It appears there have been numerous studies done, and there have been various House of Commons and Senate studies done, on the industry, and the response has been habitat restoration and the various mechanisms we've seen there.

With all the resources of DFO, what has occurred today has not arrested the decline in salmon stocks in primarily the southern Atlantic region. What are you recommending that would be different in your approach to managing this obviously troubled resource?

Mr. Kevin Stringer: There are a couple of things.

In terms of trying to figure out what we do spend on this...it's fisheries management that's deciding what we should have in terms of the rules. Part of the answer is catch and release in the Gulf of St. Lawrence. That's something we did last year, and that's something we did again this year. It's very controversial with some of the players, but that's the sort of thing...taking further measures to address it. And there's reducing the overall catches. If you actually look at that chart that Gérald showed, yes, we're concerned about what Greenland's doing, especially since we're making such an effort to actually bit by bit get that figure down. So reduce catch.

Enforcement is also important. We're actually moving to different types of enforcement, with fewer fishery officers hiding behind trees, more, I would say, electronic and forensic enforcement, so we'll actually be able to catch bad guys and they've got less of an incentive to do this.

Those are two. I think there are issues around aquaculture as well that we're working with the provinces on. There are issues with first nations, and first nations have taken steps over the last number of years. In the Miramichi, first nations have moved to trap nets instead of gillnets. In Newfoundland, the Conne River First Nation over the last few years has decided they're not going to fish because they're concerned about conservation.

It's all those little steps. I don't know if there is one gigantic step. In fact, the report that we got didn't suggest one gigantic step. The one piece—and Trevor's spoken to it and Gérald's spoken to it—is at-sea mortality and having a better understanding of what's happening in the ocean and actually being able to better diagnose what the challenges are. We think we have programs that work reasonably well on habitat, on management, on working with aboriginal groups, internationally. We need to continue those, and continue to ratchet things down. But that's going to be the big question mark, the at-sea mortality and understanding what's happening in the oceans.

•(1640)

Mr. Robert Morrissey: Yes, but everything you describe is in the mirror. My question was, as we go forward, sitting here today with the resources of DFO, understanding the complexity of the issue, and I agree it is complex to a person who's not knowledgeable on that side of it.... But these issues have been addressed for some time. I still go back to: what is the one thing, if it is one—and there's probably no one silver bullet—you're looking at now that would be different on a go-forward basis and you feel may address this issue?

Mr. Kevin Stringer: This is a personal view, and I'll ask Trevor to jump in—

Mr. Robert Morrissey: No, this is a departmental one.

Mr. Kevin Stringer: Okay, the departmental view, in terms of what we're doing, is we are doing, I would say, more of the same, because that's where we've been directed. But we do think, and we've said it here a few times, that if there is going to be anything approximate to a magic bullet, it's around science work understanding about what's happening in the oceans and at-sea mortality. I think we have determined—

Mr. Robert Morrissey: Away from our coast.

Mr. Kevin Stringer: I think we have determined that we do need to do more on habitat, we do need to do more in various areas, no question about that. But the big issue that we've got the most questions about, and where we really think there's a lot of loss, is at-sea mortality. It's understanding that. On the west coast you've got the Salish Sea study and on the east coast you could have something similar that better understands the ocean conditions.

The Chair: Thank you.

Mr. Donnelly, three minutes, please.

Mr. Fin Donnelly: Just to follow up on Mr. Morrissey's question, I would like to hear about Mr. Stringer's personal view.

Mr. Kevin Stringer: That was my personal view. But I do think that's where the department's at. I don't think you'll find anything that says we think this is the silver bullet. Seriously, we have to not drop anything because we've actually had some success in terms of what we've done. The amount of catch is going down and we are addressing a lot of the issues. The challenge is we're holding, at best, with all of the efforts that we're doing. Is there something that's going to allow a breakthrough? We think—and I think the report points to this—it's the one thing that's the greatest uncertainty that we need to address.

Mr. Fin Donnelly: You mentioned aquaculture, and I just want to flip there for a second.

The report on page 31 of the advisory committee recommends a few things: that DFO work with provincial partners and stakeholders to undertake research into wild/cultured interactions that assesses the impact of escapees on local wild fish; that “Aquaculture fish should be marked so that escapees may be identifiable, genetically traceable and removed from river systems”; and that consequences should be imposed on industry for not accurately reporting escapees in a timely manner. DFO already collaborates in research into wild/cultured interactions with the provinces and industry as part of aquaculture collaborative research and development.

I have two questions. Is DFO considering the possibility of designating areas in which aquaculture development would be prohibited, for example, where wild salmon populations are given COSEWIC endangered or threatened status? Secondly, is DFO considering the possibility of prohibiting aquaculture development in areas near wild Atlantic salmon migratory routes?

•(1645)

Mr. Kevin Stringer: On the east coast, it is actually provincially regulated. DFO has some responsibilities but in terms of siting and those types of things, those are provincial responsibilities.

I'd also point out the point that was made first around escapements, that they are something that is provincially regulated as well, but we do work with the provinces on it. We do seek to have some consistency across provinces. It is all regulated through provincial regulations, conditions of licence, and codes of containment. This is another area where I think it is fair to say that we have had improvement, and we need to continue to have improvement. All escape events have to be reported to the provincial licencing authority, and they all have a protocol for response, which is usually trying to chase them and not necessarily catching them all.

Escape events have declined dramatically over the years, partly because of these rules and partly because of the technology of the cages. That said, it continues to be a concern. It was in the range of 40,000 escapes last year. That is a dramatic decline from previously, so there have been improvements. There needs to continue to be improvements, and we'll work with the provinces.

The Chair: Thank you, Mr. Donnelly.

We've exhausted two rounds, and we have quite a bit of time left. Normally what we did in the past and we can probably do this again—I'll put this out there as a suggestion to the committee—we have one round, mimicking the first round that we normally do: seven minutes government, seven minutes opposition, seven minutes the NDP. Do I see consensus on that? That should take us close to committee business and then we have to talk about four items on committee business. All right?

Mr. Hardie, you said you wanted to ask a question, but do you want to split your time?

Mr. Ken Hardie (Fleetwood—Port Kells, Lib.): I do, yes, with Mr. Finnigan, if you'll have it.

The Chair: Done. You have three and a half minutes.

Mr. Ken Hardie: Thank you very much.

I'm looking at the graph on page seven, and it seems that there were some pretty wild swings in the abundance of salmon up until

about 1991-92, when there was no bounce. Do we know anything about what may have happened there?

Mr. Gérald Chaput: It is a compelling picture that there were oscillations up until about the early 1990s, and something changed. We've looked at that in various fora with national scientists and we can point to that period in the late 1980s and early 1990s as almost like a regime shift. Something changed in the ocean. Something changed in the whole dynamic. After that time period, salmon never recovered.

You can see some comparative examples of that in looking at zooplankton. There are some indicators, when people look at zooplankton in the ocean in that same time period in the late 1980s and early 1990s, that there was a change in zooplankton variables as well. It seems that something changed in the ocean; something triggered it. Early 1990s was a cold period off eastern Canada. There was a very cold period of water. People felt that might have contributed to some declines in Atlantic cod as well. Something happened in the early 1990s. Conditions shifted back, but Atlantic salmon abundance did not shift back. You're right, there is a period that changed there, and we've seen it in other parameters that we've monitored in the ocean as well.

Mr. Ken Hardie: Being from the west coast, of course, I try to be a little more familiar with conditions there. Notwithstanding all of the issues that we've had with the Fraser River runs, there is an anomaly there. The Harrison run always seems to be much more abundant than the others. Are there similar things happening on the east coast? Are there some rivers that just seem to, for some reason, outperform others?

Mr. Gérald Chaput: If you look at the northern rivers, the Labrador rivers, the northern Newfoundland rivers, you probably won't see that dramatic fluctuation in abundance. Western Arm Brook is a small river on the northern peninsula of Newfoundland. It's been monitored since the early 1970s, and it's been tracking long. The big change happened when we closed the commercial fishery. All of a sudden the fish are returning to Western Arm Brook in higher numbers, and they've been maintaining higher numbers. So those northern populations seem to have been less affected by these shifts of ocean conditions over the last 40 years than we've seen in the southern populations.

•(1650)

Mr. Ken Hardie: We mentioned the issue with Greenland and especially the taking of large salmon, which seemed to have been the focus from the seventies to the early nineties, and then things dropped off. I also recall when cod was certainly under stress, that we had some issues with Portugal and Spain. Are there other players out there that we can look at as perhaps responsible for some of that ocean mortality?

Mr. Gérald Chaput: Probably Kevin could speak to that in terms of international surveillance in the North Atlantic. There is quite a bit of international collaboration in licensing vessels, monitoring vessels, looking at landings in different ports in Europe, for example. There is no evidence from the European Union on landings of Atlantic salmon showing up in ports in different locations. And we know from vessels out in the North Atlantic that as the cod fishery collapsed, fewer vessels were out there fishing. It still could be the case. Kevin?

Mr. Kevin Stringer: We have NASCO, the international organization that looks after North Atlantic salmon, and all the major players are there. We do exchange information. We've got a pretty good sense of where the catches are. Greenland is an issue. Saint Pierre and Miquelon is a very small issue, one to five tonnes. It's not from there, it's being intercepted. Those are the two we see.

The Chair: Thank you.

[Translation]

Mr. Finnigan, you have three and a half minutes.

Mr. Pat Finnigan: Very well.

[English]

I want to ask this question; I'm not sure if I'll have the time, but I want to make sure I have it answered.

We are planning a trip to Miramichi. It looks as if it's going to be this fall, and hopefully we will be meeting with the first nations; we'll be meeting with the outfitters; we'll be visiting the hatchery; we'll be talking to a scientist and people along the river. Is there anything you might recommend that we pay particular attention to as we visit the Miramichi River? I leave that to anybody who would like to take that on.

Mr. Gérald Chaput: I hope you enjoy your trip.

Mr. Pat Finnigan: I'm sure we will.

Mr. Gérald Chaput: There's so much to see there as you know from being from the area. There's also a lot of activity both by non-government organizations and provincial governments. There are all kinds of activities related to protections. Protection barriers are operated by the province where salmon are protected in heavy waters when they come up. There are cold water refugia programs, restoration programs. A number of programs are looking at trying to assess returns. There are first nations collaborations.

I think the most interesting aspects are related to habitat. We keep talking about habitat because we shouldn't think that freshwater habitat and ocean habitat are independent. Fish that grow in the fresh water, if they have healthy environments probably are healthier smolts. Healthier smolts going to sea probably have better survival rates than fish that are unhealthy.

We can speak to the freshwater habitat being very important not just in producing smolts but producing healthy smolts. Examples of that are in the southern uplands of Nova Scotia. Fish can grow in acid-stressed rivers, but the smolts that go to sea are not as healthy. The survival rates are not as good.

We keep talking about freshwater habitat being important, but it's more than just producing fish, it's producing healthy fish. And we shouldn't think that the two are not linked, so I think a lot of activity

in Miramichi that groups are doing focus on habitat. Those are key projects.

Mr. Kevin Stringer: A lot of local groups working along the river have neat little projects: a fish wheel, a little habitat program; many little programs partner with the department throughout the fishing season. And those are really worth seeing. The department does important work, but stakeholders, watershed groups, particularly along the Miramichi do enormously important work, and it would be nice to see that as well.

• (1655)

Mr. Pat Finnigan: Getting back to the CAST issue and the small salmon developing bad habits, I guess, if you could put it that way, when they get lazy and all that, I don't understand how, if they die, that would rub off on the healthy salmon. How does that affect the stock? If it doesn't work, the worst that can happen is they will die prematurely because their instinct is domesticated, if we could say that.

How does that affect it? In other words, I don't understand why there would be a danger.

Mr. Gérald Chaput: There is a concern we have. When a salmon goes to sea, there's a big selection happening. Let's not kid ourselves. A lot of fish are dying, for a number of reasons, but it's not random. The fish that are coming back are the ones that have the right package to survive the conditions. They'll come back, spawn, and potentially pass that on to their progeny.

If you take the smolts and exclude the freshwater-and-marine cycle, a lot of them survive. All kinds of fish survive: the fish that have the right characteristics. Fish that would have the wrong characteristics survive in the ocean, but they survive, and they will spawn. That's what we want them to do. We want to raise them to adults, release them back to the river, and let them spawn.

We probably have fish that don't quite have the right fitness, but they are all spawning in the river. When they spawn in the river, they have juveniles, and juveniles will fight for space. There's only so much space in the river. They will compete with each other, and some die from that. We have a lot of unfit juveniles from less fit parents that are competing with fit wild juveniles, and some are dying, so then we have effects on the wild fish as well.

It's that issue about how the ocean is filtering the fish and letting the ones that have the right package come back and spawn, but by cutting out the ocean, we're putting fish back in that have all kinds of characteristics, and probably not necessarily all the ones we need for ocean survival of the next generation. That's the issue.

The Chair: Thank you very much.

Mr. Sopuck, please, for seven minutes.

Mr. Robert Sopuck: My view, though, is that the research you're contemplating doing should generate real management outcomes. You talk about doing open ocean research on temperature, acidity, and so on. Let's say you find out about those factors in the ocean. Are you going to be able to do anything about it? The answer is no, isn't it?

Mr. Gérald Chaput: Perhaps it depends on where they are dying, right? One of the questions we have is that fish leave the river, then adults come back, and somewhere out there, from the estuary through the bay, they die.

There is tracking work that was started by the Atlantic Salmon Federation, which we're trying to promote, to tell us exactly where they are dying. For example, are they all dying in Miramichi Bay in the stomachs of striped bass? Are they all being eaten by striped bass? If we knew that 90% of the smolts were being eaten by striped bass, that would probably be a place to take action.

Mr. Robert Sopuck: I'm making a very strong distinction, though, between studying ocean chemistry, ocean currents, and ocean temperature, or looking at, for example, survival rate of smolts due to predation.

On the first type of scientific work—ocean temperatures, acidity, and so on—you may find out something about that, but there's nothing we can do about it, right? If we find out that it's striped bass, we can do something about that. I think there's every indication that predation is one of the reasons for the decline in the Atlantic salmon. It's quite clear that it is a major reason.

We can do something about that. We do it all the time. We manage human predators all the time. The department thinks nothing about managing salmon predators that walk on two legs, but somehow there is an extreme reluctance to do the same thing with, for example, a fish like the striped bass, which have gone from some 25,000 fish up to 250,000 fish. They hang at the mouth of the Miramichi, yet there's an extreme reluctance to manage striped bass in such a way.

You could actually run an experiment. Let the anglers take 10 fish each. You can do a stomach analysis of the angled catch. The anglers would be very happy to do that.

This reluctance by the department and biologists to be seen to actually actively manage a resource as opposed to studying it forever baffles me. Could you address that question? Why won't we see some action in this regard?

Mr. Trevor Swerdfager: I guess there are a couple of ways to come at this question.

The first is that you can't manage what you don't understand. Really, a big part of what we're trying to do is understand what's happening to these animals when they leave.

There are some people who argue very strongly—you would be perhaps one of them—that the main reason for the decline is striped bass. That's one argument. Another is that there are conditions that are happening out there.

I take your point. The whole idea of science—at least it's done in the department, as opposed to outside it—is to generate a management response. A big part of what we anticipate coming

out of some of our research is a set of recommendations to managers for a whole variety of things. The fact of the matter is that we don't know what those recommendations will be yet, because we don't know what the scientists are finding.

• (1700)

Mr. Robert Sopuck: There's an old saying that perfect is the envy of good, and the search for perfection often prevents us from doing. Experimental management, adaptive management, is not a bad thing, so you institute a management plan for a fish or wildlife resource and you see how it works, and then you adapt over time. On the Miramichi, I don't live there, but from what I gather folks are frustrated. There are not enough salmon to catch, yet there is this monstrous striped bass resource and it is a built-in experiment ready for the department to do. The reluctance to do this baffles me, when I think the people of the region would really appreciate that.

There is an old saying, "Do what you can with what you have where you are", and there is a clear case here where you could actually do something. Let's suppose it fails. Let say it shows that striped bass aren't the predators that people think they are. Well, so what? Let's say you've knocked the population back from 250,000 fish to 150,000 fish. So what? They were 25,000 at one point, so again, explain to me why you are so reluctant to enter into active management of the predator species.

Mr. Kevin Stringer: I'll start on striped bass. We did actually expand it last year, and we expanded it at a time when the biomass went down, so we still don't know where this particular biomass of striped bass is going to land. There is a fair amount of uncertainty of how much there is, and not as much science as we would like about it. I wish I had the numbers with me in terms of what the biomass was, but it went down significantly and we still expanded the fishery, largely for the reasons that you talked about. We actually have addressed that, but we did it for two years. That decision was taken last year, and there was not a decision this year because it was a two-year decision, and we'll take another decision coming forward.

Gérald, correct me if I'm wrong here, but in terms of the reductions that we're seeing and the concerns that we saw in 2014—and 2014 was a worrying year for salmon in Atlantic Canada, on the Miramichi and elsewhere—the reductions that we saw on the Miramichi were about the same as the reductions we saw on other rivers in the same area, which did not have striped bass. We have done some stomach samples. No one is saying that striped bass aren't eating smolts, but it's a very short period of time when they're in the river together.

We are actually looking at it, and certainly we have the recommendation from the committee, but there are a number of things that go into those decisions. There was fairly recently a special concern. The biomass did decrease from 2013 to 2014, at least the estimate....

Gérald wants to comment.

Mr. Robert Sopuck: Can I make one point? I only have 30 seconds left.

Regarding the Greenland catch—this point is more for the government members here. Again, you will recall what happened with the turbot and so on, way back, and I think it is time for the government to do the same, to contemplate something fairly serious with Greenland, simply because Greenland doesn't produce a single fish. They hardly produce any Atlantic salmon. Those are North American fish, so they have no interest at all in the conservation of Atlantic salmon stocks. They simply take the fish. I think there is a kind of moral argument here that we need to put a lot of pressure on Greenland to say "You hardly produce any fish, yet you're harvesting the most valuable Canadian and North American Atlantic salmon there are, and we need to do something about it".

Mr. Kevin Stringer: Can I jump in?

The Chair: Could you please be brief, Mr. Stringer?

Mr. Kevin Stringer: I'll be very brief. Just a couple of facts: yes, they do produce some fish, but not much. I think 70%, we estimate, is North American-based. It could be higher, but the rest is European, so the Europeans and us have this concern in common, and we will continue to be vigilant on it.

Thank you.

The Chair: Thank you.

Mr. Donnelly, you have seven minutes, to conclude.

Mr. Fin Donnelly: How long would it take the department to develop and implement a new precautionary approach regime for the management of recreational salmon fisheries in eastern Canada?

Mr. Kevin Stringer: We're actually working on that for Atlantic salmon. In the way that we do it now, we have—I've forgotten exactly how to say it—conservation objectives for key rivers, for index rivers, of a certain amount of eggs per square metre. We establish that.

Now we are moving bit by bit towards changing that to a limit reference point. It may actually end up being approximately the same thing on the same basis. It was about a decade ago that we came up with our precautionary approach in establishing limit reference points for fisheries. We've done it bit by bit in all of the major fisheries.

This is one that we need to move ahead on. It takes about a year. It's about establishing a limit reference point, and that's a scientific process. It's based on productivity and the history of the fishery. Then we meet with the stakeholders and establish harvest control rules. These rules basically say what we're going to do in a given situation with respect to the stock. We establish a healthy zone, a cautious zone, and a critical zone, and we take different actions within those areas.

It takes about a year to do the limit reference point, and it takes a bit of time to do the rest of it, but we are trying to proceed that way.

Gérald, do you want to speak to the Gulf coast?

•(1705)

Mr. Gérald Chaput: What I should say about Atlantic salmon is that we have had a limit reference point called the conservation requirement, since the late 1970s. We have closed commercial fisheries in Canada because stocks were not meeting this objective. We have a history going back over 40 years for which we actually

have a reference value. We're moving forward to the whole framework where decisions are pre-agreed to so that there's no debate or discussion with user groups. When the stocks are at a certain level, we know what our actions are. That would be very useful to do. It will take, in consultation with user groups and provinces, some discussion about our objectives, to agree on what our actions would be at different stock status points. It would probably take a year to consult with people.

A voice: In each area.

Mr. Fin Donnelly: How long would it take the department to assess wild salmon populations in all or most of the rivers in eastern Canada?

Mr. Gérald Chaput: That would probably never happen because it's a—

Mr. Fin Donnelly: You can't do it? What about "most"?

Mr. Gérald Chaput: It's probably not doable because a lot of the rivers are very small in—

Mr. Fin Donnelly: Are they rivers though, not creeks?

Mr. Gérald Chaput: Yes, they're rivers. They flow into the ocean, and have very small populations. Not only are they hard to assess, but there are so many of them that, practically, it is probably not that useful to assess every one. There are key rivers we can assess within a region, and use those as index rivers to manage an area. I think that's a more practical way to look at management questions such as that.

Mr. Fin Donnelly: So, a high-order river?

Mr. Gérald Chaput: Yes, but within all the salmon fishing areas in eastern Canada we probably have some rivers where there is monitoring taking place. We know if we have key rivers within areas where stocks are being monitored, and we assume from those stocks that they probably match the neighbouring rivers nearby. That's a very practical approach.

Mr. Kevin Stringer: Gérald, I think we do. As I said earlier, we have about 1,000 rivers in eastern Canada, and we have about 500 where we have some sort of conservation requirement, those limit reference points. But we have about 60 to 90 where we actually do an assessment based on counts and based on estimates.

Mr. Fin Donnelly: That's helpful. Would the department consider partnering with aboriginal groups, local watershed and community groups, universities, provincial government departments, and others, to complete this sort of an assessment to broaden your reach?

Mr. Kevin Stringer: We do, and we can do more. There's no question. In terms of fisheries stakeholders, for most fisheries we work with the Commercial Salmon Advisory Board. On Atlantic salmon and, I would say, on Pacific salmon we work with them. It's a passionate group. It expands enormously our ability to do work, and there's no question that we can do more.

Mr. Trevor Swerdfager: Minister Duncan and Minister Tootoo are going to make a fairly major announcement tomorrow morning on the disposition of our new science resources. A recurring theme in that, and what we are going to be moving towards, is a much bigger focus on partnership. The kind of thing you're describing is very much how we're orienting ourselves to do the science, the management, or what have you, but particularly, the collection and assembling of knowledge around conservation. We are fundamentally wired for an approach that very much involves the sort of stakeholders you describe, and the ability to enter into partnerships with them. For a whole host of conservation reasons, it will be foremost in what we are about to do.

Mr. Fin Donnelly: Of those 60 to 90 specific rivers, how many have water quality monitoring programs?

Mr. Trevor Swerdfager: The majority of water quality monitoring programs are delivered by Environment Canada. There's a percentage, but I don't think we can give that right off the top of our head. Provinces are quite heavily involved in that as well. Certainly, it goes back to one of the comments we heard earlier, where we were trying to understand water quality and water quality conditions and relate them to populations. But we can safely say that the distribution of the water monitoring program is delivered mostly by Environment Canada and is quite comprehensive.

● (1710)

Mr. Fin Donnelly: I want to follow up on Mr. Finnegan's earlier question about river-by-river management versus stock assessment. The specific question is, does DFO believe that a river-by-river management system of salmon stocks is the way forward, or do you still feel the current sub-management units are the effective management approach?

Mr. Kevin Stringer: I'll start. No question, that is something we would look at. It's something that we are looking at. When we talk

about the number of rivers we have, it is a challenge. Gérald said earlier that probably, given the area that we're covering, we're going to have to continue to work with our approach, which is to index rivers, key rivers, as the signal for rivers that are nearby. That said, in some areas where it is a major river, a major producer with a good number of fishers, it is something we could look at.

Mr. Gérald Chaput: If you look across the salmon fishing areas that we currently have in Canada, there are 23 in eastern Canada and 11 in Quebec, and those areas actually correspond to biological units, they actually use management differently. In the Maritime provinces as well, we have management units where management is different. In Newfoundland, for example, they have different management areas. We have classifications that more or less fall into that as well, so we are actually doing area-specific management. Although people don't recognize it as river-specific, there are quite important differences in management when you go across eastern Canada, and when you go to different provinces and different regions. There is some variation in management regimes in response to stock status and different populations.

The Chair: Okay, folks, thank you very much. I really appreciate it. Mr. Chaput, Mr. Swerdfager, Mr. Stringer, and Mr. Sandhu, thank you for joining us here today again. I have no doubt we will see you in the future. As you know, we have a cod study we want to talk about too.

Therefore, thank you again for coming.

We're now going to committee business, but we'll take a break because we're going in camera. We'd like to ask witnesses and visitors to leave while we get on with business.

[Proceedings continue in camera]

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