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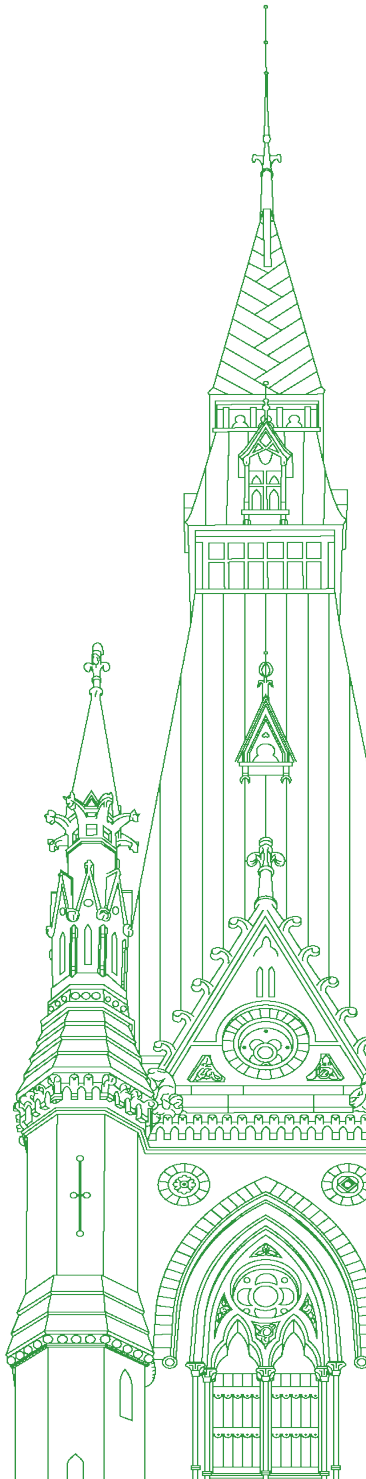

Chair: Mr. Ken McDonald

Standing Committee on Fisheries and Oceans

Tuesday, April 26, 2022

● (1140)

[*English*]

The Chair (Mr. Ken McDonald (Avalon, Lib.)): I've been told we're back and up and running. I apologize for the delay. It's this modern age of technology that we live in today. Everybody is so dependent on it in more ways than one. The clerk is going to check to see if we can add the time on at the end.

We're going to start from the beginning because apparently nothing was actually captured for ParlVU. I hope the witnesses have the time to stay with us.

If possible, I'll ask Mr. Vigneault to start off again with his opening statement so that it will be captured and recorded for somebody to look at it sometime down the road, if they're interested. Again, we'll start from the top, if that's okay with everyone, and we'll go on from there.

Dr. Bernard Vigneault (Director General, Ecosystem Science Directorate, Department of Fisheries and Oceans): Thank you, Mr. Chair, for the opportunity to discuss the science conducted by Fisheries and Oceans Canada.

[*Translation*]

I am the director general responsible for ecosystem science, which includes environment and ecosystems, ocean and climate, fisheries and marine mammal science.

[*English*]

I am joined today by my colleagues from the science sector, who represent a broad range of departmental scientific expertise and our geographic footprint across Canada.

I would like to present Andrew Thomson, regional director, science, Pacific region, who is responsible for the science activities in British Columbia and Yukon; Mr. Matthew Hardy, regional director, gulf region, who is responsible for the science program within the southern Gulf of St. Lawrence; and Tana Worcester, director, strategic science planning and program integrity in the Maritimes region, who leads Canadian science advisory secretariat processes and science planning.

[*Translation*]

We also have Dr. Judith Leblanc, science advisor for the Quebec region, from the National Contaminants Advisory Group at DFO.

[*English*]

Finally, I would like to present Dr. Kristi Miller-Saunders, research scientist, DFO Pacific, who conducts genetics and genomics research on salmon in B.C.

Fisheries and Oceans Canada relies on a strong and vibrant science sector. Each year, DFO science mobilizes teams of research scientists, biologists and technicians to conduct field and laboratory studies for hundreds of distinct projects in marine and freshwater systems. This results in a wealth of knowledge about our ecosystems and fish populations to support the departmental decision-making. The science sector has expertise in a wide range of fields, including marine environment and aquatic ecosystems, hydrography, oceanography, fisheries, aquaculture and biotechnology.

DFO science is made up of science professionals located in research institutes, laboratories, experimental centres and offices across the country. Science staff collect data and conduct research and monitoring activities, the results of which contribute to the science advice that can be used to answer specific questions or to inform decisions.

As a science-based department, science integrity is essential to the work of the department and its employees. Science integrity is critical to the decision-making process, from the planning and conduct of research to the production and the application of advice. Departmental scientists are bound by our code of ethics and values, and our science integrity policy, which reinforces principles such as transparency, scientific excellence and ensuring high standards of research ethics.

DFO generates science advice in a transparent way, using the Canadian science advisory secretariat, which is based on the principle of evidence-based peer review. Participants in the peer review process participate as objective experts to complete the peer review of the science under consideration. To guide participation, DFO has published a conflict of interest policy and a policy on participation for the CSAS meetings.

Peer review is a vital component of the important challenge function that the DFO science sector provides. Its reviews have included domestic and international scientific experts from government, academia, indigenous communities, environmental non-governmental organizations and industry experts. The objective of the peer review meetings is to provide sound, objective and impartial science information and advice.

The results of these peer reviews and the supporting analyses are published on the department's website. These scientific analyses inform departmental decision-making and provide Canadians with the scientific analyses and advice generated by the departmental science staff. DFO also supports open science, has an action plan and continues to publish data, including through the open government data portals. All DFO science reports are open and accessible.

DFO science works with a range of partners when undertaking its research activities. Our researchers and staff collaborate with scientists from other government departments, universities, indigenous communities, environmental organizations as well as members of industry. Collaboration contributes expertise, knowledge, analyses, data, samples and platforms.

Those collaborations contribute to scientific excellence within our department, extend the breadth of the expertise we have access to, demonstrate Canadian leadership internationally and help to inform the sound and critical science basis for decision-making.

Thank you, Mr. Chair.

● (1145)

The Chair: Thank you for that.

We'll go back to Mr. Perkins—almost like a rewind—for your six minutes or less.

Mr. Rick Perkins (South Shore—St. Margarets, CPC): Thank you, Mr. Chair.

I might start a little differently this time and ask witnesses if they could try to keep their answers as brief as possible for all sides, because we all have limited time.

I'd like to start off.... I don't know if it's Mr. Vigneault I should ask.

When the minister is presented with decisions to make with regard to the status of a stock or a quota—whether it should be up or down or, in the case of Atlantic mackerel, suspended or eliminated—is the minister always presented with science for every single option?

Dr. Bernard Vigneault: The short answer is yes. We provide, systematically, science advice to support the memo for decisions for the minister. The science advice is directly based on the peer review meetings that we conduct ahead of the process that leads to the decision.

Mr. Rick Perkins: Does the minister often ask questions around the details of that science, such as when it was conducted and what the trends are? Does the minister get into that kind of detail?

Dr. Bernard Vigneault: Yes. Generally speaking, we offer a range of information from the science sector to support its decision. That includes briefings as and when requested and a specific subsection of the briefing material that relates to the science advice.

Mr. Rick Perkins: We saw in the Discovery Islands court ruling last Friday that the minister chose an option that was not one of the four options put forward by the department.

How often does the minister choose an option that was not an option put forward by the department?

Dr. Bernard Vigneault: The minister has full authority over fisheries decisions. What is provided to her is the science that is based, in part, on the best advice that has been peer-reviewed and is available to answer. However, on the decision, the minister has full authority to make decisions.

Mr. Rick Perkins: Thank you. I may come back to some of those questions if I have time.

Ms. Leblanc, in your letter in November to the deputy minister, you stated that the senior officials in the department altered your recommendation before it went to the deputy minister.

How often have you or the scientists you represent experienced your work being altered by senior members of the department or the minister's office?

[*Translation*]

Ms. Judith Leblanc (Science Advisor, Department of Fisheries and Oceans): Thank you for the question.

I did sign the letter you are referring to. However, it wasn't in my capacity as science advisor for the department, but as a union steward and consultation team president for the Professional Institute of the Public Service of Canada.

Out of respect for the process initiated with DFO and because it is not part of the duties for which I've been called to appear before this committee, namely those of scientific advisor, I will maintain the confidentiality of the discussions taking place with the department. Both the institute and its representatives wish to do so to facilitate an appropriate resolution.

[*English*]

Mr. Rick Perkins: A big part of our study is to understand how often the department minister used the decision-making process and what the process is. It is incumbent before a parliamentary committee for officials to comment, when their letters have been made public, about how often alterations are made by senior officials. Perhaps we can come back to that.

Ms. Leblanc, or any of the other members, is it regularly presented as part of the science—

[*Translation*]

Mrs. Caroline Desbiens (Beauport—Côte-de-Beaupré—Île d'Orléans—Charlevoix, BQ): Point of order, Mr. Chair.

There is no interpretation.

[*English*]

The Chair: We'll suspend for a moment for that to get checked.

Is it okay now? Perfect. That was quick.

● (1150)

Mr. Rick Perkins: Mr. Chair, I'm not sure which witness can answer this question. Perhaps it's Mr. Vigneault.

When recommendations go to the minister on any species and the actions required, do they contain information about the experience of the fishing community and how it's experiencing a particular issue with regard to a species?

Dr. Bernard Vigneault: Thank you for the question.

Obviously, I can only reply in general terms, as I'm responsible for the science input to the process.

Along with the science input, all other inputs received through the consultation—not just through official fisheries management advisory meetings—are summarized and provided for decision-making.

Mr. Rick Perkins: Thank you.

In a particular case—

The Chair: Actually, Mr. Perkins, there are about 11 seconds left, which is hardly time for a question or any sort of answer.

Mr. Rick Perkins: Thank you to the witnesses.

The Chair: Mr. Vigneault, could you raise your mike a little bit? They're having trouble hearing, and they're getting some cracking sounds through the mike. It's hard on the interpreters' ears.

We'll now go to Mr. Cormier for six minutes or less.

[*Translation*]

Mr. Serge Cormier (Acadie—Bathurst, Lib.): Thank you, Mr. Chair.

Thank you to all the witnesses for being with us today.

Canadians need to trust the science, but it is also part of our role to question how fish stocks are assessed and how decisions are made.

In the past two weeks, for example, the department has made decisions that have impacted my region, such as the closure of the spring herring fishery, the closure of the mackerel fishery and significantly decreased shrimp quotas.

I'll start with herring. The herring fishery is closed. The industry had been expecting this for several years, as there has been a noted decline in the resource.

I know Mr. Hardy is from the Gulf region. So, my question is for him, and it's strictly about herring.

Mr. Hardy, how do you make the decision to close a given fishery? How do you collect the data? At what point do you decide to close a fishery?

Mr. Matthew Hardy (Regional Director, Science, Gulf Region, Department of Fisheries and Oceans): Thank you for the question.

We assess herring stocks using a variety of indicators, including data received from harvesters. We include abundance indices, derived from various scientific analyses, including sample-based acoustic surveys conducted at sea. All of this forms the scientific basis for our analysis of stock abundance and composition. In the case of herring, we have noted a decreased size at maturity. Various parameters indicate that stocks are not in good condition.

Mr. Serge Cormier: Is the purpose of sampling to reopen the fishery? The spring herring fishery is currently closed.

Are you sampling the resource? Are there stocks to speak of? Are you out on the water or working in your offices when doing the analyses? What are you currently doing in that respect?

Mr. Matthew Hardy: In terms of sampling, we carry out projects in cooperation with industry stakeholders. In addition, Fisheries and Oceans Canada vessels will soon be at sea. We use a combination of data to assess the stocks. The information we derive from industry partnerships is an important factor in many of our assessments.

Mr. Serge Cormier: As you know, we have spring herring along our coastline. I am being told there is currently no one on the water conducting scientific surveys. Hopefully that's not the case, but if it is, I hope you look into the matter and address it.

I'd now like to focus on shrimp. There's been a significant decline in shrimp stocks in recent years. What would you estimate the shrimp biomass in the Gulf is today, in tonnes?

I'm not asking about the total allowable catch, or TAC, but the total estimate of the resource.

● (1155)

Dr. Bernard Vigneault: Thank you for the question.

For shrimp, we use abundance indices. We haven't determined an absolute biomass value. These are indices that were established several years ago as we set a precautionary principle for the species.

Mr. Serge Cormier: How much biomass is there, approximately?

Do you have quantitative data, in tonnes?

Dr. Bernard Vigneault: We're working on a method to extrapolate a total amount of biomass from our indices, but I don't have the figures with me.

Mr. Serge Cormier: We'd appreciate you sending us those.

I recently saw some figures on redfish, which are abundant in the Gulf of St. Lawrence. You say that redfish have consumed between 168,000 and 221,000 tonnes of shrimp over the past two years.

Is that correct?

Dr. Bernard Vigneault: Unfortunately, I don't have the scientific data for that region of Quebec in front of me, but yes, redfish is a major shrimp predator, and its population has increased in recent years.

Mr. Serge Cormier: In 2021, redfish fed on 168,000 tonnes of shrimp, while the TAC for shrimp was at 18,000 tonnes. Again, it's the process that I'm questioning.

Math was not my favourite subject in school, but these two numbers are easy enough for the average person to understand. If redfish consume 168,000 tonnes of shrimp and the TAC is 18,000 tonnes for shrimp, how can we expect the resource to recover?

If redfish feed on that many shrimp and quotas are cut, how does that help the stocks?

I'm trying to understand how you evaluate these things.

Dr. Bernard Vigneault: Actually, when there is known pressure on the stocks, whether it be natural or fisheries-related, we factor that in and deliver cautious scientific advice.

You mentioned redfish predation, which is considerable. There are also factors related to warming and anoxic waters in the Gulf of St. Lawrence, which have significantly reduced the habitat for Gulf shrimp over the last few years. We do not expect these conditions to improve in the short term. Our scientific advice was based on all of these parameters.

Mr. Serge Cormier: As you can imagine, these figures are debatable, in fact, the industry also questions them.

[*English*]

The Chair: Thank you, Mr. Cormier. You've gone over time.

We'll now go to Madame Desbiens, for six minutes or less, please.

[*Translation*]

Mrs. Caroline Desbiens: Thank you, Mr. Chair.

I'd like to ask the scientists some questions.

First, how do you proceed when you send boats out to assess the resources?

Could you give me an idea of how that's done?

Dr. Bernard Vigneault: Thank you for the question.

We use a range of methods to do field surveys. We conduct surveys aboard ships and fishing vessels in the marine environment, scuba diving surveys, remote camera surveys, and river surveys for salmon, for example. That means there's a whole range of methods for collecting evidence and data, which are incorporated into the scientific advice that we produce to support decisions.

Mrs. Caroline Desbiens: I'd like to ask our witnesses a question along the same lines as what Mr. Cormier was talking about.

Is there regular communication between the Department of Fisheries and Oceans and the Department of the Environment on climate change, for example?

Is any predictability possible?

Do your scientists communicate with them?

Dr. Bernard Vigneault: We do indeed communicate with them.

We work in collaboration with several other departments, but first and foremost, we work with Environment and Climate Change Canada on all aspects of modelling ocean conditions and the impacts of climate change. We also contribute to their weather forecasts.

● (1200)

Mrs. Caroline Desbiens: Thank you.

The natural mortality rate for herring and mackerel is said to be 60%, which is almost entirely due to seal predation, and fishing only alters 5% to 6% of the stocks.

Do you also have an analysis of what you are going to do about pinnipeds?

What are the possible solutions to reduce predation of herring and mackerel?

Dr. Bernard Vigneault: Thank you for the question.

In all cases, when we produce scientific advice, we assess the causes that explain the trajectory of fish stocks, whether it is due to fishing or other causes. We often find that natural mortality, for all sorts of reasons, including predation, is a predominant factor compared to mortality caused by fishing.

In many cases, despite the increase in the population of some pinniped species to almost historic levels, we see that this is not a predominant factor in predicting the trajectory of fish stocks. There are also logistical constraints when considering management approaches for pinniped populations.

Mrs. Caroline Desbiens: There must be different ways of evaluating resources when it comes to lobster, cod, halibut and capelin, for example. I know no one here wants to hear about capelin anymore, but I'll mention it once more.

Do you have any teams able to assess that?

For example, do you communicate regularly with fishers who work in the field, or does that happen only occasionally?

In your study, how do you consider the information obtained from fishers?

Dr. Bernard Vigneault: Thank you for the question.

We have key collaborations and we consider the information provided by fishers in different ways. It can start from the very beginning. In some cases we do data collection in partnership with industry, which provides us with samples and participates in sampling. It can also go as far as interpretation and peer review of the data, where we invite industry experts to provide and validate information about fishing activities, observations and methods used.

Mrs. Caroline Desbiens: Do your own observations correlate with those made in the field, or do you often make observations that run counter to the information provided?

Dr. Bernard Vigneault: Sometimes there can be significant differences between observations in the field and peer-reviewed scientific opinion. This is not because the observations are not good. It is because correct interpretation of observations require systematic data and models; in short, a broader context.

Often cited cases include forage fish, which tend to aggregate. From the point of view of fishing activity, you can end up with very high concentrations of shrimp or forage fish in one place. However, when we do the assessment of indices or biomass at the scale of the study area, in some cases we can see a decrease in stocks.

Mrs. Caroline Desbiens: Thank you.

[*English*]

The Chair: Thank you, Madame Desbiens. That was exactly on time.

We'll now go to Ms. Barron, for six minutes or less, please.

Ms. Lisa Marie Barron (Nanaimo—Ladysmith, NDP): Thank you, Chair.

A big thank you to all of those who are here today, all the witnesses and all those from the science sector. It's great to have you all here and to learn more about the work you're doing, which is vital to our ability to ensure that sound decision-making is being done.

I have many questions, but there is one in particular I am hoping to find out a little more on from Dr. Miller-Saunders.

Dr. Miller-Saunders, I know, was at DFO prior to my time of being elected as a member of Parliament, and I appreciated reading the information that was presented at that time. The report was published in March, which was initially written, of course, in 2012, around the PRV found in B.C.'s open-net fish farms. I'm wondering if we could learn a little bit more, now that this report has been published, around the importance of this knowledge being presented in a timely manner, and maybe some more information around what happened in that delay.

● (1205)

Dr. Kristi Miller-Saunders (Senior Research Scientist, Department of Fisheries and Oceans): The study took place in 2012, and a report was prepared in that same year. The delay was due to a disagreement between me and the industry vets on the interpretation of the science. That delay has continued for 10 years, because apparently there needs to be an agreement on the interpretation of the science before the report can be put in, or before a manuscript can be prepared. That is perpetual over the last 10 years, despite the fact that the agreement is no longer active.

I'm sorry. What was your specific question?

Ms. Lisa Marie Barron: Expanding on that a bit, I'm trying to understand the process that was taken that resulted in a 10-year span of our not seeing the results of the science that was conducted by you and presented in 2012.

Dr. Kristi Miller-Saunders: The importance of that study was that it was the first study to document the presence of PRV in salmon in the Pacific northwest. It definitely could have informed a lot of the work moving forward. However, subsequent to that, there were other studies by other groups on that particular virus. My own program continued to work with different sets of samples to better understand the potential of that virus to cause disease and the prevalence of the virus in our natural wild populations.

Our work has shown that the virus is likely capable of causing disease in both chinook salmon and Atlantic salmon. The same kinds of disease processes that we see in other parts of the world have been seen in our salmon in aquaculture in British Columbia, and we do see some similar types of pathological changes in our wild chinook salmon populations.

Recently, we have a paper coming out that shows PRV is one of the agents most strongly associated with population-level impacts in chinook and coho salmon.

Ms. Lisa Marie Barron: Thank you very much, Dr. Miller-Saunders. That sounds like some really vital information for us to have, to understand and to be able to use in decisions around how to best move forward with fish farms, so I appreciate that information.

You mentioned the story around the process here. I wanted to share a bit about what Bob Chamberlin shared around the CSAS process. Specifically, he said that, basically, at every step of the way in the process, in the steering committee, in the terms of reference, in the discussion paper and in the peer review process, there was undue influence by industry as they could select who will participate in the peer review process.

I'm being confusing, but I'm wondering if you can share a bit around whether you agree or not that the process that we currently have in place can impede our ability to access timely scientific information, when we have a peer review process that is heavily weighted by industry and perhaps those who may have conflict in the future with the decisions that are being made.

Dr. Kristi Miller-Saunders: Yes, I think my comments on this have been made public previously. I have had concerns over the inclusion, or control, of these kinds of processes by industry.

However, there is now a new conflict of interest document that goes with the CSAS process, and I am hoping that this may resolve some of those issues into the future. That only came out in 2021.

● (1210)

The Chair: Thank you, Ms. Barron.

Before I go to Mr. Arnold, I want to check with our witnesses to make sure they're okay with staying a little longer, because we lost time earlier. I know I mentioned that we'd get our full time, but I didn't take into account your schedules at that time.

Is that still okay? I'm seeing nodding.

We'll now go to Mr. Arnold, for five minutes or less, please.

Mr. Mel Arnold (North Okanagan—Shuswap, CPC): Thank you, Mr. Chair.

Thank you to the witnesses for being here today on this study that I put forward for the committee. I want to start off with Ms. Leblanc, if I could.

Ms. Leblanc, you made several statements in your letter to the deputy minister, Timothy Sargent, last November. My recollection is that you gave examples of scientific advice that was meddled with after it had passed through the scientific peer review.

You've stated today that, here as a representative of DFO, you're not able to comment on that. I believe that you were invited as a witness as a member of the Professional Institute of the Public Service of Canada. If we were to invite you back as a representative of that organization, would you be able to comment and give answers regarding those comments you made?

[*Translation*]

Ms. Judith Leblanc: Thank you for the question.

In the current context, I was invited as a DFO employee and science advisor. We would have to consult the Professional Institute of the Public Service of Canada to determine who could testify in another context. Unfortunately, I cannot comment on this situation today.

[*English*]

Mr. Mel Arnold: Thank you.

I will switch my questions now to Dr. Miller-Saunders.

Dr. Miller-Saunders, over the years, how have your scientific work and reports been received by the international scientific community versus the Canadian science community versus DFO? Have there been differences in how your work and reports have been received in those different communities?

Dr. Kristi Miller-Saunders: Yes, there is a vast difference in how my research has been taken by the department compared with how it's been taken internationally. I'm repeatedly asked to collaborate on international studies that employ the kinds of technological approaches that I have employed and developed as a scientist in Canada while working for Fisheries and Oceans, and it's fairly rare that I've been asked to employ those technologies within my department.

I do collaborate extensively with universities, with the Pacific Salmon Foundation, and with affiliates in Norway and in other parts of Europe as well as the U.S. It has been a frustration, I have to say, in my scientific career to be much less valued in my own department than I am internationally.

Mr. Mel Arnold: Thank you for that.

A Federal Court decision last Friday set aside the government's Discovery Islands decision that was issued in December of 2020. That decision was issued without scientific reasons. In your opinion, was there or is there a scientific basis for the Discovery Islands decision announced in December 2020?

Dr. Kristi Miller-Saunders: I'm not privy to the information that the minister would have been provided with, so I really can't speak to the basis of how she made her decision.

Certainly, the strategic salmon health initiative, which I collaborated on with Dr. Brian Riddell of the Pacific Salmon Foundation, has identified specific evidence that would suggest that at least two pathogens, piscine orthoreovirus and tenacibaculum maritimum, may pose more than a minimal risk, but both of those agents were part of the CSAS process that did declare that there was a consensus decision with very high uncertainty of no more than a minimal risk. However, we have two papers coming out that should bring to light some new evidence that needs to be reconsidered when it comes to that risk assessment.

● (1215)

Mr. Mel Arnold: Thank you.

Again for you, Dr. Miller-Saunders, why do you think the Discovery Islands decision was announced without scientific reasons to support it?

Dr. Kristi Miller-Saunders: I can only guess that the science that was provided to the minister would be the seven CSAS documents, reports that were prepared that all declared no more than a minimal risk with a high degree of uncertainty. Based on those assessments, there would likely be no reason to suggest that there was a scientific basis.

Mr. Mel Arnold: Thank you.

The Chair: Thank you, Mr. Arnold. You're right on your time, or just a little over.

We'll now go to Mr. Hardie for five minutes or less.

Mr. Ken Hardie (Fleetwood—Port Kells, Lib.): Thank you, Mr. Chair.

Thank you to the witnesses for attending.

I want to talk about the terms of reference that would be in place when a study is done and when science is brought in. Who actually sets the terms of reference and the scope of the study?

Mr. Vigneault, perhaps we'll start with you.

Dr. Bernard Vigneault: Thank you very much for the question.

I assume the member is referring to the peer review advice, rather than the actual research project—

Mr. Ken Hardie: I'm not talking about the peer review.

I'm asking who decides what the scientists in your group will study, and who decides the scope and nature of the study? I have the Discovery Islands work in mind when I ask this question.

If your scientists are assigned to do something, who sets the parameters of the study?

Dr. Bernard Vigneault: Thank you for the clarification.

The parameters of the scientific study itself—the proposal—are led and decided on by the research scientists and the scientists of the department.

What is set, for the management of the science, are the priorities we would like to address through research or monitoring proposals. Some of the priorities come from specific proposals to the Government of Canada, such as the investment in science needed to support the fish stock provisions. With others, we have a bit more flexibility within the existing envelope, so we try to adjust the priorities in consultation with our client stakeholders and communicate that to the research community. They, in turn, then develop the proposal that will support the initiation of a research study.

Mr. Ken Hardie: You indicated earlier in a comment that you're looking for the science to support the decision. Isn't that getting it backwards? A decision needs to have some science behind it, but the way you framed it made it sound like, "Here's the decision. Now let's go and find the science to support the decision."

Clearly, that couldn't be the case, right?

Dr. Bernard Vigneault: The idea for how we prioritize our work is that the type of science endeavour we do is targeted at answering specific questions or management objectives. The easy example, with which we're all familiar, is fish stock assessment. We know that, on a regular basis, we have to reassess the health of the stock and provide scientific evidence for the management to articulate a proposition. That is what I mean.

It's not that we derive everything we do from a specific decision. Generally speaking, it's the sum of our monitoring and research endeavours that gets integrated into specific science advice or peer review. That's the basic end goal of most of our science activities.

Mr. Ken Hardie: I want to go back to the Discovery Islands work that was done.

I think this would be a question for Dr. Miller-Saunders.

They were presented with a high level of uncertainty. I'm asking you for an opinion here. Would this not put big, bright lights on the precautionary principle? That is, if there's a high degree of uncertainty, we should err on the side of protecting wild stocks. This doesn't appear to have happened here.

● (1220)

Dr. Kristi Miller-Saunders: Thank you for the question.

Uncertainty is a means to reflect incomplete scientific information, or studies and interpretations that may contradict one another. Where there's uncertainty, there's an expectation that policies will be more precautionary, especially in cases where there's a resource in crisis. Therefore, in cases where risk is determined to be minimal but there's a high degree of uncertainty, there should be a strong motivation to fill the knowledge gaps and re-evaluate the assessment of risk upon receipt of new information.

Until that time—until such time when uncertainty is declared to be low—managers need to proceed with caution in putting a consensus judgment into action.

In short, yes, there is a need to apply the precautionary principle where there's a high degree of uncertainty.

The Chair: Thank you, Mr. Hardie. Your time is up.

We'll now go to Madame Desbiens, for two and a half minutes, please.

[*Translation*]

Mrs. Caroline Desbiens: Thank you, Mr. Chair.

Ms. Miller-Saunders, does your research focus only on compiling and analyzing data, or is there also a team looking at ways to intervene to recover the resource, to reactivate and protect it, as well as to have predictability, given an impending demise of the resource? Are you working on both fronts?

[*English*]

Dr. Kristi Miller-Saunders: I do. A lot of my research focuses on work in wild organisms in their natural environment. However, we do bring certain questions into the lab, largely related to the impact of stress on fish and the impact of climate change. We can show, within a laboratory setting, what amount of a given stressor may impose stress and may result in mortality in a lab, and we can go out and measure those kinds of effects in fish in the field.

Most of my work is currently known in the area of pathogens, but a lot of my program also looks at environmental stress and climate change. We use a combination of laboratory study and field-based observations.

It would be brilliant to be able to do large-scale manipulations in the field, where one could manipulate a factor that one thinks may be causing mortality. This type of work has been done with sea lice in Europe, where they have prophylactically treated juvenile wild salmon.

[*Translation*]

Mrs. Caroline Desbiens: Pardon me for interrupting, Ms. Miller-Saunders.

Do you have all the material resources and budgets you need to conduct impactful studies that could have a significant effect and allow you to sound a timely alarm?

[*English*]

Dr. Kristi Miller-Saunders: Funding in the department is largely based on competitive proposals. There is the new Pacific salmon strategy initiative. I have not yet received any funding from that strategy, but I anticipate that hopefully I will.

I fund my program principally through money outside of the department, because I have better success in generating funds to do my research with outside granting agencies than I do inside the department. I have published 55 peer-reviewed publications in the last five years. I think my program and the prolific nature of the science we do is pretty well documented.

The Chair: Thank you for that.

We'll now go to Ms. Barron, for two and a half minutes, please.

Ms. Lisa Marie Barron: Thank you, Chair.

There's one question that I'm asking myself, and I know many others are as well.

Dr. Miller-Saunders, I'm wondering if you could provide your opinion on how things could or would have been different had the results of your scientific report from 2012 been made available in a more timely way. What are your thoughts on what might have been different as a result of that?

● (1225)

Dr. Kristi Miller-Saunders: Certainly the results of that study were made available within the department. Every piece of science that is done in my group is reported up through the chain if it could potentially impact policies or regulations. The department certainly knew, even back in 2012, of those findings.

Publicly, the findings of PRV were first put out by another group, based on the IP in the findings of my group. I wasn't able to publish the first discovery of PRV in Canada, nor was I able to carry out a lot of new research in that area, and certainly not with those particular samples.

It's a hard question. There has been a lot of research on that particular virus now. There have been laboratory challenge studies undertaken. There have been a lot of field studies. PRV has been tracked within the department for several years, largely in cultured fish, but my program has tracked it in wild fish.

There is a mounting weight of evidence on the impacts of PRV. It's really important to note that, everywhere else in the world, PRV is known to be a disease agent, and all strains of PRV have been shown to be capable of causing disease in salmon—in Pacific salmon and in Atlantic salmon. The research from my lab would back up that international viewpoint.

I don't know.... It's hard to turn back the clock and know how things would have been different if that had been made public at the time. However, I think that significant inroads have been made since that time.

The Chair: Thank you, Ms. Barron. Your time is up.

We'll now go to Mr. Zimmer for five minutes or less.

Mr. Bob Zimmer (Prince George—Peace River—Northern Rockies, CPC): Thank you, Mr. Chair.

I want to, first of all, thank my colleague Mr. Arnold for putting this study forward. It's a very important study. It's a study of science at the Department of Fisheries and Oceans.

Forgive my preamble, but it will take a few minutes.

I wanted to highlight another example that you may not have heard. It's a science-based proposal to have a brief opening to fish for hatchery chinook in B.C. Modest science supported the sport fishing advisory board proposals, but they were not approved due to undisclosed concerns. These previously undisclosed concerns were new concerns, and they were finally made known to the sport fishing advisory board post facto. This is based on closures last year and hoping for an opening this year.

Proposals have been put forward that address these new concerns in Howe Sound, Pacific fisheries management area 28 and southeast Vancouver Island PFMAs 17, 18, and 19. Again, these amended proposals, which were already ranked as low risk, provide even more protection for local and Fraser River stocks of concern. So far, during the current integrated harvest planning process, senior DFO Pacific region staff have informed the sport fishing advisory board that they will not reopen the existing 2021-22 salmon IFMP.

The sport fishing advisory board has met the department's new information requirement and has substantially adjusted its proposals based on this new information. However, despite the minister promising to listen to the science-based proposal, we have recently heard that the minister completely disregarded the science-based proposal.

This is a question for Ms. Leblanc and and Ms. Miller-Saunders. Does it surprise you that the minister for DFO disregarded sound science. Please answer yes or no.

[*Translation*]

Ms. Judith Leblanc: As part of my duties as a science advisor at Fisheries and Oceans Canada, I am required to not only evaluate research projects, but also submit advice to the department's management. Once the advice is submitted, the decisions rest with management, not with me in my role as science advisor. My 26 years of experience in the department have taught me to understand my area of influence. I can have some influence, but the decision is not mine.

[*English*]

Dr. Kristi Miller-Saunders: I would echo the comments of Dr. Leblanc that our role as scientists is to provide scientific information, not to make the policy. We have very little control...or a limited amount of input on what science moves forward to the minister, or even to upper managers in Ottawa, and how they utilize that science.

● (1230)

Mr. Bob Zimmer: Maybe I'll ask it one more time. Does it surprise you that the minister for the Department of Fisheries and Oceans disregards sound science? I would like a yes or no from each of you.

Dr. Kristi Miller-Saunders: Not in my experience.

[*Translation*]

Ms. Judith Leblanc: As a scientific advisor, my opinion is about the science. Other elements are part of the decision-making process, but...

[*English*]

Mr. Bob Zimmer: A simple yes or no was what I was looking for.

I will move on to question two. I read the recent CBC article of January 24, 2022, that quotes you, Ms. Leblanc. You said:

> A pattern of decisions and events has emerged in the department that is causing scientists in the Newfoundland and Labrador region to have grave concerns about the current status and future direction in the department's science advice, scientific independence, scientific excellence and integrity....

This is my second question. How do you believe DFO should integrate science-based advice into its decision-making? Give a quick answer, please.

[*Translation*]

Ms. Judith Leblanc: Thank you for the question.

As I stated earlier, this letter was written in a context other than that related to my position at the department. I am therefore unable to comment on it.

[*English*]

Mr. Bob Zimmer: I understand that. I'm asking a different question, though.

I'm asking how you believe DFO should integrate science-based advice into its decision-making. I quoted the article, but I'm asking you a specific question that doesn't necessarily relate to that previous paragraph.

How do you believe DFO should integrate science-based advice into its decision-making?

The Chair: I'm sorry. We have to move on, Mr. Zimmer. Your time has gone over.

We'll now go to Mr. Morrissey for five minutes or less, please.

Mr. Robert Morrissey (Egmont, Lib.): Thank you, Mr. Chair.

Dr. Vigneault, from reading your opening statement, you used words like “transparency” and “transparent”. Peer review is a vital component of the important challenge function that the DFO science sector provides, and your reviews have included domestic and international scientific experts from academia, indigenous communities, environmental non-governmental organizations and industry experts.

Dr. Vigneault, has DFO science ever gotten decisions wrong in the past based on the data that your own department has? I'm using that in relation, because various fisher organizations engage scientists. They do their own data. How do you interpret the scientific information that they're providing you versus what you're receiving from DFO's scientific division?

Dr. Bernard Vigneault: Thank you for the question.

Yes. By definition, the science process is an iterative process that makes an interpretation based on what's available at the time. We always make sure that we—

Mr. Robert Morrissey: Dr. Vigneault, is it always an interpretation?

Dr. Bernard Vigneault: When we do science advice, it's based on the data. Yes, through the peer review process, the data is integrated. That includes input from the industry. If there's new scientific information that's available, new data, it's revised on a regular basis, as need be, in terms of the biology of the species or if there's fundamentally new information.

A classic example of that is that for several stocks we were able to develop models that predict the trajectory of the stock. Those models use all of the information that's available from the past to make the best output. Sometimes that changes the forecast from year to year, based on the latest scientific information that's available. That's part of the science process. That's why the major stocks are reviewed on a regular basis through peer review.

Mr. Robert Morrissey: Okay.

Your advice is provided to the minister in making decisions on quota, and it's always interesting. When the decision is to increase the quota, everybody agrees with the science. When the recommendation is to cut the quota, that's when the different opinions come forward.

On the information that you receive from fishers, you used.... I'm quoting you, but not directly. You provide the fisher information, and it goes as part of your briefing to the minister. Do you put an opinion in that as well on the fishers' advice you received or the data they received?

● (1235)

Dr. Bernard Vigneault: Thank you for the question.

I was referring to the summary of the fisheries management-led advisory committee. First, the science sector is not involved. It's a neutral summary of the inputs that were received. When we provide science advice, the industry representatives provide expertise to the peer review, and that's part of the consensus-based advice that's produced after the peer review process.

Mr. Robert Morrissey: Maybe Mr. Hardy could answer this, or you, Dr. Vigneault, in the short time I have left.

Currently, we have two fisheries shut down in the gulf region, the mackerel fishery and the spring herring fishery. Are you confident that your information has no gaps in the data you collected prior to making that recommendation to the minister? Are you confident that the information you have accurately reflects the state of the fishery?

Mr. Matthew Hardy: Thank you for the question.

Yes, absolutely we are confident in the level of rigour that was applied to both of those stocks in the peer review process in determining the state of the stock and providing that information to the minister based on the best available information. In both those cases, industry information and contribution to those processes in terms of data and in terms of their views on the interpretation of information are incorporated into our assessment as part of the package that goes up to the minister.

Mr. Robert Morrissey: We won't have time now, but could you provide to the committee the exact percentage? How much of the gulf mackerel fishery and the spring herring fishery is used for commercial bait to support the lobster and crab fisheries in that area?

I know that you might not have it here, but if you could provide that to the committee, that would be great. Could you do that?

Mr. Matthew Hardy: Thank you for the question.

I don't have that information at my disposal—

Mr. Robert Morrissey: No, but the department has it, and you should be able to get that.

The Chair: Thank you, Mr. Morrissey. Hopefully, we'll get that provided in writing to the committee.

We'll now go to Mr. Small for five minutes or less, please.

Mr. Clifford Small (Coast of Bays—Central—Notre Dame, CPC): Thank you, Mr. Chair.

I just have so many questions here, I don't know which questions or who to ask them to, really. There's just so much—

The Chair: It's up to you, not me.

Some hon. members: Oh, oh!

Mr. Clifford Small: Yes.

Thank you to the witnesses for coming. I guess I'll start with Mr. Hardy, because I have quite a few friends who are fishers in the gulf region.

What's the status of the gulf shrimp stocks right now? Is it growing or declining?

Mr. Matthew Hardy: Thank you for the question.

Gulf shrimp have been declining over the last number of years, unfortunately.

Mr. Clifford Small: How have you determined that?

Mr. Matthew Hardy: There are a number of studies and surveys to assess stocks, including our DFO surveys looking at size class, age composition and everything else, and looking at commercial catches and whatnot. All this is integrated into an assessment model and into the various zones throughout the gulf to produce an assessment for each of the zones.

For the most part, we have seen declines, although we are still in the healthy zone in some of the zones. There are indications, as was mentioned previously, of predation and a downward trend.

Mr. Clifford Small: I've been talking to some industry folks, and they've told me that 4R shrimp stock is actually growing. Maybe that's one of the healthy ones you're referring to—I'm not sure—but is it possible that you're cutting back that shrimp quota to feed the redfish?

Mr. Matthew Hardy: Thank you for your question, first of all, but in terms of cutting back the quota, those are decisions that are made with respect to ensuring the sustainability of the fishery. Certainly, predation and a number of other factors—environmental change—are all factors that speak to how well the stock is doing. With respect to the fisheries decisions, they're aimed at ensuring the sustainability of the stock in the long term.

● (1240)

Mr. Clifford Small: Why did you go beyond the preliminary approach and cut it by 20% when the protocol would be a maximum of 15%?

Mr. Matthew Hardy: If I understand the member's question, Mr. Chair, that's with respect to the harvest decision rules that are in place in the shrimp fishery. I think that's a management decision, and from a science point of view, our focus is on putting together the best available information from an assessment point of view, ensuring the rules that have been developed are compliant with the ever-changing environmental conditions that are representative of what's going on in the environment.

Mr. Clifford Small: Okay.

Talking about assessments, do you know how many fish species in Canada have their biomass determined with the aid of acoustic surveys?

Mr. Matthew Hardy: Thank you for the question. Offhand, I do not know that information.

Mr. Clifford Small: The acoustic surveys for mackerel...?

Mr. Matthew Hardy: Offhand, I do not know the number of acoustic surveys that are conducted for mackerel.

Mr. Clifford Small: I have a little example from other northern Atlantic countries—Iceland and Norway—where they put their capelin on a moratorium in 2019-20 for some reason. I guess they couldn't find them acoustically, and then they went out and found them somewhere where they weren't expecting to see them at all. Now, they have this gigantic capelin fishery of almost 900,000 tonnes coming this year. I know you're well aware of that.

Do you have any ideas on how Iceland can have these wide variations and why their conservation measures seem to work and our conservation measures don't, given that we prosecute between 1% and 10% of most of our biomass? These guys are doing 30% to 40% of their biomass, but their oceans are much more productive than ours. Do you have anything to give to the committee, any thoughts of yours, about why this could be happening?

Mr. Matthew Hardy: Thank you for the question. That's a really broad question. It speaks to the changes we're seeing in the environment.

Generally speaking, across all our pelagic fish in Atlantic Canada and specifically in the gulf region and in the Gulf of St. Lawrence, we are seeing changes in environmental conditions happening quicker. That affects productivity, recruitment and the overall biomass.

Certainly it's to be expected that across the range for various pelagic species, from a north to south distribution and across the Atlantic, there can be localized differences. As to how that relates to specific management measures that are applied between Canada or Iceland, I'm not familiar enough that I could speculate on whether those are impacting the overall trends.

The Chair: Thank you, Mr. Small.

We'll now go to Mr. Kelloway to finish up this part of our session today.

You have five minutes or less.

Mr. Mike Kelloway (Cape Breton—Canso, Lib.): Thank you, Mr. Chair.

Hello to my colleagues and the witnesses. Thank you so much. The work you do has an impact on all of our communities, all of our rural communities and the people that work within them. I appreciate the efforts and the work that goes into it.

We talked a lot today about technical peer review processes. I think that's important. We've also talked to a certain degree about industry consultation. I have three questions, if we can get through them. My first question focuses on how to ensure that knowledge from industry stakeholders and indigenous fishers and fish harvesters are part of the advice that goes to the minister.

I'll start with Mr. Vigneault on that.

Dr. Bernard Vigneault: Thank you very much for the question.

Yes, we ensure that at different steps of the process. I mentioned earlier the collaboration with the industry stakeholders. There's also lots of ongoing collaboration with the indigenous organizations right from the start, in designing research activities or collaborating with us on the surveying and data gathering. We invite them to participate in the peer review process, so that they can provide their expertise to the discussion and inform the analysis of the data. That's all being input into the science-advised decision.

Above and beyond that, the minister has other considerations when making a decision. That includes the direct input from the indigenous communities, including the traditional knowledge as well as industry input, as we mentioned earlier.

● (1245)

Mr. Mike Kelloway: Okay, thanks very much.

I wonder if we could do a little deeper dive on the last part in terms of what it looks like.

Mr. Vigneault, I'm wondering if you can provide the committee with information on the formal arrangements that the department has taken to include the voices of our hard-working fish harvesters. Basically, can you give us a short example of what this looks like?

Dr. Bernard Vigneault: Thank you for the question, Mr. Member.

There are a range of collaborations including direct collaboration. The harvesters are actually providing support for the science endeavours with compensation by collecting the actual samples that are required for the assessment.

They are also involved in the science advice and in the other steps of the process where we're involved. We work more and more in a management process where a scenario is tested against conservation objectives. Industry is part of setting those objectives and setting the conditions around the modelling that we do, so they're part of that science.

Mr. Mike Kelloway: Mr. Vigneault, I think I probably have time for one more question.

In your introductory remarks, you spoke about open science. I'm wondering if you could provide the committee with some concrete examples—I'm big on concrete examples—of how our government can leverage open data and science to increase a couple of things, like transparency and building trust in government while also creating an environment of innovation that includes trust and collaboration with industry and first nations.

Dr. Bernard Vigneault: Thank you for the question.

Yes, I think it's fundamental to have the science available to all, so that they can look at it and contribute to it. From the peer review at CSAS, hundreds of advice are published yearly on top of several hundred scientific publications.

We have more than 450 datasets, including data that are used for a full range of decision-making—not just for fishery but implementation of the Impact Assessment Act and others. In many areas we're using leading-edge technology to expand the amount of data.

We're developing expertise in acoustic data, remote sensing data and genomic data. All that is made available to all who contribute to the science process.

Mr. Mike Kelloway: Thank you very much.

The Chair: Thank you, Mr. Kelloway.

I want to thank our witnesses for staying with us much longer than they had planned to address concerns of the committee members.

We will recess for a couple of minutes now to allow our witnesses to sign off, and then begin our next session and have the sound check for our next witness.

● (1245)

_____(Pause)_____

● (1250)

The Chair: We welcome our next witness, Dr. Mona Nemer, chief science adviser.

The floor is yours now for your opening statement of five minutes or less, please.

Dr. Mona Nemer (Chief Science Advisor, Office of the Chief Science Advisor): Thank you very much, Mr. Chair, and good afternoon to you and all the members of the committee.

I want to thank the committee for inviting me here today, and I welcome the committee's interest in science.

[*Translation*]

I am very pleased by your interest in science.

[*English*]

Science helps government decision-makers gather data, analyze evidence and assess different policy options and their impacts.

Let me begin by briefing you about my office, our mandate and some of the work we've done since my appointment in September 2017.

[*Translation*]

My mandate is to provide the government with advice and recommendations to advance three main objectives.

One, ensuring that government science is fully available to the public and that scientists...

[*English*]

The Chair: Excuse me, Dr. Nemer. We're not getting translation.

I'll get that checked. Just a moment, please.

The Clerk of the Committee (Ms. Tina Miller): Excuse me, Dr. Nemer.

[*Translation*]

Could you give us a short sentence in French, please?

Dr. Mona Nemer: Yes, of course.

My mandate is to provide the government with advice and recommendations.

[*English*]

The Chair: It sounds good now, and we're getting the translation.

You can start where you left off and continue.

Dr. Mona Nemer: Thank you.

[*Translation*]

My mandate is to provide the government with advice and recommendations to advance three main objectives.

One, ensuring that government science is fully available to the public and that federal scientists are able to speak freely about their work.

Two, improving the science advisory function within the federal government, so that scientific analyses are considered when the government makes decisions.

And three, recommending ways for the government to better support quality scientific research within the federal system.

[*English*]

Over the past few years I have had the opportunity to observe the interplay between science and policy-making. By science, I mean not just the physical and natural sciences, but the social and behavioural sciences as well. Here are some of my observations that relate to the work of this committee.

First, it's crucial for federal government scientists to provide high-quality research that directly informs legislative, regulatory or policy decision-making. For this reason, one of my office's first initiatives was the creation of a model scientific integrity policy, which has now been adopted by more than 20 federal departments and agencies, including DFO. The policy provides a framework, laying out everyone's role in the conduct of high-quality science that is free of undue influence. The best science advice is based on high-quality, transparent research.

Second, it's important for federal departments to have structured mechanisms for engaging and evaluating external research. That's because a great deal of relevant scientific expertise exists outside of the federal government.

Third, it's essential that the scientists and policy-makers understand each other's imperatives. Scientists need to understand what evidence is relevant to the policy objectives at hand, and policy-makers must understand both the benefits and limits of what scientific evidence can provide. This is why my office, in collaboration with Health Canada, has developed an online self-directed course on effective science policy conversations. This course will soon be offered through the Canada School of Public Service.

In my capacity as adviser to the Prime Minister and cabinet, I can be called upon to provide formal or informal science advice. For example, in 2018, the Minister of Fisheries and Oceans asked me to lead an independent expert panel to provide recommendations on the appropriate use of scientific evidence in aquaculture decision-making. My office brought together experts from Canada and around the world to advise on this issue.

Our publicly available report made a number of recommendations that are designed to improve science advice, scientific priority setting and science communications. One of them was the appointment of a departmental science adviser at DFO. That recommendation was implemented, and I want to acknowledge the work done by DFO science adviser, Dr. Paul Snelgrove. It's my understanding that work continues on several other recommendations from the expert panel's report.

● (1255)

[*Translation*]

The report on aquaculture science is one of many pieces of scientific advice that my office has provided to the government since the beginning of my mandate. Much of the advice my office has provided to government in recent years has been related to the pandemic. The pandemic revealed the public's interest in science and the scientific evidence used in decision making. Open science and transparency are essential not only for creating good policy, but also for maintaining and building trust in our public institutions.

[*English*]

It's my hope that we will use the lessons learned from the past two years to nurture a more scientifically literate society as well as stronger and more open institutions.

Thank you.

The Chair: Thank you for that.

We'll now go to Mr. Perkins, for six minutes or less, please.

Mr. Rick Perkins: Thank you, Dr. Nemer.

I was pleased to hear that you examine the quality of the science being provided to decision-makers, and the process. With all of your responsibilities for science in the government, I'm not sure how far you get into the mud—or your team does—in terms of science such as that conducted by DFO.

I want to use, if I could, a recent example, to understand how far your agency may go into the science. The minister recently closed the Atlantic mackerel fishery. The basis of the decision was obviously based on the science, combined with the catch numbers. Would it surprise you that the spawning science that DFO has done in the Gulf of St. Lawrence over the last decade has moved to a week earlier in the month of June, further away from the peak period of spawning on June 24?

All palegic fish, especially on spawning and migration, are water-dependent. Generally, earlier on when the science is being done, DFO is actually doing science on the spawning mass when the water is two degrees lower than when mackerel spawn. They're doing it at around 8°C rather than 10°C to 13°C degrees. As a result, they're finding a smaller and smaller biomass.

It's sort of a self-fulfilling prophecy. When you take out the results from the last decade of the sampling they're doing in the water that is colder than when mackerel normally spawn—when you eliminate that—you find that the spawning mass is actually 48% from its high in the 1980s. However, DFO is basing its decisions with that lower temperature included, which means the reporting that the biomass is only 5% of its peak in the 1980s informs the minister's decision that the stock is in trouble. They're going out too early, and they're not finding it at the same spot.

Would your department be looking into those kinds of things and analyzing whether or not the science quality is delivering what it should be?

● (1300)

Dr. Mona Nemer: This is a complex question. Perhaps I should clarify that, if I'm asked by the minister to provide direct advice on a question like this, my office certainly would. Generally speaking, we're not asked to provide this kind of evidence or oversee that kind of detail.

Perhaps to help, I can say that there are a number of evidences that are gathered as part of the science advice. One is, of course, observation. The other one is estimates. The third one is a pattern, and the fourth one is the causal hypothesis, if you will. All these need to factor in when we look at the completeness of the evidence and the quality of the science and the evidence that is presented.

Mr. Rick Perkins: Thank you for the answer.

I will switch to another area, marine protected areas. I'm sure you've been part of some of the international conferences where the government is promoting 25% by 2025 and 30% by 2030. I recently, in the last few months, attended a meeting, a consultation with the fishing industry in eastern Nova Scotia, about the proposed marine refuge off the Scotian shelf.

DFO science said that the reason they were proposing this was to protect a particular type of Gorgonian coral that exists on the edge of the shelf in that area where they have a very robust halibut fishery, and it would potentially mean the end of that halibut fishery.

When I asked the scientists if they had specific data on the level of coral development in that area over time, say, the last decade, and whether it had been going higher or lower in that area and, if it had been depleting and been affected negatively, whether they could draw a direct cause to fishing, climate change or others issues of storms, they referred me to the science, generally, that they had. I looked at it, and it had absolutely no science on that geographic area. It was a general bit of science with regard to Gorgonian coral and the effects of trawling, which isn't done in this area, and that type of thing.

I'm worried that DFO is proposing that we shut down large areas of our commercial fishery for this artificial goal in marine protected areas based on absolutely no science on the effects of fishing done in these specific areas.

Dr. Mona Nemer: I don't know if you want me to comment on this particular issue. I can't because I'm not really aware of the details of this.

I will say, however, that as part of our recommendations with respect to aquaculture, it was strongly felt at the time that it would be a benefit beyond aquaculture as well. The panel of experts recommended that DFO use an integrated ecosystem approach because things, of course, happen differently on our different coasts. Having an integrated approach allows the gathering of the relevant evidence around the entire system and the tracking, which goes back to what I referred to at the beginning in terms of a pattern, observations and fitting all this into a really testable hypothesis.

The Chair: Thank you, Mr. Perkins.

We'll now go to Mr. Hanley for six minutes or less, please.

Mr. Brendan Hanley (Yukon, Lib.): Thank you.

Thank you, Dr. Nemer, for appearing today.

There was a time when this office didn't exist. It's relatively new, having been established or at least re-established in 2017 by the Liberal government.

In general, since taking office, where have you seen gaps in science informing policy? How has your office attempted to correct this? Maybe this is a chance for you to elaborate on some of your initial comments.

● (1305)

Dr. Mona Nemer: Thank you for these questions.

The office has certainly been very busy in the past five years, and certainly in the past two years with the pandemic. However, from the get-go we saw our role as really looking at the horizontal issues, and making recommendations for the enhancement of all the science advice and the science itself. As part of this, I can't say that I did an audit of any particular department. I did visit many labs. I spoke with scientists. We looked into how research and science was being conducted.

That's why one of the first things we did was to introduce the science integrity policy. For those who are not familiar, this is the equivalent, really, of a policy on the responsible conduct of research. That's something that exists in academic institutions. It's actually an obligation of both the institutions and the researchers who receive federal funding to comply with the responsible conduct of our research.

The policy does delineate the role and the responsibility of both the employer and the employee in many ways. It suggests ways to disclose, for example, conflict of interest. It suggests ways by which people can talk about their research, about their science, without undue influence. This was very important.

The second thing we did as a follow-up, of course, to this was to propose a road map for open science. We've all seen during this pandemic the importance of open science, not only for enhancing the trust of the public but also for accelerating innovation, for accelerating the production in this case of diagnostics and preventive measures.

We proposed this road map, and we have worked with departments to achieve it so that the science that is conducted by federal scientists is easily accessible, whether it's in the form of published reports and manuscripts or that of the observational data part as well.

Mr. Brendan Hanley: Thank you very much. That's very helpful.

I know you've mentioned the pandemic a few times. We had many examples of trying to act on emerging science. One could not always wait for peer review, let alone duplicate studies.

Can you talk a little bit about how you see some learnings there from using emerging scientific findings that may not have had time for peer review but that may be important enough to change policy?

Dr. Mona Nemer: Yes, absolutely.

There are well-established standards, if you want, in terms of the quality of the science and the strength of the evidence. Of course, ideally, we would like to have the same findings being reproduced by others, being peer-reviewed, but under difficult circumstances and with lots of uncertainties, people can determine whether the available science, the available evidence, is of sufficient quality to be incorporated into decision-making. In the case that it's not, and there is a void in the evidence anyway, it's then up to the policy-makers, of course, to take the relevant course of action.

Mr. Brendan Hanley: To take a slightly different or more focused tack, I have heard and read reports on the lack or relative lack of climate change analysis into fish stock estimates by DFO. It sounds like there are some recent efforts and funding boosts in order to support better climate change analysis.

I wonder if you could comment on that particular area and the importance of modelling climate change effects into fish stock populations.

● (1310)

Dr. Mona Nemer: Climate change definitely changes many of the environments, including, for example, the temperature of the water, the salinity, the acidity, etc. This is why, as part of our recommendations for aquaculture at the time to DFO, we recommended that an integrated risk management framework be adopted where specific inputs and variables would be considered, and the consequences of climate change would certainly be one of them.

Mr. Brendan Hanley: Thank you very much.

The Chair: Thank you, Mr. Hardie.

We'll now go to Madame Desbiens for six minutes, please.

[*Translation*]

Mrs. Caroline Desbiens: Thank you, Mr. Chair.

I also thank the witness, whose remarks are always very interesting.

Ms. Nemer, to help us understand the internal processes, could you give us an example? What happens when the minister's office sends your team a request for information to support regulation?

Dr. Mona Nemer: When the minister asked my office to make recommendations on the use of science in the management of aquaculture, we had a discussion to get the focus right, which could be very broad. In this case, the focus was on the use of scientific advice and an assessment of the strategy for prioritizing science and science communications. My office then worked independently to identify experts in all relevant fields, both within and outside Canada, and then we began our work. Our office wrote a report and we sent it to the minister's office.

Mrs. Caroline Desbiens: Was this report subsequently made public?

Dr. Mona Nemer: Yes, it was made public.

Mrs. Caroline Desbiens: In your approach to finding a panel of experts, do you have any particular concern for people in the field?

For instance, we often talk about indigenous people or local stakeholders in fisheries. Are they systematically included in your research?

I had to insist on capelin, for example. We set up an emergency committee to make the department aware that it should give priority to our two fishers that were endangered, not their fish.

Is consultation with stakeholders in the field built into the process?

Dr. Mona Nemer: I can assure you that we are mindful of equity and diversity in all our committees. In addition, we ensure diversity among academics and people working in the field, particularly on the community side, including indigenous communities. We know that this is a very important aspect for practically every area. This is certainly the case in the area you are focused on, which is fishing, but it is also the case in the area of health. This is what we have been doing over the past few years.

Mrs. Caroline Desbiens: What worries you most in your work? Is it climate change, lack of financial and material resources to do your work, lack of collaboration or communication?

What is the most pressing issue for you at the moment?

Dr. Mona Nemer: All of these issues are extremely important. In terms of science and scientific advice, what concerns me is that our sectors, our institutions and our various departments work in isolation, when the problems are extremely complex. The relevant science is extremely complex and that is true in many respects.

It is becoming increasingly important to ensure that there are no gaps in our knowledge. Knowledge is not acquired overnight; it takes time. It should not be in no-man's land. We need to have an appropriate view of the system ahead of time so that we can develop the knowledge, research and processes required to tackle it.

● (1315)

Mrs. Caroline Desbiens: So there is an interest in synthesis in order to be more effective. We could talk about maximising the efficiency of various fields of study.

Isn't that so?

Dr. Mona Nemer: I wouldn't say it's about efficiency in the sense that it is often understood. It is not about industrial productivity, for example.

Mrs. Caroline Desbiens: We understand each other on this.

Dr. Mona Nemer: This is a real concern. We want our knowledge to be as complete as possible and not to have a gap between different kinds of knowledge.

Mrs. Caroline Desbiens: Thank you.

[*English*]

The Chair: We'll now go to Ms. Barron for six minutes or less, please.

Ms. Lisa Marie Barron: Thank you, Mr. Chair.

Thank you to Dr. Nemer for being here today.

I want to gain an understanding. We're seeing that DFO scientists are doing a lot of good work, but we're seeing incidences where this good work isn't necessarily translating into policy. I can think of a couple of examples. One example we spoke about today was the 3Ps cod fishery. Another one is regarding the recent decisions made around the interior Fraser steelhead. Many examples are coming up.

In your position, do you track any incidences like this that are happening within specific departments?

Dr. Mona Nemer: That's an important question.

If I may, I want to clarify my position. My position is not one that evaluates the science that is taking place and is being communicated to the government in each department. I'm not really an auditor or an ombudsperson. I have a more proactive function, if you will, which is to provide advice on how best to conduct the science and to provide science advice.

Ms. Lisa Marie Barron: Thank you for clarifying.

I guess I'm trying to understand. Do you have the ability to look at the different departments to see how they compare, to see if there's functionality in the set-up of the departments and if there are challenges or differences?

I'm just trying to understand if, the way things are done within DFO, there are challenges as a result of the structure itself. Do you have any input on that?

Dr. Mona Nemer: It's certainly my hope, Mr. Chair, to highlight best practices and bring together communities of practices from different departments. In many ways, I look at the science workforce as a very important community within the community of the public service, which would gain a lot from increased communication, which is why we're such champions of open science.

We have created this kind of community as part of the open science, as part of the tools that we are trying to develop right now to help scientists and policy in the various departments to evaluate the science and to put in place the best possible mechanism for science advice that's, of course, adapted to the realities.

Ms. Lisa Marie Barron: We had Dr. Vigneault here prior to you. In his speaking notes he had some information specifically around DFO having published more than 450 datasets to the Open Government portal and all DFO science reports being open and accessible.

Further to your comment around best practices, are you able to speak specifically to the data that's being made available through DFO, the timeliness and what that accessibility is like within that site?

● (1320)

Dr. Mona Nemer: Thank you for this important question, because it's one thing to make the data and the science open, but it's another to make it accessible. It's something else again to make it easily found and interoperable with other data that exists out there.

I will candidly say that this is an area in which we have more work to do because of the societal nature that I spoke about. It's sometimes difficult to find certain datasets and certain information that for sure exists out there. If you're from outside the government, you really need to have some patience to navigate your way until you find the data.

It is one of the projects my office is now doing with the various science-based departments, to create perhaps not one but a small number of repositories for the data and for the scientific reports that would be easily accessible to the public.

Ms. Lisa Marie Barron: Thank you.

I'm a new member of Parliament, so of course I'm taking this information based on what I read and watched. There was a FOPO study on wild Pacific salmon. From that study a recommendation was put forward to have the CSAS process more independent from DFO's work. I know this may or may not be unique to this department.

I'm wondering if you can highlight some thoughts around that and any best practices that you might want to share.

Dr. Mona Nemer: Again, thank you for this question.

As part of our analysis of the aquaculture science, we took a good look at the CSAS process at DFO, and I have to say that it is certainly very good that this process exists to synthesize the science. However, we made a number of recommendations to perhaps increase the efficiency and the transparency of the process itself, to examine how the topics and the people—the experts—are chosen, and to look at where the results of the CSAS process, whether it's a report or the synthesis of a symposium, are put and how quickly that is done.

I have to say that I was pleased to see that they've introduced a conflict of interest requirement, which is extremely important. It's not that you can't have people who come from industry or from other countries or other departments or even the same department, but any conflict of interest, perceived or real, needs to be disclosed, and that's a best practice.

The Chair: Thank you, Ms. Barron.

We'll now go to Mr. Arnold for five minutes or less, please.

Mr. Mel Arnold: Thank you, Mr. Chair.

Dr. Nemer, in 2018 you led an independent expert panel on aquaculture science in producing a report that made a number of recommendations. Have you had any follow up with DFO or the fisheries' ministers since 2018? Have those recommendations been fully implemented? Do you feel there's been enough time that those recommendations should have been implemented by now?

Dr. Mona Nemer: One key recommendation from this report was the creation of the position of an independent departmental science adviser. That was done. This role exists in other government departments as well now. This is something that I'd like to see more generalized. They become part of the network with the chief science adviser, so that we can actually keep track of what's happening in departments and we can help each other.

I have—

● (1325)

Mr. Mel Arnold: Thank you. That's one piece that's been done, but the other recommendations from that, specifically that quantitative methodologies and risk-science approaches be developed, have those recommendations been followed through?

Dr. Mona Nemer: I must say that I have not looked in detail, but I do believe a number of them are still outstanding.

Mr. Mel Arnold: Thank you.

That raises further questions. It appears you are asked to find sources of science to provide information and advice. Is part of your role to follow up to make sure that science was efficient or it answered the questions that were actually asked in the first place? Is that part of your role, or your office's role?

Dr. Mona Nemer: Again it's not part of my role and mandate to follow up on what's been implemented in the various departments. Of course, should the minister wish that my office looks into this, we would do so.

Mr. Mel Arnold: Thank you.

When you were first appointed chief science adviser in 2018, the federal government put out a news release and stated that you will provide impartial advice to the Prime Minister and the Minister of Science. Two years later, the Prime Minister issued a campaign promise to develop a plan to transition open-net pen salmon farms in B.C. to closed containment by 2025. Did you provide or are you aware whether science advice was provided, either formally or informally, as you indicated earlier today that's how you provide information?

Did you provide advice or was other scientific advice provided to the Prime Minister for his decision to make this commitment?

Dr. Mona Nemer: I believe the departments are also tasked with providing science advice to their ministers and to the Prime Minister, certainly, in areas that are of their jurisdiction. Of course, it's not my role to look into whether this advice has been provided or not.

Mr. Mel Arnold: Okay, thank you for that.

It came out in testimony earlier today that the CSAS process is a peer review process and that the participants participate as objective experts to complete the peer review of science under consideration.

Could you provide in writing—I think we'd need to do it in writing because of time constraints—what level of science expertise participants in the CSAS process actually possess? How many of them have a science background? How many of them have a management background that does not include science training? Would you be able to provide that to us?

Dr. Mona Nemer: I certainly would be able to provide this after this appearance, because I would need of course to look at the biographies of the members of the CSAS committee.

Mr. Mel Arnold: Thank you. That would be appreciated, because we have heard anecdotally that there may not be a true science background in some of the people who are involved in the process and that would certainly seem contradictory to the point of its being a peer review process.

I think my time is up. Thank you.

The Chair: Thank you, Mr. Arnold.

We'll now go to Mr. Hardie for five minutes or less, please, to close out.

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

Dr. Nemer, is it safe to say that your mandate is to see that good science is conducted and reported objectively and free of undue influence? Is that really the core of what you're there to do?

Dr. Mona Nemer: It is my mandate to make recommendations so that science quality is there, and enhanced and increased, and that proper science advice is provided.

● (1330)

Mr. Ken Hardie: Listening especially to Dr. Miller-Saunders talk about work she did that was basically suppressed for a period of time, it could have better informed the decisions regarding the Discovery Islands, but it required a consensus with industry. It would appear that the scientists at the DFO are captive both to the DFO and to industry. Does that trouble you?

Dr. Mona Nemer: Perhaps it would be of benefit for me to explain how science publications and manuscripts come about. Usually there are a number of the researchers who have done the work who are the authors and the co-authors who would write the results of their study. This is when it's submitted to a scientific journal. It goes out for peer review and it's either accepted as is or requires additional changes, information, etc. This is the usual process. In many institutions, universities, the private sector—

Mr. Ken Hardie: I'm sorry, but I'll have to ask you to keep your answer fairly short or to follow up maybe with something in writing on that. That would be most useful to us, because this is the important.

Are you empowered when you're giving advice to cabinet and to the Prime Minister to recommend changes to the regime being used for science at the DFO?

Dr. Mona Nemer: I am certainly empowered to provide recommendations, and I suppose that the government departments can then use the recommendations as they see fit.

Mr. Ken Hardie: You were complimentary of the creation of a position of science adviser, but again, going back to Dr. Miller-Saunders' experience, do we also need a science ombudsman?

Dr. Mona Nemer: The science integrity policy is meant to put in place the proper frameworks for the responsible conduct of research, including the ability of the scientists to publish their work without undue influence. In many ways, this has now existed for the past couple of years, but it did not before.

Mr. Ken Hardie: You were talking about science “adapted to the realities”. Is that really the job of scientists to adapt whatever they find to whatever reality there is, or is that an interpretation that's best left to the people further down the food chain, if you will, in the policy-making and decision process?

Dr. Mona Nemer: I don't believe I have used the words, “science adapted to reality”. If I did, I apologize for it because it's not that science adapts to reality. Perhaps if we talk about the models, they need to take into consideration the various elements that are relevant to the question or the subject at hand. It's certainly not the role of science to adapt to a reality. Science needs to examine the state of what's happening around us, including in an adaptive manner, taking into account changes in science and changes in the inputs into that particular science.

Mr. Ken Hardie: Do I have much time left, Mr. Chair?

The Chair: No, not really. I'm going to cut you off right here, Mr. Hardie.

I want to say a big thank you to you, Dr. Nemer, for appearing today and for your patience for sticking around when we were having technical difficulties during the first hour of our session, which delayed our getting to you. We appreciate your doing this and your appearance here today.

With that, I'll say meeting adjourned.