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Chair

Mr. Scott Simms

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• (0850)

[English]

The Chair (Mr. Scott Simms (Coast of Bays—Central—Notre Dame, Lib.)): Good morning, everyone.

Welcome back to our continuing study of what are marine protected areas, and all the work going toward that.

Before we get to our guests, to give a bit of background, we're just returning from the western leg of our trip. We went to the Northwest Territories, as well as British Columbia. In the fall, we will be going to the east coast, to Nova Scotia, Quebec, as well as New Brunswick.

I also want to thank Mr. Sopuck. We should give a little round of applause for Mr. Sopuck, who managed to sell the idea that going to the east coast is a tremendously worthy affair for this particular study.

Mr. Robert Sopuck (Dauphin—Swan River—Neepeawa, CPC): A mere \$72,000.

Some hon. members: Oh, oh!

The Chair: Thank you, sir. I didn't hear that applause, by the way.

Some hon. members: Hear, hear!

The Chair: That's better. Thank you very much.

Sorry about that. That was a little bit of inside baseball. To our guests, Mr. Sopuck was able to convince the powers that be that this study is worthy of an east coast mission.

Anyway, let's move on with the study. First, we're going to ask for presentations from our groups. We have one group and we also have two people who are presenting as individuals.

From the World Wildlife Fund of Canada, of course who are no strangers to us—they have been here several times—is Paul Crowley, vice-president, Arctic program. Mr. Crowley, it's good to see you again. You staged an event yesterday. It was very nice, and a very good speech as well. With him is his colleague, Sigrid Kuehnemund, lead specialist for the Oceans program.

Also appearing, as individuals, we have Sally Leys, professor, Department of Biological Sciences at the University of Alberta. I understand, Ms. Leys, you have a power point presentation for us as well, so we'll pull that up when we get to your presentation.

Finally, we have Rashid Sumaila, professor, Fisheries Economics Research Unit, The Institute for Oceans and Fisheries at the

University of British Columbia. Mr. Sumaila, it's nice to see you as well.

I'm not sure about your designations. Are you both professors and Ph.D. recipients as well? You both are. Dr. Sumaila, Dr. Leys, it's nice to see you. Thank you very much.

What we normally do is hear presentations of 10 minutes or less at the beginning, followed by a round of questioning.

We'll ask Dr. Sumaila to proceed for 10 minutes or less. Thank you.

Dr. Rashid Sumaila (Professor, Fisheries Economics Research Unit, Institute for the Oceans and Fisheries, University of British Columbia, As an Individual): Mr. Chair, I want to start by thanking you for giving me the opportunity to share some of our work and the work of colleagues around the world on marine protected areas. I specialize in the economics of the oceans and fisheries. We develop bioeconomics models. We do evaluations. We look at internal issues and policy issues like fishery subsidies and illegal fishing. In all of this our goal is to see how economics can integrate with other disciplines like biology to help us manage our fisheries into the future for the benefit of all Canadians, born and unborn.

I thought I should start with the economic benefits, because you probably have heard a lot about biological benefits. One of the key things we talk about in the economics literature is the insurance value of marine protected areas because, in general, we don't know everything about the ocean. There's uncertainty. There's risk. We make mistakes. The economics literature argues that it's good to put some of the oceans portfolio in a protected area in case of shocks and mistakes. Think of this as your retirement insurance. You don't want to put everything in one stock or in one class of assets; you want to spread them out to help you. Diversification is one of the reasons. The other one is resiliency. Papers are coming out. On June 5, we published a paper where we showed that protected areas could mitigate climate change effects if you have enough of them in your waters.

Many countries have done this because it enhances tourism values. Eighty per cent of Palau's waters is now protected and tourism values are just zooming because all the live creatures are there, whales and so on. That's another reason.

Finally, fisheries values is where I think we have a bit of an issue because there is a short-term cost to fisheries if you put in an MPA. Some efficient effort has to be made to move and change. This is where most of the resistance comes from. The literature shows that in the medium-term and long-term the benefits are quite high, higher than the short-term cost. The problem is how to deal with the short-term cost.

To give you one key piece of a report that came out from the Scottish government, recently they made a report about the potential socio-economic cost of MPAs before they implemented them. In March of this year they came out with a report looking at the consequences, and they found their fears of the cost of implementing MPAs did not come true. I can share the reference with you later.

How can Canada make progress in this area? I think we are around 1% or 1.5%, and the goal is 10% by 2020. Before I came here, I looked around the world to see which countries have achieved this and more. We have countries like the U.K., the U.S.A., Palau as I mentioned, and Chile have gone over 10%. How did they do this? I saw two types of strategies. One is to create large marine protected areas in remote parts of the ocean where there's little or no fishing. The other is there is a situation where you create small MPAs where fishing takes place. In the case of the first, that has turned out to be not difficult to do because you are not displacing people. You are not losing economic value. The U.S.A. is a good example of that. Both George Bush and Barack Obama did this. That is one strategy Canada could possibly use. In that case you can have a top-up, top-down approach. The government can find a place where they can say to do it, and there won't be much resistance.

In the second case, if you do small MPAs in fishing areas, you really need a bottom-up approach. You have to deal with the community, work with the fishers, find ways to soften their short-term costs so we can all get these high-level benefits later. We also see our leadership is really important. You have a leader who knows that the medium-term and long-term are better for the country and really pushes the nation to do it. Again Obama, the President of Palau, the Prime Minister of Chile, and the U.K. have done this, and they've been quite successful.

The last point, specifically about the Oceans Act and MPAs in Canada, is I see no kinds of stipulations or deadlines, and this usually makes them slip. If we want this to work, we'll need to put in some deadlines to help the system to move toward achieving the goals.

• (0855)

It's difficult, actually, to go from community to community, even though that would be the best thing to do. If we want to have movement, we may have to have some minimum standards that can be applied to places and coasts around the country, and very quickly.

My final comment is about that paper I mentioned, published through PNAS, which found that to make this successful, to get the benefits, your MPAs have to be large. I know the big question is about how large. Recently Callum Roberts of the U.K. did a study where he looked at the whole literature. The consensus in the literature is about 30%—we are now looking for 10%—in order to achieve the benefits fully. It has to be well managed, of course. Paper

parks don't work. It has to be there for many years, because fish don't grow in minutes, right? Most of them don't.

I urge you to keep this in mind as you help Canada create a policy for marine protected areas in the country.

Thank you very much.

The Chair: Thank you, Dr. Sumaila.

Dr. Leys, you have 10 minutes or less, please.

Dr. Sally Leys (Professor, Department of Biological Sciences, University of Alberta, As an Individual): Thank you. Good morning.

First of all, I believe it's World Oceans Day, so congratulations. I believe Canada started that, so it's an honour to be here on this day.

I don't actually work on marine protected areas. In fact, I've been studying the physiology of sponges in a marine protected area. I've read some of the statements from the previous witnesses to this hearing, so I believe perhaps the area I can comment on is the Hecate Strait and Queen Charlotte Sound marine protected area, in which I work. In particular, I can comment on the science that goes into determining boundaries.

To provide some background on that habitat and that marine protected area, the first slide shows an image from the website of Fisheries and Oceans that indicates the locations of the three reef complexes on the west coast of British Columbia.

I've been studying glass sponges since 1991 and sponge reefs since 2004. Glass sponges are deepwater marine animals that are very unusual. They're unusual in many ways, not the least of which is that they have a pure glass skeleton—completely opal. Unlike corals, they lack nerves, but they have an electrical signalling system that makes them sensitive. This is my particular interest. The sponges filter water—a lot of it. They do this by using whip-like cells that suck the water through themselves. I give you this just as a bit of background as to the kind of creatures that are forming the habitat we're talking about. This can be seen: if you put dye on the wall of a sponge, it draws the water through itself.

They filter a lot of water. We generally say that a sponge filters 1,000 times its body volume each day, but that can vary. As with any pump, it's costly. The cost of balancing how much energy it takes to filter the water and how much energy it gains from the water is what I'm interested in, and this is what we need to know in order to understand why reefs can form where they are.

A single sponge like this one in Hecate Strait, which has an opening the size of a dinner plate, can filter 300,000 litres of water a day. That is six times the size of this water tank, which is 50,000 litres. That's a single sponge, and there are multitudes of these across the reef. We've estimated that where sponges are dense, they can filter the entire water column—170 metres—each day.

Of course, water moves, and new water moves in at each tide to replenish what they have filtered. Sponges extract bacteria from the water and excrete wastes as ammonia and as particles. The ammonia is reused by phytoplankton, and the particles are eaten. We call this an ecosystem function.

Sponges are stationary animals, and the reefs have thousands and thousands of sponges. In this video, you can see that the multitude of animals that make up this reef live among the sponges. There are rockfish, crustaceans, and huge numbers of different invertebrates. I've been working in other reefs, but in Hecate Strait in particular, we see rockfish in every single crevice. These are juvenile rockfish, so it looks like it's a very important habitat for juveniles.

The Hecate Strait reefs were an obvious target or area of interest for a marine protected area. They're globally unique. These structures are not found anywhere else in the world. They work as a nursery, and they have this ecosystem function of filtering water, but it still took many, many years for them to become a protected area.

They were first found in 1989. In 2009, consultations began to make them an area of interest, and in 2010, they were formed as an area of interest. In 2012, I was asked to join a trip to verify the areas where the reefs occurred. They had discovered potential new areas by mapping, so we travelled to look at this.

● (0900)

In 2013, I was asked if I would provide some evidence or science on the effect of sediment on the sponges. This spurred a collaboration between me and Fisheries and Oceans colleagues funded by pockets of money that were made available for these kinds of collaborations. We leveraged more money by getting NSERC-funded ship time grants to get out to the reefs. In the last four years, we've had two trips. I returned from the last one three weeks ago.

In that work, we did experiments to look at the effect of sediment on the sponges and found that when you resuspend sediment over the sponges, it does, in fact, coerce them to stop filtering, to stop pumping. It takes them about an hour to recover after each sediment burst. We also checked the predicted boundaries of the reef and we can say that, while they're very accurate from the multibeam, they do overflow by about 10%.

This slide shows the northern reef complex. The blue area on this slide is the area outlined by the area of interest in 2010. In yellow is the core protection zone, and in grey is the adaptive management zone. The area of interest, you can see, is slightly larger than the core protection zone. The core protection zone and the adaptive management zone come from the *Canada Gazette* and they come from the 2015 publication and have not changed. Clearly what's happened is the core protection zone is slightly smaller than the area of interest.

We have found that in the adaptive management zone, you potentially could have a trawling fishery, but currently it's closed on the precautionary principle. Since we found that sediment does affect the sponges, their filtering, it would seem that's an accurate supposition. We found that they stopped filtering when levels reached 10 to 40 milligrams per litre. That's a quarter of what's suspected to be or known to be resuspended by trawl fisheries, and we know from very thorough studies that trawl fisheries do elevate sediments up to 800 metres behind the trawl.

The adaptive management zone shown here is about 600 to 1,200 metres. There is no scale on this figure here, but with the blue line that you see, the distance between the blue and yellow is about a kilometre. What we're looking at is an area around this reef that is probably fairly good as a buffer zone if no activity were to occur in it.

Another thing to know is that in this reef we have a vertical adaptive management zone. That means fisheries are allowed to trawl above the reef at 30 metres, so mid-water trawling. In 2013, the Canadian Science Advisory Secretariat reported that 13% of mid-water trawls had some benthic species in them that indicated the trawl might have touched the bottom. They weren't sure if those were transcription errors in the database, but 13% of 115 trawls is about 15 errors. The question would be that if the trawls did touch the bottom, considerable damage might occur.

I took the liberty of bringing with me a piece of the sponge that we collected at Hecate Strait, which I can show you to indicate how fragile these really are. I don't do this to say this is a very remarkable creature, it's just that a single trawl would definitely ruin this. We have done experiments to look at the recovery of the sponges, and they do not recover after five years. Again, the precautionary principle might be used.

I read some of the transcripts from the earlier witnesses and I understand that people felt there might not have been enough consultation and that the precautionary principle might not have been used perhaps fairly. I feel that if you look at the recording of the *Canada Gazette* it actually reports quite a considerable amount of consultation. What seems to be the case is that people may not be quite aware of all the science that has gone into the decision-making at each stage of making the boundaries. That seems to me to be quite a simple thing, because even I have trouble understanding exactly how these boundaries were formed.

● (0905)

It might even be simply a case of making the science and the decision-making available on a website and making the timelines in which those decisions were made readily available, as the minutes to these meetings are, so that people are very aware of those decisions.

Thank you.

The Chair: Thank you very much, Dr. Leys. I appreciate that.

I suspect that at the end of this, when we break for the next session, we would like to go down and have a look at your coral reefs up close, if that's okay.

Mr. Crowley, will you be presenting on behalf of the World Wildlife Fund of Canada, or will you be sharing your time?

Mr. Paul Crowley (Vice-President, Arctic Program, World Wildlife Fund-Canada): I will be presenting on behalf of WWF.

The Chair: Mr. Crowley, go ahead for 10 minutes or less, please.

Mr. Paul Crowley: Thank you.

To start off, I have a bit of information about World Wildlife Fund-Canada. We are Canada's largest international conservation organization. We have the active support of more than 150,000 Canadians, and we do work in unique and ecologically important areas so that nature, wildlife, and people thrive.

In the Arctic, WWF-Canada works to ensure the marine environment is healthy, allowing for sustainable use by local communities and providing a sustainable ecosystem for Arctic wildlife, including iconic species such as polar bears, Arctic whales, walrus, and seals.

Our conservation success in the Arctic relates to our collaboration with government, industry, academia, and Inuit communities, with an emphasis on understanding, respecting, and supporting Inuit cultural and ecological priorities.

WWF's long-time presence in the north, particularly in Nunavut and the Northwest Territories—we have offices in both Iqaluit and Inuvik—enables us to work closely with communities. We understand that without the support of the local communities, sustainable Arctic conservation is not possible. We also understand that conservation efforts will be undermined if they are surrounded by endemic poverty, so we work to ensure conservation efforts support community development in the north.

Today, on World Oceans Day, WWF-Canada is pleased to offer our perspective for this study being conducted by this committee. We bring a context from the 2016 “Living Planet Report”, a WWF report that tells us that our wildlife and their habitats are under increasing pressure from climate change and other human activities.

In the marine environment, many stocks—31%—that contribute to the global fish catch are now fully fished or overfished, with the main threats being over-exploitation and degradation of marine habitats. From maintaining sources of food to helping protect shorelines and biodiversity, MPAs can achieve so much.

In 2016 we contributed to the environment committee study on protected areas. Much of that testimony is echoed here today. We recommend that the ENVI committee's findings, particularly recommendations 20 to 32, be applied to this Oceans Act study. What makes this study so meaningful is its timing, with the opportunity to influence the legislative review of the Oceans Act. The current process to create MPAs is long and arduous and needs to be streamlined to reflect existing realities.

Protecting and conserving the marine environment and biodiversity is critical particularly in the north, due to the role of Arctic waters in moderating the global climate, protecting marine diversity, and providing food security, income, and cultural identity for indigenous peoples and communities. In addition to Canada's commitment to protect 5% of the marine and coastal areas by 2017 and 10% by 2020, WWF-Canada is pleased that Canada pledged to create a pan-Arctic marine protection area network in 2016 under the Canada-U.S. joint statement on climate, energy and

Arctic leadership, including at least 10% of Arctic waters, and committing to “substantially surpass these national goals in the coming years”.

The Arctic offers great potential for marine conservation. Working at the community level, I can tell you what I have heard, which is that Inuit ask for more conservation and more control over development to ensure they maintain opportunities for sustainable harvesting. This is very important for Canada to hear. It's an incredible opportunity. For instance, the communities around Lancaster Sound have been voicing this message for over 30 years, as they wait for the creation of a national marine conservation area that will protect the area from oil and gas exploration and exploitation.

• (0910)

For the Oceans Act to achieve the intended benefits of MPAs and to ensure all traditional uses and values are duly considered and respected, we offer three key recommendations: create a marine conservation economy focusing on community benefits; recognize indigenous protected areas; and implement minimum standards for MPAs.

WWF-Canada commends DFO's efforts to solicit community voices for protection as communities in the north know best what should be protected. Inuit are holders of traditional and local knowledge that must inform the identification of these sites. We hear first-hand that northern communities want protection, and their expectations go way beyond what the government so far has put on the table. In the Arctic, almost all communities are coastal and depend on the bounty of the ocean for their well-being. They have a strong desire—and I cannot emphasize this enough—to ensure that their food sources are protected now and well into the future.

For conservation to succeed long term in a region where poverty is endemic, it must also provide community benefits. The four Inuit land claims agreements across the north of Canada were settled over a span of 30 years. They vary considerably with regard to the Inuit rights recognized in the marine environment, including the requirement to negotiate impact and benefit agreements for the creation of MPAs. This presents a challenge to the timely creation of MPAs in the north but also an opportunity to secure community, economic, and financial benefits.

While land claims have very differing requirements for impact and benefit agreements, a moral case can certainly be made that impact and benefit agreements should be negotiated to the highest standard across all four regions. We recommend that the Government of Canada create an equitable and transparent financing formula as well as high minimum standards for community management through IBAs across all four Inuit land claim regions. These should be negotiated well in advance and with representative Inuit organizations.

Long-term benefits should be secured to ensure progressive investment in community infrastructure, enabling communities to manage and develop from marine conservation, such as opportunities for long-term local management through community-based monitoring and enforcement.

In considering the Oceans Act amendment to modernize how we protect our oceans, the Government of Canada should consider including a new approach to marine protection—indigenous protected areas. WWF applauds the work of the ministerial special representative for the Arctic, Mary Simon, in her holistic road map for a new shared leadership model that provides a strong way forward for conservation in the north with its emphasis on establishing indigenous protected areas.

We agree with her recommendation to apply this conservation designation to the Pikialasorsuaq. The Pikialasorsuaq is a polynya, an area where water remains open through the winter. It's the most productive polynya in the Arctic, and it is shared between Greenland and Canada. "Pikialasorsuaq" is actually a Greenlandic word that means "physical or mental upwelling" and it's used to describe this incredibly rich polynya.

Placing more emphasis on IPAs as a protection mechanism would allow indigenous peoples to create and manage their own protected areas and contribute to marine conservation targets. When a clear expression of desire to protect a marine area is demonstrated by an Inuit community, a rapid process to deploy that protection should ensue, driven by the community itself and assisted by the Government of Canada. Inuit conservation management allowing for continued harvesting and community uses would be paramount. Monitoring, research, and enforcement would provide Inuit employment.

• (0915)

This committee has already heard that just under 1% of Canada's marine territory is protected today. In terms of quality, not all sites offer the same level of protection that benefit habitat species and coastal communities. Only about 0.1% qualifies as highly protected, meaning that no fishing or other extractive industries such as mining or oil and gas development are allowed. Many of our protected areas are small and they are not actively managed. WWF-Canada recently conducted a survey that tells us almost nine in 10 Canadians consider that 1% is way too low and that eight in 10 Canadians support minimum standards for MPAs, opposing commercial activities such as oil and gas, and industrial fishing within the boundaries of MPAs.

While we do want to reach marine protection targets, we need to ensure that this protection is meaningful. The goal should be not only to get to 10% but to choose the right 10% through proper siting. MPA networks provide a foundation of sustainability by systematically selecting sites that operate synergistically at various spatial scales and with ranges of protections to reach ecological goals more effectively than individual sites can alone.

We should not lose sight of the need for networks in the race to get to 10% by 2020. WWF-Canada supports the development of an MPA network in the western Arctic bioregion, but also urges Canada to initiate the development of an MPA network in the eastern Arctic.

Minimum standards set in advance for all MPAs are key to effectiveness. Minimum standards can also help develop co-operative management and co-management frameworks with indigenous communities and within land claim regions. Setting standards before sites are selected can improve certainty for stakeholders, including indigenous communities, and can speed up the consultation process.

In the Lancaster Sound area, communities have been asking for protection for over 30 years. Why should it take 30 years? Our tools need to be adapted to adjust to that and speed up this process.

In particular, northern communities have expressed the desire that no seismic activity or oil and gas development take place within marine protected areas. Canadians certainly don't expect to see oil rigs in areas that are considered conservation areas.

The Laurentian Channel, for example—this is not in the Arctic—is a proposed MPA site that will allow oil and gas exploration development in over 80% of its borders if it were designated today. This oil and gas activity would pose a series of risks that are not compatible with the objectives of an MPA.

• (0920)

The Chair: Mr. Crowley, I'm going to have to ask you to summarize really quickly. We're way over time.

Mr. Paul Crowley: Thank you.

We have a unique opportunity, particularly in the north, where the desire—the need—for conservation is expressed by communities. The goal of 10% should only be a stepping stone on a much more ambitious target. Whether it is an ambitious target of 30%, or even more, certainly what communities are saying consistently across the north is that this is what they desire.

Thank you, Mr. Chair.

The Chair: Thank you, Mr. Crowley.

Folks, we want to welcome our guests here today.

[*Translation*]

Joining us is Sylvie Boucher, from the riding of Beauport—Côte-de-Beaupré—Île d'Orléans—Charlevoix.

[*English*]

We also have Julie Dzerowicz, who is from the long-named riding of Davenport, one of the most treasured neighbourhoods in Toronto. My own bias is included there, I admit.

We have Wayne Long, from Saint John—Rothesay, also.

Thanks for joining us, folks.

I do want to say happy World Oceans Day, as was pointed out earlier by our guests, and I would be deeply regretful if I did not say happy birthday to Mr. Ken McDonald. I saved the best for last, Ken.

That being said, let's move on to something else, the reason we are here, of course.

We will have a round of questioning. These will be seven minutes for the first round, and five minutes for the second round.

Mr. Hardie, you're starting first, for seven minutes, please.

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

Thanks, everybody, for being here. Some of us are operating with the benefit of having visited the north just last week in fact. Some very interesting observations came out of that.

Dr. Sumaila, looking at the economics of it all, but also looking at the other considerations that go beyond the dollars and cents, do we really have to stare down the notion that maybe commercial fishing is a sunset industry?

Dr. Rashid Sumaila: Commercial industrial fishing, yes, I actually see movement around the world toward that, and there is a lot of discussion these days about small-scale fisheries versus industrial large-scale fisheries.

This point you are making is coming up again and again. Why is this so? When you look at—

Mr. Ken Hardie: I would ask you to keep your answer fairly short, because I do have a number of questions and limited time.

Dr. Rashid Sumaila: Okay. From what I am seeing in the international arena, yes, there is a push toward more small-scale, community-based fisheries that serve the communities more.

Mr. Ken Hardie: That being the case, if we are headed in that direction, what we would rather not see is the kind of shock that we experienced, for instance, with the cod fishery in Newfoundland, where all of a sudden one day, boom, it was gone and the social and economic dislocation was quite considerable.

Dr. Leys, I want you to put your scientist's hat on in more of a general way, but certainly in the context of studying the ocean. What role do you see, and how could we possibly accommodate the traditional knowledge that comes from people who have passed down information on the ocean and what it does, and how they have worked it for thousands of years in some cases? Do you see a mechanism by which we can successfully merge the traditional knowledge with, obviously, the scientific data that is gathered through your methods?

• (0925)

Dr. Sally Leys: Where peoples have used the oceans for much longer than those in modern day, yes, absolutely, we're not taking the time, probably, to listen. Even some of the comments here by Paul Crowley are very wise, asking for a different version of management. One of the things we run into is how to manage these areas, too, so using that traditional knowledge to manage it would be a really smart way to go.

Mr. Ken Hardie: The Department of Fisheries and Oceans, into which we have injected a fair bit of additional resources, especially for science...but the complaint we hear fairly often is that they seem to be an enclosed biosphere. They don't necessarily easily accept science or traditional knowledge from the outside.

Is there a model you could see where we can actually take full advantage of the traditional knowledge as well as the science that we gather? Maybe this is something you could follow up on with us, if you have the time to do so.

Dr. Sally Leys: Absolutely. I think you're hearing well what people are saying. I don't think it's by any intention of the people

who are working in the fisheries. I think it's just day-to-day work and what they know of how to work together.

I envision a model where what we call stakeholders—perhaps aboriginal groups, perhaps scientists, perhaps economists—are actually on committees, working together to make the decisions and not just consulted. These are the people who are responsible for those decisions and are drafting the future.

Mr. Ken Hardie: Mr. Crowley, you focused a lot of your comments on the far north. Of course, we also have a west coast and an east coast that represent quite different dynamics, and certainly a lot of competition between indigenous or first nations fishing and commercial fishing. Up in the north, we got the sense that a consensus model exists and that they work it through until all can come to an agreement. Is that possible on the other two coasts?

Mr. Paul Crowley: I don't have the experience on the other two coasts to be able to answer that question fully.

The experience that I do have would indicate that in some areas it is, and that there is certainly the need for reconciliation to give a full role to indigenous values and rights, which is very important.

Mr. Ken Hardie: When we consider the traditional use that first nations and indigenous people have made of the ocean, we certainly had a very close look at that in Paulatuk and in Tuktoyaktuk. We have also heard, as a complaint from commercial fishermen, that the food, social, and cultural fisheries on the west coast involve very modern harvesting methods. Do you think that's really compatible, the use of modern harvesting methods and larger ships and trawling, with some of the other things that simply weren't available even a hundred years ago, certainly a thousand years ago? Do we need to step back and not just maintain that first nation and indigenous fishery, but maybe have a very close look at the methods they use, which may not be sustainable?

Mr. Paul Crowley: If methods are not sustainable, they should not be used regardless of who is doing it. I would say, however, that indigenous people should not be kept in a museum in terms of their practices. They have evolved, and they should be allowed to evolve. The approaches that Inuit now take to harvesting, for instance, are not the same ones you would have seen even 30 years ago, and I think that's appropriate. If those methods of harvesting are harmful to wildlife populations or the ecosystem, then they should be adjusted.

• (0930)

The Chair: Thank you, Mr. Hardie.

Mr. Sopuck, for seven minutes, please.

Mr. Robert Sopuck: Dr. Leys, I just have a comment. You talked about stakeholder groups. I notice you didn't mention anglers or communities in your stakeholder groups. You talked about indigenous people, economists, and academics. I think it's a major omission to not have anglers and communities listed as stakeholder groups.

Dr. Sumaila, you talked about displacing people a number of times in reference to the creation of MPAs. It sounds to me like your view is that "displacing" people is a prerequisite for the establishment of MPAs. Is that correct?

Dr. Rashid Sumaila: No, I was talking about displacing fishing efforts in the fishing area.

Mr. Robert Sopuck: Well, that's displacing people.

Dr. Rashid Sumaila: Not necessarily.

Mr. Robert Sopuck: Well, they fish in an area. I think that's parsing words a bit too much. Clearly, you're saying that the people who use that MPA have to be displaced.

Dr. Rashid Sumaila: In the short term, and I made it clear, you may need to cut effort, and cutting effort, everything being equal, will involve some people. But in the medium term and long term.... This is the thing—the economist doesn't just look at today. If you did that, you would never save for retirement, for example. That is the point which I think is important.

Mr. Robert Sopuck: Many fishermen have mortgages on their boats which they have to pay, and those mortgage payments are due every month. I think we need to have a lot more sympathy for the people who ply the ocean.

Mr. Crowley, your testimony was mainly aspirational, nothing that anybody could disagree with: we have to conserve fish, protect fish, and on and on. But the problem with MPA creation is the details.

From none of you did I hear a lot of details, apart from trawling and the sponges, which I thought was very well presented. Say you have an MPA in a shipping lane. The sponges at the bottom of the ocean are protected, but the shipping lane needs to be there for economic reasons. Would an MPA automatically exclude a shipping lane, given that the predilection of most environmental groups is to completely eliminate all human activity?

Mr. Crowley.

Mr. Paul Crowley: We certainly did not say we should eliminate all human activity. We should eliminate human activity that isn't compatible with the conservation objectives of the MPA.

Mr. Robert Sopuck: Good.

Mr. Paul Crowley: As a rule of thumb, we would say that seismic exploration for oil and gas is not compatible with an MPA, full stop. When it comes to other activities, we have to look at the conservation objectives.

Mr. Robert Sopuck: In British Columbia, for example, the recreational salmon fishery is worth about \$500 million a year. They harvest 20% of the catch of the commercial fishery. For 20% of the fish, they're five times the value. What has happened to salmon fishing on both coasts is that the ethic of catch and release has really taken off. The hooking mortality rate of released fish is about 5%, so a very gentle activity like catch-and-release angling should be allowed in most MPAs.

Mr. Crowley.

Mr. Paul Crowley: I would say you have to look to the conservation objective of that MPA. If it's not incompatible, then that's fine.

Mr. Robert Sopuck: Yes, but this is about the take. If you have an activity that is essentially no take....

Dr. Sumaila, what would your view on that be?

Dr. Rashid Sumaila: The key thing is whether the activity impacts the ecosystem or the fishery. Catch and release is better than

catch and take home, but we also know that there's mortality involved with that.

Mr. Robert Sopuck: The studies show it's between 0% and 5%. I checked it.

Dr. Rashid Sumaila: Yes. There is that, if you can live with that, and maybe that's okay, but it depends on the objective, as he said.

Mr. Robert Sopuck: On the issue of oil and gas, given that we have many oil and gas facilities off the east coast in particular, can you definitively quantify the impact those oil and gas rigs have had on fish populations? The cod are recovering. Seal numbers are exploding. Give me some numbers, not just opinions, on the effect of oil and gas facilities on fish stocks.

Ms. Kuehnemund, in your testimony, I think to the environment committee in May last year, you were very down on these oil and gas facilities, so I'd like from you some quantifiable evidence of the damage that these do to fish stocks.

• (0935)

Ms. Sigrid Kuehnemund (Lead Specialist, Oceans Program, World Wildlife Fund-Canada): I don't have any quantifiable numbers on the effects or impacts of oil and gas activities on the ecosystem, but there are very strong signs to show that there are effects from both seismic exploration and also exploitation in terms of production and drilling. There's certainly a risk of harm from oil spills to the marine environment and to the ecosystems. There's a benthic impact in terms of drilling, in terms of the physical displacement of the sea floor and disruption of that immediate environment. There are concerns in terms of seismic effects certainly for large marine mammals, regarding hearing loss and impairment, and catchability of fish for sure. They often move out of an area, so it often impacts the economics of fishing, not only the environment.

Mr. Robert Sopuck: I am quite surprised that you are unable to provide quantifiable evidence. What I heard just now were opinions, and we cannot base the terms and conditions of an MPA on opinions. You made the point that scientists say that there are impacts. Well, I would expect someone like yourself, who's worked on this for quite a while, would have those numbers.

I find in the testimony throughout this effort that we're working on now, the lack of numbers and quantification, and the lack of detail on what has been recommended for an MPA to be distressing, because the government's in a position to make some very serious decisions. These decisions have to be based on numbers.

Ms. Sigrid Kuehnemund: I appreciate that those decisions have to be based in sound science, and I would be happy to provide the committee with some objective, quantifiable evidence of the impacts of oil and gas activities on the ecosystem.

Mr. Robert Sopuck: Thank you.

Dr. Rashid Sumaila: [Inaudible—Editor]

The Chair: Dr. Sumaila, at some point you may want to work it into your answers, but I have to move on to the next questioner.

Mr. Donnelly, for seven minutes, please.

Mr. Fin Donnelly (Port Moody—Coquitlam, NDP): Thank you, Mr. Chair.

Thank you to all our witnesses for being here on World Oceans Day and talking to us about this important topic of how we protect our oceans and achieve the target of 10% by 2020.

Dr. Sumaila, I'll start with you. You talked about economic benefits. You referenced small-scale, community-based fisheries. We heard on Tuesday in the committee about competing world views, for instance, the current paradigm that we're in versus, I'll call it, the new modern, emerging, sustainable world view, or that other world view. We've been discussing the idea of balance of economics versus environment and what that balance might look like.

We've just heard from WWF in terms of the state of global fisheries, and I think you have statistics about how so many fisheries are in decline, overfished, or at capacity.

The question is, how do we manage to make this shift? You talked about the short-term impacts of MPAs. How do we move in that direction, given our current world view and recognizing that, yes, maybe we have to change, and maybe we are out of balance? How do we move in that direction when we have fishermen who have to pay their mortgages?

Dr. Rashid Sumaila: It's like any investment program. When you are in serious imbalance, like we are with the fisheries, we need to take drastic action. Drastic action means that society has to be willing to invest, one way or the other, in order to get us back in balance.

Our analysis is showing that if we are able to put in marine protected areas, to bring in sustainable management, we'll get lots of benefits in the future. We do have numbers for this, showing that the problem is how to move from here to there. This is where people like you come in. In the rebuilding, for example, see that there is enough money to compensate fishers to help them to adjust to the short-term costs while we move society to the higher-level benefit. We're talking about billions of dollars.

Fisheries are really important, if you think globally. The reasons some of us are working so hard for sustainability are many. Number one, we take about 120 billion tonnes of fish a year out of the ocean. If you convert that to the number of mature cows, just to make you realize, that's about 120 million mature cows. I'll call them fish cows, if you like, that we pull out of the ocean each year, which is more than all of the cows we kill on our farms. We employ about 260 million people. Many are young people who will have no jobs, so imagine the security problems that we'll all face.

We need to invest. When I say we, the public and private sectors need to invest, soften the blow to our fishermen. I have a lot of sympathy for fishermen, because they are important. They are people, just like the rest of us. They need to keep their lives going. But we need that investment to move this to a higher level for everybody.

● (0940)

Mr. Fin Donnelly: Thank you.

You referenced a number of studies in your presentation and your remarks. If you could provide this committee with those, or follow up with those, that would be extremely helpful.

Dr. Rashid Sumaila: Very good.

Also, regarding the last question about the numbers, we have actually calculated numbers for the impact of oil spills in the Gulf of Mexico. We did calculations for the northern gateway to see what would happen to the fishing revenues and so on, if we had oil spills. I can share those, too.

Mr. Fin Donnelly: Thank you. I appreciate that.

Dr. Leys, you gave us a fascinating and specific look at the glass sponge reefs in Hecate Strait.

One thing you caught my attention on, which I think the committee could pick up on, is consultation. I think you made a fairly straightforward observation that making information about every decision available on the website, essentially making those decisions public, would be extremely helpful. That is often overlooked. I think it's something we need to look at because when we were up north and on the west coast, we heard that the consultation process for determining protection in whatever areas of the ocean is key. Trying to achieve that consensus is extremely difficult, so I think your point about decision-making and making that public is really important.

I don't know if you want to add anything really quickly.

Dr. Sally Leys: Really quickly, the credit should go.... It should not be forgotten that Fisheries and Oceans has a very good system. They have the CSAS, Canadian Science Advisory Secretariat, and they have the SAR, a science advisory report, that comes out of that. That is made available. There's a lot that goes on in there, after that, that really could come up. Even as a teacher, if you try to teach this and look for the information online.... Colleagues have that information. They say, "Look at the website." You look, but there's nothing there. They say, "Oh, it's another document. We can make that available." It is there, but I think additional effort is needed to make that communication more readily accessible.

Mr. Fin Donnelly: Absolutely.

In my remaining one minute, Mr. Crowley, could you repeat your second recommendation? You gave us three. The third one is minimum standards. I want to ask about minimum standards, but perhaps you could remind me what your second recommendation was.

Mr. Paul Crowley: It was to recognize and develop the concept of indigenous protected areas.

Mr. Fin Donnelly: Thank you.

On minimum standards, do you think the recommendations you're talking about for the Arctic should apply or could apply to the Pacific and the Atlantic?

Mr. Paul Crowley: Certainly with regard to oil and gas, the case is quite clear. With regard to other impacts, you have to look to the objective you're trying to achieve with that marine protected area. Certain things will not be compatible. Certainly, bottom trawling that impacts on the benthic environment is unlikely to be compatible in most MPAs, but you do have to look at each one to see what you're trying to achieve.

An example was given earlier of a shipping channel. If that shipping channel can be managed properly within an MPA and not impact on the objective of that MPA that it's trying to achieve, then it should be allowed to continue. If it cannot, then it's a different story.

• (0945)

The Chair: Thank you, Mr. Donnelly. Thank you, Mr. Crowley, as well.

We'll go to Mr. Finnigan for seven minutes, please.

Mr. Pat Finnigan (Miramichi—Grand Lake, Lib.): Thank you, Mr. Chair, and thank you to the guests for being here today.

I'm on the other coast, but I guess protecting our marine areas is important around the world. This is very interesting.

Dr. Sumaila, how important do you think the new technology we have today is to gather resources? We've heard from different witnesses that it's very hard to monitor expansive MPAs in the ocean. How do you monitor them? How do you make sure they're not exploited, or how do you know the monitoring is working?

Where do you think technology is today? Do you think we are doing much better today with it and can gather hard data on the numbers we're trying to get?

Dr. Rashid Sumaila: About three or four years ago, I gave a talk in California. There were tech people there. When I finished my talk, I was asked a question by a young guy who said, "Rashid, what can we do in Silicon Valley to help you guys sustain our futures?" I told him, "Create an app that will count all the fish in the ocean and we will go far."

Things are really moving in that direction. There is a group called Global Fish Watch, and UBC is working with them now. They use satellite imagery to count the boats on the water, and from there we estimate the quantity of fish they must be taking, and so on. There's a lot going on in that field, and I think it is a big, hopeful thing.

There will be a situation very soon whereby we can sit in this room and actually watch most of Canada's waters and see who is there, who is active, and what they are doing. I'm very hopeful.

Mr. Pat Finnigan: Thank you.

Dr. Leys, I don't know a whole lot about the sponge reefs, but from what I understand, they're quite deep in the water. Would you say that the activities on those reefs, now that we have bigger ships and can go farther, would hardly have been disturbed 100 to 150 years ago, and that the activities right now are probably what is harming them, if at all? How can we measure the damage that has been done? As you showed, those are very fragile pieces of nature. Do we know whether some have disappeared already?

Dr. Sally Leys: Yes, we do. There are reports on all patrol activities over the years that have been documented. The region I

showed you is the northern complex. In 2012 I went to a suite of different spots in the central complex, and I didn't go to the southern complex—it's considerably damaged. The reason I work in the northern complex is that I know I can get really good information for the physiology, the information that's required.

The damage is devastating. I took colleagues a couple of weeks ago on the last couple of dives we did to see some of the places in the northern part of the northern complex where there are broken sponges.

The next questions are what the recovery potential is, what really happens as the next step, and how we can monitor this. We should be protecting these areas even if there is damage.

Mr. Pat Finnigan: Some would say, so that happened, what effect does it have on the rest of the ecosystem? We've heard incredible testimony as to how much water they filter, the sediment, and all of that. Did that cause any effects on the rest of the ecosystem? What do we know about that?

Dr. Sally Leys: We have mapping data now and crazy numbers of counts of fish. What we can see is that where the sponges are intact—I can send you the data my students have been working up—you have 20 fish per five square metres, little juveniles in among... everywhere. As soon as you get to where there are not sponges, you don't see that.

The halibut move in and out of that area. It's amazing, these halibut that swoop around. It's remarkable to see. You see more at some seasons, because they move through. Where there aren't these structures, these large elevations of sponges, you have fewer fish. Presumably, the correlation is that this is an area in which small fish are hanging out, away from the current. There's a lot of current in that area, so it's a sort of protection for them. It generally is like a bush: it has all the birds in it.

• (0950)

Mr. Pat Finnigan: Yes.

Mr. Crowley, at WWF do you do research on your own?

Mr. Paul Crowley: We support research, and we certainly have supported research with the Department of Fisheries and Oceans for years.

Mr. Pat Finnigan: How do you decide which research is the right one?

Mr. Paul Crowley: In our case, with the Arctic program, for instance, we have the Arctic species conservation fund. That fund is directed to conservation objectives. For instance, if it is to better understand where narwhals go and how they react to ships, and one of our conservation objectives is related to that, that's the research we will support. It depends on which applications come in.

Mr. Pat Finnigan: We had testimony from first nations communities the other day. They were talking about the economic side of this as well. They haven't said no—from what I heard, anyway—to exploiting the resource on the land and in the water if it means sustainable development.

If they were to say that perhaps oil and gas could be done or perhaps mining could be done, how would you react to that?

Mr. Paul Crowley: For us, with marine protected areas, it's clear. For either seismic activity or oil and gas exploitation, it's not compatible.

We accept that in the north there is a lot of poverty and there needs to be community and economic development. That's why we're beginning work to help communities with inshore fisheries development, for instance, on a small scale. What I've been hearing about in the north, though, through numerous consultations, is the balance they see at the community level to protect it first and then see what may be compatible, as opposed to letting everything in until there's too much, and then it's too late. They're very clear about that.

The Chair: Thank you, Mr. Crowley.

Thank you, Mr. Finnigan.

Mr. Arnold, you have five minutes, please.

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

It's great to be here on World Oceans Day.

Mr. Sumaila, you mentioned that certain countries have reached their 10% goal of MPAs. I believe you mentioned that Palau has reached that goal. What was the main reason for the MPA, and has it affected their local food source?

Dr. Rashid Sumaila: Actually, it hasn't impacted their local food source, because local, small-scale community fisheries still go on. It's the big industrial fishing they took out. They were simply catching the fish, shipping it out, and selling it to Japan and so on. That was that. They lost some revenue, but that is quickly being made up by the tourism value. It's amazing. People go there just to see the creatures. It's booming. I've been there. I've been on the boats and talked with business people who are starting in tourism activities and catching up.

Mr. Mel Arnold: How are the people who used to have that for a food source now being fed?

Dr. Rashid Sumaila: You know, it's very funny, because the main industrial fishing was for tuna, and they weren't eating much of that at all.

Mr. Mel Arnold: No, I don't mean the local food source. You mentioned the food that was being shipped to Japan. How are those people being fed?

Dr. Rashid Sumaila: Oh, in Japan, yes, that's another question. They will probably go somewhere else or eat something else. These days we have a lot of sushi fixes and sushi stuff coming up, because tuna is going, and with California rolls and so on—I've been to Tokyo, and it's happening in Japan too—I've seen some of the evolution coming in.

Mr. Mel Arnold: That food fish pressure has simply been shifted somewhere else.

Dr. Rashid Sumaila: Somewhere else, and if it is less, it will go to places where the intensity for development can be high. If you go to beef instead of fish, then we're worse off, but if you move to vegetarian food or the California rolls of the world, then actually it's an improvement, yes.

• (0955)

Mr. Mel Arnold: Thank you.

Dr. Leys, you mentioned that you were asked to take part in an expedition to explore new areas of interest around the sponge reefs that had been brought to attention. How were those additional areas first discovered before you went to map them out?

Dr. Sally Leys: The reefs, fortunately, are opaque, or reflect sonar. Kim Conway at Natural Resources Canada originally discovered them by multibeam mapping, so it was for resource purposes that the whole coast was mapped. The technology with mapping changes the resolution of the sonar. The first maps he presented to Fisheries and Oceans showed so many reefs, and they kept becoming updated. The managers, I believe, saw the new areas and wondered if they were reefs. That's how they were identified. We had spots on a map that we had to go and check with a remote-operated vehicle.

Mr. Mel Arnold: Thank you.

Ms. Kuehnemund, in your brief to the environment committee, you said, “we need to ensure that protection is meaningful.” Can you define “meaningful”?

Ms. Sigrid Kuehnemund: Absolutely. When we talk about meaningful protection, we mean having minimum standards for MPAs set in advance, and—

Mr. Mel Arnold: Minimum standards set by whom?

Ms. Sigrid Kuehnemund: Well, I believe there's a great opportunity, with the amendments to the Oceans Act, for the Government of Canada to set and legislate standards through the Oceans Act in creating marine protected area regulations.

Mr. Mel Arnold: But not necessarily meeting the international standards that seem to be set: no-take areas, large areas, and so on.

Ms. Sigrid Kuehnemund: The IUCN has standards for marine protected areas and defines six categories of marine protected areas. Those categories include areas that can be used for multiple use, so it's not a given that all MPAs have to restrict all human activity.

Mr. Mel Arnold: Okay. Thank you.

Mr. Crowley, you were mentioning that harvest techniques and things have changed. I believe you said that maybe the lives of our indigenous peoples need to change or their way of life needs to change. Please correct me if I'm wrong. We were just in the north, and the MPAs that were created around Paulatuk and Tuktoyaktuk were created and requested by the local indigenous groups in an effort to maintain their beluga whale harvest. I'd like to hear your comments on that traditional harvest, that way of life which they say they simply can't live without.

Mr. Paul Crowley: We are fully supportive of indigenous harvesting, as long as it's done in a way that is sustainable. The comments earlier were about what techniques could be used. I don't think we should expect the Inuit or indigenous people to use today the techniques that they used in the 1800s. Those techniques should evolve, and rifles should be used if they are the appropriate tool for that harvest. We are fully supportive of sustainable harvests by indigenous people.

The Chair: Thank you, Mr. Crowley.

Thank you, Mr. Arnold.

Birthday boy, you have five minutes, please—or, I should say, Mr. McDonald. My apologies.

Mr. Ken McDonald (Avalon, Lib.): Thank you, Mr. Chair.

Thank you to our witnesses.

Dr. Sumaila, you talked about the economics of the ocean. For me, being from Newfoundland, the furthest easterly point, I lived through the cod moratorium. I see it every day, whether it's a fisheries issue, oil development, or whatnot. Everything is taking place almost simultaneously where I live, too. It's important in all aspects: the economy, local communities....

In looking at the economics of the ocean, do you take into account that the fishery has a certain value? The oil development that's taking place is basically in the ocean because the rigs are there. We're about to start a fourth one. It's on its way out now to start drilling to its oil find and to start producing very soon. Then there are the economics of the communities that are affected. Has it ever been all tied together to see the true value of each to the communities and to the country or province as a whole?

• (1000)

Dr. Rashid Sumaila: Yes, there is an effort to study the total economic value of all the ecosystem services you get from a system. That will include the values you have enumerated. There's a lot of work currently ongoing. Before, we used to do fisheries alone and we'd do oil and gas alone. Now there is this push to do the whole thing.

My own partnership group has something called the OceanCanada Partnership, supported by SSHRC. It's a cross-country partnership of 20 private, academic, and government partners that are actually trying to do the same thing for the three ocean regions of Canada, trying to look at all the activities and calculate the economic value to the communities. That is ongoing from our side, but I know the other side is doing that.

It's very important to look at all of this. For example, we did a study that looked at fish value versus carbon sequestration value of the high seas. I'm going out of Canadian waters now. This is work I did together with Alex Rogers of Oxford. He did the science and I did the economics. What we found was that the carbon sequestration value is about 10 times the fish value of the high seas, for example. Those kinds of analyses are needed to help policy-makers like yourselves make sound economic decisions.

Mr. Ken McDonald: Looking at the fisheries-related economics, have you tried to draw the circle to the economics of aquaculture, whether it be open pens in salt water or land-based? If you have a

fishery that's very important or the product is very important to feed people around the world because of the protein and everything else and if that fishery is dying or not able to take place anymore because of marine protected areas or for whatever reason, have you looked at the economic benefit of having an aquaculture industry in that particular species?

I know we do a lot of salmon aquaculture right now, but maybe halibut or things like that could replace the downsizing that takes place in many fisheries.

Dr. Rashid Sumaila: This is another interesting question.

There is a project that Simon Fraser University is leading and UBC is a partner, where we are looking at coho salmon, in particular, for exactly what you said. The cultures of coho have gone down to about 5% of what they used to be, only a few decades ago, and they have become endangered in some parts of the B.C. waters. This project is using genome technology to try to see how we can enhance the wild population, but also how we can help the local, sustainable, containment aquaculture of coho to help supplement the supply.

So, yes, there is. My group is there to do the economics, while they do the genome science, and we combine the two to do exactly what you're saying for coho, in particular. This can be expanded to other species, of course.

Mr. Ken McDonald: Thank you.

The Chair: Thank you, Mr. McDonald.

Before we move on, I want to say greetings to Mr. Bezan from the riding of Selkirk—Interlake—Eastman, which is also the home of one of Canada's great exports, Crown Royal rye whisky.

Mr. Sopuck, go ahead for five minutes, please.

Mr. Robert Sopuck: Thank you very much.

In the interim, I did do the math on the environmental performance of oil and gas installations. This is from the Canada-Nova Scotia Offshore Petroleum Board. In 2015-16, for hydraulic oil, there were three spills of less than one litre. There was one spill of 11 to 150 litres and no spills greater than 150 litres. For diesel fuel, there was one spill of less than one litre. For condensate, there was one spill of less than one litre.

That's it. That's the total amount of petroleum product released—so-called spilled—from these installations off Nova Scotia. That is miniscule. That's why I asked for quantification. These generalized statements about “this being the effect of this” and “scientists say” are not helpful and not useful. It does not help us with the program we're trying to carry out here.

Again, I would urge all witnesses to refrain from making generalized statements and would ask that they quantify everything as much as they can.

I have a “gee-whizz” statistic. Off the east coast, there were 64 billion litres of oil shipped in 2006 and there were 430,000 litres spilled. That works out to 0.00067% of 1%. That's the number. So, generalized statements are not helpful. The design of an MPA has to be specific. The rules and regulations and the terms and conditions are extremely important because those terms and conditions will affect people's livelihoods. With the collapse of oil prices in Canada, the economies of eastern Canada and indeed western Canada are under serious threat. Much of what the environmental community says is that we should shut this stuff down, as if it's no big deal. It is a very big deal. I would urge you to quantify things as much as you can.

One of the witnesses earlier talked about highly migratory species and that MPAs are not really helpful for migratory species. Obviously, salmon is one of the most prominent examples. Salmon move through a coastal area. It's not necessarily a spawning area. It's a feeding area they use from time to time, and then they go someplace else.

How would an MPA help that salmon population, if it was designed the way that I think people want an MPA designed? I'll ask Dr. Sumaila that.

• (1005)

Dr. Rashid Sumaila: If you look at the literature, two things can help migratory species. First is the size of the MPA. For it to be effective, the MPA has to be large, fortunately or unfortunately. That can lead to other issues but you need to cover as much of their range as possible for it to be useful.

Second is the new research that has just been published by Sally Otto, Daniel Pauly, and others, where they look at fish behaviour. It's amazing. They found out that fish evolve also. If you have an MPA and they know it's an MPA when they're in there because no trawling is chasing their shadows, and so on, they learn to be within the MPA rather than going to another place where they will get smacked. So they are not as stupid as we think they are.

This is new, quite cool research. After some time, they stay more in the peaceful areas than in the crazy places where they get hit. There's a lot of research coming out on this still.

Mr. Robert Sopuck: Having been outsmarted many times by fish, a creature with a brain the size of a pea, I will very much agree with you, Dr. Sumaila, about how smart fish are.

On a serious note, it would be really good if we could get an MPA off the coast of Greenland. The way they're savaging Canada's Atlantic salmon stocks, as was enunciated by the Atlantic Salmon Federation last week, is truly unconscionable.

Dr. Sumaila, the California experience, which was relayed to us, was that the MPAs were put in the very best places where people fished and closed off much of the recreational fishing in coastal California, small areas to be sure, and it was proposed they go someplace else. Fish concentrate in certain areas. How do we deal with that?

Dr. Rashid Sumaila: California is quite special in many respects. There was a big movement to put in MPAs and they did. I just came back from the UN conference; I was there Monday to Wednesday. I got an email from California, a group of people who are now

beginning to study the economic impacts of that and get numbers, as you say. So I'm going to talk with them when I go back to see what happened since then.

• (1010)

In terms of Greenland, that is a good point. When you share a stock, you need to think about it in terms of MPAs. I mentioned the ocean conference because many people told me that Canada should step up on the world stage and lead on ocean issues. If we do our homework well, we will be in a good place to talk to Greenland and other countries about also doing their part.

Mr. Robert Sopuck: Can you send me a copy of that California economic study? California, I like that one.

Dr. Rashid Sumaila: I have it on email only.

The Chair: Gentlemen, I'm sorry to interrupt, but we're closing in on time.

Ms. Dzerowicz, you have five minutes, please.

Ms. Julie Dzerowicz (Davenport, Lib.): Thank you so much, Mr. Chair.

I want to thank all my colleagues for welcoming me here today. Happy birthday, Ken.

Thanks for the excellent presentations.

I come from a downtown Toronto riding but I lived in Vancouver for a year. One of the things that Davenportians really care about is the environment, and they care about climate change.

We're trying to select the MPAs on the west, in the north, or on the east coast. I had a colleague who used to visit the north quite a bit, and she would interact with a number of the indigenous peoples up there. They would say that the world has changed significantly for them. They see almost annually how climate change is impacting their habitat.

Mr. Crowley and Ms. Leys, if you happen to have something to add, in our selecting MPAs and our even coming up with a governance model or even trying to figure out the right model for monitoring, how is climate change going to impact how we're going to select the area?

For the economics of the ocean, climate change adds a high level of unpredictability. How would you say that we need to incorporate what we're learning around climate change impacts in our selecting the areas and the monitoring? If you have any advice on that, I'd be grateful.

Mr. Paul Crowley: Thank you for the question.

Climate change impacts should be fully integrated into the development of a network of MPAs. There is no place where that is more important than the north. For instance, we know that with the warming of the waters and the environment summer sea ice is retreating considerably. There is an area in the Canadian Arctic Archipelago, and north of there, that we call the last ice area, where it's projected to be one of the last areas where summer sea ice will be.

Looking at that as an important opportunity to protect that last ice area as a refuge, we hope the systems will be able to rebound. I think it has to be fully integrated into the choice of how you make a network, and also how you manage an area. In the north, having Inuit who have lived on the waters for millennia to be the monitoring program, the community-based monitoring program that is based on generations of information, will be extremely important.

Ms. Julie Dzerowicz: Mr. Sumaila, do you have anything to add?

Dr. Rashid Sumaila: Climate change is really a hot issue for the oceans. Number one, the ocean absorbs a lot of the CO₂. That is leading to ocean acidification, in addition to the sea's surface temperature rising. Also, there's deoxygenation. Parts of the ocean are being depleted of oxygen. These are huge.

In the paper I mentioned, which I will share, which was published on June 5, we actually surveyed the literature to see what MPAs can contribute in terms of mitigation and adaptation. We found that the size and the siting will affect how resilient we are.

Thinking of the ocean acidification, for example, if you have a fish population that is really in good shape and then the ocean is acidified, it has a better chance of surviving than when you have a weak population. It's like a human being. If you are sickly and then you get hit by something, you just go. If you are in good shape, you would withstand it better.

In terms of size, it will affect it. Before climate change, people were talking about 30%. It looks like we'll actually have to go more than that. Again, I go to the retirement fund. Most financial analysts will say you should follow your age in terms of how you put part of your retirement in a safe place, right? I think it's going to push us to far more than 10%, I'm sorry to say. If we really want to sustain our fisheries in the face of climate change, the size and siting will differ, but this needs more detailed work because fish populations are moving into different places because of changing temperatures.

• (1015)

Ms. Julie Dzerowicz: Ms. Leys, unless you have something to add, I have another question to move on to.

Dr. Sally Leys: I have a concrete example if you would like.

In terms of the reefs, they are in a network. Networks, you've all heard, give resiliency and size. With climate change, you can't predict. You don't know if one area will be better than another. Because the recovery of populations might depend upon a new MPA you might make up at Chatham Sound, one should be open and forward-thinking in order to continue such a network. These kinds of regions could be influenced by low oxygen that comes up from the deep ocean as climate warms. You never know which patch might be the feeder patch that will sustain new reefs. You need to think a bit broadly.

The Chair: Thank you, Dr. Leys. I didn't mean to cut you off. I apologize. We tend to let witnesses go on but we're running short of time.

Mr. Donnelly, to end on three minutes, please.

Mr. Fin Donnelly: Thank you, Mr. Chair.

We were just talking about meaningful protection and the definition of what that meant. I'd like to ask about the definition of minimum standards.

Mr. Crowley and Ms. Kuehnemund, could you both elaborate on minimum standards and tell the committee about what minimum standards are, what's included, how we achieve minimum standards, and what they look like?

Mr. Paul Crowley: The first minimum standard—and we've spoken to it—for us is with regard to oil and gas exploration and exploitation and its incompatibility with MPAs. Writing that in at the outset would provide certainty for industry and for communities in terms of creating MPAs.

Ms. Sigrid Kuehnemund: First and foremost, we understand and recognize that some activities can occur within marine protected areas, but it's important to ensure that the activities that do occur do not contravene the conservation objective of a marine protected area. As Paul mentioned, from minimum standards, we feel oil and gas activities are not compatible with marine protected areas.

As per IUCN guidance, there are some forms of fishing activity that can occur within marine protected areas. We look to the IUCN's standard rule that marine protected areas should include zones that restrict all extractive use. We are pleased with the St. Anns Bank marine protected area example, which has been worked through a stringent negotiation process with stakeholders and, through the MPA design and development process, has achieved a high standard. Seventy-five per cent of that area is off limits to fishing activity, and we support such a standard.

Mr. Fin Donnelly: Okay.

Dr. Sumaila, I was going to add that we haven't heard anything about size. What we've heard over and over again from witnesses is that size matters, maybe you want to comment.

Dr. Rashid Sumaila: Yes. In terms of size, the latest number we have scientifically, and I can share the paper, is that most scientific papers recommend 30% of an area as optimal for sustainability and conservation.

The Chair: Thank you very much, Dr. Sumaila.

I want to thank our guests.

Thank you so much, Dr. Sumaila, Dr. Leys., Mr. Crowley, and Ms. Kuehnemund, who joins us again. It's good to see you all again. Thank you very much for doing this.

We are going to break, but first we will go to Mr. Bezan. You have an intervention.

• (1020)

Mr. James Bezan (Selkirk—Interlake—Eastman, CPC): Mr. Chair, I have a point of order.

It's just that I see on the agenda that our next piece of business is in camera—

The Chair: That is correct.

Mr. James Bezan: —for a Standing Order 106(4) request, and I think that is not consistent with what other committees have done when a 106(4) request has come forward.

If you look back at meetings that have been held under Standing Order 106(4), government ops had a request by four members for a resolution on July 28, 2016. It was actually televised. We had a notice of meeting from the committee on international trade back on August 3, 2016, and it was public. International trade had another special request on August 18, and that was public. Finance also had a Standing Order 106(4) request, and that was televised on September 9, 2016.

Since this is a special request under Standing Order 106(4), which says that within five days of receipt you have this debate, I think it should be a public meeting, not in camera. I hope there isn't an attempt to hide our having a real discussion. I'd ask that you allow this meeting to take place as a public meeting.

The Chair: Thank you, Mr. Bezan.

Under normal circumstances I would wholeheartedly agree, but I'd like to point out that, on October 25, 2016, Mr. Donnelly proposed a motion which was passed that the committee may only meet in camera for certain purposes, and there are 10 listed. The fourth one is to consider a draft report or an agenda, and this does qualify as an agenda matter.

That is why I scheduled this to be an in camera meeting. However, may I suggest that, if you wish to go out of being in camera, there is one way of doing that.

Mr. James Bezan: I move that the rest of the meeting take place in public so we can discuss the special request of four members under Standing Order 106(4).

(Motion agreed to)

The Chair: Done. We will be in public.

We'll take just a couple of minutes' break. Perhaps you would like to see what was exhibited earlier by Dr. Leys.

• (1020) _____ (Pause) _____

• (1025)

The Chair: Okay, folks, welcome back.

This is the second session, which is public, regarding committee business.

Mr. Bezan.

Mr. James Bezan: Mr. Chair, we have a special request, under Standing Order 106(4), and I'd like to move that motion:

That the committee hold a briefing with the Deputy Minister of Fisheries and Oceans on the issues surrounding closures to Canadian Coast Guard stations in Gimli, Manitoba, Selkirk, Manitoba, and Kenora, Ontario, in addition to cuts made to the search and rescue dive program in British Columbia and cuts to the Salmonid Enhancement Program.

The Chair: If you could just give us 30 seconds, Mr. Bezan, we're going to distribute that.

First of all, by a show of hands, may I see who's interested in speaking to this particular motion?

Oh, my. Okay.

Mr. Hardie, I saw you before, and then I'll go down this way.

Mr. James Bezan: I have the floor. I moved the motion.

The Chair: I'm just trying to line up who's speaking, so it's Mr. Hardie, and Mr. Sopuck, and then down that way.

Mr. Bezan, you're up.

Mr. James Bezan: In the motion, there is one extra word I inserted after "Selkirk", namely, "Manitoba", so make sure that is noted in the minutes.

I want to call to everyone's attention that this affects my riding directly. It really impacts Manitoba, especially Winnipeg. The Coast Guard station at Gimli and the Coast Guard stations at Selkirk and Kenora really do serve the public. A lot of people have secondary residences on Lake Winnipeg, and Lake of the Woods at Kenora, and they enjoy boating, enjoy the waters.

I'd like to make sure everybody is aware, first and foremost, that Lake of the Woods is an international waterway. It occupies parts of the Canadian provinces of Ontario and Manitoba and the State of Minnesota in the U.S. This is an international waterway, and the Coast Guard is there to provide support to the RCMP and to Canada Border Services Agency in the transit of people back and forth over the lake. In Selkirk and Kenora, the Coast Guard stations are responsible for putting out navigational aids, including markers of difficult channels, rapids, and other hazards in the waterway.

The Red River and Lake Winnipeg are both recognized as federal navigable waters. The Coast Guard stations in these locations have been there for over four decades, and the Gimli Coast Guard station provides very important safety provisions as well as search and rescue services for people on the lake.

A lot of you may not be familiar with Lake Winnipeg, which is in my riding. Lake Winnipeg is an inland ocean, and its waters are very dangerous. It responds to wind and often has waves six to 10 feet high. People have perished on the lake as recently as a couple of weeks ago. We have to have Coast Guard there to provide safety to our commercial fishers. There are 23 small craft harbours on Lake Winnipeg that fall under the purview of DFO. There are over 1,000 commercial fishing families who earn their living off that lake. Northern communities are served by the lake's commercial fishing businesses, and during the summer all their freight, all their goods, come in from the lake. There are lake freighters that move all their goods. Until recently, even ferry services were still going on the north basin.

There is a need to have Coast Guard support for that type of civilian movement as well as for recreational boaters. We're talking sailboats; there are yacht clubs up and down the south basin. We need to make sure that those people have the required level of safety.

The Gimli station has just started to benefit from a reinvestment program announced in 2015. Over \$2 million has already been spent on the construction of two new buildings. A third building is now under way; the foundation is poured, and they just have to erect it. Its purpose is to provide storage facilities for fuel, for navigational markers, boats, and accommodations for the Coast Guard staff who are flown in for respite from other areas of Canada. We have to make sure this money is not just thrown away.

It is my understanding that both the Kenora and Selkirk stations may be closed as of today, with the buoys still out there. There have been no communications with the RCMP or provincial governments about who is going to pick up these services and how they're going to be delivered.

Finally, I'd just note that situated at 17 Wing Winnipeg is 435 Squadron, which is made up of search and rescue technicians for the central region. Their area of responsibility extends from the U.S. border in central Canada, through Manitoba, and right up into the Arctic. Those SAR techs train on Lake Winnipeg twice a week, either diving or jumping in. Canadian Armed Forces protocol is that a SAR tech cannot train unless there is Coast Guard search and rescue within one hour of where they're conducting their training. If we lose search and rescue out of the Coast Guard station in Gimli, there will no longer be training done from 17 Wing. Everyone will have to be moved to Comox in British Columbia.

● (1030)

Therefore, I'd ask that everyone support this motion to ensure that we get the proper briefing and understanding of why the government wants to make these cuts.

The Chair: Thank you, Mr. Bezan.

Very quickly, folks, the witness testimony went five minutes beyond the scheduled time, pardon me, because I like to be a bit flexible. Could I have unanimous consent to extend this meeting by five minutes to compensate for the witness testimony? Am I seeing unanimous consent?

An hon. member: No more than five minutes.

The Chair: Very quickly, Mr. Hardie.

Mr. Ken Hardie: Yes, I regret that, but I do have another committee and preparations to do.

I lived in Kenora and fished in Lake of the Woods. I lived in southern Manitoba and fished in Lake Winnipeg. I too want to hear what's going on and why, and certainly as a resident of the west coast, I think the developments there also require some answers. We want to find out what's going on.

Having said that, though, the position that I would personally take, and I think the position of this side, is that this motion is a good idea and well intended, but unnecessary. We have the supplementary (A)s coming up, I believe, next Thursday, the 15th, which will give us an opportunity to canvass these issues with the officials we need to speak with. As such, this is probably redundant at this point.

Sure, we'll entertain your arguments to the contrary, if there are any.

Thank you.

The Chair: Mr. Sopuck.

Mr. Robert Sopuck: Yes, I appreciate Mr. Hardie's sentiment. On the surface, what he says makes sense. However, this is a very complicated issue.

Also, this committee has set precedents in the past. With the Canfisco fish plant, we interrupted our program to spend a day on that, and on the Comox situation, I think we had two meetings. This

particular meeting that we are requesting, a stand-alone meeting, is very consistent with what this committee has done in the past.

This is the first time this side of the committee has asked for anything like this. As a Manitoban myself, I can't overemphasize how dangerous Lake Winnipeg is. It's a shallow lake. The waves kick up. There are also lots of cottagers. Its proximity to Winnipeg means it's very highly used. The aboriginal communities on the east side of Lake Winnipeg absolutely require those vessels to service their communities, and those vessels need the support of the Coast Guard.

This is a pretty significant issue, and very much along the lines of the Comox issue we studied before, so I would request that we do this in a separate meeting and have a fulsome discussion of the issue.

● (1035)

The Chair: Mr. Arnold.

Mr. Mel Arnold: Mr. Chair, I don't agree with Mr. Hardie's statement that we could cover this with the supplementary estimates meeting. This is going to take more than one two-hour meeting, I believe. There's so much involved here, with the restoration resource unit, the salmon enhancement program, and the Coast Guard dive teams.

We saw the instance on the west coast of B.C., I believe it was in 2001 or 2002, where a fishing vessel capsized at the mouth of the Fraser River. Coast Guard divers had to wait 45 minutes for approval. They were on site, but they had to wait for 45 minutes for approval to go into the water. The people on that boat drowned. There's a high probability that they were still in an air space and could have been rescued had the dive team been able to go in sooner. This is cutting that dive team. This is going to cause life-threatening situations where the divers will not be able to enter the water without their approval.

I also want to stress that's not the only important part of this request for this meeting. I took part in a resource restoration program last fall, just before we came back from our summer time in our constituencies. We had two DFO officers guide 30 volunteers, restoring a river channel that had flattened out on a delta so thin that the water was only two inches deep and the massive chinook salmon could not get back up. We spent part of a morning and an afternoon with burlap and fence pegs restoring that river to a channel that became over a foot deep. Those fish would otherwise have been stranded in the lake and unable to reproduce, further impacting our salmon populations on the west coast.

That was just one simple operation for a day or two with those two DFO officers. The cuts that are being made here are absolutely unconscionable. We've heard that our Conservative government made cuts to DFO over and over again. This is unbelievable. We've heard from constituents, from conservation organizations, from schoolteachers who have had salmon tanks in their classrooms for decades, who are absolutely outraged by what is being done with these cuts. To try to fit them into one meeting with the supplementary estimates would be doing an injustice to what's being done here.

The Chair: Mr. Donnelly.

Mr. Fin Donnelly: Mr. Chair, I want to add my comments to the call for at least a stand-alone meeting. I think it's absolutely critical that we have at least one meeting to address the issues brought forward by this motion. I think Mr. Bezan has clearly spelled out the impacts of the Coast Guard cuts on Manitoba and Ontario.

To add to Mr. Arnold's comments about the loss of the dive team in the RRU on the west coast, I'll just add my comments about the loss of the salmonids in the classroom program. Over one million students have gone through—one million students in 40 years—and this program is being eliminated. I have heard, and I know many B. C. MPs have heard, as Mr. Arnold is saying, from teachers, from students, from parents, and from stewards right across the Province of British Columbia how upset they are with this decision. That's one small program of the salmon enhancement program that's being affected here.

We have the dive team, which is a completely specialized unit in the Coast Guard. It goes in for recovery. I know there's been talk of other federal agencies like the RCMP being able to pick up the slack or the city dive squad being able to do this. The RCMP goes in for recovery. The unit of the Coast Guard has specialized equipment and training to prevent deaths. It goes in there to prevent deaths. Mr. Arnold referenced the incident that happened, I believe, in the early 2000s, in 2001, in which a car went into the Fraser River, on Sea Island. It was right by the Coast Guard base. Of course, they had already cut the dive team. The Coast Guard was right there, on the incident, with the submerged vehicle. The occupants most likely were alive. However, they couldn't go in because they didn't have the specialized unit. They had to wait for the RCMP dive team to come. It took over an hour, and, of course, it was a recovery. They were extracting bodies at that point.

There was a huge outcry. Mr. Dhaliwal was the minister at the time. The community was outraged and let him know that. He was the minister, and the decision was reversed. Now, 15 years later, we're looking at cutting exactly the same thing. Have we not learned from a past mistake?

I agree with Mr. Arnold and Mr. Bezan. We need at least one dedicated meeting. I don't think, to Mr. Hardie's point, we can cover it under supplementary estimates, for which we have so many other issues that we have to talk about.

I fully support this motion. Thank you.

• (1040)

The Chair: Thank you, Mr. Donnelly.

Are there any more comments on this particular motion?

I see none, so we now go to a vote.

Mr. James Bezan: Could we have a recorded vote?

The Chair: Mr. Arnold, you wished to add something?

Mr. Mel Arnold: I would like to make an amendment to the motion in the first line, "That the committee hold a briefing with a series of meetings...", so that we don't get limited to just a half-hour meeting or a half-hour briefing with the minister. This needs to be, "That the committee hold a briefing consisting of a series of meetings with the Deputy Minister of Fisheries and Ocean...".

The Chair: Just give us 30 seconds to make sure we get your amendment right.

By the way, I forgot to mention that Standing Order 106(4) was triggered by four letters received from members of this committee—Mr. Arnold, Mr. Doherty, Mr. Donnelly, and Mr. Sopuck—to which we had five days...so we fall well within that range. An amendment was just put forward by Mr. Arnold. I won't read the whole motion, but it says, "That the committee hold a briefing", and Mr. Arnold inserts "consisting of a series of meetings" and then it continues on with "with the Deputy Minister of Fisheries and Oceans...".

Is there any discussion on that?

(Amendment negatived)

The Chair: We now go to the main motion, as put forward by Mr. Bezan.

Mr. James Bezan: Could we have a recorded vote?

The Chair: We will have a recorded vote indeed.

(Motion negatived: nays 5; yeas 4)

The Chair: The motion has been defeated.

We are now at 10:46 a.m., a little bit over.

Thank you, folks.

We stand adjourned until Tuesday of next week.

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