HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Fisheries and Oceans

FOPO • NUMBER 025 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Monday, October 3, 2016

Chair

Mr. Scott Simms

Standing Committee on Fisheries and Oceans

Monday, October 3, 2016

● (1530)

[*English*]

The Chair (Mr. Scott Simms (Coast of Bays—Central—Notre Dame, Lib.)): Hello, everyone. Welcome to the Standing Committee on Fisheries and Oceans, on Monday, October 3.

Today, we are going to hear from witnesses about the study of northern cod stock, which is a continuation of our recent trip to Newfoundland and Labrador.

Before we do that, it has been brought to my attention that the liaison committee is asking what our future travel plans are, as a committee. Of course, we can't give them anything specific, because we don't know the studies beyond January, so, before I get too much into it, here is what I'm asking.

Can I get unanimous consent that we carve out 10 minutes at the end of this meeting to get some ideas about a study list, about what we hope to do beyond the next study, beyond the study about the habitat and DFO?

What I am asking about is future studies down the road. I'm doing this now—

Mr. Fin Donnelly (Port Moody—Coquitlam, NDP): Is that beyond the three?

The Chair: Yes. Beyond the three studies that we scheduled, what are some of the ideas? We don't have to come up with anything definitive. We just have to put the ideas out there as to what we may be looking at so that we are able to give the liaison committee some idea about travel in 2017.

Do I have unanimous consent for that?

Some hon. members: Agreed.

The Chair: Great, we'll do 10 minutes at the end of the meeting. Thank you.

Let's get back to our witnesses.

We have Brett Favaro, research scientist from the Fisheries and Marine Institute at the Memorial University of Newfoundland. It's nice to see you. I've said this before of other people, and I'll definitely say it now: He is a person who is no stranger to this committee. He has been here several times, including on cod studies in the past. I think 2005 was the last one.

We have Dr. Jeffrey Hutchings, who is Killam Memorial Chair in Fish, Fisheries and Oceans from the department of biology at Dalhousie University. I hope I got that right.

We have Alan Sinclair, co-chair of the subcommittee on marine fishes subcommittee, joining us by video conference from Nanoose Bay.

We also have Joshua Laughren, executive director of Oceana Canada, and Robert Rangeley, director of science at Oceana Canada, who are also no strangers to this committee. It's good to see you again.

We are going to start with 10 minutes of comments.

Let's start with Brett, for 10 minutes, please.

Dr. Brett Favaro (Research Scientist, Fisheries and Marine Institute, Memorial University of Newfoundland, As an Individual): Thank you, Mr. Chairman.

I'd like to thank the committee for the invitation to come and speak today. It is an honour and privilege to do so.

I'm here today to talk about the future of the fishery for northern cod. My name is Dr. Brett Favaro and I'm a research scientist at the Fisheries and Marine Institute of Memorial University. As a scientist, I build and test gear that is designed to produce the smallest possible impact on the environment while being safe and effective for fish harvesters to use.

I'd like to start today by acknowledging that this isn't just my story I'm about to tell, it's the story of my graduate students, my collaborators, and the many inshore fishermen who have played host to our research, especially Aubrey and Marie Payne from Fogo Island. I also acknowledge financial support from the Canadian Centre for Fisheries Innovation, the Government of Newfoundland and Labrador's Department of Fisheries and Aquaculture, and the Research and Development Corporation of Newfoundland and Labrador, as well the other organizations on my slide.

As you're all aware, the collapse of the northern cod represented one of the greatest environmental and economic tragedies in Canadian history. However, for the first time since the moratorium, there appear to be early signs of recovery. I'm not going to spend much time today talking about the health of the stock, because I'm certain that will be amply covered by the rest of my scientific colleagues who will be speaking today. What I want to talk about is how to conduct a fishery if and when it opens again.

The sustainability of any fishery depends in part on the technology you use to catch fish. And whether you use gillnets, longlines, trawls, or any other technique, there are going to be impacts on the environment, but not all gear is created equal. For example, gillnets are a sort of gear that have been widely used to catch fish in Newfoundland and Labrador and were used to land a major component of the cod catch prior to the moratorium.

There are problems with gillnets. For one, it's not just cod that they catch. When you put a gillnet in the water, it's quite likely you're going to catch a lot of things that you don't want to be catching, from seabirds to seals. There is a lot of marine life that can get caught in a gillnet. Second, if you lose a net at sea, you get a lot of ghost fishing, which means animals that are caught and killed by these nets when they're drifting around in the water. This is bad for fishermen and it's also bad for the environment. Third, and perhaps the most difficult for industry to cope with, is that by the time you haul back your gillnets, there's a good chance that the fish will have degraded substantially in quality.

From the moment a fish is ensnared in the gillnet, the clock starts ticking. They struggle in the nets, they're picked up by predators and scavengers under water, and they slowly die before you even get the chance to harvest them. This makes it very hard to ensure consistent quality in the fish being caught in the gear and there are economic consequences to this, which I'll explain in a moment.

This brings us to my story today. In the early 2000s, my colleague, Phillip Walsh, began an effort to introduce a gear known as pots to the community of Fogo Island as an alternative fishing gear to gillnets. Pots are baited traps that are set on the bottom of the sea and Canada has a long history of using pots in many fisheries. For example, in British Columbia, we use pots to catch spot prawns and sablefish; and in Newfoundland and Labrador we use pots to catch snow crabs.

Over the last few years we've discovered that pots are a great gear for catching cod as well. On this photo, you can see one of the original pot types, which we call a Newfoundland-style pot. It's quite large and heavy and was used by some Fogo Island fishermen for several years to catch cod. Now, the Newfoundland pot did work, but it was somewhat expensive to build and if your boat is very small, it can be a little unwieldy. Therefore, we pursued a project where we'd identify a pot that is so efficient that it makes clear economic and environmental sense for fishermen to use it as their primary gear, and if we couldn't have identified such a pot, we'd design and build one ourselves.

The slide shows one of the pots that we designed and built. Between the summers of 2015 and 2016 we tested five models of pot aboard industry vessels from Fogo Island, including lightweight Norwegian-style pots with various mesh sizes, and this pot you're looking at right now. Pots are a very practical fishing gear; to save space, they're collapsible. Here, you can see three pots stacked on top of each other on the back deck of a fishing boat. Notice the little doughnut-like floats on the top of the pot. When the pot goes in the water, these floats actually pull the roof of the pot upward which opens it up, so fish can swim inside.

When the pots are collapsed, they're quite compact. If you can believe it, you're looking at more than 30 pots of five different makes all stacked together in this small trailer. Here, you are looking at one of the lightweight Norwegian-style pots, but with a large mesh size that we added to make it easier for small fish to escape. This catch was pretty typical, about 30 fish with the length of, on average, about 60 centimetres. But the real advantage to this gear is not the quantity of fish, it's the quality. When fish are caught in pots, they're not killed by the pot. They're vibrant, healthy, and in great shape when you bring them aboard. This is why fish harvesters have been able to sell their pot-caught cod to fine restaurants at premium prices.

I contrast that with this photo of a gillnet-caught cod, which was taken by my graduate student, Phillip Meintzer, just last week in Labrador. Here you can see a cod that is beat up, damaged, and harmed by the capture process. This fish is not going to fetch you much money at the market.

● (1535)

While it's possible to get very high quality fish out of gillnets, if you leave them in the water for very short periods of time, in reality there are a million different reasons that a fisherman might leave the gillnets out there for longer than would be ideal. For example, if you have your net out and a storm unexpectedly rolls in, you may be unable to safely retrieve your gear during that same day. As a result, fish may be ensnared in nets for days at a time, and what you end up catching is damaged and worth very little.

Quality also depends on proper handling of the fish after they're caught. Here you can see us bleeding fish in icy water aboard the fishing boat. Here I'm showing you the bled and gutted fish being stored on ice for the trip back to the processor. This type of care is essential to ensure that you get as much economic bang for your buck out of every fish you take out of the water.

Now I'm going to show you a video that brings pots to life.

One aspect of my research is that I start nearly every project by attaching an underwater camera to fishing gear so we can better understand what actually goes on when the fishing gear is in the water. What you're looking at is our big experimental apparatus with the Norwegian-style pot on the inside of it. We're about to see video, looking from the top down onto this pot when it's underwater.

Now you're about 40 metres underwater, just off of Fogo Island. What you're seeing here is a few minutes after the pot was set in the water. It's hard to see because of the contrast, but you have some cod swimming around the pot, and you have one in the upper chamber of the pot right now. You can see that the entrances are on the left and right, so they're swimming around the bottom to try to find their way into the pot.

Now you're seeing about 20 hours after the pot was set. The pot has about 35 cod in it. You can see them swimming in that upper chamber. What actually happens is, whichever direction the water is moving, the fish will orient themselves and swim against the current while they're still in the pot. Again, these cod are still alive when they're in the pot, and they don't actually get killed until you bring them aboard.

In a moment we're going to see this pot get hauled up to the surface. These videos are very powerful because we can actually explore what's going on with this gear underwater.

Here's the fish being brought up to the surface. I've sped it up a bit, so this is actually at about double-speed. We're actually watching the gear come off the bottom and get hauled right back up to the surface to be brought aboard the boat.

This is the first instance when you're going to see the fish start to swim in a disturbed manner, where they swim more aggressively, presumably to try to find their way out of the pot. The videos have shown us that not very many actually manage to escape. When they get right up, near the surface, you can see some bubbles start to come out of the cod as well.

We repeated this many times in Fogo Island over the summer, and we were able to paint a really good picture of what a typical deployment of a pot looks like.

Now that we're underwater, I'm about to take you above the water.

Now we're flying over a fishing boat that's actually using a pot. If you look down here, this is one of the Newfoundland-style pots actually being hauled up and brought aboard the vessel. This just gives you a sense of what this looks like when you're actually fishing these out on the water. We have our fish down there in the water. This pot has a large cod end at the top where the fish accumulate.

This is the boom on the vessel. It's going to get swung out across, and it's going to get hauled out of the water.

I hope this gives you a sense of what potting looks like in real life. This summer we found that we could catch a vessel's entire weekly quota in a single day of fishing with 25 pots. The new, lightweight pots are cheap to buy, and easy and safe to use, and there is tremendous grassroots' support for this technique. We receive dozens of calls every week from fishermen across the province who are interested in this gear. Pots are scalable, meaning you can use them on big boats or small boats, and they certainly catch commercial quantities of fish. They can preserve the quality of fish that they catch so the fishermen can achieve higher market prices than fish caught with less sustainable methods. You can use biodegradable twine to provide an escape hatch on the pot, so if a fisherman loses one underwater, the pot doesn't continue to trap fish forever.

As a conservation biologist, I'm impressed by their reduced impact on seabirds and other large-bodied marine species, which would otherwise be greatly harmed by the widespread reintroduction of gillnets to Newfoundland and Labrador.

I want to wrap up by leaving you with two key messages. The first is that, from a conservation and economic perspective, any new cod fishery should be based on quality rather than quantity. We cannot create a system that forces fishermen to catch massive volumes of low quality product to make a living. It is inherently unsustainable and doesn't make sense economically. Our research suggests that pots could be a viable tool to be used at large scale in a quality-based fishery. When you're making decisions about how to manage the cod fishery, pots should be at the top of your mind.

My second piece of advice deals with the nature of the cod stock itself. I remind everyone that we're talking about a species that the Committee on the Status of Endangered Wildlife in Canada, or COSEWIC, has assessed as being endangered. Even if it seems like there are more cod in the water than there have been recently, there are still far fewer cod in the water than there were historically. Any new fishery absolutely must go slow. Just because there are more cod now than there were a decade ago doesn't mean it's okay to hammer the species with more fishing pressure than it can take.

COSEWIC's most recent assessment of Atlantic cod occurred in 2010, based on data going up to 2007. I think it would be tremendously helpful for COSEWIC to assess cod once again so that all levels of government, as well as industry, can be given a clear-eyed picture on the health and status of northern cod, and so that any decisions about it can be made using the best available peer-reviewed science to date.

● (1540)

Once again, my two key pieces of advice were first, to focus on quality in the cod fishery and to consider pots as a tool to achieve that; and second, to have COSEWIC conduct a scientific reassessment of the state of Atlantic cod, and for managers to thoroughly consider that assessment in any decisions made about the fishery.

I spoke to you today about the benefits of pots and there are many. I think this gear can provide an excellent pathway towards sustainability in a revitalized cod fishery. As a scientist, I also have a responsibility to end with a reminder that the best way to make fishing profitable is to make sure there are enough fish in the sea to go around.

Thank you very much.

The Chair: Thank you, Mr. Favaro.

I extend compliments to the cinematographers as well. That was a fantastic-looking video. Well done, and to you as well. On behalf of the whole committee, I congratulate the people who did it.

Dr. Brett Favaro: We're all our own cinematographers out there. That was all video that we collected over the course of our studies.

The Chair: You're overbrimming with talent, the lot of you. That's very good.

Dr. Hutchings, you have ten minutes, please.

Dr. Jeffrey A. Hutchings (Killam Memorial Chair in Fish, Fisheries and Oceans, Department of Biology, Dalhousie University, As an Individual): Thank you.

Mr. Chairman, members of the committee, thank you for the invitation to speak before you as part of your study on northern cod.

My personal experience with northern cod began as a child in the early sixties when I would walk with my father and my grandmother to Mr. George Temple's stage at the bottom of Bull Arm, Sunnyside, Trinity Bay. My science experience with northern cod began in earnest in 1992, two years after completing my Ph.D. at Memorial.

Since then, I have contributed more than 70 research papers in the peer-reviewed scientific literature on various things: the ecology, life history, reproduction, genetics, fisheries history, and population biology of northern cod. I appeared before this committee on the topic of northern cod in 1997 in Ottawa, and, as the chairman indicated, in 2005 in St. John's.

Although the earliest documentation of a Newfoundland cod fishery dates from 1504, northern cod have almost certainly been fished since the late 1400s. Harvests are estimated to have been less than 100,000 tonnes each year until the late 1700s, and from the 1830s until the late 1960s, catches were typically between 200,000 and 300,000 tonnes each year.

This apparently sustainable level of catch, coupled with some assumptions about a sustainable harvesting rate, implies that the spawning stock size of northern cod from the late 1700s to the mid-1900s was perhaps in the order of 1 million tonnes to 1.5 million tonnes. Today it's estimated to be 300,000 tonnes.

Following the introduction of European-based trawlers in the late fifties and the early sixties, catches increased to a historic high of 810,000 tonnes in 1968, before collapsing in equally dramatic fashion in 1977, when Canada extended its fisheries jurisdiction to 200 nautical miles. Controlled in part by total allowable catches established by Canada, catches increased gradually to a post-1977 high of about 270,000 tonnes in 1988 prior to the moratorium.

We've just heard something about recent changes in technology, but technological changes have occurred throughout the 500-year old fishery. During the first three centuries, northern cod were taken mainly by baited or unbaited hooks, either from relatively large vessels on the banks or small vessels inshore. In the 1790s, the French introduced the bultow, baited, multi-hook line trawls, or longlines.

Cod nets or gillnets were introduced in the mid-1800s, followed by the cod trap in the 1870s. Bottom trawls were introduced just before the 20th century. These were initially towed by steam-driven side-trawlers before the advent of stern-hauled bottom trawl nets from factory-freezer trawlers in the second half of the 20th century.

These technological efficiencies, which have occurred throughout the centuries, had their greatest impact on northern cod from the late fifties to the mid-seventies, contributing to the massive overfishing that set the stage for a collapse in the early nineties.

When the moratorium was announced, it was estimated that northern cod had declined by 99% when compared to the size of the stock in the early 1960s. Globally, this was an unprecedented depletion for a bottom-dwelling, long-lived marine fish.

Such a massive depletion draws attention to a standard tenet in population biology, and it's one of the reasons the recovery of northern cod has been so slow and uncertain. That is, that small populations are more vulnerable to unexpected natural and human-induced disturbance than large populations. Put another way, after the moratorium, the unprecedented magnitude of depletion impaired the ability of northern cod to increase in the face of environmental conditions to which northern cod had been able to persist in the past when it was much larger. In other words, the smaller size of the northern cod stock made it less able to buffer natural environmental change.

Research indicates that fish stocks that decline to less than 10% of their maximum are likely to experience prolonged and highly uncertain recovery. The magnitude of loss of northern cod easily exceeded this threshold.

So, magnitude of depletion affects recovery, but fishing is also likely to have played a role. Although the 1992 moratorium significantly curtailed fishing activity, the catching of cod did not end. The yearly reported catch of northern cod from 1993 to 2009 was about 3,000 tonnes per year.

This might not sound like much, but for a depleted population, the impact can be significant.

● (1545)

For example, six years after the moratorium, in 1998, a directed commercial fishery for northern cod was reopened. The fishery was characterized as a limited fishery because the catch quotas were small relative to the quotas of the 1980s. But from a science perspective, the catch quota in and of itself is of no consequence. What matters is the size of the catch relative to the size of the stock from which the catch is taken.

In my view, this limited fishery, from 1998 to 2002, nipped early signs of recovery in the bud. If a lesson is to be learned from this ill-advised fishery, it is that it is necessary to have catch quotas be part of a management plan for which rebuilding targets and harvesting rules are clearly articulated, quantitative, transparent, and scientifically defensible.

Recovery targets and harvest control rules are two key elements associated with credible fishery management plans intended to achieve high-yield sustainable catches in the long term, yet they do not exist for most of our depleted cod stocks more than 20 years after their demise, and northern cod is one of those. In addition, the only existing harvest control rule for a Canadian cod stock solely under Canadian jurisdiction is unhelpfully open to multiple interpretations and unlikely to be very enforceable. It states that when the area 3Ps cod stock is below its limit reference point, “consideration may be given to whether directed fishing will be permitted at some level.” It goes on to say that fishing “should not be approved if the decline [below the limit] is substantial and should not continue for an extended period without evidence that recovery will occur within a reasonable timeline.”

So there are a lot of words that can be interpreted in many different ways, and such ambiguities are unlikely to lead to clear action when trouble is detected. It is instructive to compare the language associated with this 3Ps cod harvest control rule with one recent international effort initiated by fisheries management agencies to strengthen the scientific integrity of a harvest control rule for the largest cod stock in the world, off Norway.

From a sustainable harvesting perspective, it is fundamentally important, I think, that scientifically rigorous targets and harvest control rules be established. Without them, neither society nor industry can assess the degree to which a proposed catch level is consistent with the objective of achieving a particular target within a defined period of time. In the absence of targets and harvest control rules, there is no rigorous means of auditing the effectiveness or tracking the record of fisheries management actions. Efforts to recover northern cod could be strengthened immeasurably by a scientifically credible recovery plan that is entirely consistent with international best practices, such as those adopted for all commercial fisheries in the United States and the European Union. It would also, of course, be entirely consistent with Canadian sustainable fisheries policy, the implementation of which has been slower than perhaps is warranted.

This science-based recommendation carries considerable benefits, I think, from a communication perspective. Management strategies need to be scientifically credible in an international context to achieve fisheries sustainability certification, something of increased importance to all kinds of seafood industries. Management strategies that are transparent and quantitatively based strengthen the ability of society to audit their effectiveness.

This recommendation to establish scientifically credible target reference points and harvest control rules will require a stronger role of science than perhaps what has been evident thus far. This could be achieved, for example, by having science alone determine limit and target reference points, as is done in the U.S. and in Europe.

Once these have been established, harvest control rules might then emerge from discussions with various stakeholders, but they should be quantitative, unambiguous, and well-founded scientifically.

Thank you once again for the opportunity to offer these opening remarks. I look forward to addressing any questions the committee might have as a result.

Thank you.

● (1550)

The Chair: Thank you, Dr. Hutchings.

I have just a couple of points for clarification. Was 1504 the first recorded catch of cod?

Dr. Jeffrey A. Hutchings: It wasn't the first recorded catch. We don't what the catch was, but it was clearly the first unambiguous report of vessels fishing in Newfoundland waters.

The Chair: That's very interesting. Also, you said Norway has the largest northern cod stock or just cod stock?

Dr. Jeffrey A. Hutchings: The largest cod stock in the world. It's primarily fished off the north coast of Norway in the Barents Sea.

The Chair: That's not northern cod.

Dr. Jeffrey A. Hutchings: Northern cod refers only to the cod found in management units 2J, 3K, and 3L, which is from Hamilton Bank in southern Labrador to the northern half of the Grand Banks. That's the only northern cod.

The Chair: Okay, thank you.

I just wanted to point it out.

We're going to go to Oceana, and Mr. Laughren, you're going to speak.

You have 10 minutes or less, please.

Mr. Joshua Laughren (Executive Director, Oceana Canada): Thank you for the opportunity to chat today.

My name is Josh Laughren, and I'm the executive director of Oceana Canada. With me is Dr. Bob Rangeley, who is the director of science for Oceana Canada.

We were established in 2015 as an independent charity and as part of the largest international group focused solely on oceans conservation in many countries around the world. Our view is that by restoring Canada's oceans we can strengthen coastal communities, increase economic benefits and nutritional benefits, and secure a future food supply.

To elaborate on that, seafood must be a big part of the solution to feed a growing population. Wild seafood requires minimal fresh water to produce, emits very little carbon dioxide, doesn't use up arable land, and provides healthy and lean protein at a cost per pound lower than beef, chicken, lamb, or pork. When properly tended, our oceans can provide a nutritious meal to nearly one billion people every single day, sustainably.

This view of Oceana about fish as food makes us not just pro-fish, but also pro-fishing. We have copies of a report that we did recently called “Here's the Catch”. You have a summary document, and we have the full scientific report, if you're interested. We think it's the most comprehensive and up-to-date public analysis at this date of fish stocks in Canada. Please don't hesitate to contact us if you have any questions.

Here are some facts we think just about everybody appearing before a committee has agreed upon so far. There are signs of a fragile, but broad-based, recovery for the northern cod stock, which is fuelled in part by an abundance of capelin and improving environmental conditions. This is good news.

The cod fishery of the future will not be the same as the past, and it must be based on quality rather than quantity. The stock is only at about a third or so of the limit reference point, with no certainty about the rate at which it will continue to recover. We must all be careful to safeguard this recovery while planning for the kind of fishery we want to build in the future. These we take as the general points of agreement.

How do we do this? How do we ensure the return of this fishery in the way that we'd like? We have four observations we'll make that will end in five recommendations.

The first, echoing what Dr. Hutchings said, is that there is still no rebuilding plan for cod nearly 25 years into the moratorium. Kicking off the hearings, DFO officials said there was a rebuilding plan, but elaborated that there is a process to develop a rebuilding plan with no set timeline given on it. I believe many of us here around this table—certainly, Bob and I, and the Royal Society of Canada report—have been calling for such a plan for much more than a decade now.

If you comb through all the science and management documents, you'll find that some of the fundamental elements of the rebuilding plan are not in place, specifically, with no rebuilding targets, timelines, or harvest control rules. We also haven't built in the precautionary approach requirements, even for those that are listed as needed under the integrated fisheries management plan for 2J, 3K, and 3L groundfish. DFO has not identified the three status zones, which are “critical”, “cautious”, and “healthy“, with an upper limit reference point. They have not set removal rates for each zone and there are no pre-agreed decision rules that have all been called for.

I want to spend a few minutes on establishing an upper reference point. It's complicated in this case, but it's also totally scientifically achievable. We committed to it under the UN fish stocks agreement. It's required for Marine Stewardship Council certification, for example. It's contentious because it forces us to make some difficult decisions, such as what historical baseline we're going to use for recovery.

After 25 years in, if we have not established a target reference point, then you have to conclude it's because DFO has decided not to do one. Not having an upper reference point is significant and consequential. Here's one point I hope you can remember. Without an upper reference point, the lower reference point, or the limit reference point, effectively becomes the target for rebuilding. You heard that from DFO officials who referenced that as reaching this point, which is the point at which we were never supposed to get to in the fishery, as the stage at which we can all look forward to having a fishery recur, even if modestly again. We hear it when people quote DFO model estimates and assert that we could—and we've heard it—significantly increase the harvest today without much risk of decreasing the stock size, but without reference to how it will affect the stock in getting to where we want it to be.

● (1555)

This is dangerously close to the textbook definition of sustainable overfishing, in which you ensure that the stocks have little chance of ever getting up beyond their depleted state and that they thus vastly underperform with regard to what they should be or could be doing economically and ecologically.

So reaching a lower reference point, the limit reference point, not a rebuilding target, has really come to define success in this fishery. It's a safe bet, we think, that without an appropriate rebuilding target in place, the pressure on the minister to increase the fishery will become just about unstoppable before the stock ever actually gets to that lower limit reference point. If this happens, we again risk squandering that opportunity to really grow the fishery back to a healthy level.

We don't have a rebuilding plan because the Fisheries Act doesn't require one. Canada has few formal rebuilding plans, despite having made a policy commitment to do so. In several cases, for example, for cod and redfish, we allow directed fisheries to continue fishing stocks in that critical zone. The reason is pretty simple: unlike in some other jurisdictions, the law does not require us to rebuild stocks that have been overfished.

Recommendations to FAO, the Royal Society of Canada reports, and research in other jurisdictions all show that recovery is more effective when a recovery plan is legally mandated and automatically triggered at predefined stages.

I know that later in the fall this committee is going to be conducting hearings on incorporating modern safeguards into the Fisheries Act. We argue that there really is no single recommendation that this committee could make that would do a better job of rebuilding cod and other depleted stocks than to amend the Fisheries Act to include a duty to rebuild. We hope we can appear before this committee later on to discuss this at the appropriate time.

Northern cod management is opaque still. It really is impossible for anyone but a determined expert to understand the state of northern cod, current projections, the way DFO is managing current fishing, its objectives, and the way its decisions are made.

I know DFO has noted that all science documents are in the public domain and that's true, but when you look at it, the integrated fish management plan is available only upon request. You have to know where to go to get that, and you really have to forage through all the Canadian Science Advisory Secretariat, CSAS, reports and management plans over several years, crosswalking with some of the national frameworks, just to determine what the objectives are, where the gaps are, or even if there is actually a rebuilding plan or if an upper reference point has been set.

Key information used in the decision-making is often withheld, such as what has been called the fisheries checklist, now called the sustainable fishery survey, as we understand. That is not available to the public yet.

We're really encouraged, we have to say, by the commitments to transparency in the minister's mandate letter. There have been early steps taken by the department to better organize information publicly, and we've been calling for the release of the sustainable fishery survey or the checklist as an urgent priority, which we hope to see.

My last observation is that it looks as though we have five to 10 years to develop a vision and plan and to implement it for the future of this fishery. We've heard that if current positive trends continue—and with a rough year for capelin this year, there's no certainty that will be the case—northern cod may reach two-thirds of the limit reference point in three years. That means it will likely be five to 10 years until the stock clears that critical zone where we really should be thinking about a harvest increase.

We wish it were faster, of course, as does everyone, but the silver lining is that we have at least five years to implement a rebuilding plan that outlines the kind of fishery that benefits Newfoundland and Labrador communities.

It has been noted many times that there's a lot of cod on the global market and that to be competitive we need to focus on sustainability and on quality, not on quantity. We've heard a terrific presentation today on that, especially on having years with cod pots and line-caught cod. These are the kind of low-impact years that really should be strongly promoted in a new fishery.

We recognize that with innovation come quantifiable transition costs and that new investment will likely be needed, but the payoff will be substantial. If five to 10 years sounds like a long time, it's really not. We're already 25 years in, so we want to take advantage of the urgency and the ambition arising now due to these positive signs of recovery, to spur the science and the investment to building the sustainable fishery that coastal communities want and that the global market demands.

The observations on the lack of a rebuilding plan, the lack of transparency, the lack of a need for a rebuilding plan, and the opportunity we have to develop the plan for future fishery lead us to five short, specific recommendations. In each case these recommendations are consistent with what has already been committed to by the department but has not yet been implemented.

● (1600)

One, obviously develop a rebuilding plan based on the best available science that includes target reference points, timelines, and control rules, and stick to that plan unless and until new and reliable data comes into play.

Two, ensure we manage carefully for prey availability, especially capelin, and factor in ecosystem considerations like habitat protection and climate change as much as we can.

Three, keep removals from all other sources at the lowest possible level we can, at least until the stock clears that critical zone, and then make decisions that are consistent with the rebuilding targets that we set.

Four, make the rationale for management decisions as transparent as we can, including publishing DFO's sustainable fishery survey or checklist.

And five, invest in and give priority to gear and harvesting methods proven to increase quality and reduce bycatch and other impacts.

We have lots to build on: investing in the reinvestment in science that we've seen, a commitment to openness and transparency, the sustainable fisheries framework to be implemented, and great entrepreneurial developments in Newfoundland.

Every experience around the world shows that when you follow the science and set and stick to targets, stocks do recover, and people reap the benefits. And the northern cod fishery, we do believe, can be rebuilt once again to contribute enormously to the health of coastal communities and global food supply.

Thank you.

● (1605)

The Chair: Thank you, Mr. Laughren, and thank you to your group as well. You've been in front of us before, of course, and we appreciate that.

The Committee on the Status of Endangered Wildlife in Canada, or as Mr. Favaro referred to them earlier, COSEWIC, have been here on occasion, too. And Mr. Sinclair is joining us from Nanoose Bay.

Go ahead.

Mr. Alan Sinclair (Co-chair, Subcommitee on Marine Fishes, Committee on the Status of Endangered Wildlife in Canada, As an Individual): Thank you for the opportunity to participate in this exercise.

I've been the co-chair of the marine fishes subcommittee in COSEWIC since 2010. In fact, the first report that I presented to that committee was on Atlantic cod. That was the last report that COSEWIC did on the species. Before that, I was a scientist with Fisheries and Oceans Canada, and I have had experience on the east and west coasts. On the east coast, I did research in stock assessments on Atlantic cod. I chaired the groundfish subcommittee of the Canadian Atlantic Fisheries Scientific Advisory Committee from 1991 to 1993, and participated in several Atlantic zonal cod stock assessments meetings.

With regard to COSEWIC and what COSEWIC has been doing with Atlantic cod, the current format of COSEWIC was established under section 14 of the federal Species at Risk Act. Its assessments form the scientific foundation for the list of wildlife species at risk under that legislation. COSEWIC's mission is to assess the conservation status of species that may be at risk in Canada, and to report the results of the assessments, including reasons and uncertainties, to the Canadian Endangered Species Conservation Council, the Minister of Environment and Climate Change Canada, and to the Canadian public. COSEWIC uses the best available scientific, aboriginal, and community knowledge to assess species. The assessment process is independent and transparent.

The Species at Risk Act, or SARA, recognizes that conservation of biological diversity requires protection of taxonomic entities below the species level. With this in mind, COSEWIC developed guidelines for recognizing separate populations that are both discrete and evolutionarily significant relative to other populations. Discreteness refers to reproductive isolation caused by physical barriers or behaviour, and evolutionary significance refers to adaptation within discrete populations to differing environmental conditions in their respective habitats. A prime example of this is adaptation to preglacial isolation. If such discrete and significant populations are lost, they would likely not be replaced through natural dispersion. COSEWIC uses the term designatable unit, abbreviated as DU, for such populations.

Fisheries management also recognizes that population structure and species are divided into stocks for management purposes. These stocks are thought to be self-contained, with limited movement between stocks. However, fish stocks tend to be less discrete than DUs, and therefore less likely to develop evolutionarily significant adaptations. In the case of Atlantic cod, where both stocks and DUs have been defined, stocks have been combined into DUs, and no stock has been split between DUs.

That's a bit of background to help with what I will give next, which is the timeline of Atlantic cod assessments by COSEWIC. These have been done three times. In 1998, the species was considered a single unit and it was assessed as special concern. While there were considerable declines in both abundance and distribution of various Atlantic cod stocks at the time, the species was still highly abundant across its Canadian range. It did not meet the criteria for threatened, but it was considered to be special concern, because if conditions persisted it might become threatened.

It should be noted that at the time, research on genetic and adaptive variability among Atlantic cod populations in Canada was in its early stage, and the available evidence did not support establishment of multiple DUs. The assessment was done again in 2003, and Atlantic cod was assessed as four DUs. This change in population structure reflected a considerable amount of new information on variability in genetic discreteness and adaptive characteristics of the species throughout its Canadian range.

The Newfoundland and Labrador DU included the area from Cape Chidley in the north, the Labrador coast, and the Grand Bank off eastern Newfoundland. There are three separate cod stocks in this area: the northern Labrador or 2J stock; northern cod, 2J3KL, which is the main interest in this committee, I understand; and the southern Grand Bank cod 3NO.

There was also an Arctic DU, which was restricted to coastal lakes in Frobisher Bay and Cumberland Sound. This isolation from other Atlantic cod, and very special characteristics of its habitat, qualified it as being both discrete and significant relative to other populations.

● (1610)

There is also a Laurentian North DU that include two stocks, St. Pierre Bank and the Northern Gulf of St. Lawrence, and then a Maritime DU that included five stocks in the Southern gulf of St. Lawrence, Cabot Strait, Eastern Scotian Shelf, Western Scotian Shelf, and the Canadian portion of Georges Bank.

The Newfoundland and Labrador, Laurentian North, and Maritime DUs were distinguished from one another by variation in a number of characteristics indicating discreteness, which comes from genetics and tagging, and significance, which has to do with biological characteristics like age and maturity and also other genetic studies.

The Newfoundland and Labrador DU was assessed as endangered based on an estimated decline in abundance of 97% since the early 1970s, and 99% since the early 1960s. There has been virtually no recovery since the fisheries were closed in 1992 and 1993.

The Canadian government decided not to list the Newfoundland and Labrador DU under SARA, citing management initiatives that were in place under the Fisheries Act that focused on recovery and reducing catch.

Significant native, social, and economic impacts were anticipated related to reductions in other fisheries as the DUs were listed, whereas no mention was made of permitting capture under sections 72 and 73 of SARA, as had been done with both fish species when they were grandfathered under SARA in 2003.

The species was assessed again in 2010. The cod was assessed at that time as six DUs. As was the case in 2003, this change in the number of DUs from four to six resulted from further accumulation of information on population structure and immunity from genetics studies.

What was previously the Arctic DU was split into two, Arctic Lakes and Arctic Marine. The Arctic Marine included marine waters east and southeast of Baffin Island, and these fish seemed to have genetic characteristics more closely related to those of cod in Greenland and eastern Atlantic than to other Canadian cod stocks.

The Maritime DU was split in two—the new Laurentian South DU included the Southern Gulf of St. Lawrence, Cabot Strait, and Eastern Scotian shelf; the new Southern DU included the Western Scotian Shelf and Canadian portion of Georges Bank. These DUs were distinguished by genetics and age of maturity.

The Newfoundland and Labrador DU and the Laurentian North DU were not changed. The Newfoundland and Labrador DU was reassessed as endangered for the same reasons used in 2003. There had been very little change in abundance between the two assessments. The population remained extremely depleted with little sign of recovery. No decision has been made regarding whether the species will be listed under SARA, and it's been six years now since that assessment.

COSEWIC reassesses species at risk every 10 years, and the next Atlantic cod assessment will be in 2020.

Thank you.

The Chair: Thank you, Mr. Sinclair. We appreciate that.

Now we're going to go to our rounds of questioning.

I want to say welcome to the MP for Foothills. It's a nice succinct name for a riding, I must say.

Mr. John Barlow (Foothills, CPC): It's nice and easy.

Thanks for having me.

The Chair: Mr. Barlow, it's nice to see you.

We're going to go to Mr. McDonald for seven minutes.

Mr. Ken McDonald (Avalon, Lib.): Thank you to our witnesses for appearing today, both here in person and of course by video. It's been a really exciting study thus far. We've had lots of information from all sides, some differing, some not, but it's been a real eye-opener, I have to say, to go around and talk, whether to the officials or to the fishermen on the wharf, about what's going on with our cod stock.

Dr. Favaro, in many places this year, especially in Newfoundland, we're hearing reports of large quantities of fish. We're hearing tell of large fish, which I think hasn't been the norm in the past. I just want to ask you if you think that's an anomaly or is it a trend that we may see, and why.

● (1615)

Dr. Brett Favaro: I think this is where we have to be very careful. With my work, I'm always out on the water with folks and talking to people in different places. It's hard to disentangle what you're seeing in front of you from what the broad trends are.

I try to explain this to fishermen, too. You have to look at the stock assessments, and you have to look at the big scales, because it's really hard. There is this idea of shifting baselines, so we now see that there is more cod and there is bigger cod. That's just because in our frame of reference, a decade ago maybe there were even fewer. However, if you go back 30 or 40 years, it's a completely different story.

I would be very careful before assuming that this is a trend or that all is well. I think it's certainly good news, but we have to be very careful with how we proceed.

Mr. Ken McDonald: Maybe you could answer this one as well, Dr. Hutchings.

What holdback on the growth of the stock is caused by predation? Are we doing enough to try to balance it out, and to deal with the predators not getting too big compared to what they're taking from the stock? Should there be a balance of the predators versus the stock, to allow the stock to grow?

Dr. Jeffrey A. Hutchings: Balance can be a tough word sometimes. Balance means different things to different people in different contexts.

I would say there are perhaps two ways to look at this. One is, after the massive reduction in cod when we were left with a relatively small amount of cod compared to what was there certainly in the early 1960s, as I said earlier, they become more vulnerable and more susceptible to natural changes in the environment. Some of those could well be increases in the number of predators on occasion in particular areas. It also depends on how cod are spatially distributed relative to where their predators are.

In one sense, I think predation could well be reasonably identified as one factor affecting the natural mortality of cod in the absence of a fishery. I think that probably makes sense as part of the natural history of cod.

I find it interesting that we see cod having increased substantially over the last decade to a level that's the highest it's been in 25 years despite the fact that its primary predators, arguably harp seals, are also close to their maximum level of abundance.

On the degree to which predation affects recovery, I think it would be scientifically credible to say that it has had some effect, likely slowing the rate of recovery in the past, but I don't think it is preventing recovery given that we're seeing cod on a fairly positive trajectory relative to what we've seen recently, and given that the harp seal population is as high as it is.

Mr. Ken McDonald: Dr. Hutchings, are we as a government, or is DFO as a department, doing enough to assess the real stock that's out there, the real biomass, and doing it regularly enough to get a good count, not just on the cod but also on their major food sources? Do we know where that balance is? Are we up to date? Are we doing enough to be well-informed on both sides?

Dr. Jeffrey A. Hutchings: It's difficult to know sometimes how much effort one should expend in gaining more information relative to how much more information it's going to provide.

DFO has been undertaking broadscale groundfish research surveys throughout the northern cod region since 1983. They were designed for cod. They're pretty good at sampling other bottom-dwelling species. To your point, they don't sample the midwater species very well. That requires some other form of technology to sample those prey items in a fisheries-independent manner, meaning that you're not relying on catch data alone. That's been a challenge. DFO has some acoustic survey information for capelin for example, and it also has inshore spawning location information, but the two sets of data have given discordant perspectives over time. One could make the argument that perhaps we need more acoustic surveys. I think that will require another significant investment of funds. I think one would want to look to other countries that have such acoustic technology in place—Norway comes to mind—and evaluate the degree to which more investments of that nature are likely to produce the kind of information that will give us a more confident feeling for the status of cod.

All that is to say, I think your point is a very good one. This is the kind of question that we'd like to have better information on, but it's a big ocean and it can be very challenging to get reliable information of that nature.

● (1620)

Mr. Ken McDonald: Mr. Laughren, do you think we should extend the current limit of what we control, like the 200-mile limit? Should we go beyond that? What about enforcing that? Are we doing enough on that now, or should we be doing more?

Mr. Joshua Laughren: Save the easy one for me.

I don't think that's a great investment of our political will at the moment. I think the control over NAFO in particular has gotten better, but not without issue. It has gotten a lot better over the last 10 or 15 years, due to the leadership of Canada, I would say. We do have new tools coming into play. Here's a great chance for a plug. Oceana Canada just launched global fishing watch, which brings all fishing efforts and all fishing boats on to publicly available—

Mr. Ken McDonald: Mr. Laughren, I'll have to leave that plug where it is because that's going to be your final point.

Mr. Joshua Laughren: I'll stop there. No, I think we should be focused on applying policy as we have it in Canada

The Chair: Thank you.

Mr. Sopuck, for seven minutes, please.

Mr. Robert Sopuck (Dauphin—Swan River—Neepawa, CPC): Dr. Favaro, can you conduct size selection of cod because you're bringing them up alive? Could you introduce something like a slot size so that larger, more valuable fish could be released? Or does the act of bringing the fish to the surface from that depth cause significant mortality?

Dr. Brett Favaro: This is one of the exciting things about pots. They're probably among the most controllable of fishing gear, meaning that you can make escape panels, you can change the entry size, you can make the entry rigid, or you can make it soft. If it's rigid, you set a maximum size for the animals that can get in there.

Whether the fish can survive and be released again is species-dependent. With cod, there have been tagging studies done elsewhere in the world where survival has been pretty good, but it depends how deep you're fishing them from.

Mr. Robert Sopuck: Right.

Dr. Brett Favaro: This is exactly one of the things we need to replicate in Newfoundland and Labrador to see to what extent they can survive, how that is related to depth, and how that is related to body size. In other words, are big or small ones more likely to survive?

Mr. Robert Sopuck: Yes, the idea of slot limits has worked very well for many sport fisheries, so I think that's something to consider.

Mr. Laughren, quickly, did I hear you say—and you can correct me—that on a worldwide basis, cod are abundant?

Mr. Joshua Laughren: No.

Mr. Robert Sopuck: Okay. What's the price of cod worldwide? Does anybody have an idea? Is it high, low, what it used to be, or...?

Go ahead, Dr. Hutchings.

Dr. Jeffrey A. Hutchings: I think it depends on the quality of fish.

Mr. Robert Sopuck: Sure, okay.

Dr. Jeffrey A. Hutchings: In some places it's unchanged from what it was in the 1990s, but in other cases it's considerably more expensive.

Mr. Robert Sopuck: Since the cod moratorium in the 1990s, a significant shrimp fishery developed off Labrador. Dr. Hutchings, is there a relationship between the decline of the cod and the increase of the shrimp?

Dr. Jeffrey A. Hutchings: The best available scientific information would be consistent with that hypothesis.

Mr. Robert Sopuck: Okay, so right now we're in a major issue with the shrimp fishery off the coast with allocation. The reason I asked the value question earlier is that it almost seems like we have a choice between the cod and the shrimp. We had testimony in the previous Parliament from some very upset fishermen who were not too excited about the cod coming back because they had set themselves up for lucrative shrimp fisheries supporting many communities. To me, that's a legitimate choice that governments make.

In your view, Dr. Hutchings, is the shrimp fishery valuable enough that we should do whatever we can to preserve it, and is it somewhat related to predation?

Dr. Jeffrey A. Hutchings: I could offer you my perspective on it, since you've asked me for my opinion. Where I buy my fish and where I buy my cod, you can pay a pretty penny for cod and for high quality fish from Iceland and Norway. It's more expensive than the shrimp. We come back to this issue of quality and the quality of the product. I think you can attain a high price to go back to the fisherman from a good quality product.

The other aspect with the shrimp is that the they are a cold water species. We have been seeing this trend of warming water temperatures, and to some extent—we don't know, we can't nail it down precisely—that's probably affecting the shrimp.

● (1625)

Mr. Robert Sopuck: I really appreciate that answer because I think it's quite significant for our study. So thank you for that.

Dr. Hutchings, you said that in 1998 the fishery was reopened. It sounds to me as if it was against scientific advice. How did that happen that the fishery was reopened in 1998 and went to 2002?

Dr. Jeffrey A. Hutchings: I think, to be fair, after a number of years of closure, there were a lot of reports in different places, notably in Trinity Bay, and the union was bringing these to the fore, to the government's attention, making the point that from its perspective the health of the stock was better than what DFO science was indicating. That pressure, which must have been considerable, I would imagine, was the primary motive for opening the fishery. It wasn't part of a broader management context or science advice, but it was interesting and a bit unfortunate. I can tell you that for those five years the quotas were set somewhere between 4,000 tonnes and 9,000 tonnes. So that's not a lot. That's not a lot of fish compared to the 200,000 tonnes and 300,000 tonnes that were caught in other years. But DFO did some very good tagging studies during the same period of time and, basically, it tagged a lot of cod. Fishermen sent the tags back to DFO from the ones that they caught, and then DFO was able to estimate the percentage of cod that were being removed from these small-scale fisheries, compared to what was there, and it found it was in the order of 30% to 35%, which is a very high rate.

So I would suggest it was that tension between the perception of the health of the stock in some parts of the inshore area and what DFO science was saying.

Mr. Robert Sopuck: In Dr. Brattey's testimony at the last meeting here, he talked about the fishery developing over a hundred years or so, and he said it went up to 800,000 tonnes. I seem to recall 600,000 tonnes. Nevertheless, the maximum catch was quite significant.

Dr. Hutchings, earlier you talked about the 200,000 tonne figure as the early yield from that fishery from decades and decades ago, and in looking at Dr. Brattey's data, I thought it looked as if around 200,000 tonnes would be the maximum sustained yield once a full recovery is in place.

I'm not going to hold you to a number because I know how difficult that is, but is that in the ballpark of where you think we'll end up at some point?

Dr. Jeffrey A. Hutchings: Scientists don't like to be pinned down on these types of matters.

Mr. Robert Sopuck: I know they don't. Politicians like it even less.

Dr. Jeffrey A. Hutchings: That said, you asked a question and you should get an answer.

If the conditions that exist today and the productivity of northern cod today persist into the foreseeable future, given that a catch of 200,000 tonnes was clearly sustainable from roughly the 1830s to the 1960s, I would say it is not out of the question to identify 200,000 tonnes as a target quota, as something we would like to achieve.

Again, we come back to this issue of a target, but I think there's a lot of historical and contemporary data that would say it's not out of the question.

● (1630)

Mr. Robert Sopuck: That was as many equivocations as Sir Humphrey made on *Yes Minister*, but as a fisheries biologist myself, I am deeply sympathetic to your dilemma, given the uncertainty of the data.

I think my time is up, Mr. Chairman. Thank you.

The Chair: Mr. Donnelly, you have seven minutes, please.

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

Thank you to all our guests, our witnesses, for being here and presenting excellent information.

Mr. Laughren, you emphasized a quality versus quantity fishery, and you feel the department doesn't have a real rebuilding plan for northern cod. You talked about the rebuilding targets and the upper reference point, etc. Then you gave us four main points and five very specific recommendations, which I think are excellent. They've been submitted here, so I hope this committee considers these five recommendations and includes those in our report, when we produce a report here and discuss recommendations and decide on them. I think these are very clear, and as I say, I hope they will be included. I certainly will be encouraging the committee to adopt these.

You're calling, obviously, for the department to engage in a rebuilding plan and have that included in the Fisheries Act. I'm wondering if there are other nations around the world that have experience with rebuilding plans. Can you talk to us a little bit about that and where Canada sits with such plans?

Mr. Joshua Laughren: Sure. First, I'll point to the FAO report, which we can send over to you. When they analyzed stocks that had been rebuilt, there were a few commonalities. In the majority of cases, the difference between stocks that were rebuilt and those that weren't was where there was a legal requirement mandating some rebuilding. That was a general overview.

Number two, certainly we know—as I'm sure most of the committee members do—that the Magnuson-Stevens act in the U.S. is very prescriptive in that regard, requiring that action be taken within a certain amount of time when overfishing is deemed to be occurring, and also requiring that rebuilding plans be put in place when stocks are deemed to be overfished and depleted.

The EU, through its common fisheries policy, also has commitments to rebuild. Right now, we are conducting a comparative analysis of countries around the world and what their legal requirements are for rebuilding, which will be completed shortly, and I hope to bring it to the committee when it reviews the Fisheries Act.

Mr. Fin Donnelly: Thank you.

Mr. Sinclair, thank you for your overview. You said the next assessment is coming in 2020, but do you have an opinion? Do you think the northern cod population should be removed from the last endangered status designation?

Mr. Alan Sinclair: I think the recent indications of improvement are encouraging, but there is still a long way to go before this population is secure. The recent increases have been in less than one cod generation, which is roughly 10 to 12 years, so the increase has been over a short period of time. We really don't know how long it's going to persist and what's coming. I think it's a little early to redo it, but the option is always available. These assessments can be done on a quicker time scale, if people would like to see that. If there is significant new information that would require our committee to consider them again, that can be brought to our attention, and the process can be hastened. Normally, it takes about two years to get one of these reports done. This is a very large report, as you can imagine. We are in 2016. If there was a request today to have the cod redone, it might be ready in 2018, and it's going to happen in 2020 anyway.

Mr. Fin Donnelly: Thank you.

Dr. Hutchings, you gave us a historical overview that was quite helpful. One of the things you emphasized, which I think is really important, is that we should have the best available science, and that science should determine management decisions. I wonder if you could talk briefly about how you think we, or the department, could best ensure that science plays a key role in northern cod management.

● (1635)

Dr. Jeffrey A. Hutchings: I suppose the first thing to do would be to look at what has been done elsewhere—in other words, as I indicated in my opening remarks, what I would call best practices internationally. We have scientists in Europe, Australia, New Zealand, South Africa, and the United States who have processes to establish these limit and target reference points based on science alone. I noted that—if I interpreted the remarks correctly—the department indicated that a harvest control rule would be established by an interaction between DFO and industry. That's perhaps reasonable, but of course industry is only one of the stakeholders in determining what a harvest control rule might look like.

I'm veering away slightly.

I guess my point is, to follow up on what Josh said, that other countries have been using science to a greater and greater extent, and I think this should give a lot of encouragement to government, to the department, to be consistent with what other countries are doing.

Mr. Fin Donnelly: Thank you very much.

Have you had a chance to look at Oceana's five recommendations?

Dr. Jeffrey A. Hutchings: I've just heard them, but they sound familiar.

Mr. Fin Donnelly: Okay.

With the remaining few seconds I have, I'm going to go to Dr. Favaro for one last question about the scalability of the pots.

You've emphasized a value-added commercial fishery, with emphasis on quality over quantity. If we were to move up in terms of the amount of northern cod being fished, what would be the scalability of those pots, of that mechanism or fisheries technique you are proposing here?

Dr. Brett Favaro: When I say “scalable”, I mean that you can fish with one pot, you can fish with 25 pots, which is what we used for our study, and you can fish with more than that. For example, when they're fishing spot prawns in British Columbia, there are 500 pots on a boat. The action of fishing occurs while the gear is in the water, and what the fishermen are doing is they're putting it in the water, and they're coming back the next day and taking it out, but the fishing action is happening in the water. When I say “scalable”, I mean this isn't something that is only suitable for an artisanal small-scale fishery. It can work for that, but you can also imagine putting loads and loads of pots on a boat. I'm not advocating for wide-scale increases on fishing for cod, but this is one of the challenges of a conservation biologist. Everyone always says to me, “So, you're studying how to catch cod...”. This is the challenge, right? We're trying to find ways to do it with a lower impact. When I say “scalable”, again, I mean you can do it on a small scale or you can do it on a big scale.

The Chair: Okay, thank you very much.

Before I go to Mr. Morrissey, I need a quick clarification. How long are those pots in the water?

Dr. Brett Favaro: We were using 24-hour soaks. I mentioned the storm problem with gillnets if you can't get out and haul the gillnets. With pots what we find is if there's a storm, then you can leave them out for two or three days. The fish are still fine when you bring them up.

The Chair: Okay. Thank you.

Mr. Morrissey, go ahead, for seven minutes, please.

Mr. Robert Morrissey (Egmont, Lib.): My question is to Dr. Favaro.

Given the studies that you were doing on catch equipment, and given that the collapse of this fishery occurred so dramatically—when you look at the evidence that was given by DFO officials—literally within two to three years it dropped to a significant low. Nobody has pointed to any one area, I don't recall, in the evidence... Would you say that the catch methodology that was being utilized up until the moratorium was put in place had a significant impact?

Dr. Brett Favaro: There are two aspects to that. One is the direct impact of the fishing gear—for example, trawl nets on the sea floor—but there's also just the fact that when you lock yourself into a quantity-based fishery where you're getting low amounts for every kilo or pound of cod that you land, it necessitates huge landings. What it means is that you have a situation where, because you've built your fishery in this way, there has to be pressure to keep catches high or else nobody's going to make any money and you're going to lose your job.

I think there's the direct impact of the gear and there's also this issue of what it means economically to have gear that's not fetching the best quality you can get. I think those two worked in concert to cause problems.

Mr. Robert Morrissey: Thank you.

My question is to whoever would answer it, probably Dr. Hutchings.

In listening to commentary given by various witnesses before this committee, there's been a lot of focus put toward the scientifically credible process that must be undertaken and followed as you look at reopening this fishery. How much, in your opinion, should the process incorporate evidence or interaction from the primary producers, who are the people most affected by the collapse of the fishery and who will benefit most from the opening of the fishery? Could you comment on that?

● (1640)

Dr. Jeffrey A. Hutchings: I can.

I would suggest that what science can do in addressing any question is to provide advice to and provide analysis. As long as the results of that analysis are open and transparently communicated, and the science advice is made plain to decision-makers, to society, to fish processors, and to fishermen and so on, then you can evaluate what is then done with that science advice. In a broad sense, I think the credibility of incorporating science advice depends a great deal on the transparency of that advice.

I would argue that science should determine the limit and the target reference points for a fishery. The harvest control rule, which I haven't defined properly, is a control rule that governs the level of fishing pressure, or the level of fishing mortality, depending on whether the stock is close to the limit or close to the target. That rule can take on various forms, and ideally it is quantitative. That is where I think the fishing industry can come into play, and society can have a role in saying, "Okay, here's the limit and there's the target. How long do we want to reach that target? How long do we want to play things out?" In other words, there are decisions that can be made for which society has a role to impart information as to the speed with which a recovery plan or rebuilding is likely to take place. That is as long as everyone is cognisant of the pros and cons of having a big fishery now or maybe waiting a number of years for another fishery. I think that would be a valuable place where the industry could have a voice.

Mr. Robert Morrissey: Have we been effective in establishing credibility with the fisher?

Dr. Jeffrey A. Hutchings: That's a tough question. It somewhat depends on who you speak to.

Mr. Robert Morrissey: We're referring to just a fisher.

Dr. Jeffrey A. Hutchings: Well, it depends which fisher.

Mr. Robert Morrissey: That's fair.

Dr. Jeffrey A. Hutchings: I've interviewed a lot of them over time and found some fascinating information that, for example, DFO never captured.

Mr. Robert Morrissey: What was that?

Dr. Jeffrey A. Hutchings: There were changes in fishing effort over time. I interviewed inshore fishermen from Bonavista down along to the southern shore, and I basically asked them questions about how they changed their gear and how their mesh sizes in the gillnets changed over time. What about the size of their cod traps or the design of their cod traps? Did they have to fish farther and farther away from shore? Did they have to leave their gillnets out for longer and longer periods of time?

It was only by asking the fishermen those questions, one on one, that a pattern emerged.

Mr. Robert Morrissey: And that was not notable by DFO?

Dr. Jeffrey A. Hutchings: No. It might become and I would argue it should become part of a new management scenario, but it wasn't part of the management scenario of the seventies and eighties, to quantify spacial and temporal changes in fishing effort and changes to fishing gear.

The Chair: I think Mr. Laughren wanted to weigh in.

Mr. Joshua Laughren: I'm just going to go where Dr. Hutchings went at the end. I mean, when we do it badly, we pit science against the knowledge of the people in the industry.

Mr. Robert Morrissey: And the politician is caught in the middle.

Mr. Joshua Laughren: Yes.

Mr. Robert Morrissey: It's not a great spot to be.

Mr. Joshua Laughren: It's not a great spot. When we do it well, we integrate information from the users into our science model, so the science is better, and that's where Dr. Hutchings was going at the end. I shouldn't put words in his mouth.

That seems to me the way out: to find better and better ways to integrate that information, rather than pitting the one against the other.

● (1645)

Mr. Robert Morrissey: I have one final question. You referenced that there's no legislative mandate for a recovery plan, I believe, in the Fisheries Act. I'm paraphrasing. Yet you referenced the U.S. Magnuson-Stevens Fishery Conservation and Management Act as being a reference. Does the U.S. not have problems with cod stocks off the east coast and various other fisheries stocks that are collapsing or near collapse as well?

Mr. Joshua Laughren: I think the U.S. has all sorts of problems with its fisheries too. There are things that are going well and things going badly, but the one thing they have a better record on is rebuilding stocks that have—

Mr. Robert Morrissey: Could you give one example?

The Chair: I'm sorry, but I'm going to have to close it out right there. I apologize.

I should have been clear earlier, when I said to put up your hand if you want to weigh in on a topic. You have to get the members' attention because, when they get their block of time, they own the floor. It's theirs. It's not mine to butt in, even though I just butted in. Sorry.

Mr. Doherty, you have five minutes, please.

Mr. Todd Doherty (Cariboo—Prince George, CPC): Thank you, Mr. Chair.

Mr. Favaro, how much do the pots cost on average?

Dr. Brett Favaro: That's a great question with a complicated answer, because right now we're in the prototype phase for a lot of these. We built them by hand. I mean, it's conceivable that you could get these things down to the low hundred-dollar range. It depends where you want to get them built. It depends how you want to do the labour. Do you want to get them built in China and brought in? Do you want to try to build them locally? These are all sort of other questions that will factor into that answer.

That's once we all settle on the exact type of pot that we would want to use in a fishery like this, and there's a lot of options there too.

Mr. Todd Doherty: Mr. Favaro, I saw your video and I too want to commend you for your cinematography. I would like to ask how much time you spent on boats at Fogo Island and with the fishers in Gander?

Dr. Brett Favaro: We spend a couple of weeks a year up there and we have a research team up there a little bit longer than that. We go there for when the commercial fishery opens, during that time, but we go up at other times a year as well just to check in with the local harvesters and see what people's priorities are.

Mr. Todd Doherty: Okay.

Mr. Hutchings, I have the same question for you. How much time have you spent on the boats out in the water with the local fishers?

Dr. Jeffrey A. Hutchings: Well, in the last 20 years, none.

Mr. Todd Doherty: Okay. Thank you.

Mr. Laughren and Mr. Rangeley, I have the same question for you. How much time have you spent on the water with the local fishers?

Mr. Joshua Laughren: I have not spent much.

Mr. Robert Rangeley (Director of Science, Oceana Canada): I've spent small amount, three weeks.

Mr. Todd Doherty: Mr. Hutchings, you've said that science alone should determine harvest limits. Do you not think that we should be talking with the local fishers and consulting local fishers, local communities that depend on the economics of the fish stock?

Dr. Jeffrey A. Hutchings: I think we should set quotas, knowing what the targets are and knowing what the parameters are for what we're trying to achieve in a fishery.

Is there a role for fishers? Absolutely, but as I said in response to Mr. Morrissey's question, I think the science and the pros and cons of having a higher or a lower quota under any given circumstances should be clear to everyone, so that everyone can judge the appropriateness of the decision.

Mr. Todd Doherty: Okay. It has come up time and time again in our testimonies up to today, and again today, have any of your organizations studied capelin and the effects on the cod stock population? Have you done a capelin study?

Dr. Jeffrey A. Hutchings: I have not done a capelin study.

Mr. Todd Doherty: I'm sorry, I don't know who mentioned that we're looking at another poor year or a poor season with capelin. I would think that's something we should probably look at, or invest in, as we look at and project how our northern cod is going to be affected by that.

Mr. Sinclair, correct me if I'm wrong, but did you mention that at this point there has been no significant recovery since the 1992-93 moratorium, or was that with the 2003 report?

Mr. Alan Sinclair: Yes, that was regarding when the COSEWIC reports were done previously in 2003 and 2010.

The observation at the time was that there was no significant increase in the population. Things are, obviously, different now.

Mr. Todd Doherty: Can any of our guests tell us what the water temperatures are like off the coast of Norway? Are they warmer or colder?

Mr. Alan Sinclair: I think they're cold.

Mr. Todd Doherty: Are they? Are they colder than those off Newfoundland? We have had testimony within the last week saying that because of the jet stream, or what have you, it's warmer than off the coast of Newfoundland.

● (1650)

Dr. Jeffrey A. Hutchings: It rather depends on what part of Norway. They're caught along the south part of Norway that experiences incredibly warm temperatures, almost too warm, 20 degrees, 22 degrees in the summertime. As you go farther north, of course.... The waters are warming, definitely, as they are here. In an absolute sense, it's hard to get colder than Trinity Bay in March.

Mr. Todd Doherty: It was chilly last week, too.

I have one other question, and this is to our panel. Do you have any suggestions as to why Norway rebounded so much quicker than we did?

Dr. Jeffrey A. Hutchings: I can offer a perspective.

First, the stock didn't decline nearly to the same extent. It declined to about 10% of its maximum size.

Second, Norway decided to curtail fishing activity at a time when the cod stock—and we haven't talked much about it today—still had a broad age and size structure. One of the unfortunate things we did in Canada was to keep fishing and fishing, and we narrowed and narrowed the size and age structure of cod, such that after the moratorium it was difficult to find a cod aged nine or 10, although the fish can live to age 24 or 25.

The Chair: Mr. Sinclair, did you want in on that conversation?

Mr. Alan Sinclair: I was just supporting what Dr. Hutchings said. I agree with his explanation of the differences between what happened in Norway and what happened in Canada.

The Chair: Thank you very much.

Thank you, Mr. Doherty.

By the way, for the record, both Mr. Doherty and I are wearing sealskin today. I just thought I'd point that out.

Okay, Mr. Sopuck, as well.

Ms. Jordan, five minutes, please.

Mrs. Bernadette Jordan (South Shore—St. Margarets, Lib.): Thank you, Mr. Chair.

Thank you very much to our guests today. I found all this very interesting.

Dr. Favaro, I'm going to go to you first in regard to the gillnets versus the pots. You talked a lot about the quality of the fish when you bring it in. What about the amount? Would you still be able to catch the same amount with a pot as you do with the gillnet?

Dr. Brett Favaro: I'll put it this way, the weekly quota for fishing vessels on Fogo Island is 2,000 pounds a week. We were getting 2,000 pounds a day. If it were more efficient, then maybe you could fish for less than a day. It's not making a huge material difference in the labour that goes into it.

The other thing is that pots are much less labour intensive when you bring them aboard. You pull them up, you shake them, and the fish come out. With gill nets, you have to pick all the fish out, especially when they've been left out too long. The fish can get all tangled. They can get mashed in it. There are all sorts of challenges with that. When we're looking at these different gears, we're looking at the usability of the gear in real-world conditions, as well as in ideal conditions.

My response to you is that we were able to catch them at a volume that was sufficient for the fish harvesters we were working with.

Mrs. Bernadette Jordan: Right.

Further to the net versus the pot, you talked a little about the ghost fishing with the gillnets that get lost. Is that not a concern at all with the pots? I've seen pots that have been left and have washed ashore in other fisheries. Can it not happen with this as well?

Dr. Brett Favaro: To mitigate that, you can put in a biodegradable panel. You can work in some twine that will actually degrade when it's been in the water for too long. If you do lose the pot, it actually opens up and the fish can swim out over time. That isn't to say that there's no impact of having garbage on the bottom of the ocean, because there certainly is, but it's one impact you can do something to mitigate.

Mrs. Bernadette Jordan: Okay, thank you.

My next questions would go to Dr. Hutchings and Mr. Laughren because you both made kind of the same reference to science. I believe one of you said it should be based on stronger science only where we go forward with the quotas, with the reopening of the fishery.

Are you talking independent science? Are you talking DFO science? Is there a combination? I may be wrong, and please correct me if I am, but I kind of get the feeling that you're not thrilled with the DFO science that's come about. Is it better to say we need an independent review of the fishery?

Dr. Jeffrey A. Hutchings: I think 20 or 25 years ago, I would have said that I felt that the DFO scientific review of its work wasn't as transparent as it should be. Today, however, I think DFO's scientific reviews are quite open and quite transparent. They do incorporate the industry, the union, and academics. I think perhaps they could make better use of NGOs than they have in the past.

Basically, what I could envisage emerging from a review of this nature is that science, through a variety of different types of models, comes up with estimates of target reference points. There are various targets that are used internationally and nationally and there can be uncertainties associated with what they might be, but the key element to these types of meetings is that they're peer-reviewed. In other words, the methodology is there to be torn apart if it needs to be torn apart, and if assumptions are made that are inappropriate, people will hear about them.

Ideally, you end up having scientific advice or a recommendation that is based on the best available information, and the methodologies that have been used to obtain that advice have been thoroughly vetted.

● (1655)

Mrs. Bernadette Jordan: Thank you.

This can be for whoever wants to answer. We're now 25 years into the moratorium, and I know that with the increase in the stocks now, a number of fishers in Newfoundland are feeling that maybe we're moving towards a commercial fishery. I get the feeling from listening to you that we're not there yet; we're not ready to reopen a commercial fishery. It's not at a sustainable level. Is that a fair assumption?

Dr. Jeffrey A. Hutchings: Well, I would say, actually, that we do have a commercial fishery right now.

Mrs. Bernadette Jordan: I mean a large-scale commercial fishery.

Dr. Jeffrey A. Hutchings: As I've said for a little while now, it rather depends on what society wants, and this is where the target comes back into play. If we just wanted a small fishery of 5,000 tonnes or 10,000 tonnes a year, we could do that right now, but if we aspire to a 100,000-tonne fishery or a 200,000-tonne fishery, then our decisions about how rapidly we increase the quotas will be affected by that.

The Chair: Thank you, Ms. Jordan.

Now we're going over to Mr. Barlow, for five minutes, please.

Mr. John Barlow: Thank you, Mr. Chair.

We do have fish in southern Alberta. Ours are in rivers, but it's good to be here as part of this as well.

Mr. Laughren, I saw that you wanted to chime in there as well. I've looked through the material you have here. Would you say that Canada's cod fishery is a depleted fishery? Am I right on that? Maybe you'd like to expand on what level you feel the cod fishery is at right now.

Mr. Joshua Laughren: I quote good scientists like Dr. Hutchings and the work of DFO that says it's at one third of what's been established as that limit reference point. It's some 90-plus percent from depleted in a historical sense. I think that's a fair characterization in anyone's mind.

Mr. John Barlow: Mr. Sinclair, I want to move to you. I was looking through some of your material, and you mentioned a report, "Recent Declines in Cod Species Stocks in the Northwest Atlantic". You mentioned in there, "Research into these mechanisms will be costly, lengthy, difficult and may not prove successful." You mentioned, "The environmental mechanisms that have been influencing cod recruitment are unclear."

We've heard a lot today that the science behind assessing the health of our stocks is difficult. Is that still the case, or are there ways now that have improved the science behind assessing the health of our cod stocks?

Mr. Alan Sinclair: I think the surveys that have been referred to here, which have been ongoing for northern cod since 1983 and for other cod stocks in other parts of Canada since the early 1970s, are very effective at what they're doing. They're designed statistically to be efficient for species like cod. They work well for other species like haddock and pollock, and things like that.

They collect a wealth of information, it's being done consistently year after year, and internationally these surveys are enviable. It took about 10 years for them to become useful and we began to understand what they were saying and how we could interpret them effectively, but now I don't think anybody would suggest that these things should be done away with.

In addition to that, we're developing much more effective and powerful statistical methodologies to deal with the plethora of information we have on the fish stocks. We have new technologies that have to do with hydroacoustic surveys that allow us to have broader coverage in the water column, and we also have video and remotely operated vehicles used to understand behaviour and what fish are doing in the wild. Those technologies are available and becoming more and more available.

DFO is working hard to keep up with it. Perhaps they could be further advanced, but I still think we're learning more and more as we go forward.

One of the biggest problems I see—and it's always been a problem, and we're still trying to grapple with it—is trying to predict what's going to happen five years down the road. One of the biggest uncertainties is how many new fish are going to be produced each year. It's called recruitment. Given how many spawners there are, and what the environmental conditions are, people have been looking at this like the Holy Grail in fish stock assessment science for decades. It's proving to be difficult to get a handle on it.

What we're good at doing now is monitoring conditions and putting them together in an historical perspective to give us some idea of what we could expect from recovery, for instance. Having precise predictions into the future about when something is going to happen is still a big challenge.

● (1700)

Mr. John Barlow: You mentioned the inability, or maybe the inefficiency, of trying to predict the environmental factors that are part of assessing the health of the cod stock. Is it still your assessment that trying to assess and predict the environmental side of it is almost impossible, or are we having some progress in that area, as well?

Mr. Alan Sinclair: I haven't seen great progress in that area. I'm also a little bit away from the game these days. Perhaps other scientists in the room might have other opinions on it, but from my reading of things, it's still a great challenge.

It's important we bear that in mind when we're developing fisheries management plans when we don't know the future, just like when we make investments and talk about how people deal with personal finances. You have to hedge your bets, and don't do things that are too rash that could put you in jeopardy in the future.

Mr. John Barlow: I'm assuming it's difficult for us to influence that side of it as well. Despite having a moratorium on the catch, we can't have an impact on the environmental side of it.

Mr. Alan Sinclair: Except maybe cutting down greenhouse gas emissions and a few things like that.

The Chair: All right, thank you, Mr. Sinclair.

Now we go to Mr. Finnigan, for five minutes, please.

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

Thank you to the committee witnesses for appearing today.

Last week we were all out on the travel committee in Newfoundland, and we ended up with the salmon in Miramichi. We had one particular visit to Fogo Island, and from the fishermen in that community we heard that there are lots of fish in that area and there are lots of cod.

My question is for anyone. Does that fish population migrate? If you were to have controlled management in that particular area, would that affect the stock? If you brought it down to a certain level, does that affect the stock anywhere else? In other words, could you micromanage every area depending on the stock? My question is, does that fish migrate?

Dr. Jeffrey A. Hutchings: In my view, you've just identified the key scientific question for northern cod, that is, is it truly one single unit or is it composed of multiple units? We have very good reason to believe that cod in some areas don't migrate offshore, that they remain in inshore waters throughout their lives, whereas other cod come in from the offshore waters to the inshore waters to feed in the summer months and then migrate back again.

I think it is a really key question in science, and we increasingly have genetic tools to do this. They're doing this in Norway right now. They can grab a cod in Norway and do what's called a “genomic analysis”, and they can determine whether it came from the North Sea or coastal Norway or some other location. I suspect that in five or 10 years we'll know a lot more.

My gut feeling, knowing what I know about the biology of cod, is that northern cod are likely made up of a number of different reproductive units on smaller scales than 2J3KL, but how many of those there are and how big they are remains an open question.

● (1705)

Mr. Pat Finnigan: Dr. Favaro.

Dr. Brett Favaro: I have a really quick add-on to that. The way we do that type of research really matters. When we're on Fogo Island, we're talking to the community and letting them participate in the research. Getting them involved is a really good way to help people develop their own scientific literacy. This is where I think people like ourselves in academia are a little more nimble about that than maybe institutions like DFO, because it's very easy for us to approach the fish harvesters and get them involved with projects. I'm plugging that aspect of citizen science and involved research about things, because it's not enough to know: we need to have everybody know and understand it. It's going to be a lot easier to manage the stock if we can do that.

Mr. Pat Finnigan: Thank you.

Mr. Laughren, you said in your book that we have sophisticated equipment now such that you can monitor fishing fleets to make sure they stay within the law. From what we've been hearing, we can police them, but then it's up to the flag that's on the ship, to that country. In other words, we can be the police, but we're not the judge. How do we know that the international community is abiding by the laws and that if they're caught they're taking measures to remediate?

Mr. Joshua Laughren: That's a great question.

Certainly, a fair bit of it relies on co-operation between countries. It depends. If the vessel is within your own waters, I think you have much more that you can do, obviously, than if it's outside your waters.

We do increasingly have tools. Using AIS and satellite surveillance, you can tell where ships are and whether they're conducting what looks like fishing activity. You can flag that ship and identify it for follow-up, including when it goes to ports, both when it goes to your own port or to other ports. These are tools that help us with enforcement, but the ocean is so awfully big and spread out. We get better at it, but that's obviously going to be a continuing challenge.

Mr. Pat Finnigan: We were talking about the pot system. We see a lot of Fogo Island fishers who are still using the line. I think it's also a good method. They bleed the fish, behead it, and ice it right away. Quality, they get it. On Fogo Island, they know that's their future for the community.

If pots are the answer and if we could switch them all to pots, is there any incentive? Do we have any programs that could help everyone to stop using gillnets, first of all, and going either to line or to pots. To me, it looks like pots would be even more efficient. What's your comment on that, Doctor?

Dr. Brett Favaro: Handlines certainly have a role on the artisanal side of things, where they've fetched a good market price for their fish and sold them to fine restaurants as well.

The Government of Newfoundland and Labrador earmarked $2 million towards what I think they call their “groundfish development fund”. That was partly what funded our potting work. I think the economics are going to speak for themselves at the point where you can get twice as much per pound for that pot-caught fish, provided that you've correctly identified what you do with it after you capture it. That matters a lot. There is definitely work to be done in standardizing that and making sure that everybody is aware of how you process that fish and how you keep it aboard your boat to get that really high quality.

We're just getting into the economics of it now a little more, too, and doing almost a business plan for a fishing vessel and what it would look like if you're getting into it and starting up a pot-based boat versus this or that. I think the numbers are going to be very favourable for potting when you look at it that way.

The Chair: Thank you, Mr. Finnigan, and thank you to our guests.

Mr. Donnelly, please, for three minutes.

Mr. Fin Donnelly: Mr. Laughren, how should the department fairly consider science, local knowledge from fishermen and the community, first nations knowledge, and knowledge from the conservation community in developing rebuilding plans, setting targets, and determining management plans? In other words, do you know if there are any good models out there from other countries or even within Canada from provinces or territories?

Mr. Joshua Laughren: This isn't my area of expertise, but I'm sure there are plenty of good models.

I like what Dr. Hutchings said. The question of how many fish are out there is a science question. The question of what is the effect on the population of different levels of harvest is a science question. Once you know that, it then becomes an informed public policy discussion. Given that, what is the level of harvest that we want to undertake?

I think there's a “render unto Caesar what is Caesar's” mode here, where science informs the discussion, but in the end there's a public policy discussion about what we're willing to accept and not accept. It's that interplay.

● (1710)

Mr. Fin Donnelly: Would you encourage the committee to look at models that are inclusive like that and include these different interests?

Mr. Joshua Laughren: Absolutely, and I think DFO is getting better at that too.

I'm going to look to my colleagues here to see if anyone has a good example to point to exactly that.

Mr. Robert Rangeley: I was going to mention the indigenous knowledge. There is a large initiative under way on fish and western and indigenous knowledge systems in Canada. It's called “Fish-WIKS”. It's about fish and indigenous knowledge.

They're finding that DFO isn't able to easily incorporate knowledge from observations from indigenous peoples. Their effort is to try to bring that to the science of rebuilding. In fact, our symposium, for which you got a postcard at your desks, is going to delve into that issue.

I think the same applies to input into the scientific process from other sorts of observations. Dr. Hutchings mentioned an example on the spatial distribution.

It's very valuable input.

Mr. Fin Donnelly: Thank you.

To go back to Mr. Morrissey's question about rebuilding plans in the U.S., Mr. Laughren, since you ran out of time, maybe you could take a minute to talk about the examples of those fisheries with the rebuilding plans. I'm interested in that.

Mr. Joshua Laughren: Sure. Bob helped me on this. In our science report, we pointed to a number of case studies, such as the Atlantic sea scallops in the U.S., which recovered quite quickly. Georges Bank haddock is another one that comes to mind, which recovered very quickly once a rebuilding plan was put in place. Swordfish would be another one.

In Canada, we have the Atlantic halibut. We don't only have to look elsewhere for good stories about recovery, but when you look across the board, they are more likely to happen when you have that legislative mandate.

Mr. Fin Donnelly: Mr. Sinclair, I think you wanted to jump in.

Mr. Alan Sinclair: Yes. Thank you very much.

I also would suggest that you perhaps make some contacts with the groundfish fishery in British Columbia. It's a very complex fishery. It has a much higher species diversity than Atlantic Canada has. It has the same kind of mix of fishing gear and various issues, but they are making remarkable progress as a unit in putting in place very effective fisheries management plans.

On the offshore trawler fleet, there's 100% observer coverage that is paid for, and a large part of it is paid for by the industry itself. They have video monitoring on fixed-gear fisheries. They get together and talk among themselves about how to make sure that all the catch is accounted for. In my opinion, it's very successful.

On another one, we're working with the David Suzuki Foundation. They've frozen the trawl footprint, if you will. The areas that are being fished now with bottom trawls have been identified and only areas that have been used a lot are being used anymore. It's a very encouraging example and probably not that well known worldwide.

The Chair: Just let me break in for one moment. We have about five to eight minutes left. I don't think it would be fair to open up the one round of questioning or what have you. We've just gone through two complete rounds.

To use the common expression of every game show host, do you want to do a lightning round just very quickly if you want a point of clarification or anything else?

Mr. Donnelly, you go ahead.

Mr. Fin Donnelly: I was just going to finish with Dr. Hutchings' comment that I think obviously size and age structure matter.

The Chair: Right. I'll leave that as it is, maybe at the wish of the committee.

Mr. Morrissey, go ahead but be very quick.

Mr. Robert Morrissey: Could you elaborate on the Atlantic halibut that you referenced as a management plan that worked?

The Chair: Can you elaborate in a concise way?

Mr. Robert Rangeley: The Atlantic halibut has shown tremendous growth. There were good management efforts put into place in terms of limiting bycatch and overharvesting on the Scotian Shelf, so it really is a success story.

Mr. Joshua Laughren: That's now at near-historic levels.

The Chair: Mr. Finnigan, go ahead very quickly.

● (1715)

Mr. Pat Finnigan: We talked about the warming of the waters and that's what we've been hearing all along. We don't know what's happened, really, but we know that the warming waters have had some effect. Whether the waters in Norway are warmer than here...a lot of species are affected. Would you say that our best place to put a good chunk of our money is towards making sure as quickly as we can that the warming of the climate doesn't happen? Would measures such as we took today to cut carbon be good measures to help the fish stock?

The Chair: Go ahead very quickly, sir.

Mr. Joshua Laughren: Yes. By far one of the most important things we can do for our oceans is to limit climate change.

The Chair: Thank you to our guests.

Dr. Favaro, Dr. Hutchings, Mr. Laughren, Mr. Rangeley, and of course, Mr. Sinclair joining us on the west coast, it's good to see you all.

Thank you to all our witnesses.

We're going to break for just a brief period and we'll come back in camera to discuss.

[*Proceedings continue in camera*]