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Mr. Rodney Weston

Standing Committee on Fisheries and Oceans

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● (1535)

[*English*]

The Chair (Mr. Rodney Weston (Saint John, CPC)): I call this meeting to order.

Before we begin, I'd like to inform the honourable members that on Friday, April 27, 2012, the clerk of the committee received a letter of resignation from Mr. Fin Donnelly as first vice-chair of the committee.

Some hon. members: Ohhhh.

The Chair: Pursuant to Standing Order 106(2), we will proceed with the election of a new vice-chair at this time. I'll invite the clerk to preside over this process.

Georges, go ahead.

The Clerk of the Committee (Mr. Georges Etoka): Thank you, Chair.

I am now prepared to receive motions for the election of a first vice-chair.

Pursuant to Standing Order 106(2), the first vice-chair must be a member of the official opposition.

Mr. Donnelly, go ahead.

Mr. Fin Donnelly (New Westminster—Coquitlam, NDP): I move that Robert Chisholm be first vice-chair.

The Clerk: It has been moved by Mr. Donnelly that Mr. Chisholm be elected as first vice-chair of the committee.

Are there any other nominations?

Is it the pleasure of the committee to adopt the motion?

Some hon. members: Agreed.

The Clerk: I declare the motion carried, and that Mr. Chisholm be elected first vice-chair of the committee.

Thank you, sir.

The Chair: Thank you, Georges.

Mr. Chisholm, congratulations.

I want to take this opportunity to welcome you and Mr. Toone to the committee. I didn't do that last week, and I apologize. I was actually waiting for your colleague to join us and welcome two new members to this committee. We're certainly looking forward to your participation in the committee as we go forward working on issues of importance for fisheries and oceans.

I look forward to continuing to work with Mr. Donnelly. It's been a pleasure to work with him in his capacity as vice-chair and I look forward to continuing that as well.

Mr. Chisholm, go ahead.

Mr. Robert Chisholm (Dartmouth—Cole Harbour, NDP): Thank you, Mr. Chairman.

I'm pleased to be a part of this committee. I know that Mr. Donnelly has set a standard that I will have to work hard to maintain, but the fisheries are certainly an issue that has been important to me in my political life in Nova Scotia. I look forward to working with my colleagues around the room as we continue to pursue issues that are so important to this country.

Thank you very much.

The Chair: Thank you very much, Mr. Chisholm.

We'll move on and thank our guests for joining us today. Sorry for the delay, but certainly business has to be taken care of.

Mr. Imre, I appreciate your taking the time out of your busy schedule to appear before our committee today and to discuss the issue that this committee has undertaken as a study: invasive species in the Great Lakes water system. I look forward to your presentation.

Our clerk has probably advised you that we generally allow about ten minutes for presentations and then we move into questions and answers.

If I interrupt you at some point, I apologize in advance. In the interest of fairness, members are constrained by certain time limits to allow everyone the appropriate amount of time available to them.

Anytime you're ready, please proceed.

Dr. Istvan Imre (Assistant Professor, Department of Biology, Algoma University, As an Individual): Thank you very much.

Bonjour, mesdames et messieurs. Thank you very much for inviting me here. It's certainly a pleasure and an honour to be here to talk to you today.

My name is Istvan Imre. I am a biology faculty member in the biology department at Algoma University, which is Ontario's newest university. It's the smallest but arguably probably the most formidable, as you will see.

Today we'll be talking to you about sea lamprey. I am not an expert on the five species of Asian carp or the northern snakehead, and arguably the sea lamprey are a clear and present danger. They are right here, right now. Out of the close to 200 aquatic species that we know have infested the Great Lakes in the last decade or so, without a doubt sea lamprey is the most formidable. Also, as you are probably aware, it takes the most effort and the most amount of money to try to control it.

You might be looking at my title and thinking, “Oh, he's a sensationalist”. That's partly true, because I like Schwarzenegger and the whole *Terminator* series, but if you look at the mouth of the sea lamprey that you see on the screen, you will probably understand that for a lake trout, or for other fish species found in the Great Lakes, an organism attaching to them with that kind of formidable armament really will result in termination of that individual.

Very briefly, I will talk to you about the taxonomy and the life cycle of the sea lamprey and its invasion history, or how it got here. I will also say a couple of words about the Great Lakes Fishery Commission, because I understand that you will be thinking about renewing that convention between the U.S.A. and Canada, as well as a couple of words about present control measures of sea lamprey and also a couple of proposed measures.

The reference at the bottom of the screen is to one of the papers that I wrote. Most of the information that we'll be talking about today is found in that publication.

First, although most of us think of the sea lamprey as an eel, it really is not an eel. In fact, it's a fish species that is a lot more ancient than that, although I know it looks very similar. In fact, it's jawless, hence the name “agnatha”, which means jawless. It is also grouped into a group called cyclostome, which means “round mouth”, for obvious reasons. It is actually native to the Atlantic Ocean and invasive in the Great Lakes ecosystem.

It has been around much, much longer than the dinosaurs. Why do I mention that? Just so we understand that this fish, from an evolutionary standpoint, is a really successful species. As such, it might be quite difficult to exterminate.

Now, sea lamprey is not the only species we know of. There are about 40 species of lampreys. Many of them are parasitic, but only the sea lamprey has gained the notoriety that we know of in the last century or so.

It's an anadromous fish, meaning either that it lives in the Atlantic Ocean and goes into the Atlantic Ocean shoreline tributaries to spawn or, if it's land-locked, that it lives in the Great Lakes ecosystem and then goes to spawn into freshwater tributaries. The adults are at the parasitic life stage.

As you can see from the pictures, they have horny teeth-like structures in an oral hood that is used to attach to the side of the fish. They use their tongues to rasp a hole in the side of the fish. You can see in the pictures what is the very unfortunate outcome of a sea lamprey attack, as well as, in the upper right corner of the picture, a lake trout with two individuals attached to it.

Another picture shows that lake trout. It's not just the attack that causes the death of the fish, but often.... Actually, all small fish die from it. Some large fish might survive the actual attack, but they succumb later on to various bacterial infections. About 40% to 60% of lake trout die once they have been attacked by sea lamprey.

To give you a bit of applied data in terms of what is the significance in terms of economic injury, a sea lamprey can kill 40 or more pounds of fish during its adult life stage. We know of instances when only one of every seven fish attacked actually survived. Even though we tend to think of sea lamprey as preying on salmonids, which would be salmon-like fishes and trout and salmon, they actually prey on a broad variety of native fish species that live in the Great Lakes ecosystem, including whitefish, burbot, walleye, and even lake sturgeon—so they are really indiscriminate parasites.

My illustration shows the life cycle in a nutshell. The reason for me presenting this is so that the committee understands that many actual geographical areas or habitats that the sea lamprey needs for its life cycle overlap with those of other fish species, thereby making separate control of that species quite difficult at times.

● (1540)

The spawning phase happens from late April to June, depending on the water body. These fish need very clean habitat, clean streams, not unlike salmon. That is ironically one of the reasons why, when we cleaned up St. Marys River over the past couple of decades, with the habitat improvement the sea lamprey managed to move in there and spawn.

Once the eggs are deposited the adults die. The larvae are filter-feeders for anywhere from three to about 17 years. They reside in streams. After that they metamorphose and go into the nearest large lake or the Atlantic Ocean and become parasitic. They live in that life stage for about 12 to 20 months. Then they reproduce and the whole cycle starts all over again.

On the invasion history, we know that sea lamprey have been present in Lake Ontario since 1835. Their landlocked populations have been known to occur in streams around Lake Ontario, but we don't have any data about sea lamprey in the other Great Lakes before 1921. All of us know that the Welland Canal was built in 1829 to connect Lake Ontario and Lake Erie. That indirectly opened an avenue for the sea lamprey to infest or invade the other Great Lakes.

We found sea lamprey in Lake Erie in 1921, and from there on it spread very quickly into the other Great Lakes. By some accounts they had already finished their invasion by 1939. They were also present in Lake Superior. In a very short time, one or two decades, the population exploded, resulting in a quite precipitous decline in both recreational and commercially important native fish species populations.

Why was there this sudden explosion? These species are brand-new to this ecosystem, meaning that the native fish species did not co-evolve with them. They did not recognize them as a predator, or didn't evolve proper defence mechanisms against them, so they could do a huge amount of damage in a relatively short amount of time.

As an example, before the sea lamprey entered Lake Huron and Lake Superior, Canada and the United States could harvest about 15 million pounds of lake trout. Once the sea lamprey got in, by the early 1960s the catch was down to about 300,000 pounds. So there was about a 50-times decrease from previous catch levels. That of course resulted in the collapse of a number of commercial fisheries.

To give a quick idea for the committee of where the sea lamprey is present around the North American continent, the area shown in brown is where the sea lamprey is native, along the U.S. and Canadian eastern seaboard. The area shown in red is where it has become invasive in the last century or so.

As we all know, the Great Lakes Fishery Commission was put in place in 1955-56. One of the major responsibilities of the commission was to implement a program to try to manage this formidable invasive pest. Presently the program is composed of a multi-pronged approach using chemicals like lampricides to kill off the juveniles that reside in streams. We trap the adults, sterilize the males, and release them back to compete with healthy males. We also have a so-called barrier program on 50 or so tributaries around the Great Lakes to stop them from accessing their spawning areas. Obviously, if you have a barrier that stops the sea lamprey from going to their spawning stream you don't have to treat that habitat with chemicals.

We started working on the lampricides in the early 1950s. Scientists believe they have now tested some 6,000 compounds. In 1958 we found one that was very effective, popularly known as TMF. It is applied to streams in industrial quantities. It's very effective in killing larvae at their filter-feeding stage. We were able to reduce sea lamprey populations by about 90% in the 1960s.

However, we all know that pesticides have a negative connotation. They're becoming more and more expensive. So the fishery commission put an emphasis on coming up with other ways of controlling this pest.

● (1545)

We can also trap them. This would be a small portable trap on smaller streams. These can be quite effective in catching the adults when they are migrating to their spawning grounds.

When we are incorporating traps into larger barriers, they tend to have a lot lower efficiency. A large amount of research at the present time is aimed at trying to come up with ways of making these traps more effective with newer designs.

The sterile male release program, as you probably know, has been recently stopped. This involved using nasty chemicals to basically sterilize males by chemical means and releasing them into their habitat to compete with healthy males. Of course the eggs of females that were fertilized by these males did not survive.

Finally, the barrier program I mentioned is composed of several different barrier types, including low-head barriers, which we will be showing examples of, as well as electric barriers, raised crest barriers, and velocity barriers. All of these are aimed at trying to take advantage of the lesser swimming ability of the sea lamprey and protecting habitats above the barriers from species spawning in those areas.

Just to give you an idea, these are the locations of barrier dams around the Great Lakes. There are over 50 of them at the present time. To put it in context, we have about 5,800 streams around the Great Lakes, so it's a very small number of streams that actually have this control device on them.

This is what a barrier dam would look like. It's about 1.5 metres to 2 metres in height. Sea lamprey cannot cross it, but several other fish species can. You can see a large salmonid in the air that was able to jump and swim over it. Nevertheless, there is information telling us that it still disrupts the migration of several other fish species that are native to the Great Lakes ecosystem.

This would be an example of an inflatable barrier. This is being raised up only during the migration season and then being lowered after the sea lamprey migration season to allow for the movement of other fish.

The Great Lakes Fishery Commission has put a lot of emphasis on trying to decrease reliance on chemicals like the TFM, and coming up with more improved use of traps and barriers, other more environmentally friendly choices, as well as new alternate control methods.

I'll be finishing in about two minutes. Sorry for being a bit over time.

One new measure that has enjoyed quite a bit of research attention over the past five to ten years is the use of pheromones, which are substances that typically attract individuals to the point of origin. Larvae have a so-called migratory pheromone that is used by adults. It's considered by adults as a kind of habitat reliability index; if there's a pheromone coming out, that means there are live larvae so it's a good spawning habitat.

Males also release a sex pheromone to attract the females during the spawning phase. Scientists have been able to synthesize these chemicals to try to attract lamprey to traps and of course kill them.

An approach I have championed, so to speak, over the past couple of years—I finally got a bit of money from the fishery commission—is to ring the alarm. As opposed to attracting them, it's about scaring them away. That's by using natural alarm cues—for example, chemicals that might reside in their skin or internal organs or in the decaying sea lamprey. Or we could use direct predator cues. These would be urine, saliva, or other chemicals originating from known sea lamprey predators. This research is ongoing.

How could we use that? Obviously if it works, we could prevent sea lamprey from entering certain streams and concentrate them into streams where we already have trapping or other control methods. Or during the day, when they typically hide under rocks and under cut banks, we could perhaps scare them out from hiding and make them more available to trapping devices.

It's nothing new. It has been used. It's a push-pull strategy, namely pulling them with pheromones and pushing them with repellents. It has been used with inside pests, and we are trying to use the same approach towards sea lamprey.

Thank you very much for your attention. This is what I wanted to talk about. The reason for going into this kind of detail is to make you realize we have to look at every life stage where we can potentially control the sea lamprey. As you see, the Great Lakes Fishery Commission is already using a multi-pronged approach, to try to control them in any way and by any means possible.

● (1550)

So far, we have been pretty successful, with the exception of the St. Marys River. That is probably the hot spot of the Great Lakes, and this is where my university is, on the shore of St. Marys. That one river system is actually seeding most of northern Lake Huron with sea lamprey. Further research is still desperately needed.

Thank you.

● (1555)

The Chair: Thank you very much, Mr. Imre.

We'll start off with questions at this point, with Mr. Hayes.

Mr. Bryan Hayes (Sault Ste. Marie, CPC): Thanks, Mr. Chair.

Welcome, Dr. Imre. It's very nice to have you here from Sault Ste. Marie, Algoma University, which is where I graduated from. Algoma University and Sault Ste. Marie are very pleased to have you come to Sault Ste. Marie, so thank you very much for that.

You stated in your report that in 2001 the Great Lakes Fishery Commission pledged to reduce its reliance on lampricides by 50%, which is why you're working on developing a new method. Do you have any sense of what progress has been made in terms of that 2001 pledge? Has there in fact been a reduction in the reliance on lampricides by 50%, to your knowledge?

Dr. Istvan Imre: I'm not part of the control personnel, so I couldn't give you the exact data, but my understanding is that the present sea lamprey control still relies very heavily on pesticide application, because frankly that is, at the present time, the most efficient way of killing sea lamprey.

There might have been some reduction, but certainly not to the extent that they had hoped to achieve. The pheromone research has been going on for at least that length of time, if not longer, and it has shown quite positive signs in terms of achieving good success in getting lamprey to respond to pheromones. There have been some field tests to show efficacy, but to my knowledge pheromones have not been utilized on a large scale for control purposes. I literally just received money last year to do research on the repellents that I propose, so I'll be doing the first experiments this summer.

Another gentleman, who is working on this in parallel, did a set of experiments last summer. To make a long story short, at the present time I don't think that the Great Lakes Fishery Commission is anywhere close to meeting its target of reducing pesticide application.

Mr. Bryan Hayes: Can you speak to what prompted them to actually set that target? Was there something wrong with the use of lampricides? Was it creating something that made people feel they needed to change what they were doing? Was there a particular reason for setting that target? Why would they have made that suggestion?

Dr. Istvan Imre: From reading the literature as well as the reports that came out from the Great Lakes Fishery Commission, my opinion is there could be several reasons. One of them, which I think everybody is aware of, is nobody likes pesticides being put into drinking water supplies. Now, admittedly this pesticide biodegrades, but nevertheless it has a negative connotation. There is at least some evidence that this pesticide, despite the claim that it acts only against sea lamprey, in fact causes chronic effects in the very early life stages of lake sturgeon, for example. We know lake sturgeon is at the present stage endangered, or very close to being so.

The last and probably most important reason is that the cost of lampricide is literally going up almost every year. My understanding is that at the present time the cost of the chemical is in the order of $1 million per lake. It varies, I think, from about $800,000 to over a million, depending on the lake.

That's the overall control, but most of the control in fact relies on pesticides. I think the Fishery Commission can see the writing on the wall, in the sense that costs keep going up and up and the public doesn't like the fact that pesticides are being used in water in industrial quantities. It would probably be a very sensible idea to try to decrease the amount of it and come up with other methods that at least could complement the use of the pesticide.

Mr. Bryan Hayes: I read your article, and it mentioned, as did you, other alternatives, such as the pheromones, the intensification of existing alternative control technologies, such as low-head barrier dams, and the trapping and release of sterile male lamprey. To date, have you measured or is anybody measuring which method is proving to be the most effective?

Dr. Istvan Imre: I cannot give you data because I'm not part of the actual control personnel, but I think there's no question, pesticide is by far the most effective.

I alluded to the use of traps that are being used at the present time mostly for population evaluation purposes in terms of what densities of lamprey we are dealing with, as opposed to being used for outright control because of the high variability in efficiency. Typically efficiency is quite low, especially in very large river systems like the St. Marys.

In terms of the barrier dam issue, it can be quite good, in that it really prevents animals from moving up into spawning habitat and it's a one-time cost in the sense that you have to build a barrier only one time. Of course you have to go and collect the animals. And it's effective.

There is a problem with that. During the latter part of my undergraduate studies in the late nineties I actually participated in a study that looked at the effect of those barrier dams on the migration patterns of other native fish species. Yes, we do stop sea lamprey, but we also stop a number of other fish species that actually have their spawning migration roughly around the same time. An example at hand would be the common white sucker, *catostomus commersoni*, which also has its spawning migration right at the same time as when sea lamprey do. So yes, we stop sea lamprey, but it has other effects. So again, it's kind of a double-edged sword.

In terms of the other methods, namely the sterile males, I'm not aware of any data in terms of how effective it is. If you were to ask somebody from Fisheries and Oceans Canada they probably could give you better data on that, but I know that due to cost issues that program was terminated lately, even though we do know that once those animals are sterilized they cannot spawn.

The pheromone program is not at the stage of actually being used for any kind of control, and the repellent is just starting up, so those would not figure at all into the overall equation.

● (1600)

The Chair: Thank you, Mr. Hayes.

Mr. Chisholm.

Mr. Robert Chisholm: Thank you, Mr. Chair.

I'd like to split my time with Mr. Donnelly. I just had a couple of questions, and Mr. Donnelly is going to pursue a little more the issue of the pesticides.

You talked about the St. Marys River and about how the efforts to clean that river up resulted in the lampreys coming into that territory. Maybe other people have heard the presentation, but I wonder if you could tell me a little bit about what was done with the St. Marys River, about what was the problem, and then explain a little bit about how that happened.

Dr. Istvan Imre: It's a water quality issue that we have had for quite a long time—namely, all the effluents, mostly industrial effluents, that went into St. Marys. Many of them have accumulated in the sediments too. We used to have a paper mill; I think it's closed now.

Anyway, due to usual Ministry of the Environment regulations, as in trying to restrict any kind of toxic outflow from any kind of industrial entity, over time that has resulted in generally cleaning the water up. Don't get me wrong; it's a positive thing, and I very much applaud that. We should do more of it. But the issue is that sea lamprey actually need good quality water, clean water, cold water for spawning, just like salmon and trout do. An unwanted effect of the cleanup of the river itself, namely cutting down on toxic load and what not and improvement of water quality, has resulted in sea lamprey being able to move into it and spawn, and, more importantly, the larvae being able to survive in the sediments.

Just before coming here I read a report written by Lupi and Hoehn that was published in 1998 and reported that the Great Lakes Fishery Commission had looked at the number of sea lamprey coming out of St. Marys and seeding northern Lake Huron in 1998, which was 14 years ago. The average estimated number of sea lamprey per lake was about 50,000. However, in northern Lake Huron—and remember that all the lampreys are coming from St. Marys as a point of origin—their number was estimated at 400,000, more than all the Great Lakes combined.

I assume the next issue would be if we can do streams, why can we not do St. Marys? The reason it's so difficult to control is that St. Marys is a very large river. It is very deep and very fast. Putting a chemical into a very deep and very fast river is not particularly effective, even when using a huge amount, because the flow takes it away very quickly. We can control through chemical only in some backwaters kind of sporadically. It doesn't really make a dent.

That river has enjoyed a lot of research attention in terms of the dams in Sault Ste. Marie. The Brookfield dam and the Edison company on the other side have several traps built into the dams. Those traps are catching sea lamprey every year. There's a lot of research attention coming from the University of Guelph as well as from me and DFO locally to try to figure out how we can increase the efficiency of those traps as much as possible, given that chemical control wouldn't work.

Did I answer your question?

● (1605)

Mr. Robert Chisholm: Yes. It's interesting.

The Chair: Mr. Donnelly.

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

I understand that TFM lampricide can be harmful to other species. You mentioned the lake sturgeon, and there's also the threatened northern brook lamprey and spotted salamanders. While pesticides no doubt play an important role in controlling invasive aquatic species, we know that they can harm many species at the same time and have effects that are difficult to predict. In light of this, how important is Fisheries and Oceans Canada's research and other scientific research like yours to the understanding of the impact of these pesticides?

Also, do you believe your work could be affected by the cuts to DFO?

Dr. Istvan Imre: I think I'm probably overstating the obvious a little bit, in the sense that everybody knows what kinds of effects pesticides can have in general and on other aquatic species that cohabit the streams with sea lamprey juveniles.

I think what I said about lake sturgeon earlier is important. It's not a strong effect. It doesn't result in immediate large numbers of individuals dying, but over time it can influence their survivability. It's not strong evidence, but it's there. Of course other lamprey species—and there are several that are native to the Great Lakes ecosystem—would be affected. I think it's important to conduct further work on that as well as to try to conduct more work on other avenues that are more environmentally friendly, to perhaps hopefully in the near future.... That's what the Great Lakes Fishery Commission was thinking in 2001. It hasn't happened in the past 11 years, but some of these things take a long time.

In terms of how my work could be affected, my money typically comes not from Fisheries and Oceans Canada, but from the Great Lakes Fishery Commission. The Great Lakes Fishery Commission has given me a grant for one year to pursue this repellent idea. So if funding were cut—and we've already felt cuts from the U.S. side that came last year—that would basically prevent us from doing further work. We couldn't do it.

Something else I think cannot be stated enough—and this is what I'm fighting at my own school too. I have colleagues who do, for example, plant ecology. I'm not trying to trivialize it, but it takes a lot less money to go out and do research with plants than to do research in water, where you need boats, trucks, personnel, and shocking devices. Or say if you want to do lab experiments, you need special.... DFO, for example, in St. Mary's has actually built a very nice lab facility that they have allowed me to use.

Mr. Fin Donnelly: Maybe I could ask just one more quick question, since I have a short amount of time.

Given those constraints, what do you think is the most important next step that Canada could take in dealing with the aquatic invasive species?

Dr. Istvan Imre: Do you mean other than providing at least the same amount of funding that we had before?

I think that funding this research as well as managing, in terms of control, is really important.

Please excuse me, I'm not trying to tell you what to do—that's your own decision. But you could think of this money as an investment in the sense that if we invest the appropriate funds in control and further research, we can make sure that the existing commercial fisheries will exist in the future. It's literally at that level.

Remember that both commercial and recreational fisheries are estimated as being worth billions of dollars per year in terms of revenue. In that regard, I would take the view that I don't think they'll ever be able to get rid of the sea lamprey. It's more just a matter of trying to keep them at very low densities and allowing fish populations to survive alongside them.

● (1610)

The Chair: Thank you very much.

Mr. Kamp.

Mr. Randy Kamp (Pitt Meadows—Maple Ridge—Mission, CPC): Thank you, Mr. Chair.

Thank you, Dr. Imre, for being here.

It was a great presentation, and I think it helped us. We've heard a lot about sea lamprey, but I don't think we've understood as much as we have today about the biology and the life cycle and so on. So I appreciate your testimony.

Obviously the sea lamprey is native somewhere. Can you explain where that is in the world?

Dr. Istvan Imre: The sea lamprey is native to the Atlantic Ocean, which means it would be spawning on both the American side and the European side. Actually, I think Mr. Allen brought up the issue that two lampreys were sent to the Queen. I guess China goes with pandas and we go with sea lamprey, no pun intended.

The interesting thing is that, for example, in Portugal—for which I have factual information, because one of my colleagues is the terrestrial invasive species chair at Algoma and he is from Portugal—the sea lamprey is literally a national delicacy. They eat *arroz de lampreia*, which is a dish prepared out of rice and lamprey blood.

Yes, I'm from Transylvania. Both things are true.

There is a fishery—at least it used to be a commercial fishery for sea lamprey—and it's at the point of being overfished in the Atlantic Ocean. At the present time it's such a highly sought after food item that you could get 50 to 80 euros per live lamprey in Portugal: there are not enough of them. Yet here, of course, it's invasive, and it's very difficult to control and probably impossible to eradicate.

Mr. Randy Kamp: Yes. I guess that's the direction I was going. I mean, we think of it only in bad terms, but it's of high economic value in places in Europe, for example Portugal, as you mentioned.

Is there no...? Is it harvested at all? What happens to these dead lamprey after we kill them in the Great Lakes?

Dr. Istvan Imre: Once they are killed they are not utilized. I brought this issue up to the USGS and the Fish and Wildlife Service in the States, as well as DFO in Canada. We're able to operate everything: why not just put out commercial fishery permits for sea lamprey?

The problem is actually a bit more complex than one would think. Mainly at issue is that when you allow people to fish for something, what they will do then is they will take the sea lamprey from one stream, because they don't catch enough, and put it into other streams to make sure they produce enough to make a living. That was sort of the main argument for me—that of course they would do that. We're all human, right? We just want to make money. So if you want a lot of lamprey and you can get only 1,500 from a stream, and your livelihood is depending on it, and nobody sees it, then let's plant lamprey in all those streams.

All kidding aside, though, I talked about this aspect with my colleague. Given that there would be commercial interest and need in Portugal, why not just catch them, put them on ice, ship them overnight, and make money with it? On both sides there would be jobs for people, and obviously there are sea lamprey here.

But there is an added issue here. One, probably neither of the resource management agencies would go for it, because people would just start planting sea lamprey all over the place. Two, I have looked into the very sparse evidence that exists at the present time that sea lamprey, because they're top-of-the-food-chain, feeding on large-bodied fish like salmon, bioaccumulate a lot of heavy metals. Unfortunately, sea lamprey at their adult life stage have so much lead and mercury and what not in their tissue that I think they would pretty much qualify as toxic waste. In all fairness, you couldn't go and peddle it to another country: “Oh, buy some sea lamprey. It's good for you—as long as you eat it only once a month.”

Voices: Oh, oh!

Dr. Istvan Imre: I'm just kidding, but you know what I mean.

● (1615)

Mr. Randy Kamp: Okay.

I apologize if you already told us this—I might have missed it—but do we know how it got here in the 1800s, through which vector it arrived?

Dr. Istvan Imre: It basically got into Lake Ontario through the St. Lawrence River. There were absolutely no dams or anything, so it must have made its way up through the St. Lawrence River into Lake Ontario. The first mention made of it, that I found, was in 1835.

Now, of course it destroyed the fisheries in Lake Ontario in the short term. However, it was actually our doing. In fact, thank you very much for raising that issue. It was basically our fault. We allowed it to get into the upper Great Lakes when we built the Welland Canal to allow commercial shipping to get up there. At that time, nobody thought about the fact that, my God, they could get up there using the same waterway, which unfortunately they did.

I'm glad you brought this up. I know the time is very short, but if I may, in this context I think what is very important, in fact probably most important, is prevention. I mean, you have to realize that with a terminator like this, we'll be spending probably millions and millions of dollars—as long as we have money or we care about trying to control it—but this is only one of the 186 or so species that got in during only the last 10 or 20 years. So you have to think very, very carefully as a legislative body what you allow in.

To give you another example, I went to a Chinese fish market in Toronto. I went in because I love fish and I always look out for fish. When I went in there, I saw a whole bunch of fish that are not in Ontario, that are not in Canada, swimming happily around in tanks. I'm just thinking, “If somebody buys one of these....”

We buy piranhas for kids, in the aquarium trade. The kids after a while realize that as piranhas grow up, they have teeth on one end, so they put them in the nearest water body. Then you see a little newspaper in southern Ontario saying, “Oh, a kid caught a piranha in the local lake. How did that happen?”

Well, in exactly the same way, we allow, for business reasons or whatever, stuff to be introduced and then get out. Why do we suddenly have on our hands the problem with the five Asian carp species? It is for the very same reason: they were introduced to control some kind of vegetation and aquaculture purposes, I understand, in the southern states. And it's not “if” they get out; for any kind of aquatic species, it's “when”, literally. So they did get out. There was a flood and they overran the dike. They got into the Mississippi River system, and it's a wildfire coming towards Canada.

To my mind, as a scientist...and I teach invasive species biology to students. Please don't get me wrong; I'm not trying to lecture you on this. This is just kind of a desperate plea from a scientist that we have to be very careful about what we allow to come into the country in living form, because once it's in, there's absolutely no control over where it's going to be thrown or let loose. We put the goldfish into the toilet—out of sight, out of mind.

There are exotic catfish, for example, that you think won't survive Lake Ontario. One of my colleagues caught, during regular electrofishing beside the Pickering plant.... The plant puts out all that warm water from the cooling operations and it creates this kind of warm-water ecosystem, so those catfish survive in that area.

Okay, I know, that's just one individual, but these animals have been literally, over evolution, “trained” to survive everything they can. Hence we have to be very, very careful with what we allow to come in.

I'm sorry; I probably overspoke my....

Mr. Randy Kamp: Thank you very much.

The Chair: Thank you very much, Mr. Kamp.

We'll go to Mr. MacAulay.

Hon. Lawrence MacAulay (Cardigan, Lib.): Thank you very much, Mr. Chair.

Welcome, Dr. Imre.

We humans are hard to handle.

Dr. Istvan Imre: Did you say handle?

Hon. Lawrence MacAulay: The human being is hard to trust.

I believe that one of the biggest things we need in these situations is education. I do not believe that society would want to do this if they really realized what damage would come of it. I don't know if you wish to elaborate on that.

Basically, one of the most important things we need to do is have people understand that in fact when they take a species that is not native to this country into this country and release it, they're causing great harm to the ecosystem. Do you agree?

Dr. Istvan Imre: Yes, I completely agree. Obviously I wasn't implying that someone would do it with the evil intent of destroying anything. That was not my meaning.

Yes, I would completely agree about educating the public. That's part of what we do, of course, at any given university or other educational institution. That is why we have invasive species courses as well as general ecology courses. We always say that we have to be careful, because this is what they can cause.

Sea lamprey, besides being a terminator, works as a negative flagship species, if I may say so, literally showing people that this is what can happen if we sometimes make decisions that might be the best for certain reasons, but perhaps not. People don't think through all the possible scenarios. I would agree. Education is very important.

● (1620)

Hon. Lawrence MacAulay: Thank you very much, Doctor.

I didn't catch whether you indicated how often they deposit eggs and die. When do they do it, and what stage of life is it? It's not frequent, obviously, if they die when they do it. That's the end.

Dr. Istvan Imre: Actually, remember that I said that they live as a parasitic adult for 12 to 20 months. That's when they actually kill fish by parasitism. Then they go into tributaries of the Great Lakes to spawn. Once they have spawned, they die. Any given female can deposit anywhere from 25,000 to 100,000 eggs.

These fish are not an exception, in the sense that, just as with any other fish, most of those eggs don't actually survive. But up to about 6,000 of those eggs per individual can survive and do survive, on average. So one individual could potentially give rise to up to 6,000 other lampreys.

Hon. Lawrence MacAulay: You did indicate that there was a major reduction in the harvesting of salmon and trout. You also indicated that there was a major reduction in the sea lamprey at one time. What happened?

Dr. Istvan Imre: The fisheries did rebound. In the late 1950s and 1960s, we saw a collapse of several fish species.

Well, I wasn't completely clear, in the sense that sea lamprey contributed to it, but they weren't the sole factor. Overfishing was also part of it. We managed to bring sea lamprey densities in the 1960s under control, but that was done at the same time as a lot of lake trout and other species were being raised in hatchery operations and released into the Great Lakes to help those species rebound. That has happened, to some extent.

Hon. Lawrence MacAulay: Before my time is gone, could you also elaborate on the sea lamprey releasing a chemical when it's injured? Is that correct?

Are you about to do research on that? It would be better to ask you this question a year from now, probably. But you must feel that there must be some way that would be used as a control method.

Dr. Istvan Imre: Thank you for the question.

In the paper I mentioned, from 2010, I speculated that they have to have some kind of chemical within their tissues, because we know of a broad variety of other fish species, including some salmonids, that have a so-called alarm cue that is typically released from their skin when a pike, for example, comes and bites them. It's like a chemical warning signal to the other conspecifics—individuals of the same species—that it has been attacked and to watch out and go away.

We figure that sea lamprey must have something similar. In fact, Dr. Michael Wagner, who works at Michigan State University and is a permanent scientist for the Great Lakes Fishery Commission, has shown that they have shown avoidance behaviour toward decaying sea lamprey extract.

I'll be working with freshly killed sea lamprey as well as juvenile sea lamprey tissue extract. Basically, I'll take a certain amount of tissue, grind it up, dissolve it in water, release it in water, and see what they do. There is very positive science that shows that they avoid it. Of course, it doesn't kill them. It's not a control method; it's a behavioural manipulation method.

I'll give you an example of how it works. Imagine that the width of this room is a stream, and on one corner you have a dam—

Hon. Lawrence MacAulay: You could scare them out of the area.

Dr. Istvan Imre: Yes, that's what I'm getting at.

Assuming uniform distribution of animals moving up, if I were to release the repellent on the other side of the stream it would scare them over to this side and they would become more available for trapping. In the optimal scenario, if we were to put a pipe across that released that chemical into the water we could potentially set up a chemical barrier. It would be temporary in nature, but it might tell them to not enter this stream and to move on to the next one. Instead of using a huge amount of very expensive chemicals you could just release that and ring the alarm that this is a bad spot, so go away, if everything were to go well.

● (1625)

Hon. Lawrence MacAulay: It would also be natural.

Dr. Istvan Imre: Yes.

Hon. Lawrence MacAulay: In some areas there has been a major increase in sea lamprey, and in some areas there has been very little increase in sea lamprey. Can we learn anything from that, as far as the different conditions in each area?

Dr. Istvan Imre: I presume you're talking about the St. Marys River.

Hon. Lawrence MacAulay: Yes.

Dr. Istvan Imre: We do know what the difference is. The habitat conditions have improved substantially, allowing the animals to successfully reproduce in that area. We are less efficient in controlling sea lamprey there because the chemical we normally release is very efficient in small streams, but we're dealing with a body of water that's 300 metres wide, several metres deep, and moving very fast in some locations. You would need a humongous amount to be effective in killing the larvae, and most of it wouldn't make it all the way to the bottom.

Hon. Lawrence MacAulay: And it's not very acceptable either.

Dr. Istvan Imre: That's another issue.

Hon. Lawrence MacAulay: Thank you, Mr. Chair.

The Chair: Thank you very much.

Dr. Imre, on behalf of the entire committee I want to say thank you very much for your time here today, your presentation, and taking the time to answer our questions. It's been very informative, and we do appreciate it very much.

Dr. Istvan Imre: Thank you very much.

I apologize to the gentleman who was translating for me. Sometimes I tend to talk very fast. I've been told to slow down, but when I get turned on I just shift gears. I very much appreciate your time and the honour of being able to talk to you. I apologize if I've been a bit too passionate about things.

Hon. Lawrence MacAulay: It's good that you are.

Dr. Istvan Imre: Thank you.

If you need any information about sea lamprey or anything at all, please do not hesitate to contact me. I'd be more than happy to help.

The Chair: Thank you very much.

We will take a short break while we allow our other guests to set up.

● (1625)

(Pause)

● (1630)

The Chair: We'll begin.

I want to thank you gentlemen for coming to meet with our committee today. We certainly appreciate your taking time out of your schedules to meet with us, and we look forward to your presentation.

The clerk has probably informed you that we allow about ten minutes for presentations, and each member has an allotted time for questions and answers. If I interject at some point, please don't be offended. It's just in the interest of fairness to ensure that all members have the opportunity to ask questions and have them answered.

The floor is yours.

Mr. Robert Duncanson (Executive Director, Georgian Bay Association): Thank you very much.

Good afternoon. My name is Bob Duncanson. I'm the executive director of the Georgian Bay Association. I'm joined today by my colleague John Wilson, who's a director of our organization and the chair of our fisheries committee.

I have a few slides, just to give you a bit of background on where we come from on the invasive species issue. Then we'll get into some specifics on species of concern to us.

The Georgian Bay Association is a not-for-profit umbrella group representing 20 community associations along the eastern and northern shores of Georgian Bay and the North Channel. We've been speaking out in the interest of property owners in this area since 1916.

There are about 10,000 families who own land along the shores of Georgian Bay collectively. Through their taxes and the goods and services they purchase, and such, they contribute about $100 million to the local, provincial, and federal economies every year.

Approximately one-third of our members are U.S. citizens, so that's new money to our country. That's for just the Georgian Bay Association. We don't propose to speak for other landowners on the rest of the Great Lakes, but there are 42 ridings that touch on the Great Lakes and we happen to touch on two of those ridings. You can see that the multiple effect is quite significant.

The Georgian Bay Association is an incorporated organization, with shareholders and an annually elected board of directors. We are fully accountable to our members, who are all property owners. At the direction of our shareholders we have committees that focus on key issues, including fisheries, and monitor aquatic invasive species, which is why we are here today.

The Georgian Bay Association is proud of our heritage of providing quality input and feedback to all levels of government. We're actively involved on committees such as the advisory panel to the Canadian re-negotiators of the Great Lakes Water Quality Agreement, the International Upper Great Lakes Study Board; and in Ontario, the source water protection committee.

I'll now turn the floor to my colleague John Wilson.

● (1635)

Mr. John Wilson (Director and Chair, Fisheries Committee, Georgian Bay Association): We would like to address three issues in our presentation: the need for ongoing research on invasive species in the Great Lakes; how to deal with the threat of the Asian carp; and the need for ballast water standards.

I'd like to share with the committee the latest research on aquatic invasive species in the Great Lakes, which was presented by U.S. and Canadian scientists at last month's Great Lakes Fishery Commission conference. The main message presented was that the ecosystem of the Great Lakes is undergoing what senior biologists call “a regime change”—that's a case in which the ecology of the fishery moves from one stable state to another stable state over a number of decades—and that the particular regime change we're going through has been brought on by the impact of aquatic invasive species.

The chart I am showing shows what the stable state in the middle Great Lakes—Michigan, Huron, and Georgian Bay, which we focus on—looked like in the 1990s. The lakes had a relatively healthy stable ecosystem, and you'll notice that invasive species dominated many of the levels of the food chain—the salmon, the alewife, zebra mussels.

Zebra mussels were introduced through ballast water in the late 1980s and had spread through the near shores of the Great Lakes, causing problems with water intake systems but not with the overall ecology of the lake. It was the later introduction of another invasive specie, the quagga mussel, also through ballast water, that precipitated the ecological change in the lakes. Unlike the zebra mussels, which only survived on rocky bottoms to maybe 30 feet deep, the quagga mussels could survive on sandy or silt bottoms down to a level of 350 feet. The quagga mussels have now replaced the zebra mussels in the near shore and have carpeted the bottom of the lakes. This quantum growth in the number of mussels filtering phytoplankton and zooplankton out of the lake water has resulted in a serious break in the food chain.

This reduction in food at the lowest level of the food chain created a domino effect up the chain. The tiny shrimp diporeia, of which within a square metre you'd find thousands, have now pretty well disappeared from the middle lakes, the issue being that they are without the phytoplankton to feed on. The alewife crashed without their main source of food, which was the diporeia, and as you move up, so did the salmon, which were the next to fall—that once-prized recreational sport fishery.

The chart titled “A Regime Change is Underway” shows us where we are now, in the midst of the regime change. The native fish of the Great Lakes—the lake trout and the walleye—have actually returned to be the top predators. Another invasive specie, the round goby, is now their main source of food. The overall energy level, however, of the once vibrant lakes has now dropped to the same level as that of Lake Superior.

The scientists at the conference have also reported on a new side effect from the introduction and spread of quagga mussels and round goby. It turns out that the round goby like to eat quagga mussels. The problem is that quagga mussels filter and retain bacteria. When they die, their bodies act like an incubator, producing botulism and toxins. When round goby eat the dying quagga mussels, they act as a conduit to carry the botulism and toxins up the food chain to all the fish and birds that now rely on these round goby as their main source of food. We're now experiencing mass die-offs of fish and waterfowl from botulism types C and E around the Great Lakes.

In order to better understand the significant ecological changes that are still taking place in the Great Lakes as a result of invasive species, it is our recommendation that more scientific research be done. With the completion of the Great Lakes Water Quality Agreement now awaiting approval by both governments, the negotiations of the Canada-Ontario agreement will soon begin. This funding is critical to support the scientists and the biologists who carry out the necessary research on the Great Lakes. We would urge the committee to support the federal government in this funding.

I'll turn the floor back over to Bob.

● (1640)

Mr. Robert Duncanson: I'm going to spend a few minutes talking about the Asian carp. I know that you've heard substantial things about it in the past, but we're here to tell you our perspective as Canadian taxpayers and voters.

When we attend events such as the biennial meeting of the International Joint Commission, which we did in Detroit last year, we hear scientist after scientist stand up and talk about the damage done and the cost to control invasive species such the sea lamprey, about which you just heard earlier this afternoon, and zebra mussels. But when the conversation turns to Asian carp, we seem to be resigned to letting history repeat itself. We don't think that the lessons that were learned—that it's very expensive to control these things once they are in and a lot less expensive to keep them out—are being met with open arms by the IJC, among others.

As you'll likely know, there is an internal struggle going on in the U.S. as how to prevent Asian carp from entering Lakes Michigan, Huron, and Erie from the Mississippi River system. Several states have taken the State of Illinois to the Supreme Court to try to get a permanent barrier built in the Chicago River. This has been rejected by the Supreme Court.

The White House tends to side with Illinois on this; meanwhile, they are spending over $50 million per year on electric barriers, poisons, and such. The stakes on this are high, including a $7 billion commercial and recreational fishery and untold damage to tourism and recreational property owners.

What should Canada do? We think that the federal government should lobby as hard as possible for a permanent barrier on all potential river access points—not just the Chicago River: there are other entry points that lead into Erie and, further up from Chicago, into Michigan. Simultaneously, the government should review its Canada-U.S. dispute resolution mechanism. We say this not to be cheeky, but this invasion is going to result in a countless number of lawsuits between the two nations. We had better be prepared for that.

I'll now turn the floor back over to John Wilson.

Mr. John Wilson: I'll talk about ballast water regulations. The largest source of aquatic invasive species and pathogens entering the Great Lakes is through ballast water out of ocean-going vessels. It was recognized over a decade ago that ballast water exchanged with salt water offshore was not effective in killing aquatic invasive species. The International Marine Organization developed water quality standards for ballast water and promoted a whole new industry to have companies develop ballast water treatment technology for ocean-going vessels.

Last month, the U.S. Coast Guard issued new ballast water regulations which conformed with those sanctioned by the U.S. EPA and the IMO that will take effect this June. As of 2014, any new vessel entering the Great Lakes or any vessel that has had a dry dock since 2014 will be required to have approved ballast water treatment technology on board. The U.S. Coast Guard will determine by 2016 whether there is a need for stronger ballast water standards and wheether there is technology available that could deal with it. Transport Canada has made no comment about adopting the U.S. standards.

It is our recommendation that DFO should work with Transport Canada to bring in new ballast water regulations that align with those of the U.S. This will alleviate concerns that Canada will retain less stringent standards in order to increase the volume of trade through its ports at the expense of the environment.

That concludes our presentation.

● (1645)

The Chair: Thank you very much, gentlemen.

We'll move right into questions at this time.

Ms. Davidson.

Mrs. Patricia Davidson (Sarnia—Lambton, CPC): Thank you, Mr. Chair.

Thanks, gentlemen, for being here with us this afternoon.

This is a topic that we're finding to be very interesting, and we're learning a lot about it. It's a huge concern to those of us who live on the Great Lakes. I come from the Sarnia—Lambton riding. Certainly it's something we hear a lot about.

I want to ask you, Mr. Wilson, about the ballast water regulations. We had some people before us last week, a couple of professors. I want to read to you what they said.

> In 2006 Canada took an important step in controlling this vector by requiring all ballast water entering the Great Lakes to be at a salinity of 30 parts per thousand.

Then they went to on to say that

> Over the past five years since the regulation went into effect, there have been no reported invasions attributable to overseas shipping.

Do you agree with that, or do you think there are still issues with the ballast water?

Mr. John Wilson: I would agree, very much so. Canada had adopted a voluntary ballast water and saltwater exchange program long before that, as had other countries. This is not a leading-edge activity that was done by Canada.

It was back about 10 or 12 years ago that the IMO, as a global organization, decided that they needed to look at this. They needed to find a solution, and they too recognized that saltwater exchange is not good enough. That's what led them down the path to say let's set standards that would be high enough, from a water quality point of view, to deal with what they hoped were most of the invasive species that would be found in ballast water. They started that, setting the standards, working with different crating companies around the world, as well as many companies....

We have a company in London, Ontario, Trojan Technologies, that has developed a tremendous product that is going to be used in vessels, and it's being tested on ocean-going vessels right now, to treat ballast water.

The world has been moving for ten years to get to this point. Maybe part of it is the justification of the U.S. Coast Guard in also implementing these ballast water standards and the need for technology. Neither the International Marine Organization nor the U.S. EPA nor the U.S. Coast Guard believe that saltwater exchange is good enough to prevent invasive species from getting into freshwater.

On the other side, the statement that they haven't found an invasive species in five years is always a very tough one. There has never been a way of determining this is the day in which an invasive species arrived in the Great Lakes. There is a day when it's found. An invasive species may be deposited in one port on the Great Lakes, but what will happen is that we have all of these lakers that move freight between the various ports on each of the Great Lakes, and they become one of the major conduits for moving the invasive species further. A zebra mussel that's let go in Toronto would take 50 years to get up into Lake Michigan, but the lake freighters, because they're constantly moving freight and moving ballast water around the Great Lakes, are a conduit to move it effectively around.

If you wanted to look at a precautionary principle, if we felt that the cheap way of exchanging saltwater with ballast water was sufficient, none of these organizations would be putting in the need for ballast water technology. Ballast water technology is about a $2.6 billion industry. It's a brand-new industry with large global players that have developed and are testing and are now installing ballast water technology in ships. I would tend to rely on that, that there is a need for this technology. It's not something that's a wish and a prayer, but an actual need.

Mrs. Patricia Davidson: So this is coming into force in June in the United States, in American waters.

Mr. John Wilson: The Great Lakes, on American waters.

● (1650)

Mrs. Patricia Davidson: Okay. And how is it being differentiated between American and Canadian waters, with the ships going through?

Mr. John Wilson: I do not know how they will be able to do that. It may well end up being the end port. If the ship is coming into the Great Lakes and it is going to stop with its load at a Canadian port, it may well be allowed to do that. If it's going to then go and pick up product at a U.S. port, it would then have a problem if it doesn't have ballast water technology on board.

Each of the U.S. states—certainly Michigan, Wisconsin, New York—put in their own ballast water quality standards. Some were 100 times stronger than what the U.S. Coast Guard has just announced. At this point, I think we were away for about one or two months, but the standards that New York State had put in were going to shut down all the shipping this year.

I believe there was an agreement with the U.S. Coast Guard that said to the states, if you will withdraw your ballast water standards, we will implement these for all of the Great Lakes. I believe that is how we ended up getting a common standard. Everyone is in agreement on the American side. All of the states are in agreement on this standard. Part of the agreement was that they would look at whether they will move it up to the 100 times stronger standard by 2016.

Mrs. Patricia Davidson: I can't remember which one of you were speaking to the slide that said "current status". A comment was made about the IJC. I don't know if I heard you correctly. Did you say the IJC does not seem to be taking this seriously enough, or they are?

Mr. Robert Duncanson: No, it was in the audience as we were at the IJC forum. We were hearing the presentations from the various scientists. There just seemed to be this silence about preventative measures on the Asian carp when we had just gone through a day and half worth of the damage and the cost of controlling the ones that are already in.

It just seems to us, as members of the public, frustrating to not hear somebody stand up and say, "Guess what, guys? It's going to cost us a fraction of the amount to stop these things from coming in as it would to chase them." The Asian carp, I should point out, unlike the lamprey, does not need rivers to procreate. It's going to be really difficult to interrupt their breeding cycle.

Mrs. Patricia Davidson: What do you see these permanent barriers looking like? How do you see that working?

Mr. Robert Duncanson: Permanent barriers. The biggest challenge we've heard, or one of the biggest push-backs, is the canal barges in the Chicago area. To be honest with you, I'm not an expert in this area at all, but I don't see why you can't have roll-on, roll-off barges coming up to this barrier in between—save jobs and save the barging industry—and create this concrete or land barrier that will separate in real terms the two bodies of water, as they once were.

The Chair: Thank you, Ms. Davidson.

Mr. John Wilson: The U.S. Coast Guard will be producing their report by 2015, in which they will outline these options: how they would go about producing a permanent barrier, as well as any other options they have been able to come up with. Until that time, the U. S. will continue to have to spend $51.5 million per year to kill off as many of the Asian carp as they can in the rivers leading up to Lake Michigan.

Mr. Robert Duncanson: I would like to think there's a creative solution that is a win-win, and that we can appeal to the merchants or businesses that are threatened by a permanent barrier, yet achieve this ethological separation.

The Chair: Thank you very much.

Mr. Toone.

Mr. Philip Toone (Gaspésie—Îles-de-la-Madeleine, NDP): Thank you, Mr. Chair.

Thanks for your presentations.

I especially like the slide on regime change. It's astounding to see how much change can happen in such a short time. It's truly frightening, in fact.

If I could speak to you, Mr. Duncanson, or both of you in fact, your members are particularly interested in controlling the Asian carp. Are they looking at other species, or is this their main concern, that particular species?

Mr. Robert Duncanson: As John pointed out, last fall, when thousands of waterfowl washed up on Wasaga Beach, the smoking gun was the round goby and the quagga mussel. They were critical in bringing that botulism into the food chain, and that catches the attention of the public.

● (1655)

Mr. Philip Toone: I have to agree; this particular slide certainly takes you back.

Mr. Robert Duncanson: If you go back and look at the history of botulism, and this kind of kill-off, it's only in the past couple of decades that we have been seeing regular occurrences of this. It's a bit of a perfect storm. It's not just the invasive species; it's a bit of the warming of the water. It's the clarity, which is also invasive-species-related, in that the zebra mussels and quagga mussels are now clearing out the water columns, so that the sun is penetrating lower and growing algae at the bottom of some of these lakes that have never had algae growth there before. It's a bit of a perfect storm that this is happening there.

Mr. Philip Toone: The change is happening so quickly that one of the concerns I have is that we're not really sure where this change is leading to. We don't know what species is going to be affected next. It's all new science. Frankly, the cutbacks at DFO are of great concern to me, that we might not be able to keep up with the science.

We're talking about now changing the Fisheries Act, so that we no longer protect habitat, we're only going to protect fish—and only commercially interesting fish—against serious harm. I'm not sure we even know what that is. I don't think we can predict any of this. I'm worried that the changes to DFO are actually going to compound this issue.

Do your members have any comments on that?

Mr. Robert Duncanson: Yes, I'll touch on that.

In fact this morning we had a meeting with one of our senior MPs, Tony Clement, on this very topic. We're very worried that governments at both levels—provincial and federal—are retreating from the environmental oversight of the Great Lakes at a time when this perfect storm is picking up some speed, or we're worried that it's picking up some speed. That's why John says that we're really looking at that next round of the Canada-Ontario negotiations as critical, because when the Great Lakes Water Quality Agreement is made public, assuming that what we saw in draft form actually makes it through cabinet and through the U.S. process, you're going to see some very strong words about nearshore issues and nutrient-loading issues on the near shore.

What these zebra mussels and quagga mussels are doing is rebalancing the whole nutrient-loading system of the Great Lakes. The words are going to be there and the strength of the words will be there, but money is what it's going to come down to. If we don't have the money to keep the scientists in place to make sure we're on top of this thing, it's a free-for-all.

We understand that the Fisheries Act is being retooled. It's going to be a bit more selective and a bit more cabinet- and minister-directed as far as how they're going to go about this is concerned. We believe there is a case to be made for the Great Lakes commercial and recreational fisheries to be protected under the new model, but time will tell whether the bucks flow. That's what it's going to take: sustained scientific support.

Mr. John Wilson: The Canada-Ontario agreement works.... It's actually the Ministry of National Resources and the Ministry of the Environment that do a lot of the work on the Great Lakes. That's kind of Ontario's part of it, in that they actually have the scientists in the boats. They collect the data, do the analysis, and feed that information back up for the scientists to work with.

We go and talk to them now, and they say they don't know what's going to happen now, that they're waiting. There isn't funding any more, so we're waiting for the Canada-Ontario agreement. If there's going to be scientific research and we're going to start to keep finding a way to understand how this regime change is going to play out and what we can do about it—or how we deal with it and adapt to it—we're going to need to have the science done.

So their last hope is that agreement. That's why we encourage this committee and DFO, if they can help with that process, to make sure there's funding that's going to happen. Otherwise, we're going to find ourselves wondering.

Mr. Robert Duncanson: I'd like to build on that a little bit. As the federal regime changes to the oversight of the fisheries and the environment in general, and there seems to be a retreat to avoid duplication.... Everyone can agree that duplication in tight financial times is an important thing to look at, but at the same time, as you may have read, the Ontario government is going through its own belt-tightening and is cutting—guess what?—MOE and MNR.

So our point, which we make whenever we can, is that we hope both levels of the government—the federal and the provincial—are making sure that as they simultaneously retreat there isn't this massive hole left in the middle that leaves us all vulnerable. There has to be a high level of coordination. In addition to just the negotiation of the Canada-Ontario agreement, there has to be coordination between the levels of science to make sure that somebody is keeping their eye on the ball.

● (1700)

Mr. Fin Donnelly: Just to continue on that thought real quickly, in line with Mr. Toone's questioning and the cuts that you've pointed out, I very much appreciate your presentation and the fact that you've laid it out with five recommendations here.

Do you have costing to these recommendations? Is there an idea of what kinds of amounts we're looking at for each of these recommendations?

Mr. John Wilson: Certainly for the ballast water standards, I don't think it's going to cost you a lot of money to do that. In reality, you're just synchronizing yourself with the U.S. Ships are going to have to do it anyway. They're going to have to be doing it globally, too—and that's coming—under the IMO.

On the science, from the costing side I think $8 million was the Canada-Ontario agreement, but much of that money did not go to the science. It went to areas of concern, to those particular spots around the Great Lakes—Hamilton Harbour and others like it—that had a lot of chemical/metal history behind them and needed to be cleaned up. That's where the vast majority of it went.

A portion, though, has been used in the past to be able to do the research on the Great Lakes, and that is the part you need to keep. If they decide to cut it and only do areas of concern, we will stop learning about what's happening.

The Chair: Thank you very much.

Mr. Sopuck, go ahead.

Mr. Robert Sopuck (Dauphin—Swan River—Marquette, CPC): Thank you very much.

I would like to make a comment.

As a strong supporter of what the government is doing to the Fisheries Act, I would recommend that you look at things in a different way, unlike my colleague was alluding to. A focus on fisheries of importance such as yours should be welcomed by you. What's being done under the Fisheries Act, the changes to the Fisheries Act, is getting the government out of very unproductive fisheries work and refocusing on fisheries of importance, which yours obviously is. I wouldn't call it a retreat by any means. It's a refocusing, and I think you will be pleasantly surprised over the months to come with what will be happening.

Concerning Lake Huron, you talk about an increase in water clarity. With the increase in light penetration, are you seeing more plant growth and weed beds? You talked about algae, but what about the taller plants and the weed beds, have those come back?

Mr. John Wilson: It's a very rocky bottom on certainly a lot of the lakes. In essence, there's not a lot of silt.

It's interesting. If you talk to the commercial fishermen who are still using nets for their catches, what they've seen is tremendous growth in the amount of algae. It literally blows on the bottom. It fills their nets and it takes forever…. In fact, the Ministry of Natural Resources has been working with them and they're now developing these new nets that will have a space from the bottom up, before the netting actually starts. Algae is becoming more prevalent and it's hurting the industry a lot, so they're trying to adapt their net techniques to get as good a quantity of catch as in the past but not have all the fouling taking place with the algae on the bottom.

Mr. Robert Sopuck: Concerning the fish population itself, one species you did not discuss is the steelhead or rainbow trout populations. I know that Georgian Bay had, or maybe still has, thriving steelhead runs. Are those still intact?

Mr. John Wilson: I don't think they are.

Most of the rainbow trout in Georgian Bay and in the North Channel come from aquaculture operations. They are escapes, and we have a huge volume of escapes from these operations. What happens, actually, is that mussels grow on the side of the nets, which eventually rip.

It's interesting. There's a study being done now by a researcher, and she's about to publish it, but parts of it were presented at the Great Lakes Fishery Commission conference. What it shows is that along the North Channel the genetic makeup of the rainbow trout is now changing completely to that of escapes. The native wild rainbow are now disappearing. There's a genetic changeover taking place.

This is always the great fear: when you introduce a fish that has only one genetic form, they start to take over. If they do, if something happens, be it weather or disease or whatever, you can lose them all. You lose the diversity you find in wild genetic makeup.

So that's where we would see most of the rainbow within Georgian Bay and the North Channel—they really come from escapes from aquaculture operations.

● (1705)

Mr. Robert Sopuck: The rainbow trout originally were an introduced species. They're not native to the Great Lakes to begin with.

Mr. John Wilson: No, you're right.

Mr. Robert Sopuck: You made a comment early on, and I think I caught it right, that Lake Erie's water quality was going to a situation similar to Lake Superior's.

Mr. John Wilson: No, the middle lakes: Lake Michigan, Lake Huron, and Georgian Bay. The charts presented show the biomass, the amount of energy in the lakes. What you see is this drop that took place around 2003, the big change that went down, and since then those lakes have been running at the same biomass level as Lake Superior's. It's quite surprising. That was not the tradition. These lakes had a lot of biomass, had a lot of fish in them. What you're seeing is you take the food source out and you have this break in the food chain. But if you remove the filter, if you start to take the microscopic plants and the microscopic animals out of it, you start to lose that biomass. That's what we have right now, that change.

Can you still have a fishery? Yes, Lake Superior still has a fishery. But it's a very different kind of fishery from what we had in the past in those middle lakes.

Mr. Robert Sopuck: How about the insect abundance in the lake? You talk about the diporeia being gone. Have mayflies taken over? What are you seeing in terms of mayflies?

Mr. John Wilson: Nearshore has not changed that much. The nearshore fishery, which would be made up of largemouth and smallmouth bass, you'll find that at certain times of the year all the walleye will be in the nearshore. That has not changed a lot.

The biggest change in the Great Lakes has been the offshore, where the big fish are, where the big predators are, where the commercial fishing takes place. That's where the quagga mussels are.

The nearshore is a very small ring. If you take the edge of the Great Lakes and go 30 feet deep and you look at it, it's a very small ring. The vast body of the lakes is really offshore, but that's where you start to see the big change. Quagga mussels have now gone into the deeper water and have been doing the filtering process there.

The loss of the tiny shrimp, the diporeia, was big for the whitefish. Whitefish struggle. They're hanging in there, but they lost a lot of their weight. They lost a lot of their oils. A lot of the commercial fishermen were struggling. They weren't getting the same kind of quality product they were getting before, because the whitefish ate the diporeia as well.

Alewife also, their main food source was the diporeia.

Mr. Robert Sopuck: The alewife is another introduced species.

You mentioned the cisco. Have the cisco come back and replaced the alewife as a forage fish?

Mr. John Wilson: They have, but not as much as the round goby. The round goby is prolific. It started on the nearshore, but you find now it's in deep water as well. If you looked at bass, whitefish, lake trout, walleye, if you were to open up the stomach of a lake trout, 65% of what you would find in the stomach would be round goby.

The cisco are there, and they're coming back, but the round goby has become this amazing fish. I don't know if you've seen them, but they're really ugly. They grow four inches long. You wouldn't want to eat them. This is what they're finding. They look in the stomach and they find the round goby.

Mr. Robert Sopuck: One last point: In terms of lake trout, are the lake trout you're catching now in good condition?

Mr. John Wilson: They are coming back.

Mr. Robert Sopuck: The cisco is their main—

Mr. John Wilson: Well, it's an interesting thing that happened. The slate of scientists, the same ones we're talking about funding, discovered this. The alewife produce an enzyme. That enzyme, when the lake trout would eat it, would break down thiamine. Thiamine is needed in the lake trout's eggs.

We lost the great fishery of lake trout with the sea lamprey. Everyone expected as they got the sea lamprey under control and reduced it by 90% that the lake trout would come back, but it didn't. It came back very slowly.

A lot of stocking of lake trout has been done every year for years now by the Ministry of Natural Resources in trying to help it get back. When the alewife crashed, suddenly it wasn't there any more. They're finding that the lake trout are reproducing naturally again, the wild lake trout. We're starting to see that fishery come back, only because it was being kept down because of this invasive species. No one knew why it was happening.

● (1710)

Mr. Robert Sopuck: Cisco is the traditional prey for the lake trout.

Mr. John Wilson: And the others. That's also helping the lake trout come back.

Mr. Robert Sopuck: I think my time is up. Thank you.

The Chair: Thank you very much.

Mr. MacAulay.

Hon. Lawrence MacAulay: Thank you very much, Mr. Chairman.

Thank you, gentlemen, for being here.

You mentioned a regime change, a generic change. The Fisheries Act was mentioned. We don't want to get into a political discussion, not at all, but it sounds like you could be the luck of the draw.

I think it's so important. You talked about the return of the lake trout and other things. I would expect that if you do not have scientists, it puts you behind. I'd like you to expand on that.

Mr. Robert Duncanson: Absolutely. You can't replace some of the scientists who get laid off, temporarily moved, or whatever. They're carrying with them invaluable knowledge. I worry when I see quick shifts between federal and provincial priorities and what not, that you could end up throwing the baby out with the bathwater. You get rid of these scientists, and there goes your historical knowledge on some of this stuff.

Hon. Lawrence MacAulay: To get rid of the scientists would be totally unacceptable.

I'd like you to bring in the Ontario-Canada agreement, which you referred to in your discussions.

Mr. Robert Duncanson: The Canada-Ontario agreement is what's going to allow Ontario to continue to be a partner with the federal government in whatever form, and I agree that the revised Fisheries Act may well target the Great Lakes and Georgian Bay as some of the continued recipients of attention. But as John said, you need the ground troops out there, the MNR and MOE folks who are out there in their boats pulling in some of this data to feed back into the system, and that can only happen if they get funding. There's no reason to believe that we won't continue to get funding through the Canada-Ontario agreement. I guess the discussion is about how much.

Hon. Lawrence MacAulay: It's obvious somebody is going to get less. If there is less to go around, somebody is going to do without, or somebody is going to have less.

Mr. Robert Duncanson: Yes.

Hon. Lawrence MacAulay: And of course you'd be very much hoping it's not you.

Mr. Robert Duncanson: That's right.

Hon. Lawrence MacAulay: Along with my own area, I hope you do receive it.

We do exist, and we are part of the country, and the fishery is quite important.

You have quite a lot of clout. You have 10,000 families with $100 million.

Mr. Robert Duncanson: The $100 million is a conservative estimate.

Hon. Lawrence MacAulay: Be careful with that word.

Mr. Robert Duncanson: That's a conservative estimate of the amount of goods and services and taxes from those 10,000 families, assuming each pays $10,000 on their properties.

Hon. Lawrence MacAulay: I'd like you to elaborate on a couple of things before my time runs out.

Number one, what's your success on educating your own members? You have 10,000 families there.

Also, on the ballast water issue, do you not feel that...? It's difficult for me to understand. If we have different regulations and the technology is not there for certain boats that have the ballast water and it is there for other boats, and they both release, how is that going to work when you're working with the Americans in the Great Lakes? I would think they would have some concern about this. Do you not feel that we basically need to not follow the Americans but to adopt the very best technology possible? Because it's obvious that's how invasive species come in. I would think the way you would most frequently have invasive species come in would be in ballast water.

You also threw in the Canada-U.S. dispute-settling mechanism.

● (1715)

Mr. Robert Duncanson: Yes.

Let me address your first question about education of our members. We spend a fair amount of time working with our members through presentations and seminars and newsletters. Education is vital to this. As I mentioned, about a third of our members are U.S. citizens. We try to educate them so that when they go back to their winter homes they will pick up the phone and call their congressmen and congresswomen and raise these issues. So we do spend a fair amount of time on that. It's a never-ending challenge to get people in, but the nice thing is that the motivation is huge. People own these properties because of the natural beauty, so when you put to them that the natural beauty isn't going to be there for their children and their grandchildren, that gets them to stand up and listen.

So we're always looking to government to help us with the science, to help educate our members, and as I say, we don't shy away from using the U.S. back door to get this. I'll point out that Mitt Romney owns Canadian property on Lake Huron. So if the winds of change blow in November, we'll have another go at the U.S.

Hon. Lawrence MacAulay: I could comment on that, but I won't.

Mr. Robert Duncanson: Do you want to talk about the ballast water?

Mr. John Wilson: Yes. I think we're probably agreeing on this, that the need is definitely there. The winds of change are there, because IMO was a global agreement and very soon there are going to be the 33 countries, and 35% of the global trade is going to be done by countries that have agreed with this need to deal with ballast water.

We sit and look at our problems. There are exactly the same problems all over the world. Our invasive species are showing up in New Zealand, and they're showing up in the Caspian Sea. We're all dealing with the same thing. Every summer we have 500 ocean-going vessels come into the Great Lakes. So we're saying those 500 that come in have to have ballast water technology. There are tens of thousands of ocean-going vessels around the world, but we have 500 a year that come in and we're telling them to use their logistics software, as they would for the width of our canals and the depth of our harbours, to also make sure their ships have ballast water technology on them if they're going to come into the Great Lakes. It's not hard.

Hon. Lawrence MacAulay: You say a third of your clientele are Americans. Are they involved in this well enough to be bringing this ballast water issue to the table as far as we're concerned here in dealing with it and making sure that we require the same regulations as the U.S.? Do you find that they ask for that, or are they informed enough to really realize that we could be behind the ball?

Mr. John Wilson: We have asked them, as we always do, to push their congressmen and their senators for U.S. legislation. We understand Canada wasn't going to.... We've talked to people such as Lawrence Cannon. We had a meeting with him when he was the Transport Canada minister. At the end of the day, the answer was that we'll follow the United States when they make their move.

Hon. Lawrence MacAulay: It looks to me like in 2016 the regulations could even be much stronger in the U.S.

Mr. John Wilson: They could be. And if I were an owner of a shipping organization I would look really strongly at it. If I'm going to spend a million dollars to put technology into my boat that's going to do this, I'm probably going to go with the technology that's at a higher standard, so I don't have to replace it between 2012 and 2016. That would be the smart move. It does exist. It is out there. There are lots of products that are already out there to meet the standards that are needed for 2012. The companies have been working on this for a long time. There are companies that are now working on those newer standards that are a hundred times stronger.

Hon. Lawrence MacAulay: Thank you very much.

The Chair: Thank you, gentlemen.

On behalf of the committee I want to say thank you for taking the time today to come here. It has been a very interesting discussion. We've had some U.S. politics. You talked about the winds of change. I'm not sure where we go with all of that, but it was an interesting discussion.

Thank you very much on behalf of the entire committee for taking the time from your busy schedules to appear before us here this afternoon and providing us with the information you provided us with. It has been very informative. Thank you very much.

Before we adjourn, committee members, we have one more item of business to discuss.

Mr. Chisholm, I'll give you the floor first.

● (1720)

Mr. Robert Chisholm: Thank you, Mr. Chairman.

We are going to give notice of two motions we would like to deal with on Wednesday. The first one is as follows:

> That the Standing Committee on Fisheries and Oceans consider at the first opportunity amendments to the Fisheries Act and other provisions affecting federal jurisdiction over canadian fisheries waters included in Bill C-38, an act to implement certain provisions of the budget tabled in Parliament on March 29, 2012 and other measures, and that the minister be requested to testify.

The Chair: Thank you, Mr. Chisholm.

Mr. Donnelly, do you want to provide notice?

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

The second motion that we'd like to put on notice reads as follows:

> That, because the Fisheries Act is critical to protecting fish habitat and the fisheries, the Standing Committee on Fisheries and Oceans immediately undertake a study and hold hearings with affected stakeholders across Canada on the long-term environmental, economic, social, and cultural effects of the proposed changes to protection of fish habitat in the Fisheries Act.

I so move.

The Chair: Thank you very much, Mr. Chisholm and Mr. Donnelly.

Notice of motion has been made and we will certainly take these in and the clerk will distribute copies to all members of the committee via e-mail.

Thank you very much.

There being no further business, this committee stands adjourned.

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