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Chair

Mr. Rodney Weston

Standing Committee on Fisheries and Oceans

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● (1545)

[*English*]

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

I'd like to thank our guests for joining us here today. We certainly look forward to your presentation.

We generally allow about 10 minutes for presentations, and then we move into questions. If I cut you off at some time, I apologize in advance. It will be in the interest of fairness. We try to ensure that each member has adequate time to ask questions and have answers provided to them. We try to make sure we get as much done in the confined timeframe we have to deal with.

Ms. Bailey, please proceed when you're ready. The floor is yours.

Ms. Sarah Bailey (Research Scientist, Central and Arctic Region, Great Lakes Laboratory for Fisheries and Aquatics Sciences, Burlington, Department of Fisheries and Oceans): Thank you.

My name is Sarah Bailey and I am a DFO research scientist. I am by training an invasion biologist, and I have been studying ship-mediated invasions in the Great Lakes for 12 years.

With me is Nick Mandrak, a research scientist at DFO. He is also the executive director of the DFO Centre of Expertise for Aquatic Risk Assessment for aquatic invasive species. Becky Cudmore is a senior science advisor on aquatic invasive species for DFO and the national manager for DFO's Centre of Expertise for Aquatic Risk Assessment.

We're going to split our 10 minutes and each take the opportunity to address the committee. I'll make some brief opening remarks, and then Nick and Becky will follow.

I lead DFO's ballast water research and monitoring program in the Great Lakes. We have a very collaborative program. We link with the Canadian Aquatic Invasive Species Network, Transport Canada, American researchers and regulators, as well as the shipping industry. I also participate in the ballast water working groups of the International Maritime Organization and the International Council for the Exploration of the Sea. We work to coordinate and improve ballast water management strategies globally.

I will focus my comments on the risks posed by ballast water, an evaluation of binational regulations that mitigate these risks, and remaining challenges.

When ships load ballast water at a port they load an entire aquatic community into their tanks. If that ballast water is not managed, a variety of species can be discharged at the next port of call, sometimes with very large population density. The discharge of unmanaged ballast water has been a very important vector of invasive species to the Great Lakes since the opening of the St. Lawrence Seaway and is responsible for roughly 55% of invasions since 1959.

Starting in 1989, following the discovery of the Eurasian ruffe and the zebra mussel, Canada and the United States implemented a series of voluntary and then mandatory science-based ballast water regulations for vessels arriving to the Great Lakes. All vessels arriving to the Great Lakes from outside Canadian waters must now manage all ballast water, including residual water and sediments, by exchanging or rinsing their tanks with ocean salt water before discharge. A binational team inspects all of these vessels and orders corrective action, if necessary, to prevent unmanaged discharges into the Great Lakes.

I led a recent scientific evaluation of the efficacy of the current Great Lakes ballast water management program. Our comprehensive assessment used four lines of evidence and indicated that the risk of ship-mediated, non-indigenous species introductions has been markedly reduced. No new species attributed to ships' ballast water has been reported in the Great Lakes since 2006. Despite this, the risk of ship-mediated invasions in the Great Lakes has not been completely eliminated.

My team is currently conducting research to evaluate the risks posed by different vessels and different geographic routes, and we are evaluating new methods to manage ballast water. We are supporting Transport Canada in regulatory work following Canada's ratification of an international convention that will require vessels to treat ballast water using technologies such as filtration and chlorination.

We have also been exploring a combination approach, using ballast water exchange and treatment to provide an enhanced level of protection against ballast-mediated invasions for the Great Lakes.

My colleague Nick Mandrak will continue the opening remarks.

Mr. Nick Mandrak (Research Scientist, Central and Arctic Region, Great Lakes Laboratory for Fisheries and Aquatics Sciences, Burlington, Department of Fisheries and Oceans): I would like to briefly discuss three topic related to AIS and the Great Lakes: pathways other than ballast water; research; and monitoring.

I believe that when he sat before this committee, Dr. Ricciardi indicated that ballast water was not the only pathway for AIS to get into the Great Lakes. As we have done with the ballast water pathway, we need to better understand the relative risks and potential to control the introduction of AIS through these other pathways. These pathways include several, collectively known as organisms in trade. In order by volume, these are aquarium, live bait, live food, water garden, and biological supply house trades. Other pathways include authorized stocking, unauthorized stocking by private individuals, and secondary spread though canals such as the Welland Canal in Trent–Severn Waterway.

Our analysis has shown that introductions of non-native fishes through ballast water and authorized stocking have levelled off in the Great Lakes in the past several decades, whereas unauthorized introductions through trade are increasing. We are currently conducting risk assessments of these pathways to determine the relative risk of each of these pathways and the best approaches to minimize these risks. Ms. Cudmore will discuss risk assessment in more detail in her presentation.

In the Great Lakes, DFO carries out one to two AIS research projects per year. Since 2005, these projects have included improving the tools required to conduct risk assessments, including methods to predict establishment and impacts of potential AIS currently in a pathway, and a method of screening large numbers of species in a pathway such as the aquarium trade, which imports millions of individuals of over 2,000 fish species into Canada every year. Although only a very small fraction of those species may harm Canadian ecosystems if introduced into the wild, we need to develop tools to identify those few species, and develop regulations to minimize the release and subsequent impact of such species.

In 2006, DFO developed an AIS monitoring plan for central and arctic regions, including the Great Lakes. Based on this plan, DFO has since carried out one to two AIS monitoring projects per year. These projects have monitored for species, including Asian clam, bloody red shrimp, round goby, and tubenose goby, and pathways including the Trent–Severn Waterway, the Welland Canal, and in conjunction with other sampling in some of the Great Lakes action plan areas of concern. The purpose of monitoring is to better understand the current status of existing AIS and their use of pathways, and for early detection and rapid response. Monitoring of existing AIS and pathways can be used to minimize the spread of species, but monitoring for early detection and rapid response is much more effective in controlling AIS if early detection and rapid response plans are in place. In the Canadian Great Lakes, we are in the early stages of the development of such plans.

● (1550)

Ms. Becky Cudmore (Senior Science Advisor, Central and Arctic Region, Great Lakes Laboratory for Fisheries and Aquatics Sciences, Burlington, Department of Fisheries and Oceans): Going on to risk assessment, risk assessment is a cornerstone of any aquatic invasive species program and provides a foundation based in science. Advice stemming from risk assessment is used to determine effective actions and use of resources by targeting highest-risk species, pathways, and locations. The advice is helpful in terms of research, monitoring, response, and management, including regulations.

Risk assessment for aquatic invasive species first looks at the probability that a species would be introduced, taking into account the likelihood that it would arrive, survive, establish, and spread. The second part is to determine what the magnitude of the consequences would be if the species is successfully introduced. Combining these two parts gives the risk of that species to an ecosystem.

DFO's national Centre of Expertise for Aquatic Risk Assessment was established in 2006 in Burlington, Ontario, and represents a key step in the development of a prevention-based aquatic invasive species program. The centre is internationally recognized for its expertise and provides guidance and tools to many agencies. To date, we have conducted full risk assessments for 25 species and written biological reports for 38 species. We also look at pathways and have completed two pathway risk assessments—ship-mediated and the Ontario baitfish pathway. As mentioned by Dr. Mandrak, other pathway assessments are under way.

One of the purposes of risk assessment is to identify future threats and concerns, assess them, and develop roadblocks to prevent the arrival of high-risk aquatic invasive species. Northern snakehead and the organisms in trade pathways are some of our top concerns in the Great Lakes right now, along with Asian carps. The concern of the arrival of two of these Asian carp species led to the development of a bi-national risk assessment targeting the Great Lakes. This initiative was announced in October 2010 and was led by the DFO Centre of Expertise for Aquatic Risk Assessment, and it was coordinated by the Great Lakes Fishery Commission. We worked extensively with our Great Lakes colleagues on both sides of the border, from the U.S. Geological Survey, other federal, state, and provincial agencies, and universities. The goal of the project is to provide scientifically defensible advice for managers and decision-makers to prevent the introduction and establishment of these harmful species. The results will guide the activities for an Asian carp strategic plan, the funding for which was just announced by Minister Ashfield on Monday at $17.5 million over five years.

Thank you.

● (1555)

The Chair: Thank you very much.

We're going to move right into questions now, and we'll start a seven-minute round, with Ms. Davidson leading off.

Mrs. Patricia Davidson (Sarnia—Lambton, CPC): Thanks very much, Mr. Chair.

Thanks very much to our witnesses here this afternoon. This has certainly been an interesting study. We've heard from a wide variety of people, but the concerns all certainly seem to be much the same. I think it is felt that there has been some progress made in different areas when it comes to invasive species. It's felt that there has been quite a bit of progress made on the lamprey eel, for example, and also on the ballast water regulations.

It's also widely felt that the Asian carp will be a huge problem if in fact it ever does become established in the Great Lakes. I think everybody is very concerned about that.

The other invasive species that has come to light from the witnesses has been the northern snakehead fish. There have been some grave concerns expressed about that.

I'd like my first question to be about the ballast water research. Perhaps, Ms. Bailey, you could just talk a little bit more about the new methods you're looking at developing for early detection and enforcement. Could you just enlighten us a bit on where this is going?

Ms. Sarah Bailey: Certainly. Thank you.

With regard to new methods for the treatment and management of ballast water, there are a variety of technological systems, globally, being developed. Pretty much all the systems combine at least two technologies. One would be a mechanical separation—something like filtration—which would do an initial treatment of the water. The second treatment normally involves some kind of biocide or active substance, such as chlorine, which would further reduce the viability of any species that would be in the ballast water.

A few systems are type approved. They have gone through a type approval process with the International Maritime Organization. But very few of these are being tested for fresh water or cold water. So a lot of our work is focusing on making sure these treatment systems that have been approved elsewhere are also going to work to protect the Great Lakes.

We have also been working with early detection tools, using things like vital stains and particle counters, to try to quickly assess what's in a ballast water sample. Right now, if we collect a plankton sample and send it to a taxonomist, it could be months before we get the results. We're trying to find technologies we can use so that we can get results in an hour, in which case we could actually take action before that discharge is completed.

Mrs. Patricia Davidson: You talked about your collaborative programs and your international working groups and so on. Is it mainly the United States you work with internationally, or do you work with other people and study their best practices as well?

Ms. Sarah Bailey: We work internationally. We have a very close working relationship with the United States because of the Great Lakes and the need for compatible regulations. We are also able to work together on research in the Great Lakes.

The international working groups are generally working groups of scientists who come together to share the latest developments and information internationally to inform the international regulations and make them as protective and as science-based as possible.

Mrs. Patricia Davidson: Thank you.

Ms. Cudmore, I believe it was you who referred to the announcement made on Monday regarding the $17.5 million to protect the Great Lakes against the Asian carp. Of course, I expect that everybody at this committee was extremely happy to hear that announcement. It's very good when we know that there has been a fair amount of work ongoing, but it's great to see that this is being continued.

As I said earlier, it seemed as though most of our witnesses felt that the Asian carp was the invasive species that could probably be the most harmful and that concerned them the most. Could you just talk a little bit about what this funding announcement means when it comes to addressing the threat of the Asian carp?

● (1600)

Ms. Becky Cudmore: Yes, and thank you for the question.

You're correct in that we have been working on Asian carp for several years, especially with our American colleagues. Asian carp are not in Canadian waters at this time. They are in the U.S. The bulk of the work has been in the U.S., but we have been participating with them in terms of control measures and providing scientific advice. This funding will allow us to more aggressively pursue proactive activities with our key partners around the Great Lakes.

The strategic plan centres around four pillars. One is prevention, looking at outreach activities, research on containment and movement, and understanding pathways and entry points. Second is early warning, setting up a monitoring program in waterways of highest risk of entry to the Great Lakes. Third is response, working with our Great Lakes partners to develop response plans should Asian carp show up in the Great Lakes. Fourth is management, collaborating with our enforcement agencies around the Great Lakes.

These four pillars will allow us to deal with this imminent problem of the Asian carp's arrival in the Great Lakes. They are certainly the closest on our radar screen. They're in close proximity, and we are in a really unique position to not react to an invasive species that's already shown up. We are able to be proactive and prevent them from arriving in the first place.

Mrs. Patricia Davidson: Thank you.

The Chair: Thank you very much, Ms. Davidson.

Mr. Donnelly.

Mr. Fin Donnelly (New Westminster—Coquitlam, NDP): Thank you, Mr. Chair.

Welcome to our guests. Thank you for appearing in front of the committee.

We've heard some differing views from different witnesses regarding the managing of ballast water from ships. Some witnesses have said Canada's ballast water management system is adequate, and others are saying it's inadequate. Certainly some have pointed out that they feel we have an inferior regime to the one in the United States, for instance, their laws, their regulations, their management systems, and their practices.

I'm wondering if you can give your opinion. Do you feel we are adequately addressing the ballast water issue, or do we need to up our game in terms of the Canadian laws, regulations, and practices?

Ms. Sarah Bailey: Thank you for the question.

Canada has had regulations in place for a number of years now, and because of the time lags in being able to detect invasive species, we're only actually able to start seeing differences now. Although the discovery of the last ballast-mediated species in 2006 coordinates nicely with the 2006 regulations, because of time lags we actually think that effect is a result of the regulations in the early 1990s, and we think it's going to be another 10 years before we see the added benefits of the introduction of tank flushing in 2005 and 2006.

That being said, we're already seeing remarkable decreases in invasion risk with the current exchange and flushing regime. Canada has already signed on to the international convention for ballast water management, which means we're moving forward to having numerical standards in place, meaning ships are going to be required to install treatment systems.

Mr. Fin Donnelly: Timelines.

Ms. Sarah Bailey: There's a timeline according to when a ship is built and how big it is, but starting in about 2016, a large number of ships will be installing these treatment systems. We think that will even further protect the Great Lakes beyond the reduction we've seen already.

The U.S. federal regulations are compatible with the Canadian and the international approach currently. Some of the states, through their certification of the Clean Water Act, have come out with more stringent discharge standards, so a lower number of organisms being allowed to discharge.

The problem I see with those regulations is they're below the levels of detection, these higher standards. As a scientist, I can actually test if a treatment system is meeting that standard. I can't test the treatment system to see if it can meet that standard. My opinion is the international standard, which is set at the level of detection, will give the best protection we can give currently, and once we get that in place, we can then re-evaluate and see if more is needed.

● (1605)

Mr. Fin Donnelly: Just to follow up, does that mean we don't have the proper equipment needed to do the testing, or why can't we detect...? Are other jurisdictions able to detect and we can't? What's the deal there?

Ms. Sarah Bailey: Actually, it's a global limitation. It has to do with the fact that the discharge standards are of such a low density that you're essentially looking for one organism in swimming pool volumes of water. In order to test that standard, you have to be able to filter those very large volumes of water without any loss or error, or causing death to the organisms by filtering that much water. Essentially you're talking about such large volumes of water that we physically can't filter it to look for such a small number of organisms.

Mr. Fin Donnelly: Internationally it is being identified as a problem, so that's something we obviously have to take into account.

Ms. Sarah Bailey: Yes.

Mr. Fin Donnelly: Okay, thanks.

In terms of research and monitoring, DFO is experiencing about a 7% cut overall to its operating budget in science, including research and monitoring, which is obviously being squeezed. We've heard from many witnesses, and a common theme seems to be the need for increased investment in dealing properly with AIS, aquatic invasive species.

In the presentation you mentioned the $3.5 million a year announcement by the minister. We've heard suggestions of the need for about $10 million a year to at least adequately deal with this issue.

I'm wondering if you could comment on the level of investment needed to properly address this issue.

Ms. Becky Cudmore: The $3.5 million per year to deal with Asian carp will allow us to adequately deal with our most pressing issue in the Great Lakes right now. We don't know how any of the realignment the department is facing during this transition period will affect the aquatic invasive species program outside of what this new money for Asian carp will be.

Mr. Fin Donnelly: You can't give a guesstimate of the level of dollars needed to deal with this problem? This is really only the Great Lakes, as opposed to all aquatic invasive species in Canada.

Obviously this is an important port or area in Canada, for sure, but this is one area. It would be nice to know whether the department could give a reasonable guesstimate as to the level of resources needed to deal with this problem, or do we not have a handle on that?

Ms. Becky Cudmore: We can say for sure that the Great Lakes are the biggest epicentre in Canada for aquatic invasive species by far, so it does seem appropriate to put this type of funding towards that. We also have a lot of commitments that this funding will help us deal with.

With regard to the funding for the entire country, we do very well with the money that's given to us. We are able to have very strong partnerships with conservation groups, with our partners in the province, and we leverage that quite well. We could always do more with more.

Sarah, did you want to add anything?

Ms. Sarah Bailey: I was going to say, as an example, that I can give you the level of effort that's been given towards ballast water over the last five years or so, during which time we've seen progress. Between Transport Canada and Fisheries and Oceans, we've spent about a million dollars annually on research and development, and Transport Canada dedicates a million dollars annually to the inspection program to enforce the regulations.

The Chair: Thank you very much.

Mr. Hayes.

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

This is going to be a really simple question, or it's going to sound simple. It was mentioned that there have been no new species introduced in the Great Lakes since 2006. How do you know that? In other words, what has been done, and what can you say that can substantiate that?

● (1610)

Ms. Sarah Bailey: That's based on reports from the general scientific community. There actually have been two plant species reported in the last year; we're not sure if they're established or not. But that number for 2006 is for ballast-mediated species. The last species that was thought to have been brought in by ballast water was reported in 2006.

There is not a comprehensive monitoring program to sample all ports in the Great Lakes. This is based on what all the people who are out there doing the work are finding.

It's also based on our four lines of evidence, where we've sampled ballast water coming in from ships, identified what's in there, and looked at the effectiveness of the ballast water programs. With those four lines of evidence, we're able to comfortably say that the risk from ballast water has been reduced.

Mr. Bryan Hayes: You mentioned all of these people out there doing work. Does anybody really know how many people are out there doing research work?

We've heard from the Canadian Aquatic Invasive Species Network, the Great Lakes Fisheries Commission, the hunters and anglers, provincial MNRs, and university research groups.

My concern is in terms of efficiencies. I simply want some assurance that the left hand knows what the right hand is doing and that all this information is being shared and communicated, so that work is being conducted effectively.

Can you give me some sense that communication is happening, how it's happening, and who is coordinating it?

Mr. Nick Mandrak: Thank you for the question.

I think we're doing a good job of communicating with all the organizations that are carrying out research specific to AIS and doing research in general that may lead to the findings of AIS in the Great Lakes.

Within DFO, we have an AIS database, and anyone who receives funds from DFO or from CAISN is required to submit their findings on an annual basis to this database. So we do have a coordinated database.

CAISN does coordinate annual meetings where people get together to say, this is the research we are doing and these are our findings.

I think among the research community there is good communication, and CAISN and the DFO AIS program are good coordinators of that communication.

Mr. Bryan Hayes: A number of risk assessments have been completed by your group on, apparently, the Asian carp, the northern snakehead, the smallmouth bass, and the round goby.

I have two questions. First, once an assessment is completed, what happens with it in terms of an implementation plan?

Second, what are the current risk assessment priorities, and how are they determined? I mean, if you've done these, what's next?

Those are my two questions, but if you only get to one of them, that's fine. Hopefully, somebody else will pick up on the other one along the way if they feel it's appropriate.

Ms. Becky Cudmore: I appreciate the question.

We've done quite a few risk assessments since 2006, when we started. The results are useful in many ways, and I can give some very specific examples.

We've done a risk assessment for bloody red shrimp, which arrived in the Great Lakes in about 2006. Through the risk assessment we were able to identify other areas where it may be and where maybe we should start monitoring those areas looking for them. That summer, we implemented a monitoring program for bloody red shrimp and did find them in those areas. We were able to get at them a lot earlier than we would have without the risk assessment to help guide where we should look.

The Great Lakes are huge, and we need these risk assessments to help us target our vulnerable areas.

The risk assessments also come with a level of uncertainty. What is driving uncertainty or certainty with a risk assessment? A lot of our risk assessments have identified research priorities that we need to take in order to increase our certainty or our comfort level with the level of risk a species poses.

Probably one of our proudest results was our 2004 risk assessment for all of Canada for Asian carp. The risk assessment result was that the risk was high should Asian carp be introduced into Canadian waters. That led to the ban of possession and sale of live Asian carp in the province of Ontario. So there was a very direct link from our risk assessment results to seeing regulations in place by the province. Subsequent to that, the Province of B.C. has also banned possession and sale of Asian carp, based on the results of our first risk assessment.

The second question was on determining our current risk assessment priorities. One of my jobs is to basically scan the radar. I'm looking at what pathways are available for invasive species to travel to Canada and what species are on those pathways. Is there anything happening in the States? Are there species there that we should be concerned about in Canada? Is there something going on in Europe?

We also talk to the provinces, NGOs, and anyone who will provide us with information about what their concerns are, what the next potential invasive species are that they are concerned about.

We compile that information, and we'll do a rapid assessment: is it in a pathway to Canada, could it survive, and would it have impacts? That list is then vetted through a national executive committee we have that's made up of representatives of scientists and managers from across DFO. They prioritize, based on the information we have available.

In some cases, we are formally asked by either our own agency or other agencies to conduct a risk assessment. That helps move things up the priority list because it's a formal request for science advice. That's how we come up with what we're going to work on that year.

● (1615)

Mr. Bryan Hayes: Thank you.

The Chair: Thank you very much.

Mr. MacAulay.

Hon. Lawrence MacAulay (Cardigan, Lib.): Thank you very much, Mr. Chair, and I apologize for being late.

Thank you for being here.

Regarding the $17.5 million that has been announced, what amount will be going to the Centre of Expertise for Aquatic Risk Assessment or the DFO Great Lakes Laboratory for Fisheries and Aquatic Sciences in Burlington?

Also, have you escaped the cutbacks? If you did, great. If not, what effect do they have? Could you give us some of the details?

I hope I'm not repeating things.

Ms. Becky Cudmore: With regard to the funds and where they're going to go, we are still working on those details right now. We know that the Great Lakes Laboratory for Fisheries and Aquatic Sciences is very strongly committed to working with the U.S. on preventing the introduction and establishment of Asian carp in the Great Lakes. I don't think any would come to the Centre of Expertise for Aquatic Risk Assessment, but we would certainly want to leverage those funds and do any further risk assessment work if it was deemed necessary.

On your third question on the cuts, to my knowledge, the aquatic invasive species program has not been affected by the recent round of cuts.

Hon. Lawrence MacAulay: Very good. Can you tell me basically how the $17.5 million will be spent?

Ms. Becky Cudmore: Sure. We have an Asian carp strategic plan. It will be for Canadian activities, but also to work with our American partners. The funds would stay here in Canada. It's to deal with a prevention program for Asian carp.

Hon. Lawrence MacAulay: Is there anything for education?

Ms. Becky Cudmore: Absolutely, prevention and—

Hon. Lawrence MacAulay: I think the big problem a lot of times —we could talk about a lot of different things—is that people import these fish, these invasive species. They take them in. A lot of people do not realize what they are doing. I'd just like you to go on that angle a bit, if you are.

Ms. Becky Cudmore: Absolutely, I cannot stress enough how important outreach and education is for industry, community groups, and the general public in terms of preventing aquatic invasive species. Some of the ideas that we're working on now include education of importers and retailers who are importing these things in Ontario, and also any industry groups, so that we can work with them, because the more eyes on the water, the better. That would be commercial fishermen, recreational fishermen. We definitely would like to reach out to them.

Hon. Lawrence MacAulay: Very good. And the people who buy these just to have them at home...? Most Canadians would not do this if they really knew what they were doing. That would be my opinion.

Ms. Becky Cudmore: Right. The intended reason for bringing these in is not to release them into the wild. We think there are many reasons why they are being released.

Hon. Lawrence MacAulay: They have them in their home pool or whatever, and then they get tired.

Ms. Becky Cudmore: Yes, there are lots of those examples out there.

Hon. Lawrence MacAulay: On the recent findings of the possible snakehead in B.C. waters, have you any comment on that and what effect it could have?

● (1620)

Ms. Becky Cudmore: In Burnaby, B.C., a fish was videotaped. Dr. Mandrak and I looked at it and we believe it is a northern snakehead. We do know that in Canada there are no laws prohibiting importation of any aquatic invasive species. We just don't have those regulations.

Hon. Lawrence MacAulay: Should there be? That would be another question, if I have time.

What should be done, along with education? Should there be laws passed? How do we enforce these laws? I suppose like every other border—

Ms. Becky Cudmore: I appreciate the question, and for snakeheads, it's an interesting case study. You cannot import snakeheads into the United States. They have a federal law that prohibits import. We are importing them into British Columbia.

Dr. Mandrak and I have seen them for sale in markets in British Columbia, and we have bought one live and taken it to the hotel. We knew it was going to be a matter of time before it showed up in the wild, and it did.

I couldn't agree more. We do need regulations in order to prohibit only our highest-risk species. We wouldn't need to prohibit everything, only the highest-risk species for import, and DFO is developing regulations in order to be able to do that.

Hon. Lawrence MacAulay: Is there much of a problem in bringing these fish in to be used as bait and that type of thing? Is that much of a problem?

Ms. Becky Cudmore: I'll let Dr. Mandrak speak to that.

Mr. Nick Mandrak: Thank you for the question.

I actually recently supervised a Ph.D. student who looked at the very issue of bait and the extent to which it is a problem in contributing to the AIS problem. The problem is not the import, because the import of bait into Canada is banned, and it seems that's generally upheld. There are probably some minor exceptions regionally, where there are recreational fisheries near large populations of American fishermen.

We found that in Ontario, where we did our primary study, there is an occurrence of AIS in the bait trade. We found them in very low numbers. For example, we did a study where we looked at 17,000 fishes bought from 50 different bait shops in southern Ontario. We found only a handful of aquatic invasive species that are illegal in the trade.

So if you go and you buy your bait, getting an invasive species in that bait is a rare event. However, that event, the buying of bait, occurs over four million times a year. This is a low-probability event that has a high probability of actually happening.

But that's not the end of it. That's sort of the—

Hon. Lawrence MacAulay: Is there any kind of invasive species used for bait itself?

Mr. Nick Mandrak: Round goby are not targeted for use, but anglers would tolerate their use. As I mentioned, you buy the bait that has, let's say, round goby in it. We predict that round goby are found in one out of every 400 sales of bait.

If you then extrapolate to the four million events, there are quite a few round gobies—

Hon. Lawrence MacAulay: And then that becomes a serious problem.

Mr. Nick Mandrak: Well, it depends on what the anglers do with it at the end, right? If they use all of their bait, or if they don't use all of their bait and they destroy the rest of it, that's not a problem. The problem is when they actually release that bait into the wild.

Why do anglers do that? Quite often it's because they think they're doing the right thing. They don't want to kill a living organism. They release it into the wild.

However, you were talking about outreach earlier; over the past decade, I would say there's been a lot of outreach, particularly targeting anglers, to prevent this behaviour from happening. A couple of decades ago, when I was a graduate student, we actually did a study on the prevalence of anglers releasing bait. It was about 30% to 35%. Most of them did it because they thought they were doing a good thing for the environment. We've gone from that down to, in recent years, about 19%.

We think it's largely because of this outreach that is happening that anglers are becoming more aware.

Hon. Lawrence MacAulay: That's good to hear.

The Chair: Thank you, Mr. MacAulay—

Hon. Lawrence MacAulay: So if the education program is working, then, that's where you think we should go?

I think I'm near the end of my line.

Voices: Oh, oh!

The Chair: I think you're right. Thank you.

Mr. Toone.

● (1625)

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

Thank you for the presentation. I'd like to follow up a bit on where Bryan Hayes was going with his question about what's next.

I'm interested in the part of your mandate that is to help prevent the introduction and the establishment of invasive species. Environment Canada, in the recent budget, cut the invasive alien species partnership program. It's gone. So how do we do that outreach? There seem to be now barriers to that outreach.

I'll name a few groups that no longer have funding regarding invasive species: the Conseil québécois sur les espèces exotiques envahissantes, the Magdalen Islands priority intervention zone committee, the Great Lakes United invasive plant watch network, the Ontario Invasive Plant Council. We've cut them all off.

We have some research, and I understand that you're able to facilitate the prevention or at least the establishment of invasive species, but we're also cutting back on the very partners that could help us in controlling those invasive species.

What is next? We don't seem to have those connections anymore. How are we getting those boots on the ground?

Ms. Becky Cudmore: Thank you. I appreciate that question and can understand the issues there.

Each department is required to do an operational review and align their resources to priority areas. For DFO, the protection of native species for the Great Lakes is a priority. Working on prevention of the establishment of aquatic invasive species in the Great Lakes aligns with that mandate. For DFO, working with our partners is absolutely essential. That is how we've always done our work and how we plan to continue to do our work.

For Environment Canada, I can't really comment on the decisions made there. For DFO, we do want to continue to work with our partners. We can't do the work we've done, the good work we've done, without them.

Mr. Philip Toone: I appreciate that, but I'm still perplexed. It's not clear where that connection is now going to be made. Some of the information you had translated to Environment Canada. There's a lot of overlap. It's not a completely distinct organization. When people require assistance regarding invasive species, they will go to Environment Canada based on the information you provided. You're now still in a position to provide some of that information, but I don't understand—who are these partners? Now that we've cut all this funding since March, who are we going to specifically? Who's assisting us?

Ms. Becky Cudmore: For the Great Lakes, we would work with the Ontario Federation of Anglers and Hunters, the Province of Ontario, and the state and federal agencies in the U.S. Those are our main partners on the waters of the Great Lakes.

Mr. Philip Toone: Is it fair to say that we've now dumped this onto the provinces? It's up to them now to fix this problem. The federal government is pulling back.

Ms. Becky Cudmore: I think that given our continued ongoing funding with aquatic invasive species, to my knowledge, to date there have been no cuts. With this new additional funding with respect to Asian carp specifically, we would not be considering downloading anything onto them.

Mr. Philip Toone: But you mentioned a moment ago that we don't know what we're doing with that additional funding. I might add that it's additional funding in a context where there have been cutbacks just about everywhere else. So you may be getting a little bit more, but the net result is that there's actually less than there was previously. Again, are we just dumping this onto the province? Is that what's going on here?

Ms. Becky Cudmore: No, I would say that's not the plan at all. It's to continue to work with them as a strong partnership, and to leverage each other's best information, best use of resources, and expertise.

Mr. Philip Toone: I'll go back to the groups that no longer receive funding. The Magdalen Islands priority intervention zone committee is not a provincial government organization. Are we still working with them, or have we just cut them off?

Ms. Becky Cudmore: Outside of the Great Lakes, we have the ability through our partnerships to leverage education and outreach beyond the Great Lakes with small community groups.

I'm not sure I can answer your question.

Mr. Philip Toone: Let's bring it back to the Great Lakes then. There's the Ontario Invasive Plant Council.

Ms. Becky Cudmore: Right.

Mr. Philip Toone: Are we still working with them?

Ms. Becky Cudmore: Yes, we absolutely work with them—

Mr. Philip Toone: How are we funding that?

Ms. Becky Cudmore: —but for plants it is....

● (1630)

Mr. Philip Toone: You mean an invasive species plant.

Ms. Becky Cudmore: For an invasive species plant, we rely on the province to deal with that toxic group specifically.

Mr. Philip Toone: Although we funded them up to March 2012.

Ms. Becky Cudmore: The Government of Canada did.

Mr. Philip Toone: Right.

Ms. Becky Cudmore: It was not DFO.

Mr. Philip Toone: It was not DFO. That's understandable. We have information. I'm just trying to figure out what we are doing with that information. What is the next step? Again, I'm not hearing that we're working with anybody other than the U.S. government and the Ontario government.

Ms. Becky Cudmore: The Ontario Federation of Anglers and Hunters is also a strong partner with us. It leads on education and outreach in the Great Lakes area.

Mr. Philip Toone: Well, we're certainly lucky that we have them, but I'm wondering if there are any other organizations that have been on the list that required funding in the past and that are no longer going to be able to assist us.

Ms. Becky Cudmore: I would suggest that for those groups you should try to leverage whatever expertise and abilities they have with their partner agencies outside of the Great Lakes.

The Chair: Thank you, Mr. Toone.

Mr. Leef.

Mr. Ryan Leef (Yukon, CPC): Thank you very much.

I should just ask, maybe collectively, if any one of you is familiar with the WAPPRIITA legislation.

Look at that; we have a group. You're the first group so far to nod your head and say yes.

Let's go back a little.

Mr. MacAulay was talking a little bit about international and interprovincial transport and trade in invasive species or harmful species. I'm interested that the snakehead, for example, can be bought and sold and traded in British Columbia. If you can't answer it or don't feel comfortable offering an opinion, say so, because it might fall more into the enforcement purview, but wouldn't WAPPRIITA speak directly to that kind of activity—interprovincial transport and trade in a species that could be harmful?

Ms. Becky Cudmore: I appreciate that question very much, because I ask myself that same question. Organisms in trade is an area of specialty for me, and I do work closely with enforcement agencies, both the province and the Border Services Agency.

Dr. Mandrak and I had been connecting what we would call a characterization of the organisms in the trade pathway, and we were invited along to the airport to look at live fishes coming in. During a slow moment around 2 a.m., I was reading legislation—

Mr. Ryan Leef: Yes, it must have been a slow moment.

Ms. Becky Cudmore: —and I came to WAPPRIITA and asked myself why we aren't using this to ban species harmful to the environment. So I did bring that up to DFO, and the legal opinion is that we can't use that because there's no mechanism, the way the legislation was built, to add species to the list. So then it became important for DFO to step up to the plate and develop draft regulations in order to have a list to prohibit import, and that's where we are right now, drafting these regulations.

Mr. Ryan Leef: Okay, and that's to annex a particular group?

I'm sorry, I don't have the regulation or the act itself right in front of me, but if I remember right now there is a definition of species that would be considered harmful. It's pretty general, which would beg the question why we don't just add an annex with some defined species.

So the legal opinion right now is that even with the generality of that, you can't say.... I'm thinking out loud here. I guess in some locations a species could be harmful, but the exact same species in other locations is not, and that generality would be nice to play with in WAPPRIITA.

It's just not carte blanche, where the legislation would kick in regarding an invasive or problematic species. I guess if you put it in an appendix, without starting to add geographic locations to the species as well, which complicates your regulations...you would think the enforcement staff would be able to act based on scientific information about the geographic region in which the species is introduced, and the harmful impacts, and you could present a case with the general definition of that regulation. That's not the case, is it?

Ms. Becky Cudmore: But then we recognize our gap and are hoping to close that gap with these new regulations from DFO, to which we can list things, and also recognize that species in one part of the country may not be harmful while they are in another. So we're working on it.

Mr. Ryan Leef: From my past experience, it was the provincial and territorial conservation officers, enforcement agencies, that were able to enforce that regulation along with DFO. Is that going to be a continued track as well?

Ms. Becky Cudmore: With the regulation, yes, there would definitely be partnerships between the federal government and the provincial and territorial governments, and that's where the discussions are going on right now. The provinces certainly can ban—and many of them have banned—possession and sale of certain aquatic invasive species. What they can't ban is import, which is a federal responsibility. So this helps close that gap as well. There's some closing of gaps as well as continuing the enforcement relationships between the federal and provincial agencies.

Mr. Ryan Leef: And does that act cover interprovincial and international trade?

● (1635)

Ms. Becky Cudmore: Well, it would cover movement interprovincially.

Mr. Ryan Leef: Movement, right, and that covers wild animals and plants.

Ms. Becky Cudmore: That's the intent—aquatic species.

Mr. Ryan Leef: And because it can be applied across all of Canada—going back to a couple of questions Mr. Toone was asking—it would make sense that provincial bodies, given that they might have a specific acceptance variable to some species and not to others...that their biologists, their scientific community, their enforcement community, and their education programming and branding around that.... It would seem to make sense that they participate, contribute, and fund that sort of thing as well.

Would that be fair to say?

Ms. Becky Cudmore: Yes, definitely.

The Chair: Thank you, Mr. Leef.

Mr. Ryan Leef: Don't I get a MacAulay minute here?

The Chair: No, you don't get a MacAulay minute.

Mr. Bryan Hayes: You've got to be here a little longer, eh?

The Chair: Thank you.

Mr. Donnelly.

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

Following up on Mr. Leef's comment about WAPPRIITA, I'm wondering about the timeline. You mentioned that the department is working on closing that gap or addressing that issue. How long before we can expect to see something? That sounds like an oversight that it would be nice if everyone could work together to fix.

Is that something that will need to come back to the government to approve through Parliament? And what kind of a timeline are we looking at?

Ms. Becky Cudmore: The question might be better answered by people in regulations and policy rather than science people, but I am aware that it is currently in consultation—the draft regulations are in consultation—with the province, so I think they're hoping to have something very soon that they can table.

Mr. Fin Donnelly: I'll shift gears back to species risk assessments. Of the invasive animals and plants that you've done risk assessments for, what would be the top three to five that are causing the greatest risk to Canada in the Great Lakes?

Mr. Nick Mandrak: I think, undoubtedly, it's the Asian carps that are on the doorstep to Canada that are of the greatest risk to the Great Lakes right now. You did hear about the snakehead in Burnaby. That's not the closest snakehead to the Great Lakes in North America. In fact, there's a population established in the Potomac River in Washington, D.C., and in a pond in Philadelphia, and there have been sightings elsewhere towards the Great Lakes.

There is not an obvious pathway to bring them to the Great Lakes. For example, we do not see them in trade at live food markets in the Great Lakes Basin, but that's the one we're keeping our eye on, because it is moving in unpredictable ways outside of areas that had obvious pathways.

So the Asian carps, and then, secondarily, I think the snakehead, from at least a fish perspective, would be of concern.

There's another species as well that is found in the live food trade in the Toronto area. It's the Asian swamp eel. That species has had a significant negative effect in parts of the United States where it has been established. That's a species that is on the radar screen as well.

Mr. Fin Donnelly: Where would Zebra mussels and round goby fall?

Mr. Nick Mandrak: They're already here, so they are having an effect. From a risk assessment point of view, we know what the risk is. The risk is high. It's certain that they'll become established and have an impact. We're looking beyond. As Ms. Cudmore mentioned, we really want the cornerstone of our AIS program to be prevention, and we want to prevent the next round gobies and the next zebra mussels.

● (1640)

Mr. Fin Donnelly: What are the top three threats then? Those were risks. What are the current threats to the lakes, the fishery, the economy, etc.?

Mr. Nick Mandrak: I actually did a study that looked at the main threats to rare species, and I think that study is a microcosm of what's actually impacting the ecosystem as a whole. Habitat degradation, I think, would be considered the greatest threat, which would include things like loss of wetlands, modification of shorelines, and so on. The second threat in our study was invasive species. They have various effects, from impacting native species through to having socio-economic impacts. We've all heard of children getting their feet cut on zebra mussel shells, for example.

It really drops off after that because those are really the two main risks. In the past it would have been overfishing, which at this point is not a major issue in the Great Lakes and hasn't been for quite a while. A century ago, some of the greatest losses in the Great Lakes were related to overfishing, but it's no longer a major issue. It's the same with contaminants. They're no longer a major issue.

Mr. Fin Donnelly: Just on the contaminants, does that mean we have them under control? Is that why? We heard testimony that the contaminants issue—the fecal coliform, for instance, that's been produced on the shores—has been a real issue, but are you saying that's a local issue?

Mr. Nick Mandrak: I don't study contaminants so it's very difficult for me to be specific about whether or not we control that issue. In fact, that's covered by Environment Canada in the province. But based on our study, we concluded that the impact of contaminants on rare fishes was very low.

Mr. Fin Donnelly: Could you supply the committee with a copy of your study?

Mr. Nick Mandrak: Absolutely.

Mr. Fin Donnelly: We would appreciate that.

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

Mr. Sopuck.

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

I was very interested, Dr. Mandrak, in a recent comment about how the risk of contaminants seems to have declined....[*Technical Difficulty—Editor*]

I'd like to focus on the Asian carp. Everybody focuses on that, and it implies that the Asian carp, and I think rightly so, is a game changer in terms of invasive species. The rainbow trout in the Great Lakes wasn't really a game changer. The Pacific salmon weren't. But there is something about this species. I gather it's a filter feeder. Is that what the issue is? Can you elaborate on that?

Mr. Nick Mandrak: Sure. Thank you for the question.

The rainbow trout or the other trout and salmon species were introduced into the Great Lakes to replace the lake trout, which had been decimated a long time ago. They had the same sort of ecological role. The Asian carp have a completely different role. We do not have these huge fishes that are planktivores—they're feeding on the microscopic organisms that you can't see in the water column.

They compete with every species. Every species, at some point, no matter how big they grow, will feed on those microscopic organisms. These Asian carp grow to be over a metre long, up to 50 kilograms. Every day of their life they're feeding on those organisms, at a rate of about 40% of their body weight per day. The reason they're a game changer is because they're unlike anything the Great Lakes have ever seen.

Mr. Robert Sopuck: What you say is quite alarming. How are Asian carp controlled in their natural habitat, the native habitats where they came from? Do they dominate and overwhelm every place on earth?

● (1645)

Mr. Nick Mandrak: They don't. That is a good question.

Keep in mind that in their native range they have evolved with the entire fish community over a very long time, over hundreds of thousands of years, depending on where they are found. I've collected them within their native range in eastern Russia, where they were just one component of the environment. There they are in an equilibrium. They've evolved with other species, including predators that have learned to feed on the young of these Asian carp. If they get into the Great Lakes, the Great Lakes ecosystem is entirely naïve. They have not evolved with them, and there will be an immediate impact because of the naiveté of the fish, which have been in the Great Lakes for the last 10,000 year in the absence of Asian carp.

Mr. Robert Sopuck: When new species colonize a new habitat, there is generally an explosion, and then things kind of settle down. They never come back to where they were. Will we ever see a settling down if the Asian carp get in? Is anything happening on the Mississippi, for example? Are we seeing a re-adjustment there, or is that completely out of the question?

Mr. Nick Mandrak: Not yet.

Mr. Robert Sopuck: Okay.

Mr. Nick Mandrak: That is part of the invasion theory—you have this initial spike and then you have a levelling off. That initial spike, though, could have such a catastrophic impact on the Great Lakes that even if the numbers came down again the lakes might not go back to their previous state.

Mr. Robert Sopuck: I wasn't implying that they would ever go back to their previous state. When the carp got into all the lakes across the country, they never went back to their previous state. The common carp seems to have fit in, in an ugly way. Things have returned to an equilibrium there.

I was very interested in one point in your presentation. You talked about evaluating the success of the round goby eradication effort. Can you talk about what you're doing in that program?

Mr. Nick Mandrak: Yes.

Mr. Robert Sopuck: Could that be a model for the future?

Mr. Nick Mandrak: Thank you for that question.

This was a very specific case where in a tributary to Lake Simcoe, round goby were found in about 2005. It was thought to have been placed there by bait. Lake Simcoe is a large lake just north of Toronto. It has a large population around it and is one of the most important recreational fisheries in the province.

The province, the federal government, and the Ontario Federation of Anglers and Hunters led a project to try to eradicate the round goby from this one creek, called Pefferlaw Brook. What we did was use rotenone, a fish poison, in the bottom five or six kilometres of the creek where it was found. Actually, it was applied by our sea lamprey control folks, who have made this a science. They're very good at doing this.

Our role was to determine what the fish community was like beforehand and afterward and whether the eradication had been successful. Unfortunately, the eradication was not successful. It cost hundreds of thousands of dollars and a lot of person days. We concluded that it was not successful in terms of eradication, because the habitat was just too complex. We could not guarantee that the poison totally covered every square centimetre of the habitat and the brook.

It was successful from the point of view that we actually reduced the numbers to the point that we delayed the invasion of Lake Simcoe. The longer you can delay the invasion, the longer you delay those impacts.

I think there were two take-home messages from that project. First, prevention is key. Prevention is the one sure way to prevent the impacts. Second, if through unfortunate circumstances AIS do show up, we should do our best to control them as quickly as possible to reduce the impact as much as possible.

Mr. Robert Sopuck: Thank you.

The Chair: Thank you very much.

Go ahead, Mr. MacAulay.

Hon. Lawrence MacAulay: Doctor, it's interesting, what you're talking about. Basically, when we have an invasive species that comes in, to eradicate that invasive species is pretty well impossible. Is that correct?

Mr. Nick Mandrak: It is very difficult. There are success stories in the world. The key to eradication is early detection.

● (1650)

Hon. Lawrence MacAulay: You're doing a study, which you're going to send to the committee. I'd be very interested in reading that.

In the situation where you spend a lot of money to eradicate a certain invasive species, and you do not, do you keep it at that level? Does it stay at the lower level, or does it go back up?

You talked about the environment being perfect for a species to expand. I would expect that they do expand again after we've spent a lot of money.

Mr. Nick Mandrak: That's what happened, because you would have to continue spending that money to maintain the control, as we do successfully with sea lamprey. Once the sea lamprey came in, we established a control program. We do a very good job of controlling it but have found that it's almost impossible to eradicate it.

Again, prevention is the cornerstone.

Hon. Lawrence MacAulay: Have you conducted any recent economic assessments on the effect aquatic invasive species have on the Great Lakes?

Ms. Becky Cudmore: No. The three of us here generally stick to science and social science. It's not part of our responsibility for Asian carp in the Great Lakes. Our policy and socio-economic analysts are doing a study to determine what the impact would be from a socio-economic point of view. But we're not part of that.

Hon. Lawrence MacAulay: I would expect, then, when you're talking about invasive species that are already there, that the thought of eradicating it is not on. That will not happen. We have to continue to spend the dollars.

Is there any way we could deal with these species? You talk about Asian carp. Where it came from, in its natural environment, it had predators, and here it does not. I'm not suggesting that we have predators for them, because they'd likely kill more.

Is there any thought of going out further? Is there any thought of going beyond spending the money to do this? Is there any science, any evaluating work being done, to see where we could go?

Mr. Nick Mandrak: Thank you for the question.

I really think that, again, prevention is key. Part of prevention is that we know that the Asian carp, for example, are in the Mississippi Basin right now. How do we prevent them from getting into the Great Lakes? We know that our American colleagues have set up an electrical barrier in the Chicago Sanitary and Ship Canal to prevent the fish from getting to the Great Lakes. They're also conducting research on other options to prevent them from getting into the Great Lakes. If they get into the Great Lakes, we need to look at ways that we can either control them in the Great Lakes or in fact prevent them from getting into the Canadian portions of the Great Lakes.

Hon. Lawrence MacAulay: Are the electric barriers efficient?

Mr. Nick Mandrak: The U.S. Army Corps of Engineers is leading the study to look at the effectiveness of the barrier, and it appears to be quite effective.

Hon. Lawrence MacAulay: Thank you very much.

The Chair: Thank you, Mr. MacAulay.

On behalf of the committee, I want to say thank you very much for taking the time to come and meet with us today and answer our questions. It's been very informative. I certainly do appreciate your input.

Dr. Mandrak, you talked to Mr. Donnelly about a report. You can forward that to the clerk, and the clerk will make sure it's distributed to the committee members. I appreciate that.

Thank you very much for your time today.

There being no further business, this committee stands adjourned.

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