HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Agriculture and Agri-Food

AGRI • NUMBER 024 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Tuesday, October 18, 2016

Chair

Mr. Pat Finnigan

Standing Committee on Agriculture and Agri-Food

Tuesday, October 18, 2016

● (0845)

[*Translation*]

The Chair (Mr. Pat Finnigan (Miramichi—Grand Lake, Lib.)): Good morning everyone.

[*English*]

Welcome, everybody. We're here to continue our study on GM salmon.

[*Translation*]

Today we have with us Ms. Ruth Salmon, from the Canadian Aquaculture Industry Alliance.

Welcome, Ms. Salmon.

We also have Mr. Thibault Rehn, from Vigilance OGM.

Welcome, Mr. Rehn.

[*English*]

The way we usually start is by giving each of you up to 10 minutes to introduce yourselves and make your presentations. Then we will follow up with questions.

Who wants to start?

Ms. Ruth Salmon (Executive Director, Canadian Aquaculture Industry Alliance): I think I'm on first, so that's good.

The Chair: Ms. Salmon, you can go ahead.

Thank you.

Ms. Ruth Salmon: Good morning, Mr. Chairman.

Thank you to the committee for inviting the Canadian Aquaculture Industry Alliance to speak with you today.

By production volume and value, our association represents over 95% of the aquaculture industry in Canada. Our members include large and small companies from both finfish and shellfish sectors, marine and freshwater operations, regional aquaculture associations, feed suppliers, and other companies across the aquaculture value chain in Canada. We are farmers operating in all 10 provinces and Yukon. Our industry generates $3.1 billion in economic activity and over $1.2 billion in GDP, and employs more than 15,000 Canadians in rural, coastal, and first nation communities from coast to coast to coast.

With growing demand for fresh seafood in Canada and around the world, we believe our industry can grow in a sustainable manner to more than twice our current size. With the right governance and policy framework in Canada, which we are working hard to achieve, our industry is poised to add an additional 17,000 jobs and over $3 billion in additional economic activity in Canada by 2024.

The government's new economic advisory council, which was created to advise the government on steps to create long-term economic growth in Canada, appears to agree. While the council's final report won't be completed until early 2017, the council's chair, Dominic Barton of McKinsey and Company, has spoken publicly about the need for Canada to become a global champion in the agrifood sector and has highlighted aquaculture as a key sector for growth.

We can deliver on this growth and meet the demands of our customers with a combination of new farm sites and productivity gains, improving on our own current technology. While we do not oppose the approval of genetically modified salmon, our customers in Canada and around the world are not demanding it. We do not need nor do we intend to employ genetically modified salmon technology in Canada.

Consumers are interested in the food they eat and in receiving accurate information about the food they purchase, including where it comes from and how it is farmed. We support that.

We note that voluntary labelling is an option open to companies as long as they comply with the national standard of Canada on voluntary labelling and advertising of foods that are and are not products of genetic engineering.

We also support the Government of Canada's food labelling policy to require labelling in circumstances where food safety issues are identified, and to ensure that food labels are accurate and clear.

Thank you very much.

[*Translation*]

The Chair: Thank you, Ms. Salmon.

Mr. Rehn, you now have the floor.

Mr. Thibault Rehn (Coordinator, Vigilance OGM): Thank you, Mr. Chair.

Good morning everyone.

I am going to speak French.

I thank you for your invitation, and for this opportunity to present the concerns of the more than 200,000 people in Canada represented by the Vigilance OGM network.

My name is Thibault Rehn, and I am the coordinator of a small network called Vigilance OGM. The network is based in Quebec. it is made up of citizens, environmental groups, farmers, unions and groups of consumers who are concerned by what we put on our plates on a daily basis, but also by how food is produced and the impact this has on our health and our environment.

Firstly I want to talk about the concerns Vigilance OGM has after 20 years of experience in Canada, since GMOs have been in our fields and in our plates for 20 years now. Secondly, I will talk about regulating GMOs in Canada, which is a matter of concern for us. Finally, I will discuss the mandatory labelling of GMOs, which is in our opinion the most effective way of informing consumers and respecting their fundamental rights. With these three points, we are going to try and see why Canadians still do not trust these technologies which have existed for more than 20 years.

As you know, GMOs have been in our fields for 20 years, and also on our plates. The GMO industry had made several promises in the beginning. I will discuss the three main promises the industry made in this regard.

The first promise was to offer consumers better, cheaper, tastier, fresher and more nutritional products. That was one of the big promises of the industry 20 years ago. The second promise was to decrease the use of pesticides. Finally, the third promise was to feed the world, especially the southern countries, whose population is expanding.

Unfortunately, after 20 years, we can only note that 85% of all of the GMOs marketed in the world are genetically modified to resist so-called total herbicides, or soil sterilants. That is the case for instance of the famous Roundup Ready seeds that resist Roundup. Currently, in the world, less than 1% of marketed crops are there to potentially provide a benefit to consumers.

The industry did not keep its promises. A large majority of the GMOs are there to resist soil sterilants. So much more the first promise, which was broken.

The second promise was to diminish the use of pesticides to produce better seeds for our environment. If we look at Statistics Canada data, we see that since the introduction of GMOs, there has been a 130% increase in the sale of pesticides in Canada—which is enormous—for cultivated areas of more or less the same size.

In Quebec, where I am from, the use of glyphosate-based pesticides, the ones that are generally used for GMO crops, increased by 71% between 2006 and 2012. As opposed to what the industry had promised, the use of pesticides has not decreased. Rather, it has considerably increased in our country, and this concerns us greatly.

Thirdly, we had been told that GMOs would feed the world, especially the southern hemisphere countries. Canada is the fifth world producer of GMOs. There are practically no countries growing GMOs in Africa and Asia, aside from cotton in India. The four main GMO crops are cotton, canola, soya and corn. These GMO crops are mainly used to feed cattle in northern countries, to produce bioethanol for our cars, and are added to processed products. So there are no GMO food crops that are used to help southern countries. This is a third promise which was not kept by the industry.

In the case of cattle fed with GMOs, it is hard to trust the promises of the same companies that have not kept their promises generally.

We are also concerned by what Mr. Paul Mayers, the vice-president of policy and programs at the Canadian Food Inspection Agency, said before this committee when he appeared two weeks ago. He stated

● (0850)

[*English*]

that the recall of GMO is “extremely positive”.

[*Translation*]

When we see the Statistics Canada figures, we have trouble seeing this in a positive light.

Our second concern is Canadian regulation.

As you know, Health Canada is responsible for the regulation of plants with novel traits, especially since 2013, when that department began supervising the Canadian Food Inspection Agency.

To develop the Canadian regulations on new GMOs, especially new plants, in the vast majority of cases, Health Canada uses data reported by the industry almost exclusively. This worries us. Health Canada has never carried out any long-term studies on the safety of GMOs. We would like to see that done.

When she appeared before the committee about two weeks ago, Ms. Karen McIntyre, director general of the Food Directorate at Health Canada, stated that the department was very transparent, and that its website showed all of the studies that it had taken into account in its acceptance of genetically modified salmon. After listening to that committee hearing, I went on the Health Canada website. What I saw was that the documents available on the Web mention no studies done on genetically modified salmon. Even an access to information request netted us nothing on this.

As you know, one of the fundamental pillars of science is to allow scientific communities to reproduce studies, to compare and evaluate data, and unfortunately, that is currently impossible in Canada. We don't know on which studies Health Canada bases its decision to accept or reject GMOs, in this case salmon. We don't even have the title of those studies.

In the case of genetically modified salmon, Health Canada tells us that it did not base itself solely on industry data—so, in this case, data from AquaBounty, which is the company that wants to market this product—but on all of the available scientific literature. However, when we take a closer look at this, we discover that the vast majority of the scientific literature on this was produced by AquaBounty. Health Canada can say that the department bases its decisions on the scientific literature, but that is relatively weak as compared to the weight of the industry studies. This concerns us.

We would like the Canadian regulation not only to be based on the safety or lack of safety of these GMOs, but that other factors also be taken into account, such as their economic impact. You will recall that the introduction of flax and alfalfa closed many markets for our farmers. And so we are concerned by the fact that there are no economic impact studies being done on the introduction of new GMOs.

We are also worried about environmental impacts. Twenty years ago, many people had anticipated the appearance of weeds and the increase in the use of glyphosate-based products. No sufficiently rigorous studies have been done, in our opinion, on the environmental consequences of the introduction of GMOs.

As well, there are no studies on social acceptance. No one was consulted about GMOs, neither the population nor the producers. Apple producers in Quebec were not consulted about the GM apple, for instance. GM alfalfa, which is already on the market in Quebec, is of great concern to the Union des producteurs agricoles, which is asking for a moratorium on it.

We are worried. We would like the regulations to be more transparent as to the safety of these products, but also that other factors be taken into account.

As for the mandatory labelling of GMOs, aside from the information that must be provided to consumers, the right to know what one is eating is a fundamental right that has been recognized by the UN. This is not just for human health reasons, but also for ethical, religious and environmental reasons. This has been an issue for 20 years. Before coming here, I circulated surveys that have been done since 1994 in Canada, and which show that a huge majority of Canadians want to see the mandatory labelling of GMOs. This is a democracy. Since such a large majority has been asking for this for such a long time, the government should have adopted this kind of regulation long ago. In fact, 64 countries around the world have already passed such regulations. We would not be the first.

We also note that letting the market self-regulate does not work. In 2004, the Liberal government voted in favour of voluntary labelling, and to my knowledge, in the intervening years, no company has chosen to indicate in its labelling that its product contains GMOs. We can't let the market self-regulate. The government has to act.

As I know that the mandate of your committee is to determine what measures should be put in place to inform the public, our first recommendation is to bring in mandatory GMO labelling, which would not only allow consumers to know what they are eating, but also allow producers to know what certain products contain. As you know, most GMOs are intended for animal consumption. Farmers are entitled to know what they are feeding their animals, just like the consumer is entitled to know what his family and children are eating.

It is urgent to act before GM salmon arrives on the market, potentially in a few years. Consumers may reject this product totally.

We have a second recommendation. We would like to see more transparent regulations. As we explained, this is not the case right now with Health Canada. We would like health to not be the only factor that is taken into account in regulating new GMO products that are coming onto the market, but that you also consider other factors such as the environment, the economy and social acceptance.

Thank you.

● (0855)

The Chair: Thank you, Mr. Rehn, for your excellent presentation.

[*English*]

Now we will start with questions.

Mr. Anderson, you have six minutes.

Mr. David Anderson (Cypress Hills—Grasslands, CPC): Thank you to our witnesses for showing up today.

Ms. Salmon, in your statement you talked about the fact that you have the opportunity to double the size of your industry. How do you see that happening, and what is the time frame for your industry to do something like that?

Ms. Ruth Salmon: We've looked at what's possible with the levels of investment if we make some policy, legislative, and program changes for our industry. We've stated for a long time that the regulatory framework is complex and confusing and deters investment. We've identified a strategy which, if enacted, would encourage investment. By talking to our companies we are ready to invest if the right situation is in place. That's how we've arrived at doubling the industry by 2024.

Those are realistic figures that are ground truth with what industry is willing to invest if they're able to get access to new sites, new amendments, and have a sound regulatory and legislative framework in place.

● (0900)

Mr. David Anderson: You're talking about the regulatory system for your industry in general, and not specifically to the GMO approval process.

Ms. Ruth Salmon: That's right. The GM discussion doesn't factor into our plans for responsible and sustainable expansion. We believe we can do that responsibly with the technology we use today.

Mr. David Anderson: Okay, so you haven't spoken out against the new technology.

I'm just wondering what it would take for your industry to accept it. Is it customer acceptance? What is the main...?

Ms. Ruth Salmon: That's a good question.

We've long been on the record as saying that we wouldn't accept it until two things were in place. One is that the appropriate regulatory bodies in Canada and the U.S. approve it, which is where we are now. Two, if the market demands it, and that's the key issue because we produce a high-quality product that is in high demand. We can't meet the demand right now for our product, and our buyers and the customers are saying they want more of what we currently produce. They're not interested in a product using genetically modified technology.

Mr. David Anderson: Even at this point, in spite of the fact that the product supposedly can come to the market faster—a larger fish in a shorter period of time—your buyers are still saying that.

Ms. Ruth Salmon: They're not interested, and we're therefore not interested in supplying it.

Mr. David Anderson: Often industry funds research in agriculture, or whatever. Has your industry been involved in funding this research, or have you participated in it?

Ms. Ruth Salmon: No, the members of my association have not.

Again, it goes back to looking at what the barriers are for our industry moving forward, and this isn't one of them.

Mr. David Anderson: Okay.

What do you see as the particular challenges for the approval of GM animals? That's what we're talking about. We're not talking about health and safety because despite what we were told this morning, large-scale studies have been done—I think one in a trillion meals—that show no negative impacts from GM products in the food system.

What do you think are the particular challenges of the GM animals?

Ms. Ruth Salmon: Our industry doesn't see it as something we're grappling with, because we feel very strongly that we can move forward responsibly and sustainably without GM technology. Our industry has been involved in selective breeding programs for a number of years, and those programs are creating a high-quality fish that is in demand in the marketplace. That's our focus, and that's where we want to look moving forward.

We think your conversation is an important conversation to have. We support consumers having access to accurate information about what they're eating and how their products are produced so they can make informed decisions. Ultimately, we will certainly support government's decision on this topic.

Mr. David Anderson: The approval of the AquAdvantage salmon was reported in the media with both the positive and the negative discussion we would expect. How do you think the public should be informed about these new products? Do you think there would be improvement in that, or is it just a case of whoever is doing it needs to get the information out and you'll have a discussion?

Ms. Ruth Salmon: I think it's an important discussion. I am not sure that we can go much further than that, other than the fact that all our members are committed to helping pass along that accurate information, and certainly we will support the government's decision and go along with that. We think it's an important discussion, and we certainly understand that there are lots of ramifications.

● (0905)

Mr. David Anderson: The approval process is basically taking care of the health and safety issues, and that's not part of our.... I think we agree on that. Do you see this as a knowledge challenge for the proponents of GE animals, specifically that they need to get their information out there to convince the public, or do you think it's more than that?

Ms. Ruth Salmon: I think we also have a role to play to get out accurate information about our products, so I think it's both.

The Chair: Thank you, Mr. Anderson.

Ms. Lockhart, you have six minutes.

Mrs. Alaina Lockhart (Fundy Royal, Lib.): Ms. Salmon, your industry gives us an interesting kind of case study to look at. Can you tell us a little about the history of aquaculture? When did we start using aquaculture to provide salmon to consumers?

Ms. Ruth Salmon: It's a good question. Here in Canada, we've been farming shellfish for a lot longer but we've been farming salmon for about the last 35 years. In that time, the industry has certainly grown in Canada, though not at the same pace that it has worldwide. Our competitors in Norway, Scotland, and Chile have grown at a much faster rate. The demand for the product is there worldwide. We've been actually stalled in production in the last 12 or 13 years, and as I mentioned to your colleague, that's basically because of regulatory challenges. In terms of when we began production, it's about a 35-year-old industry here in Canada.

Mrs. Alaina Lockhart: When the industry began, did you face challenges as well with consumer acceptance, looking at farmed salmon versus wild salmon? What were consumers looking for at that point?

Ms. Ruth Salmon: It's an interesting question, because there are certainly pockets of the population that are critical of the industry simply because it's new and unfamiliar. I mean, 35 years isn't a long time compared to agriculture. Certainly, there has always been a very quick acceptance in the marketplace, because the product is high quality, and that was received positively very early on.

In reference to the last question, we still have a job to do and continue to focus on consumer information about our industry: how we farm, the best practices we use, and the fact that our industry is well grounded in science and that all our salmon farming companies in Canada are certified to a global standard, so they have gone beyond the regulatory bar and meet a global standard.

We are still involved in getting that information out because, as you say, a 35-year period is actually quite fast to have consumers embrace a new industry, so we continue to do that consumer information education piece.

Mrs. Alaina Lockhart: It would be key from your perspective that consumers need to be informed about the product they are consuming—

Ms. Ruth Salmon: Absolutely.

Mrs. Alaina Lockhart: —and that the onus is on the industry to provide that education, to a degree.

Ms. Ruth Salmon: The industry will always have a role to play in informing about the products. We take that seriously. Others may have a role to play too, but you are absolutely right that when any kind of new technology or industry moves ahead, consumer information is part of that.

Mrs. Alaina Lockhart: Okay.

During your process, obviously labelling must have come up in discussions on how you differentiate between wild salmon versus farmed salmon. Has there ever been any labelling requirements or has the industry taken any measures in regard to labelling?

Ms. Ruth Salmon: That's an interesting question.

It's been our perspective that there's a demand for both wild and farmed in the marketplace. Up until the approval of the genetically modified technology, were the two types of salmon available in the marketplace coming from aquaculture and not from the traditional fishery? Our perspective has always been that we want consumers to eat more salmon and that there's a place for wild and farmed. Health Canada is suggesting that we should be eating two servings of salmon a week. In Canada we don't even eat two servings a month. Our competitors aren't the wild salmon. We want to do more to get people to eat more seafood.

Does that answer your question?

● (0910)

Mrs. Alaina Lockhart: I think so. I'm just trying to track the experience with aquaculture, and trying to compare that to where we are on the timeline with GMO salmon, and some of the reasons that aquaculture is a growing industry. I think those are good points.

Ms. Ruth Salmon: Exactly. As I say, we've not been able to meet the demand. Our members often say to me that they could sell double the amount of salmon that they have if they had access to it, if they could produce it. Our challenge hasn't been to try to defend against the wild industry. It's been to encourage people to eat more salmon and work with our politicians and our federal government to improve our regulatory and legislative framework so that we can grow sustainably and responsibly to meet that demand.

Mrs. Alaina Lockhart: Thank you very much. I appreciate that.

The Chair: Thank you, Ms. Lockhart and Ms. Salmon.

[*Translation*]

Ms. Brosseau, you have the floor and you have six minutes.

Ms. Ruth Ellen Brosseau (Berthier—Maskinongé, NDP): Thank you, Mr. Chair.

I want to thank the two witnesses who are appearing before the committee today.

Mr. Rehn, thank you for your presentation.

Several countries have already brought in measures making the labelling of GMO foods mandatory. The European Union, for instance, has already adopted policies on this. In Canada, the labelling of these products is not mandatory because the Canadian government considers that they have no impact on health or nutritional quality.

This is not the first time that we have seen private members' bills on this matter come before Parliament. During this session, my colleague Pierre-Luc Dusseault tabled Bill C-291, which concerns the mandatory labelling of GMO foods. I think this is important. You explained well in your presentation that we are entitled to know what is in our plates and what we are eating. This is not just for reasons of health, since it also raises ethical and environmental issues, as well as religious ones.

According to your studies, would the cost of a basket of groceries increase if Canada brought in mandatory GMO labelling?

Mr. Thibault Rehn: That is a question we are asked often.

When we launched a campaign in Quebec in favour of mandatory GMO labelling, we asked Université de Montréal researchers what studies had been published on the consequences of such a measure on the cost of food. There are no studies that have shown that the cost of a basket of groceries would increase.

In the United States, the industry fought for years to prevent mandatory GMO labelling, because it felt that this would increase its production costs enormously and that consumers would suffer the consequences in increased food costs.

However, since Vermont introduced mandatory GMO labelling last July 1, companies like Campbell's and Kellogg's, who are giants in the food industry, have adapted and begun to change their packaging. In fact, they began this process even before mandatory labelling became law in Vermont. Company representatives told us openly that this was not more costly, and that they changed their packaging on a regular basis in any case to adapt to consumers' tastes, and that they would not see an increase in food costs.

In short, the cost of food has not increased since Campbell's and Kellogg's took those steps. Consequently we doubt that consumers would see any significant increase in the cost of food.

Ms. Ruth Ellen Brosseau: People have said, among other things, that there is not enough space on the labels. Things are not always clear when we go to the grocery store and try to decipher the data on the nutritional value of certain products. It is sometimes difficult to track down certain products.

You also talked about the need to carry out studies and to consult Canadians so that they can be confident. We need studies on economic and environmental impacts. There are concerns in Quebec concerning alfalfa.

You said earlier that producers and other Canadians were not consulted on genetically modified apples. Could you tell us more about the need for in-depth studies, and especially, the need to consult Canadians in order to ensure that they will want to buy these products? I don't know if Canadians would be willing to buy GM salmon if they knew that in the United States 80 retail chains are refusing to sell this GM salmon.

Could you tell us more about the importance of having in-depth studies and consulting Canadians on this?

● (0915)

Mr. Thibault Rehn: As I was saying earlier, GMOs have been on the market for 20 years. The Canadian government spends enormous sums to try to convince people that these products are safe, but it still isn't working. Health Canada published a survey recently and its results were sent to the committee two weeks ago. People have overall doubts about the safety of GMOs. This is also why this committee was created.

Transparency is important when it comes to scientific studies. We would like to see more money allocated to Health Canada so that the department can do its own studies. If we tell consumers—as is the case currently—that most of the studies are conducted by industry—not all of them, but the majority of them—it is difficult for the consumer to trust these products, because they know that the organization that conducts the studies is the organization that wants to sell them. So there is a great lack of trust.

Moreover, how can we ask a consumer to trust a product when the objective of these companies is to hide the content of these products, since they don't want to label them? You can't ask someone to trust a product when the information about it is hidden. Labelling is also important and needs to be put in place.

Ms. Ruth Ellen Brosseau: According to the surveys, for 20 years, a large majority of Canadians have been asking for mandatory GMO labelling. The position of processors may be mixed, but I think that Canadians want information on the products they consume.

[*English*]

Ms. Salmon, you said in your testimony that it's really important that Canadians know what they're eating, if it's farmed, if it's wild, and that you support—

The Chair: Madam Brosseau, we're out of time. I'll give you a chance to ask your question and hear a quick answer.

Ms. Ruth Ellen Brosseau: Is your organization for or against genetically modified salmon labelling? If the government were to go ahead with the labelling of genetically modified foods, would you support that decision too?

The Chair: Quickly, madam.

Ms. Ruth Salmon: Yes. We'll support whatever the government's decision is, for sure.

The Chair: Thank you, Madam Brosseau.

[*Translation*]

Mr. Breton, you have the floor and you have six minutes.

Mr. Pierre Breton (Shefford, Lib.): Thank you very much, Mr. Chair.

I am going to continue in the same vein as my colleague and discuss the issue of labelling.

Mr. Rehn, you are in favour of mandatory GMO labelling. You spoke about trust and informing consumers who want to know what is in their plate and what they are purchasing.

In your opinion, what are the main arguments being put forth by those who do not want to see specific labelling for GM salmon?

Mr. Thibault Rehn: One of the main arguments is the fear that consumers will reject the product. You probably know that the industry spends a lot of money to develop new products. If the market does not exist, it would have been a very unfortunate investment.

The second argument is that it will cost retailers too much. However, as we saw earlier, this does not necessarily entail enormous costs.

Those are the two main arguments. However, the issue is not just knowing whether this is bad or good for our health. Knowing what we eat is a fundamental right. In fact, labelling already exists in 64 countries. We often hear about the European Union, but India, China and Australia also have some degree of mandatory labelling. North America is really lagging behind on this.

● (0920)

Mr. Pierre Breton: Yes.

Out of the five large producer countries, two use labelling. That is what you said, and I believe I also read it in your report.

Mr. Thibault Rehn: Yes. There is Brazil and India.

Mr. Pierre Breton: Still, there are three countries out of the five large producers who do not use labelling.

Do you have any information to give us about those three countries?

Mr. Thibault Rehn: Yes.

In fact, the largest GMO producer in the world, our neighbour the United States, produces approximately 40% of all GMOs in the world. Then come Brazil and Argentina, who together also produce 40% of GMOs. There is also India and Canada, who produce approximately 6% each. As for India, the product is mainly cotton. There is mandatory labelling in that country, even if some might say that legislation is difficult to put in place there. Brazil also has mandatory labelling, although there are some gaps when it comes to consumers.

So there are five countries that produce 90% of all GMOs in the world. Consequently it is a myth to say that that technology has been adopted by everyone. We see that after 20 years, there are still only five countries producing 90% of all GMOs. Last year there were as many GMOs in Canada as in 188 countries in the world. So this is not a technology that has been adopted by everyone.

Mr. Pierre Breton: Okay. Thank you.

Ms. Salmon, my next question is for you.

Obviously, there are studies that show that the consumer will be much more interested in conventional salmon. I don't know if you agree with that. Perhaps you could tell us what you think about that and also what would ensure that consumers might be more interested in buying genetically modified salmon.

We know that it has been approved in Canada and the United States. So we are likely to see it arriving on store shelves in the coming months.

[*English*]

Ms. Ruth Salmon: Backing up to your earlier question, certainly our members are in touch with their customers both at the retail and the restaurant levels, and they're hearing the same thing, namely, that the customers are not interested in genetically modified salmon.

That's really critical because we feel the problem is that there's a gap in the amount of farmed salmon that's available on the marketplace today. We feel that we can fill that gap without utilizing genetically modified technology. That helps all Canadians. It helps industry. It helps Canada. It's something that the consumers and the marketplace demand.

From our perspective, we're not really interested in seeing genetically modified technology move forward when our customers are not interested.

[*Translation*]

Mr. Pierre Breton: Similarly, we know that there is also some reluctance in the United States on the part of several retail chains to sell genetically modified salmon. We know of dozens, including Costco, which is one of the largest retailers in the United States. Do you have an idea about whether there might be a similar trend here, in Canada?

[*English*]

Ms. Ruth Salmon: Certainly, from talking to my members who are in touch with the buyers in Canada, it's exactly the same trend. Consumers in Canada and the U.S. are not interested in eating genetically modified salmon.

[*Translation*]

Mr. Pierre Breton: Thank you very much.

The Chair: Thank you, Mr. Breton and Ms. Salmon.

[*English*]

In the second round, we will go with six-minute periods for questions.

The first one is from Mr. Longfield.

Mr. Lloyd Longfield (Guelph, Lib.): Thanks to both of the witnesses for coming forward.

We're really doing our best to have a balanced study here and you're giving us some information that contradicts earlier information we received. This is why we do these things.

Health Canada, industry, universities, the Canadian Food Inspection Agency, and Agriculture and Agri-Food Canada are all saying that at a molecular level there is no difference between this salmon and the salmon we're consuming right now. Studies have been going on since the 1980s and we're now coming to the point of having this product enter the marketplace.

First of all, I have a question for Mr. Rehn in terms of the studies being done.

Health Canada has been doing studies. The universities have been doing studies, as has the CFIA. What studies are you looking for? What gaps do you see in the studies that we should be continuing with?

● (0925)

Mr. Thibault Rehn: If you have access to Health Canada's long-term study on the impact for human consumption, I would be really happy to see it, because I think nothing exists.

There is no consensus on science, so it is not saying that there is a consensus and we need less science because everything is solid. We need more science. There was a letter signed by more than 300 scientists on biotech in Europe saying there was no consensus on the impact of GMO products on health.

[*Translation*]

The miracle solution is not to say at the last minute that we have already done enough scientific research and that everything is going well. Rather, the goal is to do more research to fully ensure that there is no impact on health.

As you say, it isn't just the impact of GMOs on health. Even if genetic modification had no impact, we know that GMO crops require a significant amount of pesticides and that, in scientific research, the impact of pesticides on health is well documented. There is a consensus on the matter, namely, that pesticides act negatively on plants and insects. Although there was a consensus from one day to the next that genetic modification has no impact, the fact that more pesticides are being used globally in GMO crops has an impact on the environment and on health.

[*English*]

Mr. Lloyd Longfield: Perhaps I could extend that a bit. The CFIA studies, Agriculture Canada studies, look for the impacts of pesticides to make sure they're not transferred into the food that we're eating and for other environmental impacts around pesticides. The scientists at the University of Guelph whom I've spoken to get very upset around the arguments about genetically modified foods being worse than other foods, because they say it takes chemicals out of foods, that it takes some of the negative environmental aspects out of food production. We're looking at feeding a hungry planet that's getting bigger all the time, and they see genetics as a way forward.

Obviously, your group is looking at that in terms of social impacts and other impacts. You're providing the other side of that argument.

[*Translation*]

Mr. Thibault Rehn: Once again, I simply have to look at the Statistics Canada figures.

Since the introduction of GMOs in Canada, pesticides sales have risen 130%. How can we say that the use of pesticides has declined and that their impact on the environment has decreased? It's impossible.

In fact, there were empty promises that would have us believe that GMOs would help us feed the world, grow crops in dry habitats or increase productivity. However, these GMO seeds are in laboratories and are not being marketed because seed companies sell pesticides and have an interest in continuing to do so.

Unfortunately, they have been successful in doing so because sales of their products have increased. There is currently nothing in the world to feed people. There is everything you need, however, to sell pesticides.

[*English*]

Mr. Lloyd Longfield: Thank you very much.

Ms. Salmon, on the impact on the Canadian aquaculture industry, I'm listening to your testimony but thinking that the fish we're talking about coming back to Canada, the salmon coming back to Canada, are being raised outside of our industry. Do you see that as a major competitor to your industry that would be filling a gap that otherwise could be filled by Canadian businesses?

Ms. Ruth Salmon: I would like to be clear about your question. Do we feel that the genetically modified product coming into Canada would be a competitor?

Mr. Lloyd Longfield: Right.

Ms. Ruth Salmon: Again, we're making our growth decisions and plans for the future based on the current marketplace and the customers that my members have. They tell my members they're not interested in purchasing that product, so we don't see it as a major threat.

We don't oppose the approval of genetically modified salmon. It's just not a technology that our members are interested in pursuing.

Mr. Lloyd Longfield: In terms of Health Canada, I don't think we would be allowed to grow that product in Canada.

Ms. Ruth Salmon: Right.

Mr. Lloyd Longfield: Okay, great. Thank you very much.

The Chair: Thank you, Mr. Longfield.

[*Translation*]

I will now give Mr. Shipley the floor for six minutes.

[*English*]

Mr. Bev Shipley (Lambton—Kent—Middlesex, CPC): Thank you to our witnesses for coming out.

I'm always interested in comments like what Mr. Rehn, for example, has made about the lack of benefit to the general public. Prior witnesses spoke about the lack of benefit to the producers. What we know now is that there are some 18 million farmers who actually use GMO in their business. What we've also found is that in the seed business, when you actually talk to the dealers out my way, those most technical seeds, which at the start tend to be the most expensive—it will cost you a hundred bucks or a little better an acre to plant, just for the seed—they're the first to go. I'm always wondering when I hear that what the thought is of the presenter who says there's no benefit to the farmer, when actually the farmer sees it as having a great economic benefit, a great environmental benefit.

Also, we have a report that came out by the American Council on Science and Health which was an analysis of 147 studies. The studies were not done just in Canada or the United States, but globally about the impact of GM soybean, maize, cotton crops, pesticide use, and farmer profits. What they found is crop yields increased 22%, farmer profit increased 68%, and they also found that GM technology has reduced chemical pesticide use by 37%.

We're always going to have these discussions about the use, but what I can tell you from on the ground.... I'm assuming that when we're talking about aquaculture and GMO salmon, we're not talking about safety and those issues. It's already been determined that those products are safe. What we are concerned about is how we market that, because we clearly know the benefits, not only in profit.... Some will say that all the big companies are interested in is profit. Actually, it's about the farmer. If we don't have an economically sound farming industry, aquaculture industry, then we don't have safe secure food that is economical to the consumer.

With that, I just want to ask Mr. Rehn one question. Are there any GMO products that you actually approve of?

● (0930)

[*Translation*]

Mr. Thibault Rehn: Yes.

The organization I represent is not against science. When people have diabetes, they use insulin that is derived from a genetically modified plan that secretes this substance. We totally agree with that. As long as it remains in a laboratory, and there is no possible contamination, and it is done in order to help people, we have no problem with this kind of technology.

[*English*]

Mr. Bev Shipley: Ms. Salmon, as I mentioned, I think the issue comes around to marketing. You said that there's a resistance among the retailers and consumers, and yet when we go through the regime.... You talked about the scientific regime or the approval regime, or some of it, in terms of conventional as opposed to GMO being very complex, or confusing, or frustrating maybe in terms of the conventional, and yet when we talk to Health Canada, Agriculture Canada, CFIA, the approval process for GMO is much more rigorous than for conventional, because it has to bring in those environmental and food safety issues.

I don't understand why a marketing agency or a retailer would not give options of conventional, wild, or GMO. We do that in conventional food products. We do it in terms of organic food products.

What are your thoughts about this? I believe this is an industry issue. How does an industry come together to meet the demand? You're saying two meals per week.

Ms. Ruth Salmon: Right.

Mr. Bev Shipley: We should have two meals....

● (0935)

Ms. Ruth Salmon: We should have two meals a week and Canada is having about two meals a month.

Mr. Bev Shipley: We're somewhere around two a month or something.

Ms. Ruth Salmon: Yes.

Mr. Bev Shipley: How do we meet that demand conventionally without not bringing in the total aspect of what the industry can provide? How do you think the industry can come together as a unit to help promote that?

Ms. Ruth Salmon: You raise some really important questions in terms of how we increase the domestic consumption of fish and seafood. That's a much broader discussion than the one we're having around genetically modified technology.

On that perspective I think there's a great deal we need to do collectively, not just as an industry but also as a government, and retailers as well, to help support that increased consumption of fish and seafood.

My point was that the issue is not that we don't have the potential to expand the existing industry in a responsible and sustainable way that has socioeconomic benefits to rural and coastal communities. We already have that and we have a path forward for increasing the size of that industry responsibly.

The Chair: Thank you, Ms. Salmon.

Ms. Ruth Salmon: That's a different question from how we actually increase consumption.

The Chair: Thank you.

Thank you, Mr. Shipley.

[*Translation*]

Mr. Drouin, you have the floor for six minutes.

Mr. Francis Drouin (Glengarry—Prescott—Russell, Lib.): Thank you very much, Mr. Chair.

I would like to thank the witnesses for being here today.

As my colleagues said, we have held a few meetings now to study the topic of GM animals, particularly salmon, for the purposes of human consumption.

My question is for Mr. Rehn.

Two or three weeks ago, we had beef producers appear before us. They explained that, although their animals have been eating GMO grains for almost 20 years now, there are no traces of GMOs in the meat. So it would be logical to deduce that, even if humans eat genetically modified salmon, there would probably be no traces of GMOs in their bodies.

That brings us to the debate on the issue of labelling. Should the government interfere in non-scientific issues like labelling, or should it impose mandatory labelling the way other countries do?

You mentioned diabetes earlier. You know that in Canada, labelling must be bilingual, in French and English. Labels on products are already small. Should Canada require producers or processors to label their products, are we not sacrificing space that could be used for health information? For example, someone with diabetes must look at the different data in order to eat properly.

How do you respond to that? How have other countries managed this?

Mr. Thibault Rehn: This matter has been addressed in the various presentations, including mine.

I went to a supermarket and looked at the cereal boxes to determine what space was left for the information, including nutritional information, ingredient lists and logos. I realized that the space reserved on the overall packaging for nutritional information is very minimal, proportionally speaking. In fact, there is still plenty of room on the packaging. We would like a label similar to that of organic products, with a logo on the main side of the container. Consumers, who have to make a fairly quick choice in the supermarket, could know right away if a product contained GMOs. There could also be a list by ingredient to see which ones are genetically modified to some degree. People would see that it's often canola, soybeans and corn, even cotton, but it is rare for it to be in our food. There is still a lot of room on the labels. I went to the supermarket to check. There is no reason to sacrifice one for the other.

Mr. Francis Drouin: But if it isn't for health reasons, why should the government intervene?

Today we're talking about GMOs. In 10 years, consumers might have other concerns. So why should it be the government's role to intervene and not up to the consumers to ask producers to label these products correctly? Producers organize the marketing based on what consumers want. This is seen especially with regard to organic products. Labels currently indicate that they do not contain GMOs. We are already seeing a trend within the industry. I simply have difficulty in understanding why the government should intervene if it isn't for health reasons.

● (0940)

Mr. Thibault Rehn: You know already that the government intervenes when it isn't strictly a health reason. There already are labels that are not solely health-based. They can be based on what we call “organic” features. They may have to do with health, ethics and the environment. There are labels based on religious considerations, including labels to indicate if something is “halal” or “kosher”. Currently, the government doesn't regulate just health.

As for your question about the industry, we have seen, as I said in my presentation, that if we let the market self-regulate, it won't work. Voluntary labelling has been around since 2004 and, as far as I know, no company has knowingly indicated on its product that it contains GMOs. Ultimately, it is a basic right that must be respected by the Canadian government.

Mr. Francis Drouin: On this issue, when the government plays a role in non-mandatory labelling—and we have heard about this with Health Canada, Agriculture and Agri-Food Canada and the Canadian Food Inspection Agency—it looks at the veracity of these comments, whether it is true that these products contain no GMOs.

Reference is often made to a third party. This is how the government intervenes, but it lets the companies market their products or do their own marketing. It only checks the veracity of the comments on the labelling to determine whether it is true or not, but its opinion is still based on a third party. So the government does not make labelling mandatory, but it regulates in a way to determine whether the product would lead consumers astray.

How much time do I have left, Mr. Chair?

The Chair: You have 50 minutes.

Mr. Francis Drouin: You're telling me that I really have 50 minutes left?

The Chair: I'm sorry. I meant to say 50 seconds.

Mr. Thibault Rehn: So you have time to ask me some questions.

[*English*]

Mr. Francis Drouin: I heard your testimony, Ms. Salmon, that you heard clearly from consumers that they don't want GMO products right now. What if, in five years, consumers say that they've heard a lot about GMOs, and the marketing of that science is clearer? Would your position change, or would you still believe that you can fulfill the market with the current technology?

I'm assuming that within your alliance, if one producer were to adapt that new technology—we've heard from the company that's proposing it that they can actually produce more quickly from farming to market—there would be a competitive advantage for that particular company. If it were somebody from within your alliance, would that be a problem for you, or would you adapt a new vision or a new strategy?

Ms. Ruth Salmon: I think you've narrowed it down to exactly what our focus is. It's the market demand. We want to be producing a high-quality product that's in high demand. We currently are doing that. It would be very difficult to say how the consumer preference would change in 10 or 15 years, but we want to stay in touch with what the marketplace actually demands.

The Chair: Thank you.

This wraps up the first part of our session on GMOs. I want to thank Ms. Salmon and Monsieur Rehn for their wonderful participation. This will certainly help us in elaborating our report.

We shall break for a few minutes just to change witnesses. We will be back right after that.

● (0940)

(Pause)

● (0945)

The Chair: We shall get going with the second part of our committee meeting this morning.

Mr. Shipley.

Mr. Bev Shipley: Mr. Chair, I don't want to interrupt the witnesses' presentations. I have a motion that we had talked about a couple of meetings or so ago. It has to do with the initiative that the government has brought forward in terms of a carbon tax, which will be far-reaching across the country, and the impact of what that may mean to different industries and to individuals.

I have tabled a motion and I'd like to read it back into the record:

> That pursuant to Standing Order 108(2), the Standing Committee on Agriculture and Agri-Food conduct a pre-budget study on the effects that the recently-announced, Liberal Government carbon tax would have on the agriculture sector and producers; that this study be comprised of no less than four meetings to be held at the Committee’s earliest convenience; that departmental officials from Agriculture and Agri-Food Canada and Environment and Climate Change Canada be in attendance for at least one meeting; that the Committee report its findings and recommendations to the Minister of Agriculture no later than February 15, 2017.

It just allows this committee to hear about the impact, whatever that may be, on our industry and from the producers themselves across the country. When we're talking, if this committee should travel, we know this is going to be on the plate. Of course, obviously they don't all have to come in. We have video technology now that allows individuals and producers to go to a station to present.

With that, Mr. Chair, I present the motion and I'd ask that we have a vote on it.

● (0950)

The Chair: Thank you, Mr. Shipley.

Monsieur Drouin.

Mr. Francis Drouin: I'm not necessarily against this motion, it's just that timing for February 15, 2017, would interfere with our agricultural policy framework study.

I also believe it's way too early to do that. I know B.C. has had a carbon pricing model for quite a while, but it's going to be different from Ontario and Quebec. I think we need to wait to see what other provinces will adopt before we move forward on this, so I will be voting no on this.

The Chair: Mr. Shipley.

Mr. Bev Shipley: Remember the date is in the middle of February of next year, so we don't have to do this right now.

It's going to have a significant impact on agriculture and our producers. The reason I'm bringing this in is so we can actually put it into our agenda and get it resolved and have our hearings before mid-February. The committee can actually be pretty expeditious in terms of those hearings, and then, on agreement, we would just get it to Parliament and to the minister. That's why we're doing it. This is mid-October, so it gives our committee an opportunity to deal with it prior to the end of February 2017.

The Chair: Mr. Longfield, go ahead.

Mr. Lloyd Longfield: I think it's an important topic in its time, when it's appropriate to do. The consultations with the provinces and territories, as Mr. Drouin said, are ongoing. We have to look at what comes out of the larger discussion, and then look at the impact of it on our committee work.

The Chair: Are there any other comments? If not, I shall ask—

Mr. Bev Shipley: Mr. Chair, I'll ask for a recorded vote.

The Chair: Okay.

(Motion negatived: nays 5; yeas 4 [See *Minutes of Proceedings*])

The Chair: Thank you.

We shall now continue with our witness.

I want to welcome Mr. Mark Butler.

[*Translation*]

Mr. Butler is the policy director of the Ecology Action Centre.

Good morning, Mr. Butler.

● (0955)

[*English*]

From Memorial University in Newfoundland, we have Mr. Garth Fletcher.

Thank you so much for appearing in front of our committee on this important topic.

I'll give you up to 10 minutes to do your opening remarks, but you don't have to use the whole 10 minutes.

Mr. Butler, do you want to start?

Mr. Mark Butler (Policy Director, Ecology Action Centre): Certainly. Thank you very much for this opportunity to present and include the aquatic realm in your deliberations. We are in court on this topic this morning.

As you said, I'm the policy director for the Ecology Action Centre. Prior to working at the Ecology Action Centre, I worked for a time in the fishing industry. I also worked at the Huntsman Marine Science Centre teaching biology. I was there at a time when research into how to make salmonites more resistant to super chilling was occurring.

The Ecology Action Centre is an environmental organization founded in 1971. We endeavour to ground our work in science. Most of our staff have science backgrounds. We try to find solutions that integrate the economy and the environment. Prior to the engagement on the issue of GM salmon, we did relatively little work on this issue. We became involved because of the threat to wild Atlantic salmon. As we have become more familiar with this issue, it is the threat to species with wild counterparts that concerns us.

First, we are concerned about the risk to wild salmon should GM salmon escape. We are worried that GM salmon could outcompete wild salmon for resources, such as food, habitat, and mates. Second, and even more important, we are worried that these salmon could breed with wild salmon and change the genetic makeup of wild salmon forever. This would have unknown ecological consequences and economic consequences. I should note that research also shows that GM salmon can interbreed with wild brown trout.

You might be thinking, “but these fish are sterile and on land”. Our greatest concern is with the commercialization. At that point, you are talking hundreds of millions of fish being grown in numerous facilities and potentially close to some of our famous Atlantic salmon rivers in New Brunswick, Quebec, Nova Scotia, and Newfoundland and Labrador. At the commercial scale, the reassurances aren't so reassuring. We know that fish have escaped from land-based facilities before. We also know that triploid induction is not 100% effective. When you are talking about hundreds of millions of fish, 1% or 3% or 5% starts to look like a lot.

We are not looking for problems or windmills to tilt at. Atlantic salmon have enough problems without embedding them. It's an endangered species. Unfortunately, we see a problem that is underappreciated and downplayed by the industry. If these fish escape into Atlantic Canadian salmon rivers, they will put at risk a substantial recreational industry, which is particularly important in rural areas.

We are in court because we are upset by the current handling of this issue. AquaBounty received approval for commercial production in Canada without there being an assessment of commercial grow out. The export of eggs from one research facility is a very different matter from the production of millions of fish at numerous facilities. We are requesting that a strategic environmental assessment be carried out on the risk to aquatic systems from GM organisms.

There also has been no public consultation in Canada around the first GM food animal in the world, and there's been no consultation with stakeholders, be it the aquaculture industry, the commercial fishing industry, the tourism industry, or the recreational fishing industry. I would also point out that there has been no consultation with first nations and indigenous peoples. Atlantic salmon was and is a very important species for first nations in Ontario, Quebec, and Atlantic Canada. Altering the genome of this fish should trigger consultation.

When this fish was approved for human consumption in the U.S., there was a reaction from the Alaskan fishing industry. As a result, until the labelling issue is resolved in the U.S., it is my understanding that approval in the U.S. is on hold.

In Nova Scotia, our fisheries minister has spoken out against GM salmon. He is quoted as saying, “We're more interested in making sure we protect what we have. Until someone can prove to us and to the public that this will be a good idea—and I don't see much support anywhere for this—we're not interested.” Keith Colwell also said he is concerned about what the impact of accidentally introducing genetically engineered fish would have on natural populations from both an ecological and sports fishing standpoint. That was on May 20, 2016, following approval from Heath Canada.

● (1000)

I have spoken about some of the risks. Others have spoken of benefits. For Atlantic Canada, I don't see the broader economic benefits. Yes, the company stands to gain by controlling the broodstock, but I don't see the lift, including jobs, to the broader economy. I also understand that the growth rates of this salmon have not been independently verified.

The Ecology Action Centre does some work around seafood labelling. The trend in the seafood industry is toward traceability and transparency. Consumers want to know more, and they want consistency of information across product. As you know, other jurisdictions label for GM.

Finally, I understand that many of you represent constituents that are growing GM crops, and that places you in a difficult position. I would ask that you give special consideration to our wild Atlantic salmon and the risk to all wild species in your deliberations.

Thank you very much.

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

Now, Mr. Fletcher, for up to 10 minutes.

Dr. Garth Fletcher (Memorial University of Newfoundland): I am here to represent myself, I guess. I'll just give you a history of my personal involvement in GM salmon. At the moment I am a professor emeritus and head of the department of ocean sciences at Memorial University.

I am a little nervous, so if I quiver it's because I don't want you to do this.

My colleagues, Choy Hew from the department of biochemistry at MUN and Peter Davies from Queen's University, and I started studying fish antifreeze proteins in the mid-1970s. These unique proteins evolved to protect fish species inhabiting polar or subpolar waters from freezing when water temperatures declined below the colligative freezing points of their body fluids.

During this time, there was a developing interest in Atlantic salmon aquaculture along the coastal regions of the Atlantic provinces. However, salmon do not have antifreeze proteins to protect them from freezing, so culture operations were restricted to waters where the water temperatures rarely declined below zero.

As academic scientists, we were looking for innovative ways to broaden our research program, so we applied to the Natural Sciences and Engineering Research Council's strategic grants program for funds to transfer antifreeze protein genes from a small flatfish, called the winter flounder, to Atlantic salmon.

Our goal was to develop freeze-resistant salmon, thus enabling the salmon aquaculture industry to expand operations throughout the Atlantic coastline and to create much needed employment in coastal rural areas. Between 1982 and 1999, we were fortunate enough to receive funds of approximately $1.66 million from NSERC for our gene transfer experiments.

During this time, we worked out how to transfer the antifreeze genes to Atlantic salmon—most people thought it was impossible—and to have them expressed and passed on from generation to generation by cross breeding. We found low levels of winter flounder antifreeze proteins in the blood of the Atlantic salmon; however, these levels were insufficient to protect the salmon from freezing.

While the salmon we produced were not sufficiently freeze resistant for aquaculture purposes, our experiments were successful in establishing a proof of concept: genes could be transferred from one fish species to another, actually quite easily.

This success prompted us to look into transferring a growth hormone gene isolated from chinook salmon to the genome of Atlantic salmon in order to accelerate growth rates, and again, to improve the economics of salmon aquaculture in the Atlantic provinces. We started experiments in the fall of 1989, and by 1990 we saw obvious signs of success. Atlantic salmon containing the additional growth hormone gene grew considerably faster than the non-transgenics.

In 1991, when we were applying to renew our NSERC grant to continue our growth hormone gene transfer research, we were reviewed by an NSERC site visit committee who encouraged us to look for an industrial partner so that the results of our research could be commercialized.

We were fortunate enough to do so when we met up with a Mr. Elliot Entis, who was starting up a small privately funded U.S. biotech company, then called A/F Protein, based on the use of fish antifreeze proteins to protect cells and tissues from cold and freezing temperatures.

By this time, Choy Hew and I had filed preliminary patent applications through our employers, Memorial University and The Hospital for Sick Children in Toronto—often called SickKids—where Choy Hew had taken up a position. Elliot agreed to license the transgenic salmon technology from our employers and Choy and I became founding members of A/F Protein Inc. Our principal aim was to demonstrate to NSERC that the private sector was interested in our research.

In 1994, A/F Protein Inc. founded A/F Protein Canada, a wholly owned subsidiary. Elliot, Choy Hew, and I served as board members. I took on the position of CEO and chief scientist, and served in this capacity until 2005.

● (1005)

Once incorporated, the company received a loan from ACOA and a matching grant from the Province of Newfoundland. This enabled us to set up a small antifreeze protein purification laboratory in St. John's that was independent of MUN. Our research on the growth hormone transgenic salmon still continued at MUN's ocean sciences centre.

The year 1994 was also when Choy and I accompanied Elliot Entis on a visit to the FDA in Washington, D.C., to begin discussions regarding the regulatory approval process for the transgenic product.

In 1996, A/F Protein purchased a small land-based salmon hatchery in Bay Fortune, Souris, P.E.I., for the purpose of developing a broodstock of transgenic salmon.

In 2000, A/F Protein Inc. split into two independent companies: A/F Protein and Aqua Bounty Farms, later AquaBounty Technologies, with Aqua Bounty Canada as its subsidiary. I continued to direct and supervise the operations of both Canadian companies.

By 2003, Aqua Bounty Canada had 36 full-time staff, nine of which were Ph.D.s.

In 2005, most research related to the documents required by the FDA was completed, at least from our end. At this point, the parent company made the decision to lay off most of the employees in St John's, which included me. I then returned to become a full-time functional professor emeritus at MUN. I took on the position of director of the ocean sciences centre in 2009, and in 2012, I was given the position of head, a position which I still hold.

In 2006, AquaBounty Technologies registered with the London Stock Exchange's alternative investment market as ABTX. At that time, the company raised about $30 million.

In the interests of full disclosure, I must inform you that I remain on Aqua Bounty Canada's board of directors. I was asked to serve on the board by the parent company because Canadian law requires a Canadian resident to be on the board of foreign-owned companies. I see no reason not to help the company I helped found. For this, I receive $3,000 a year.

The Chair: Thank you so much, Mr. Fletcher. You said you were nervous. You don't have to be nervous. We're a pretty friendly bunch, and you can relax.

Dr. Garth Fletcher: You're not in my position.

The Chair: With that, we shall start the round of questions, and we have six-minute periods for questions.

[*Translation*]

Mr. Gourde, you have the floor.

Mr. Jacques Gourde (Lévis—Lotbinière, CPC): Thank you, Mr. Chair.

I would like to thank the witnesses for being here today.

My first question is for Mr. Fletcher.

You have spent almost your entire career as an aquaculture scientist. You have shown that it is possible to transfer genes from one fish species to another. It involved modifying the genome to obtain specific characteristics to improve a species.

Today we're talking about genetically modified foods. Genetic modifications happen now naturally, mainly through accidents of nature or by natural selection. You acted more quickly by transferring genes from one species of fish to another.

Did you gain anything in terms of generations or did you straight out reinvent a species of salmon by modifying it using the genome of another species? Are we getting closer to the limit of this? Is it a good idea to pursue this or should we instead leave more to natural selection?

● (1010)

[*English*]

Dr. Garth Fletcher: I have not been in aquaculture for my whole career. I'm a fish physiologist, so I've worked on a lot of other things as well, from physiology to things like that. I only came into this sort of aquaculture thing because we had a particular knowledge about genes and fish. At that time in my career, nobody worked on fish genes. That didn't occur until later. I had the opportunity to work with two colleagues, one being a molecular biologist who was interested in the genes. That's how I got into this whole thing. It was quite amazing really.

I don't think when we transfer the genes that we are creating a new species. I don't think that any systematist would say it's a new species. It's an identical species. It just has a slightly different gene change.

[*Translation*]

Mr. Jacques Gourde: These genetic changes stem from human intervention, but could they have occurred through an accident of nature?

If these fish had been put in cold water, would natural selection have worked and made this species more resistant? Basically, did you only fast track what nature would have taken 30, 40 or 100 years to do?

[*English*]

Dr. Garth Fletcher: I don't know what would happen in 40 to 100 years. Salmon do live in the cold water, except that they go off Greenland and go into deeper water where it's not so cold. They just have that period of time. It's an artificial situation to be coaxing them in cold water, of course. Coaxing is a farming operation, so it's not wild. The industry is constantly doing genetic selection to improve production.

I'm just speaking personally that I feel all genetic technologies could be used. It's a good idea to use genetic processes to improve the production of animals for food. So any technique that can be invented, and more neurotechniques.... This is an old technique now. More techniques will come into play.

I have colleagues at Memorial University who are genomicists, and they're constantly working on which genes are turned on and off by stress, diseases, and ultimately, they will modify the egg even if it's only done by broodstock selection. You're certainly going to change the genetics of the populations, to some extent, in the culture system.

I'm not an expert on this area. As I said, I go back 30 years, and I had a particular set of tools and there was an interest in trying to improve the production in the Atlantic provinces. We saw this as an idea. I had no idea it would get to this length. I still think it was a good idea.

● (1015)

[*Translation*]

Mr. Jacques Gourde: Given what we know today, if we further developed the potential of these large ocean areas, which total almost three-quarters of our planet, what would it mean in terms of aquaculture and global proteinic contribution?

[*English*]

Dr. Garth Fletcher: The potential is tremendous and it's a great opportunity for those who know how to do it, in my opinion. Some countries are already looking at more offshore production sites. There are other problems, engineering problems that we see in particular, but I think it's a great idea. Perhaps to get away from coastal...it might be good.

[*Translation*]

Mr. Jacques Gourde: Could other species of fish eventually be considered?

[*English*]

Dr. Garth Fletcher: I don't get the question at all.

[*Translation*]

Mr. Jacques Gourde: Could species other than salmon eventually be considered from a production standpoint?

[*English*]

Dr. Garth Fletcher: Yes, whatever the market likes to eat....

The Chair: Thank you, Mr. Fletcher.

We'll move on to the next questioner.

We have Ms. Lockhart for six minutes.

Mrs. Alaina Lockhart: Thank you, gentlemen. I think both of you as witnesses really exemplify the balance that we're trying to strike in this study.

Being from Atlantic Canada, I certainly appreciate the concerns that you have, Mr. Butler. Atlantic salmon affects so many industries in Atlantic Canada and is a species that we have struggled to maintain over the years. I understand where you're coming from, and I've been encouraged by some of the testimony that we've had leading up to today about the measures that are being taken to ensure that indigenous Atlantic salmon stocks aren't impacted by this work.

Mr. Fletcher, you have 30 years' experience with this particular project. Have there been any breaches of security up to this point in your research? What is the probability? Can you speak to that at all?

Dr. Garth Fletcher: As far as I know, there have been no breaches of security. In the beginning, the university and the....

By “security” you mean escapes.

Mrs. Alaina Lockhart: Yes, or the opportunity to impact wild salmon.

Dr. Garth Fletcher: Oh, there's none, to my knowledge, and I've been the one helping to look after the fish. At the marine lab in Logy Bay, where we're sitting on the edge of a cliff by ocean water, I don't see any probability of the survival of salmon leaving at any early stage, and there's certainly no way big fish can get out of there. It's hard enough keeping them alive in the lab.

Mrs. Alaina Lockhart: We talked about the sterility of the fish, but there's still a 5% chance of breeding. Can you speak to that?

Dr. Garth Fletcher: I can't speak for the company, but as far as I know, and I've heard them give talks on this, it's typically over 98%. That's all I know.

Mrs. Alaina Lockhart: Why would it be that 2% wouldn't be sterile?

Dr. Garth Fletcher: It's biology, isn't it.

Mrs. Alaina Lockhart: Yes, and I'm not an expert.

Dr. Garth Fletcher: I think they continue to work on that. With regard to interbreeding salmon, there is another expert you could talk to—not me, I'm not a salmon biologist—about the problems that farmed salmon have breeding with wild salmon. As I understand it, the farmed salmon are very poor performers. So you have another risk factor. Somebody could do a risk analysis, just speaking off the top of my head here, that could say what the probability is.

At the moment, I would say this. I don't mean to insult anybody, but I would suspect that we, and I don't mean me, have created the need to point out that you can create triploid salmon broodstock. That's probably what, in my opinion, the whole industry should be doing. That would take a long time, but then you would have less interbreeding, because farmed salmon do, at times, interbreed, and there's...they're all fertile.

● (1020)

Mrs. Alaina Lockhart: Thank you.

Mr. Butler, you worked at Huntsman and in the industry. I actually spent some time in the Charlotte County area as well. It was in human resources in aquaculture; nonetheless....

What are some of the experiences we've had with aquaculture in Atlantic Canada that cause concern for you as we look at a new stream of production?

Mr. Mark Butler: Well, we were just talking about the potential for farm escapees to breed with wild fish. I believe a study just came out that showed that it has happened now. I think in the industry they use broodstock from the Saint John River, and they've now found salmon in other rivers with the genetic makeup of the Saint John broodstock. There's an example of a concern to the Atlantic Salmon Federation. I know there's a large project in Newfoundland right now that is of concern to them.

Mrs. Alaina Lockhart: Is that related to open net farming?

Mr. Mark Butler: It is, in part. Aquaculture is an important industry, and should be an important industry, in Atlantic Canada. Our organization has certain recommendations about how it should be done.

Taking it to the GM level opens up a Pandora's box for us. Given that all you need is one GM fish to breed with one wild Atlantic salmon, and that trait is then in the wild brood stock, the level of security required is so, so, so much higher. We're talking about one facility now, but you can imagine if there were many facilities with hundreds of millions of fish over many years of production, with lapses and cut corners. There are good operators and there are less-good operators. I know that for a fact. Different companies have different records. We know that from working with different companies. Something is going to happen.

If you had more time, I would suggest you bring in a scientist from DFO to talk to this. I think long term, if we commercialize these species right now, even with the high success around triploid induction, we would see breeding with wild fish. Then for anglers, be they from New York or from Halifax, like me, that would change our perspective on fishing in Atlantic Canada.

The Chair: Thank you, Mr. Butler.

Thank you, Ms. Lockhart.

[*Translation*]

Ms. Brosseau, you have the floor for six minutes.

Ms. Ruth Ellen Brosseau: Thank you, Mr. Chair.

I'd like to thank the two witnesses for their presentations.

[*English*]

Mr. Butler, you mentioned in your presentation earlier that an article came out on May 20, in which the provincial Minister of Fisheries, Keith Colwell, said, “We’re more interested in making sure we protect what we have. Until someone can prove to us and to the public that this will be a good idea—and I don’t see much support anywhere for this—we’re not interested.”

Later on in the article it goes on to talk with Kirk Havercroft, CEO of Queen's County-based farming operation, Sustainable Blue. They're worried about branding. They're worrying about people getting confused and mistaking their products for genetically modified salmon because there are no regulations in Canada mandating GMOs to be labelled. They are talking about consumers and Canadians interested in having genetically modified labelling.

[*Translation*]

You also mentioned previously that there were no consultations with the public, with producers and, particularly, First Nations.

Can you explain why at this point it would be important to hold these kinds of consultations with Canadians?

[*English*]

Mr. Mark Butler: It has implications on a number of levels. In the United States, this was approved for human consumption. I believe Senator Murkowski, who is a pretty fierce defender of the Alaskan salmon fishing industry, came out swinging and said that we have to hit the pause button because right now there will be consumer confusion. They won't know. If it's not labelled, then it's not distinguished. Then some people are going to.... They received over a million comments, I think, in consultations in the U.S. People care about this.

From an economic standpoint, those who sell salmon are concerned about confusion and about consumers turning away from salmon altogether.

This is a big step. It has implications. We're going to see other fish. We might see insects. We might see birds. We might see trees. If you care about nature, there are implications. For the government not to do any public consultation at all, be it with stakeholders like the commercial fishery or others, is going to have implications for the commercial fishing industry long term, not right now. I think it's wrong that there haven't been consultations.

I don't want to be too much like a preacher, but I think a mistake has been made and I would encourage the government to rectify it.

● (1025)

Ms. Ruth Ellen Brosseau: You mentioned that it was a threat to wild salmon. You talked about how the GM salmon could potentially escape. There were talks at this meeting and previous meetings of the sterility of these female fish and how it goes from 95%.... There is still some speculation. You spoke earlier of a report that proved that these fish could still breed.

Also, in your opening remarks, you said that Ecology Action Centre is in court this morning. Can you tell us why you're in court?

Mr. Mark Butler: The Lord could better answer this question, but there are a number of reasons. I think one that is really important is that DFO did an assessment, but only of the export of 100,000 eyed eggs from P.E.I. to Panama.

They did not do an assessment of the commercial grow out. I'm still worried about the P.E.I. facility, but unless we get a mammoth hurricane or there's some kind of serious eco-sabotage, it is unlikely there is going to be interaction between those fish and the few remaining wild fish left in P.E.I.

When you go to commercial grow out, as I've said, and I can't emphasize it enough, we're talking about hundreds of millions of fish. Imagine a facility like that right beside the Miramichi River. Fish have escaped from land-based facilities. If you're talking numbers, if there are a million fish, 2%, that's 2,000. If it's 100 million, that's 200,000.

I get it that the chances are low, but the longer it happens and the more fish you produce, the more the risk goes up. I think the probability eventually approaches 100%. It would be best to ask DFO, but I think you can get comparable growth rates. If you have optimum conditions for both types of fish, you can get growth rates that are comparable.

Ms. Ruth Ellen Brosseau: There have been quite a few studies and polls over the last 20-some years. Canadians take interest in what they're eating. There's a whole “buy local” and the 100 kilometre diet. People want to know what's in their food, how the animals are raised, and where it's processed. They want to know as much information as possible.

The Chair: Quickly, Madam Brosseau.

Ms. Ruth Ellen Brosseau: There's a private member's bill that's been tabled in the House asking that genetically modified foods be labelled. I know there are two sides. I think Canadians do have a right to know. The United Nations backs that up not just for health reasons, but for ethical reasons and maybe religious reasons, too.

Could you speak to the importance of labelling?

The Chair: Thank you, Madam Brosseau. We have to cut it off at six.

Mr. Longfield.

Mr. Lloyd Longfield: Thanks to both of you for coming. It's such an honour to speak with people who are experts in their areas and working on both sides of this equation for us.

I'd like to direct my first comments to Mr. Butler.

The University of Guelph has a biodiversity centre that looks very closely at the traceability of foods and at the traceability of all life forms on the planet. It's a small project they're working on. They have NSERC funding, and they have funding from different agencies around the world.

You mentioned the traits of salmon. An earlier presentation led us to believe that the genetic or molecular makeup was identical. If you took a GMO salmon and a regular salmon, and then you did an analysis, it would be one for one.

● (1030)

Mr. Mark Butler: May I give a glib answer? Then why bother, if it's no different. Obviously, there is, I mean....

Mr. Lloyd Longfield: It's more the trait of the growth rate. I'm not an expert. We're just trying to get the facts on the table.

Mr. Mark Butler: It's a fair question. I get it, but at the same time there obviously is a difference, otherwise we wouldn't be interested. I think if any other body goes forward on this, you need to....

There's a DFO scientist, Robert Devlin, who's done, relatively speaking anyway, a lot of research on how these salmon behave. It's only in laboratory conditions, because we can't test it in nature. That's always a limitation. They do have different behaviour traits. We don't know how this particular genetic expression will express itself in wild fish under a hundred different conditions in the lab.

Mr. Lloyd Longfield: Okay, thank you.

Our time is so limited. I wish I could get into that a little further. My understanding is that it is one gene sequence change 30 years ago that is being used now.

Maybe this is for Dr. Fletcher.

With the aquaculture industry, we had a previous presentation that said they weren't interested in this, but the industry was interested in overcoming the problems with antifreeze genes. You were there at the beginning of all of this, which is amazing. Who started this? Was the industry looking for antifreeze genes? No.

Dr. Garth Fletcher: Just us.

Mr. Lloyd Longfield: It was the university, just through pure scientific—

Dr. Garth Fletcher: Just two guys, myself and Choy.

Mr. Lloyd Longfield: Right. Tremendous.

Dr. Garth Fletcher: We were working on antifreeze proteins. We were one of the first. I'm a physiologist. Choy is a protein chemist, and Peter Davies at Queen's is a molecular biologist. We had started working on the antifreeze protein because it was so unique. There was virtually no genetic work going on by anybody, anywhere, in fish, I mean.

We had already isolated the antifreeze gene. Then there's another friend who ended up calling up at the university and going around the province trying to find places to culture salmon in Newfoundland. I said to him bluntly, “You're not going to be able to do it. They're not freeze resistant.” Choy Hew said to me, “Let's give them the gene.”

As you know, we're always looking for money to do our research. We applied to NSERC's strategic grants program, and rather nicely they gave us our first parcel of money to give it a try. It did take us a few years to figure out how to do it. Nobody else was involved. All that NSERC required was that we show that it might be a benefit to the Atlantic provinces. There were no companies involved at all.

Mr. Lloyd Longfield: You mentioned the Atlantic provinces. The University of Guelph has been quite involved with the Atlantic provinces in protein production and research around gene development in different areas, whether it's pigs or in other areas such as plants.

This is the opportunity for Canada to become the number one food processor, producer, and supplier in the world. You didn't say that this was the tip of the iceberg, but I translated that in my head. Is this something that universities across Canada are now doing by taking your research and looking into other areas, or is that still something that needs to be developed?

Dr. Garth Fletcher: As I think I said, there's a lot of interest in doing genomics of salmon, a huge amount of work in genomics. The other side of it, knowing my colleagues, is that we're waiting to see what the government does. There was no question when Choy and I started out this was unknown territory and we were just doing a lot of experiments. We never dreamed that we would have a company be interested in it directly at that time.

● (1035)

Mr. Lloyd Longfield: Are you working with other universities in Canada?

Dr. Garth Fletcher: Me personally?

Mr. Lloyd Longfield: Yes.

Dr. Garth Fletcher: Not on these things I don't. I still work with antifreeze proteins because that's my first love, really, why fish don't freeze in the natural world and how they are protected. Others are working on other things that have to do with biotechnology and biotechnology products in aquaculture.

Mr. Lloyd Longfield: So you accidentally put us in the leadership position in the world. Is that safe to say?

Dr. Garth Fletcher: It's very flattering.

Mr. Lloyd Longfield: It's an honour. Thank you, and thanks for the work you have done.

The Chair: Thank you, Mr. Longfield.

[*Translation*]

Mr. Drouin, you now have the floor for six minutes.

[*English*]

Mr. Francis Drouin: Thank you to the witnesses for being here today.

Mr. Butler, you've had the opportunity to talk about the lack of consultation. When farmed salmon was introduced in Canada, do you recall whether there was a consultation process for that?

Mr. Mark Butler: Whoa. You're asking me to go back to my early twenties.

Mr. Francis Drouin: Mr. Fletcher, was there a consultation process for the introduction of farmed salmon in Canada, or how did we go about approving this in Canada?

Dr. Garth Fletcher: How did we go about approving it?

Mr. Francis Drouin: Yes, farmed salmon.

Dr. Garth Fletcher: Didn't it start with DFO down in St. Andrews?

They sent a gentleman called Arne Sutterlin to Norway to learn how they were doing it. He came back to DFO in St. Andrews, and they started doing some experimental work with some private sector people. That's all I know about it really. It started down in the Passamaquoddy Bay area as a potential way to make money, I guess, and create employment.

Mr. Francis Drouin: Okay.

Currently in Canada, it's not mandatory to label whether salmon is farmed or wild. Is that your understanding as well?

Mr. Mark Butler: That is my understanding. I think the wild industry makes an effort to label it as wild.

Mr. Francis Drouin: Does your membership or your organization advocate for one versus the other?

Mr. Mark Butler: Do you mean in terms of wild versus farmed?

Mr. Francis Drouin: Yes.

Mr. Mark Butler: It depends how the farmed is grown. When it comes to shellfish—and by the way, they have been growing oysters in P.E.I. for a long time—when it comes to farmed, it's a question of how it's grown.

I won't pretend that we don't have issues with the aquaculture industry, and you have heard about them presumably either in the news or here. We're pushing for better practices.

Again, GMO takes it to a whole new level. That would be my answer.

Mr. Francis Drouin: When you say “to a whole new level”, has your organization done a scientific assessment with regard to that?

Mr. Mark Butler: We have the DFO assessment of the export of eggs, and then we have as part of the core process another 400-page document.

I would love to see more science, more discussion of science. Actually, our organization is thinking about convening some kind of scientific discussion around this, because it's not happening elsewhere.

Mr. Francis Drouin: Your main concern is not with regard to the health of humans, but rather the environmental impact that it may have.

Mr. Mark Butler: I care about my family and my friends. Yes, I'm concerned about human health. It's not my area of expertise. I respect others who are concerned about it.

Also, when we got into this court case, we got calls from people from the Jewish faith who said there's an issue here for them in terms of kosher food. This issue has many dimensions—ethical and health—but our focus is on, and has to be on, the natural world and protecting, in this case, wild Atlantic salmon.

Again, I would say the gene-editing technology is getting cheaper and easier to use, and we're going to see potentially other species that have wild counterparts, and the integrity of those wild species is going to be put at risk or affected. If we had done a bit more thinking and conversation in the beginning days of aquaculture—I was kind of around there; I worked at the Huntsman Marine Science Centre when it was happening—maybe we could have avoided some of the mistakes we subsequently encountered that have harmed the industry and its image.

● (1040)

Mr. Francis Drouin: Forgive me if I ask a stupid question, but I don't live close to an ocean.

Mr. Mark Butler: Yes.

Mr. Francis Drouin: Are you satisfied with the current practices of farmed salmon in Atlantic Canada? If not, what are some of the recommendations that you would have for industry to adopt better practices? That will relate back to GM salmon, if there are escapes or if the escape rate is too high. How would you deal with that?

Mr. Mark Butler: Right now, if you are growing a lot of fish, there are impacts on the surrounding environment. For finfish—salmon, trout, halibut—we prefer to see closed containment, because that has a number of advantages in terms of waste, antibiotics, and sea lice. We have companies in Nova Scotia that are moving in this direction, and I am very happy to buy their product.

With GMOs, if it happens once, that's it. Then that trait.... It's like the first ship that brought zebra mussels into the Great Lakes. In an aquatic system, you can't get those zebra mussels back into the ship. You can't round them up.

Aquatic systems pose unique challenges.

The Chair: Thank you.

[*Translation*]

Thank you, Mr. Drouin.

Mr. Breton, you have the floor.

Mr. Pierre Breton: It's always a pleasure to have...

Is it my turn, Mr. Chair?

[*English*]

The Chair: Oh, sorry, we didn't have names.

It's Mr. Anderson, I guess. Go ahead.

Mr. David Anderson: Mr. Fletcher, maybe I'll ask you one and then let my colleague have a bit of time before we are done here.

I'm just wondering what surprises you faced along the way. Were you surprised by any of this? You said this was fairly easy technologically, or whatever, but I'm just interested in the surprises you faced.

Dr. Garth Fletcher: My first surprise was that it worked. We didn't know that. That's the kind of thing you hope for. In fact, the growth hormone one was part of the best experiment I ever did. We got results in one year. Normally, I'm looking at years and years of rather straightforward stuff, so that was the first surprise.

In the beginning there wasn't.... When we were doing the antifreeze, there wasn't.... Nobody complained. In fact, the university touted it, and the region was dipping into gene transfer. It was the same with the Atlantic provinces. When I gave talks—I am an academic, so that's the kind of talks I would be giving—there wasn't any there.

In my view, a lot of this happened in the 1990s, with the handling of the mad cow disease in Britain, when the public became aware that the government might not be completely honest with the public. That's when.... The surprise was that suddenly there was a backlash from people who were concerned.

Mr. David Anderson: Okay.

Mr. Breton, do you want the remaining time?

[*Translation*]

Mr. Pierre Breton: Thank you very much, Mr. Anderson.

My question is for Dr. Fletcher.

We know that the industry is currently hesitant to market the product and that consumers are also experiencing reluctance about this. What should the industry do to improve consumer and retailer confidence in this product? Many retailers in the United States don't want to market it.

What should companies do to reassure the public and the industry about this?

[*English*]

Dr. Garth Fletcher: Well, I think that businesses will look after themselves first. If they have a perfectly good business and they see the public being concerned about this product, I can see why they would say they don't want to have anything to do with it. Many of them are publicly traded companies, so why would they do that?

In my view, the onus is then on AquaBounty, or whatever subsidiaries there are, to educate the public. It is an education program, because the public as a whole, as it becomes more and more urban, has no idea where food comes from. They don't understand the process, anyway, so it's really an education program, to understand that these are techniques. When we have food on the market, it is created from mutants. They pick out the mutant that does best, and they produce it. It's not called a GMO, but it goes into the marketplace. So you have an education program. That, I think, is the biggest challenge, whether it's for the companies or for the government, to teach people more science.

● (1045)

The Chair: Thank you, Mr. Fletcher and Mr. Breton.

That brings us to the end of this session. I want to thank you so much for taking part, Mr. Butler and Mr. Fletcher. This will certainly help us in writing our report.

For the committee members, we'll be here next Thursday for an hour and a half on APF, and then 30 minutes for a business session.

The meeting is adjourned.