

PRINCE EDWARD ISLAND LEGISLATIVE ASSEMBLY



Speaker: Hon. Francis (Buck) Watts

Published by Order of the Legislature

Standing Committee on Agriculture and Fisheries

DATE OF HEARING: 2 NOVEMBER 2018

MEETING STATUS: PUBLIC

LOCATION: LEGISLATIVE CHAMBER, HON. GEORGE COLES BUILDING, CHARLOTTETOWN

SUBJECT: BRIEFING FROM FISHERIES AND OCEANS CANADA (GULF AND MARITIMES REGIONS)

COMMITTEE:

Hal Perry, MLA Tignish-Palmer Road [Chair]
Dr. Peter Bevan-Baker, Leader of the Third Party
Hon. Paula Biggar, Minister of Transportation, Infrastructure and Energy
Jamie Fox, MLA Borden-Kinkora
Colin LaVie, MLA Souris-Elmira
Alan McIsaac, MLA Vernon River-Stratford
Hon. Chris Palmer, Minister of Economic Development and Tourism

COMMITTEE MEMBERS ABSENT:

Hon. Sonny Gallant, Minister of Workforce and Advanced Learning

MEMBERS IN ATTENDANCE:

Darlene Compton, MLA Belfast-Murray River

GUESTS:

Fisheries and Oceans Canada (Doug Bliss, Lori Cuddy, Serge Doucet, Mike Wambolt)

STAFF:

Ryan Reddin, Clerk Assistant (Research and Committees)

The Committee met at 10:00 a.m.

Chair (Perry): I'd like to call this meeting to order and welcome everyone to the meeting today. Unfortunately, we have regrets from the hon. Sonny Gallant who couldn't make it today, but I want to welcome each and every one of the members who could make it here today.

The agenda was circulated prior to today. Everyone had an opportunity to review it. Do we have any changes, additions, or do we have an adoption to the agenda?

Thank you very much, Alan McIsaac.

A few housekeeping rules before we move on. If you have any telephones, please turn it off or to vibrate. Also, before speaking, especially for the first time, state your name and your title/your position for Hansard. Please address any questions or responses through the Chair.

Third, we're going to move on to a briefing on marine fisheries and matters of representatives from the Fisheries and Oceans Canada, the Gulf and Maritimes Regions. A request was sent in to them prior, or sorry, when a follow-up meeting with the Northern Pulp of Nova Scotia Corp. and we are very pleased that you could come in today and present to our committee.

Would you prefer to hold questions at the end or during your presentation?

Serge Doucet: Thank you, Mr. Chair.

Serge Doucet, Regional Director General for the Gulf Region for Fisheries and Oceans.

It is at your pleasure. It might be a little bit easier if we can get through the presentation, but if there any specific questions at any time, feel free as well.

Chair: Okay.

I guess what we'll do is we'll hold questions until the end of the presentation, and so you may begin.

Thank you.

Serge Doucet: Thank you.

Again, Serge Doucet, Regional Director General for the Gulf Region for Fisheries and Oceans.

Thank you for the opportunity to come in and present some of the information that we're going to present in the coming minutes.

I believe that the last, I guess, appearance in front of the standing committee was by our Associate Deputy Minister, Kevin Stringer. I believe that was back in 2017, and knowing Kevin quite well I suspect it would have been a very entertaining discussion with a lot of history. Hopefully, we'll keep the bar high as well.

I've brought with me some of my staff or some of our regional staff to present some of the information, and also to be able to answer any specific questions. If we don't have immediate answers, we will commit to getting the information as much as we can and get it back to the committee. So at this point in time I'd like to introduce – I'd like my colleagues to introduce themselves.

Mike Wambolt: Hi, my name is Mike Wambolt. I am a section head with the Fisheries Protection Program in Maritimes Region for Fisheries and Oceans.

Doug Bliss: Good morning my name is Doug Bliss. I'm the science director for the Gulf Region operating out of the Moncton office.

Lori Cuddy: Good morning, I'm Lori Cuddy. I'm the acting area director for Fisheries and Oceans area office in PEI.

Serge Doucet: So again, I think that we focus today's – Serge Doucet RDG for Gulf Region – today we focus the presentation on specifically on the questions that were forwarded in a letter dated February of 2018.

We appreciate the opportunity to put this information together, and I think that you'll see that we do have a lot of information. Again, sometimes specifically around smaller bays and so on we may not have that level of detail of information, but tides and currents and some of the stock assessments and whatnot are pretty accurate for the entire Gulf and the Northumberland Strait and

more specifically in the, I guess, would be the southern Strait –

Doug Bliss: Eastern.

Serge Doucet: Eastern Strait. So without saying, I guess the next part would be for Doug to go forward with his presentation.

Chair: Okay, thanks Serge, but prior to that, for Lori and Mike especially, you're on the ends and I noticed that you're kind of speaking into the microphones. These microphones should be able to pick up your voice from where you're sitting. If there is any trouble sound will let me know and we'll adjust it.

Thank you.

Unidentified Voice: Thank you.

Doug Bliss: Okay, good morning members.

Thank you for the opportunity to come and speak to you. It's Doug Bliss from Fisheries and Oceans Canada. I'm the science director operating out of Moncton. My organization does all the species information –

Chair: Thank you.

Doug Bliss: Thank you.

Good morning, members. Thank you for the opportunity to come and speak to you.

It's Doug Bliss from Fisheries and Oceans Canada. I'm the science director operating out of Moncton. My organization does all the species information, oceanographic scientific survey work and providing scientific advice for the Southern Gulf St. Lawrence, including the Northumberland Strait. Much of the information that you'll see today has been collected by my team over many years, and I hope it will be helpful for you.

I have a slide deck here of about 20 different slides, and we're going to cover three major areas. One of them is talking about the oceanographic conditions and typical currents and recent temperature trends that we see in the Northumberland Strait. I have some commentary about the health of the coastal marine ecosystems which you have specifically asked for; and we'll give you –

although you did note in your request to have a specific discussion about lobster and herring, we're also providing information about many other commercial species to be able to provide a complete picture of what we see.

So just to orient you, I don't need to do this for anyone in this chamber, but anyways. The Northumberland Strait, we have a map projected on the screen. Much of my information will be talking about the Northumberland Strait, and when I'm able I will also be trying to make references specifically to the eastern portion of Northumberland Strait.

If we move on to consider the oceanography, the first slide shows the residual surface currents in the Gulf of St. Lawrence. This graphic which is taken from hydrodynamic models shows that these residual currents are generally weaker in the Northumberland Strait than in the open ocean areas of the Gulf of St. Lawrence.

The circulation in the Northumberland Strait is rather complex due to the interaction of tides and winds. When averaged over a relatively long time, like shown on this graphic, the residual circulation in the Strait is generally from west to east with a small gyre at each end of the Strait.

A little bit more detail on how currents look, and I apologize for the smallness of these graphics; but of more interest for this presentation is to show how currents flow in and out of the Northumberland Strait during a tidal cycle, because the currents are driven by the tides.

Here you see four graphics which show the relative direction and magnitude of water currents in the Strait during different times of a typical tidal cycle of 12 hours. Because of the timing of tides in the Northumberland Strait, I do not reference high tides nor low tides as the timing of high and low tides varies considerably along the length of the Strait. For example, today, the high tide at West Point, PEI, is five hours later than the high tide at Woods Islands, PEI.

For example, we have four graphics on the board, and I will be referring to the graphics in a clockwise manner. I apologize when you look at the first top left one says 'Start'.

Over to the right top it says '3 hours' and then I'll be going to the next one on the bottom right which is actually '6 hours'. I've transposed those numbers. That's six hours on the bottom right and 9 hours on the bottom left.

At the start of this simulation, we see currents flow towards the centre of the Strait from both ends. Current speeds are higher in the eastern and western entrances, and there is almost no water movement in the centre of the Strait around Confederation Bridge.

Three hours into this simulation, we see that the situation has reversed and that water is exiting the Strait from both the western and the eastern entrances, with a dominant westerly current in the west end of the Strait. That's the top right graphic.

Three hours after that, so six hours after the start of this simulation, we can see that the water is continuing to empty out of the Strait through both ends, the eastern and the western end, with dominant flows through the eastern end of the Strait whereas previously it had been dominant flows out of the west end.

Three quarters of the way through this tidal cycle, which would be the final graphic, which is the bottom left one, you can see the currents are now flowing back into the Strait and in the centre of the Strait there is a strong easterly current.

This short demonstration shows that at the entrance to the Northumberland Strait, the currents are higher, and these areas experience relatively higher water exchange. Whereas the centre of the Strait, the water masses slosh back and forth, forced by water coming in from the east or the west, resulting in an overall-net less water exchange in the same period of time.

Another way of looking at the tidal currents in the Strait is to look at maximum tidal speeds, which is what we see on the graphic here. This schematic shows that the maximum current speeds experienced in the Northumberland Strait during a typical tidal cycle. Note that the current speeds are stronger at the entrances to the Strait at the eastern and the western end.

These are depth-averaged currents, and these depth-averaged currents can exceed more than 0.1 meters per second or, in terms that we're all familiar with, more than 1.9 knots. Again, another illustration just to see that in terms of current activity in the Strait, certainly higher currents are experienced both in the eastern and western ends.

If we move on to talking about temperature, we have two graphics here. On the left-hand side we see the Northumberland Strait can experience warmer bottom temperatures than elsewhere in the Southern Gulf of St. Lawrence. This is demonstrated by the schematic on the left which shows bottom temperature recorded during our scientific surveys in 2017.

You can see that once inside the Strait, coming from the eastern end, that the bottom sea temperature rapidly increases with the warmest bottom temperatures near the centre of the Strait. This shows why tourism ads like to refer to the Northumberland Strait as the warmest waters north of the Carolinas.

Just if you can look at units, the dark blue in the centre of the Southern Gulf of St. Lawrence, you can see those are temperatures that are near zero during September 2017; and you can see as we move into the Strait and towards the centre of the Strait where you have dark red, the temperatures are in the high teens and approaching 20 degrees Celsius, so quite a difference in bottom temperature.

Although we didn't show a graphic on this, we can confirm that the data does confirm that the average water temperatures have been rising in the Northumberland Strait over the last decade or so.

On the right-hand side, the graphic on the right illustrates the temperature swings that are experienced in the Northumberland Strait. In this case, we can see that over a long period of time, 26 years in this case, that the average difference between summer and winter water temperatures can be more than 23 or 24 degrees Celsius, especially in the centre of the Strait and coastal areas.

There are areas at the entrance to the Strait that have slightly less or slightly smaller temperature swings, but are still

experiencing temperature swings between summer and winter in excess of 20 degrees during the year.

The Northumberland Strait experiences greater seasonal differences in temperature than elsewhere in the Southern Gulf of St. Lawrence. This oceanographic discussion really illustrates that the waters of the Northumberland Strait are very dynamic during the course of the year and have a physical environment which, over time, to which the fish and wildlife who make this their home are well adapted.

So that concludes the brief presentation on the oceanographic situation. We're going to move on to a discussion about the health of the coastal ecosystems. I actually only have one slide on this, and I'll be talking to the slide.

One of the questions posed by this committee was to ask Fisheries and Oceans Canada to comment on the current health of oceans with a focus on the region's marine ecosystems. For this presentation, we will briefly comment on two research initiatives which were done to examine the ecosystem health of the Northumberland Strait and associated estuaries in the last decade.

Both these initiatives were collaborations between our department, universities, non-government organizations, provincial governments including New Brunswick, Prince Edward Island and Nova Scotia, and other experts.

The first initiative I will mention is the Ecosystem Research Initiative for the Northumberland Strait. This was conducted between 2007 and 2012 with the following objectives: understanding the present state and development of ecosystem health indicators and assessing changes of habitat and fauna over time.

This collection of studies focused on the marine ecosystem, from oceanographic modelling to fish species assemblages and food web links. Several research reports and publications resulted from this initiative, such as the development of a 3D ocean model to study movement of invasive species, lobster larvae dispersion and sediment transport, describing the water masses and zooplankton in the water mass

and to characterize diets of pelagic fish, lobster and rock crab.

Much of this data has been used by various agencies to identify ecologically and biologically important areas in the Northumberland Strait.

One major component of this research initiative was also to compare changes in species composition and abundance in the Strait over the last 30 years.

Results indicate that changes have occurred over time in the species mixture, but given the complex nature of the ecosystem, the study was not able to quantify whether these changes could be considered positive or negative.

There are natural variations within this ecosystem for different levels of equilibrium which indicates to us that this ecosystem is showing good resilience, which is a term that we use in the scientific world as a proxy. If we say that an ecosystem is resilient, it is really a proxy that its health is relatively good.

The second and more recent effort has been with the Northumberland Strait environmental monitoring partnership which took place between 2012 and 2015. It was created as part of the Canadian Water Networks, Canadian Watershed Research Consortium.

Research was focused on understanding the impact of nutrients, sediments and contaminants from land-based activities on the estuaries and bays of the Northumberland Strait – on fish and fisheries, invertebrates and vegetation, with a specific focus on eel grass.

One important outcome of this work was the development of a regional monitoring framework to assess the cumulative impacts from human activities in estuaries and to monitor the ecosystem health of coastal areas.

Key environmental indicators selected to monitor ecosystem health were nutrients, sediment loading, dissolved oxygen, plankton and algae communities and eel grass.

At Fisheries and Oceans Canada a new regional monitoring program focusing on tracking nutrients was started this year in order to assess the health of coastal ecosystems over time.

For illustrative purposes only, I have included a graphic from this research partnership which was taken from a study that focused on assessing the relative nitrogen loading from watersheds in the Northumberland Strait in aquatic estuaries and coastal ecosystems.

This graphic shows nitrogen loading and various watersheds and is the kind of information that can be used to understand the ecosystem health of rivers, estuaries and coastal areas.

As a result of these two major research efforts, we do know that further study is needed to establish clear relationships between the various states of coastal estuaries and bays and the overall marine health of the Northumberland Strait.

While the Northumberland Strait could be considered to be in a state of transition because some of the oceanographic variables and temperatures, it is still a very functional ecosystem. Water transparency is high with about 66% of the strait still having enough light for photosynthesis on the sea floor to occur.

Chlorophyll concentrations which are a proxy for how many nutrients and whatnot are in the water column vary, but all observed concentrations are well below the values that have negative effects.

The nature of the fish community is changing, which I will speak to for the remainder of this presentation.

I will now move on to talking about the various fish species and this committee has requested, specifically, a discussion the life history of herring in our waters and this graphic that we have – which I'll walk you through – is meant to describe that.

Atlantic herring is one of the most abundant fish species in the world. They are a fish which congregate in large schools and are found on both sides of the Atlantic Ocean and can grow up to 45cm in length and

weigh over a kilogram. They feed on copepods, krill and small fish. As you know, they are prey fish for many other fish and marine mammals. This slide shows the various stages of the Atlantic herring life cycle.

Spawning takes place in our area between August and October and eggs are released into the water in water temperatures of about 10 to 15 degrees Celsius and sink to the bottom. I will note that it is known that herring eggs are sensitive to temperature salinity and low oxygen levels.

But unfortunately, we were not able to find information I could provide to you for this presentation of what their tolerance's are. There has not been much work done on that in the scientific literature.

The eggs hatch in about two weeks and rapidly proceed through various life stages as larvae, they move into nursery habitats which are found in coastal areas. Afterwards, herring move into deeper waters to spend the winter months and come back into the Southern Gulf the following spring and summer.

Atlantic herring reach sexual maturity at about four years of age and can live between 12 and 16 years. Spawning occurs annually once maturity is achieved.

Moving onto another slide about Atlantic herring; the graphic on the right of this slide shows the major spawning grounds for spring herring. In yellow – hopefully you can see those patches in yellow – Magdalen Island, the western portion of the Strait and fall herring, which is spawning in the western end of the Strait.

The arrows in this graphic shows the seasonal migration pattern of the species moving into deeper water for wintering grounds around the Laurentian Channel. So there is a net movement of the species in and out of the Strait during the course of the year.

The graph on the left shows our estimates of the spawning stock biomass of fall herring since 1978. You will note for the last 10 years, there is a consistent declining trend with the stock being, in what we call the cautious zone of the precautionary approach,

but is still above the limit reference point which, for us, I will discuss in a little bit more detail.

Moving onto another pelagic fish, the Atlantic mackerel, of which you would all be familiar. We will be presenting other species as well in order for you to have a more complete picture of fish populations in the Northumberland Strait.

Atlantic mackerel are a schooling fish found in our waters. It spends the warmer months close to shore near the ocean surface, appearing along the coast in the spring and departing with the arrival of colder weather in the fall and winter months. Atlantic mackerel are in the critical zone of the precautionary approach. When in this zone, following Fisheries and Oceans Canada's decision making framework for the precautionary approach – and I quote: management actions must promote stock growth and removals from all sources must be kept to the lowest possible level until the stock has cleared this zone. Cleared this zone means the stock has increased.

The graph on the left shows where we found the presence of mackerel eggs over two years in the Southern Gulf of St. Lawrence.

Note that eggs enhanced spotting does occur throughout the Southern Gulf. Since we do not conduct these kinds of surveys in the Northumberland Strait, we do not have data confirming the presence of eggs there.

However, we do catch mackerel in our multi-species scientific trial surveys conducted in the Southern Gulf and the Northumberland Strait and as you can see from the graphic on the right – we do see distributions of mackerel in the Northumberland Strait, particularly in the eastern end.

The next three slides will briefly describe the status of groundfish species in the Southern Gulf of St. Lawrence. All of these species are at low numbers but continue to be present in the Eastern Northumberland Strait. The first two that I will present are winter flounder and yellowtail flounder.

The maps on these slides show distribution maps of the occurrence of these species

during the time period of 2010 to 2014 on the left and 2015 to 2016 on the right.

Both yellowtail flounder and winter flounder stocks are in the critical zone of the precautionary approach.

Another two species of groundfish – American plaice and Atlantic cod; this slide presents the distribution of these two species.

The difference between these two species and the ones we just saw are – that not only are these species in the critical zone and are no longer subjected to directed fishing – but they have been assessed as species at risk and in the categories of threatened and endangered respectively.

The fifth groundfish species which I would like to present to you is white hake. Not only has directed fishing been prohibited since 1995, it is also been assessed as endangered.

This species has one of its last strongholds in the eastern proportion of Northumberland Strait. I apologize for the members for this graphic. I realized after I had sent it that the legend on the graphic, on the right, where it clearly illustrates where the white hake is present in the Eastern Gulf, of course, is covering up some of the map in the area you guys are most interested in. But, it's very similar to the map that you can see on the left, which basically demonstrates that this particular species is present in coastal areas in the southern part of the Gulf and that's, as I said, where its last strong-hold is.

So moving away from groundfish and fish in general, we move into lobster and shellfish. We'll briefly give you a presentation on the lifecycle of lobsters and their status, and then moving on to briefly touch on rock crab and scallop.

You have asked for more detail on lobster in this presentation. This slide is a pictorial demonstration of the lifecycle of lobsters. There are four stages in the Planktonic stage, which is at the top part of the graphic, which are the stages where the lobsters float in the water column. After this stage, they settle out to live the rest of their life on the sea floor. Once on the sea floor as juveniles, they spend at least two years hidden away under rocks, and growing into adults. They

do not mature into adults until they are about five years of age, or older and they have a life expectancy is about 30 years or more.

The American lobster is a general species, which inhabits many environments. Lobsters inhabit areas where bottom temperatures range from five to 20 degrees Celsius, or even higher. Their tolerance is quite broad and have been known to survive from temperatures slightly below zero to 30 degrees. They can even survive abrupt changes in temperature, as well. They are also tolerant to low salinity, but exposure to very low salinity, which you can find in river estuaries, less than 10% does cause significant stress to the animals. For the early life stages, they are a bit more sensitive and survival is jeopardized when the surface temperature is less than 10 degrees Celsius. However, warm water temperatures during their larvae stages is beneficial, as it results in the most rapid growth and the shortest duration of their so-called Planktonic stage, which is at the top part of that graphic.

Moving on to the recent trend, or actually not recent trend, a very long trend of American lobster; this graph presents the landings of American lobster for the Southern Gulf in the blue on top, going back to the year 1892. For lobster fishing area 26A, which as you know, is the eastern Northumberland Strait area, this graph goes back to 1947. Note, in both cases, for the entire Southern Gulf, and for the lobster fishing area in eastern Northumberland Strait, that recent landings are at an all-time high.

Lobster is considered to be in the very healthy zone of the precautionary approach and it's expected that high lobster abundance will be maintained for some years, given the good productivity, or high recruitment of the stock.

If we look at this slide about recruitment, another way of looking at the health of the lobster stock is to look at recruitment, which is a measure of the abundance of juvenile lobsters, which will become adult lobsters in a few years. This set of maps shows abundances of juvenile lobster taken from our annual scientific surveys from 2012 at the top left, to this year, which is the map at the bottom left. The patches of red indicate

areas of very high densities of juvenile lobsters, which is an indicator of what we can expect the adult population to continue to increase in the years to come.

I just draw your attention to the fact that again, in the eastern and the western ends of the Strait, we are seeing, in the last couple of years in particular, very high densities of juvenile lobsters, which is a possible indicator of what the future stock may look like.

Moving onto rock crab; rock crab is an important species, not only for fishing, but it plays an important role as a prey for several species and especially, as a preferred prey for lobster. This map shows that rock crab are present in good numbers throughout the Strait. We have not done scientific assessments on rock crab to more precisely understand their population status, but right now, the population trends are not showing any signs for concern. More studies and surveys focusing on rock crab will be undertaken by Fisheries and Oceans Canada in the upcoming years.

Finally, I would like to present to you some information on sea scallop. The sea scallop is a bivalve mollusk, which is a filter feeder. Scallops frequently occur in dense, local aggregations called beds, usually on sand or gravel, or gravel pebble substrates. Scallops can grow at temperatures ranging from eight to 18-degree Celsius, and they prefer salinities of 30 to 32%, but can tolerate salinities as low as 25%.

In the Southern Gulf of St. Lawrence, scallops must often face temperatures ranging from minus two to 20, as we presented earlier in the slide just talking about the temperature variation expected during the course the year. The sea scallop is stressed at temperatures higher than about 20 to 23 degrees Celsius. Mortality of sea scallops occurs at temperatures above 24 or greater and there are occasions where mass mortality of scallops has occurred in certain periods in the past.

The map on the left depicts the source locations of over 80% of the landings in the Southern Gulf. You can see that there are basically three main areas in the western end, right in the center of the Strait and also, in the eastern end of the Strait. These are

exactly the same areas where our scientific surveys have shown higher densities of scallops. This year, we conducted an assessment of a scallop stock in the Southern Gulf of St. Lawrence – we, as in Fisheries and Oceans. This review concluded that the abundance indices based on catch rates and densities of scallop, are considered to be at low levels relative to other areas of eastern Canada.

The map at the right, for your information, depicts the existing scallop buffer zones. These zones where scallop dragging has become prohibited have gradually been implemented since 1996, primarily to protect juvenile lobster habitats. Those zones are the blue zones that are illustrated along the coast in the Northumberland Strait.

This concludes the Fisheries and Oceans Canada presentation to you on the overview of oceanographic conditions, ecosystem conditions, and commercial fish species in the Northumberland Strait.

Thank you for the time and opportunity to present this information to you.

Thank you.

Chair: Thank you guys very much for that presentation.

Before we go any further, I just want to acknowledge Darlene Compton, who is the MLA for Belfast-Murray River, who is sitting in today.

We're going to move towards questions. I have a few on my list, and I'll compile it as we continue to go along–

Doug Bliss: Okay.

Chair: –so first up, we have Jaime Fox.

Mr. Fox: Thank you, Chair.

Thanks for your presentation, very informative; a lot of information, actually.

I'm curious on the Confederation Bridge – have you seen much change into the Strait, how it interacts with nature or with climate and the movement of water, since the installation of the bridge?

Doug Bliss: So, the two studies that I referred to, talking about ecosystem healthy, were essentially started because of concerns about the Confederation Bridge. So, some of the commentary that I read from that was that there were changes that were noted, but they were small enough that it was impossible to determine whether there were negative or positive impacts from that.

Chair: Jamie Fox.

Mr. Fox: Thanks, Chair.

You talked about different fish species that were in decline or actually endangered, I guess–

Doug Bliss: Yeah.

Mr. Fox: – so, is this a trend that is concerning? How do we protect this? How do we stop this?

Doug Bliss: Excuse me, Mr. Chair. Should I have to indentify myself every time I speak?

Chair: You don't have to, just the first time.

Doug Bliss: Just the first time?

Okay, thank you.

Chair: Yeah.

Doug Bliss: Thank you, Mr. Fox.

It's clear that in the presentation that we can see, that depending upon the fish group that you have, there are groups of fishes that are in trouble; clearly, the groundfish are.

What we've seen over time is – the groundfish, as we all know, were severely depressed – and around the mid-1990s in general, fishing pressure was reduced or taken off completely on most of those species.

But what's happened in the meantime is that nature always fills the balance, right? So, when these species went into a big deep decline, we've seen ecological niches in the Southern Gulf and the Strait change, which is one of the reasons, we think, in science, that there is high abundances of lobster and snow crab.

For example, I didn't mention snow crab because it wasn't relevant to this discussion in the Strait – there is always kind of sort of tug and pull. One species goes down and another species has the ability to come up. With groundfish, I know our department is very concerned about rebuilding stocks. And we're in the process of doing a rather, I think, a large effort in the upcoming years to see what can be done to increase those stocks.

Chair: Jamie Fox.

Mr. Fox: Just two final questions there, Chair.

I'm interested in the temperature of the water. One thing I've noticed – I do a lot of fishing for salmon and stuff – I've noticed a definite increase in the last while the water temperatures increasing. How much variance have we seen in Northumberland Strait?

Doug Bliss: I can't answer that precisely, but it's one of those things I wanted to bring that information. We didn't have time to put it together for you, but we will follow-up to be able to give – to provide the committee some information about what the trend looks like.

Chair: Jamie Fox.

Mr. Fox: Thanks, Chair.

Final question, given everything you've presented today and everything I've heard am I safe in saying that the Northumberland Strait between the west and the east points would be the most sensitive ecological area in that region?

Doug Bliss: So the Northumberland Strait between the east – so that's the entire Strait – is that sort of what you mean?

Mr. Fox: Yeah.

Doug Bliss: I guess the way I would characterize it is the Strait is different than the rest of the Southern Gulf of St. Lawrence. It's shallower, it heats up faster, it gets colder because of ice. So it has a higher – a lot more variability, and more subjected to land use activity. So I don't know if you can quantify it.

I think the ecosystem studies that have looked at it have noticed some changes, but we're still not at the point to be able to sort of be able to definitively say whether things are trouble. We don't think things are in trouble. The Strait is still pretty healthy, but we do see changes like very, very high abundances of lobster and low abundances of groundfish. It's sort of an open question about whether that's good or bad.

Mr. Fox: Okay, thank you.

Chair: Alan McIsaac.

Mr. McIsaac: Thank you very much, Chair.

Really great presentation. I really enjoyed the slide you had there, reminded a few years – well 30 years ago, I was talking to one of our former meteorologists here and he was explaining about the tides in the –

Doug Bliss: Right.

Mr. McIsaac: – Gulf area. He said the Gulf is like a saucer, and it kind of rolls and the tide goes with it –

Doug Bliss: It does.

Mr. McIsaac: – and that's how it works. It's a pretty good description, and showed up here again, except when you get to the Strait. When you see in the Strait the areas of high flushing there's areas that are very limited and that would be in the South Shore of PEI and in what we call the Three Rivers area and in between that, the area that we're most concerned about in Southeastern PEI it seems like it circulates a lot, but there's not a lot of activity over there. This is where our concern is, it's that outflow pipe coming from the plant goes into that. Is it just going to circulate around there? And your other slides farther on show that it's a very prolific breeding ground for different species.

So these slides are really crucial in pointing out the fact that this is highly sensitive, extremely important breeding grounds and why would we ever allow anyone or any company to do anything to jeopardize that? So am I picking that up right or is that just – are the graphics really true in the fact that this is so crucial to our fisheries?

Doug Bliss: Well I did notice in my commentary, or note in my commentary, that there are, as you pointed out, there are known gyres at either end of the Strait. In order to detail and to look specifically the questions that I'm sure that you have about this is – would require – we do modelling at a large scale so we haven't because we're trying to cover very large parts of the ocean. In order to get that information, and it's very doable, to be able to do it a project to actually look at in finer scale in the eastern part of the Strait to see exactly where things go and things track. Very doable, just we haven't done it because we work on a large scale.

Chair: Alan McIsaac

Mr. McIsaac: Thank you, Chair.

Just in presentations we've had from our fishermen too, they're seriously concerned about this, that's for sure. I think we all know that, too. So I think it's incumbent upon all of us to make sure that this message gets out to everyone so they really understand exactly the situation of what a pipe going into that area can do.

Again, you showed the other graphic of the lifecycle of the lobster for one instance, and we know from the discussion we had earlier with our fishing association that the time that larvae is in the water column and it gets into fresh water or warmer water it is certainly not good for the lobster. I don't know.

I thank you for the graphics and I thank you for the presentation, but I wish everyone could see just exactly the way the currents work there so they'd know that when a pipe goes out dispersing the fresh water and warm water how it can affect the species that so many people in our province rely on for our income.

Thank you.

Chair: Okay next on our list we have Minister Biggar.

Ms. Biggar: Thank you.

Couple of questions, some may be off topic, so if you don't want to answer those you can probably get me that information later.

Doug Bliss: I'll defer to Serge.

[Laughter]

Ms. Biggar: Okay.

First of all, in regard to the presentation is that something that we could access for presentation on our website or anything like that? That we could have this or is there a specific reason we couldn't have the slide deck to be able to?

We have it? Okay.

Chair: Yes, Ryan will distribute that to all of us.

Ms. Biggar: Okay, okay. I just want to make sure we're able to use it.

Doug Bliss: And minister, all of the information that we have provided is essentially public information that was spread over –

Ms. Biggar: It's public now I guess anyway.

Doug Bliss: – many different reports and things like this. It is in our information as publicly available.

Ms. Biggar: Going back to the – Chair?

Chair: Yes.

Ms. Biggar: Going back to the coastal marine map, if we could?

Doug Bliss: Probably this one here, right?

Ms. Biggar: Yeah. Are you able to zoom in on that? I'm just interested in that legend and the explanation that goes with it because I can't –

Doug Bliss: Yeah so this is a – and again, I was just trying to use this as an illustration because I didn't want to – but this is actually from the study which is the second one in the Northumberland Strait Environment Monitoring Partnership. They sampled nitrogen loading coming off the land in many rivers, and so the legend is talking nitrogen loading in terms of kilograms per hectare per year. It's a measure of how

much nitrogen is going into the water from the land.

In salt water, nitrogen is the one that drives eutrophication in plant growth, which is why when you're doing salt water studies you want to focus on nitrogen. So the dark green is lowest scale and then it goes to yellow – see it goes through the greens, yellow, and then red. It's sort of like a stoplight approach where the red is about 10 times more than the dark green in that one. But again this is just for illustrative purposes.

Ms. Biggar: Well I live in the land of the Malpeque oyster.

Doug Bliss: Okay. That would be green.

Unidentified Voice: Up in the green area.

Ms. Biggar: Up in the green area there. So that's certainly a concern right across PEI, I know there's other oyster areas, but that's my home base.

There's been some discussion and some different studies about how having oysters in bays will help filter that out. Have you done many studies on that, as to if there's a bay that is in need of more filtration the correlation between having more oysters placed there to help filter it out? I've seen some really startling examples of a piece of water that was totally – you couldn't even see through it, and then you put the oysters in and it filters it right out, clear. I'd be interested to know what kind of projects or research you're doing around that.

Doug Bliss: So yes I guess this is off-topic.

Ms. Biggar: It is, and I apologize.

Doug Bliss: I can tell you directly that I have a team of people who do a lot of work on that. We have a program within Fisheries and Oceans Canada's science sector which is called the Program for Aquaculture Regulatory Research. We've conducted an awful lot of research on the estuaries of PEI. To get at, in sort of our lingo, we call it to look at the care and capacity; and so the influence of nutrients going into the estuary and whether if – the interaction and whatnot. So we actually have a number of studies and have done an awful lot of – well not an awful lot.

We were participating in a big presentation not only a month ago, I think, talking about that in Malpeque Bay. So, certainly could come back if you were interested –

Ms. Biggar: Sure, okay.

Doug Bliss: – and provide you more information, but I think the short answer is yeah, we've done a lot of work on that –

Ms. Biggar: Okay.

Doug Bliss: – and we have a fairly good idea of the interaction between nutrients and shellfish and the water quality in the bays.

Ms. Biggar: And just –

Chair: Minister Biggar.

Ms. Biggar: – just to finish up I guess, in regard to your presentation overall and the importance of us understanding what the effluent pipe going out into the strait could do, I think it's very important that we do have all the facts before those final decisions are determined on what's the best course to take. Ultimately we do not want our industry wiped out by a decision that we can't reverse.

So that would be my comments, and I thank you for your presentation.

Doug Bliss: Thank you, minister.

Chair: Next we'll move on to Peter Bevan-Baker.

Dr. Bevan-Baker: Thank you, Chair, and thank you, Mr. Bliss, for your very informative presentation.

I'm going to focus initially on the area in the central region of the Northumberland Strait there where you –

Doug Bliss: Okay.

Dr. Bevan-Baker: – describe the water as sloshing around. Sloshing back and forth, excuse me, was the phrase that you used.

Doug Bliss: Yes.

Dr. Bevan-Baker: And it's also the area most prone to temperature fluctuation – it's

the warmest in the summer – looking at the map that was up there a minute ago, probably the area that's most prone to nutrient loading as well, which may or may not be exacerbated by the plans for the effluent pipe from Northern Pulp.

So the first question I'd like to ask is: In that central region where the water is sloshing about, how many tidal cycles – do you know the answer to how many tidal cycles it takes for the water to actually be flushed out of that area?

Doug Bliss: No, I don't, but I'm sure we could provide that information.

Dr. Bevan-Baker: Okay.

Doug Bliss: It would certainly be less than on either end, obviously, just in terms of by looking at the graphics and how the water movement works, yeah.

Dr. Bevan-Baker: Which would make that particular area of the Gulf, which is adjacent to Charlottetown and a lot of recreational, never mind the economic reasons for protecting that area – would that make that particular area the most liable to the creation of a dead zone or an anoxic area?

Doug Bliss: Are we talking about the central part of the Strait again?

Dr. Bevan-Baker: Yes, where the water is moving less freely, it's more stagnant.

Doug Bliss: I guess what we can say is that if you have less water exchange, then that sort of thing is a possibility; but it really depends upon what your current oxygen levels are and what's driving the oxygen levels down.

So we haven't – I believe in those two studies that are referred to there, there weren't any, I didn't mention that, but their – if you just let me look at my notes from that, I think I might have made a personal note to myself about that, if you can just let me check for a minute.

All right, so what I can tell you: The impacts of nitrate loading in estuarine ecosystems, which is what you're referring to, are well-documented as nutrient enrichment

promotes plant growth such as algae blooms which can depress oxygen levels.

During the course of those studies, they did try to study anoxic events when there was almost none or no oxygen in the water, and they have found some estuaries where just in the estuaries, not in the Strait itself, where there have been anoxic events recorded.

We don't know very much. Because the study was emphasized on Prince Edward Island, we haven't done the same kind of follow-up on the southern side, so the New Brunswick and the Nova Scotia side.

One of – the authors of those two reports had noted that they focused their efforts on looking at estuaries, and future work needed to look at whether there was a connection between what's going on in estuaries in terms of nutrient loading and oxygen levels and the Strait itself. That's sort of under the term of people know it's something that needs to be looked at.

Dr. Bevan-Baker: So currently – just to be clear, Mr. Bliss, there has been no report to date of an anoxic zone or dead zone in the Northumberland Strait?

Doug Bliss: Not that I am aware of.

Dr. Bevan-Baker: Not that you're aware of, okay.

You mentioned in your presentation the temperatures in the Northumberland Strait have been rising over the last decade –

Doug Bliss: Yes.

Dr. Bevan-Baker: – although you didn't have a graph to show that and Mr. Fox already asked –

Doug Bliss: Yeah.

Dr. Bevan-Baker: – what the specifics of that are, but you say you don't actually have that available.

Doug Bliss: I don't have that available today.

Dr. Bevan-Baker: Okay.

Doug Bliss: But we will provide that information.

Dr. Bevan-Baker: Okay.

Doug Bliss: It's probably not dramatic in terms of – like, it wouldn't be many, many degrees. It'll probably be partial degrees, but all of that is – you know, on an ecosystem level, that could or could not be significant, but definitely there's that positive trend.

Dr. Bevan-Baker: I'd like to move on to the potential – and of course, it is only potential because no decision has been made yet – about the effects of an effluent pipe being brought out into the Strait.

I'm referencing a letter signed by Serge Doucet, who's with us this morning from DFO, regarding the potential impacts of such a pipeline. I note from the letter that you refer to section 35 of the *Fisheries Act* and saying that your department would review only the physical impact from proposed construction projects and that DFO, and I quote: will not be reviewing any components related to effluent discharges or impacts.

I was quite surprised by that. I would have imagined that something of this scale that you would look beyond just the physical implications of the pipeline, but that you would actually take into account the potential effects of the effluent on an ecosystem, particularly one as sensitive as the Northumberland Strait.

Since you're here this morning, I'd be interested if you could expand on that and explain why DFO would not do any reviews related to the effluent.

Serge Doucet: Thank you, Mr. Bevan-Baker.

That's why I brought the team here, and it's the division of responsibilities between the Department of Fisheries and Oceans and Environment and Climate Change Canada. That's why Mr. Wambolt is here, and he'll be able to provide you a bit more of that context and background on that reasoning.

Mike Wambolt: Thank you for the question, Mr. Chairman.

My name is Mike Wambolt with Fisheries and Oceans' Maritimes Region. What happened in 2014, there was a designation order done by the federal government where they assigned all administration and enforcement responsibilities of section 36, it is, which actually covers the effluent and deleterious substance regulation under the *Fisheries Act*. That was assigned over to Environment and Climate Change Canada.

Previous to that, there actually was a memorandum of understanding since the 1980s, really, that most sections of (Indistinct) 36 were actually administered by Environment and Climate Change Canada. The pulp and paper effluent regulations are a regulation that falls under section 36, and that's part of the administration.

That's one of these things. That's why we said why we were only looking at the physical impacts, because the effluent regulations are administered by Environment Canada, so we would only look at the physical impacts of the project under section 35, which is the serious harm to fish that are part of a commercial, recreational or Aboriginal fishery.

So that's where we come in. We will do that assessment of the physical impacts from the installation of the pipe, and any components of the effluent or the effluent impacts would actually be Environment and Climate Change Canada. We work with them fairly closely, so the information like we've seen here today; we would share all this information with them, but the actual regulations are under their administration.

Dr. Bevan-Baker: So am I right in thinking there's nobody from ECCC here this morning?

Serge Doucet: No, there isn't.

Dr. Bevan-Baker: Okay.

I'd like to move on to the herring stocks. Of all of the pelagic fish that you noted up there, the graph is not encouraging. You can see that steady decline over the last number of years; but that was not one of the fish that you designated as being critical or threatened or endangered. I can't remember the actual designation you gave it, Doug.

Doug Bliss: This is – we call that something between the red and the yellow line up there is called the cautious zone.

Dr. Bevan-Baker: Cautious zone.

Doug Bliss: Yeah, so fishing and activities are still permitted, but tighter regulations and tighter control, yeah.

Dr. Bevan-Baker: Right. I note that there's been a draft executive summary of the 2018 herring stocks. It hasn't been peer-reviewed yet, but I did read through that yesterday and it certainly cast doubt on the sustainability of the stock, and it points to certain vulnerabilities, one of them being that there appear to be a larger percentage of one and two-year-old herring, not yet sexually mature, than there have been in the past, which clearly questions the sustainability of the stock.

I'm wondering when you see a graph like that that's been in steady precipitous decline for as long as that has and you have the most recent executive summary just from earlier this year, which points to vulnerabilities, at what point do you intercept – because we're still allowing a couple of thousand tonnes of spring herring to be caught in this area.

I have a couple of questions on that but the first one is: At what point do you stop those quotas from being caught?

Doug Bliss: Do you want to deal with that one Serge?

Serge Doucet: Surely. Again, the recommendations that come from our science division to our resource management folks, with some of those numbers help determine those management decisions.

We've seen over the last number of years a continued reduction in total allowable catch and once we get to that red line – if you want to call it that, that's when we'll see more drastic measures that will occur from our resource management decision.

So again, this year we've seen a reduction in quota again this year and if trends continue, we will continue to try to manage the available stock with the pressure required by

harvesters to want to get out and fish the stock.

We take the science advice on an annual basis and continue to make those decisions based on the best information that we have.

Chair: Peter Bevan-Baker.

Dr. Bevan-Baker: Thank you Chair.

I realize, of course, that every species is unique and different, but how much of a parallel is there between the graph that we see there and the Atlantic cod situation that led to a complete collapse – and very suddenly, in similar waters or regional waters.

Serge Doucet: A parallel between this graph and cod – it's not something that I think that we've actually looked at in that context, sir. It's something that we could definitely try to model and see if there are any parallels. Again, we're talking back what I believe it was 1994, or right around that time.

It's something we'd have to go back and look at, but it's not something that we've actually looked at in that manner.

Dr. Bevan-Baker: Of course, herring stock is critical for a number of issues and it's great to see that the lobster stocks are healthy and there are certainly no immediate concerns.

However, in order for our lobster fishers to catch those lobster, they need bait and herring is the preferred bait here, it's the most readily available and affordable bait.

I think – lovely that lobsters are doing well and rock crab are there, but without the bait available for our fishers, it doesn't matter. Or they're going to have to buy more expensive bait and import it.

I am concerned about the health of the herring stock and I know I – I'd like to quote from Jenni McDermid, who works in your department and she says: that science is just one factor considered in setting quotas, it would be worth talking to fisheries management and finding out why quotas were set the way they were.

She alludes to the fact that scientific information is only one factor which is used in coming to a decision on total allowable catch. Would you like to make any comment on that? You're the scientists, you provide the information to the politicians: what other factors are they considering when they set total allowable catch beyond science?

Serge Doucet: So there are definitely the socioeconomic factors that come into play, historical catches and current access and pressure on the stocks that come to consideration as we make those decisions.

You spoke briefly about the need for herring for a number of different – if you want to call it end users – it being either bait fishery, the herring world fishery, the smoked herring fishery. So there are a number of areas or industries that are dependent upon the species and again we take all those elements into consideration and using the precautionary approach as Mr. Bliss identified, there are some lines that we will not cross.

Currently the herring stocks are of concern and we share that concern and again, managing through it as best we can to ensure that we don't get to a point where the stocks are in that dire need or becoming that extinct or – what would it be called – endangered area, I guess.

Unidentified Voice: At risk.

Serge Doucet: At risk.

Chair: So Peter I'll give you one more and then we'll put you back on the list and give the others an opportunity?

Dr. Bevan-Baker: Sure, I appreciate that, thank you Chair.

In that case I'll move on to – there's been a lot of news recently about the health of marine ecosystems and just yesterday there was news that the oceans are absorbing far more heat than we imagined previously so another example of: we don't really know how much we don't know at the moment.

But clearly and you described the – I think you were talking about the Northumberland Strait rather than the Gulf of St. Lawrence,

but you talked about it being a resilient ecosystem, but one that's also in transition.

Serge Doucet: Yes.

Dr. Bevan-Baker: One of the transitions – and I want to talk a little bit about the University of Washington report that came out about two weeks ago, I believe it was, on the anoxia in the deeper water layers of the Gulf of St. Lawrence and I realize that's not the Northumberland Strait, but I would like you to talk a little bit about the implications of that for the fisheries and the health of the ecosystem. The marine ecosystem but the Gulf in general and what you foresee in the future as these ocean currents – the Labrador Current and the Gulf Stream are clearly changing.

Serge Doucet: I guess how I'd respond to that is: familiar with the University of Washington report and how it was reported in the media.

I would say the way it was reported was not totally descriptive of the situation in the sense that our scientists who are doing the oceanography in the Gulf of St. Lawrence have noted that particularly in the Laurentian Channel – in the deep parts of the Laurentian Channel – there are some trends, that we are seeing anoxic trends at the bottom of the channel.

There is no evidence that that has started to happen in the shallower waters, but that being said, it's certainly on our radar. We are trying to track those things.

These sorts of things with depressed oxygen levels are interconnected with temperature, are interconnected with ocean acidity – which is another area that, we in the science sector, are starting to pay more attention to. So, 10 years ago no one was looking at the pH of the oceans for example. We are now.

But that being said, it will take us a few years to develop enough data to be able to see trend lines on what's going on.

In terms of anoxia, as I say, our information, again, is at the larger scale. We know that the presence of depressed oxygen is in – we see in the deeper parts of the Laurentian Channel, particularly up towards Anticosti Island.

We don't have any evidence of that to date on the shallower areas, except where we've done work, obviously, in costal estuaries – which is a slightly different reason why there would be anoxic events. But all that to say is that we're keenly aware that the ecosystem is changing and we're trying to make sure that we are at least monitoring what needs to be monitored to understand what's going on.

We recently started a pH program. In a few years from now we'll start to see what – if there are trends in ocean acidification which clearly is a huge concern for anyone who relies on animals, rely on calcification of their shells or their exoskeletons.

These are all sort of relatively new areas for us, but that we are paying a lot more attention to.

Chair: Darlene Compton.

Ms. Compton: Thank you, Chair. I'd like to thank each of you for coming out today.

You talked about 26A which is in my stomping ground for sure and I'm sure most of the fishermen in that area would be quite happy to hear the lobster stocks are in very good shape there. Peter touched on the herring stock and I was going to bring that up that it's a huge concern for all the fishers.

Just to, I guess, we're concerned – the top of mind right now is the effluent and how that's going to affect the Strait.

You talked about DFO versus the Department of the Environment and how you don't really – it's their issue right now more than yours, but you work together.

We all want to see a federal study. We want an extended study on how this is going to affect the Strait. Can you share with me either you or Mike, or Doug, about if there was a federal study, would DFO be more involved? Would there be more consultation? Would they – can you speak to that at all?

Mike Wambolt: Mike Wambolt with Fisheries and Oceans.

I can't speak for the Canadian Environmental Assessment Agency directly.

I can say we would be involved the same as we would be involved in provincial EA. We participate and we do work very closely with Environment and Climate Change Canada and provincial environment as well.

I can't critique the difference between a provincial EA and a federal. That would really be their mandates to sort of speak to, but there likely would be a little bit more consultation. The federal EAs typically are a little bit larger, longer, and they do a broader consultation, so I don't want to speak for them entirely, but we would be involved either way. We provide this type of information that Mr. Bliss has pulled together today to either/or to assist them in making decisions and so we provide – we're an expert advice department under either environmental assessment.

Ms. Compton: Yes, on that we know the federal assessment I think would be almost a year. So there would be a longer timeframe for there to be engagement and involvement from both departments.

I talked about the tidal flow in the Northumberland Strait. I've got some sailors in my family and talked about this just recently about where that effluent is going to go and how far it will go, and they say: Well, from northeastern Cape Breton to the Magdalens and then up to the Tryon (Indistinct) – that it would affect all of that area for sure and then beyond. I know I was watching your slides there to try and get a feel for how much of the area would be affected.

I talk about 26A because most of the fishermen from District 4 fish there, but it's a bigger picture and I just wonder if you could comment a little bit more about the tidal effects on where that effluent will go and how far-reaching.

Doug Bliss: Thank you for the question.

It's Doug Bliss speaking.

Again, what I had mentioned to your colleague is imminently doable doing those kinds of studies. We haven't done them; doing them at a finer scale. It's called dispersion modelling. Part of the outcome of those environmental studies I was referring to, there's a very good 3D model which

means you look in three dimensions of water flows in the Strait and it's already been used for looking at dispersion of things like lobster larvae and these sorts of things. All that is to say that this can be done.

Once information is available in terms of location and what you're actually talking about coming out of the pipe, then these things – totally within applied science to run the models to be able to give predictions about where these things – the extent and water quality and these sorts of things.

Chair: Darlene Compton.

Ms. Compton: Just one final comment on that.

So, you know, it is doable. The science is there and we had Northern Pulp here and really, there was no science, is what they said. There's no science done so our concern here on the Island, and I'm sure in Nova Scotia and New Brunswick is when will the science be done? Is there going to be time for the science to be done? Because if we're not going to go to a federal study, are they going to take the time to see the tidal flow and where it goes? Are they doing – does anyone have that answer? Because Northern Pulp didn't seem to, DFO doesn't seem to.

We're just trying to get to the bottom of what is the best way forward and who is going to be involved in the process? Who is going to make the decision and look at the science? I just don't know if you can comment anymore on that as DFO or as the fisheries protection biologist, or – I know it's really tough to say, but everyone is involved in this and everyone should be involved. But, if we don't go to a larger, longer study, are we going to see the science – is the question.

Serge Doucet: I guess from a response, Ms. Compton, again, I think that from a regulatory perspective, we're bound by what we're required to do and as Mike spoke about, we are advisers to the different either federal or provincial EA processes.

As those processes evolve, we'll be asked to provide some of that information and we will at that point in time. But again, we're kind of limited by our scope as the Department of Fisheries and Oceans around

what we can do and what we cannot at that point in time. As required and requested, we'll provide that input – we'll entail that research and modelling and provide it to the regulators to make some of those decisions.

Ms. Compton: Thank you, Chair.

Chair: Minister Palmer.

Mr. Palmer: Thank you, Chair.

Thank you for the presentation. It's really informative and I think we all have learned a lot today with this.

Doug, I had a question for you around – one of your slides showed the juvenile lobster are abundant east and west.

Doug Bliss: Yes.

Mr. Palmer: How far do lobster roam? How far will they go from where their home base is to come back around there? What's the distance of territory?

Doug Bliss: Right, so what we know if we look at this graphic – sorry, Doug Bliss speaking – on the lobster cycle, we know they float around in the water column after their first hatch. So it would be the stage one, two, three, and four before they sink out.

A great deal of their movement actually happens in that portion of their life stage, and that's where currents become very important in terms of dispersing the animals before they settle down. So, there have been lots of tracking studies and stories about some lobsters wandering, doing a walk-about and going places but generally speaking, they can migrate but it would be on the tens of kilometres rather than the hundreds of kilometres kind of range.

It's interesting, when we look at – what would be a good graphic? Well, we can use anything – if we look at the Northumberland Strait, this is a recruitment slide, and you can see that there isn't a lot of – or measurement of recruitment right in the centre of the Strait and this is actually partly – this goes back to some of the other questions – this is partly because the water flows in the centre of the Strait are much smaller than on the western part of the

Strait. So, you're not getting a lot of lobsters – I mean, if we were to look at the middle part of the central part of the Strait around the Confederation Bridge, a lot of the lobsters that are caught there do not come in from the outside because they don't get dispersed. It's the ones that are born there. They grew up there and they sort of stayed there, where you get a lot more interaction in other areas where the water currents are higher.

We do know that there is some migration, and animals do this when there are a lot of animals, they like to go the same way. We don't always like to stay in the crowded bar, they sort of disperse. We do know that there is some movement in the summertime of adult lobsters where it's crowded on the ends. They do walk into, sort of, the centre of the Strait. But again, that's sort of at the scale of tens of kilometres perhaps, and not hundreds.

Chair: Minister Palmer.

Mr. Palmer: So, at the early stages where they're kind of riding the current to wherever –

Doug Bliss: Floating out, yeah.

Mr. Palmer: – it's going to go. I guess the reason that we would see the abundance of them there is because the current is not pushing them somewhere else, so they're being born. They're kind of going around in a circle and kind of land back in the same place because of the current flow.

Doug Bliss: Yeah.

Mr. Palmer: Is there any related research that will suggest that if they don't like the habitat where they land, that they can get out of there and go somewhere else? Because I think what we're seeing here is if there's a pipe coming out and there's fresh water being pushed into that area, those lobster are trapped, more or less. Is there any research that will show that if they don't kind of like where they are they'll get out of there?

Doug Bliss: I think what we can say with a species like lobster, which are generalists, they're quite adaptable. And not only do they tolerate environments that perhaps aren't ideal for them, but like we see with

crows or other species, if they don't like it they'll move.

I think the answer is: If something – because they have the ability to move. If they are subjected to areas that they don't like, I'm guessing – I can't refer to any scientific studies. I'm sure it's been done, that would show that they move out of an area that is inhospitable to them, yeah.

Chair: Minister Palmer.

Mr. Palmer: Final one.

So if they could move, which that makes sense to me, that they don't really like the area where they are, they'll get out of there. They'll avoid it. So if there's warm, fresh water coming into an area and our currents will just have it spinning around in that area and it doesn't really flush well because of currents, then could we assume that whatever stocks are there, lobster or whatever, will just kind of avoid that whole area and just get away and go to somewhere else that they can thrive in?

Doug Bliss: Can we assume that? I think that seems like the natural thing for animals to do, but then you get into all this stuff. If you move out of a place and then you go into a place that's really crowded they may not like that, too. So it's really hard to say exactly how they'll – you know, on a local level you can see that, but if the animals are moving from one spot and they're going to another spot where there's 100 lobsters in very small area probably – and they're pretty aggressive to each other. They're known to be cannibalistic and these sorts of things.

I'm sorry it's not a straight answer. It kind of depends about what's going on.

What we do know, I think, about scallop, for example, which can't move. We know that as a species they are more sensitive to some of these environmental things. We know that shellfish, in general, not only scallop but shellfish they have pretty, until they evolve over which would obviously take some time, they have some limits in terms of what they can tolerate. In terms of fresh water and temperature and these sorts of things and they can't move.

Mr. Palmer: Okay, that's good.

Thanks.

Chair: Colin LaVie

Mr. LaVie: Thank you, Chair.

I appreciate you coming in. This is a lot of information to absorb and as a committee for agriculture and fisheries; we've got to get all our information gathered in from all resources.

Just go to your title map again, and just –

Doug Bliss: This one here? Is this?

Mr. LaVie: No, that one.

Doug Bliss: Okay

Mr. LaVie: The member McIsaac, he was mentioning that, and hon. Palmer. The currents right there and the eastern around the southern part the currents are just going in circles and circles. That's not necessarily what happens. They just don't go in circles and circles and circles. They spread out. You know, there's tides there that can do 2.5 knots or 3.4 knots when they – it just doesn't circle in one area, like everything just doesn't settle right there. Those tides are going east and those tides are going west, so everything goes either way.

Again, to the hon. Palmer, there's no scientific research, and the big issue is the pipe coming out of Pictou. That's why we're gathering all this information. What happened – I'm a fisherman myself, and what happened to me where I fish there was a fish plant and they were putting stuff out into water in a pipe. It never killed the fish, but the fish didn't go into the area. No fish, no crab, no nothing went into the area. We couldn't get the scientific research on it; nobody would want to do it. So the fishermen just moved out of the area because there was no fish, but that plant closed.

So when that plant closed, where did we start fishing again? We started fishing in around the end of the pipe. We couldn't get the scientific research. Dave probably remembers that. I'm just putting that out

there, in case you don't get the scientific research. There are a lot of questions.

Jim, is it Jim? No Mike. You mentioned that you deal with the pipe; you don't deal with what comes out of the pipe. So do you have any concerns with the pipe?

Mike Wambolt: The physical impacts from the pipe insulation?

Mr. LaVie: Yes.

Mike Wambolt: So that's – the insulation of pipes is a standard process where we look at all kinds of pipe and intakes and cables. It's a regulatory review process.

Our concerns are related absolutely to the impacts from the physical implications of the pipe, and we may require a *Fisheries Act* authorization and other types of regulatory tools that we can put in place. Similar to other harbours and things that are developed, we have a process that they can apply for that. If there are impacts we can offset or create other projects that will offset some of those impacts. That's part of our regulatory process. We will look at that physical impact, and we will – you know we do have concerns about it because if it's impacting important habitats such as eel grass beds and things like this we will review that very carefully.

We can't make any determination until we actually find a final root and actually submit the information. Because we don't have – we still only have proposals at this stage in the game so I can't make any decision or sort of surmise what they might do with the pipe or how it's going to go in or how the insulation methodology actually happens. All of those things have to be taken into consideration. Yes, I am concerned about the pipe insulation, and we'll review that and all the information provided very carefully.

Chair: Colin LaVie

Mr. LaVie: Okay. Thanks.

So there's no application actually in for a pipe?

Mike Wambolt: There has been an application submitted, but the application

was incomplete – sorry Mike Wambolt again sorry – the application was submitted back in 2017, but the application was incomplete because we don't have final design methodology or actual locations. So they started the process with us, but we basically continue to communicate with Northern Pulp and until they have the specific habitat information specific methodology and design – we have a basic idea of the pipe size, but that's about it. We don't have how they're going to put it in. So we need all this detailed information on habitat and insulation methodology in order to inform our regulatory decision under the Fisheries Act under Section 35.

Mr. LaVie: Okay.

Thanks, Mike.

Chair: Colin LaVie

Mr. LaVie: Thank you, Chair.

Your spring and fall herring, when are the surveys done for those?

Doug Bliss: So we do a couple of different surveys. One of them is for eggs, and then we do acoustic surveys where we go out and essentially try to find schools of fish and measure the size of them. And we do those typically – just trying to remember, because when do we do the herring stuff? I believe we do the herring stuff in June and July.

Chair: Colin LaVie

Mr. LaVie: Thank you, Chair.

So the one, the spring herring, it's well below your line.

Doug Bliss: Yeah, so what we have on the line there now is fall herring. And –

Mr. LaVie: That's fall, on the yellow line?

Doug Bliss: – Yeah, that's fall herring. So the graphic on the left is only fall herring. They didn't present stuff on spring herring because generally speaking it's not fished at this end of the Strait, sorry this end of the Strait, at the eastern end of the Strait. That is a much more restricted. It's already a much, much more restricted fishery for spring herring.

Chair: Colin LaVie

Doug Bliss: I've only presented information on fall herring.

Mr. LaVie: So the herring stocks are in trouble. Did the herring just go north or where's the herring at?

Doug Bliss: Well I think there's been – if you read some of the reports that come out of us and other NGOs who sort of look provide commentary on health stocks there has been a trend for all the – as a grouping the pelagic fishes and the forage fishes. Mackerel is in the same boat, capelin in Newfoundland. There've been systemic changes in the ocean in the last 20-30 years, and it seems to have impacted these species with it. There's a general trend for many of these group of forage fishes or pelagic species that they are showing declining trends.

Chair: Colin LaVie

Mr. LaVie: Thank you, Chair.

So do you follow, say if down around Maine?

Doug Bliss: Yep.

Mr. LaVie: You follow that? So is that all coming north or is Maine – are they in the same situation as us? Maine?

Doug Bliss: Yeah, jeez. I'm sorry, Mr. LaVie, I can't – don't know the answer to that one.

Mr. LaVie: Okay, that's fine.

Chair: Colin LaVie

Mr. LaVie: Thank you, Chair.

So your cod; let's use cod for an instance. When do we do surveys for cod?

Doug Bliss: So, the way our surveys work is in September we have vessel time and the maps that you see on the projection on the wall right now, we cover that entire area in 10x10 grids. There are about 320 stations that we do every year, so we will cover the entire southern part of the Gulf of St. Lawrence doing trial surveys in September;

it takes us about three and a half weeks. We do a similar survey, it's called a mufti-species survey in the Northumberland Strait, and we do that in August.

The reason we do these in August and September is, basically, because that is when we get ship time to be able to do that. Because afterwards, what happens is that we have at our disposal, about four different research ships that cover all of Eastern Canada and we have to do surveys from the tip of Labrador to the boarder of the United States, and into Quebec City. So it's just the matter of during the course of the year, there are surveys being done somewhere in Atlantic Canada waters, using the same ships.

Chair: Colin LaVie.

Mr. LaVie: Thank you, Chair.

In my experience, we never caught cod in the summertime; it was either spring or fall. Does the cod in Newfoundland seem to come back? Northern Newfoundland?

Doug Bliss: If you wouldn't mind, I'll just talk about scientific survey a little bit.

I mean, one of the reasons why the timing of the year, if you have a survey that runs over a number of years, the exact month of the year when you go out shouldn't make as much of a difference as if you were going out only for one or two years. So, if you have 35 years of data, which we do, you'll consistently, out in September or August, see a trend, whether it will go up or down.

Speaking about Newfoundland cod, I don't pay attention to that.

Mr. LaVie: Okay.

Doug Bliss: I'm sorry I can't comment on what is going on up there. I probably know as much about that, in particular, from what I read in the media.

Chair: Colin LaVie.

Mr. LaVie: Okay, that's good for now.

Chair: Okay, thank you very much.

We'll move onto minister Biggar.

Ms. Biggar: Thank you, and just staying on the herring topic a bit, in regard to the stocks declining. I think we all recognize that our local fishers are very contentious fishers. The elephant in the room I'm going to mention is the international (Indistinct) that come into Canadian waters. How much monitoring are we doing of the fish that they are taking out of our waters?

Serge Doucet: So through the international organization of the Northwest Atlantic Fisheries Organization, NAFO, there is a monitoring program and that is managed through our Newfoundland and Labrador office. There is information I could get on what that monitoring looks like, it's not something that we are directly involved with in the Gulf Region, but it is some information that I could get back to you.

Ms. Biggar: Okay, I think that would be important; one more thing.

Chair: Minister Biggar.

Ms. Biggar: Just in regard to the environmental assessment, having gone through them when we laid the cables. I'm very familiar with the stringency that it looked at, the physical impact, certainly, and having to move thing back and forth to be able to meet those requirements.

But I think you said that you probably be asked for some input, perhaps, when it comes to that. I guess I would just ask that what you bring back to that – this Legislature agrees, and I'm don't think I'm speaking out because I think we asked for that – that there be a federal environmental assessment. That is very key to making sure before any decision is made. I would ask you to reiterate that.

Chair: Jamie Fox.

Mr. Fox: Thanks, Chair.

Picking up on something that Colin mentioned and I remember it now. I remember when the McCain's plant in Borden was first put in back in 1991, I believe it is. There are two pipes that were put out there in the Strait and there was great concern over the placement of those pipes and the discharge of those pipes in the Strait by the fisherman. And I do remember

fisherman talking that after that water started being pumped out into the Strait, it warmed the waters and the fish moved. They no longer fished lobster there in that area. So there was a concern over that.

Anyway, it was allowed and the fisherman had to go elsewhere, and it did affect the stocks, from my understanding, in that area.

Now we have McCain's plant dispatch been shut down, several years ago. We are now finally, actually seeing fishing guys, the lobster guys, are back in that area fishing again. I think that picks up on what Colin said, but also, I would say, would be a threat of what's going to happen if that pulp mill will allow to do the exact same thing.

I'm curious on something that you said. You said that you do have concerns, and you mentioned that twice, that you have concerns over the placement of that pipe. I would like to know what your actual concerns are over that and are there any concerns on what is being discharged from the pipe?

Mike Wambolt: I have to speak to those two separate issues. The concerns from the discharge, I can't comment on that. I would have to defer that to Environment and Climate Change Canada.

My concerns around the pipe are similar to any construction, marine or coastal. I do marine and coastal projects review, so I have concerns about any development in the water, so break waters, any sort of coastal development. We review those, we take consideration of all information and the habitat that is impacted to make sure, and we review and use our policies and guidance to make decisions on what we actually have for an impact and whether we off-set it, or what process do we follow, so we can provide advice.

The hon. minister referred to the cable (Indistinct), so that was a regulatory review process. We had a lot of concerns about that. We went through a process and reviewed that project, mitigated that and talked and worked with the proponent to mitigate the impacts, as we always try to reduce the impacts from the physical disturbance. That is first and foremost.

So, we generally review these projects, and that's when I said I have concerns, it is just from the methodology. Any time theirs is impacting of habitat, we have concerns. We try to make sure the proponent is understanding and aware of those, and then we work with them to mitigate them, or offset them if required. So it is a regulatory process that we follow. But again, I'm sorry I cannot speak to the effluent impacts beyond the physical.

Mr. Fox: I'm not going to push you on the issue, but I think you do have an opinion.

Chair: Jamie Fox.

Mr. Fox: Thanks, Chair.

You mentioned in that answer, about the habitat. If I know – if I put something in the water, or if I build something and the direct result of building that is mitigated or whatever the word is, and you try to do your best to protect the environment, but I know that it is going to affect the habitat, why would I approve it?

Mike Wambolt: You're talking about the impact from the effluent? Why would I approve it? Because if –

Mr. Fox: We know the pipe is going to be used for one reason and one reason only. The pipe is going to be used to put stuff out into the Strait, which has a possible affect on the fish habitat, which I think we already agreed that it is a sensitive area.

Why would we approve something under Section 35, if we know there is a possibility there could be a direct impact on Section 36?

Mike Wambolt: We have to differ to Environment and Climate Change Canada. We will provide the advice to them, but we don't comment on the regulations that are administered by them.

The impacts from the effluent if there are any, would be their concern, and we would actually differ to them. So, it would be DFO trying comment – does not comment on their regulations, we just provide expert advice during that process. We will let them speak to any potential impacts, but they really have regulations, and it is completely

under their administration. We have to provide them the information on what we know, but we can't speak to the physical impacts from the effluent itself or from any potential dilatory effects of the effluent, we can only stay within Section 35 because that's what we administer.

Mr. Fox: Okay, fair ball.

Thank you.

Chair: Peter-Bevan Baker.

Dr. Bevan-Baker: Thank you, Chair.

In my earlier line of questioning I brought up, or I repeated, what you had said earlier about the fact that this is an ecosystem that is in transition. And one of the reasons that the lobster is doing so well is that they're resilient and they're adaptable and the temperature of the water is not a huge concern to them. Relative salinity is also not – they're incredibly resilient and adaptable. Not all species are so.

We've mentioned sea grass or eel grass a couple of times in our discussion this morning. I'd like to talk about another vegetation, marine vegetation, and that's kelp.

A couple of years ago there was a disappearance of kelp in the Halifax, Mahone Bay area. Just a couple of days ago there was a report that this is becoming much more widespread and one of the concerns about the loss of kelp – many concerns, one is the rapidity at which it happens. Kelp is a foundational species. It's not only a carbon sink but it's also incredibly important for cod, haddock and sea urchins and a number of other species.

I'm wondering if you have any concerns about the die-off of kelp which has happened in this locale and very recently and very suddenly and dramatically. Not just a small die-off, but 90% die-off or a complete die-off.

Could you speak a little bit about the vulnerabilities about that with regard to the Northumberland Strait?

Doug Bliss: Thank you; it is Doug Bliss speaking.

Thank you, Mr. Bevan-Baker.

I didn't really come prepared to talk about kelp. I can perhaps by analogy talk about eel grass.

I think they provide similar kinds of functions in the ecosystems in terms of providing important nurseries and refuges for many species of fish and shellfish. Of course one tends to be in coastal waters or shallow waters and the other in deeper waters.

With regard to eel grass we know that there has been a trend over many, many years to see decreasing beds and distribution and densities and eel grass and I don't think, in that case – it's a bit of a head scratcher about why this is going on.

All I can say is you know there are a bunch of smart people trying to figure that out, but no one has come up with good explanations for that. I can't speak to kelp directly, but I would assume there would be colleagues not only within DFO but in the academic community would be actively looking at some of those questions.

But to have a die-off of any kind of keystone species, of which kelp and eel grass and plants in particular is always a concern. It's not a good signal in terms of the ecosystem.

Dr. Bevan-Baker: Thank you, and I absolutely agree.

And again, it's the time of flux and time of rapid transition in many ecosystems particularly, but the marine ecosystems are have been described as the canary in the coal mine or perhaps better – the cod fish in the coral reef would be perhaps a better example, or a better analogy.

I talked earlier about the anoxia in the deep water levels and you answered that and I thank you for that. I'd like to talk about the temperature changes in the waters of the Gulf. I know we touched on this earlier, specifically about the Northumberland Strait and I know you didn't bring the data for that with you today.

That report, I mean the IPCC report on climate change that came out just a week ago was pretty dire and said that we need to

get our act together within the next decade or we may pass some tipping points. That IPCC report used the more conservative estimates when it came to the warming of the oceans.

Just two days ago we have another scientific report published in *Nature*. A peer reviewed scientific report which says that the warming of the oceans is actually considerably worse than we imagined.

The upper level which suggests that the IPCC report that we were all so concerned about – well perhaps not all of us but I was certainly concerned about, is perhaps a very conservative description of what's going on.

So I have two questions, the first is: Can you spell out in any sort of specific way – and I realize this is a sort of difficult question, what the consequences of such warming would be for the marine ecosystems here? And again, with the uncertainties I understand that's a difficult question.

The second part of my question is: What in your opinion is the timeline we have for action in order to mitigate that – stop it?

Doug Bliss: Well those are very large questions.

Dr. Bevan-Baker: I know that.

[Laughter]

Doug Bliss: Mr. Bevan-Baker, thank you.

I think when we talk about – and I will just note as well I think you referred to the *Nature* report, I mean the last couple days has also been reporting through papers that have come out that the estimation of how much the world's oceans are actually absorbing of the world's heat is much more than estimated.

I think ecologists around the world, when they are looking at what is happening to the state of the planet are increasingly being focused on the oceans – realizing that it is really the oceans that drive life on this planet, in terms of oxygen production for our atmosphere and many other things it's all connected.

So that's the big picture view, right? Obviously, as I referred to before, have consequences for whether acidification would be decreasing in this case. Actually, pH decreasing; acidification increasing.

I think the consequence of such warming, which I think your question was – is – the way I'm going to answer it is to say that when you get changing temperature regimes you get changing regimes of what species can live in the water.

I'll give you a very good example. The recent trend that we've seen for North Atlantic right whales, we think is driven by their food source, calanus finmarchicus – which no longer seems to be present in great numbers in the Bay of Fundy. It is present in the Gulf of St. Lawrence. So there's an example where we think because of the little animals that are temperature sensitive have changed their distribution that has forced to change the distribution of another, or many other species.

I think we can expect to see the same kind of consequences happening that because the changes in the ocean that are currently undergoing are faster than most – virtually all animal species can adapt to or evolve to that we will see that species will see that the species will start to, within their environmental tolerances, find places in the world where they can live, particularly in the temperature regime, right?

So that brings up the question of: What does that mean for species in the Gulf of St. Lawrence? I think we've already discussed today that lobster seems to be a fairly robust species in terms of being able to adapt to changing conditions.

We simply don't know because, really, I don't think the work has been done on many of these other things like pelagic species. We do know in dealing with herring in particular for example, is unlike when we deal with other fish, they're very sensitive to us when we try to tag them or handle them or do studies on them. They don't like it.

They don't like to (Indistinct). Other fishes, you can put tags on – whether they be sharks or other things like that are very robust and can take some manhandling and go back in the water we do our scientific study.

I think it really depends as the temperature increases – the current thinking now is that the animals aren't going to be able to adapt their physiological tolerances fast enough. We really have to look at, if there's rejection that the water is going to be a certain amount warmer in 50 years from now. We'd probably have to look towards: what are the ecosystems right now south of us look like? Which might be an indicator of what our ecosystems in the future might look like in terms of what animals can tolerate the various temperature limits.

So I think time will tell. We also see similar impacts on – you know, take another iconic species, Atlantic salmon, we know temperatures – they have fairly tight temperature tolerances in terms of what they like and what they don't like. Their evolutionary strategy – they don't have enough what we call plasticity in their evolutionary mechanics, at least at this point in time to adapt to the warming water temperatures.

What we do see is that they're extending their range into the Arctic. There's all this stuff, so I can't answer your question directly. I think we can make inferences about what could happen in the future, and what we would expect is that species who have higher tolerances to warmer water, we're going to see more of them here in the future. Yeah.

Chair: Peter, do you have many more questions?

Dr. Bevan-Baker: Just a couple more, Chair.

Doug Bliss: I sort of rambled around a little bit. I apologize for that.

Dr. Bevan-Baker: No, no, I realize it's a complex question –

Doug Bliss: Yeah.

Dr. Bevan-Baker: – with no clear answer.

Can I reiterate the second part of my question, though? Which was: Given the rapidity –

Doug Bliss: Yeah.

Dr. Bevan-Baker: – and the significance of the changes brought about in the marine ecosystems because of –

Doug Bliss: Right.

Dr. Bevan-Baker: – climate change. The warnings are that we have 10 or 12 years to make some significant changes to the way that humans live on the planet. I'm just wondering, as a scientist, whether you agree with that assertion or whether you have no opinion or whether you –

Doug Bliss: I think for the purposes of this committee I can't give you my opinion. I will not give you my opinion as a scientist. I will give you our departmental position, which I would say is; we're extremely concerned about the rapidity of change that we see in ecosystems and species.

As I had mentioned before, things that we didn't even think about 10 years ago, we're now establishing programs to be able to understand what's happening to pH and what the consequences of an increasing acidic ocean environment is going to be for the species. I think I'll have to leave it at that, sir.

Dr. Bevan-Baker: That's fair.

One last question: you spoke a little bit there about the struggles of salmon moving north of the Arctic, and that the Arctic char are under stress there because of the rising temperature. They have nowhere to go. There's nowhere colder than the Arctic.

Those movements of species around are interesting to watch but also alarming. You brought up the right whales moving into our area. That has caused some serious problems for fishers here, and I don't need to talk anymore about that, but also the appearance of great white sharks and here on – I think it was somewhere up near Campbell's Shore on the western end of the Island, we had capelin rolling on PEI, which is a very unusual situation.

So things are really in flux here, and I'm wondering, relating – but it's not necessarily all bad, yeah. Perhaps that indicates that there are more capelin around, and that's an incredibly important species for some of the other fish in the area.

Having said that, I'd like your opinion on whether the Gulf of St. Lawrence – we have a marine protected area, a couple of smaller ones there now – I'm wondering what your thoughts are on the expansion or addition to the marine protected areas that we have in the Gulf of St. Lawrence now. Do you think that's a wise thing to do or not?

Doug Bliss: Can I defer to you, Serge?

Serge Doucet: You can.

Again, from a departmental perspective, we are working with all our federal partners on achieving the government's goal of achieving a 10%, protecting 10% of our oceans. The Gulf region, as well as our other regions, are looking at all those ecologically significant areas to identify areas of interest that we could identify to protect; and using the tools at our disposal, either through marine protected areas or marine refuges or so on.

Again, that's a process that's ongoing, that will continue over the coming months, with the objective of having, in 2020, having protected 10% of our oceans. Like all regions, and the department as a whole, we're looking at all those areas and consultations are continuing, working with the province here, working with all provinces, at identifying those areas of interest, then overlaying the benefits of those marine protected areas and going through the process of identifying them and protecting them, putting the protections in place.

I don't know if that answers your question, but that's pretty much what we have from a process or the next steps around establishing more marine protected areas in the Gulf of St. Lawrence, but we will contribute to the national goal for sure.

Chair: Colin LaVie.

Mr. LaVie: Thank you, Chair.

Doug, you mentioned right whales. What did you say they feed on again, please?

Doug Bliss: Their primary food source is a zooplankton called *Calanus finmarchicus*; not exclusively that, but that's their preferred food source. That's the Latin

name, and it's an animal that likes colder water, and so – yes.

Mr. LaVie: What is the status on the right whale now?

Doug Bliss: Status? Population status –

Mr. LaVie: Yeah.

Doug Bliss: – or –

Mr. LaVie: Population, where they're heading.

Doug Bliss: So next week there is what happens every year, something called the North Atlantic Right Whale Consortium. At that point in time, the most recent population status, which is worked on by Canadian and American scientists, will be released. I'm not privy to that information, but I can tell you last year the population status was estimated to be about 450 individuals.

Mr. LaVie: So they just don't stay right in the Gulf. Where –

Doug Bliss: Oh, I'm sorry, sir. What's their life history? Their life history is, in the wintertime they make their way down to what they call the calving areas, which are around the Carolinas in the United States. They tend to congregate down there, particularly females and the newborn calves.

Then sometime in early winter they start to make their way up the eastern seaboard. They're often seen off the Boston area congregating in the southern Gulf of Maine in February-March timeline. So we know that in terms of the southern Gulf of St. Lawrence, or the Gulf of St. Lawrence I should say, we produced a scientific report about what we knew about their comings and goings into the Gulf of St. Lawrence. We did that last year and we're going to be updating that at the end of the November.

Our earliest recorded monitoring or – not sighting, but recorded through acoustic means of a North Atlantic right whale in the southern Gulf of St. Lawrence is in late April off Gaspé. That was done, a recording of that was confirmed again this year.

We had an extensive monitoring program this year. Our first visual sightings of the

whales were into the month of May, so we do have an idea of when they're moving in and out of the Gulf. Our last data for (Indistinct) – and this is not necessarily last year or the year before, it's over a period of about five years – but we have recordings, acoustic recordings of the presence of whales around the Strait of the Cabot Strait, as late as early January.

Mr. LaVie: Just one more question: I might have missed it. You might have said it. How far north did you –

Doug Bliss: Pardon me?

Mr. LaVie: How far north were they spotted going?

Doug Bliss: We have visual sightings this year north of Anticosti. We do do surveys off the Grand Banks and around Newfoundland. Occasionally we'll see right whales in those areas as well, but not commonly.

Chair: Okay. On behalf of the Standing Committee on Agriculture and Fisheries, I want to thank Lori, Serge, Doug and Mike for coming in here today, and a very informative presentation and fielding the many questions that we had, and of course listening to our concerns. So with that, you can (Indistinct)

Serge Doucet: Thank you, Mr. Chair.

Chair: Thank you.

Unidentified Voices: Thank you.

Chair: Moving on to number four on our agenda is new business, and I'll acknowledge Jamie Fox.

Mr. Fox: Thank you, Chair. I'll be brief.

Given what these fine ladies and gentlemen have told us this afternoon, I would recommend that we reach out to the Environment and Climate Change Canada group and have them come before the committee on this topic due to what – if they are actually taking care of section 36, then I think they should be brought before the committee and asked to attend.

Chair: Okay, the floor is open for discussion.

Everyone in agreement?

Some Hon. Members: (Indistinct)

Chair: Okay. Thank you, Jamie.

Paula Biggar.

Ms. Biggar: Before the panelists leave, I'm going to propose then – I know that you had mentioned doing a presentation about the research on the impact of oysters in the bays, and the research that's being done on bays that may be not as healthy. So I would like to put that on the floor for members to consider doing – getting a presentation on that.

Chair: Okay the floor is open for discussion. Is everyone in agreement with that also? Great, thank you.

Is there any other new business? So what –

Colin LaVie.

Mr. LaVie: Adjourn.

Chair: Not quite yet.

I just want to give our clerk one moment to go over our work plan, and the status where we're at right now.

Mr. LaVie: Sure.

Chair: Do you have it in front of you, Ryan, or do you need time?

Clerk Assistant (R. Reddin): No I think I can remember it.

The committee has some requests out on this topic. We haven't gotten responses, but last time the committee agreed to bring back or to invite back Northern Pulp haven't heard – a letter went to them, but we haven't heard the reply yet.

The committee also agreed to invite federal representatives on the trade negotiations on the USMCA. A letter went out in regard to that, but we haven't had a reply just yet. I'll let you know when we do get replies, and when we can look at scheduling meetings.

Chair: Paula Biggar.

Ms. Biggar: Just in regard to that, so with the other two requests that we just put in, could we just do our priorities and whoever can come in the short – while we're waiting for answers back for –

Chair: And that's – further discussion on that and I think that's something that we will probably do at this time, Ryan, is see the response that we get back. I would love to see the last request that Jamie Fox has come too.

With that said, I'm going to leave it with Ryan.

Clerk Assistant: One other thing; I actually just forgot to mention, too. There was also another request that the committee previously made about a presentation on buying local and reducing the amounts of imports in agriculture from the department. They're ready to schedule that at the committee's convenience, so that's another thing that can be –

Chair: Okay.

We can work on that. We'll circulate that.

Do you want to repeat?

Mr. LaVie: (Indistinct)

Chair: Call for adjournment.

Thank you very much.

The Committee adjourned