Committee Meeting

of

ASSEMBLY SCIENCE, INNOVATION, AND TECHNOLOGY COMMITTEE

"The Committee will receive testimony from invited guests from the scientific community concerning marine mammal deaths that have occurred along the Atlantic Coast"

LOCATION: Committee Room 16
State House Annex
Trenton, New Jersey

DATE: May 18, 2023
10:00 a.m.

MEMBERS OF COMMITTEE PRESENT:

Assemblyman P. Christopher Tully, Chair
Assemblywoman Linda S. Carter, Vice Chair
Assemblyman William F. Moen
Assemblywoman Ellen J. Park
Assemblyman Christian E. Barranco
Assemblyman Antwan L. McClellan

ALSO PRESENT:

Mikaela Chianese
Suzanne Miller
Office of Legislative Services
Committee Aides

Jonathan Allotey
Jack Barnes
Alexandra Hayes
Elizabeth Theodore
Assembly Majority
Committee Aides

Reina Smrdelj
Assembly Republican
Committee Aide

Meeting Recorded and Transcribed by
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NEW JERSEY STATE LEGISLATURE

ASSEMBLY SCIENCE, INNOVATION AND TECHNOLOGY COMMITTEE

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COMMITTEE NOTICE

TO: MEMBERS OF THE ASSEMBLY SCIENCE, INNOVATION AND TECHNOLOGY COMMITTEE

FROM: ASSEMBLYMAN P. CHRISTOPHER TULLY, CHAIRMAN

SUBJECT: **COMMITTEE MEETING - MAY 18, 2023**

The public may address comments and questions to Mikaela Chianese, Suzanne Miller, Committee Aides, or make bill status and scheduling inquiries to Kimberly Johnson, Secretary, at (609)847-3840, fax (609)292-0561, or e-mail: OLSAideAST@njleg.org. Written and electronic comments, questions and testimony submitted to the committee by the public, as well as recordings and transcripts, if any, of oral testimony, are government records and will be available to the public upon request.

The Assembly Science, Innovation and Technology Committee will meet on Thursday, May 18, 2023 at 10:00 AM in Committee Room 16, 4th Floor, State House Annex, Trenton, New Jersey.

The Committee will receive testimony from invited guests from the scientific community concerning marine mammal deaths that have occurred along the Atlantic Coast. Each invited guest is respectfully asked to provide the Committee with 15 copies of written testimony at the meeting.

Issued 5/11/23

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ASSEMBLYMAN P. CHRISTOPHER TULLY (Chair): Good morning.

Welcome, everyone, to today's Assembly Science Tech and Innovation Committee.

Please stand up for the Pledge of Allegiance.

(Pledge of Allegiance recited)

ASSEMBLYMAN TULLY: OK, Mikaela, please take the roll.

MS. CHIANESE: Assemblyman Barranco.

ASSEMBLYMAN BARRANCO: Here.

MS. CHIANESE: Assemblyman McClellan.

ASSEMBLYMAN McCLELLAN: Here.

MS. CHIANESE: Assemblywoman Park.

ASSEMBLYWOMAN PARK: Here.

MS. CHIANESE: Assemblyman Moen.

ASSEMBLYMAN MOEN: Here.

MS. CHIANESE: Vice-Chair Carter.

ASSEMBLYWOMAN LINDA S. CARTER (Vice-Chair): Here.

MS. CHIANESE: Chairman Tully.

ASSEMBLYMAN TULLY: Here.

MS. CHIANESE: You have a quorum.

ASSEMBLYMAN TULLY: Thank you.

Good morning, everybody, and thank you for being here today.

Like many of you, we're upset about whales washing up on our shores, and are seeking evidence today of what's contributing to it. Today's hearing will be a science-based bipartisan opportunity to take testimony and

hear recommendations from the scientific community about what the State of New Jersey can do to address this issue.

The public has a right to know that their government is monitoring issues of great public interests and concern. But, before acting, we must understand the problem. It's important to hear and understand the facts from the scientific experts, and we are going to take a thoughtful data-driven, fact-based approach today.

We're not here to draw any conclusions, but we're here to collect evidence. As more evidence becomes available from reports conducted for both the State and Federal level, the Legislature may hold additional hearings.

We are obviously very distressed over the increase in large marine mammals washing ashore, and we also know that this can negatively impact the quality of life in our shore communities, which is an economic hub of our state. Twelve members of the New Jersey Congressional Delegation have written letters about whale deaths, and we share their concerns. We want to be part of ensuring that the public and the Legislature is receiving solid scientific information.

I look forward to what we will learn today, and I thank our invited guests for testifying.

And, with that, we're going to start with Shawn LaTourette, our DEP Commissioner.

Shawn, are you here? Here you go.

Commissioner, thank you so much for being here today.

S H A W N M. L a T O U R E T T E: It's a pleasure, thank you for the invitation.

So, I'll start by offering a few opening remarks, and leave plenty of time to address questions, concerns that this panel may have relative to, as you described, Chairman, an important issue -- one that we at the Department of Environmental Protection take with the utmost seriousness.

For those of you who I have not had the pleasure of engaging much with, my name is Shawn LaTourette, and I have the distinction of serving as New Jersey's Commissioner of Environmental Protection.

And, to my mind -- and to the minds of the hundreds of environmental professionals who serve our residents every single day at DEP -- one of the foundational imperatives for us is the management of the public trust. Because every single natural resource of this state -- the air, the land, the water; our open and wild spaces; our fish and wildlife and their habitats -- every single one of these natural resources belong to the people. Not to the government; not to this panel; not to the fine professionals of the DEP who work so hard every day to protect them. Every single natural resource belongs to the people of this state. And, we are charged with protecting those resources -- holding them in trust and ensuring their good care.

And, there's many ways that we do that that are relevant to today's inquiry. One of the ways that we do that is through our management of our coastal resources. So, New Jersey discharges responsibilities under the Coastal Zone Management Act -- the Federal Coastal Zone Management Act, and our State coastal environmental laws. And, those laws require the sound management of marine resources. So, in fulfilling our mission, we regulate activities in state waters, including the development of energy-generating facilities and infrastructure, and we otherwise coordinate environmental reviews across Federal government agencies.

We at DEP expect -- but, importantly, legally require -- that every regulated entity, including offshore wind project sponsors, pursue development objectives, including assessing potential environmental impacts with a sound and responsible approach that requires the avoidance, the minimization, and the mitigation of potentially adverse impacts upon natural resources. That is a fundamental part of our mission.

But, we have another really important mission: We serve, in many respects, as this state's climate science agency. The Division of Science and Research at the Department of Environmental Protection; the climate mitigation and monitoring program; our air quality energy and sustainability program; our climate resilience planning program -- all of these instrumentalities come together to study and to report on New Jersey's climate experience.

And, the truth is that New Jersey is ground zero for some of the worst impacts of climate change. Many of you see this unfolding across your districts. We have a risk of increasing sea levels two times greater than most other places on the planet. We have experienced dramatic increases in extreme rainfall, that many of you on this panel had held the hands and the sorrows of community members as they have lost lives and livelihoods in flash floods. We have an increasing risk of extreme temperature and heat, particularly in our most densely populated areas of this state, and we have an increasing risk of wildfire afflicting many parts of New Jersey.

All of these experiences are outlined in our New Jersey Climate Science Report. And, one of those findings within our climate science report -- which has been previously presented to this Legislature -- is the effect of our climate experience on the ocean. And, this is really critically important,

because as a function of our changing climate, our oceans are getting warmer; they're acidifying. We are seeing changes in habitat. We're seeing changes in habitat, particularly if you were to look at Chapter 6 of the New Jersey Climate Science report. You would see a recognition of the climate effects on the ocean and how those effects are changing the migration patterns of certain species -- including menhaden, which is a prey fish for marine mammals.

And, what is happening? What is happening with menhaden is, as habitat becomes destructed, these prey fish are moving landward. And, as these prey fish move landward, their predators are following them. Their predators include whales. And, as these prey fish -- particularly at certain times of year while migrations are occurring -- as they move landward, whales are chasing them. And, this landward migration is bringing whales into direct conflict with a shipping superhighway that resides just off our coast. A shipping superhighway that has experienced great growth -- great growth in deliveries to what is the busiest port in the nation. And, we are seeing mortality of whales in many instances because of ship strikes as these marine mammals are drawn closer to our shoreline because of changing climate conditions that affect the habitat of their prey.

Now, we take this deeply seriously, and have been working with partners in the Federal government to further study, monitor, and understand these interactions. But, at the same time, what we are also evaluating is, as a function of our routine work with Federal counterparts -- so, for example, the Department of Interior's Bureau of Ocean Energy Management, or the National Oceanic and Atmospheric Administration's Fisheries Service, also known as NOAA Fisheries. Because each of these entities, alongside the

Department of Environmental Protection, regulates infrastructure development -- any kind of infrastructure development. Whether it's a pipeline, a telecommunications cable, an offshore wind project -- without bias or preference to any outcome, seeking *only* to ensure the paradigm that I mentioned earlier: the avoidance of adverse impacts to our environment; the minimization of adverse impacts that cannot be fully avoided; and the mitigation, meaning compensation and restoration for environmental impacts that are not fully avoided or minimized. And, we do this work together with these Federal entities, with respect to offshore wind. Which, as this panel knows, has been identified as a culprit in the death of marine mammals.

It is my hope that this panel takes away a really important point: The culprit is a changing climate, and our inability -- societally -- to get it under control. The 1980s were the last decade to get climate change under control, and we failed, miserably. And, as a reflection -- as an outcome of that -- we have seen increasing temperatures that stress public health; increasing rainfall; extreme weather that has devastated communities; rising sea levels that will deeply affect our shoreline; and the disruption of our fish and wildlife. That's what's on display here.

But, that's not a conclusion that we draw instantaneously because our reports and science tell us. But, through the examination of multiple lines of evidence, we examine whether there is a potential for the exploration and development of offshore wind facilities to have adverse impacts, as I mentioned earlier. And, that happens in two phases: First, with respect to the investigatory phase, because -- as I believe everyone knows, and in case there is any mistake about it, there *are* no offshore wind development

projects under construction right now, and there *are* no wind turbines off the New Jersey coast, and there won't be until at least next year, assuming all permits that are being pursued are received. But, there is exploratory work that is occurring; surveying of the ocean environment. And, I believe some of the folks here today will speak to that.

But, in the work to identify whether that surveying activity could have an adverse effect on the environment, there are numerous studies that are undertaken, and the Federal government -- not the State government -- the Federal government authorizes survey work with certain restrictions and monitoring requirements to ensure the avoidance of conflicts with the species of concern, whales or otherwise.

And, so, what I am trying to convey to you all is that the environmental statutory and regulatory framework that this Legislature and that our Congress, nationally, have enacted over the years, is performing its works. It's doing the job of ensuring the avoidance and minimization of adverse environmental impacts in the evaluation and potential construction of infrastructure facilities -- no question.

But, what that statutory framework and regulatory framework does not do is protect whales from a changing climate. That is the job of all of us, and it is a deeply necessary job that we perform together to ensure a quick and just transition to a cleaner economy. Because with the continued emission of fossil fuels, the continued emission of carbon dioxide and methane and other climate pollutants into our environment, these conditions affecting whales will only worsen. Because, our overall climate experience is worsening at a horrifying pace.

It would be a mistake for this Committee to convene and discuss only the implication of marine mammals, because we are in a climate emergency, and we all have to act together, and fast with due regard for the safety and security of our environment -- the fish and wildlife and all of us who occupy, rely upon, and enjoy that environment. And, we *can* do that, but we shouldn't be distracted. We shouldn't be distracted by misinformation. We should call out disinformation every single time we see it. Because it distracts from the critical work of protecting your constituents from a worsening climate experience that will continue to cost us lives and jobs and threaten our economy -- especially our coastal economy.

So, I implore you to go beyond this inquiry, to consider more broadly the work we all must do -- and fast. Because if we want to save the whales -- and, mind you, I invite all newcomers to the cause -- we have to act fast, responsibly, with due regard for our constituents and for our wildlife. Your DEP is doing that. Join us, please.

I'm happy to take your questions.

ASSEMBLYMAN TULLY: Commissioner, thank you so much for your time today, and your testimony.

You actually addressed a lot of the questions that I have. I do have a few for you, and then I'll open it up to my colleagues.

Given-- If we can just get an idea of what DEP is doing right now. Given that DEP has stated that it's going to continue to monitor whale mortality, can you please explain the criteria that should be closely examined to better understand the uptick in whale mortalities on the New Jersey coastline, on the entire Atlantic as well?

And, to what degree is it the Department's responsibility to identify the reason for increased whale deaths?

MR. LaTOURETTE: So, in the first instance, it is a Federal responsibility, because New Jersey's jurisdiction and obligation is limited to its own geographic scope -- approximately 3 miles off our coast -- in terms of what we can enforce and require. But, we work in concert with our Federal agencies in pursuit, in discharging the Federal Coastal Zone Management Act. The NOAA Fisheries is the primary lead agency for investigating the unusual mortality event that has been experienced since 2016.

So, this is not new. The unusual mortality event has been occurring for several years. And, what the National Marine Fisheries Service examines, among many things -- and this is all available. It's all available directly from NOAA Fisheries, and the DEP has also set up a microsite off of our own website to provide all of the occurrence studies and further information. So, you can see what NOAA is tracking and what we are monitoring alongside them. And, then, we also work with the Marine Mammal Stranding Center when these occurrences are experienced.

So, in terms of understanding cause, I mean, there's a number of things that are done. So, one of the things that is done -- and, this is done by the Federal government -- is examining the carcass of an animal that has deceased. And, so, that is not always possible. It is not always possible to perform what is called a necropsy, given the state of a particular carcass. But, that has occurred over the last several years, and in many, many cases what is identified is vessel strike affecting whales. There is also an uptick in dolphin-related mortality that is under investigation by NOAA. We have experienced, often, mortality on this scale before when that dolphin mortality

was experienced -- I believe last in 2013, but I can double check that. It was identified to be viral among the species. That does occur; these animals do get sick. There are, occasionally, die-offs.

But, with respect to the whales, the overwhelming number that we've seen have been a matter of a vessel strike, as I was explaining, because of the tension between the habitat change and the shipping channels.

There is also a concern that entanglement of commercial fishing equipment also is related to whale mortality, and so you would see that in some of the reporting as well.

ASSEMBLYMAN TULLY: Thank you.

Does the Department have sufficient funding and staff allocated to this issue?

MR. LaTOURETTE: So, the Department's funding for fish and wildlife programs is primarily driven by two sources: Federal dollars and from dollars from hunting and fishing licenses. There is a minimal State appropriation, if that's your question.

ASSEMBLYMAN TULLY: What can we do to ensure a better maintenance of our oceans, given the circumstances? What can we, as representatives with the Legislature, do to assist DEP in this obviously very distressing--

MR. LaTOURETTE: I think, first and foremost, that this Committee can -- and should, if you haven't already -- reviewed our Global Warming Response Act, 80 by '50 report.

So, in 2007, and then updated in 2019, this Legislature passed the Global Warming Response Act. The Global Warming Response Act requires the Department of Environmental Protection to evaluate our

progress toward reducing climate emissions toward a goal that this Legislature set. That goal is to reduce the emission of carbon dioxide and other climate pollutants by 80% by the year 2050. We are woefully short of reaching that goal. The legislation required that the Department of Environmental Protection analyze our progress and identify all of the pathways -- regulatory, incentive-based, legislative -- that could be pursued to effect meaningful climate action.

The solution for our oceans is not just a New Jersey solution, of course. It's a global solution. But, we have to do our part by transitioning ourselves to a cleaner economy. That report tells you how. And, so, to the extent that anyone on this panel or others would like to meet with the DEP about the recommendations that are made there, we are happy to do that.

ASSEMBLYMAN TULLY: Thank you, Commissioner, I'll certainly take you up on that.

I don't want to monopolize all the time; we have a lot of testimony today.

I would like to open up to my colleagues for any questions or comments.

ASSEMBLYMAN BARRANCO: I do have a question.

ASSEMBLYMAN TULLY: Please, go ahead.

ASSEMBLYMAN BARRANCO: So, Commissioner, you made a statement during your opening statement that you made certain affirmations that are very difficult for us here to understand without greater clarity.

Primarily, with respect to the movement of prey fish or the specific temperature changes within certain regions of ocean water that the

science community believes has created different migratory patterns for dolphins and whales. Am I correct in that assumption -- in that interpretation of what you said?

MR. LaTOURETTE: I think that the better way to understand it is not so much of the effect of the ocean on the whale population -- marine mammal population -- itself, but rather, it's effect on the smaller prey fish that they chase.

ASSEMBLYMAN BARRANCO: Right. So, obviously, your assertion is the movement of prey fish have caused large marine mammals to choose different migratory patterns or different areas of the ocean in which they occupy to hunt for food.

Is that correct?

MR. LaTOURETTE: Well, the -- it's the prey fish that are moving --

ASSEMBLYMAN BARRANCO: Yes--

MR. LaTOURETTE: --and the whales are just hungry.

ASSEMBLYMAN BARRANCO: Right, so, it's your assertion that the movement of prey fish have caused marine mammals to choose different areas of the ocean to hunt in.

MR. LaTOURETTE: They're altering course, so to speak.

ASSEMBLYMAN BARRANCO: So, it's difficult for us, obviously not being scientists -- I don't know that anyone on this panel is a scientist, or anybody in the room, for that matter, except for the people who were invited to speak.

It's a little hard for us to just accept the affirmation. So, if there is some proof -- scientific or otherwise -- that these animals are, in fact,

choosing different regions of the ocean to swim in and it's causing either strikes or other sorts of behavior that's causing them to run into a situation where they're being killed, we would like to know that. We would like to have that proof because we're here for marine mammal deaths, right? The climate change issue is a greater issue that we debate every day, we talk about, we try to figure out how to tackle that issue.

We're here today to find out why are these animals dying, right? So, it's a little hard when you make the affirmation that the ocean is changing and its causing the prey fish to move here, mammals to go here, and they're creating situations where these animals are being faced with death where they wouldn't otherwise because of climate change. It's a little hard for us to just assume that that affirmation is real.

So, I hope at some point, Mr. Chairman, that we have a scientist who can confirm your affirmation. Because, if we just accept your affirmation as fact, then this debate is over.

MR. LaTOURETTE: To be clear, Assemblyman, I am not asking you to trust me, I'm asking you to trust the hundreds of scientists who already work for you.

ASSEMBLYMAN BARRANCO: No, that's not true, Commissioner. Everyone here is begging to trust you, that's why you're the Commissioner of DEP.

MR. LaTOURETTE: And, that's why we prepared for you the New Jersey specific report on climate change, and it's effect upon our state.

Because you hear one horrifying piece of information after another from the global scientific community -- they're right, they're not making it up. They're scientists, they're putting it into a report and even

simpler reports for policy makers to help convey the science. That's not hidden from view; that's fully available, you just have to choose to read it.

And, so, we did that here for New Jersey in particular, because the International Panel on Climate Change -- the IPCC -- and the U.N., they prepare reports that are very broad in nature about a global experience. So, we took that information and we evaluated the New Jersey specific experience, and, in 2020, we delivered New Jersey's Climate Science Report. We updated it for you last year, so the information I am offering you about oceans -- it's in there. The science is there, it's available. It's also available on our website -- many reports, that could be read and shared. We share them routinely.

The same is true of NOAA Fisheries. They, too, prepare the information. It's not unavailable; it's not as though there's a lack of science. There is plenty of science available--

ASSEMBLYMAN BARRANCO: I agree with you--

MR. LaTOURETTE: --that, in effect, says exactly what I'm telling you.

But, you don't have to trust me, you could--

ASSEMBLYMAN BARRANCO: That's my -- well, that's why--

MR. LaTOURETTE: You can trust the scientists -- I certainly do.

ASSEMBLYMAN BARRANCO: That's why I bring it up, Commissioner.

Your affirmation of the movement of prey fish and the temperature changes that cause these migratory differences that are causing

-- see, again, we're going to face, in this Committee today, we're going to face convenient and inconvenient facts. That's why we're here.

MR. LaTOURETTE: Yes, I understand. I face inconvenient facts every single day.

ASSEMBLYMAN BARRANCO: Depending on how you feel about this -- but, at the end of the day, Commissioner, what we're here for is, why are we getting multiple-ton mammals on our beaches?

MR. LaTOURETTE: So, I just explained that to you.

I think there's something important to understand. Number 1, I'm not offering you a personal affirmation. I am offering you a summary of sound, reliable science. You can choose to review, in detail, the information that I've summarized for you. But, I'm not asking you to accept my personal affirmation.

And, to be clear, I don't have feelings about it. I am not legally, statutorily, or regulatorily empowered to have feelings about it. My job, the job of the Department of Environmental Protection, is to ensure the sound management of our natural resources and, in the case of development, to, under the laws that this Legislature has created over the years, ensure that as development projects on land, in water -- wherever they may be that could disrupt protected environmental features, including the habitat of marine life -- that that activity is pursued in a manner that is responsible, using the best management practices.

We are, at DEP, chockfull of professionals who know these things -- deeply. And, our work, it is not outcome-determinative. It does not depend on the changing tides of public sentiment. It doesn't depend upon the advocacy of environmental activists long-engaged in this work; nor, does

it depend on the sudden interest of newcomers interested in protecting whales. Rather, it depends only upon an evaluation of sound science and application of a regulatory scheme that treats every single piece of infrastructure the same.

Quite honestly, we don't care whether it's an oil rig or a pipeline or a telecom cable or a natural gas facility or a wind turbine or an electric transmission cable (indiscernible). Every single piece of infrastructure is treated the same, because that's fairness. And, so, we embody -- or, rather, apply -- that principle in the evaluation of whether or not to authorize a particular activity. So, it doesn't matter how we feel.

ASSEMBLYMAN BARRANCO: Thank you for your time, Commissioner.

ASSEMBLYMAN TULLY: Thank you, Commissioner.

Again, you were invited here today as a subject-matter expert, and we certainly rely on the DEP for the information that we're receiving here today. We do have many scientists that will be coming to testify.

So, if there are no other questions--

ASSEMBLYMAN McCLELLAN: I do, Chairman.

ASSEMBLYMAN TULLY: OK.

ASSEMBLYMAN McCLELLAN: If you don't mind.

ASSEMBLYMAN TULLY: Yes, please.

ASSEMBLYMAN McCLELLAN: Mr. LaTourette, how are you doing today?

MR. LaTOURETTE: I am doing well; it's nice to see you.

ASSEMBLYMAN McCLELLAN: Good to see you again, it's been a while.

Quick question for you: Are you familiar with the lawsuit brought on by the Murphy Administration in 2018 that says that the Murphy Administration alleges that using sound equipment to map the ocean floor is very dangerous to marine mammals and should be stopped in the Federal court level?

MR. LaTOURETTE: I think that you might be referring to -- I think what you might be referring to is offshore oil exploration. Can you just be a little more specific?

ASSEMBLYMAN McCLELLAN: Sure, yes.

Offshore oil and things of that nature, but they're using the same equipment from my understanding -- or is it different equipment, is my question to you.

MR. LaTOURETTE: Oh, no, it's not the same.

So, you mean -- when you say the same equipment, let me just make sure that I'm understanding the question, so I answer correctly. Are you asking if whether the oil and gas industry uses the exact same equipment, in--

ASSEMBLYMAN McCLELLAN: As far as the sound mapping on the ocean floor. The equipment-- Is it similar? Is it the same? Is it different?

And, why would -- not to say why you (indiscernible) or know what the Governor is thinking -- but what changes (indiscernible) from 18 to 21 that says that this equipment does not affect the mammals?

MR. LaTOURETTE: I don't think that the Governor has said that, but even if he did, it wouldn't matter -- with all due respect to my boss,

my job is independent of his, and it's to protect our environment, irrespective of any gubernatorial initiative.

And, the-- But, I think the distinction that you might be trying to draw out, Assemblyman, has to do with the different types of surveying equipment that can be used. And, so, one of the things that's available that I'm going to -- the microsite off of DEP's website that I mentioned earlier -- our most recent study is on the effects of that acoustic monitoring.

And, so, I think the distinction that you might be identifying is the difference between the type of surveying work that is being done for the evaluation associated with potential development of offshore wind facilities and more seismic-related surveying.

So, those are two different things. And, one of the most recent studies was classifying these different types of equipment, because it's not all one type of equipment; multiple different types. And, specifically for the-- To evaluate weather, the type of sonar that is used would be disruptive to renounce, and it's not. And, that's what-- Just, again, not a personal affirmation, just a summary of what the science says, the type of sonar being used to evaluate the ocean environment is not the type that would be likely to adversely affect these marine mammals.

Now, there *are* types that could adversely affect marine mammals, but those are not the types being used. But, again, don't take my word for it. I can follow up and go over a printed copy of the study if folks can't find it easily on the website, but it's there. But, there has been some misinformation swirling -- disinformation, really -- that sonar use is somehow confusing marine mammals. That is not the case.

ASSEMBLYMAN McCLELLAN: So, that's not the case?

MR. LaTOURETTE: No.

ASSEMBLYMAN McCLELLAN: So, when you say that -- and, two things can't be true, I'm not an attorney, I know you have the legal background -- but I know if we're in court and I ask you what's affecting them and you're saying, "It's definitely not sonar," but we don't know what's affecting them.

So, those two things can't be true. If you know for certain that it's not sonar, but then on the other hand you don't know what's affecting them, do you think that there's an opportunity that we need to take a step back, 60, 90, 120 days, and try to figure out what's affecting them, if you can't answer that question for certain?

MR. LaTOURETTE: We know what's affecting them. It's not unknown. It's an interesting and very kind of circular inquiry, the idea that we don't know.

We *do* know. We *do* know. The changes to the environment in which these mammals exist is what is causing them-- Now, there are multiple pieces of that equation. There are multiple lines of evidence that are evaluated in order to hone in on cause.

So, by evaluating the sonar question, you're looking at these multiple lines of evidence. You're looking at the changes in habitat; you're looking at the migration patterns; you're looking at the underwater environment and the things being used there, like the sonar. And, together, you form a picture. This is how science is done.

And, so, it's not an absence of information at all. It's not as though we don't know what's happening. We understand what's happening.

ASSEMBLYMAN McCLELLAN: OK, so, if we know what's happening, and then we're going to drill to build these wind farms, is that going to affect the habitat also? You're saying that's not going to affect their habitat. So, hundreds and thousands of wind farms are not going to affect their habitat and cause them to either go -- come closer, because they're running from it, or it's not going to bother them because they're not hearing it, and they'll just get run over by ships?

MR. LaTOURETTE: So, the way that that environmental assessment and regulation works is, let's take any type of infrastructure project -- offshore oil rig, offshore wind turbine, a port -- anything that goes in the water. We evaluate the impact, the potential impact, upon species of concern. And, there are two ways that that happens: under the Endangered Species Act, and under the Marine Mammals Protection Act.

And, so, in each of these inquiries, there are studies that are performed based on multiple data points that are collected *all* of the time -- and, I think some of the other speakers will speak to this, the myriad of data points that are available that are continually assessed, and how we do that. But, under these two pieces of law, the Federal government, with participation through the State, evaluates the species that are present in a particular affected area where a project may be undertaken, and then the further analysis of how the development of a project could affect a species, and then that is all presented in what is called a "biological opinion."

So, there is, for example, a biological opinion that was prepared, released within the last few months, relative to Ocean Wind 1, which is the proposed wind farm off the coast of Atlantic City. And, that biological opinion identifies whether there would be adverse impacts that would affect

the species. And, that biological opinion concluded that there would be no likely adverse impact that threatened the species -- meaning, that would kill them -- but, rather, there would be temporary disturbance to the underwater environment. Now, that's the case with anything. It's the case when you build a port, a bridge, all of the telecommunications and pipelines that serve us every day that go under water. There is a temporary disturbance, but the work is performed in a way so as not to kill anything -- that's not allowed.

ASSEMBLYMAN McCLELLAN: So, are we familiar with the-- And, I'm not sure if you are or not, but I'm sure (indiscernible) the right whale?

MR. LaTOURETTE: Yes, I am.

ASSEMBLYMAN McCLELLAN: And, are you familiar with what the United States Department of Commerce said about them, and the fact that there is, at this point, 350 of those left? And, the focus on this memo -- well, the memo I'm speaking of -- was dated May 13 of 2022.

So, this may disrupt the abundance and availability of the typical right whale's food. The focus of this memo on this operation will fix such focuses as the (indiscernible) oceanography, and the impacts of driving these whales and their prey to disruption and possible extinction.

So, would we focus on this possible extinction now that we're down to less than 350 from 450 in 2011? And, now, this is possibly going to drive them out. So, you're not concerned about that particular mammal, or are you concerned about all mammals?

MR. LaTOURETTE: When you say "this," what is the "this" you're referring to?

ASSEMBLYMAN McCLELLAN: This is as far as the mammal is concerned, the right whale? Or you mean--

MR. LaTOURETTE: When you say, "This will drive them out," what is the subject?

ASSEMBLYMAN McCLELLAN: The development of ocean wind.

MR. LaTOURETTE: Ocean Wind 1 and the project?

ASSEMBLYMAN McCLELLAN: In general, not just one particular project -- in general.

MR. LaTOURETTE: So, you can't make a generalized conclusion about all of offshore wind.

ASSEMBLYMAN McCLELLAN: I'm not, I'm not (indiscernible) generalized question, I'm talking about ocean wind, in particular in New Jersey. But, I'm just talking about this ocean wind as it is, not in general.

MR. LaTOURETTE: So, what the biologists do is they evaluate the presence of a species in a particular area where an activity may occur. And, so, with respect to Ocean Wind 1 off of Atlantic City -- just sticking with that example -- what I just described a few moments ago, the biological opinion--

ASSEMBLYMAN TULLY: I'm sorry, Commissioner, can we have you switch your mic? Because we're getting a lot of static up here. Can we get your testimony?

Thank you so much; sorry for that.

MR. LaTOURETTE: So -- is that better? OK.

So, maybe I'm too close. Is that better?

What I was explaining a few moments ago about the Endangered Species Act and the biological opinion that was rendered -- that biological opinion examines the -- it's still happening. Is there something I should -- sorry.

Any better? OK, all right.

That biological opinion examined the very question you're asking. Because this is the routine work of environmental governments -- this is what occurs in every single development scenario. And, it occurs project by project. There is not a sweeping analysis that says, "All offshore wind is good and will have no bad impacts." That's not what anyone is saying.

Every single thing we do has an environmental externality -- every single thing. For example, we're creating pollution right now, holding this hearing in the service of some purpose. We've decided societally that we'll do that; that we will allow the creation of air pollution that harms people's lungs to hold this hearing. And, the DEP manages that pollution and ensures its reduction.

To the same end, in the development of in-water facilities of *any* kind -- offshore wind included -- there is an analysis of potential impact upon species, and that biological opinion evaluated the right whale. And, it concluded that it's not likely to cause mortality. Now, may there be some temporary habitat disruption? Yes, absolutely. That occurs in the development of everything.

ASSEMBLYMAN McCLELLAN: Last question, and I appreciate your taking the time.

So, you're familiar with the Bureau of Ocean Energy and Management, correct?

MR. LaTOURETTE: Yes.

ASSEMBLYMAN McCLELLAN: So, they had a report in March of '21 that building these ocean wind turbines will basically have no impact on reducing global warming. Are you familiar with that?

MR. LaTOURETTE: That does not sound like a statement that BOEM would make.

ASSEMBLYMAN McCLELLAN: March 21st of 2021.

MR. LaTOURETTE: Is there a specific line that you want to point out?

ASSEMBLYMAN McCLELLAN: In their whole report -- if you can gain the report, it's there. Their wind offshore project, final environmental impact Volume 2 on March 2021, page A-66, third paragraph.

So, (indiscernible)--

MR. LaTOURETTE: And, yes, what does it say?

ASSEMBLYMAN McCLELLAN: BOEM -- is what they are known as -- conclude in 2021 that the building all of these offshore wind farms will basically have no impact on reducing global warming.

So, if we're trying to reduce global warming, and everybody is all about BOEM, and going off and using them, they have a report in 2021 that says that's not going to happen.

So, if it's going to be *de minimis*, why should we go and spend billions of dollars to affect a billion-dollar industry? Because you mentioned Atlantic County. I'm going to talk about Cape May County, what Cape May County does for the State of New Jersey and does for the world, because it has a billion-dollar fishing industry--

MR. LaTOURETTE: Yes it does--

ASSEMBLYMAN McCLELLAN: --and billion-dollar tourism industry. And, at this point in time, we're going to render that pretty much done.

MR. LaTOURETTE: Absolutely not.

ASSEMBLYMAN McCLELLAN: Completely. If--

MR. LaTOURETTE: No. I'm sorry, Assemblyman, I don't mean to interrupt you, but that is false.

ASSEMBLYMAN McCLELLAN: I don't want to go back and forth with you, I don't mean to interrupt you, I'm just-- I talked to the fishermen. And, I'm telling you that they're not-- They're saying that they're going to have problems getting insurance because they are not going to be allowed to fish around these wind farm areas, so that's going to destroy their economy. Talking about the economy and tourism, that I'm very familiar with in Cape May County, and what's going to cause issues with the residents there and the tourism there.

So, that's their opinion, and you have a different opinion as you said. But, let's circle back to what BOEM has said, and you then can give your opinion as far as the rest of that -- I didn't mean to cut you off, so, I apologize.

MR. LaTOURETTE: I think what's important is to recognize, as we all should, the difference between fear and fact.

The world is changing, and it's changing rapidly. And, it's changing rapidly as a function of all of the carbon and climate pollution that we have placed into the atmosphere. That's not an opinion; that's not a feeling. That's a fact. And, that is showing *really* adverse changes all throughout our state and the world. And, we have to change that. We *have*

to take the steps that will reduce the emissions of those climate pollutants, or else our climate experience only gets worse, and much, much, *much* worse.

The biggest threat to our commercial fishing industry is not the erection of new facilities a mile apart in the water. It's the fact that the very ocean itself is changing. We did that. We have to solve for that.

Now, to the point of any one individual wind turbine itself -- correcting the course of human history in terms of the emissions and climate pollution, of course it would have a negligible impact. But that's not the point. The point is to gradually move from a fossil fuel-based economy that has created the very adverse conditions that this panel has organized to appraise to a cleaner economy that does not cause those conditions. But, that happens incrementally over time. No *one* wind turbine -- and, no *one* wind farm -- will change that outcome.

I imagine that that is the point that report is making. But, it misses the-- It's the forest for the trees. Because, the point of climate action -- of a just transition to a cleaner economy -- is to change the overall makeup of our energy portfolio to one that pollutes less over time, so that we avoid a worsening of these conditions.

So, no, one wind farm isn't going to do it.

ASSEMBLYMAN McCLELLAN: I'm sorry, one last question.

ASSEMBLYMAN TULLY: Go ahead.

ASSEMBLYMAN McCLELLAN: This is my last one, I promise.

How do you feel about nuclear? Because I've been told nuclear is the most cleanest energy. How do you feel about that?

And, then I'm done.

MR. LaTOURETTE: Again, my job is not to have feelings about it.

ASSEMBLYMAN McCLELLAN: Your opinion.

MR. LaTOURETTE: My job is to look at the science and the law, and very clearly--

ASSEMBLYMAN TULLY: I want to stay on topic, too, so if we can--

MR. LaTOURETTE: And, very clearly, nuclear energy is cleaner than fossil fuel energy. It has lots of other negative environmental externalities like disposal issues; like potential harm to communities if not managed well. Because everything has environmental externality -- everything.

ASSEMBLYMAN TULLY: Commissioner, I know we're coming up on about an hour right now, so--

ASSEMBLYMAN BARRANCO: I'm sorry, Chairman, one more thing -- I just want to--

ASSEMBLYMAN TULLY: I'll allow one more question, and then I do want to move onto the next--

ASSEMBLYMAN BARRANCO: No, it's not a question, it's a statement.

ASSEMBLYMAN TULLY: I'd like to (indiscernible) a lot of statements after -- after the Committee--

ASSEMBLYMAN BARRANCO: I just want to address something that the Commissioner said, it's going to be very quick.

ASSEMBLYMAN TULLY: All right, if we could make it very quick, please.

ASSEMBLYMAN BARRANCO: So, Commissioner, you made a-- After we spoke, and I had brought up to you something that I thought was not necessarily a fact, and you had made an affirmation, and that was the exchange between you and I, and we got through it.

But, you said something a moment ago that I think is crucial to the purpose of this day, and that is, you said -- and, you're addressing the question of Assemblyman McClellan -- you said that there was a biological opinion obtained for a certain (indiscernible) purpose. That is the reason we're here. Because a lot of what we're doing is based on opinions -- whether they be based in fact or not, very few of us know.

Hopefully, we've assembled scientists who are going to share that with us, but it's crucial what you said: It's a biological opinion that caused you to move forward on the first farm outside of Atlantic City.

So, we need to get to the root of those opinions. That's why we're here.

ASSEMBLYMAN TULLY: Assemblyman, we have scientists here today, so--

MR. LaTOURETTE: I think--

ASSEMBLYMAN TULLY: I'll give you last comments and then -- yes, just go ahead Commissioner.

MR. LaTOURETTE: I think you're getting tripped up by semantics, Assemblyman.

When I use the phrase, "biological opinion," that is a statutorily and regulatorily defined document. A "biological opinion" is an outcome of an evaluation required under the Endangered Species Act. It is a scientific

determination -- it is a term of (indiscernible). It is not someone's random opinion; it is the conclusion of scientific study.

ASSEMBLYMAN BARRANCO: It's not a random opinion, but it's an opinion--

ASSEMBLYMAN TULLY: Guys, I want to -- please, I allowed you -- Commissioner, if you (indiscernible), then we're going to move on, thanks.

Commissioner, do you have anything else?

MR. LaTOURETTE: I don't think so; I don't think so.

I think I have one reflection, which is, if what you're interested in doing -- really interested in doing -- is saving the whales, you need to focus more holistically. Because what appears to be happening is that we are pursuing an inquiry about why whale mortality is occurring.

There is an abundance of scientific information to answer that question for you. Whether you like the answer to that question or not is irrelevant, just like my feelings in my work are irrelevant.

But, what I hope for in this exchange is a grounded and reasonable and scientifically-informed dialogue, because that's the way that we do our work every day at the DEP. One that looks at the multiplicity of factors that are leading to changes in our ocean and our environment writ large. I look for a holistic and meaningful dialogue, *not* one that tries to identify a villain and point at it, but instead really, truly, tries to save the whales.

ASSEMBLYMAN TULLY: Commissioner, thank you for being here today. Thank you for your testimony.

MR. LaTOURETTE: Thank you.

ASSEMBLYMAN TULLY: I'm sure if any of our colleagues have any follow ups, we'll contact you directly.

And, thank you again.

MR. LaTOURETTE: Thank you very much.

ASSEMBLYMAN TULLY: Appreciate it.

OK, so, we're going to move on to our next testimony. This will be in person: Josh Kohut, Ph.D., Professor at the Center for Ocean Observing Leadership; Danielle Brown, Ph.D. student at Rutgers, also affiliated with Gotham Whale and the Marine Mammal Stranding Center; and, Sheila Dean, Marine Mammal Stranding Center, the Director.

Thank you so much for joining us here today.

OK, please -- whoever would like to start first, please go ahead. Just make sure the microphones aren't on at the same time, I think that might be what is causing a little bit of the static background.

D A N I E L L E B R O W N: How is that?

ASSEMBLYMAN TULLY: Great.

MS. BROWN: Hello, and thank you to the Chair, Vice-Chair, and Committee members for inviting me to speak today.

My name is Danielle Brown, I am the Director of Research for Gotham Whale. I am also a Ph.D. candidate in ecology and evolution at Rutgers University. I hold a bachelor's degree in biology from Stockton University, and a master's degree in environmental science and policy from George Mason University.

I have lived in New Jersey for my entire life, and I have dedicated the last 10 years to whales. My experience with whales first began when I formerly worked as a field stranding technician at the Marine Mammal

Stranding Center. This was back in 2013, and it was here that I first became interested in humpback whales specifically, following increased sighting and stranding reports. At this time, only 10 years ago, it was confusing to the public to see humpback whales feeding in our area. They assumed that they did not belong here and that they were in distress, and, for this reason, I concentrated my entire master's thesis specifically on humpback whales, including their population characteristics and impacts from human activities.

I collaborated with researchers throughout the western North Atlantic to learn more about the whales that we see here, which has led to several peer-reviewed publications. As the Director of Research for Gotham Whale, I have helped to document thousands of sightings of more than 300 individual humpback whales off New York and New Jersey.

I have spent hundreds of hours on the water, and I think I'm one of the few people in this room who has personally witnessed what whales look like when they have been struck by a vessel. And, I'm not talking about stranded animals, I'm talking about live animals feeding. I have seen humpback whales missing body parts; I have seen humpback whales actively bleeding from injuries; and I've also seen old propeller wounds. And, unfortunately, there are several whales that I have seen alive and also dead.

The good news is that we have learned a lot about these humpback whales in just a short period of time. To understand the dynamics of humpback whales in the New York Bight, you must first be familiar with the entire population. Humpback whales in the Western North Atlantic are highly migratory. They move between winter breeding grounds near the equator, and feeding areas in the gulf of Maine, Canada, Greenland, and the Eastern North Atlantic. These feeding grounds are genetically unique

populations. Mothers exhibit maternal sight fidelity; they do return to the same feeding areas over and over again with their calves, and those calves typically return to the same feeding ground as well when they become independent.

However, as you all know, we now see humpback whales consistently in the New York Bight and in the Greater Mid-Atlantic -- outside of these typical feeding and breeding areas. There is limited evidence suggesting that humpback whales occurred here consistently prior to the 1990s, so their present-day occurrence here in the New York Bight may be a more recent phenomenon.

In the 1990s, humpback whales increased their presence in the Mid Atlantic, notably off Virginia and North Carolina during the winter. Most were found to be juveniles, and it was suggested that these were making a partial migration -- since it was winter -- and they were not at breeding age yet. However, there were a few summer sightings during this time, mainly off Cape May, New Jersey. In conjunction with this increase in young humpback whales in the Mid Atlantic, there was an increase in strandings. There were 58 humpback whale strandings documented from New Jersey to Florida from 1985 to 2000. These whales were almost exclusively juveniles, and many showed signs of ship strike or entanglement. At this time, it was theorized that the increase in young humpback whales close to shore near urban areas and overlapping with human activities was causing that uptick in strandings.

Following this event, there were two additional spikes in humpback whale strandings. In 2005, 34 minke, humpback, thin, and sperm whales stranded from Canada to Maryland. And, from 2006 to 2007, 48

humpback whales stranded from Maine to Virginia. Humpback whale strandings have been an issue of concern along the east coast for nearly four decades. Although there were some summer humpback whale sightings off Cape May in the 1990s, systematic surveys from 2008 to 2009 still found the species to occur mainly during winter off southern New Jersey. These surveys also found a low number of humpback whales -- there were only 17 sightings over two years. However, beginning in 2004, humpback whales had actually increased their presence near the shelf break in the New York Bight, and, beginning in 2011, opportunistic sightings of humpback whales increased in the New York-New Jersey Harbor Estuary. Since then, sightings have continued to increase, and humpback whales are now the most common species.

Small numbers of humpback whales can now be found feeding in the New York Bight year-round, but are typically most common during spring, summer, and fall. Many are juveniles that belong to the gulf of Maine feeding population, but, in most cases, we don't know what population they belong to. Generally, the youngest whales are found close to shore, while older animals are found off-shore. Whales are commonly seen service feeding in and around shipping channels leading into the port of New York and New Jersey, and their presence has become consistent enough to generate an expanding whale-watching industry.

Along with this recent increase in humpback whales in the New York Bight, there has been another spike in strandings: 191 humpback whales have stranded since 2016 from Maine to Florida. And, similar to these past mortality events, most of the stranded humpback whales have been juveniles, and many have been hit by ships or have scars from entanglements.

The most recent mortality event may have begun in 2016, but strandings and interactions between humpback whales and human activities have been on the rise long before that. There are still many, many things that we don't know. Although we do have a substantial amount of opportunistic data from northern New Jersey and some from Cape May, there have been no coast-wide systematic surveys for marine mammals along the Jersey Shore. The most recent surveys that I mentioned earlier occurred 15 years ago, and focused specifically on southern New Jersey. Therefore, we cannot properly evaluate the abundance or distribution of humpback whales and other species here.

We also don't know how humpback whales are using the entire coast of New Jersey, whether they use waters currently planned for offshore wind construction, or even what environmental factors influence their distribution here. We don't know why some humpback whales are spending time in the New York Bight during the feeding season when the rest of the population is still found north on those main feeding grounds. (indiscernible) whale distribution is largely influenced by prey availability, and humpback whales have been documented feeding on at least two different prey species here. However, we do not have enough data at this point to know which prey species are most important, or how changes in prey abundance have influenced the increase in humpback whales.

Lastly, although we know that humpback whales and other species *are* hit by ships, and *do* become entangled in fishing gear off of New Jersey -- and also in the greater Mid Atlantic -- we do *not* know what types of ships are involved, or where these accidents happen. Near the entrance to the port of New York and New Jersey, humpback whales often overlap with

cargo ships and cruise ships, which are both common sources of whale mortality around the world. But, these interactions with whales are rarely reported, which makes it extremely difficult to understand and prevent them.

Ultimately, the takeaway here is that things are changing rapidly in New Jersey, especially when it comes to humpback whales, and there are many data gaps. These whales are now a consistent part of our ecosystem. We have seen an increase in humpback whale usage of the Mid Atlantic over the last 40 years, and in the New York Bight over the last 15 years. The more whales that we see, and the more time that they spend here, will lead to more overlap with human activities. If this trend continues, there will be a continued increase in strandings in our waters regardless of what industry is operating off of our coastline.

For me, the answer is more research. My hope is that the State of New Jersey will finally focus resources towards the study and management of humpback whales and other whale species to fill in these knowledge gaps as they continue to increase along our coastline.

Thank you.

ASSEMBLYMAN TULLY: Thank you.

J O S H T. K O H U T, Ph.D.: Good morning.

Thank you, Chairman Tully, Committee members, for the opportunity to come and speak with you today.

My name is Dr. Josh T. Kohut. I am a professor of oceanography at Rutgers, your state university. I've lived in New Jersey for over 40 years -- I couldn't believe it when I counted that number. I can't be that old, but I am.

This morning I am going to provide comments, given my expertise in ocean technology and ocean science. I have a bachelor's degree in physics; and a mathematics minor from the College of Charleston; and I hold a Ph.D. in physical oceanography from Rutgers University. I have published over 80 peer-reviewed papers in the field of ocean technology and science. For the last 25 years, I have been part of the leadership of the Rutgers University Center for Ocean Observing Leadership -- or RU COOL.

RU COOL is recognized as a world leader in ocean science, technology, and prediction. For more than three decades, our faculty, technical staff, and students have worked together through local, state, national, and international partnerships to conduct ocean research and support applications, decision making, and management of our ocean resources.

Given my expertise, I will focus on the dynamic nature of our ocean as it relates to the distribution of whales and their prey. Characteristics of the ocean off our coast undergo remarkable variabilities, from days to weeks, to seasons, years, and decades. The physical oceanography of this region is influenced by fresh water that comes out from our rivers and estuaries; shelf-break canyons; the gulf stream well offshore; and tropical and winter storms. No other part of the global ocean undergoes greater surface temperature changes from winter to summer than the ocean off our coast. The seasonal changes lead to formation of cold bottom water that persists throughout the entire summer that we call the cold pool -- a feature that occasionally makes its way all the way to the beach in the summer, changing surf temperatures dramatically. You may have experienced that in your own experiences on the shore.

UNIDENTIFIED SPEAKER: We have.

DR. KOHUT: This intense ocean variability drives an equally variable ecosystem, from the plankton algae up through the fish and marine mammals. These changing ocean conditions, combined with specific habitat preference of local and migratory species can cause their distribution and that of their prey to vary significantly, from week to week, season to season, and year to year.

Furthermore, our coastal waters are situated in one of the most rapidly warming regions in the world. Ocean warming has led to vulnerability among approximately half of the U.S. northeast shelf species. And, the dominant response of fish to ocean warming has been to shift their distribution to the north.

Off New Jersey, Atlantic mackerel and herring abundance are at or near historic lows. In contrast, Atlantic menhaden, or bunker, abundance has spiked upwards in the region since the 1980s, and on-water observations suggest that they are staying later into the winter. This winter distribution of menhaden is closer to shore than historic mackerel and herring populations, and overlaps with areas where juvenile humpbacks have been observed feeding at the surface.

I pause here just for a minute just to let you know that the testimony I'm providing-- We provided written, and there are references to all these statements. So, there is background information; there are stock assessments that are done on these species, and we reference those for you. If you need further information, just contact us and we can get that to you.

So, now, more than ever, it is critical that we consider the scientific evidence and the complexity of the entire system before drawing

conclusions about the cause of individual strandings. Many factors -- natural and human-related -- impact ecosystem health. Decisions need to be based on scientific data, solid evidence, and consider the entirety of factors contributing to observed or perceived impacts. I encourage you to consider all the oceanographic variability impacting the habitats utilized by these whales.

So, how can the scientific research community help? New Jersey is a global leader in ocean and ecological observing and prediction. As I sit here with you today, we are monitoring our ocean with satellites in space, radar networks along the coast, and underwater robots beneath the surface. All of the data generated by these systems are sent to publicly available websites for access to different users and communities. Thanks to the effort across the entire research community, baseline monitoring of many ocean variables has been in place for decades, and continues today.

For example, an autonomous underwater robot, right now, is patrolling the waters off our coast, sending back data on marine mammal detections and the ocean conditions around those detections in real time. I can access it from my phone. Additionally, there are communities of experts, including public, private, and academic researchers; commercial and recreational fishers; among others, who are ready to utilize available data and their own expertise to inform your policy decisions. Despite what many have said in recent months, I am here to confirm to all of you that the scientific community's responsibility is to the data and sound methods that pass the rigor of peer review. Regardless of the source of funding, over the past 25 years, my projects addressed research and monitoring objectives by scientific analysis of publicly available datasets. Rutgers ensures that executed grants

and contracts with funders protects my intellectual property, and open communication of results, including peer-reviewed publications.

Simply put, I am qualified to do the research that I undertake, and the output of my research is supported by scientific evidence and methodology that passes the rigor of expert peer review.

In summary, the ocean is highly variable, and we have the technology and expertise to document that variability with timely, quality-controlled data. It is imperative to consider the evidence associated with all potential factors of this ongoing UME, including dynamic oceanographic conditions, before placing blame toward any specific entity or activity. I hope that a science-driven policy and decision making on this issue is the goal; that you will seek out the communities of experts who have experience studying and observing the relevant processes off the New Jersey coast. When seeking sources of information, consider their experience and record of producing scientifically defensible conclusions given the evidence. These are the standards throughout peer-reviewed science that ensure the best available information is available to you.

I would like to thank Chair and the Committee for your time, and please keep Rutgers as a resource that you can go to in the future.

Thank you.

ASSEMBLYMAN TULLY: Doctor, thank you so much for your time.

Director Dean, please.

S H E I L A D E A N: Hello, my name is Sheila Dean, and I am currently the Director of the Marine Mammal Stranding Center.

The Center was formed in 1978 by my husband, Robert Schoelkopf and myself, and we were the first of its kind in New Jersey. Prior to that, marine mammals would lay on the beach and die, or were pushed back out and eventually wash in again and die.

As our community continues to grapple with the recent surge in whale strandings, many of you have reached out with questions regarding how our work is funded and our role in the ongoing investigation. As the only first responders in New Jersey for marine mammals and sea turtles, we work under a permit from NOAA Fisheries and the State of New Jersey to do the work that we do. We also work with our fellow network members from the Greater Atlantic Marine Mammal Stranding Network to help find the answers about what is happening to these animals.

The work that we do, that we perform, is the first step in many that will bring us closer to understanding why we are seeing so many whale strandings along the east coast. Large whale necropsies can take a day or more to complete. The work is grueling and dangerous, requiring a large team of people, each with a specific task, working together as safely and as sufficiently as possible to complete the examination.

When a large whale washes ashore in the northeast region, often times, staff from other stranding organizations will travel in from out of state to assist with our efforts. We are grateful to our fellow stranding network members who have helped support our staff by assisting our team with the recent necropsies as these large-scale stranding events take dozens of people to facilitate.

Stranding organizations such as ourselves perform the necropsies and collect any samples that are viable, based on the condition of the carcass.

Once we have collected the samples, they are sent to laboratory pathologists who are responsible for processing and analyzing. When the pathologists have completed their work, the scientists who are tasked with researching the ongoing unusual mortality event interpret the findings.

This is not the first UME investigation that the Marine Mammal Stranding Center has been involved with. In the summer of 1987, hundreds of bottlenose dolphins washed ashore in New Jersey, as well as along the east coast. After several months of necropsies and sample collection, the cause was found to be a virus which had spread through the population. A similar event occurred in the summer of 2013, which, again, was found to be a virus.

In an effort to be transparent with our followers, the Marine Mammal Stranding Center has shared the initial findings of the recent whale necropsies on our website and social media accounts. In all cases, including those animals in which evidence of ship strike was found, the pathology results are still pending. This means that the final cause of death has not been determined. To assign blame before the scientific data is analyzed and interpreted would be premature, and could dilute our impact on championing changes on behalf of these animals in the future.

The Stranding Center is approaching this investigation in a non-biased manner. We are asking patience, as our staff is entirely focused on performing our work in the most professional and scientific manner, and the death of these animals is a sad event and it has come all too frequently lately. Our small but mighty team has been stretched thin with 12-hour days, but we are continuing to work to help find answers about why the whales are dying. We appreciate the community support as they show us the same compassion that we share with the animals.

It's important to note that the Stranding Center is also approaching this investigation without influence from any other outside organizations or corporate entities. In essence, the Marine Mammal Stranding Center has not accepted any funding from wind energy companies. As a non-profit organization, the Center is funded by donations, fundraisers, grants, and gift shop sales. As with all non-profits, our financials are public record, and you can review our organization's most recent IRS 990 on GuideStar.org, or you can stop in the Stranding Center and you can see a 53-page copy of our financials in our museum.

We just appreciate the patience of the public and the support of our community as our staff is entirely focused on performing our work in the most professional and scientific manner.

Thank you.

ASSEMBLYMAN TULLY: And, thank you all for your testimony today and your work on this issue.

I just have a couple of questions, and then I'll allow my colleagues to ask any questions they have.

But, regarding the necropsies, if I can just ask -- how many has your organization participated in?

MS. DEAN: We have had nine whales -- actually, three of those whales we could not reach because they were (indiscernible) out at sea.

So, the necropsies that we did were six in total.

ASSEMBLYMAN TULLY: Got you.

And, can-- Just so we have a better understanding of it, can you explain the process for examining a stranded whale and how you would determine their cause of death or injury?

MS. DEAN: Well, initially--

ASSEMBLYMAN TULLY: And, no, we're not scientists, so the layman way would be the best; thank you.

MS. DEAN: I'm not either, but Danielle is, and Danielle has been with us on every necropsy that we've done on these whales.

Initially, we'll see an animal wash up, and we might see some bruising or some marks on it, which indicates it had been hit. There might be some propeller marks on it, or sometimes we'll find evidence that the animal had been entangled at one point, although we haven't found any animals in this group of animals that had entanglement ropes on it.

So, we have to put together a team at that point. Most of the time, the whales that are coming in -- I'm going to say all of these whales -- have been dead for weeks, most likely, so they were pretty badly decomposed, and we knew we were going to not be able to find a lot from examining their bodies. And, sure enough, when we would open them up, there wouldn't be a lot left inside of them that was viable. We did take samples that we could, and pass them along to the researchers, but it's a day-long process of opening a large whale up. It's a little bit gory; a lot of people who have come to witness it have to walk away, because you can imagine, you have a 40-foot animal that you're opening its entire insides out.

So, we take the samples. They are prepared specially for whatever we're looking for. Some are put in Formalin, some are frozen. There's different ways that we prepare them. They are then passed onto the researchers, like I said, and now we wait for the results. We haven't had the results come back yet because, as you can imagine, there's not a lot of people who do that -- the research on the samples -- and there was a lot of animals

at one time. So, consequently, this is all over the United States, it's not just the east coast. There's whales washing up everywhere.

So, we just have to wait. We're waiting our turn, patiently, and hopefully they'll come back with something. It could be a disease, we don't know, like it was with the dolphins that took many months, back in '87, before we heard anything. It could be the same thing; it could be many months before we know anything.

MS. BROWN: Could I answer that?

ASSEMBLYMAN TULLY: Please, go ahead.

MS. BROWN: Hi, I'm sorry.

So, I think it's important to point out that there are very few people in the State of New Jersey who have experience in conducting a necropsy on a large whale -- or even a dolphin, for that matter. So, I am one of the few people in this state that does have that experience, so I do offer my assistance whenever a whale washes up on the beach, as a volunteer.

It's also important to know that there are protocols that we follow in order to determine what caused the death of -- or what potentially caused the death -- of a whale. After everyone is-- Volunteers are recruited, and we have developed a plan to respond to the animal and to actually get to the site with equipment. The skin and blubber are typically flenched off first, after measurements are taken. That is where we typically begin to look, or begin our investigation into the potential causes.

A common question is, "How could a whale possibly be considered as a potential ship strike when there are no obvious propeller injuries?" And, that is actually very common. It's much more common for a necropsy to be conducted and for us to see large areas of bruising or

hemorrhaging, and that has been defined as one of the -- something that could be evidenced as a suspect or probable vessel strike. Whales -- their blubber is very thick -- they don't always show those obvious signs of being hit by a ship, very similar to someone having internal bleeding. So, it's really not always obvious at all. But, the folks who are in charge of these necropsies are well, well versed in how to tell the difference between healthy tissue and damaged tissue.

So, I (indiscernible)

ASSEMBLYMAN TULLY: Thank you so much for your testimony today.

I'll allow my colleagues-- Again, if we can stick to asking questions on topic, I'll allow for any statements or comments at the end of the meeting.

Does anyobody have any questions?

Vice-Chair.

ASSEMBLYWOMAN CARTER: I think that it was covered, but I just want to make sure.

And, I appreciate it, because you are all the professions that are looking and researching and doing this. First of all, thank you for the service that you do -- especially the volunteers, going out and working with these whales.

But, as you look at it, and here on the east coast, we are New Jersey. Across the east coast, can you determine, really-- Is there really a huge uptick? Is it only in New Jersey that there's this uptick with the whales?

And, is there, across the east coast, something else besides being hit and tangled -- which is hard to do -- but once they're being examined, is

it plastic, things that have been consumed, in them, that also could be a huge cause of this (indiscernible)? It's more than just climate but what we, as humans, sometimes do with the things of how we go about everyday activities, things that get into the ocean. Is that also maybe some type of a cause?

MS. DEAN: We typically do not see plastic in the large whales, because they eat the smaller fish. The medium-sized and the smaller whales are the ones that would eat squid, and they're the ones that would take in plastic, like plastic bags, thinking that it was something -- a squid or something that they would normally eat.

ASSEMBLYWOMAN CARTER: And, is there that uptick that we're seeing more in New Jersey, or is it along the east coast? Are we seeing those type of numbers along the east coast with them, with the whales coming to shore? Things like that.

MS. DEAN: I can only speak for New Jersey. We have an extremely small staff, and we did see that uptick in the humpback whales, yes. The other whales that washed in, the other species, was pretty much normal from what we see.

You do have a packet, and it shows all the different whales that we do see and how many we see each year since 2002. And, so, yes, like I said, there is an uptick in the humpbacks, but that's probably because of the prey that they're following. And, we don't know for sure, but it's just-- That's what we think, that it's just they're following the prey that's causing them to get struck by the ships because of it.

ASSEMBLYMAN TULLY: Anybody else?

ASSEMBLYMAN McCLELLAN: Just a quick question.

Are you-- And, thank you guys for everything that you're doing and continue to do.

And, Stockton is the best college in the state. Just pointing it out.

Are you familiar with the dolphins that washed up in Sea Isle? So, what would cause eight dolphins that claimed to be out frolicking in the ocean and playing around to all just rush to the beach?

So, what would cause eight dolphins that seemed to be just out playing in the ocean and then all of a sudden they just go and beach. Do you have any idea, can you give an opinion on that, please?

MS. BROWN: I can, yes.

So, when trying to answer that question, the first thing that we look at is the species. So, those species, or short-beaked common dolphins. Short-beaked common dolphins are *not* the bottle-nose dolphins that we regularly see from our beaches. They are a pelagic species.

So, my first question is, why are they close to shore in the first place? We do know that that species does like to feed on more pelagic fish. One example is American sand lance or sand eels. This is a species that is typically found further offshore, although it does come in occasionally closer, and that is one of the fish species that NOAA has let us know has been seen in abundance over this past winter.

So, it is possible that these animals were following fish closer to shore. That also explains why sightings of these animals have been seen in areas like Raritan Bay, in very shallow locations. These are not coastal animals; they do not navigate shallow waters very well at all. And, if we look further outside of New York and New Jersey, we do know that up in New

England, short-beaked common dolphins strand very often. They do tend to get stuck inside shallow bays when the tide goes out. So, it's very possible that that happened, and I do know -- I believe -- that some of those animals were found with food in their stomachs, so it was very likely they were eating at the time.

ASSEMBLYMAN McCLELLAN: Thank you, that's all, Chairman; thank you, sir.

ASSEMBLYMAN BARRANCO: First of all, let me thank the three of you -- especially you, Ms. Brown, your experience must be-- I can't imagine being in the ocean in the presence of whales every week of your life, it must be very cool.

I have a couple of very simple questions. First, I would like to focus on what Director Sheila Dean said. You had said that in many cases, necropsies could be many months before you know anything about what the necropsy is informing us of. Can you expound on that a little bit?

MS. DEAN: We take the samples from the animals, and we pass them along to the laboratories who investigate them to see what they may find as disease or something else going on with the animals. We haven't had any answers back from them, because there's-- I guess there's a shortage of research--

ASSEMBLYMAN BARRANCO: Yes. When you say many months, can you put a number to it?

MS. DEAN: So, in '87, it was about 10 months before we found out it was a virus, from the dolphins.

ASSEMBLYMAN BARRANCO: And, what about recent necropsies?

MS. DEAN: The recent necropsies, the samples have all been sent out.

ASSEMBLYMAN BARRANCO: And, nothing back yet?

MS. DEAN: Nothing.

ASSEMBLYMAN BARRANCO: OK.

Dr. Kohut, I agree 100% with what you said; your statement was very well done, and I thank you for your expertise and for being here with us today.

Ms. Brown -- I hope to call you Dr. Brown very soon, according to what you said-- I do have a couple of things about what you had said. First of all, I don't know if you saw my exchange with the DEP Commissioner, but you did state in your moment there that data on prey fish is insufficient.

MS. BROWN: I did.

ASSEMBLYMAN BARRANCO: Can you expand on that a little bit?

MS. BROWN: Absolutely.

So, the majority of systematic studies into the presence of prey off the New York Bight is with trawl surveys that occur somewhat of a distance from shore. Atlantic menhaden, which is the fish that we do visually see the whales feeding on-- That's why we call that a prey species, because we'll actually see the fish come out of the water when the whales are feeding. So, we do know they feed on that species.

The trawl surveys don't necessarily pick up Atlantic menhaden, because they can be found closer to the surface. So, unfortunately, we don't have enough information on that species in particular. The other fish species that we have seen whales feeding on is the American sand lance, like I

mentioned earlier, and there is not a fishery for that species. So, again, research is not focused on that species here off New Jersey.

So, there are definitely data gaps as far as prey is concerned. I should also mention that, although we do see whales feeding at the surface on Atlantic menhaden and offshore on sand lance, we do not know if there are other prey species that they focus on. We know there are other species that Dr. Kohut had actually mentioned earlier. Atlantic mackerel and Atlantic herring are present off of our shores, even though in low numbers, so we don't know if the humpback whales are feeding on them as well.

ASSEMBLYMAN BARRANCO: OK, so, I think we can say that we really don't know what the prey fish are doing completely.

MS. BROWN: The prey fish?

ASSEMBLYMAN BARRANCO: The prey species.

MS. BROWN: Well, we don't know what their actual abundance is in our area.

However, we do know that they are moving north and they are here year-round when, previously, they were migratory. So, Atlantic menhaden are off of our shores year-round, so there is a year-round prey species for humpback whales.

ASSEMBLYMAN BARRANCO: OK.

And, also, you said at one point that there are many, many things that we don't know. Obviously, I'm not going to ask you to tell me the things you don't know, but can you tell me what maybe you're working on that you don't know that you're working towards an answer on?

MS. BROWN: Sure. I think I outlined several things that we don't know, and that is just a subset.

So, specifically, some of my research at Rutgers as a Ph.D. candidate focuses on trying to figure out what those humpback whales are feeding on, trying to determine their diet composition to see what species are most important to them in the mid-Atlantic, not just off New Jersey.

I'm also looking at hormone levels, stress hormones, and how that may change over time.

ASSEMBLYMAN BARRANCO: And, finally, I'd like to say I agree with you with one of your last assertions, which is, we definitely need more research.

So, I look forward to seeing--

MS. BROWN: One hundred percent.

ASSEMBLYMAN BARRANCO: Thank you for being here.

MS. BROWN: Thank you.

ASSEMBLYMAN TULLY: Thank you, again.

Anybody else?

Please, Assemblywoman.

ASSEMBLYWOMAN PARK: I also want to thank everyone for your testimony today, it's very -- sorry.

I just want to say that it's a lot of information that I'm taking in; I'm learning a lot about whales.

So, I think having this discussion today, really, prey fish seems to be the key to a lot of what's happening. So, I know you had mentioned, Dr. Brown -- or, soon-to-be Dr. Brown -- that there are certain species that we are aware of that the humpback whales feed on.

So, from this discussion, would you say that they're kind of particular to certain prey fish, and there are fish that, even though are out that, the whales won't eat? Is that a good enough conclusion?

MS. BROWN: Sure.

So, humpback whales are opportunistic, so they will feed on many different fish species. But, it's typically a schooling fish. So, they generally don't go after the same species that we fish for recreationally. They're really looking for patches of prey.

What does make things a little bit more complicated in our humpback whales that we see is that, although we see them feeding on Atlantic menhaden very often, when they feed at the surface, this is not a fish species that seems to be as important to them on their northern feeding grounds. So, more often, they will feed on those sand eels; they will feed on Atlantic herring or Atlantic mackerel. So, that makes things interesting as well.

So, it just shows you one more thing that we're not sure about.

ASSEMBLYWOMAN PARK: And, so, let's say the prey fish that they *are* consuming -- are they coming closer to shore for whatever reason? Do you have data on that?

MS. BROWN: Well, Atlantic menhaden are a coastal species to begin with, so, there have been protections that have been in place over the last decade that may be leading to an increase in Atlantic menhaden. But, also, they are generally -- they were generally known, and you can correct me -- as a more southern species. So, it does appear that we're seeing more in the New York Bight, and they are seeing less further south.

ASSEMBLYWOMAN PARK: Thank you very much.

ASSEMBLYWOMAN TULLY: Very good, thank you.

Anybody else? (no response)

All right, thank you so much for your testimony here today. Thank you so much for the incredible work that you're doing. I'm sure if we have any follow-up questions, we will reach out to you directly, and I really appreciate you making the time today.

Thank you.

DR. KOHUT: Thank you.

MS. BROWN: Thank you.

MS. DEAN: Thank you.

ASSEMBLYMAN TULLY: OK, and, that's actually-- That's it for our in-person testimony here today.

In order to provide the Committee here with more individuals within the scientific community that can speak to this issue, we are allowing testimony by phone.

And, first up, we have Dr. Nowacek. He is a Professor of conservation technology in environment and engineering at Duke University.

Dr. Nowacek, can you hear us?

D O U G L A S N O W A C E K, Ph.D.: Yes I can, absolutely. Can you hear me?

ASSEMBLYMAN TULLY: We actually can. Then, this is working; this is wonderful.

So, Dr. Nowacek--

DR. NOWACEK: Oh, fantastic.

ASSEMBLYMAN TULLY: Yes, thank you so much for making the time today, and please introduce yourself, your work, and we'll go from there.

Thank you so much for being here.

DR. NOWACEK: Yes, Mr. Chairman, thank you for the invitation and the staffers for putting this together.

We only got connected relatively recently, so I don't have actually a full statement to present, so apologies for that, but I'm happy to answer questions, obviously, and then do some follow up.

But, about me, as the Chairman introduced, I am a professor at Duke University, specifically at the Marine Laboratory out on the coast, but also in the Engineering School in electrical and computer engineering. My-- I received my Ph.D. from the Massachusetts Institute of Technology and the Woods Hole Oceanographic Institution. And, during that time -- and since that time -- I have worked on the bio-acoustics and acoustic ecology of, primarily whales and dolphins, but also manatees, fish, and sea turtles. I have also spent the last, pushing 20 years now, looking at the effects of noise on (indiscernible), primarily, and that work has included quite a lot of work with offshore industrial activities from oil and gas, seismic surveys, to the very types of surveys you're talking about today, to a variety of things; looking at the proximal responses of the animals as well as some of the physiological responses and the acoustic responses.

So, I am happy to-- I will leave it there. I think-- Yes, I have in front of me the sources and the statistics on the sources that Ocean Wind was approved to use. So, it gets very technical very quickly, acoustic nerves are like that. But, I'm happy to try to convey what I can in terms of

interpreting those things for all of you and for questions that your members might have.

So, I'll just leave it there, and I'm happy to take questions. Thank you.

ASSEMBLYMAN TULLY: Doctor, again, thank you so much for being here today.

It was actually asked earlier, and based on your testimony I'll just ask: It was suggested ocean floor mapping associated with wind energy development could disorient marine animals. Could you speak to that in more detail, through your expertise?

DR. NOWACEK: Yes, absolutely, I'll segregate the sources into basically two types: the so-called HRG, which you may have seen, the high resolution, geo-technical or geo-physical sources, and the high resolution comes along with high frequency. And, the easiest way to think about that is the ultrasound that we use to look at babies while they're still in their mother's womb. And, those high-frequency sound waves can do a very good job at resolving fine features, like a baby's finger, for example.

Those HRG sources, with respect to the wind energy development, those sources, I would actually go as far -- something coming from a scientist -- those high-frequency sources I would consider *de minimis* in their potential for impact on basically all marine mammals, because they are extremely high-frequency, which is out of the hearing range of these animals, and they're also-- Those high frequencies are absorbed extremely quickly in seawater. In fact, there's been significant technical development in getting those sources closer to the bottom so that they can operate even

better, so you don't have to go through the water column and then down into the bottom.

Another important thing to consider-- And, this, I use the comparison to seismic surveys used for oil and gas exploration yearly as a comparison. Not to say one is better than the other or anything like that, they're both sound sources. All of these things are acoustic, obviously, sound sources. But the other set of sources for the wind energy development are the, relatively speaking, lower frequencies -- you've heard them referred to as boomers, barkers, or chirpers, or these other terms that you may have heard. They do operate in the hearing range of humpback whales, as are -- or right whales, for that matter. I know it was mentioned earlier that right whales are concerned, or are a concern.

But, the level of the barkers and boomers, for example, looking at the source level here which is listed at 203 decibels -- and, I certainly won't torture you with a lot of discussion about decibels, but just as a comparison, again, the whole array of seismic forces used for oil and gas exploration are some 100,000 times more intense -- louder, in terms we can all understand -- than the sources that are being used for the wind development. And, there's a very simple reason for this, Mr. Chairman, and that is that the wind energy development only needs to explore the top 50 or so meters of the sediment, whereas the oil and gas surveys, by their nature, are looking kilometers -- thousands of meters -- into the bottom, and they need more energy. So, that's why they have to have more energy. The upside on the wind energy development side is that these sources, while still a formidable sound source, they're much, much less intense than those sources.

So, to get to your question, I will rely-- I will go back to what the National Marine Fishery Service has authorized as harassment. And, there's two categories: One is level A, which causes -- could potentially cause -- actual damage to the animals' ears or otherwise. The other one is Level B, which is a behavioral disturbance. And that, Mr. Chairman, could be anything from a slight deflection in orientation or movement, or, you know, a variety of behavioral things. They could start feeding or stop feeding, or any of these things. Are they significant by an individual whale? Not really. If the whole population stops feeding for months, that's a bigger problem. But, can the sources disorient the animals such that they would die instantly? No. Do we worry about them getting a little disoriented and deviating around a path? That could certainly happen.

But, the Fishery Service, as well as the Department of Energy, have both come out and stand by their--

ASSEMBLYMAN TULLY: Sorry, Doctor, can you just hold on just one second? Your microphone somehow turned off.

You're good, go ahead.

DR. NOWACEK: OK, where did you lose me?

ASSEMBLYMAN TULLY: Probably about 15 seconds ago.

DR. NOWACEK: OK, I'll try to backtrack.

As far as the disorientation or change in behavior, that is possible with these lower frequency sources. I'll quote what the Fishery Service approved for Ocean Wind, and that is that they expect a "Level B behavioral disturbance at a range of 141 meters in the worst-case scenario." So, 141 meters from that source, that is 20-some miles offshore -- the whales are obviously offshore as well -- but after 141 meters, the Fishery Service does

not anticipate or determine that there is any behavioral change even to those animals.

So, to the sources that are being used, at any stage in this process, I would stand by what the Fishery Service has published on their website and in documents, as well as the Department of Energy has recently come out with a similar statement with all of the backing material that none of the sources used for wind energy development, as currently laid out, have any chance of causing the mortalities that have been witnessed off the Atlantic coast -- full stop.

ASSEMBLYMAN TULLY: Doctor, thank you for discussing IHAs.

If you could just give us a little bit more details on what IHAs are, and when NOAA issues them, just for our background here.

DR. NOWACEK: Absolutely, my pleasure.

Under the Marine Mammal Protection Act, as revised in -- I don't remember what year, '93 I think -- one of the-- So, the MMPA, as most folks know, protects marine mammals and protects from what's called "takes" of marine mammals. And, that could be anything from a slight behavioral change, all the way through to a mortality. The Fishery Service has certainly not authorized any lethal takes as part of any of these activities, but the IHA is a mechanism in the MMPA that allows anybody -- from your fellow citizen to wind energy developers, the Navy, whatever -- it authorizes those takes as incidental to the activity that you're doing. So, the IHAs are issued prior to those activities. They go through Section 7 consultations of the National Environmental Policy Act so that they are vetted across agencies, including

other causes and agencies like BOEM, and BOEM consults by providing the information about the sources.

So, those IHAs are issued. There are lots of-- There are many, many stipulations in there that include, for example, for North Atlantic right whales, a very large shutdown radius -- which varies by project, so I'm not going to give you a number -- right through to other, to the delphine species, the other large whales; it authorizes them a certain number of takes; and stipulates a lot of safety measures that have to be implemented from listening -- passive acoustic listening -- to posted observers to make sure there are no animals in the area. They have uniformly, I believe, they have a period before which they can start -- something like 30 minutes or an hour -- that they have to scan the area to make sure there are no animals within those stated safety ranges -- and they're smaller for right whales, for example.

In addition, it authorizes-- The IHAs authorize time periods of the year during which these activities can occur, and those are lined up to minimize impact, especially to the most vulnerable species like right whales. And, for example, Vineyard Wind off Massachusetts is only authorized to do construction from May through December, I believe, because the right whale numbers are very, very low. But, they still have all those mitigation measures in place to ensure that there are no animals within the ranges of -- certainly of danger, let alone even behavioral. And, they have to record all the animals that they see and the range they were from the sources and any response they see in the animals.

So, that's the IHAs in a nutshell. The research part of it is different. So, we have to apply for research permits that are totally different

-- I won't even go into those, because they're really not relevant, but I'm happy to take any questions.

ASSEMBLYMAN TULLY: Thank you, Doctor, appreciate that.

I know we have a few questions from the-- OK, does anybody have any questions for the doctor?

Assemblyman.

ASSEMBLYMAN McCLELLAN: Just one quick question.

DR. NOWACEK: Yes.

ASSEMBLYMAN McCLELLAN: Do you feel as though there is a cumulative effect when you're doing testing of the ocean floor, or do you feel as though that certain testing, like for oil, or certain testing for wind farms, is different, so there will be no cumulative effect on mammals in those areas because of the protocol that they have in place?

DR. NOWACEK: Yes, the cumulative effects question is an extremely vexing one, and one that the whole world is struggling with, in terms of trying to actually get a handle on it.

There are several ongoing projects for North Atlantic right whales that are geared towards exactly those questions. There have been some studies in Europe of wind farm construction and harbor porpoises -- they don't have large whales over there, so it's the only analogy we have -- and the take-home message is that those whales, the porpoises, avoid the areas when there is construction. They, for the most part, return to those areas once construction is done, and the piledriving is about a half to a day per piling, so you can calibrate yourself on how long those activities are actually going to happen. There's variability, there's resupplying, those sorts of things.

But, as far as the cumulative effect of the construction part, my interpretation would be that if you just take ocean wind by itself -- it doesn't occur in a vacuum -- the cumulative effect of that on any marine mammal species is likely to be very, very low.

As regarding the cumulative effects across all of the wind farm development, I thought I heard somebody reference hundreds of thousands of turbines -- we're not to those kinds of numbers yet; it's certainly not approved yet. And, the concern about the turbines interacting with the oceanography, as you heard from Dr. Kohut, there's a National Academies panel that's just been convened that several of us are on to look at that very question.

So, I'm going to have to say, unfortunately, that the jury is out on the cumulative effects. I can tell you from the acoustic side that the confined area of the wind farms -- which sounds like a lot of acres, and it is a lot of acres, but remember the ocean is pretty big and the size of the survey areas is much, much, much smaller than it was for petroleum and gas. Again, just as a comparison's sake, they're just smaller -- and less loud.

So, I worry less about the cumulative effects of that. I can't, unfortunately, give you a full answer.

ASSEMBLYMAN McCLELLAN: Thank you for that.

And, then, just one last question. I know we've been focusing on whales and dolphins and things of that nature. Is there any effect once the turbines are up on -- and, I don't know if you know this, I'm just throwing it out there -- on birds, and birds flying into those turbines, and things of that nature?

I don't expect you to know it, but just a general question.

DR. NOWACEK: Yes, and I should have said as part of my introduction I also lead a Department of Energy and BOEM-funded multi-institutional study -- Dr. Kohut is actually a co-investigator on that study -- that is focused on looking at the potential impact on marine mammals and birds and bats of offshore wind development.

What I can tell you, again, from our European colleagues, is that their birds are certainly killed by wind turbines, and bats are as well. And, there is some of the same species, like black-backed gulls and gannets that occur on the Atlantic coast. How they are going to-- Some of the data from Europe is the animals, when they're flying, they tend to avoid the wind farms. They do fly between the turbines.

So, the short answer is yes, birds are killed. The bigger answer is we don't have any signs that there are any kind of population-level consequences of wind farms on anything other than maybe one or two species of bats on land. So, we try to putting that -- as you did with the cumulative effects question, trying to think about the population-level consequences, and we don't have any signs that there are population-level consequences for any bird species.

ASSEMBLYMAN TULLY: Doctor, thank you for that, but I want to stick to the topic at hand.

Does anybody have any additional questions for the doctor, while we have him?

ASSEMBLYMAN MOEN: Just a final question here.

Doctor, thank you for joining us. This is Assemblyman Moen.

To your knowledge, are there any studies that unequivocally link the sound that would be generated from this development to whale strandings

in New Jersey and New York or other places? And, are there -- just through your studies, have there been any other states that may have that data available? Is there any data available on that?

DR. NOWACEK: Well, there are no-- I can say, well, like I said, the HRG sources are absolutely *de minimis* in terms of their potential impact on whales. And, to my knowledge, and any of that data I'm familiar with -- and I've written over 100 papers myself and co-authors, probably three quarters of them, on these very topics -- there's no signal anywhere that any of these acoustic sources would cause animals -- certainly not cause animals to die and be floating out at sea, nor stranded, either.

ASSEMBLYMAN MOEN: Thank you.

DR. NOWACEK: Yes.

ASSEMBLYMAN TULLY: OK, thank you, Doctor, thank you so much for your time and your testimony today. We greatly appreciate it.

DR. NOWACEK: Thanks for the opportunity.

ASSEMBLYMAN TULLY: Thank you.

OK, unfortunately, did we -- our last -- he's on a plane?

So, our last call-in, unfortunately--

R O B E R T A. D i G I O V A N N I, JR.: I actually am here.

ASSEMBLYMAN TULLY: Oh, are you on the tarmac right now, or--

MR. DiGIOVANNI: I'm sitting on the tarmac, yes I am.

ASSEMBLYMAN TULLY: Robert DiGiovanni, Founder and Chief Scientist of the Atlantic Marine Conservation Society, thank you so much for being here today, thank you so much for making the time, and I will let you get started because I know you're in a bit of a rush.

So, thank you.

MR. DiGIOVANNNI: Thank you very much, Mr. Chairman, and thank you Committee members for the opportunity to speak with you today.

As mentioned, I am Rob DiGiovanni with the Atlantic Marine Conservation Society, and, as you've figured out, I'm sorry I can't join you today in person, but I am actually in the middle of conducting an aerial survey for marine mammals and sea turtles in the Northwest Atlantic now, so we'll be taking off in a little bit to go do some counts.

I've been part of the Marine Mammal Stranding Program for over 30 years, and during that time I've responded to over 6,000 marine mammals and sea turtles that have washed up on our coastline, mainly in New York. And, working with our partners at the Marine Mammal Stranding Center in New Jersey, I have conducted necropsies on over 150 large whale species. And, as a member of the Greater Atlantic Regional Fishery Stranding Network, we work with our partners, not just the Marine Mammal Stranding Center, but also Mystic Aquariums up and down the coast to look at what is occurring in the New York Bight.

We *are* authorized by NOAA Fisheries to respond to these animals, and to be able to try to understand the cause of the mortality for these animals. And, we couldn't do this in the field. As Sheila has mentioned, we're a mostly volunteer network trying to pull it together with the limited resources that we have to be able to actually try to understand the causes of mortality on these animals, and that can't be done without a group effort -- not just from these stranding partners, but Federal, local, and state municipalities working together.

It is important for us to keep in mind-- And, I heard some of the questions about what happens during a stranding event. As Sheila pointed out, there's a lot that goes on during this event. I don't think I've ever been on a whale stranding that was less than a 12-hour day, and it really needs about 12 to 25 people to be able to conduct this examination and collect information from these animals when they are washing up on our beaches. And, this does happen pretty frequently, or a lot more frequently than most people are aware of. Since 2016-2017, we have been in the middle of an unusual mortality event, which has been designated by the UME working group -- the Unusual Mortality working group by NOAA Fisheries -- and they designate unusual mortalities by looking at an increase in frequency or location, time of year, and a number of factors that are definitely listed on their website to look at the criteria by which they can designate an unusual mortality event.

We are currently in the middle of three unusual mortality events for large whales: the North Atlantic right whale, the minke whale, and the humpback whale. All of them have started since 2016, and, in that time, roughly we have recovered -- of all three species -- it's, I think, it's 375 animals, of which a third of them have occurred in the New York Bight area. So, two-thirds have occurred outside of the area for this.

So, what are these changes that everybody has been talking about? When I first started doing strandings back in the '90s, we would get a whale stranding once every-- The longest distance was about 617 days between stranding events. So, you would get one every year, or every couple of years. In 2007, we started to see an increase of the number of strandings to go to having one or two a year. And, in 2016 and 2017, we reviewed some

of these data and we looked at the frequency of strandings and as of October of 2017, we were looking at an average time between stranding events as somewhere around 63 days. By the end of that year -- only a couple months later -- that average time had dropped to around 26 days, where it's been hovering for a number of years.

I point this out mainly because it gives us an indication that there's a lot of variability in when these strandings occur and the time of year. It also points out that we do have strandings at many different times of year, until every month of the year we have had large whale strandings. I think there's a byproduct. I forget who spoke about how long they have lived in New Jersey, 40 years. I'm thinking about how old-- While doing this for 30 years, there's a negative of doing it for so long, but there's also a positive. I'm starting to remember when you go back to stranding sites and you remember seeing these animals in similar areas.

So, there are definitely cycles that we're going through and, as of right now with the stranding events, we are seeing this increased frequency in the last six years. But, of those -- as I said, there's about a third, about 84 of the animals since 2017 occurred in the New York Bight that Atlantic Marine Conservation Society are working with our network partners at Marine Mammal Stranding Center and Mystic Aquariums have responded to -- 17 of which were actually live animals that stranded. And, then, of those 84, 57 of them were able to have necropsy examinations. And, of those 57, 35 had evidence of human interaction, or vessel strike, or something along those lines. So, 24 of those 35 were actually vessel strikes, and we say human interactions. I remember a question earlier was about marine debris, but when we look at anything that's human interaction we look at vessel strikes,

entanglement, and ingestion of debris, although it is not seen as readily in the larger whales, we have seen it in other species of animals. So, these findings that we're seeing that are attributed to vessel strikes are pretty consistent to what we've been seeing for decades. What's been different is the frequency we've seen in the last six years, and, also, the species composition. We're starting to see a little bit more of the humpback whales.

As we've come back to the unusual mortality event, we will see that vessel strike and entanglement are the leading causes of mortality for the humpback whales, and for the right whales. But, for the minke whales, which is another species that we encounter, it seems to be more of a biological process, so more of a disease process that we're encountering. So, even though we're having an increase, we're seeing an increase for a variety of reasons, which is probably indicative of what's going on in the environment.

And, I've heard a lot of questions about the menhaden, and food, and I've always used the example of looking at this system and how we go through this. We know we have whales, historically, along the coast of the northeast United States. But, if you think about years ago when we used to go traveling on the highway system of the '70s, we would stop at a rest area and we didn't have a lot of really great choices for food. Now, when you go and travel, you can see there's a lot more choices there, so we might have a longer time that's being spent in those areas. And, so, you can see those changes.

One of the first comments we used to get when we used to go out on strandings 45 years ago is people would say to us that they didn't even know whales were here, let alone the fact that we're having them wash up on our beaches. Now when we go out on a whale stranding, or a necropsy, or

something along those lines, what we're hearing from the public is that they're seeing more whales, "Hey, a friend of mine was here and we just saw a bunch of whales." Just the other day we had a whale stranding in New York, and in talking to one of the members of the public they were telling us about three humpback whales that they saw off of Fire Island.

So, those are some of the changes that we're seeing. I would hear everybody's thoughts about-- We need to collect more information and we need to collect data and share that and disseminate it. But, I would also want to point out that the stranding programs on a whole are one of the most consistent methods by which we have been examining causes of mortality, and it's one of the undersupported parts of the equation where it's really forcing us to try and, in many cases, people coming in on their own time, putting them up in hotels.

So, in order to address this, we need to bring a lot of these issues together, and a lot of these data together, because when I'm out on the beach and somebody asks me, "Is this normal?" If I don't know that we just got 10 humpback whales offshore, I don't know how that really relates to what we're seeing. And, I think that what we're hoping with this -- and, I talk about this as the New York and New Jersey Bight, and trying to look at this more of a system, working with our partners, we could start to answer some of these questions and making sure that we have the infrastructure and the support to be able to conduct these examinations so that we can provide the much-needed data going forward.

So, hopefully I didn't go too long.

ASSEMBLYMAN TULLY: Doctor, thank you so much for your testimony here today.

I know you are potentially taking off shortly, so I would just ask that you please provide a lot of the statistics and data that you provided during your testimony to the Committee. We'll be sure to follow up with you if any of my colleagues want more detail, please through me. We can ask the doctor as well.

But, does anybody have any questions for the doctor while we have him?

MR. DiGIOVANNI: Actually, it's mister, just so you know. It's not doctor. Even though it's 30 years.

ASSEMBLYMAN TULLY: Thank you, sir.

Assemblyman, please go ahead.

ASSEMBLYMAN McCLELLAN: Just one quick question.

I guess it's kind of two part. Do you-- One, do you know if multiple testings are going on at the same time? And, if they are, would that have a different effect if there's multiple testings going on, or it doesn't matter, it's the same effect regardless of if it's testing or it's not testing?

MR. DiGIOVANNI: To make sure I understand you correctly, are you asking like when we're conducting a necropsy and sending samples out? Is that what you're asking about?

ASSEMBLYMAN McCLELLAN: No, particularly seismic testing. It's all-- There's multiple ones going on at the same time. Would that have a cumulative effect on the mammals, or does it not matter, or you don't know either?

MR. DiGIOVANNI: I think that Dr. Nowacek answered that question about the seismic testing a lot better than I would be able to--

ASSEMBLYMAN McCLELLAN: Surveys, I'm sorry.

MR. DiGIOVANNI: And, so, when you look at that, as far as-- When we look at the surveys from a necropsy perspective, we conduct a necropsy in exactly the same manner, where we examine, and Danielle Brown mentioned earlier about conducting the examination and not jumping to any conclusions where we look. And, so, one of the things we would look at is, when we are able to conduct a necropsy and open up the animal; look for bruising; look for broken bones. Those samples are then sent out to independent pathology labs to verify what our field results say. And, then that's what leads to us being able to say, these are potential or probable causes of mortality related to the vessel strikes. And, that's really how we conduct our examinations.

The understanding about what testing is going on would be great to be able to coordinate those efforts going forward, just so we know.

ASSEMBLYMAN McCLELLAN: Got you.

Thank you, sir.

ASSEMBLYMAN TULLY: Thank you.

Sorry, Assemblyman, do you have a question?

ASSEMBLYMAN MOEN: I do.

Thank you for joining us.

My first question is, are you in a window or aisle seat?

(laughter)

In all seriousness, what can we do as representatives of the State, as members of the Legislature-- What can we do to assist with the difficulties of conducting necropsies and analyzing stranding?

MR. DiGIOVANNI: That's a really good question. I mean, the biggest thing that we need is to support directors of programs. The Marine

Mammal Stranding Center, like Sheila says, they're an amazing team, and extremely dedicated, and put in a lot of hours. It's always a pleasure when we're working with them. But, they're definitely undersupported. They need basic support to be able to have staff members who can be able to help and assist with it.

As we go forward -- and, I don't want to -- these are issues that we have as far as strandings and marine mammals that have been going on along the seaboard for years, and we need to make sure that we can continue to maintain that consistency of data collection. And, without continued support from not only the Federal but the state level, that makes it very problematic.

And, I think that's my biggest concern, is what happens when we don't have gas money? To make it pretty simple. I mean, back in the day, we used to joke about not being able to pay a toll, you know. So, I guess that's even a problem now as the prices go up.

ASSEMBLYMAN TULLY: Anybody else? (no response)

Doctor, thank you so much for making yourself available today. We really appreciate the time, and safe journey.

MR. DiGIOVANNI: Thank you very much, I appreciate it.

ASSEMBLYMAN TULLY: Thank you.

OK, that is our last testimony for today. I will allow any brief statements from my colleagues before we adjourn for today.

We'll go around the horn here.

Assemblyman?

ASSEMBLYMAN BARRANCO: I'm good.

ASSEMBLYMAN TULLY: Good.

Assemblyman.

ASSEMBLYMAN McCLELLAN: Just, quickly, thanks for inviting me, allowing me to hang out in this Committee.

(laughter)

Secondly, I think the overall thing that we should take from today is that we need to take a step back and see what's going on in our oceans and get a direct answer and not just assume.

We had testimony today that we know exactly what's going on, and then we had testimony that says they're waiting six months and 10 months to get information back from dead animals. So -- also, we don't know what the cumulative effect is.

So, I think we shouldn't be rushing to do things, and as a legislator, I've seen that in my short time here, that certain bills can get pushed through in a matter of weeks and certain things can take two, three, four, five years to get through. So, when you're doing things and you're affecting peoples' lifestyles and you know, the only good thing that I saw -- or know -- that's coming out of this is that it's going to create jobs for tradespeople. That was the only good thing.

But, at what cost is that going to be? Do we know that this energy is going to help? We don't know that. We don't know that at all. We know there are going to be some quality jobs that are created, and that's a good thing, and that's a plus, but that shouldn't be the overall, overwhelming thing. And, those jobs can still be created, but I still think we need to take a step back and not rush to do things, and see how it's going to affect our ocean; see how it's going to affect our bays, and our communities and things of that nature.

I think we, as elected officials, need to start taking some time back on legislation that we put forward, and not allow somebody from up top to push things for their own selfish agendas.

ASSEMBLYMAN TULLY: Assemblyman.

ASSEMBLYMAN MOEN: Thank you, Chairman.

I do just want to take a moment to thank everyone who has testified today and those in attendance.

As Assemblyman McClellan said, representing my area of southern New Jersey -- Camden and Gloucester County -- from an industry perspective, we understand the significance here.

But, I think what the DEP Commissioner said is that if we're doing our jobs here correctly, it is important to take a step back to look at the entire picture here. That means with the urgency that many folks that come to the table with objections to offshore wind, that urgency -- I would truly hope that that urgency would carry through to dealing with the larger issues we've heard today about climate change; to dealing with some of the other issues that may impact why whales are dying, which can include the increased ship traffic that we heard about today.

These are things that I think, collectively, we can continue to work forward together on. I think this information that we heard today -- the testimony that we heard -- will be analyzed by our staff on both sides of the aisle, and will give us information that we can continue to move forward and work together on to determine what the State of New Jersey, in partnership with the Federal government, can be doing to ensure that we're moving along in the same direction in an appropriate, safe, and respectful way.

So, thank you, Chairman, for holding the Committee hearing today, and I'm looking forward to the work that comes ahead.

Thank you.

ASSEMBLYMAN TULLY: Thank you, Assemblyman.

Assemblywoman.

ASSEMBLYWOMAN PARK: I just, I think my takeaway from the discussion today is that, yes, there is an urgency as far as global warming. Clean energy -- there's an urgency to clean energy, and the takeaway today as far as the whales and what's happening off our shores is that we really need to figure out the prey fish situation, that we need more data regarding prey fish.

And the other-- I've heard from the last doctor that called in was that the ocean surveying for the offshore wind is very *de minimis* -- I think he said "*de minimis*" like six times -- so, obviously, we need to really think about this more. But, at the same time, there is an urgency.

I just read an article about how this summer is going to be one of the hottest summers yet to come, and, so, we don't want to keep -- we don't want to keep this in the back burner, saying, "Global warming, global warming is going to happen." I want there to be a future for our children and clean energy for them in the future.

So, I thank everyone who came today and spoke, too. So, thank you very much.

ASSEMBLYMAN TULLY: Thank you, Assemblywoman.

I would like to sincerely thank everyone who testified here today. Obviously, this is a very important issue, a very emotional issue, and I would like to thank our Committee for having a healthy conversation as well.

And, giving us the opportunity to listen to the experts share their insights into whale deaths off the New Jersey Shore and elsewhere across the coast.

We're going to review all the data and testimony we heard in today's fact-based hearing, and we're going to continue to work with the experts to understand how to address this issue if necessary. This Committee is going to hold additional hearings, and I thank you all today for your time.

Get home safe. Meeting is adjourned.

(MEETING CONCLUDED)