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PAGE 57: Motion to request staff to move forward with the preparation of an amendment to each of the island-based FMPs to address trawl and net gear as discussed in the options paper presented at the April 2022 CFMC meeting. The motion carried on page 57.

CARIBBEAN FISHERY MANAGEMENT COUNCIL
178TH REGULAR COUNCIL MEETING
COURTYARD MARRIOTT
ISLA VERDE, PUERTO RICO

APRIL 19-20, 2023

The Caribbean Fishery Management Council convened on Tuesday morning, April 19, 2022, and was called to order at 8:15 a.m. by Chairman Marcos Hanke.

Call to Order and Roll Call

MARCOS HANKE: On today, April 19. We are going to start the meeting. It's 9:13 am. This is the 178th CFMC meeting. We are in Puerto Rico. We're going to start by opening this meeting and roll call is going to start from Cristina's side. My left.

CRISTINA OLÁN MARTÍNEZ: Good morning. Cristina Olán, Council Staff.

LIAJAY RIVERA GARCÍA: Buenos días. Liajay Rivera, Council Staff.

GRACIELA GARCÍA-MOLINER: Graciela García-Moliner, Council Staff.

MARÍA LÓPEZ-MERCER: María López, NOAA Fisheries.

CARLOS FARCHETTE: Carlos Farchette, Council Member.

JEAN-PIERRE L. ORIOL: Good morning. Jean-Pierre Oriol, Council member.

LOUIS ANTHONY BLANCHARD: Good morning. Tony Blanchard, Vice Chair.

MARCOS HANKE: Good morning. Marcos Hanke, Chair.

MIGUEL A. ROLÓN: Miguel Rolón, Council Staff.

DIANA T. MARTINO: Diana Martino, Council Staff.

ANDREW STRELCHECK: Good morning. Andy Strelcheck, NOAA Fisheries, Southeast Regional Office.

JOCELYN D'AMBROSIO: Good morning. Jocelyn D'Ambrosio, NOAA Office of General Counsel.

KEVIN MCCARTHY: Good morning. Kevin McCarthy, Southeast Fisheries Science Center.

NELSON CRESPO: Good morning, everyone. Nelson Crespo, DAP Chair of Puerto Rico.

JULIAN MAGRAS: Morning, everyone. Julian Magras, DAP Chair Saint Thomas/Saint John.

RICHARD APPELDOORN: Good morning, Rich Appeldoorn, SSC Chair.

HOWARD FORBES: Good morning. Howard Forbes, DPNR Enforcement.

MANNY ANTONARAS: Morning. Manny Antonaras, NOAA Office of law enforcement.

WILSON SANTIAGO: Wilson Santiago, Puerto Rico Fisheries Liaison.

ORIAN TZADIK: Orian Tzadik, PEW Charitable Trust.

IRIS N. OLIVERAS: Iris Oliveras, Council Staff.

MARÍA DE LOS A. IRIZARRY: Good morning. María Irizarry, Council Staff.

MARCOS HANKE: Now the online people. Cristina, can you help me out? Liajay.

LIAJAY RIVERA GARCÍA: Okay. Online we have Aida Ortiz Sotomayor, Chelsea and Evan Tuohy, Edward Schuster, Gabriel J. Pecunia Malave, Helena Antoun, Jack McGovern, Jesús Rivera Hernández, John Walter, Julio Cotto, Laura Cimo, Nicole Greaux, Loren Remsberg, Maria Angeli Leon, Martha Prada, Michelle Duval, Michelle Schärer, Rachel Eckley, Rachel O'Malley, Sarah Stephenson, Stephanie Martínez Rivera, Vanessa Ramírez, and Wessley Merten.

That is all on the list.

Adoption of Agenda

MARCOS HANKE: Thank you, Liajay. We are going to go now for the adoption of the agenda. Any Council member can help me out on this. Adoption of the agenda.

CARLOS FARCHETTE: Yes. Carlos Farchette, move to adopt the agenda as written.

LOUIS ANTHONY BLANCHARD: Second.

MARCOS HANKE: Any comment? Any opposition? Everybody in agreement?

Yes. Everybody in favor say aye.

GROUP: Aye.

Consideration of 176th and 177th Council Meetings Verbatim Transcriptions

MARCOS HANKE: Thank you. Consideration of the 176TH and 177TH Council meeting verbatim.

CARLOS FARCHETTE: Motion to accept the 176th and 177th verbatim transcripts as written.

LOUIS ANTHONY BLANCHARD: Second.

MARCOS HANKE: All in favor say aye.

GROUP: Aye.

MARCOS HANKE: Thank you. Before the Executive Director report, I want to request everybody to speak loud and close to the mic in order for the participants, virtual participants, to hear as well and for the recording.

And also, the meeting will end sharp at 12 because you have lunch for the people that are present because we need to be there sharp at 12:00 pm. Miguel, Executive report.

Executive Director's Report

MIGUEL A. ROLÓN: Thank you, Mr. Chairman. The first thing I would like to do is to read a letter from the record that we received, and-- Se oye ahora. Mira a ver. How about now? Okay. Sorry for that.

Diana will read a letter for the record that was sent to us by the Office of International Fisheries Affairs, and we would like to include it-- no se está grabando. Si, el problema es la mascarilla. Okay. Hello.

So, Diana will read the letter for the record. Okay.

DIANA T. MARTINO: Okay. Dear Mr. Rolón, I am writing to express appreciation for the Council support for the work of the Western Central Atlantic Fisheries Commission WECAFC, the advisory regional fisheries body responsible for promoting the effective conservation management and development of living marine resources in the wider Caribbean.

At the 17th session of WECAFC, held in July 2019 with the Caribbean Council's support and guidance, the United States successfully proposed to expand the mandate of WECAFC's joint working group on flying fish in the Eastern Caribbean to incorporate dolphin fish and other pelagic species not managed by the International Commission for the Conservation of Atlantic Tunas.

The dolphin fish stock is of great importance to the United States. Supporting active commercial and recreational fisheries throughout the Southeastern United States and wider Caribbean. As you are well aware ongoing U.S. efforts to ensure the long-term sustainability of this important stock will only be realized through a meaningful collaboration with other nations that are effectively fishing in this shared stock.

Under this wider mandate, the working group will continue to function in a technical and advisory capacity. This provides a platform for the United States to share its best available science and advance the interest of the U.S. fishermen in the sustainable fishery. Your active engagement on the part of the Council will be critical to the working group's success.

Furthermore, I wish to acknowledge the valuable contributions of the Council in support of the WECAFC's Joint working Group on queen conch and the organization's joint working group of spawning aggregations. The Council has supported the development of fishery management plans, training modules for assessment and management and communication and outreach tools to better manage these fishery resources of high economic and social value in the WECAFC convention area. I also wish to thank the Council for regularly hosting meetings of these subsidiary bodies to help monitor and advance progress.

In closing, I commend the Council for its leadership and partnership in the work of WECAFC, and I look forward to continuing our strong collaboration in the future. Sincerely, Rogers Christop.

That's it.

MARCOS HANKE: Thank you, Diana. As part of the executive report. Miguel.

MIGUEL A. ROLÓN: Okay. I would like to take this opportunity to do something that I should have done a long time ago. Sometimes it's emotional, but anyway, bear with me. Somebody asked me one day whether I have a right hand at the office. Well, I feel like

an octopus because I have many right hands. Today I want to recognize three of them.

Boy, they going to kill me for this, but anyway. The first one is Iris Oliveras. Iris, will you please come over here? She didn't know. I told her that she was going to be here to tell people to use their face mask and just put a leg to them so they can fall if they don't have it.

IRIS N. OLIVERAS: Oh my God.

MIGUEL A. ROLÓN: Well, Iris has been with us for a long time.

IRIS N. OLIVERAS: 25 years.

MIGUEL A. ROLÓN: 25 years.

IRIS N. OLIVERAS: This week.

MIGUEL A. ROLÓN: And the voice that most of you heard when we were before the pandemic. "Hello. Good morning. This is the Caribbean Council." It was Iris. For that we are really appreciative of your effort. I appreciate all your work, your friendship. This is a reef in a bottle that [inaudible] for us. Today we want to honor you with the reef in the bottle.

IRIS N. OLIVERAS: Thank you. You got me surprised. You surprised me.

MIGUEL A. ROLÓN: Well, that's the point.

IRIS N. OLIVERAS: This is beautiful. Even though it has been-- Thank you, Miguel and everybody that was involved with this. Very pleased in remembering that this week it was my 25th work anniversary. It was like "really, that long. Oh, 25 years?" And then I started counting back my age when I came to the accounting, I said, okay. Okay. No, don't say it. No. No, I won't say anything. It has been beautiful days, rough days, and a lot of challenges. Not for me only, but for the rest of the Council, but everything became the way that it was supposed to be when we had some steps that, or things that happened, not, not necessarily inside the Councils, but everything was completed, accomplished and I'm very, very proud of being part of the Council. It is in my memory, the-- It was meant to be, even though a lot of things happened with the pandemic and everything, whatever. I was supposed to be there, and I'm glad I am still there, and I'll be there for anybody that need anything, I'll be there. Just let me know. Just let Miguel know and we'll do our best to help on anything that we can.

MIGUEL A. ROLÓN: Thank you very much.

IRIS N. OLIVERAS: Thank you. Thank you.

MIGUEL A. ROLÓN: The second one.

IRIS N. OLIVERAS: Sorry, sorry.

MIGUEL A. ROLÓN: The picture?

IRIS N. OLIVERAS: Yeah, the picture.

MIGUEL A. ROLÓN: Good. The second one has a face that whenever I'm about to make a mistake with the bunny, she looks at me and says, "don't say that; you cannot do it." It's, Angie, you are not going to escape, so please come over here.

Angie has been with us for a long time. Actually, she had a time for almost nine, ten years that she went to work for another people, but then we convinced her to come back. When she came back, we had a problem. Our fiscal officer had resigned at that time, and we had to close three years at a time.

And for those you who know about numbers and grants, you know how difficult it is. I called her, and I said, "Can you do this?" And she said, "Are you crazy?" "No, I'm not. I'm desperate. Can you do it?" And she said, "yes." And she has been with us since. How many years since that time? More than 11. More than 20 years you have been with us in and out. So, for that, we want to recognize you today with another reef in a bottle.

So, the Council wants to recognize you for all your hard work for all these years, and I hope that you stay with us some more time. Unless, you get a lot of money, then you're excused. You want to say something?

MARÍA DE LOS A. IRIZARRY: No.

MIGUEL A. ROLÓN: She doesn't want to say anything, so—

MARÍA DE LOS A. IRIZARRY: Just thank you.

MIGUEL A. ROLÓN: Okay. So, like in the Oscars, we are set. [applause]

Yeah. Then, another person that keeps me out of trouble because she always kicks me in under the table. You don't see it, but she

does it. Every time that I feel telling somebody what I think, they say, "Don't do that. You're the Executive Director. He's a sob, but you have to keep your cool." So, I have been receiving a lot in this right leg here.

We all know her because she's always working with the reservations, with the hotels. When something goes wrong, we call her. Diana Martino, we all know her. So, she's another one that's going to say, "You don't do that" pero-- Anyway, we want to recognize you too, for all these years working alongside with me and the rest of the gang, the staff, Council members. I used to go to fisher's meetings with Diana. I remember, I went to a meeting in Saint Thomas, and they said, "Is Diana coming." "No." "okay." So, they left.

So, I want Diana to come over here. These are made by a biologist who happens to also be an artisan in Puerto Rico, Mario Tacher. He and his wife are also professional, but they do this for us. At this time-- where are you? --We want to recognize all your years We have been together for 30 something.

DIANA T. MARTINO: 36.

MIGUEL A. ROLÓN: 36 years. Well, myself, the Council, the staff, we want to recognize you at this time. I know that you hate this stuff.

DIANA T. MARTINO: Yeah, thank.

MIGUEL A. ROLÓN: But here it is. Don't drop it and say something. You can say something.

DIANA T. MARTINO: You fooled me. [laughter] Because I'm the one who always gets this and then you put it all in one box.

MIGUEL A. ROLÓN: Yep.

DIANA T. MARTINO: And he gave me the box. And I was like, "Wow. What a big one." Anyway, thank you, Miguel.

MIGUEL A. ROLÓN: You're welcome. You deserve it. [applause]

Yeah. We need pictures for Alida's report.

Okay. And it's a cliche, but I say, last but not least. But at this time, we want to recognize one person that I met a long time ago, and that person is always the same, you know, in front of you, in the back of you, is always the same. He knows the fishery

back and forth. I mean, like the back of his hand. He has been one of the best Council members we have ever had here. This is his last official meeting of the Council, unless we have one between here and August 10th. His last Chair and executive director meeting will be in May and it's Tony Blanchard.

Tony has been, as I said, you know, one of the best Council members we have ever had. He always defended the fishery or defended the fishers. Even though they might be from Puerto Rico, he always sticks his neck out for them. He's the only one who has sat next to the RA, one time that Roy Crabtree challenged him to sit next to him because he was talking about things that Roy should have. [crosstalk] he put it there. Then after that, Roy told me, don't ever let me do that again.

In a personal capacity. I'm a dog lover. He's a dog lover. More than me. We have kind of a special bond there. Today you are not going to escape without a reef in the bottle that we have for you today. These are fish in Saint Thomas.

LOUIS ANTHONY BLANCHARD: It is? I don't remember us having manatees though. [laughter]

MIGUEL A. ROLÓN: Marcos wanted to say something at this time. Please. Marcos,

MARCOS HANKE: Good morning, everyone. I want to say and address Tony, but I want to take an opportunity also to recognize everybody else that was here, Angie, Iris and Diana. With the guidance of Miguel as a team, they have a good atmosphere and a productive environment at the Council. As a Chairman and Council member for many years thank you to all of them for all their support.

Now, Tony. Tony and I have a very productive relationship because I really appreciate, once we can agree and disagree, keep the communication and this is what the Council is about. The relationship that Tony and I have is of mutual respect. We have been very sincere to each other, and he teaches me a lot of things. I thank you for that and I thank you for your honesty and for pulling my ear sometimes and making me think a little deeper about things.

This is what a good Council member does. It is not just the knowledge that you bring to the table; it is the other personal aspects that you bring to the table that are unique and special. Thank you very much, Tony.

LOUIS ANTHONY BLANCHARD: Appreciate it. [applause]

Okay. Well touching on this with Roy. Me and Roy bumped heads a lot of times back and forth, back and forth. He'll tell you. But I think Roy respects me because I was a man at held my ground and I can tell him I don't back off for anything unless I believe I'm wrong or you could prove me wrong. Like I said, I don't follow a weaker man than me down the road. I would follow somebody strangle, which I don't find too much of them, but if we go along the same road, you have to have me buy into it and believe that we are doing the right thing.

When I came on the Council years ago, I came out with the intention of looking out for the fishery, the best I could manage it. Looking out for the fishers, the communities, because to me it is all about the fishery. And the fishery cannot be excluding the fishermen and the other user groups. You're tourists, so on and so forth.

This all a big-- it's like a puzzle that you're trying to manage. I believe when I walked in the door, I walked in not compromising myself, and I believe I could walk out without doing so. I believe I was straightforward. We didn't always agree. But then, at the end of the day, you didn't bring me here to agree to anything. You bring me here to manage. And me and Rich bumped heads a few times, but I respect him coming from a different angle. It was a learning experience for me. I learned a lot of things. I learned about the ins and outs of how fisheries are managed.

I wasn’t always right, but I will be the first one, when I realize I'm not right to tell you, “Listen, I was wrong.” So, at the end of the day, I believe I came in with a plan. I succeeded the best I could with what I had in front of me, and I will leave and leave the torch for somebody else to carry. I'm just hoping that they do as good a job, that they take the fishers, the communities, the fishery into consideration like I did.

I can say at the end of the day, the way I walked in the door is the way we leave. Head high, walking in and out. When I am in a place, nobody has to doubt that. I am there. They know I’m there. Just by my presence they know I’m there. So, like I said, I wasn’t always right, but I'm willing to concede to be wrong, but show me that I am wrong first.

And like I say, it was a good experience. I mean, for me, for the most part, it was a good experience. Some of it was a little back and forth. Like I said, I didn't agree with some things, but we didn't always agree. But show me where I am wrong first and then I'll agree with you.

So, at the end of the day, I appreciate the time I was here. I actually lasted longer than I thought, because, in my opinion, sitting in this position, you have to have political ties and I don't have that. I don't fall to anybody. You understand? I believe you're going to put me here to do a job. That's why you signed on for. Whether I agree with you or I don't agree with you, I agree to do that job and that's what I think I have done.

So, like I said, I will leave carrying my shield, like I walked in carrying it.

MARCOS HANKE: Thank you.

LOUIS ANTHONY BLANCHARD: And I appreciate the time. [applause]

Come on Marcos. We can't do this without the Chair.

MARCOS HANKE: Thank you everyone for being part of this special moment. Miguel, go ahead.

ANDREW STRELCHECK: Yeah, I just wanted to thank Tony as well. I know the commitment it takes to serve on the Fishery Management Councils and the time it takes away from your business, from fishing, from other activities, your family. So, I know it's not an easy commitment and at the fishery service, we certainly appreciate everyone's time that is spent, obviously, in these meetings and helping us to manage the nation's fisheries. I laughed obviously when you talked about Roy, but Roy does send his regards and appreciates your time and work on the Council. And you're exactly right, you didn't always agree with him, but we always respected you for your input and your views, and it helped us be a better agency and a better Council for that. So, thank you, Tony.

MIGUEL A. ROLÓN: Okay. Thank you, Mr. Chairman. That's about it. We are also-- I'm sending an email to everybody. We are having problems with reservations and presentations. I know that people are always challenged for time, but the presentation should be in the hands of Cristina at least five days before the meeting. Otherwise, we run the risk of not being able to have the presentation on time for the meeting. So, we will send emails to everybody to remind them of that.

And the other thing is the reservation. The hotels are a little bit edgy nowadays, because people make reservation the wrong days or the wrong times, and then they try to-- well, sometimes they don't show up. So, we are going to remedy that. From now on we are going to have a block of rooms. Everybody will have the memo from Diana, and you'll be responsible for making your reservation, and

calling the hotel. Outside that day, we are not responsible for any reservation, because any reservation that is made, that is no show, the Council has to pay for it. And they are really getting very strict at the hotel.

We were able to work here because Diana knows the people. She put her magic to work, and we were able to cancel some of those reservations. Of course, if somebody have, like Alida today, an emergency with the family or whatever, we take all actions to alleviate the problem. But I don't want to say anything else.

The reason we had this letter read today is because the Council from the get-go and been working with international fisheries. Because as you'll know, we are responsible for fishery that is shared upstream and downstream with other countries. 38 countries, including countries and territories like us for the United States. So, this is important to be recognized because we would like to continue working with the NOAA fisheries. Now the contact person in the region is María Del Mar. She participates at the discretion of the RA at these meetings with the Western Central Atlantic Fisher Commission, OSPESCA is another international group, and the CRFM, which is the Caribbean Regional Fisheries Mechanism that encompasses nine countries that are members and up to seventeen with observers and members. So, it is important component of our fisheries.

Marcos, Carlos have participated as Chairs at the meetings with the working groups. And today we are going to hear from one of them. A report by Rachel on the meeting that was held recently. So, with that, Mr. Chairman, we thank you for the opportunity for this report and we would like to continue the agenda.

MARCOS HANKE: Thank you, Miguel. The next item on the agenda is the presentation that will be made by Rachel O'Malley. Rachel.

Outcomes of the Moored FADs Working Group Meeting—Rachel O'Malley

RACHEL O'MALLEY: Good morning, everyone. I'm Rachel O'Malley. I'm a foreign affairs specialist with NOAA Fisheries in the Office of International Affairs Trade and Commerce. It's nice to see you all today. We've already heard this morning in the Western Central Atlantic Fisheries Commission, or WECAFC, is a regional fisheries body with a geographic area extending from the South Atlantic coast of the United States to the waters of Brazil. There are 34 member countries.

I'm here to give you a brief report out from the recent meeting of

WECAFC's working group on fisheries using moored fish aggregating devices or FAD. The meeting was held virtually on February 14th through 16th, and we were fortunate to have a very robust U.S. delegation participating.

I'd like to extend a big thank you to Miguel and Marcos for their active engagement and input both before and during the meeting. We're also fortunate to have Dr. Wess Merten participating on the U.S. delegation, as well as a strong showing of fishery staff from Southeast Region, Southeast Fisheries Science Center, and the Atlantic Highly Migratory Species Management Division and Headquarters.

Our overarching objective for this international meeting was to build increased regional collaboration that can help support long-term sustainability of living marine resources. While we are always striving to manage fisheries responsibly in the United States, cooperation with foreign partners is of critical importance when it comes to shared stocks. Based on the tone of the meeting, I think we have a good foundation to continue advancing that.

The meeting began with a series of presentations by WECAFC member countries that offered descriptions of their moored FAD fisheries. A presentation was also given on behalf of the Caribbean Regional Fisheries Mechanism Members collectively Antigua and Barbuda, Dominica, Haiti, Saint Kitts, and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago and Grenada. These countries have in place a sub-regional management plan for FAD fisheries approved in 2018, which is focused on small scale artisanal fishers whose livelihoods are significantly supported by FADs.

The Subregional Management plan is designed to help these small-scale fishers address food security issues by more efficiently fishing offshore pelagic resources while following safe, responsible, and sustainable fishing practices. So, this formed the starting point for the working groups consideration of a draft regional management plan that expands the geographic scope to the wider Caribbean and provides us with a framework to guide the implementation of best practices.

Flexible approach allows for some countries to manage moored FADs directly. While here in the United States, we manage the various fisheries that are using FADs. In addition to the regional management plan, the working group reviewed and discussed several other documents, including a guide for improved monitoring of moored FAD catches, and improved assessment of the impact of moored FAD fishing on fish stocks.

The main conclusions of the working group, which centered on the importance of data collection and reporting throughout the region were incorporated in a draft recommendation that will be reviewed by WECAFC's Scientific Advisory Committee next week, and then forwarded for consideration and adoption by the commission at its meeting in July of this year.

Also, just to reiterate, WECAFC has a newly mandated working group on dolphinfish and flying fish would meet in January 2023. The mandate of that group is to address coastal pelagics that are not managed by ICCAT. And the creation of this group happened thanks to efforts by the Caribbean Council. So again, thank you to everyone who contributed to that effort, and we'd like to continue a dialogue with the Council in preparation for the meeting of that group perhaps at a Council meeting later this year. And I hope to meet many of you in person then.

So, I'll stop here and offer either Marcos or Miguel or any of my NOAA colleagues an opportunity to highlight anything I missed there. And also, happy to take questions. Thank you.

Questions/Comments

MARCOS HANKE: Thank you, Rachel. Tony Blanchard.

LOUIS ANTHONY BLANCHARD: Morning, Rachel. Good presentation. I got a question for you. I noticed that when you mentioned the countries that was involved, that Saint Barts, and I don't believe Saint Martin was included, and I don't believe Guadalupe was included unless I missed it. Is that the case?

RACHEL O'MALLEY: I can't recall if they were present at the meeting. I don't have a list of participants in front of me, but I can confirm that for you and get back to you.

LOUIS ANTHONY BLANCHARD: Right, because it looks like the French countries were not involved in the process. Whether it is by choice or I'm not Sure, but it just sticks out to me if that's the case.

RACHEL O'MALLEY: There were definitely some French speaking countries involved, and I know Guadalupe has been active in many of the working groups. I just can't remember about this particular one, but I can find out for sure.

LOUIS ANTHONY BLANCHARD: Okay.

RACHEL O'MALLEY: Yeah, I'll put that information in the chat,

maybe.

MARCOS HANKE: Miguel.

MIGUEL A. ROLÓN: Yeah, Tony. Some of those members are represented with their organization. The CRFM for example, represents these countries. For this particular working group, not all the countries have these devices working for the moored fishery aggregated devices, and that's the reason why they don't show up at the meetings, but they are all represented. The CFMC is just an observer, and we are part of the U.S. delegation, but the other countries, when they are not present, they are represented by this group.

OSPESCA, for example, is the Central American countries. So, you may not see them at the meetings, but they are represented, and we have exchange with them. Then WECAFC, the big umbrella, represents everybody. All the members there. So, the reason why some members decide not to show up at these meetings is because they have several working groups during the year, so they allocate the resources to those who are closest to their interests in the fisheries.

MARCOS HANKE: Thank you, Miguel. Anybody else from the Council? No? I just want to mention that I'm very glad to participate on those working group and especially give us a perspective of how well the US is doing in deploying and managing and approaching FAD fishery or moored FAD. That also is a tool that as a Council member and part as a participant of this fishery, we need to be aware, and have the need to inform our public of the implications about FAD fishery and so. On those lines, thank you very much, Rachel, for the opportunity.

CARLOS FARCHETTE: Marcos.

MARCOS HANKE: Carlos.

CARLOS FARCHETTE: So, is there going to be a plan for FADs in the WECAFC region or just mentioning that there's a committee working on FADs for the whole international arena?

RACHEL O'MALLEY: Yes. So, the next step is that the regional management plan that was approved by this working group will be reviewed by the Scientific Advisory Committee of WECAFC. Then, it goes to the WECAFC Commission, which is meeting in July and it will be up to the commission to approve the plan.

CARLOS FARCHETTE: Is a draft that we can see?

MIGUEL A. ROLÓN: We can locate the document and send it to anybody. If you look at the webpage of the WECAFC, there are documents there that we can share with you. But I will make a note of getting copies of those documents that addressed the issue of mooring Fishery Aggressive Device.

Remember there are two Fishery Aggregating Devices, the one that you anchor, that we call them mooring, and the one that you do not anchor. We will send copies of that to you. Somebody asked me what the Caribbean Council involvement will be. Well, we have to follow Magnuson-Stevens Act, as you know. So, at the time that, that we have a need for managing those Fishery Aggregating Devices we will do so.

So, I will send you copies of all the documents, Carlos, and anybody who wants it.

CARLOS FARCHETTE: Yeah, I know that their rules are a little different to ours, being U.S., but we do require-- in working with our sanctuary committee, we're required to have Army Corps permits to deploy these things. So, I'm not sure exactly what-- when I see the plan, I'll have a little more knowledge on it.

MIGUEL A. ROLÓN: That's a good point. Each country has a different way, different governance to approach this. When I was working with the FADs in Puerto Rico, we needed to touch base with five different agencies. The Corp of Engineer is the lead one, the Coast Guard, National Marine Fishery Service, and, of course, the local government. So, it is a complex problem, but there is a challenge and I believe that the group is going to present to the full WECAFC in July, their recommendations. Either we will have a plan at that time or the draft of a plan.

And the way it works, remember the working group prepares a plan or any document, it goes to the equivalent of the SSC, which is the SAC, the scientific group and then the document is submitted in full. Every two years the commission meets. It's submitted in full and if it's approved, then it became a management plan. Different from our management plan that you have to implement it via regulations. Those management plans, once they are approved, each country will implement the prepared regulations for the adoption of the plan.

MARCOS HANKE: Thank you, Miguel. Tony.

LOUIS ANTHONY BLANCHARD: I just got a question because I'm here listening to the back and forth, back and forth. Anybody ever think

that maybe by deploying all of these FADs, that is going to affect the way of how the fish migrate at certain times of the year? Because you are actually attracting them to something that they're going to hang around once they have the fish. But we all know that fish move from one place the next during the year and during the season, whether it be by barometric pressure, by sargassum, whatever. So, you are actually putting up like, in a way, like a fence, an invisible fence, that it could go through it if it so chooses.

My thing is this, we might see this as a positive, but we don't really know how this is going to affect the movement of the fish during the year because we have installed all of these FADs. That's what I am looking at. I am not saying it's a good thing. I am not saying it's a bad thing. I am saying, this is something we need to think about. You know, because sometimes what we think is a good thing, is actually not a good thing.

MARCOS HANKE: To your point, Tony, all of those considerations and others are explored in those meetings. In general lines, Rachel, I would like to say to the group that the way we do moored FAD fishing in the U.S. Caribbean is with the highest standards that are in terms of data collection, in terms of the deployment, in terms of how responsible we are with these operations.

Those groups really facilitate that conversation on a broader scale of the Caribbean. But all those considerations that you are, from a fisherman standpoint, are considering and are included in those discussion. I invite everybody to read what Miguel is going to send to you about WECAFC and be aware. Because, now more than ever, since we are going to manage wahoo, blackfin tuna and dolphin, this discussion is going to be relevant to this Council into the future. Thank you.

Rachel, do you want to say anything else to end the presentation? Richard. One second. Richard, question for Rachel?

RICHARD APPELDOORN: Oh, no, it's just a comment following Tony's question. Toward the end of today, we're going to be hearing a presentation from Wess Merten about the FAD program here in Puerto Rico and he's been looking at the question of fish movement. So, he might be the person you want to direct that question to. But I think what you'll find is that, yes, the fish will come in, hang around a FAD for a while and then move. So, instead of having, maybe, a smooth migration trajectory they're doing, maybe, kind of a connect the dots type of trajectory. But he'd be the one to ask that question.

MARCOS HANKE: Thank you, Richard. Rachel, you have one more question from Carlos.

CARLOS FARCHETTE: Yeah. Well, I think this comment is really involving in the U.S. Caribbean. One of the biggest complaints of the Saint Croix Fishery Advisory Committee has had with FADs is that when we deploy FADs with an Army Corps permit in place, if the FAD breaks away and it's not replaced immediately, or, you know, a couple years down the road, we have to reapply again for an Army Corps permit for a FAD that's already been approved at the same location. The committee wants to know if there's any way that they can have a blanket permit, that once the FAD is in place, it can be replaced every time it breaks away without having to go through this long process of Army Corps permits again.

MARCOS HANKE: Thank you for your comments. This is also part of the discussion of those committee in some sense. Rachel, do you want to say something in response to Carlos. Then we have Julian Magras to make a question.

RACHEL O'MALLEY: I'm sorry. It was difficult to hear that last question. I think it was a question about the permitting process.

MARCOS HANKE: The question was, once we have a FAD in Saint Croix installed, let's say that FAD move away, if there was a blank form or a process in which the whole process of going to Cuerpo de Ingenieros and the other agencies can be expedited. Can be quicker for the replacement of the FAD.

RACHEL O'MALLEY: Okay. I'm sorry. I think I'm probably not the best person to answer that question. That was the question, and this is something that we can follow up. The question Miguel was, once they lose the FAD, the FAD breaks out, if there was something, a process that can make it quicker to reinstall the FAD instead of passing through the whole process again of-- yeah.

Okay. We're going to address it. We are going to look for a better an answer for you, Carlos, later on. We don't have the way to fully answer to you. María.

MARÍA LÓPEZ-MERCER: Yeah. I will find that out for you. We have in our office, through NOAA Fisheries, sometimes, with protected resources division, worked on consulting from some of these FADs. So maybe I can ask some of our colleagues about the process and I will get back to you. I wrote it down.

MARCOS HANKE: Thank you María. Julian.

JULIAN MAGRAS: Just a quick question. Have you guys been looking at revisiting the size limits for the wahoo and the dolphins, since we're going to be adding all of these FADs, to ensure that we are also protecting the species with the size limits.

MARCOS HANKE: Is the question directed to Rachel?

JULIAN MAGRAS: Yes.

MARCOS HANKE: Okay. At WECAFC level, is there any discussion about size limits related to the FAD fishery, Rachel?

RACHEL O'MALLEY: Not at this time, but that's an issue that could be discussed within this new working group that's going to meet next year. So, we should continue our dialogue about that.

MARCOS HANKE: Thank you. Miguel. And that's the last question, or participation.

MIGUEL A. ROLÓN: Yeah. This working group was addressing mostly the mooring FADs, not the species itself. Going to Tony's comment, we have a situation in the Caribbean, it's called gauntlet fishery. Gauntlet fisheries is where every country catches whatever they can of a population that migrate from one point to another. In the case of the dolphinfish, they migrate from the Southern Caribbean all the way to Cuba. And for another part of the-- actually from North Carolina down. We have two species that, as you know, do that.

So, the reason to bring this to your attention is to let you know what is happening, what these other countries are thinking under the umbrella of WECAFC. And then, as a Council member, to think for the future when we have the island-based implemented, whether you are going to consider anything related to mooring FADs.

We also can send a letter to Muñiz. He is the director of the Corp of Engineers in Puerto Rico. The Corp of Engineers has the last word on many of these things. So, we certainly, for the August meeting, will try to get you the best information available so you can take it from there.

And remember, the FADs are two types, the floating ones and the anchor ones. We are talking about the anchoring ones. You may want to prohibit the floating ones and that's some consideration by countries. But this tool has been used since the times of Christ, before that, and it had been documented. So, it is not something that you can pull away from the fishery as easy as you can think, in many countries. So, that's why we are concentrating with the

WECAFC region, at this time, on the mooring FADs and that's for you to consider.

Probably for the next meeting, Mr. Chairman, we can put that in the agenda if you wish, so we can bring more information to you.

MARCOS HANKE: Yes. Thank you very much, Rachel. Do you want to make a question? Go ahead, Andy.

ANDREW STRELCHECK: Well, I just wanted to respond specifically to Julian. So, we will be receiving a presentation from María and Sarah Stephenson this morning about size limits for pelagic species and certainly we'll talk about in the context of whether the Caribbean Council wants to move forward with an options paper. But certainly, given the migratory nature of the species that we're managing here, makes sense obviously, if we are going to move forward with size limits or bag and trip limits that we also consider this in the broader Caribbean region and encourage, obviously management more holistically than just the territories in Puerto Rico.

MARCOS HANKE: Good point. Thank you very much. Rachel, last word?

RACHEL O'MALLEY: Sure. thanks for the opportunity to be here today and if anyone has further questions or maybe you'll have questions after you have a look at the regional management plan, feel free to email me. My address is at the end of the short paper that was included in the briefing book. Thank you.

MARCOS HANKE: Thank you very much. Excellent presentation again. Thank you so much. Next item on the agenda, Island-Based Fishery Management presentation by María López-Mercer, and Sarah.

IBFMP and Amendments Update

MARÍA LÓPEZ-MERCER: Good morning. This is María López from NOAA Fisheries. So, for this part, there's no presentations. We have some slides for the next items. We just want to give a brief update on where we are with Island-Based Fishery Management Plans proposed rule.

At this time, we are very happy that NOAA Fisheries Southeast Regional Office has concluded their review of the proposed rule and the proposed rule has been sent to NOAA Fisheries headquarters for review. That means that after the NOAA Fisheries Headquarters conductor thorough review, again, this is a very vague proposed rule, then what proceeds is the publication of the proposed rule, and then the opening of the public comment period of 30 days. So,

I don't have a date for that, but hopefully by the next meeting in August we will have news about whether it's going to be published, that proposed rule, and opening the comment period.

So, unless anybody else have other questions about the Island-Based FMPs please stand by for other updates, hopefully soon.

MARCOS HANKE: Thank you, María. Do you have Sarah too? Any other part?

Spiny Lobster OFL/ABC Update and Council's Request to NOAA Fisheries

MARÍA LÓPEZ-MERCER: Yes. So, Cristina, can you present the slide that says FMP amendments? So, what we want to do right now is just go real quick through some of the amendments that-- not that one, the other one. --some of the amendments that the Council has discussed during the past year that will be amendments to the island-based FMPs, once those are implemented.

Just to give you a brief summary of the decisions the Council made and where we are on this stage, so that when the Island-Based FMPs are in place, you know that these are other actions that are going to be coming. So, Sarah, if you want to take it from here.

SARAH STEPHENSON: Hi, good morning. I'm going to give you a little refresher on the first amendment to the Island-Based FMPs that we worked on, which was the modification of spiny lobster management reference points based on the SEDAR 57 stock assessments for spiny lobster. It's a generic framework amendment to the FMPs, so it applies to each management platform.

The issues that were addressed in the amendment were to update the management reference points for spiny lobster to account for the SEDAR 57 stock assessments and application of the Council's acceptable biological catch control rule. That control rule was included in each of the FMPs, and it specified what to do based on tiers. So now that we have an accepted stock assessment, the spiny lobster stock is now in tier three. So, that got updated with this amendment as well. The amendment also revises the AM trigger, the accountability measure trigger, for the final lobster stocks.

The status of it. The Council did take final action in August of 2021. So, it may be a while and hence the refresher. And then, NMFS is preparing the proposed rule and associated documents for that. And as soon as we know the final effective date for the FMPs, we'll start moving forward with the proposed rule package. So, we anticipate that it will be almost immediately after the FMPs.

Next slide please.

So, there's two actions in the amendment. Action 1 modifies the spiny lobster overfishing limits, acceptable biological catch and annual catch limits for spiny lobster for each island. Alternative 1 was the no action, so it just left things as they were specified in each of the FMPs and that would be under tier four of the control rule, which was data limited with no accepted assessment.

Alternative 2, looked at, the Council could have selected a variable catch approach for specifying the OFLs and ABCs, and essentially the ACLs in which the values would change from year to year, but the preferred alternative, Alternative 3, the Council selected the constant catch approach for specifying the OFL and ABCs, and then deriving the ACLs from that. So, the values for the three years were set at a constant value.

And then, you can see the sub-alternatives there. Which management uncertainty buffer the Council selected was 3B, which sets the ACL at 95 percent of the ABC.

Next slide

Action 2 modified the trigger for the accountability measure. The trigger is the years of landings that are used to compare to the ACL. So, Alternative 1 was the no action. It would use the trigger that's described in each of the FMPs, which did a ramp up of landings. So, it would use a single year of landings, followed by the next subsequent year of landings, followed by a two-year average of landings, then a three-year average of landings, and then thereafter a progressive running three-year average.

And then, there was also the clause that the NMFS Southeast Regional Administrator, in consultation with the Council, may deviate from the specific time sequences used, to determine if the ACL was exceeded. So, for instance, these years that are specified in the slide were written a couple years ago, they could be refreshed to use the most recent years of landings available. So instead of 2018, we could use 2020. And so, all of the dates would be updated. So, that's the no action. That's going to be your accountability measure for the majority of stocks, the other stocks included in the Island-Based FMPs.

Next slide please.

Alternative 2 was the preferred alternative selective, and it's going to use the most recent three years of landings to evaluate

whether an AM is triggered. And then the AM would be triggered if those average landings exceed the average ACLs in place during those years. And that language just is in the interest or in the eventuality that there may be ACLs in one year of landings data that are different because they were under a different management regime or from a different time period. But so, we're going to compare average landings to average ACLs. Under this amendment, the ACLs would be constant. So, averaging the same number three time just results in that same ACL number.

The years of landings can be adjusted to account for the best scientific information available. That's just in the eventuality that maybe landings aren't available for some reason or another. There was a third alternative to just use a single year of landings to evaluate if the AM was triggered but that was not selected.

And next slide, I believe takes you to the gear amendment. So, María, do we want to do questions at the end or—

MARÍA LÓPEZ-MERCER: I think you can do questions on the spiny lobster now if that's okay. So, we don't change the subject.

SARAH STEPHENSON: So, yes. Are there any questions on the amendment, the spiny lobster amendment?

Questions/Comments

MARCOS HANKE: Any question on the spiny lobster amendment? This is basically a status report of what is going on up to now. Hearing none. María, do you want to say something?

MARÍA LÓPEZ-MERCER: No, I just want to say that I believe that in the Science Center presentation, they're going to talk a little bit more, Kevin, is my understanding, of other plans for the spiny lobster in terms of updates to the values and SEDAR, etcetera. So, more information will be provided from that part, when Kevin gives his presentation. And then we can obviously return, like if there's anything that you guys have any additional questions regarding the amendment, then Sarah's going to be available too.

MARCOS HANKE: Kevin.

KEVIN MCCARTHY: I mean, the short answer to that is that there's an update assessment that's happening this year and the results of that should be made available for the fall meetings of the SSC and the Council.

MARCOS HANKE: Okay. Looks like the things related to the lobster

are getting better, improving the data and making better decisions on it following the guidance of the Council. Sarah can you keep going.

Gear Amendment: Modification to Buoy Gear Status Update

MARÍA LÓPEZ-MERCER: Okay. I believe it's me now. Okay. So, this is the other action that the Council discussed last year. This is the modification to the definition and use. This is going to be an amendment also to the FMPs for each one of the islands, Puerto Rico, Saint Thomas and Saint John and Saint Croix.

The issues that were addressed in the amendment was modifying the definition of buoy gear in federal regulations to allow for the use of up to 25 hooks to fish commercially. That was the issue that was addressed. The other issue was the interest on the Council of limiting the use of buoy gear to those fishing commercially only. The Council took final action for this amendment in December 2021. At this time NMFS is working with associated documents and will have a proposed rule ready for when the island-based FMPs are in place.

Next slide, please.

This has taken a little bit longer to show in here, so. All right. So, there were two actions. The first action is the buoy gear prohibition for recreational fishing. There was a no action. The it is set in our regulations, is that boy gear is an authorized gear type for recreational harvest in the Caribbean, as found in 50 CFR 600.725, which are the regulations that list the authorized gear. This will make no changes. That doesn't mean that the gear is used, it just means that for some fisheries in the Caribbean, it was not listed as a prohibited gear. It's an authorized gear.

So, Alternative 2, which was the alternative that was preferred by the Council, which just is a broad prohibition on the use of the buoy gear for those fishing recreationally in federal waters off the three islands.

Next slide.

Okay. So then, Action 2 was the modification of the buoy gear definition. The way that our regulations read is that the number of hooks-- one of the items in the description of the buoy gear is that the number of hooks that could be used with that gear was 10.

So then, we have two alternatives. One alternative would modify the definition as it applies to the commercial sector fishing only

for managed reef fish in the EEZ of each one of the islands to allow the use of up to 25 hooks connected between the buoy and the terminal end. And then, we added a third alternative, as required by the Council, so that allowing the use of up to 25 hooks would be allowed for all authorized commercial fisheries, not just for the managed reef fish. So, this is the alternative that was prepared.

So, this was just a refresher. So, you know, the decisions that you previously made and once the Council takes final action, then NOAA Fisheries steps in and starts preparing the documents and the proposed rule.

Now after the break we are going to be talking about. Two new actions that the Council requested for staff to prepare and to present. One of them is regulations regarding the use of trawl gear and other nets in the Caribbean EEZ. That's an option paper. And the second action that we are going to be discussing is related to pelagic species managements.

Pelagic species are new to management under the FMPs, and there was interest in the Council in exploring different management regimes, for example, size limits, trip limits, etcetera. So, we are going to be providing some background information of the different things that the Council can do to manage this new species. Any questions?

Questions/Comments

MARCOS HANKE: Miguel.

MIGUEL A. ROLÓN: María, do you need any motion from the Council at this time?

MARÍA LÓPEZ-MERCER: I do not; not at this time. This is just a summary of what do you guys have already done? Mm-hmm.

MARCOS HANKE: Thank you, María. Great job. Great presentation. Anybody else from the Council? We all in agreement that it reflects what we have been discussing and the document is really reflecting the great job of the Council together with the job you guys did on the office. Carlos.

CARLOS FARCHETTE: Yeah. I have another amendment. So, I'd like to know, maybe, when's a good time to maybe present this after you go through the break or whatever. I'm not sure when.

MARCOS HANKE: In terms of your logistics, what is the best time,

María?

MARÍA LÓPEZ-MERCER: Let's see, so the break is for 10:45. So, I think we can discuss it right now if you want to do that. Okay.

MARCOS HANKE: I believe it's a good timing. Go ahead.

CARLOS FARCHETTE: Give me a second here. I got some notes. Okay. The recreational, commercial and rec for hire fishers have requested a review of the regulations that govern the seasonal closed area for red hind and Lang Bank. There is a need to address pelagic and HMS fishing at the top of Lang Bank, Saint Croix during the seasonal closure for red hind at the spawning aggregation area.

50 CFR 622.435(a)(2)(ii)(A) states that from December 1st through February 28th, no fishing in those parts of the area that are in the EEZ.

Before I-- can I get a slide up there on the screen, the one that I sent on Lang Bank to Cristina. Actually, the slide I have up there is just for reference so that you all can see the water depth that I'm talking about. But while they bring that up.

The deep-water area of 25 to 75 fathoms is heavily used for trolling and fishing during the time of the closure for multiple HMS and pelagic species by commercial charter for hire and rec sectors. Fishers have said that species such as wahoo, yellowfin, bigeye, skipjack, albacore, mahi, kingfish and swordfish, which are top water species, are active during the December to February closure time and these species should be allowed to be fish because it would not have an impact to the species that are being protected in the bottom.

Also, billfish such as white marlin, blue marlin, sailfish, and longbill spearfish are also fished at the top of Lang Bank. Although I got some new information that this occurs in a little deeper water than what I'm going to show up there. What the fishers are concerned is that while hooked up and working the fish, they may inadvertently drift into the edge of the closed area. And also, that while [inaudible] making a wide turn to come about, they have found themselves partially in the closed area during the December to February time period.

Fishers use the shelf edge as a natural FAD for while trolling and fishing. There are approximately, between all sectors, 40 to 50 vessels that are impacted by the two-mile-long area that prohibits fishing at the top of Lang Bank.

So, I have a motion, and that motion is similar to the language on 50 CFR 622.435(a)(2)(iii)(B), which states for the Grammatik Bank that from February through April 30th, no person may fish for or possess any species of fish except highly migratory species, in or from the Grammanik Bank closed area. And then it went on to define the fish.

MARCOS HANKE: Carlos, can you have the language of the motion on the screen?

CARLOS FARCHETTE: I also sent that.

MARCOS HANKE: They had it a little while ago, but it's not there now.

CARLOS FARCHETTE: But there's a slide there-- Okay. That's the motion that I want.

So, it'd be, *request staff to develop an option paper to amend Saint Croix's IBFMP namely 50 CFR 622.435(a)(2)(ii)(A) by inserting the language that: no person may fish for or possess any species of fish, except highly migratory and pelagic species, in or from the red hind seasonal closed area of Lang Bank, Saint Croix.*
But I have a slide up there with the water depths from a GPS, from a fisherman.

MIGUEL A. ROLÓN: That's not necessary now what we need is a second to continue the discussion.

LOUIS ANTHONY BLANCHARD: Second.

MARCOS HANKE: discussion about-- María.

MARÍA LÓPEZ-MERCER: Yeah, thank you. Thank you, Carlos, for bringing that up. So, one of the things that I want to point out is that now we are managing pelagic species, so I think maybe saying, "Council-managed pelagic species," and then obviously this will need, I would assume, the SSC to look into this. So, that could be something perhaps that the Council can task. And then obviously, you know, consultation with our HMS folks too.

So, I mean, there's a lot of things to do here, but I just wanted to bring that up, at least apart from the pelagics, because my understanding is that in the Grammanik Bank text, there's no distinction for the pelagics. Right? Okay. Yeah. Because before we didn't manage the pelagic species but now, we are managing those pelagic species. So, the Council will need to evaluate also what

would be the effect, not only on the fish that this closure is aiming to protect, which is the red hind and other species that aggregate in the area, but also the effects on the species that the Council is managing. Okay? So, noted. Thank you.

MARCOS HANKE: Thank you, María. Miguel.

MIGUEL A. ROLÓN: Also, for the record, we don't have authority to manage highly migratory species, but we're talking about the cost of pelagics you may want to modify your language here. What we do need to, if the Council proceeds with this, is we need to immediately connect with the highly migratory office and see if they can join in in the discussion about that possibility. But certainly, we are talking about the cost of pelagics species dolphin, wahoo and others.

MARCOS HANKE: Thank you, Miguel. And adding to what Miguel brought to the table is that we cannot forget-- I'm sorry --that in other areas in Puerto Rico we have a similar discussions and lessons learned of a similar discussion that we need to take in account to do something probably much better on this case. We are in another step or another level to address this and I already shared with Carlos a few points with him, and this is for future discussion. Graciela.

GRACIELA GARCÍA-MOLINER: So, just to remind everyone of the conversations that the Council has had in previous years when we deal with other pelagics at these areas. So, a couple of issues.

One, the vertical structure of the fish community at those places. Two, the bycatches from the trolling activities-- (trolling as in T-R-O) activities that actually the spoons can bring up reef fish from the deep. I know that you're talking about, you know, fairly deep waters. But thirdly, the rugosity of these areas, even at depth, with the probability of planers, for example, or any kind of weighted line that they might be using while trolling for pelagics could impact the habitat.

So those issues are discussed when we started dealing with seasonally closed areas. So, we would need the information on bycatch, for example, what species have been harvested while carrying out these activities. But we will be looking into that. And also, additionally, any other activity that might be happening from dropping the lines that you might be looking for other species.

So, we know that these things happen. So, you know, just to let you know of past history of the discussion of the Council.

MARCOS HANKE: That that was exactly the conversation I had with Carlos. It's complicated, but it's not impossible to address. Right? And anybody else?

LOUIS ANTHONY BLANCHARD: Let me see the depth of water.

MARCOS HANKE: Let me give a turn to Andy, in the meantime, while they put the depth of water.

ANDREW STRELCHECK: Yeah. I'm certainly supportive of the motion and exploring this through an options paper. We have looked at this in other areas of the Gulf of Mexico, and I think we've addressed it more through gear restrictions in addition to the kind of prohibitions on species that could be maintained.

So, you would want to look at gear stowage requirements as well as kind of the gear allowance requirements and specific to trolling through an area that's typically closed to bottom fishing. Right? So, we can look at those regulations and come back with more information.

MARCOS HANKE: Thank you. Carlos.

CARLOS FARCHETTE: Yeah. So, María made a good point. Should, I change my language to include that Council manage pelagics in there? okay.

MARCOS HANKE: Graciela

GRACIELA GARCÍA-MOLINER: I mean, you could, but you could also request the information from the Highly Migratory Species Group to see if--

MIGUEL A. ROLÓN: Wait, wait. Point of order. Let the owner of the motion-- put it on the screen, the motion, again, and then Carlos can work it out.

In essence what they're writing here is that we want to concentrate our efforts on those species that are managed by the Council and then contact the highly migratory species office to get their input into further discussion of the issue.

CARLOS FARCHETTE: On that note.

MARCOS HANKE: Go ahead.

CARLOS FARCHETTE: Since I read in the handbook that it is written

in there for Grammanik Bank, that they're allowed to fish for highly migratory species. I don't know if, since we don't manage it, I don't understand why that was in there, but I'll change the wording for—

MARCOS HANKE: Graciela.

CARLOS FARCHETTE: Yeah. So, I'll go ahead and put "no person may fish for or possess any species of fish except Council-managed pelagics and other pelagic species" because there's some other pelagics that the Council does not manage.

MARCOS HANKE: Tony, do you agree with the changing language?

LOUIS ANTHONY BLANCHARD: Let me see up on the screen.

CARLOS FARCHETTE: And while I'm-- should I go ahead and remove this thing about the HMS until-- okay.

MIGUEL A. ROLÓN: Graciela, let Carlos dictate what he wants on the screen.

CARLOS FARCHETTE: So, we can remove the reference to highly migratory, HMS. Right? No?

MARCOS HANKE: Carlos. Jocelyn, can you support us on this motion?

JOCELYN D'AMBROSIO: Sure. So, some folks were asking about Council authority here with HMS and certain highly migratory species that are defined in the Magnuson Stevens Act, there's jurisdiction given to the fishery service to manage those. So, you can't directly manage those species, but when you're trying to protect your areas that the Council manages from fishing impacts, you can prohibit all fishing. We also have gear restrictions in these areas.

So, the current regulation that prohibits all fishing is okay, and I understand that we're now trying to say, well, are there certain exceptions, like certain types of fish that fishing that we want to allow in this closed area? So, if you're asking for an option paper, maybe you might want to not be super prescriptive, but you could say, except for certain species where the possibility for impacts with the fishery that you're protecting, I believe it's a red hind spawning area, might not be as much of a need, perhaps that's what you're sort of trying to explore.

So I wouldn't necessarily try to spell out the types of species you're excluding, but you could be general, like sort of maybe say, except for, if it's HMS species, if there's pelagic species,

whether or not you manage them, I don't know if there's certain species that their folks are fishing for there that you want to allow and to explore the potential for that. So maybe rather than trying to note all of those species now, you could direct staff to try to come back with recommendations for which fishing in that area you might want to open it up to.

So, on that point, in terms of the language, maybe you could say except for certain species of fish, including potentially HMS and pelagics. And then, staff can come back with options and explain, based on what you're going to say about depth or what the research shows, potentially, species you might want to exempt from this closed area.

So, just to state it again, maybe try to be less prescriptive with the types of fish so you can really explore options.

MARCOS HANKE: One second, Miguel. Carlos, do you, do you want to follow the guidance on the language of--

CARLOS FARCHETTE: Yes.

MARCOS HANKE: And change the language to-- and revise by Tony later?

CARLOS FARCHETTE: Yes.

MARCOS HANKE: Jocelyn, can you help Carlos with the language specifically on the board.

MIGUEL A. ROLÓN: While she's thinking about it. You know, make it simple. What you want is an options paper to see where the pelagics are, will be able to allow to be fish in the area or not. Because in the motion you're trying to have the whole regulation written. So, a simple option will be to instruct the staff to prepare an options paper to give information whether we can allow pelagic species to be fished in the water column on those areas.

MARCOS HANKE: Jocelyn.

JOCELYN D'AMBROSIO: I agree. That's a great idea, Miguel, just to be a little more general so we can-- rather than trying to develop exactly what we're going to do now, to develop the sort of ideas for where we want to go. So, rather than saying-- right now you're sort of proposing the exact amendment, but maybe you could be more-- I can't amend your motion, but if you would want to and could get a second to, as Miguel said, explore amending the island-based FMP to allow fishing for certain species, including highly

migratory species and pelagics in that closed area.

And then just to note, it's very helpful to have the regulation that you're looking at, but when we do implement the island-based FMPs, that citation will change, but we would note that in any document we prepare.

MARCOS HANKE: Miguel.

MIGUEL A. ROLÓN: I propose to table this and allow Carlos to write something with Jocelyn and then come back after the break and you can propose the language again and we can continue. It is a very important point and we wanted to make it sure that—

MARCOS HANKE: I think it's a good strategy to be more productive on the language and so on and to move along. Graciela, last word and we'll go for a break.

GRACIELA GARCÍA-MOLINER: So, keep in mind also that the Council is developing an ecosystem plan. So, ecosystem issues that are in your strategic plan are also important. So that will come into the picture. But as Miguel said, you know, keep it to see what species you're really speaking of, what other species could be harvested because the Council is also involved in sustainable fisheries and other fisheries that can grow out of the changes that are taking place in management.

MARCOS HANKE: Thank you, Graciela. Carlos, last word?

CARLOS FARCHETTE: Yeah. Real quick. I mean, if we can put up the screen with my slide on the water depth that Tony wanted to see, and I wanted to show something there also.

MARCOS HANKE: Yeah. In the meantime, while they look for the image, we're going to make a break and we can address that after the break.

CARLOS FARCHETTE: Sounds good.

MARCOS HANKE: Thank you.

(Whereupon, a brief recess was taken.)

MARCOS HANKE: For the people online, we are going to restart in a few minutes. We're just setting up some details. Just wait a one or two minutes. We'll be back.

Let restart the meeting. We are waiting for two things pending

from before the break. One was the image requested by Carlos and by Tony Blanchard. Carlos wanted to make a point about that. And also, the motion. Carlos, which one are we going to address first? The motion? Go ahead.

Yes, the motion.

CARLOS FARCHETTE: Okay.

MIGUEL A. ROLÓN: Carlos es más fácil olvidarte de ese language y escribir una línea para preparar el scoping document for allowing pelagics.

CARLOS FARCHETTE: I didn't understand that.

MIGUEL A. ROLÓN: Que es más fácil, en vez de bregar con esa, poner alternative language de lo que tú quieres, completa de lo que tú quieres. Y entonces, si eso es preparar un scoping meeting, well then, the motion will be to prepare a scoping document to address the possible fishing of coastal and highly migratory species in the area of Lang Bank or whatever.

CARLOS FARCHETTE: Okay.

MARCOS HANKE: Carlos, question. Just for the group to understand, that motion that is in there is the one that you guys worked on with the support of the legal counselor. Do you want to keep that motion?

CARLOS FARCHETTE: Yeah. Yes. Yes.

MARCOS HANKE: That's your motion. Tony, do you agree with the motion?

LOUIS ANTHONY BLANCHARD: I think you should include a—

MIGUEL A. ROLÓN: Point of order again. Yes, this is not-- what the group would like to do is to have a scoping document to prepare and then just have the motion rewritten the way you want it, and then—

MARCOS HANKE: Which is there.

MIGUEL A. ROLÓN: Just so you can say, well, this is applicated.

CARLOS FARCHETTE: I'll read that, what's there now, right? Since that's a new motion. So, I'll just read that.

MIGUEL A. ROLÓN: No. You can get rid-- according to Robert, you are the owner of the motion and the seconder. Okay? If you want to substitute the language for what you want to do, this is the time to do it. So, you can substitute a new language and usually "my motion will read that."

CARLOS FARCHETTE: Okay.

MIGUEL A. ROLÓN: I believe that what Jocelyn and María are talking about is that to use the system that we have we can ask the staff to prepare scoping document. Remember, when we have the scoping document, you consult with the SSC, whomever you want to consult with and yours will go to public hearing.

MARCOS HANKE: Yes. Carlos, to follow the process-- Carlos, is that the motion that you work on the break that you want to read for the record to see if Tony accepts? Go ahead.

CARLOS FARCHETTE: Right. So, I'm going to redo the language on my motion to read, "Request staff to develop a scoping white paper to amend the Saint Croix Fishery Management Plan to allow persons to fish for and possess certain highly migratory and pelagic species from the red hind spawning aggregation seasonally closed area of Saint Croix. The closed area is defined in the current regulation at 50 CFR 622.435(a)(2)(ii)(A). This area includes portions of Lang Bank."

MIGUEL A. ROLÓN: Instead of "to allow the person" "if feasible, to allow" because the scoping means that's what it's going to present to you. Now you're telling them, "Prepare a scoping meeting because we want to include this fishery there." So, I suggest that we put "if feasible, to allow."

CARLOS FARCHETTE: Okay. Yeah. Just add that, right, "if feasible, to allow." Right.

MARCOS HANKE: Okay, Tony?

LOUIS ANTHONY BLANCHARD: Okay. Well, I would say that you should include the highly migratory species that we manage and the ones that we don't manage. You understand? In case at some point in time those species that we are not managing becomes under us to manage.

MARCOS HANKE: To Tony's point. Jocelyn, can you clarify the language and the implication of the previous language read by Carlos?

JOCELYN D'AMBROSIO: Sure. So, this language really allows the Council to identify which species you would want to create an exception for. So, you could look at species that you don't manage right now to say it would allow fishing for them. So, it would allow that. We were trying to make it broader, so that-- we don't really know which species it would be appropriate to allow fishing for possession in this area. So, this broader language allows exploring the types of managed and unmanaged species you might want to allow fishing for.

MARCOS HANKE: Do you agree with the language presented by Carlos? Amended.

LOUIS ANTHONY BLANCHARD: Yes.

MARCOS HANKE: Okay.

CARLOS FARCHETTE: Okay. So, I would like to go back to Tony's question on water depth so I can put up my—

MARCOS HANKE: But we have a motion there that we have to discuss and finish the discussion. Graciela, you want to—

Okay. the motion that was presented to us is "Request the staff to develop a scoping white paper to amend the Saint Croix Fishery Management Plan to determine if it's feasible to allow persons to fish for and possess certain highly migratory and pelagic species from the red hind spawning aggregation seasonally closed area of Saint Croix. The closed area is defined in the current regulation at 50 CFR 622.435(a)(2)(ii)(A). This area includes portions of Lang Bank." That's the motion. We have a motion made by Carlos Farchette and second by Tony Blanchard. It's open for discussion, for formal discussion. Andy?

ANDREW STRELCHECK: Yeah, I mean, as I mentioned earlier, I'm supportive of the motion. The way I would see this as an options paper is that staff could bring back species that could be accepted or allowed for harvest, as well as look at gears or methods that may or may not be prohibited within that closed area. And then also potentially looking at the spatial extent of the area that would be authorized as well. So, kind of three prongs there that should be evaluated and then as the paper develops, could take that to the SSC and others for review.

MARCOS HANKE: Thank you. Anybody else? Any opposition? Hearing none. All in favor say aye.

GROUP: Aye.

MARCOS HANKE: *Motion carries*. And now, Carlos, the image.

CARLOS FARCHETTE: Okay. So, Blanchard wanted to see what depths to see what we're talking about. So, if I can get that slide up there. Okay. I don't have a laser pointer, so I'm going to just walk up there because even if I had a laser pointer, I shake so much that you'd all get seasick. So, let me.

Okay. I know you can hardly see it, but this is a little red dash line, inside of that is the seasonally closed area of Lang Bank. So, and what I asked the fisher to do was to bring this from fathoms to feet. So, we're dealing with feet here. So, you can see right on the edges, 472 feet, 459, on the inside it's 315. So, when they're passing by, if they hook up, this is what I was talking about, when they're fighting the fish or drifting, they might end up inside there. Not that they're fishing inside, because they don't come all the way in here to look for those species. They're always on the edge. On the edge using the edge of the natural FAD. So, that's what I'm talking about.

MARCOS HANKE: Thank you, Carlos. Graciela.

GRACIELA GARCÍA-MOLINER: So, Carlos. So, I don't see any rugosity on the bathymetry that you're showing. Do you know if we have a better map of the area to account for the sea mounts?

MARCOS HANKE: They are working on the edge of the drop off, Graciela.

MIGUEL A. ROLÓN: And in the options paper you have a very beautiful, clear picture of where we are. The whole thing.

MARCOS HANKE: Okay.

CARLOS FARCHETTE: I have some other—

MARCOS HANKE: Tony? Tony requested the image. He wants to ask a question.

LOUIS ANTHONY BLANCHARD: No, I was just curious to look at the image to see how shallow the water comes, because from the depth of water I see there, I can't see them hooking any hind or any bottom dwellers at that depth of water. I mean, unless you are right down and you talking four hundred something feet of water.

So even if they come up another hundred feet at the bottom to span you talking about over 300 feet of water. So, I really don't think

trolling in that depth of water is going to be a problem for the reef species that we are managing.

MARCOS HANKE: I think we are getting into the discussions that are going to be the result of the options paper. We need to keep moving forward. We have the motion. I think we are pretty much done with this. Tony has the image and has something else on his mind to be supportive or not from this discussion in the future. I think we can keep going up with the agenda. Do you have anything else that you need to say, Carlos? Very brief.

CARLOS FARCHETTE: No. Yeah, I'm good. Mr. Strelcheck had mentioned about the gear types that would be-- that'll be worked out.

MARCOS HANKE: Yes. The processes will start. Let's keep going. Next item on the agen-- yes, we are already voted.

MARÍA LÓPEZ-MERCER: I wanted to add something for this action. So, all that information that you provided, Tony and Carlos, we noted it and we're going to be contacting, as we usually do for preparation of the backgrounds, contacting the fishers and trying to get as much information of what's going on in this area in preparation for this background white paper. So, we can be very informed and be able to bring that information to the Council so they can make an informed decision. But thank you for contributing all of that.

MARCOS HANKE: Thank you. Thank you very much, María. Next presentation, potential actions or IBFM amendments. María.

MARÍA LÓPEZ-MERCER: While Cristina puts the presentation. So, this is one of the actions that the Council requested during the last Council meeting.

MARCOS HANKE: María, one second, please.

MARÍA LÓPEZ-MERCER: Yes.

MIGUEL A. ROLÓN: Very quick. We just received a note that one of our past Chairs of the Council really passed away, Jose L. Campos. We would like to start the meeting with a minute of silence to recognize Jose Campos. Mr. Campos was an active Council member for many years, sports fisherman, controversial at times as he called himself, but he was always ready to contribute to the discussion of the Council that he participated in local international meetings. We would like to ask the Council to have a minute of silence on his behalf, and Diana will note the family that we took this action today.

MARCOS HANKE: Minute of silence. María, please proceed.

Potential Actions for IBFMP Amendments—Trawling and Other Net Gear and Options Paper

MARÍA LÓPEZ-MERCER: Thank you. And we're really sorry for his loss. So, what we are going to be discussing right now and in the next presentation are two actions that the Council requested staff to work on. The first one is going to be related to trawl gear and other net gear in federal waters of Puerto Rico, Saint Thomas and Saint John. And this is a presentation on a draft options paper, or decisions paper as we call it as well, that you have in your briefing book documents. I tried to do this presentation as closed as possible as the options paper, but feel free to refer to the options paper for any additional information.

Next slide.

Okay, so the issues that are addressed are considering a potential prohibition on the use of bottom trawl gear and certain net gear in the U.S. Caribbean federal waters as a precautionary approach to prevent negative impacts on the seabed. For example, and this is information that was discussed during the past Council meeting, destruction of coral habitat and sponge habitat in the Caribbean and on target and non-target species through bycatch.

We all know that the use of certain bottom tending gear such as pots, traps, bottom longlined, gillnets or trammel nets is currently prohibited year-round in the seven Council-managed seasonally closed areas that, for purposes of this document, we are defining as marine managed areas. These are Bajo De Sico, Abrir la Sierra, Tourmaline in Puerto Rico, and then in the U.S. Virgin Islands Grammanik Bank, the Mutton Snapper spawning aggregation area, the Hind Bank, and that Red Hind Spawning Aggregation Area East of Saint Croix, which includes a portion of Lang Bank. However, there are no specific provisions on the use of trawl gear in these or other areas in the U.S. Caribbean EEZ, with the exception of the Hind Bank MCD, because the Hind Bank MCD has a year-round prohibition on all fishing.

So, there's also gillnets and trammel nets, that was another of the types that were discussed, and they have been prohibited for the harvest of reef fish and spiny lobsters since 2005. However, gillnets are allowed for the harvest of other species, for example, baitfish, in federal waters, but they must be tended at all times.

There are no federal regulations regarding the use of gillnets or

trammel nets for the harvest of Council-managed pelagic species, which are new to management under the Island-Based FMPs and the Council has discussed in the past developing an action to restrict harvest of pelagic species with these two gear types. Now also note that there are certain nets that are also regulated by NMFS in the highly migratory species fisheries that we are not dealing with in here.

Next slide.

So, these were the two Council motions that were passed at the December meeting. The first motion said, "Prohibit the use of trawling gear from within the marine protected areas or the Council Marine Managed Areas, how we call it in this document, of the U.S. Caribbean exclusive economic zone. And the second motion was to request staff to develop an options paper to prohibit the use of gillnets, trammel nets, trawl nets, drift nets, and purse seines for harvesting fish in U.S. Caribbean EEZ.

Next slide.

So, the next slides are going to give a brief overview of what we're talking about. With respect to trawl regulations, federal regulations at 600.10 defines trawl as a cone or funnel-shaped net that is towed through the waters and can include a pair trawl that is towed simultaneously by two boats. NOAA Fisheries also defines bottom trolling as a fishing practice that herds and captures the target species by towing a net along the ocean floor. And there are some examples of these types of bottom trawling, like otter trawls, beam trawls, and towed dredges that many of these are used and managed in other U.S. regions to capture groundfish, shrimp, and other bottom associated species.

Other types of trolls are called mid-water trawling, which are also called pelagic trawls. These consist of a large net towed through the water column. So, trawls, for purposes of federal fisheries, are an authorized gear type for use in the non-fishery management plan commercial fisheries under each of the Saint Croix, Saint Thomas and Saint John and Puerto Rico fishery management plans. There is no evidence that trawl gear is or has been used for fishing in federal waters of the U.S. Caribbean except for exploratory fishing or research that was conducted many, many years ago. And again, we added this information in the sources. If you want to read a little bit more about it, all of the sources are included in the options paper.

Puerto Rico territorial fishing regulations prohibit the use of trawl gear and drift nets in their jurisdictional waters. But to

our knowledge, the U.S. Virgin Islands do not have specific regulations prohibiting the use of trawl gear in their waters.

Next slide.

So, the discussion about trawl gears is really not new. In the 2004 essential fish habitat generic amendment to the fishery management plans of the U.S. Caribbean in its associated final environmental impact statement, the Council made a recommendation to take action to ban the use of trawls in the exclusive economic zone. At that time, the Council noted that this gear type was not used by commercial fishermen, but it recognized a potential for feature use. And as the rationale for the recommendation, the Council indicated that the complex mosaic of coral on the insular shelf left little space available for trawling that would not have direct impacts on coral. Thus, a prohibition on trawling will prevent use of a gear with high risk of adverse fishing impacts on sensitive and important habitats of the U.S. Caribbean.

These recommendations have not been included in an amendment to date. So, there was no action taken at the time. However, in that recommendation, the Council also recommended that the governments of Puerto Rico and the U.S. Virgin Islands prohibit all trawling in state waters, in the territorial waters. Now the Council is interested in a potential provision on the use of trawls in the Council marine-managed areas or seasonally close areas, and or in the exclusive economic zone of Puerto Rico, Saint Thomas and Saint John and Saint Croix, for several reasons, and these reasons were brought to the Council's attention during the past presentation at the December meeting by Council staff.

Number one, it was noted that trawls have the potential to damage coral habitat, including deep-water corals, also sponge habitat and deep-water sponges that are present in the U.S. Caribbean; that they could entangle protected species in our waters; that they could damage Caribbean habitats designated as essential fish habitat in habitat areas of particular concern for managed species under the Magnuson-Stevens Act.

And there were also noted some economic considerations related to the use of trawling gears, for example the potential for damaging or losing gear and the economic considerations for that, as well as also implications for the bycatch of managed and unmanaged species that are not protected species.

Next slide.

The Council also mentioned in the presentation that there was

interest in potential implications, if any, that continuing to allow trawling for non-FMP species-- When I say non-FMP species is because this is the only groups of species that this gear is listed as an authorized type in federal regulations --as an authorized type in the EEZ, including Council Marine-Managed Areas may have on whether the existing Council Marine-Managed Areas qualify conservation areas under Executive Order 14008. This order establishes the goal of conserving at least 30 percent of the lands and waters in the United States by 2030. And we have heard during previous Council meetings details about what this entails.

So, efforts are underway to determine how much of the lands and waters already qualify as conserved. For example, the Council Coordination Committee has established a subcommittee on area-based management to review these marine-managed areas to assess the level of protection they provide. The Council has been interested in whether areas it has protected will or could meet any conservation standards developed to implement the E.O.

Next slide.

Now let's briefly talk about gillnets and trammel nets, which are types of drift nets. So, these are nets that hang vertically in the water column without being anchored to the bottom. They're an authorized gear type for the commercial harvest of managed and non-managed pelagic species and the commercial harvest of non-FMP species in each of the island management areas.

Trammel nets-- and I'm talk, sorry, I was talking in there about gillnets. And then trammel nets are not an authorized gear type for any U.S. Caribbean fisheries. And please note that when I refer to authorize, I'm talking about the list of authorized fisheries under federal regulations that if you recall we have seen this before for the buoy gear amendment and this is included also in the regulations that are going to be part of our changes to this, in terms of how the authorized fisheries are organized, in terms of, before it was all U.S. Caribbean and by reef fish, spiny lobster, queen conch or coral FMP. Now they're going to be fisheries by each one of the islands.

So, for purse seines. Purse seines is a large rule of netting deployed around entire area or school. It's not an authorized gear type for any U.S. Caribbean fisheries.

So now, why are we worrying about these two, purse seines and trammel nets, if they're not authorized? This is because, the same as in buoy gear before, a person could petition the Council to use these gear types. And when that happens, the Councils and NMFS

could take action whether to allow or prohibit the use of that gear. So, the Council-- and I added in here the regulation, and I'm going to read it. It's on 50 CFR 600.725(v). A person or vessel is prohibited from engaging in fishing or employing fishing gear when such fishing gear is prohibited or restricted by regulation under an FMP or other applicable law. However, after December 1, 1999, an individual fisherman may notify the appropriate Council, or the Director, in the case of Atlantic highly migratory species, of the intent to use a gear or participate in a fishery not already on the list. Ninety days after such notification, the individual may use the gear or participate in that fishery unless regulatory action is taken to prohibit the use of the gear or participate in the fishery. For example, through an emergency or interim regulations.

We're bringing this up because it may be of the Council's interest if they really want to prohibit, prevent, that a person requests the use of this gear types that are already prohibited, and maybe in the interest of the Council, if they desire to then address a broad prohibition.

Okay, next slide.

Okay, well we were preparing this options paper. There's some characteristics of the net fishery or issues that the Council may want to consider when they're discussing this. First is the use of certain nets to catch baitfish. For example, regulations show the use of cast nets and surface gillnets, which are single wall, that they have to be tended all times. It was also brought to the Council's attention that the use of surface gillnets to harvest flying fish from federal waters, particularly in Saint Croix.

There will also be some specification of reporting and monitoring needs. There's also compatibility or lack of compatibility of regulation with territorial waters. For example, gillnet use is allowed in Puerto Rico waters. What if there is any need for-- Would there be any need for any HMS exception that we will have to consult with our HMS partners? And we also, like we discussed this morning, the management of pelagic migratory species in other regions. For example, management of dolphinfish in the South Atlantic. Because, as you know, these pelagic migratory species are transboundary, and they are a shared resource. So, what happens in one area will have repercussions in other areas. So, it's important to keep into consideration other management regimes that are occurring in the area.

For the pelagic species in particular, in the next presentation, the next action, we are going to be discussing specific management

measures for those pelagic species. And then other things that we may want to be looking at is regulations that already protect EFH in the U.S. Caribbean.

Next slide.

Okay, so the way that we set it up is as one action right now. These are just options. This doesn't mean that this is what's going to end up in the amendment. This is just so the Council can provide input as to where they want to go. This gives an idea of how the action can be developed.

For this action in particular, we have not created an interdisciplinary plan team yet. That will be something that will come up if the Council decides to move forward with this. So, there's one action and that one action, at this time, will prohibit the use of trawl gear, gillnets, trammel nets and purse seins in the U.S. Caribbean EEZ, just like the motion that was set on December 21st, requested.

The Option 1 would basically not do anything, right? Typically, we add an option one and we evaluate what happens if we don't do anything. So, under this action, we retain the authorized gear types for the commercial recreational harvest in federal waters of Saint Croix, Saint Thomas, and Saint John and Puerto Rico.

I want to note something in here. The way that we said this, is in general for the three Islands, because that’s how the Council was trying to do this during the last time because there was an interest from the three islands to do something like this. However, if any of the islands will want to take a different approach, we can certainly address that. We can divide it into different islands. So, every island, you know, as part of the island-based management plans, they can make their own decisions. So, by no means this means that everybody has to be gripped together. I just wanted to make that clear.

Okay. And then, for Option 2, would prohibit the use of trawling gear in federal water of Saint Croix and Saint Thomas and Saint John. And we added two sub-options in here. One sub-option will be prohibiting the use of trawling only in the seasonally closed areas or marine-managed areas in federal waters of Saint Croix, Saint Thomas and Puerto Rico. And the other options would allow for prohibiting the use of trawling gear for all fishing. So, this is more like a broad prohibition of the gear. So, that's something that the Council can consider if they want to do per all the waters or do you want to just do it just for the marine-managed areas? We have set up some slides that explain what each one of the options

would do.

Next slide please.

So, Option 3. The Option 3 deals with gillnets. So, prohibit the use of gillnets in federal water of Saint Croix, Saint Thomas and Saint John and Puerto Rico. Now, in this one, we didn't do the same as in the trawl gear because, as you know, gillnets are already prohibited for use in the Council's seasonally managed areas, right? So, there's no need to include that in here. However, we have two options, one that would prohibit the use of gillnets for all fishing and then we added another sub-option that will be for all fishing except for baitfish, right? So, this option would allow for fishers to use a certain type of gillnet to fish for baitfish.

Now, I want to bring up in here that the Council will need to define what baitfish is and will have to define also what are the characteristics of this gear that differentiate it from the gillnet that will be excluded from being used in this area. So, that's something that the Council will have to make decisions on.

Option 4 deals with the prohibition of trammel nets for all fishing in federal waters. And Option 5 prohibits the use of purse seins. So, those two are the ones that I mentioned before that are not really authorized for any of the fisheries right now, but it could be in the Council's interest if they want to just do a broad prohibition for all use to prevent that there's some petitions to use the gear in the future.

Okay, so let's go to the next slide please.

All right, so this is just what it would do. Option 1, if you don't do anything, this is what happens. So, right now trawl gear is an authorized gear for the commercial non-FMP species. So, these are other species that the Council doesn't manage that could be harvested, that the fishermen will normally harvest. We understand that these are not used, and it's banned in Puerto Rico waters. So, these are just notes.

For gillnets. Gillnet is an authorized gear in the commercial pelagic species, commercial non-FMP species and commercial non-FMP pelagic species. They're not allowed for reef fish, spiny lobster or in marine-managed areas by the Council. They are allowed in Puerto Rico waters, and they're not allowed in U.S.V.I. waters. However, there are specific gillnets that are allowed in U.S.V.I. for baitfish.

And then, trammel nets. Not authorized, however they're also not allowed for reef fish, for spiny lobster or to use in the MMA. And then purse seines are not authorized and our understanding is that they are not used.

So, I'm not mentioning here cast nets. I don't think cast nets was something that the Council mentioned during the last time. I don't know if there is a need to include anything for cast nets. I believe these are more coastal.

Mm-hmm. okay So, next slide please.

So, this is what option two would entail. If you prohibit the trawling gear, this will be a broad prohibition on the use of all trawl gear for harvest of all commercial and recreational species, managed and non-managed, which would be either applicable only to Council manage-marine areas or throughout the EEZs of Puerto Rico, Saint Croix, and Saint Thomas. So, that was the two sub-options.

By taking this action, the Council would prevent negative potential ecological and biological and physical effects from the use of trawl in the future. For example, we mentioned habitat destruction and bycatch, either in Council MMAs only or throughout the whole EEZ.

Next.

Okay. And then with respect to the use of gillnets, a broad prohibition on the use of gillnets for fishing for all commercial and recreational species managed and non-managed, that will be sub-option A, or for all fishing, with the exception for the use of gillnets for the harvest of baitfish. And as I mentioned earlier, would require the Council to clearly define what is a baitfish and specify the type of gillnet use, as well as, if the exception would apply to both sectors, commercial or recreational, or if it would be different.

Our understanding is that in federal waters there's minimal use of gillnets for pelagics and for non-FMP species. Some of the reasons cited was the depth, the distance from the coast, and the preference for using other gear. By taking this action, the Council also prevents negative ecological and biological effects from the use of gillnets, for example, preventing the bycatch of undersized individuals, protected species and other target and non-target species. And although the use of certain types of gillnets used for catching baitfish commercially and recreational would allow fishermen to continue using this specific bait nets in federal water. So, that will be what sub-option 3b would provide.

Okay. And then the next slide.

Now the last ones are Option 4 and Option 5. Option 4 prohibits the use of trammel nets for all fishing in the EEZs of the three islands. They're already prohibited for fishing for Council-managed reef fish and spiny lobster and are they are also banned in Council MMAs. And option five would prohibit the use of purse seines. Purse seins are really not used in federal and territorial waters, and they are not listed as an authorized gear types under any U.S. Caribbean fish.

So, as I mentioned earlier, Option 4 and Option 5 would specifically prohibit the use of this gear. Therefore, it would not be possible for a fisherman to request the use of this gear as would otherwise be allowed under federal regulations for gears that are not included in the NMFS authorized gear list.

Okay, I'm almost close to the end, the next slide.

So, these are the next steps. Council to decide if they want to move forward with the action. If yes, indicate if any changes are needed to the scope of the actions and/or the alternative, so staff can go and prepare a document. Identify any information, requirements and sources. And task staff with the creation of an IPT for development of an amendment. So, we could move forward with this action right away, if that's what the Council desires.

Now, before we do that, let's go to the next couple of slides. The next one, please.

Because we want to start the conversation about the bait nets. So, that's important. Sorry for the amount of text that's included in here, but I'll try to summarize it.

So, in the U.S. Virgin Islands, the only type of gillnet allowed are single-wall surface gillnets that are targeting baitfish. And this is from the regulations. The nets may not be more than 1,800 feet in length as measured by the float line and may not be used within 20 feet of the bottom. The mesh size may not be smaller than 0.75-inch square, or 1.5-inch stretch. Only one bait net is permitted per boat and all other prohibited nets may not be possessed onboard vessels in territorial waters. There's a specific species that can be caught with the baitfish, Ballyhoo, gar, flying fish, round jack and bigeye scad. And based in conversations, the approximate number of fishers that use these nets could be very minimal.

So, in Puerto Rico, this fishery, the bait net fishery uses bottom and surface gillnets, or 'trasmallo' or 'filete' and trammel nets, 'mallorquín' consisting of a trammel with three net cloths tied to a line of buoys. The gillnet or trammel nets cannot have mesh size greater than six inches as measured from knot to knot of extension. For trammel nets, the outer cloths may not have a mesh larger than six inches from knot to knot. Additionally, trammel nets used for bait fishing may not be more than a quarter inch from knot-to-knot opening.

Now the regulations in Puerto Rico-- and I know this is only a summary of the territorial waters and this is just for context, so we know what's going on in the territories. The regulations permit the use of gillnets and trammel nets, except in inner water and river mouths. Additionally, it prohibits the use of gillnet and trammel nets in conjunction with diving equipment, except by written authorization from the Secretary for the capture of lionfish.

So, let's go to the next slide. This is a picture that Carlos provided showing-- do you have a-- can you put in-- Okay. Thank you.

So, this is a bait net that is used in the U.S. Virgin Islands. I apologize, but for some reason, our fisher was cut out, not on purpose. Carlos, what is the name of the fisher that provided--

CARLOS FARCHETTE: Yes. José Alberto Sánchez.

MARÍA LÓPEZ-MERCER: Thank you, Carlos. Thank you to José Alberto Sánchez for showing us the type of bait net that they use.

Okay. So, with that said, I think if you guys have any questions or discussion, I'll be happy to assist.

Questions/Comments

MARCOS HANKE: Miguel.

MIGUEL A. ROLÓN: Probably not the time, María, but Nelson Crespo brought to our attention, and I know this is the time the-- Nelson Crespo brought to our attention that there is a new way of capturing deep-water snappers and groupers. Some people are using deep-water fish trap. So, I don't know if the Council want to discuss this at the time or at least mention it, but I would like the Chair to allow Nelson Crespo to briefly tell us what's going on and what is the worry that the fishers have with this new gear.

NELSON CRESPO: Thank you, Miguel. That was about two months ago that a group of fishermen from the Northeast side of Puerto Rico brought the concern about fishing for queen snapper with traps was being developed. Also, the plan of those fishermen is to cover around the whole island. I think this is an issue that has to be addressed and studied because it'll cause damage not only to the fishery, but also to the habitat because they have to use huge traps that if you compare it with a piece of weight that we use for the vertical longlines for the deep-water snapper, when that hits the bottom, it's going to kill everything, corals, habitats, whatever, and can also kill the fishery [snaps fingers] like this.

Right now, we have a healthy fishery, a queen snapper fishery, very healthy. I'm pretty sure that we caught double or triple that was reported right now. But if these actions continue and we don't take attention and try to regulate or do something about it, this fishery is going to-- the days are counted for this fishery. It is going to end in a few years.

MARCOS HANKE: Just a follow up. Nelson, just to put in context for the whole Council to understand. On the past, we did have some capture of silk snapper, blackfin and other snappers with traps. That has happened before. But what you are reporting is the use of the trap to fish for queen snapper. Queens, correct?

NELSON CRESPO: Yeah.

MARCOS HANKE: Okay. I just want to make sure for everybody to be on the same page.

NELSON CRESPO: Yeah, yeah. In the past, and I see is still happening, but in little stage the use of traps for snapper unit one, that I don't agree at all, but, you know, we can handle that. But for the queens, due to the hard currents we have, a loss of one trap of queens [snaps fingers] can be like this because you are not going to find them because of the hard currents we have in the bottom.

So, if we lose one trap, how many pounds of queen snapper are we going to lose? And how many fishes are going to be killed until this trap is destroyed? Thousands of pounds. That is, for me, it's something that we have to put real attention. At least investigate or try to make some study about it.

MARCOS HANKE: I'm going to rely on you to give, if you can have pictures for us in the future, or more information for us to know a little more about it. Miguel?

MIGUEL A. ROLÓN: No, it's just a matter of procedure to ask María Del Mar. For the Council to take this question, what would be the best, appropriate way to do it? At this time with the document prepared, or will it require a different document?

MARÍA LÓPEZ-MERCER: Well, that depends. This is María, NOAA Fisheries. That depends on if you would like us to explore something like this within this action per se, or do you want to do it through another, through a different action?

MIGUEL A. ROLÓN: That's my point. Because from-- by the way, thank you very much for an excellent work. You people are [inaudible]. I believe that these actions that you presented today are ahead of whatever possible action we would do with traps. And at this time, probably we need to gather more information before we proceed.

So, my suggestion to the Council is to be mindful that this is happening and after this meeting, I will talk to Crespo and see what other information we can get for the meeting in August. But the Council should take action on this part because we have been discussing about the trammel nets and everything. Can you put back a slide where you have the next steps?

MARÍA LÓPEZ-MERCER: And, Miguel, if I may add to that. So, this is obviously a developing situation that Nelson is bringing up to the Council's attention. So, I would think that the next step would be to investigate more and bring more background information. I mean, traps are obviously not allowed in the marine-managed areas. So, if they are being used for whatever in marine-managed areas, then that is unlawful.

The other thing is that we do not have a distinction within reef fish as to what constitutes deep-water reef fish at this point. We're calling them reef fish, so I would think that one of the things that we would have to do, not just for this, in the near future, if the Council wants, is to make distinctions between different groups and see if we can-- that's also part of the right for the gear amendment that we want to do, is to see what types of gears are used for what and then start, kind of like, tackling that in that way.

So, again, it's a developing action. My suggestion would be, if you want to include it in here, then that's fine. We'll go back and we'll start looking into this. That doesn't mean that that will constitute like an option for this, because obviously it's a developing situation. We can always move forward with this if that's what the Council desires, and then the Council can task staff to look into this situation because obviously there's many

angles that have to be looked at, because traps aren't an allowed gear to be used in federal waters. However, if there are if there are concerns about the impact to the habitat and the impact to the fishery, then that's something that we would need to, of course, evaluate.

MARCOS HANKE: Thank you, María. Tony.

LOUIS ANTHONY BLANCHARD: I agree with Miguel. I think we need to move forward on these trawls and the seins nets. Put a ban to it.

The only thing I see here that I would say that we probably should not put a ban on, is the nets that are used for baitfish, like the flying fish and so on in federal waters. But as for the trawls, in my opinion, it is more of a destructive thing than anything else. And we are talking about allowing them in federal waters?

The Virgin Islands-- and speaking on Virgin Island's terms. We only got three and a half miles over territorial waters. We already have a very small area in which we are allowed to fish in. Why is it that we would want to allow this gear inside there, is my question. It's more of a destructive thing to me. It will destroy more than benefit, in my opinion, because of the bycatch issues, the damaging of the reef and so on and so forth.

And who is going to manage in the event that we say, "well, you know what, we are going to allow it at certain depth of water, half of the bottom." Who is going to manage that? How are you going to know that that's actually what's happening?

So, I think at the end of the day, it's not used already, why would we allow it to be used now, when we are coming on with more management plans and strategies? I think we need to shut the door now. I think the only thing that really, we should look at is the seins that are used for catching baitfish. And that's just my take on it. I don't see why we would allow a problem to arise when we have it right now under control, to certain degree because nobody's using again at this point in time.

So why open the door? Why bring attention to it? That's my question. So, right now, I would move to ban the nets in federal waters. Ban the use of the nets except for the nets for bait fish.

MARCOS HANKE: Yes. And just a follow up on you is, the need of defining well what the net for baitfish is, to prevent fishing. If we don't do a good definition, you can easily lay down those gillnets alongside to the wheat patches and catch many species of fish that are recruiting there, like amberjack, almaco jack, small

mahis, and so on, and others. We need to do it carefully.

I want to move forward because the lunch is coming, and this is a very important thing. María, I have many comments here that are aligned, again, with what you just stated. The work that you did is perfect. I was just going to concentrate on comments that add to your logic is that we have been observing the movement of some species to the deeper water. One, the trawling situation impacting deeper water areas, where the EEZ is mostly on, we are going to have an extra effect by having species that were, on the past, shallower, that now are moving deeper.

I'm going to give you an example. I just talked to Tommy Forte and on the landings from the deeper water for silk, blackfin and so on, they're having 50/50, almost, landings of red hind and other shallow water species that otherwise were not there. This is something that I observed on my charter too. I just want to add to the logistics, right, on this rationale that we are developing, that there is indication of feedback from the industry where we're having more species going to the deeper water where we want to prevent the trawling to happen, not to damage those habitats where those fish are moving too, or expanding the range where they have been if we compare to the past.

And about the cast net. The cast net is something that we shouldn't include because the charters and the commercial fishermen and everything, they have it on the boat. We're going to create more problem than anything. And even if you want to really impact the resource with the cast net, is going to be really hard to do it. I don't see any problem of excluding the cast net from this discussion.

Those are the two points I wanted to bring. Yes. Miguel and Tony.

MIGUEL A. ROLÓN: Yes. It's a matter of the process. The slide that you have on the screen is asking for the Council's direction. For example, I believe that we all agree to move forward. And if yes, then we need to address a, b and c.

In this case, María, what do you really need here? A motion that the Council accepts the process to move forward. And then, when do you think that a, b and C should be addressed? At this time or another meeting or in between?

MARÍA LÓPEZ-MERCER: Well, I think-- so based on what I heard, I feel like you are comfortable with the options that we included in the draft paper.

There's no interest on separating them by island. We can just keep it simple. So, I would think that the identification of information requirement sources, I think this is important in terms for the bait net fisheries. So, we will have to do some background information. We will take care of that and contact the fishers and Carlos, Tony, if you are able to provide that information to us so we can characterize the bait fishery as well as possible.

And then, for the next Council meeting, we can bring some specifics about what those exceptions would be, because that's very, very important, as Marcos said, so we don't end up messing it up. And then, I would say that a motion perhaps to move forward with an amendment. So, you can test that to prepare an amendment to the island-based FMPs to each one of the FMPs, that would include the options presented in the options paper, today.

MARCOS HANKE: Okay. Can you help with the language, suggest the language on the screen for any of the Council member to analyze, maybe to move the process quicker. Jean?

JEAN-PIERRE L. ORIOL: So, I just had a quick question. Do we have to define bait fish if we focused on the size limitation of the nets, like they do in the V.I.

MARÍA LÓPEZ-MERCER: Did you have bait fish defined in the regulations too, or not?

JEAN-PIERRE L. ORIOL: So, I know that-- I don't know that we have, because we have the different classes of bait fish, but I saw that in the recommendations or in the different options we talked about if you did this option, you'd have to define what bait fish is and do, I believe you said, specific requirements.

And so, I was just curious as to whether or not if we limit the actual size of the net and focus on the gear type, then-- Like, let's say we said, maximum one-inch with like one-and-a-half-inch stretch or something like that. --if you, then you would have to define what bait fish. Because it just looks like if you have to define bait fish, then you are going through a whole longer process as well.

MARCOS HANKE: To your point. I think it is important, because to prevent problems in the future, there are bait fish that are valuable, recognized and valuable, for the industry that create a socioeconomic positive or need for it and in order to explore and do this now, will prevent a fishery for other things that we unintentionally are not thinking about. Right? We just closed the door on two ways, by the gear and by the list of species that are

allowed to be kept on the boat during the fishery. I think that's responsible from our part, even though it's harder to do, to do it at this point. That just a comment. Tony.

LOUIS ANTHONY BLANCHARD: I agree with Marcos. I think we do need to specify what is bait fish. Because one may not be bait fish to you, is bait fish to me. So, to the end of the day, I understand trying the route of going with a mesh size, but that still does not take care of the species that you're looking for as bait fish.

In other words, I could say, "Well, listen, bait fish to me is a hard nose this big." To another guy, "No, I don't want that for bait, I want a sprat." "I want ballyhoo." So, I think by specifying exactly what you're looking for, you are going to have a better grasp on what is considered bait fish.

And bait fish could even be a type of fish, a certain size. You attack the guys that fish mahi, they may use a small mahi to catch a big mahi or yellow tuna, that's bait fish. You ask them, that's bait fish. To me, I'll take it home and eat it or I'll sell it. So, it all depends on who you are asking and the questions that you're asking, you're going to get an answer for.

So, I say by specifying what a bait fish is, whether it be a type of fish or a type of fish at a certain size, I think that's the route that we need to go, along with the type of nets that we use.

MARCOS HANKE: Andy?

ANDREW STRELCHECK: Yeah, I mean, good points being made here, and I think this is where the interdisciplinary planning team can help us in terms of clearly defining intent and ensuring obviously that the regulations are consistent with what we're trying to prohibit, or for that matter, authorize with regard to bait fishing.

I noted, for example, with the bait net regulations, it was a minimum or mesh size that was being specified. Well, if there's no maximum, that opens the door for a lot of different net gear potentially to be considered for harvesting bait fish, which might be problematic. Right? So how we define bait fish or how we define the gear types is important.

A couple things of note. I know Miguel made the comments about what, Nelson, had mentioned with trap gear. I certainly would encourage the Council to include that as early in the process as possible. We can always decide that that's not something we want to move forward with. And so, if staff could consider that now and bring back information in August as part of this action, I think

that's helpful. And if we decide not to proceed, then we decide not to proceed at that stage based on the information. But the rationale I'm hearing in terms of impacts to habitat ghost fishing is very consistent with reasons why we would be considering prohibitions on other gear in this action. So, the purpose and need seem to be very consistent with why we'd want to consider limitations on trap gear.

The other comment I'll make, which relates to kind of additional information. I think it would be helpful when we meet again in August to talk about the socioeconomic consequences of allowing or prohibiting these gear types, right? So right now, we're being precautionary, we're wanting to avoid habitat destruction, we're wanting to avoid bycatch. Some of those gears don't impact necessarily habitat, don't necessarily have a lot of bycatches, but there's potential socioeconomic consequences if it allows for fisheries to catch a lot of fish at once and create market gluts or run into closures of annual catch limits because harvest is ramped up because those gears are now being more prominently used. So, I think more discussion of that would be helpful as well in terms of our rationale.

MARCOS HANKE: Yes. On the same lines about the socioeconomic impact. Once we analyze or we really express our concerns about habitat destruction and the things that María put out there, for sure on artisanal fisheries is more scaled. Once you allow gears like a trawling, to be in place, that is very costly, it's more on a bigger scale thing, for sure it's going to be a big disruption on the whole socioeconomic dynamic of the Caribbean. That's from my point and from what I heard from the Council. It is not compatible to what we do over here.

And we want to prevent this style of fishery that has an impact on reaching the ACL very, very quick or damaging the resource that supports multiple species for multiple artisanal fishery sources. And that's the reason, in terms of socioeconomic, we want to prevent, be very precautionary to prevent the way we do fishery in the Caribbean. It is compatible to the mosaic of habitat that we fish, with multiple gears and so on that you guys already know.

Did I address well your points? Yes? Okay. And I made a list that some of them will be repetitive, but in order to create the record that you request, Andy.

On terms of trawling, precautionary approach to protect shallow and deeper water reefs and sensitive benthic habitats that are essential for many important species, and its different life stages. Example, deep-waters snappers, groupers, lobster, and many

others that are essential in our fishery, the way it's conducted nowadays. Also, in support to the EBFM approach that we've worked so hard on. I think it's important to not allow for the trawl gear to be used on our area. Note that this gear is not part of the traditional fisher and have no socioeconomic impact importance for us. If you pursue the prohibition of this, the trawl gear, it will help to protect the habitat, prevent overfishing of bait fish and other forage species that support our environment and the fishery. We don't want a herring fishery or a sardine fishery here cutting the legs of the fishermen, of going out and or having access to the bait fisheries, the cast net that all it will do is increase the price of the bait and create a big problem on the ecosystem. In addition, it will change the traditional artisanal fishery landscape that happened for many years in the Caribbean. And I already brought the point that the species moving deeper is a big concern either because they are spreading more around because we are doing a great job on management or because of climate change, they are moving down. We really don't know what is going on, but it is going on. We don't want the trawling to be something, to mess up those, those environments.

And that's it. The other comments I did before about the cast net and so on. Miguel, and I would like to also after, Miguel, to see the motion, the suggested motion language. Go Miguel.

MIGUEL A. ROLÓN: No, no, no. What we were thinking, we are close to 12 o'clock. Actually, it's 12 o'clock. So, consulting with María, probably, it's best to start at one o'clock with the motion, so you will be able to have a clear picture of what the motion should be. I suggestions to break for lunch now. So, allow María.

MARCOS HANKE: Agree, María? Yes?

MARÍA LÓPEZ-MERCER: I agree. One of the things that, that we can consider, the Council can consider if they want to include an action that will evaluate the traps at this time. So that's something that we can definitely talk about when we come back from lunch.

MARCOS HANKE: okay. What I hear is that we want this to move forward and do another process for the trap-- Maybe can include, but what I hear from other Council members is that we want to make sure that we don't get stuck restarting with the trap but we going to discuss that after lunch. Thank you.

MARÍA LÓPEZ-MERCER: Okay. That's correct.

MARCOS HANKE: We are back sharp at one o'clock here. Thank you

for the virtual attendees and for everybody. I'll see you guys back here at one o'clock. Thank you.

(Whereupon, the meeting recessed for lunch on April 19, 2022.)

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APRIL 19, 2022

TUESDAY AFTERNOON SESSION

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MARCOS HANKE: Let's restart the meeting. It's 01:11, and we are all back in the room here ready to go. The motion will be presented by María Del Mar, a suggested language, to see if Carlos takes over from there to expedite the process. Go ahead, María.

CARLOS FARCHETTE: Okay. So, the motion would be to *request staff to move forward with the preparation of an amendment to each of the island-based FMPs to address trawl and net gear as discussed in the options paper presented at the April 2022 CFMC meeting.*

MARCOS HANKE: Any second?

LOUIS ANTHONY BLANCHARD: Second.

MARCOS HANKE: Discussion? I hear no discussion. Any opposition? All in favor say, aye.

LOUIS ANTHONY BLANCHARD: Aye.

MARCOS HANKE: Motion carries. One absent member, which is the Puerto Rico representative from the DNR. And Jean-Pierre Oriol who is also absent. We have quorum. He is probably on the meeting outside. Vanessa's connected virtual; I believe.

MIGUEL A. ROLÓN: Was she able to vote? No, no está. No está. ¿Cristina, Vanessa votó? Que si votó.

MARCOS HANKE: *Motion carries.* What is the next step now, María?

MARÍA LÓPEZ-MERCER: I cannot vote yet. It says in there. I don't know. Maybe open the forum for Vanessa?

MIGUEL A. ROLÓN: No. You don't need to, the motion already carried so we can go to the next thing.

MARCOS HANKE: The record is clear. Thank you. Go ahead, María.

MARÍA LÓPEZ-MERCER: Yes. The next presentation would be by Sarah Stephenson from the Caribbean branch and SERO. She's going to be talking about pelagic species.

MARCOS HANKE: Andy.

ANDREW STRELCHECK: Before Sarah presents. So, I did want to go back to the discussion we were having about the trap fishery and find out Council intent. Sounds like obviously more information is needed. Do we want to at least give staff direction to not necessarily develop a white paper, maybe bring a presentation, more information back to it as at a future Council meeting with regard to the trap fishery.

MARCOS HANKE: I think it's a good idea. Go ahead, Tony.

LOUIS ANTHONY BLANCHARD: I think the first step we need to take is to find out how much guys are actually doing this, an idea of how much traps are involved in it. That way, I think it's a beginning point to figuring out how it's going to get dealt with.

MARCOS HANKE: Yes. And also, to find out-- this is an assignment for Nelson and for the rest of the Council member. The description of the trap, how deep they fish, if it's state of federal waters, and maybe you guys can help me out information that is pertinent for us to discuss this in the future, but this is what I can come up with right now. This is what we would like to see as a presentation from your office, María, trying to find out to copulate all these information to present on the next Council meeting.

MARÍA LÓPEZ-MERCER: That's correct. We can work with Council staff to put together a presentation, collecting information from various sources, including the fishers and Council members that brought this to the Council's attention. And then what we have available for August, that will definitely help start a conversation on this. We don't need a-- I don't think we need a motion for that, it's just to task staff to do that. okay? Noted.

MARCOS HANKE: Thank you. Carlos.

CARLOS FARCHETTE: So that would be only for the deep-water trap fishery. Right? okay.

MARCOS HANKE: Yes, Carlos. Thank you for the clarification.

Anything else María, on the same lines or we can keep going? Next

item on the agenda. It's ecosystem-based fishery. Let me see here. The pelagic species management white paper. That's Sarah.

Pelagic Species Management Measures—White Paper

SARAH STEPHENSON: Hi. Yes. Good afternoon. Thank you. I'll be walking through the white paper that was developed for this meeting, which outlines management measures the Council could consider developing for pelagic species that are new to federal management.

Next, please.

The Island-based FMPs were approved by the secretary of commerce in September 2020. As we heard earlier, the proposal to implement the FMPs, which contains all the regulations now organized by platform.

Oh, did it? Did it go away? So, slide two, please. Okay. Thank you.

So, yes, the island-based FMPs were approved and set to-- no. It's scrolling again.

LIAJAY RIVERA GARCÍA: Sarah, give us a moment. We're trying to figure out what's going on with the slides. Thanks.

GRACIELA GARCÍA-MOLINER: Apologies for the technical difficulties, but it's moving by itself, so we're trying to get it.

MARCOS HANKE: Graciela, is it Sarah's side or is here? It's here? Okay. For the virtual attendees, just please be patients, we are fixing the problem, some technical problem here with the virtual presentation. Thank you.

GRACIELA GARCÍA-MOLINER: We're going to try a new technique. So, we'll go ahead. Slide number two, please. Sarah, are you there?

SARAH STEPHENSON: Yes. Do you do you still want me to send you the PowerPoint?

GRACIELA GARCÍA-MOLINER: Well, let's try slide number two, and we're going to do a play and pause, play and pause. Okay. So, that one or the next one?

SARAH STEPHENSON: Hold on. So, yes, this slide, slide number two. Thank you.

The National Marine Fisheries Service has prepared a proposed rule to implement, as we heard earlier, and that contains all the regulations now organized by island platform. And that has cleared the Southeast regional office and is in the review process at headquarters.

The island-based FMPs include pelagic species that are new to federal fisheries management. Each FMP established annual catch limits and established accountability measures for the pelagic stocks. As part of the accountability measures an annual catch target was set at 90 percent of the annual catch limit. And that annual catch target serves as the accountability measure trigger. In other words, the value that the annual landings will be compared to.

Next slide, please.

Here's a list of the pelagic species managed under each FMP. For Puerto Rico, and Pompano, dolphin, are managed in a stock complex together. Little tunny, and Blackfin tuna, are together in a complex; and king mackerel and cero mackerel are together in a complex. All the other species listed here are managed as individual stocks.

Next, please.

At the December 2021 Council meeting, some pelagic species that are new to management under the FMPs were discussed by constituents and Council members. The Puerto Rico District Advisory Panel Chair presented a summary from their October 2021 meeting in which they discussed compatible state and federal regulations. The Puerto Rico DAP recommended that the Council consider establishing size limits and bag limits for recreational fishing in federal water similar to the regulations in place in Puerto Rico state waters. Which are seen summarized here in this table.

Following a presentation from the Beyond Our Shores Foundation Director on the dolphinfish research program, Council members discussed concerns about the potential for overharvesting juvenile dolphinfish in the region due to fishing that occurs during the influx of sargassum mats.

Next slide, please.

The Chair of the Saint Thomas and Saint John DAP commented that the Saint Thomas and Saint John Fishery Advisory Committee, which is a U.S.V.I. territorial committee, previously recommended size

limits and bag limits dolphin and wahoo for recreational fishing, and that the fishery advisory committee plans to propose those limits for consideration from both state and federal managers.

It was also noted during the December meeting that the Saint Croix FAC had similar discussions at their previous meetings for recommending dolphins in wahoo from size one. Currently, there are no commercial or recreational size limits, commercial trip limits, or recreational bag limits set for dolphin or wahoo in U.S.V.I., state, or federal waters.

Next slide.

Following these discussions, at the December meeting, the Council directed staff to develop a white paper for size limits for dolphin, wahoo, and mackerels and recreational bag limits for dolphin in Wahoo. And just to note, king and cero mackerel are only managed in U.S. Caribbean federal waters under the Puerto Rico Fishery Management Plan.

Staff developed a white paper, which is included in the Council's briefing book for this meeting. Along with this background information, the white paper includes a brief history of management for dolphin, wahoo, and king mackerel in the Southeast region. The paper summarizes the management measures established and the rationale for those measures for the species as managed by the South Atlantic Fishery Management Council and the Gulf of Mexico Fishery Management Council.

Next, please.

The white paper also includes a high-level description of the U.S. Caribbean fisheries for the pelagic species managed under each FMP, including a snapshot of landing information. These plots show the annual recreational landings and commercial landings for the Puerto Rico pelagic species for years 2000 through 2017. The recreational landings are represented by the black bars and the commercial landings are the gray bars.

You can see that for dolphin, wahoo, great barracuda, and tripletail, which are the four plots on the left side of the slide. The majority of the pounds landed during the time period are from the recreational fishing sector.

Next slide, please.

Recreational landing's data were not collected for the U.S.V.I., so the landings presented in the document for dolphin and wahoo

for Saint Thomas/Saint John and for Saint Croix are only commercially reported landings. Even though recreational landings have not been available in Puerto Rico since 2017, or at all, for the U.S.V.I., the white paper includes information on commercial, recreational and tournament fishing for the pelagic species.

Next slide, please.

At this meeting, the Council could determine which management measures to develop, such as commercial or recreational size limits, commercial trip limits, or recreational bag limits, and for which species. Additionally, the Council could revise the accountability measure provision included in each FMP for the pelagic stocks and stock complexes to include size limits, bag limits, or trip limits as the responsive action that the Council and NMFS could take when the accountability measure has been triggered.

In other words, when landings exceed the annual catch target. For example, if the landings for dolphin exceed the annual catch target, the Council and NMFS could implement a commercial trip limit instead of a management action, like shortening the fishing season for dolphin. Following this meeting, staff could begin work on an option paper for the desired management options.

Next, please.

Establishing minimum size limits for the pelagic species would allow the Council to restrict the harvest of fish below a certain size, reducing the amount of fish that could be harvested before they've had a chance to reproduce. The size limit options could be recommended based on an available life history information, such as size at first maturity and landings and length data where those are available.

For this management measure, the Council could consider establishing a minimum size limit for the commercial sector, establishing a minimum size limit for the recreational sector and whether or not to specify the same recreational size limit in federal waters of Puerto Rico that apply in state waters for king mackerel, which was 20-inches fork length or for cero Mackerel, which is 16-inches fork length.

Next, please.

Establish same recreational bag limits or commercial trip limits for the pelagic species would allow the Council to limit the amount of fish removed from the fishery and reduce the harvest of smaller

fish, especially for species that occur in large schools. Commercial trip limits could limit catch if highly efficient gear is employed in the fishery, and both commercial trip limits and recreational bag it could assist in preventing localized depletion.

For this management measure, the Council could consider establishing a trip limit for the commercial sector, establishing a bag limit for the recreational sector and whether or not to specify the same recreational bag limit in federal waters off Puerto Rico that apply in state waters, which for dolphins, is 10 per person per day or 30 per vessel per day. And for wahoo, king mackerel and cero mackerel, five of each species per fisher per day or 10 animals per vessel per day.

Next.

To try to assist the Council in this selection process, the white paper includes a selection matrix for both the size limit and the quota limit management measures. This is the selection matrix for considering minimum size limit for the pelagic species under each FMP. The asterisk on the species name represents the species that have regulations specified in Puerto Rico state waters. So, for each FMP, the Council would select either 'yes or no' for each species, whether they wanted to develop a minimum size limit and for which fishing sector, and then provide just a brief rationale where a size limit was desired.

Next.

And this is the selection matrix for considering commercial trip limits and recreational bag limits for the pelagic species. Again, the asterisk are the species that have regulations specified in Puerto Rico state waters.

And next is, before we start the discussion on which management measures you might like to discuss. Are there any questions?

Questions/Comments

MARCOS HANKE: I don't see any-- yes. Jean-Pierre.

JEAN-PIERRE L. ORIOL: Thank you for that. So, Stephanie, I just was curious, for the U.S.V.I., if you are aware. So, shortly after the December meeting, we actually put out our draft recreational limits for a 60-day public notice. I didn't see them sort of referenced in the presentation. So, I was just curious as to whether or not you were aware of them.

SARAH STEPHENSON: No. I wasn't. And so, I can include that. If we move forward, I can update that information and include that.

JEAN-PIERRE L. ORIOL: Okay. Because I do have what the V.I.-- so, we closed our public notice period in February, I think it was February 21st or 22nd. So, I do have the regulations that are now in the process of being signed and I have what those specific numbers are. They're actually similar to the numbers that we were talking about here in terms of 10 individuals per person or not to exceed this amount for vessel. So, I'll share that to be posted as well.

MARCOS HANKE: Just for the for the record and for us to be informed, can you state it--

JEAN-PIERRE L. ORIOL: Sure.

MARCOS HANKE: --what those are? Because in a way that if it's similar to Puerto Rico and we can start to look for some logic or something that is compatible--

JEAN-PIERRE L. ORIOL: Correct.

MARCOS HANKE: --ecological, biological justifiable.

JEAN-PIERRE L. ORIOL: And I know that our goal was to actually have these numbers to be on the compatibility side of things.

So, the new proposed regulation states that there is a combined recreational bag limit of no more than 10 dolphinfish or wahoo per person per day, not to exceed 32 per vessel per day. And not to exceed four wahoo per person per day or 20 wahoo per vessel per day.

MARCOS HANKE: Thank you. Tony? Have some technical difficulties again. Bear with us. We'll let you know soon as soon as we fix it.

For the people online, can you hear us?

SARAH STEPHENSON: Hi. This is Sarah. I can hear you again.

MARCOS HANKE: Thank you very much, Sarah.

ALIDA ORTIZ SOTOMAYOR: And I can hear also.

MARCOS HANKE: Thank you, Alida. We have Tony.

LOUIS ANTHONY BLANCHARD: Okay. Where to start? Well, I have to start at the beginning. We are right now in the process of coming up with some numbers in order to manage the dolphin and the wahoo. Now, like Miguel stated this morning, we're working with WECAFC to come across the Caribbean with one management plan, by the sound of it, that we all could buy into. So, we start there. I think that's the first step we need to start when we start talking about size limits and bag limits.

The other thing is which this is something we also need to look at. The Saint Thomas, Saint John and Saint Croix, the regulations that are running the dolphin of wahoo are all off of commercial landing. Now, I'm willing to bet you that the recreational guys, probably outnumber the commercial guys in this fishery, maybe 10 to one if not more. Yet we don't have those numbers on the books. So, really the only one we are regulating here is the commercial guy, which I don't think this is the way we need to manage.

You know, before this all-started years ago, this discussion first started with Roy, sitting in the same chair, and me and Roy butted heads because I told Roy, I understand how the ACL process works. Once you catch and it's a species that is being managed, you also have to come with an accountability and numbers to back it up.

I said, Roy, we only got the commercial landings and the only thing you would really be managing off of is commercial landings. Is that fair to the fishery? Basically, is what I tell him, which I don't think so. When the former director was there, we started on a program of collecting data for the recreational. We had asked the Council, or the Council was asked basically to give us a time period for Virgin Islands. A time period to come up with some numbers that would reflect the fishery.

For whatever reason, the information stopped coming in. So, right now we're back to square one. Where we are trying to manage a fishery off of commercial landings alone, which I think you're shooting yourself in the foot. And we are forced to because we are mandated by law to come up with something that will not work, in my opinion.

So, to the end of the day, the question is this, are we really managing this fishery correctly? And in my opinion, no. So, I go do, since I’m good at what I do. I go ask for exactly what I want.

I would like to see that we give the Virgin Islands, especially, five years to come up with that recreational data and commercial data and the wahoo and dolphin, specifically, because of the numbers that we have that would not really reflect the fishery

that we are dealing with. So that when we come up with an ACL--and when I say "we" I mean the Council, because I will not be here, --that it would give a good reflection of what we are managing, instead of just managing or saying that we're managing something which we really need to be managing.

The other thing we need to look at is, if we are coming on a pan-Caribbean level to manage these fish, maybe we need to see what the other countries have out there that is working for them so far, or that they are looking at before we come to the table with something completely off chart to try and make it work and have everybody else try bend to us.

The other thing is, I was listening at the recreational numbers, because I didn't have a chance to look at that information, what the commissioner put on to look at for the bag limits and the size limits for the dolphin and wahoo. When he mentioned 32 wahoo per boat, okay? That's what he had said, right? For recreational.

Now, I don't know if people's idea of recreation or my idea of recreation is two different things. But in my opinion on recreation. Recreation is you're going all day because it's like a hobby to you. You enjoy the sport or the game. If you catch, you catch. If you don't catch, you don't catch. I think for a boat to bring in 32 wahoos because they have the ability to, because the fish bite in. I don't think that's recreational. Because if you look at the recreational vessels, you got guys that are running aboard a property that cost two or 300,000 dollars and they got, probably, four big engines on the back of it and their sole thing to do is basically have fun. So, do you need to have fun with 32 dolphin and wahoo or 32 wahoos? Whatever it is.

So, we need to force a value, in my opinion. We need to figure out what the recreational is. Because if we're managing a fishery and we want such strict restrictions and the commercial guy that this is all he does to make money, and this is what his sole livelihood is. And then, you're having a guy that he got any kind of money that he could blow, because this is just what he does. I mean, is that really fair across the board?

And if you look at it, the recreational guys outnumber the commercial guys, especially in Florida, you will probably have an idea of what I'm saying. How much does the rec compare with the commercial guys?

So, to the end of the day, who's really impacting this fishery? Is it the commercial guys or is it recreational guys? If you have to put the numbers together. Who are the guys that dipping into this

deepest? And what I'm saying is not that they shouldn't be able to take home fish to eat. I'm not saying that. What I'm saying is just like you have a day season in the states, because you have the ability to shoot fight there for a day. Is that being that allowed? No, it's not. They give you a tag and they tell you, "Well, listen, you got this among for the season. You shoot them, or you don't shoot them, that ain't on us, that's on you."

I think we need to have the same mindset to some degree. When we manage fisheries, and we need to realize that certain guys just do this because this is their job. And other guys do this because this is how we have fun. And as for the head boats, they take all guys and charter. Right? Before they leave the dock, they are paid. Before I leave the dock, I have to make a certain amount of money to cover my expenses before I come back to the end of the day. These guys don't have it covered and then someone then brings the same fish back to the dock and floored it and sold it for a cheaper price and a black market.

So, the point I'm trying to make here is, I want to ask for at least five years to give the Virgin Islands an opportunity to come to the table. Yes, I asked for this before, it was three years and that program stopped for whatever reason. The data stopped coming in. To get an opportunity to step up now and say, "Well, listen, we will get serious; we will get this data together." To actually get some numbers that reflect what we do in it. Instead of you saying, "We will come up with some numbers, because we got to come up with some numbers" and try to work with WECAFC. And so, what they are looking at the regulations, and I'm saying that we agree with exactly what they say.

But I think if we come in on a pan-Caribbean level, we need to all be able to work with each other and come to some kind of middle ground where we could all work. So, that's basically what I'm trying to bring across the table here. And I think, to me, that that's a sensible thing to do but, you know, I'm probably not the most sensible guy on a table.

MARCOS HANKE: Tony, I will take this-- I recognize your position because we have a very long history in Puerto Rico. I want to look to Nelson about this discussion. We traveled through those weeds a long time ago. I recognize that it's different for Puerto Rico and the U.S.V.I. in some senses. But on this issue, it's not too different.

This is a complicated thing to address. I'm just going to give you some examples. For the recreational industry, when you make tournaments, there is an implication about the amount of fish that

you allow them to keep. In terms of the rules and the functionality and how attractive the tournaments will be. That's number one.

Number two, if we don't have size limit-- this is what I think there is potential to create here. If we don't have size limit, four small mahi per person, if you have 6 people on the boat, or five people on the boat is basically the numbers close to the 30 that we are talking about. And that's four little mahis that are adults already, it's not a lot of meat. Right?

There is that scenario too. Puerto Rico tried to address that by making a provision of no sale for the charters and for the recs. There are ways to do this. I think we can put on the table the discussion and learn from the mistakes that Puerto Rico made on the past. I have a lot of things to say. I don't want to take the time to do this now, but I recognize your point. I don't think it's that simple of saying this study is too much, which I believe is not because there is a deep implication for the charter and the and the recreational fishermen for many other reasons.

We need to keep talking about this. Anybody else? Julian and Nelson.

JULIAN MAGRAS: I just wanted to-- I went searching for the information that was submitted before. Back on August 26, 2019, we submitted a letter to the commissioner at that time, the Saint John/Saint Thomas FAC submitted this letter under the Chairman, Mr. Claude Berry.

I'm not going to read the entire letter, but what was recommended for the commercial side because we didn't have any information on the recreational site was, the fork length for the dolphin to be 24-inches fork length minimum size, 10 fish per angler, no more than 60 fish per boat. This is commercial. For the Wahoo was 36-inches fork length minimum size, with two per angler, no more than six wahoos per boat.

We came up with these numbers. We held a Fishery Advisory Committee Meeting down at the French Town Community Center and we invited all the commercial guys who was fishing in for these species. And we gathered their input, and these were the numbers that they would like to see. So, I'm just supporting them. It goes back a couple of years, but this is what was presented from the FAC and the commercial side.

And then just a chime into what Tony was saying. We did ask for that three years reprieve under the ex-director, Ruth Gomez, and it was granted. We haven't revisited those numbers, the program

stops. I don't know where we are today. But to go along with what Tony is saying, if I don't know what the process is and given us an opportunity to try to regather this information both commercial and recreational it would be greatly appreciated. I don't know how else to put it. And we definitely need to look at the recreational size and bag limits.

I guess the size limits would be across the board the same. But the numbers of fish per angler per boat per day, should be way down than 32. They're not selling and what happens is, if you allow these boats to catch this quantity of fish, they're going to be illegally selling the fish in our restaurants and hotels competing with the commercial guys who have to put the money out before they even go fishing. Thank you.

MARCOS HANKE: Thank you very much. I recognize all those complications, and we need to keep discussing. I want to follow-up with a question to María. this is a decision per island, right? We still can divide these decisions per island based on the graphics that you present.

MARÍA LÓPEZ-MERCER: Yeah. At this point, I mean, the islands can choose different management regimes, you know, as long there is enough background. I think at this point, we're gathering information as to what the Council would like to do. But yes.

MARCOS HANKE: Okay. Thank you. Nelson.

NELSON CRESPO: If we start talking about this term, maybe we're going to need one week. I agree with Tony. I also agree with Julian. And I also agree in part with you Marcos regarding the 30 pieces of fish. If they don't impact the black market, that's the problem.

In my opinion-- and I said this before, 10 fish for a recreational vessel is more than enough. Because like Tony says, you are going-- because this is a hobby, you are going recreationally. If you catch, you catch, if you don't, you don't. If you got a piece of fish and you can split it with the people that are in the boat, it's okay. But more than 10 fish is definitely going to impact the market and it's going against the commercial fishers.

MARCOS HANKE: Thank you, Nelson. Miguel.

MIGUEL A. ROLÓN: Okay, Mr. Chairman. No, I was talking about a matter of procedure. The dolphin wahoo has been included in the WECAFC new-- well, not new, but the Flyingfish Working Group is now called the Flyingfish-Dolphin Wahoo Working Group. Because we

recognize, at the international level, that we have issues in every country and throughout the region with these species.

In the case of the mahi-mahi, the dolphinfish, we have two species at least, one in the Northern part of the Caribbean, one in the Southern part of the Caribbean.

I'm sorry. In the in the case of the dolphinfish, we have two populations. We have, in the past, after we tried to get the three Councils of the Southeast, Gulf, South Atlantic, and the Caribbean working on these two species. But we stop it because we had some issues and problems and then priorities on the other two Councils. Now we are dealing with the question of what to do with the dolphin and the wahoo.

We included-- we, the Caribbean Council and the U.S. Delegation and the WECAFC, included the dolphin and the wahoo in the working group because we believe it is to the interest of the whole Caribbean to address these species. There are two issues with the dolphin. One is a biological issue, and the other one is the socioeconomic. It's an economic issue. One is dealing with allocation, but this is what you're talking about now. You're not talking about the biology of the darn thing. You're talking about allocation.

In the case of allocation, you have to be mindful that we cannot tell Puerto Rico or the Virgin Islands and what to do in terms of allocation. Unless there's a, you know, a federal issue with it. So, this talk about quotas and things like that, has to be done at the local level. Puerto Rico has been dealing with this for a long time. Some people want five fish only and others, of course, if you are recreational, you want 30 or 40 or whatever. They do not eat that. They sell it for shack money or gas money. That's something that has been opposed by commercial fishers everywhere you have this issue discussed.

So, what we need to hear from the Council is number one, what are the next steps that you would like to instruct the staff regarding these two species? You have heard the presentation today. So, definitely, you need information on the biology, so far what we have, socioeconomy of the two species and probably you will need to address the commercial and the recreational separately, if you have that that information. So, you will be able to then decide what to do.

In the case of the dolphin, it lasts around three years on average. So, if you, let's say that you have a strict regulation in the U.S. Caribbean that is not compatible with the rest of the

upstream, you aren't doing nothing for the biology. You may be able to do something that's related to allocation.

I bring this to the discussion because, before you continue with all the discussion, you need to have all the information possible. That's what María is saying and Graciela. We need to get that information for you in the format that you will be able to discuss it. But I believe that we have allocation. We have size limit. We have quotas. Those are the issues that you would like to address at the appropriate time.

The dolphin-wahoo working group will meet probably this year, if COVID allows. These same issues that you're discussing here, will be included in the agenda. If not, we are going to meet on the first part of 2023. And certainly, we would like to bring to the discussion, whatever the Council decides to push for the management and strategy of these two species. Thank you, Mr. Chairman.

MARCOS HANKE: Thank you. Graciela.

GRACIELA GARCÍA-MOLINER: So, María was just finding out and I think Sarah is the one that knows who sent those the information.

So, we have a couple of issues. One, the definition of a recreational fisher under the MSA. Second, we do have a recreational fishing license that is supposed to be required by anyone who is fishing recreationally in the EEZ. So, it's available to Count My Fish or something like that. MRIP has not been working in the U.S. Caribbean for a while now, but we'll hear from Kevin about that. But there is also the local recreational license and the data that are being collected by the U.S.V.I. and Puerto Rico.

So, we've been talking to the locals about what information its available. What issues are they facing. And the sale of fish during tournament times, etcetera, it is a big issue. It is floating the market. We need to bring in the socioeconomies to deal with that aspect of the regulations. But as Miguel was saying, you know, there is some basic information on the biology of the species that it's worthwhile also, putting on the table.

But the MSA-- can we read the definition of the MSA, which is really?

MARÍA LÓPEZ-MERCER: Recreational fishing means fishing for sport or pleasure.

GRACIELA GARCÍA-MOLINER: So, it's de facto then, if you harvest fish from the EEZ, prohibited to be sold on land. I mean, that's

for example, one big issue that we have.

Can we, the federal government, do something regarding stricter definition of what the recreational fishers can do, if you have a permit from the EEZ, then you cannot sell it on land. So, there are a lot of discrepancies in terms of what we can and cannot do, or at least that's the way we feel. So, you know, in that sense, we really need a little bit more direction in order for us to develop something that would be hardcore.

MARCOS HANKE: Andy.

ANDREW STRELCHECK: Well, first a comment to what you just said, Graciela. Typically, with prohibition of sale, it's tied to a permit. Right? And so, that's the challenge here is not having that federal permit nexus. But I think, certainly, we are open to exploring options that could bring back to the Council with regard to how we might be able to prohibit sale or what that could look like.

We've kind of jumped into the debate and discussion about the validity of size limits and bag limits and trip limits and I wanted to take a step back. I appreciate Tony's comments coming right out of the gate.

Recreational fishing has a substantial impact on fisheries management, right? In the Caribbean, we don't have a fundamental understanding of how much is being landed because we aren't collecting that data through surveys at this point. It is represented as of 2017. We've had some discussions about how to stand it back up, but it hasn't been stood back up. The U.S.V.I. has not collected long term recreational landings data. So, we are flying blindly, a little bit, with regard to what we know or what we don't know with regard to recreational fisheries.

It seems like we can all agree that if we're going to consider size limits, there's some value with regard to size limits both from a market, a socioeconomic standpoint, as well as biologically, right. A size of maturity to prevent growth over fishing. And so, what I would be interested in, if the Council's willing to pursue an options paper is, determining what species we think might be in most need of a size limit, and options that would look at what those size limits might be and obviously consideration for commercial, recreational or both fisheries.

For the bag and trip limits, you know, the trip limits on the commercial side, to me really would need to be tied into, are we having issues with the catch limit being met or exceeded.

Typically, we put in trip limits to make the fishery less efficient, to control effort. In this instance, we're not regularly bumping up against catch limits, so trip limits may not be needed at this time on the commercial side.

For bag limits, because of my comments earlier, I mean, we may want to consider exploring recreational bag limits, just as a way of kind of managing effort and overall harvest, and we could have staff bring back a range of options with regard to bag limits for certain species where there might be a need for those bag limits.

So, I make those suggestions because I am supportive of an options paper. It doesn't bind us to anything. But if we'd want to narrow the focus of what the staff brings back to us, I think this is the time to be able to discuss that.

MARCOS HANKE: Tony?

LOUIS ANTHONY BLANCHARD: I was glad when you guys said the information. So, I will ask the same question I just asked about 10 minutes ago. Can the Council give the Virgin Islands five years to get its information together?

MARCOS HANKE: Kevin.

KEVIN MCCARTHY: Thanks. So, just to remind everybody. The Science Center, right now, is working in collaboration with the FW and the Virgin Islands to develop a survey design for the entire fishery. So that's rec, commercial, for hire. And in Puerto Rico, as we've seen last week at the SSC meeting and at other meetings, here is a similar effort going on in Puerto Rico. That's a little bit farther ahead in terms of the commercial side. So, there have been a number of years getting a survey designed developed for the commercial sector and now DNER is working with a little bit of help, very little bit of help. It's their project for sure, but a little bit of help from the Science Center looking at the recreational side.

So those surveys and the design of those surveys have begun. You know, it's going to take a few years to get to get rolling on it. So that five-year window of getting a survey design and getting some pilot stuff will probably do that within five years. Then there's always the question of funding to keep it long term.

So that's something we're working on at the Science Center, the funding side, as well as the design side. So, there are people in the field right now working on that project.

MARCOS HANKE: Thank you. Tony.

LOUIS ANTHONY BLANCHARD: Well, I don't, to be honest with you, I don't see it as complicated as that. I am going to explain to you why. I'm not a guy that's running any show. The only show I run is my own.

But seeing that we have registration every year-- and I could make this very simple. The guys are coming to register the boats. They will tell you whether they rec, fishermen or they are commercial fishermen by the license as a whole. Meaning, the commercial guys are the only guys with license. The questionnaire could go, "do you fish for such and such?" on a recreational basis.

You get the number of participants that say "yes," you tell them "Okay. Well, listen, we need this information in this fishery. Just like the commercial guy has to turn in a catch report every time he goes out; well, you're responsible for your fishery, my friend and this is what we need."

Have them be responsible for their fishery. Because remember, this is their fishery too. You want you want to make people responsible for something, you need to give them the responsibility, and see where they go from there, and I'll tell you, whether they really care about it, or they don't care about it.

So, what I'm saying is you get them the paperwork, "listen, this is the papers you need to fill out every time you go out, and you do recreational fishing." Have them hand it in and that's where you get your foot in the door to start the gathering of information for the fishery.

And like I said, I ain't the guy behind the scenes running anything. But to me that would be a starting point where I think is a very good starting point because you have the players whether they have to come and register the boat because they have it for pleasure or they have it for to make money.

MARCOS HANKE: Yes, Kevin.

KEVIN MCCARTHY: So, the purpose of this port sampling survey is not to come up with a list of fishers who may be rec or who may be commercial. It's to get at the landings by those different sectors and the size composition of the landings by those different sectors. So, it designed or will be designing a survey to get at what's actually coming to the dock. So how many fish are being landed and how big are they? And what species? So obviously, it's not going to be limited to dolphin and wahoo.

But the idea is not so much to survey, are the Fishers saying they're commercial or are they saying they're recreational or are they saying they're for hire? It is to get at what are the landings from those different sectors? So that's so that's the purpose of that of that work. If I'm understanding your comments correctly.

MARCOS HANKE: I need to make a comment because before this discussion, we had this discussion and actually we made some recommendations to Clay Porch a long time ago about the same approach that Tony was doing to Puerto Rico. Because in order to design what you want to design right now, it will be very important to know the universe and the style of fishing that the recreational fishermen do. If they go diving for lobster, or if they go pelagic, if they will go reef fishing.

That first layer of information, we are losing the opportunity. I think what Tony just said is complimentary and an important first layer that we don't have on hand because we don't have a license first. But as an alternative to know the universe, that's a low hanging fruit. I'm sticking with that saying, right?

I understand what you said. I'm really connecting the two ideas with this participation. We have Jean-Pierre. Good.

JEAN-PIERRE L. ORIOL: So, I just wanted to make two comments. I think the first is that I do not think, particularly on the U.S.V.I. side, that we're going into anything blindly. I believe the Southeast Fisheries Science Center, over the years, again, this is my second stint on this board. Right? So, from my previous stint in '13 and '14 and my previous involvements in '08, I can remember a number of times where there were recreational fishing surveys taking place in the territory.

I know specifically that a contractor named Peter Freeman, who's a socioeconomic person, who was working with the division of Coastal Zone Management at the time, was also working as a subcontractor doing surveys in the territory on the recreational sector back in '14 and '15 and '16 prior to his relocation to the States in 2018.

Second, to your point, Tony, about the last one in terms of thing. We don't want to mix the boarding registration with the fishing. But exactly what you're stating, in terms of licensing, filling out those reports, everything. That's exactly what we're doing in the regulations. We're making sure that people apply for, receive tags, have to get a permit and have to be subject to the reporting requirements set out by the department. Because, again, we're not

trying to say that the only pressure that's out there is the commercial sector. We're trying to put some of the owners as well on the recreational sector, which is having an impact. And so, making them subject to the same types of rules and regulations of the commercial, that's the goal of the department. That's what we're pushing forward.

MARCOS HANKE: I think this discussion is getting very deep into the into the weeds, but Jean-Pierre, one comment is that we don't need to know the universe of how many recreational fishermen are every year, this effort that Tony just mentioned, and I totally understand the value of it, can be done sporadically just for us to have some information of how many people intend to go fishing. And I can go back, if Kevin wants, I can share with him the questions; actually, I think I did the questions with Nelson at that meeting that we presented to Clay for this effort. I think, please don't put that on the empty basket there. There is a possibility, right? It's an opportunity.

Anyway, I need to move the meeting forward. Miguel.

MIGUEL A. ROLÓN: You know, to decide what you want to do. And also, you don't you need to trust the scientists. You know, they are not going to say something or do something without really knowing what they're going to do. They have a plan to design the surveys, and they are best available information that they were going to collect.

But at this time, María, do you need a motion from the Council whatsoever, or do you have enough instruction to follow, to continue?

MARÍA LÓPEZ-MERCER: I don't know if Sarah has something, but I think we need guidance from the Council to what they want to do. I mean, if the Council is not ready to move forward with something at this point, then we can certainly discuss it during the next Council meeting. I mean, as Andy mentioned, bringing an options paper doesn't bound us to anything. Like, we can bring an options paper, you know, with some alternatives and options of different management regimes that we can do and if when you discuss it, you decide that this is not the route that you want to take, then that's what we ought to do.

MARCOS HANKE: Miguel?

MIGUEL A. ROLÓN: Because, in that case, because you have a lot of other stuff to discuss here in the agenda.

I suggest that the Council instruct the staff to prepare an option paper, as suggest by Andy and mentioned by María. You will have the element of judgment in the future to discuss and then you would be able to know what are the gaps that you need to fill, what are the information that you have in place, what are the biological parameters that you need to address? And what are the socioeconomic parameters that you need to address?

By the way, you need to do this for the U.S. Caribbean, I mentioned that we are having this effort internationally, but our task is to address this under the Magnuson-Stevens Act. And of course, we need to be mindful of the international concept and so forth. When they do this, they also do a review of the literature. So, all this information that we are talking about would be presented to you by the group that is going to prepare the option paper.

The staff has a lot to do between here and August. I would say that the option paper will be ready when they have it ready this year. So, if we don't do it at the August meeting, by the December meeting we will be able to have that information. And remember, we have good news at this meeting, which is that probably the island-based FMPs will be adopted this year.

And with that, Mr. Chairman, if you all agree, I believe that the staff have enough guidance to follow-up and prepare that options paper. María?

MARÍA LÓPEZ-MERCER: Yeah. Let me bring Sarah, because this is the option that she's working on. She may have additional information.

SARAH STEPHENSON: Thank you, María. I just wanted to see if the developing the options paper, would you like that for all the pelagic species that are going to be managed, which just has a few extra ones for Puerto Rico, the king and cero mackerel, the two tunas, great barracuda, and tripletail. Or are we only interested in helping these kinds of measures for dolphin and wahoo?

MIGUEL A. ROLÓN: The original idea is that the wahoo and the dolphin will be the poster boys for what we want to do, but certainly we would like to have as much as possible information on the other species considered. And that's what I was saying that we cannot pretend to have everything for the August meeting. There's a lot of work here aside from the other words that the team is working on. So, if we can collect information on the dolphin and wahoo and the species that you're saying here, then the Council will be in a better position to make a decision.

We have one fellow there, the tripletail. The tripletail is one of

those pieces that people don't know much about but is included in our recipe book. So, we probably will be trying to develop the strategy for the use of the tripletail.

So, for the record, if that's what you want, then the answer to Sarah will be that we would like to have the options paper with as many species as possible with the workload that they have. Because we don't have to do it all in one shot, they can identify those species that you are in need on more information, but at least you will be able to have, on the mayor ones, you will have some information that you and look at where you are and where you want to be.

MARCOS HANKE: Yes. I think all the list of species that are on the board right now have to be addressed. Part of the rationale, Sarah, if I go dolphinfish, as part of that catch composition, there is wahoo, mackerel, blackfin and tripletail, and barracudas, they're going to be there using the same base, same rod, same everything. Right? And I think we need to address all of them at the same time since the beginning. Just like Miguel said. Get information and start this scoping action.

Go ahead, Graciela. Last one is Graciela unless Andy wants to say something for us to move along.

GRACIELA GARCÍA-MOLINER: Yes. I was saying, we really need direction on what you want to do. Do you want us to go ahead and prepare an options paper for all of the manage pelagic species that are in the island-based FMP. Okay.

MARCOS HANKE: Be mindful too that in terms of the Council process, because some of them are new species, most of them, it's important to start to develop the record and the management and the whole information publicly. It basically is a scientific outreach for the fishermen and people that participate on this meeting.

GRACIELA GARCÍA-MOLINER: We do, then, need to make a requirement of data sharing from the local governments because they're really collecting a lot of the information that might not necessarily come to the Science Center, and any efforts that they are carrying on so that they keep us in the loop so that we know where everyone's heading, especially, you know, Puerto Rico probably is a little bit ahead of the game because of the tournaments, etcetera, that they do monitor.

So that's the data request that we need. I think we share that with the Science Center and the regional office. So, we'll, you know, following your advice, we'll get in touch with the local

governments and—

MARCOS HANKE: Yes. Please get in touch with them and follow-up on your request. Next item on-- María, you have the-- María, do you have the instructions and a clear record on the next steps on this presentation that Sarah did?

MARÍA LÓPEZ-MERCER: Yes. I believe-- this is María from NOAA Fisheries. Yes. We have the information that we need. Thank you.

MARCOS HANKE: Okay. Thank you. Miguel?

MIGUEL A. ROLÓN: Before we continue, just for the record. I just received the letter from Damaris Delgado. In order for her to be able to vote and everything, you have to have this letter. I would like to read it for the record.

The letter is addressed to Dr. Andy Strelcheck, Regional Administrator from the acting Secretary of the Department of Natural Resources, Anaís Rodríguez, and the letter states that Damaris Delgado will be the delegate representing the Department of Natural Resources and as alternate will be Dr. Ricardo López from DNR Fisher Research Laboratory.

So, the letter is on the record and is going to be sent to your office, that way she is able to participate and vote. She's now on the internet and with this, I believe that Mr. Chairman, you will need to ask whenever we have a vote, what is the pleasure of Damaris and Vanessa who are in the Zoom.

MARCOS HANKE: Noted. Thank you, Miguel. Next presentation. Let's try to catch up here. It's the Ecosystem-Based Fishery Management Technical Advisory from Sennai Habtes. Sennai.

EBFM TAP Report—Sennai Habtes, Chair

GRACIELA GARCÍA-MOLINER: So, Mr. Chair, Sennai is not able to join us because he's attending another meeting, but Kevin will be presenting for him.

MARCOS HANKE: Kevin. Go ahead.

KEVIN MCCARTHY: Thank you. So, I'm going to rely on other TAP members who may be on the call or who are in the room and in fact, I'm going to put over to Orian a couple of the slides because he's more in tune with some of those issues than I am. So, I'm going to walk you through this presentation.

I'm seeing it for the first time today. Not right this minute, but today, because I think Sennai thought he might have a moment to join us, but I think he's slammed in another meeting. So, I'll walk you through this.

Are we advancing again without trying to? I think, yep, we are. It's trying to move us along. So, I think we've got one more before that. It's just an introductory slide.

This I think much of this presentation was made last week at the at the SSC meeting. So, for those of you who saw that presentation, this will be very familiar.

Next slide.

So, just some background. You've seen a lot of this information before having to do with the EBFM policy coming out of NOAA and the fisheries service. Mainly, it's just to show support for the implementation of EBFM as a management tool to better inform and enable decisions regarding tradeoffs among and between fisheries, aquaculture, protected species, biodiversity and habitats, and recognizing the interconnectedness of these ecosystem components.

There's some background there. I won't read through this whole slide for you. You've seen much of this before.

Next slide.

And so, to get back to the EBFM TAP Charter, why does that group exist? Why did you all, as a Council, form this group. It's to provide the Council ongoing scientific advice on ecosystem-based fishery management for fishery management decisions, including recommendations for habitat status, social and economic impacts of management measures, and ecosystem-based impacts, or stressors, on sustainability of fishing practices. So, that's basically the reason for being for this committee. So, that was just basically a reminder to all of us and it doesn't hurt to be reminded of why the committee exists.

Next slide?

So, we've seen this diagram on the left, the process of fishery ecosystem plans. We began at the top, where are we now. We've, I think, as a committee resolved many of those steps in that first section and we've now moved on to this step two, where are we going? And the step on the right is just-- the bullet points underneath number two on the left are just blown up on the right. And we're working through those.

So, articulate a vision; develop strategic objectives, and how to develop those; assessment of risk; prioritize those strategic objectives, develop a strategy; and develop some operational objectives, and develop a plan to present options to the Council. So that's the process of the step two. That's where we are now and as a committee, and that's what we're working through.

Next slide.

So, is this where I'm turning it over to you or is it the next one? I got one more. okay.

So, the goal of-- and again, this is mostly background material you've seen before. The overarching goal of the Fishery Ecosystem Plans is to promote ecosystem-base approaches to ensure healthy, resilient and productive marine ecosystems and the fisheries resources dependent upon those ecosystems.

And then there are a number of things to consider within that mission. I'll just pick out a few, increases human community resilience within the context of changing ecosystems. That's certainly something that's receiving a lot attention at the national level. Define present ecosystem status and functionality; identify additional ecosystem essential species in need of conservation and management. There's a whole list of issues that fall within this ecosystem-based approach.

Next slide.

ORIAN TZADIK: Okay. I'm going to take over from here. This is Orian Tzadik, EBFM TAP member, for the record.

So, the list here that you're looking at is based on a meeting we had in March. These were the presentations that were given and some of the list of potential collaborators. So, on the right-hand side, you can see kind of the topics of a lot of those presentations. They had to do with ecosystem components and a lot of this kind of step one of the processes, where are we now?

So, the Smithsonian, for example, did some really innovative mangrove mapping project that was really exciting and got better mangrove maps for Puerto Rico and the Virgin Islands than we've ever seen before. You know, likewise, we kind of worked through some of this stuff and we heard from the Science Center, about the strategic plan, and then obviously outreach and education. Some of the CARICOOS stuff had to do with the sargassum as well. All these are kind of components of the ecosystem, trying to get a better

handle of where we are, what's going on in the ecosystem.

What I want to point out are the two presentations that are kind of highlighted on the left there and give them a little bit more detail. And so, The Lenfest project headed by that's supposed to be J.J. Cruz Motta and Stacey Williams and Tarsila Seara are working as one of the groups creating some of these conceptual models. They gave us a really cool presentation about how their conceptual models are working and how they going to, from those conceptual models, derive indicators. And then using those indicators combined with indicators from actual data sets, they're going to compare the two and see where we are and see what kind of data gaps we have. I'll go into that more on the next slide.

And then also we had a presentation from Kelly Montenero, who, with Mandy Karnauskas, did the-- what's it called? --Ecosystem Status Report and they themselves developed indicators based on the available data sets. So, it’s actually really exciting because we have all these different groups creating indicators that we can then compare against each other.

Next slide, please.

So, I kind of ran through that really quick and we're going to rewind right now and talk about the conceptual models. So, I believe everybody in this room at some point has taken part in of these conceptual model workshops. There are three different groups kind of completing these workshops. One was the Council, one was Mellivora Consulting. And then one is listed here as ISER Caribe, but it's this larger Lenfest group. There were seven different stakeholder groups that were represented among 32 conceptual models. So, that's a huge lift, compared to many other regions, that’s way more stakeholder involvement than a lot of other regions.

We really tried to get good representation across the board of different stakeholder groups and then even within those stakeholder groups tried to make sure, you know, for example, the ones that we're still missing actually are some of the fisher groups, the social scientists that were working on this insisted that we have 13 unique conceptual models from fisher groups in Puerto Rico alone. So, we're really trying to make Sure we get everybody's input at a at a lot of different scales.

And then we're in the process of trying to merge these things together at overall conceptual models for each island. And so that starts with creating like terminology among the models. And then, what they are going to do with this is, kind of, once they've

created the like terminology, the idea is to see how similar different groups are to each other and then the same group is to other groups within that group. Right? So, how does fisher group on the West Coast of Puerto Rico compared to fisher groups on the East Coast of Puerto Rico? And then how do those groups compare to those in the Virgin Islands, etcetera. And then also, really interestingly, how do the fishers compare to, let's say, the managers or the academics or the DAPs. That's also all within that.

Then the idea is to kind of create this tiered approach where you would be looking at these similarities among and within groups to eventually get to a single conceptual model per island. Those conceptual models will be based on, the components of those will be based on the amount, the times, the frequency of occurrence from the smaller models. Right? So, if we heard in every single model that something simple, like may maybe you know, pollution affects coral reefs. If we heard that in every single model, that'll make it to the top model. If we only heard that in one of the 32 models, it likely wouldn't get to that top model.

We're going to include all of the conceptual models in the final report, but this melded one will be where we then get indicators from. And then I'm not going to run through this whole process, but the indicators will then be used to inform the indicators that are derived from the data and see how well those matches up. So, what do the stakeholders think? What does the data tell us? How do they overlap? And where are the data gaps?

Next slide, please.

And so, that's what this data procurement and assimilation is. Again, this was presentation I think developed for the SSC. So, I'm not going to go through all of these steps. Happy to talk to anybody at the break about it though. The important thing here is that last bullet there that is to identify data gaps between stakeholders and the data derived view of the system. So how does the data collect from things like SEAMAP, NCCOS, the NCRMP programs. How do those data differ from that that the stakeholders are telling us? Or do they? And if so, where are the different and what are the gaps that we should explore further.

And then the idea behind creating these indicators is then assessing risk to do with the indicators. And like I was saying before, it's pretty exciting because we're going to have all these different avenues of deriving these indicators, including the ecosystem status report.

Next slide, please. Back over to Kevin.

KEVIN MCCARTHY: Okay. So, back to me. As a consequence of the work that the TAP is doing, we've developed a number of working groups, and you can see those on the left. I won't read through all of the membership other than to say, we've reached out to other groups, like the like the SSC and the Science Center and some others, to help fill out these working groups.

So, we've got a conceptual model's melding working group that Orian just talked about their work. Ecosystem indicators. Again, you'll see Kelly Montenero there. She's been doing that work as well as J.J. and others. A risk assessment group, data repository group. And then finally, what we haven't filled out yet is drafting the FEP because that's, you know, the ultimate result of all of this. So that's going to rely on the work of all the other groups. So, that's to be determined and coming in the future.

Next slide.

So, the next steps, these in red, are the completed or nearly complete. Some of this conceptual model work is still ongoing. I don't want to read each and every one of these, but we could certainly discuss them as the Council sees fit. But progress is being made. That's the main point of this first slide, then a number of a number of tasks have been done or will soon be done. But there are a number of things left to do.

So, next slide.

This is still on our to do list, and you can see this runs out through December of 2023. So, there's a year -- a little over a year and a half more of work to do in this timeline. But ultimately, in December of 2023, the goal is to submit the FEP for Council approval. I believe that is the last slide.

Yes. So, Happy to take any-- well, let me stop before I say, "take any questions" and ask other TAP members who are in this meeting, either here or online, if you've got any additional information to add. I'm just going to open it up to the TAP Members. Happy to hear your comments. If there are none, then I'll open it up to questions.

Questions/Comments

MARCOS HANKE: It's open for question. Let's try to speed up the process we are behind on the schedule. Any question?

I think the slides and the presentation was clear enough. The

Council is well aware of what is going on with the TAP. Thank you very much for the presentation.

GRACIELA GARCÍA-MOLINER: You have Alida Ortiz online.

MARCOS HANKE: Alida Ortiz. Go ahead, Alida.

ALIDA ORTIZ SOTOMAYOR: The only thing is that I want to let you know that in the Outreach and Education Advisory Panel, we will have a meeting in July that will be dedicated to what are the strategies, the outreach strategies that we can use or that the group, the working group of the fisher ecosystem plan needs for that plan. So, we'll have probably the same presentation that Kevin is doing, and then we will discuss this with the entire panel. Just to note.

MARCOS HANKE: Thank you, Alida. Next item on the agenda is the Scientific and Statistical Committee Report. Richard?

Scientific and Statistical Committee Report—Richard Appeldoorn

RICHARD APPELDOORN: Thank you, Marcos. While we're waiting for the presentation to come up, I'll just start by saying that the SSC met two days last week. It's the first time we had met since July, so there were lots of things to get through. Okay. The next slide.

So, among the issues discussed, first was an integrative analysis and visualization of the SEAMAP C data. It's a very interesting presentation by J.J. Cruz Motta on the SEAMAP data and how they've gone through this and basically created what they call the gold standard as to say it's been proved and put into a good format that now can be used to address a number of interesting questions about how, in the example he gave, how communities might be changing over the time, and what the drivers of those are, and sometimes it might be something in the environment. Sometimes it's how we've changed, how we've done the sampling. But they show up nicely in the data.

We heard one from the Science Center on Caribbean branch, this is something that the Council I think was briefed on, either the last meeting or the meeting before that. We also had, from the Science Center, an update on the research inventory, which is an inventory of cataloging all the kinds of research that have been done in fisheries in the U.S. Caribbean and trying to put that into a database.

We also had an update on the SEDAR stock assessment matrix, which

is basically a look at what species are we interested versus what do we actually have data that we can use to analyze and therefore what species do we need to perhaps target for additional data collection. So, it's kind of a data triage look at things and Kevin gave us that presentation.

That's followed by an update on the spiny lobster, OFLs, ABC's. It was pretty much what you guys heard this morning in very short presentation. I gave a presentation on the National SSC that's going to be meeting this August 15 through 17 in Alaska and the subject is on EBFM and we'll be sending myself as the Chair and also J.J. Cruz and Tarsila Seara as part of the ecosystem-based group, representing the Caribbean Council for that.

We had presentation on the lobster selectivity study that's being done. This is one of the big recommendations that came out of the stock assessment for spiny lobsters. We weren't really clear on the gear selectivity. So, that's underway. We got a presentation of showing how they're approaching that with different traps of different characteristics that made them selective for different sizes and we can see how they operate with what's in the environment. One clear thing that was not being incorporated in that was the issue of depth and there might be larger lobsters at depth. Anyway, it's an ongoing study and we have yet to see what the results will look like.

Next.

We also had several kinds of presentations on the ecosystem-based fishery management program. Essentially the same presentation you just heard on the on the TAP. We also had a more detailed presentation on the Lenfest program which was sort of what Orian was talking about here and also one on how to meld the conceptual model. So, they went into a little bit more detail on the statistical way that they're going to approach bringing all these models together.

Status of the island-based FMPs was also presented. I think you have already heard that. Again, something the Council has been dealt with in several meetings in the past that the SSC has not been up on was the five-year strategic plan, and that has some importance because it feeds into, you know, what data do we need, and this is where we're working at.

So, the last 2 things there are the Puerto Rico Port Sampling and Catch Validation Project, it’s a summary of the MER Consultant’s program of port sampling around Puerto Rico and the Life History Update by Virginia Shervette, I think the Council has also heard

that in the past.

Next? You can just hold it there.

The last 2 items there are really what I'm going to spend my time talking about because what we wanted to get to, was the SSC research plan recommendations and those two topics are what we spend most of our time discussing and have the most relevance into looking at what the research recommendations might be.

So next, back one. No. The one pack. There we go.

Okay. This is a program that was started some time ago, got interrupted by María, then since, has gotten most of its stuff done and report written and submitted into the Science Center. They've done a lot of interesting things and one is the incorporation of digital methods. So, they're at a stage now where they have basically a camera system that looks down on a board, that board will also function as a balance. So, very quickly, you could slide a fish on the board, the video is running, so it records the fish. It can measure the length automatically from the grid on the board and the balance estimates the weight and you move on to the next fish.

They have been teaching this system how to recognize species using artificial intelligence, and I've been feeding it tens of thousands of images of fishes to get it to identify those species and it's gotten very good at it. And I'll talk more about that in a second.

So those incorporation additional methods have greatly increased the amount of information that can be collected in any unit of time with the goal, of course, of minimizing the disruption to the fisher in having his catch or her catch looked at and also getting more information during that time. Another thing that came out of this is just the estimation of what the catch might be. One of the interesting details was that 24 species accounted for 87 percent of the catch. We pointed out that two species, spiny lobster and conch accounted for over 50-- it was 51 or 53 percent of the catch. So, you're getting a good view of what the species composition is.

We spent a lot of time talking about how this applies to expansion factors. There were some really interesting things that came out of this. So, some species tend to match the raw data that's collected from the commercial fisheries reporting program. I should point out something that Todd Gedamke and others emphasized, is that none of the data sets we're looking at should be considered perfect, not the MER Consultant data sets, not the commercial landings data set, these are things that all have their biases,

and we're going to talk about those.

So, as I was saying, some species from the MER consultant data, matched the raw data from the commercial reports in Puerto Rico. One of the examples of that was spiny lobsters. Whereas other species matched well with the expanded data, using the expansion factors. As an example, that was conch. So, there's some interesting dynamics going about different sectors and how much they're reporting or not reporting.

There were unexpected landings that showed up. Not unexpected that they showed up, but how much or how valuable they were. Two examples were the common octopus. So, there's several octopus species that occur in the fishery, but the common octopus was the number nine species on that list. Another one was a single species of slipper lobster. Again, there are several species that show up in the fishery but a single species, and I forget the actual name of it, showed up as number 27 on the list.

Some of the species were not targeted well. okay? This is based on a pilot sampling program that ran for several months and then they started running the full program and during that, they realized they were not getting some things and they switched how they were doing things that worked out fairly well, but they were still some species that were not targeted well from the way the sampling program was run.

Certainly, rare species always have a problem because you just don't get enough data on those. But there are others where the landings occur outside the normal sampling time or at normal sampling sites. And one example was yellowtail snapper which frequently the landings were made at night. Another one was the multi-day trips coming back from Mona frequently, they're coming in very early in the morning. And so, the port samplers were missing those. So, at least they're able to identify places where they think they're missing things and be able to adjust accordingly.

Then there were some species that are just confusing. We don't know why we weren't fitting either the expanded or not expanding, so there's other dynamics that are going on with how those are reporting or how they were being sampled in the MER program.

Next.

So, there are applications and next steps that can use this data. So, the main point was that the full data set really needs to be analyzed and you'll hear me emphasizing that again. The purpose of

this was to be able to better target the distribution effort of port samplers so we get a better estimate of what the catch is, and then subsequently what kinds of expansion factors and how those expansion factors would be calculated. So, we could start getting towards species specific expansion factors instead of coast wise expansion factors.

One of the things we did find, however, is that the expansion factors on the level of total catch do in fact work quite well compared to the MER data. So, they were aligning well and that's good news for how we were looking at those expansion factors. But as I said before on a species-by-species basis, that's where we start having problems because you're dealing with smaller data sets if we were to calculate those expansion factors on a species-specific basis, so. The MER data suggests that there will be species that we can use expansion factors for in species that we should not use expansion factors for, and there'll be other ones where we need to have more information.

So, another recommendation coming out of this is that we need to have continued targeted, prioritized sampling. So, this is not the full-blown sampling that MER Consultants were doing, but including in the normal port sampling, some more targeted sampling to address certain things.

One of the things that has come out of this, using this digital technology is that we can provide species composition of the catch from using these digital tools. And this means that on landings forms where we have aggregates like parrotfish, or something like that, we can use the data coming from the port sampling to actually split these into species-specific groups. And that's because we have the technology now to recognize the species as a fish is sliding across this digital board. And so that will give us a much better view at what our composition is for species we're not collecting that species-specific data on. And this relieves the burden of doing that from the fishermen. So, we don't ask them to start identifying everything they catch. We can do that using these digital tools.

It also provides length-frequency data which is essential for looking at mortality and changes in mortality over time, or say, the relation of the catch in population to the size of maturity, for example. So, if you're sliding these fish across the board, you're getting length frequency information. When I say, targeted prioritized sampling, if we're interested in looking what's happening at specific species, say, our indicator species for the various groups or something's coming up for SEDAR in a few years and we want to make sure we have good length frequency data, we

can target our sampling for that.

Third thing that we're hoping to have this kind of program do is verify expansion factors and as I said, get those down to species specific, if we can get. And because this is targeted and prioritized, this is all done at a much-reduced effort and cost compared to what the MER program was doing. So, with a little bit more effort and costs, we could get much more benefits out of the port sampling that we're doing now. I don't think the effort is the problem, as Kevin reminds us all, cost isn't an issue that we've all had to deal with and, you know, everybody's looking at ways about how we can do all those, because we recognize the urgency of that.

And so again just to reiterate the last thing would be to incorporate these new digital methods into the port sampling program for Puerto Rico. And eventually, the Virgin Islands as that comes to fruition.

Next.

So, the last thing was the Life History Update that was given by Virginia Shervette. Life history information, we're talking about is age, growth, longevity, maturation, age and size of maturation, and spawning seasons. And she gave us-- I know that Council has heard her give a presentation before. She went into a very long and detailed species by species account. I don't think I have all the species up here. These were just the ones in my notes. So, red hind and coney for the groupers; mutton snapper, Blackfin, queen snapper and silk sapper; hogfish; the parrotfishes are the stoplight, queen, redtail, redband, and princess parrotfishes; and also, white grunt.

So, in each one of those, she went through, you know, how much data does she have? What islands are they coming from? What gears are they coming from? What do we know so far in terms of, say, oldest individuals to date, etcetera?

Next.

And kind of summarizing across those things, appears that the otolith ageing techniques that are being used are well validated. And I should point out that although, Virginia was giving presentation, and she and her lab have done a lot of the work. This is a collaborative effort across lots of people, agencies, fishers, etcetera, who are feeding data into the system and trying to process this.

Data collection and processing tend to be really good when there is funding for that, but most species are being done on kind of an ad hoc or opportunity basis. That is to say, programs are sending samples to her lab and she's trying to process a number of these with available funds. You are kind of just sticking them in the pipelines as they go through. A lot of people have been helping in that. The Puerto Rico fisheries lab sends a lot of stuff from SEAMAP. I know Julian's been really helpful in getting things from the Virgin Islands. But it is as an opportunity on an ad hoc basis. There is potential gear select issues when trying to look at things like growth and so, for some species, there needs to be more targeted sampling to make sure that we get the samples to be able to parse out that selectivity.

She gets a lot of gut samples that are stored when they're available, and they could be used for diet composition, but they're not being really processed now because of lack of funding.

The opportunist. She gets a lot of opportunistic gonads and gut samplings, but frequently, as I say, more often than not, these are suffering because they're not properly iced or otherwise preserved before they hit the dock. And for the gonad samples, she was commenting that that already degrades the viability of those samples for that kind of work. So, although she's been pursuing opportunistic things, when possible, even that effort suffers from things beyond her control.

Next.

So, all this says, kind of, there needs to be more targeted work, and that targeted work needs to be linked to priority species, say, as we're coming up to SEDAR or, again, just targeting those species who are the indicator species under the management plans, and all those priorities need to be targeted with funding. So, if you want to have you know, age, data or life history data for species x, and we know this is coming up, there should be a funding program that is allowing that to be done either, you know, her lab or someplace else, but it's really difficult to do all this stuff without that kind of coordination between getting the work done and deciding what species you want to have done and having the funding there to complete all that.

Next.

So, all of this then fed into research recommendations. This is something we had hoped to spend More time on. Our last formal attempt was back in 2014, so that was a while ago. We had only two hours to make this discussion. Nevertheless, that 2014 study was

useful because a lot of the questions still remain. A lot of those priorities still remain. Nevertheless, we did not go through all that report in the two hours. So, what we were able to do is, first of all, it was weighted by that plan. It was weighted by the presentations on port sampling and life history that I've just gone through. It was weighted, I think, mostly on things related to stock assessments, at least initially, but we got other things in there.

There are new developments, EBFM, what we call the (h)(2) flexibilities and if you remember, those are flexibilities for setting OFLs and ABCs when catch data are insufficient. So, we could look at trends and say, catch per unit effort and set OFLs and ABCs in terms of catch per unit effort rather than actual biomass. E-reporting is coming online, both in Puerto Rico and Virgin Islands. There are digital tools like what MER Consultants was using, and so some of our recommendations dealt with those kinds of things.

In the end, what we did was just kind of produce a bullet list of research priorities as a starting point. So, we really didn't have a discussion or formal ranking of these bullets. So, this is not necessarily an inclusive list at all or exclusive list. There's a lot more work to be done, but it's a starting point. And having said that, I'll go through the bullets.

So next slide.

Grouped into a number of headings. So, first thing would be to improve the landings data. At the top of our list, as I mentioned before, was to analyze the MER report from the Puerto Rico landings; to improve the port sampling; to improve expansion factor estimation, and its application; and to increase the length composition data.

It would also-- the next bullet is to improve landing's data collection via digital tools. Again, kind of a message that came out of the MER project. Evaluate digital formats for reporting and validate versus paper reporting. So digital formats for catch reports are being starting to be used in Puerto Rico on the Virgin Islands. We think there's some space there for those to be evaluated and then also compared to how they perform versus paper reporting.

And lastly, initiate a MER-style study of landings in the U.S. Virgin Islands. I understand that is in the works someplace. We strongly recommend that that effort be given priority.

Next?

So, the next group is the collection of biological data for life history and population parameters. So, we want to improve biological data collection via digital tools. Again, we can, particularly length information from those. And then, we'd like to have timely prioritization of collection by species, as to say, what species do we need? Again, what a seed are going to look at? What do the island-based plans require for their indicator species? Let's prioritize those and get data collection targeted for those.

There was also, as part of this recommendation, that we review and formalize the stock prioritization process. We had one recommendation for effort estimation. I was generally acknowledged that estimating effort is difficult, even from the catch data. And so, it was suggested that we develop alternate methods for estimating effort. One of those that came out would say, the [inaudible] of using drones to get an aerial picture of how many boats are out and where they're located to get an idea of what the fishing effort might be. This would obviously bring in any kind of vessels that are out there, both commercial and recreational.

Next?

So, EBFM. I'll admit from right from the start that this is kind of a catchall heading, for two reasons. One, there are things that didn't fit nicely into other things, but they deal with EBF kinds of issues like closed areas. And the other reason is that, as you've already heard, the EBFM effort that's underway through the TAP is going to be producing, at some point through their analysis, a detailed, I think, analysis of where the gaps are in our data to be able to implement EBFM and use those indicators that we would like to have. So, those things are not in this list because they haven't given those to us, but they're going to be coming in the next year. So, keep that in mind.

But what we have here now is to evaluate the effectiveness and impacts of closed areas, and there's some multiple themes on this below. Develop habitat maps from existing national ocean surface multibeam and lidar data. So, they have the capability of taking that data and generating habitat maps which they demonstrated some years ago with Abrir la Sierra. Habitat maps are really important, not just for EBFM, but for a lot of the sampling programs, especially something, the independent ones like SEAMAP really would be much better if we had habitat maps.

Review the status of spawning aggregations within closed areas and evaluate the closed seasons, the timing of closed seasons relative

to the timing of spawning seasons. Investigate the functional ecology of our habitats, that is to say, has some of that function been degraded because the habitats themselves have become degraded either through climate change or coastal impacts or whatever?

And construct an electronic species habitat database. Much in line of how the Center is working on their research inventory. You know, could we have a database on species habitat use as well?

Next.

In preparation for the (h)(2) flexibilities, I think there should be some simulations to test alternative ACLs or actually it's ABCs and OFLs for using (h)(2) flexibilities. How to incorporate uncertainty into defining ABCs from OSLs. And again, we need to collect life history information to run simulations in the same way that we would run SEDAR. So just emphasizing the need for more life history information.

But just as to be able to run the models that we ran with spiny lobster for the last SEDAR, there was a whole management strategy evaluation process that ran actually two years, I think, to learn, using simulation, how to approach the models and what models could do best under what data scenarios, we would need the same kind of simulation testing for alternatives under these (h)(2) flexibilities.

For monitoring and surveys, another heading. We want to continue and expand monitoring and surveys. So, monitor a program for fish population in closed areas. Obviously, the fishery can't do that because they're closed. Expand, enhance, whatever you want to call it, cooperative fisheries-based surveys. That was something that was emphasized repeatedly that all this works better if we're doing this collaboratively and cooperatively. And to that, there was really interesting suggestion to train and delegate to fishers, fisheries monitoring activities. And that was based on some programs that I think have been developed for the Great Lakes where they've specifically had trained partners for that, and it worked really well. So, to my understanding, I'm not familiar with these directly, but these are the kinds of things that the SSC would like to be able to get back together and discuss so we can elaborate on some of these. Remember, these are just bullet points that people kind of just put out there, and I've cut them down to reduce their redundancy.

Next.

I think there's, yeah. So, socioeconomic data for management.

Determine the economic values of fisheries that can be used in assessing benefits and costs for alternative management measures. And periodic systematic collection of data to provide a baseline and compared to bases for social impact assessments. So, it's sort of the same thing as the previous one except the social data instead of economic data. And a sub one on that was research to assess and integrate local ecological knowledge into decision making. So again, trying to utilize the information from our fishers much more effectively and continuously into that process.

And all of the above would be facilitated, not just this thing, but all the recommendations that I presented would be facilitated with an MOU between the Council, the Science Center and the territories for how they're doing their monitoring and data collection. So, we're all kind of on the same team as, what species do we want to look at? What data are we trying to get from those? When are we going to do those analyses? So, when it comes time to do them, we have what we need with, you know.

We all recognize we have limited resources both in personnel and in time and the more we're on the same page about what we want to do, the more effective we're going to be using our personnel and our resources. So, I think that's it. Thank you.

Questions/Comments

MARCOS HANKE: One burning question for the-- Any question? Because we're really behind the schedule. Kevin.

KEVIN MCCARTHY: This isn't too much a question as a comment getting back to the review of the MER study in Puerto Rico. I just heard, coincidentally because we've been after this for a while. I think the end of last week, or maybe this week, that we got some money from headquarters to do a CIE review, which may not be what everybody wants to do, but is one mechanism to review that. So that money is coming through. We may be able to get that reviewed either beginning in July, which may be optimistic, but it may not come through until October. But the money is there and available so that will move that process along.

MARCOS HANKE: Thank you.

RICHARD APPELDOORN: Kevin, that's really great news. And you know, I actually argued with Kevin last week, it was like, well, CIE is kind of like over the top in terms of, you know, what maybe needs to be done, but if we can get that, wow, you know, that'd be great.

MARCOS HANKE: Miguel?

MIGUEL A. ROLÓN: Thank you, Mr. Chairman. Just to tell Graciela. Please, meet after the meeting. Sometime in the future, meet with Richard and to identify from the list of dots any project that might be of priority to the Southeast Fisheries Science Center, but specifically to the SSC. And then, maybe we can identify some that can be funded by the Council. Some of those studies that Richard and the SSC Group believe are burning question that we should address as soon as possible.

RICHARD APPELDOORN: Alright. I could sort of do that just based on the discussions we have, but we actually didn't get to a point of trying to rank any of these things. I guess the take home message, which I should have repeated at the end is, the SSC wants to come back at this and have a lot more time to give you something much more formalized. So, to the degree that we could schedule a meeting to that, that's what we would like.

MIGUEL A. ROLÓN: That's what I was pursuing. So, please take note and between Richard and you can put together a meeting. It could be a Zoom meeting, but if we can do it hybrid, that’s the way to go. So, if we do that before the next meeting, and in between, the Chair and I have the authority to allocate some of the funding for the specifics that you addressed.

But the important part is that, after hearing that presentation, we want to hear from the Council. Do you agree with that? Do you agree that we should prioritize and then have this meeting and put some money into it? Because I'm scared with the whole list. Who the hell is going to do all that? But Richard knows that too.

RICHARD APPELDOORN: You know, and you can see there that we didn't even talk about recreational landings, which is –

MIGUEL A. ROLÓN: Yes.

RICHARD APPELDOORN: -- is obviously a big issue. This is, you know, at the end, we were just okay, everybody gave us their top things and we created a list and pared it down to reduce redundancy.

MIGUEL A. ROLÓN: Yes, so I suggest allowing Graciela and Richard to put together a meeting, an agenda and the timing for that. That should be between here and in August. I know that summer is coming very quick and some of you that belong to the SSC, you have your duties with the university and so forth. So, if you agree with that idea, then Graciela can take charge of it.

MARCOS HANKE: I think we all agree with that. I don't see anybody in opposition to that, especially because you're going to have a meeting to make the priority and to have a final product for the Council to evaluate later. Graciela, please?

GRACIELA GARCÍA-MOLINER: One thing, the SSC received the strategic plan of the Council. I mean, that specifies strategies. Things that the Council wants to get done that the stakeholders have told us to direct our attention to. So, between the SSC, the Science Center, the technical advisory panel and the Council, I think, and the regional office, we can all move this forward in a very directed way. I hope, I think.

MIGUEL A. ROLÓN: The thing is we don't need to come back to the Council to tell you or ask you whether we do it or not. You already approved it. Time is of the essence because the budget now-- Anyway, we can do it with the authority that we have.

So, after this meeting, we can, you know, choose what are the priorities and identify who can do it, and maybe go into the bidding process and what have you. But this is excellent. Thank you very much, Richard.

MARCOS HANKE: Okay. Let's keep going with the agenda. I have to be-- let's go with the next presentation. Kevin with the Southeast Fisheries Science Center update.

Southeast Fisheries Science Center Updates—Kevin McCarthy

KEVIN MCCARTHY: Thanks, Marcos. I'll try and be quick. So, this is just the update from the Science Center, the Caribbean fisheries branch. I think I took credit for more than just the fisheries branch, I should point out now that there are three branches at the Science Center that have the name Caribbean in them. There's the Gulf and Atlantic-- or sorry the Gulf and Caribbean reef fish branch. There is the Atlantic and Caribbean reef fish branch and then there's the Caribbean fisheries branch which I'm in.

Next slide.

So, what we're going to see here. I'm going to give you an update on we stand with some stock assessments, our strategic planning work at the Science Center, the Caribbean Research inventory.

You've seen that presentation before, so I won't spend too much time there, but just to give you an update. Port sampling design work. Gear selectivity studies. The data triage work or the matrixing that it's sometimes called.

Next slide.

So, we'll start with stock assessments. So, this has got a lot of information on it. We're not going to dive into all of it other than to give you enough for it to serve as a reminder for me to tell you about SEDAR 80. This is Queen Triggerfish on all the islands.

Lead analyst is Nancy Cummings. Adyan Rios is heavily involved in the project as well. We've got a timeline there on the right. We are currently in the middle of the modeling exercise; all the data are in, and Nancy is working on models. Because we are now island based, that means that we're really doing 3 individual stock assessments. That is something to keep in mind.

One of the big milestones that we've had in this assessment is that for the first time we're using indices of abundance and we're also incorporating local life history information out of Virginia Shervette's lab. The goal is to have this done and to SEDAR by July one and to the Council a week later.

Next slide.

We talked a little bit about this. María did earlier today, we will have a spiny lobster update assessment, which should inform OFL and from there, ABC and ACL, but that's the work of other groups, the SSC and Council, but OFL should come out of that. This is going to be pretty much a strict update assessment following on from the assessment that was done a few years ago. We think it will be done. The plan is to have done for the fall SSC meeting. What will happen is that we’re going to update the length and landings data, life history information will be the same. The terminal year of the data is dependent upon the availability, in Puerto Rico anyway, of the electronic logbook data. So, we're working on that issue, but it will be complete through 2021 for the Virgin Islands.

An operational assessment for spiny lobster is on the calendar for 2024 and in an operational. We will revisit life history assumptions. We will look at additional data sources for inclusion in the model. But for this year, the only new data that we might include would be the gear selectivity information as it is available. So, if that's available, we'll include it. If not, it'll be a strict update with just updating the time series of landings and length information.

Next slide.

So, upcoming. I hope I got the right species in here. So, in 2023, we'll be looking at yellowtail snapper in Saint Thomas/Saint John, and in Puerto Rico, and stoplight parrotfish in Saint Croix. And as I mentioned, in 2024, it'll be spiny lobster assessment for all islands.

Next slide.

So, let's look at our strategic planning efforts. So, the goal is to develop a strategic plan for data collection, analytical best practices, outreach and education in the U.S. Caribbean. I don't mean outreach and education by the Council. This is for Science Center. The first year we're looking at the Science Center work. So, here's a bunch of people whose many of the names you may recognize. They're all principal investigators in this work. But we will be getting information and input from more people than what you see on that list. These are just the people who helped write the proposal and get the money.

Next slide.

So, we've got three years of funding. The first year, what we're going to focus on is the Science Center. We want to get the Science Center strategic plan in order. Then in the second year and moving forward, we'll be involving the Council, Council staff, SERO, territorial partners, lots of other people. And what we're going to do in the first year is identify data gaps, many of them are recognized through their projects inventory in the data triage, which you'll see in a in a few minutes. We want to optimize data collection strategies, prioritize and coordinate them.

As Rich mentioned, we all know that there are resource limitations and so with those limited resources, we need to get the most bang for our buck. And we want to improve process. So, data delivery systems and analyses. We want to be very efficient. We don't have a big staff, so we don't want to spend a lot of time doing analysis that we can improve and automate.

So, we've got a planning workshop coming up on the sixteenth through the nineteenth of May. There will be Council and SERO folks who were there, sort of as observers. But, again, this is a Science Center plan that will then be expanded in the coming year.

Next slide.

So, we'll move on to the Caribbean research inventory. This is a this is a work that you've seen in the past. Rachel Eckley has

presented it. Really what is, is an inventory or database of U.S. Caribbean work. We started with NOAA funded projects because they were the easiest one to find. But we haven't limited it to that, but that's still the primary objective. And so, it identifies existing data sources that were NOAA funded. We can use it to identify data gaps. We can focus on areas for additional data collection. But what we're building is a central centralized repository, and it's a searchable database.

Next slide.

So far, Rachel's cataloged 542 different projects, over 1200 documents. It's uploaded to what we're calling the online database manager. This is a system that resides at the Southeast Fisheries Science Center, so it's a searchable database. It includes a bunch of other data sets. We've got a management history. We've got HMS pelagic logbook history. We've got morphometric conversions. So, there's a lot of other data sets that live in there that we can use, but we're adding to that ODM, as it's called, this Caribbean data set as well.

Next slide.

So, they're currently working on formatting this online data system. Upcoming, we'll want to get some folks who are involved as testers. So, people who go online, log into this system, and search it, and use it, and see where it breaks, so that we can fix it, and/or make it more user friendly and the try to fit the needs of the users. So, we'll be looking for people to help test that in the future.

Right now, it's a limited access system but we're going to investigate how we can add outside folks to have access to this database. I don't quite know what that's going to look like because I don't own the database at NOAA. But we're going to see what we can do. In the future, the plan is to add additional non-NOAA funded work. Like I say, as we come across those, we're adding them, but primarily, we're focused on the NOAA funded research. I already mentioned the accessing the data.

So, next slide.

So, let's look at some other projects that are in progress. So, the Puerto Rico Survey design project, Rich, spent a lot of time talking about that, so we won't dive into that too much other than to say we're really happy with the way that is coming to be. We worked with MER for a number of years on that beginning way back when Steve Turner was still around, if any of you remember him.

So, it's been quite a few years and it's nice to see that coming along as well as it has.

So, one of the bullet points for research recommendations coming out of the SSC was to do something similar in the Virgin Islands, and that's exactly what that second one is. The U.S. Virgin Islands Survey design project. That's where the Science Center is in collaboration with DFW in the Virgin Islands to do a very similar kinds of study, except to say that it's expanded beyond just the commercial fishery. It will include recreational fishery, the for-hire fisheries. The attempt to get the entire fishery and all those sectors.

We've got another project that we ran into some contracting issues last year, but we think we've got those smoothed out so we will be able to move the money this year to help with that artificial intelligence work, that machine learning that Rich talked about in processing samples. The goal there is to improve port sampling efficiency, so that the fishers are not standing around waiting for the port samplers for too long.

Rich also mentioned the lobster trap selectivity project. That's I believe wrapping up. So hopefully, in the not-too-distant future, we'll see the report and the information coming out of that.

We've got similar project again with DFW as a collaborator in the Virgin Islands. We're also collaborating with University of the Virgin Islands, and the park service. They've provided divers to do supplementary work for those trap selectivity projects in the Virgin Island.

Next slide.

Okay. A couple more. I think I've already mentioned that top one, so I'll skip it. We're also working on life history. Again, as Rich mentioned, life history is a big important part of stock assessments among other things. Our interest is primarily in the stock assessment application. So, we've got a project where we're looking at shallow water, getting samples from shallow water. It says lobster, but that's incorrect. This is not limited to lobster. The issue we're trying to get at there is where are all the small fish? Because you'll see a lot of information in life history. You see a lot of curves, growth curves, and things like that. And often, they're under sampled for the small fish because that's not what fishers bring back to the dock. You'll see a lot of samples in the size range where fish are landed, but not very many when they're small and sometimes not very many where they're very big. So, part of this life history project is to identify where can we

find those small fish? So that is a cooperative research project that is working with the fishers in Puerto Rico to find the habitat that those smaller fish are in and to sample them effectively.

We've got a lobster recruit survey as well. That's been going on for about a year now. Also, it's a cooperative project working with commercial fishers in Puerto Rico. The idea is to get an abundance index of those lobsters that on the next molt or two molts are going to be big enough to be caught in the fisheries and what can that tell us as a predictor for how many lobsters we think are okay to catch in the coming year. So, it's sort of this predictive model of catches next year?

I mentioned the management history database. This is just a database of management actions. A lot of our data are fishery dependent, meaning they come out of the fishery and so they're affected by management actions. If you change a minimum size, that's going to change catch rates, because the catches coming back to the dock are going to differ. If you increase the minimum size limit or if there's a closed season, those sorts of things really impact the data, and we have to understand them. So, we spent a lot of time on that management history database. It includes not just Caribbean data, but data from the entire Southeast.

The electronic logbook data is not our project, but we are working with ShellCatch, with DNER, with ACCSP, with other folks at the Science Center to migrate the data from the ShellCatch cloud database to another storage place where we can access it. "We" being the Science Center. Because right now we don't have direct access to those data.

There was also a lot of talk about correction factors and their calculation. That takes DNER staff a lot of time. It's very burdensome. And so, we're looking at ways to automate the calculation of that correction factor. And if we do that, you know, that that opens up a possibility of getting, as Rich was talking about, those species-specific correction factors. So, we can move away, perhaps, it's not our call, It's DNER's call, from a single-- well, there's a single expansion factor for each coast, North, South, East, West. And if we want to make that specific to species, having an automated way of making that calculation will make that process a lot easier.

So, we're hopefully headed in a positive direction there where we can relieve some of the DNER staff burden for getting these correction factors and maybe have them sooner in the year than we have had in the past because it's so burdensome to make those

calculations as in the current process.

Next slide.

Okay. So, I'll go through this quickly. So, the date of triage. So, this is just a schematic of the whole stock assessment process. You know, there's data collection, then there's a modeling phase, then we give some catch advice. Then it moves over to management, which is you all, and setting, you know, once we get that management advice as in overfishing limit. Then from there, you all make decisions about catch limits and catch targets and ABCs and all of that sort of thing.

So, in order to have this process work well, and get to a place where we have the best chance of success we went into this review of the data, which we're calling the data triage. So which data are available to inform this process? Because if you don't have abundance data, that can be a problem. If you don't have the biological data, the life history data, that's a real problem. If you don't know the catch, that's a real problem. If you don't know the size composition. All of those things, if they're missing, really mess up your chances of having a successful stock assessment.

So, we don't want to start in a whole. We don't want to start knowing, "Hey, we want to do such and such species" only to find out that we're missing critical data. So that's the purpose of this project. To identify those species that have the data right now that we think we have a good shot at attempting a stock assessment or we can identify those species that are maybe missing an important piece and that's where we put resources towards. You know, if we're missing life history on a particular species, let's fund some life history work on that species.

So, next slide.

So, this is kind of what it looks like here. So, you could see this is Saint Thomas and Saint John. These are the top ten species, and they're the top ten species in terms of number of fish that have been measured through the port sampling over the years. So, across the top, you've got commercial landings. We know the commercial landings by species in Saint Thomas and Saint John beginning in 2011. That's really the middle of 2011. So, the beginning of that fishing year. Most of them are 2011, except for spiny lobster, which had always been reported by species going back to 1974. So that's really an impressively long time series.

We've got size composition for these species. Again, you'll see

the number of years. I think that when we did this analysis, I think we went through 2019. So, from 2019, back 31 years, we've got size data for yellowtail snapper.

Here green means we think it's sufficient for an assessment. The purple we're still investigating. The black means we don't have the data. And that sort of orange color, TBD, is also something that requires more investigation. So only one of these is coming up black, that spiny lobster, because you'll see on the right index, that means a catch per unit effort series. Fishery Ind is fishery independent survey. And in this case, it's a diver survey, and that diver survey was not designed to go after spiny lobster, it was designed for finfish. So, that's why you're seeing that x, that black box. So, so there's still a lot of investigating to do particularly life history and the index work but it's progressing.

So next slide.

We won't spend a lot of time on these. These are the last couple of slides. So, Saint Croix, similar layout. Again, these top ten are the top ten because they the most animals measured. So, again, you know, it's very similar to Saint Thomas in terms of a time series of data, and the size composition. Where you see these purple, the size composition samples per year, when you dive into those data a little bit, you want to have some minimum number of animals that were measured each year. And we're still unclear as to whether we have sufficient sample size, year by year a year and which years are covered for those bottoms, what, five species.

Life history, still have a lot of homework to do. As far as the indices go, fishery independent is not going to work for blackfin snapper or for redtail parrotfish. They're just not seeing a lot of redtail. Any deep-water species is going to be problematic in a diver Survey. So, if they're not seeing sufficient numbers there, they're going to get that black box. The purple may change as well as we dive more into those data and look at sample sizes. I won't get into all the technical stuff now, I’m happy to talk about it, you know, offline.

Next slide.

And here the same for Puerto Rico. A few more black boxes because we've got some deep-water stuff like a silk snapper, they're just not going to see those in an in a diver survey. The divers may be in the wrong habitat for laying snapper, for example, and they're not after spiny Lobsters, so they're in the wrong habitat for that.

Oh, before you move on, I should also say that we're taking notice

of which of these species are indicator species because they should be prioritized. The same with the, we call them single species unit. So, yellowtail snapper is on its own in the management unit. It is its own indicator, so that should also be prioritized. If there's a species like stoplight parrotfish, it's a member of a management unit, but it's either not the indicator species or there is no indicator species. So, there are some other things to think about in prioritizing which species we want to try for a stock assessment. In addition to the available data, if it's an indicator, that would suggest it should be a higher priority.

Next slide.

I think that's it. So, thank you very much. Any questions? A lot of this you've seen before. So, this is mainly an update.

Questions/Comments

MARCOS HANKE: Yeah. Thank you very much for a very good presentation. I'll ask the Council members to follow-up with Kevin offline. We need to make a very-- one question if there are any very important questions at this moment --to make a break five minutes and come back. You have a question?

EDWARD SCHUSTER: Yeah. I just wanted to ask Kevin. If you go back to the slide, you had surgeon fish and then on the other box, you had doctorfish. And then later on in the slide, you had blue tang. I was just hoping that it wouldn't cause any confusion in future reference. I was just hoping that we could keep it consistent. I don't know if you want to go back, and I can reference it. If you noticed it.

KEVIN MCCARTHY: Sure. Yeah, if we can go back to it, was it the one with all the boxes? This—

EDWARD SCHUSTER: One more, I think.

KEVIN MCCARTHY: Yeah. Saint Croix.

EDWARD SCHUSTER: Right there. Yeah. It says doctorfish, then blue tang and then in the slide before that, it had a surgeonfish, I think.

KEVIN MCCARTHY: Right. That's probably how it's showing up in the data. So, we're not making that distinction. We're just, as it shows up in the data, either as the landings or the size composition, that's probably how it's listed.

EDWARD SCHUSTER: Yeah. But, you know, I noticed that because of what we've been through before with our common name and then a scientific name.

KEVIN MCCARTHY: Right. You're exactly right. That's an important point that we're-- that everybody knows what everybody else is talking about. I agree with you.

EDWARD SCHUSTER: Thanks.

MARCOS HANKE: Anybody else in Zoom or in presence? No. We're going to take a break of five minutes. We'll be back in five minutes.

(Whereupon, a brief recess was taken.)

MARCOS HANKE: Yes. We're going to restart the meeting. I want to inform the group that-- Hello? I want to inform the group that the presentation of dolphinfish study made by Wessley Merten that was going to be done by Wessley Merten is going to pass for tomorrow at 10AM. The next presentation online is the district advisory panel Chair report. We will start with Sant Thomas.

I'm going to restart because there was an issue with the recording.

The presentation of Wessley Merten about dolphinfish is going to be passed for tomorrow at 10AM and going to rearrange the agenda for tomorrow's meeting. Right now, we're going to follow-up with DAP Chair Reports starting with Saint Thomas. Saint Thomas, Julian?

District Advisory Panel Chairs Report on March 2022 Meetings
St. Thomas/St. John—Julian Magras, Chair

JULIAN MAGRAS: Good afternoon, everyone. Julian Magras, for the record. I'll be giving my report on the marine protected areas, the areas particular concern, and might take on the SSC meeting.

In my report here, I'm just going to in the slides. I'm just going to update the highlighted notes that were made by the members of the District Advisory Panel, and I will meet them on March 22nd.

Next slide.

So, I had full attendees. Attendance from the fishers, recreational fishers, divers, association members. And who we had absent again at this meeting was representation from the local government, the liaison for Saint Thomas/Saint John District, enforcement from the Saint Thomas/Saint John District, federal enforcement and the PEW Charitable Trusts. The reason I bring this up here is because since

we first did the conceptual models meeting where we had attendance of all entities, we have not seen any of the representatives on the right. And I think it's very important for us to continue to do our job as members. And we need the support of these entities in order to have a lot of the questions that are on the table answered and we shouldn't have to wait for follow ups.

Next slide.

The areas of particular concern on the issues and questions that the committee had were: what law created APC and how these were defined and established? What is the purpose of an APC? Where the fishers or public involved? Dates when each APC were established and with what objectives. And also, we need to see studies conducted or ongoing. These questions and studies need to be presented to the DAP.

Next slide?

So, I spoke at the meeting on February ninth about the V.I. Coral Reef Monument. The lighter ones are my comments that I made, and the committee agreed with them, but they also had some extra points that they wanted to make and that was the committee has requested to see the results of studies that have been completed and reported. And also, in the V.I. Coral Reef Monument, another issue is a marina has just been approved within the monument and a lot of concerns come up. If you're a protected area, which is a coral reef monument, how do you approve a marina to be built within this monument. So, that was their comment.

Next slide.

The V.I. National Park. I think the only thing that was highlighted there was also the request of reports within the park. The committee would like to see reports that have taken place of everything that's been ongoing with the closure of the National Park? Are we doing better? Are we doing worse? What's going on? What's the outcome?

Next slide.

The Southeast Saint John Marine and Wildlife Sanctuaries, better known as STEER. It's pretty much the same request. A request of the studies and reports that have taken place and what is the plan to correct the issues and violations within the sanctuaries?

Next slide.

The Grammanik Bank. okay. Can we go to the next slide? I think the notes are in the next slide.

So, these are the take backs from the committee. Reports needed to be presented to the DAPs, the SSC and CFMC of the studies that have been taking place inside the seasonal closure. We have one of the divers who actually is a committee member, and she works for the University of the Virgin Islands. She repeatedly had an issue with the PR boats poaching in and around the bank. So, I don't know what can be done or discussion about that. And also, this year, they were lucky to see a large number of the nassau grouper actually spawning. They actually got to see them while they were doing their thing. Which was very positive for the bank, and she also said that the numbers were very high for the nassau grouper in that area this year.

Next slide.

And then, the Hind Bank. We had some heavy discussion of what's taking place in there. After the meeting, I received an email from Sarah Heidmann and she would like to give a presentation at the December Council meeting, if the Council would agree. She would give her presentation on work that has been done within the MCD for the last ten years. She's one of the individuals along with Rick Nemmeth and his team that have been doing a lot of the studies and she find it very important after a request to be willing to give reports to the fishers and to the SSC and the Council members.

Next slide.

I was in attendance at the SSC meeting last week. It was a very intense meeting. It was a very good meeting. Of course, Richard always does a great job with running that meeting. I put up some comments that that came from myself, and the comments are the SEAMAP report, I think, moving forward, involving fishermen in the study, would make a big difference. More money needs to be allocated to the life history collection so SEDAR assessments can have a better outcome. Fishermen are onboard in getting the samples needed to help with assessments, example, otoliths. Deep-water snapper study to take place in U.S.V.I. with a stakeholder’s involvement. I didn't elaborate on it here, but I’ll just say this. I think, we need to have some more discussion on what actually is going to be taking place and how it's going to be taking place. I know Graciela, you're working with that group. So, I think we need to have some discussion outside of this meeting on that.

The MER study that took place in P.R. was presented; the outcome was sketchy because of the role the expansion factors have to play.

Other issues we see with the MER project. It hasn't received final blessings as yet from the Southeast Fisheries Science Center. Discussion to move forward in the U.S.V.I. has concerns with the fisheries. We don't use expansion factors. Fishers in the U.S.V.I. are working with Virginia Shervette providing fish samples needed to complete assessments.

Next slide.

So, in conclusion for my committee, this is what we have. The MPAs and APC reports need to be presented to the committees. Presentations to be given at the December CFMC, if approved, on the 10-year study of the MCD. Government agencies who sit in a DAP to start attending meetings, also the Pew and Liaison representatives. Liaison for Saint Thomas/Saint John needs to get involved with fishermen and host workshop. Proud to hear all of what's happening in P.R. with their liaison.

The next couple of slides you're going to see where we mentioned a couple of conflicts of interest. This is how we feel. Maybe it's not a conflict of interest, but we want to put a note out there. We also see a conflict of interest with the MER consultants being pushed by Todd Gedamke as a senior founder of this company. He shouldn't be a member of the SSC pushing this company. It was clearly seen at the SSC meeting by me and other individuals that it was a nonstop portion of, "Let's move this project to U.V.I. Let's move it. Let's move it." When it pertains to someone getting money to do a study and it affect our livelihood, and you set him in a decision-making committee, it draws great concerns to us.

We also see a conflict of interest with Sennai Habtes, as being the Chairman of the TAP, because when he became Chairman, he was at the university, now he's the chief of fisheries for DFW in a decision-making role. That can sway outcomes of the conceptual models. And last but very important, is money being approved for Virginia Shervette to close life history gaps?

And that's the presentation from the DAP for Saint Thomas/Saint John. Thank you. I'm open for questions.

MARCOS HANKE: Let's finish with all the presentations first. The next presentation is DAP Chairman of Saint Croix.

St. Croix—Edward Schuster, Chair

EDWARD SCHUSTER: Good afternoon, everybody. Edward Schuster, for the record. DAP Chairs, Saint Croix.

We had pretty much a full attendance except for a few people that asked to be excused and some had logged on online. The meeting went well. We had a lot of input on there, and the outcome of that was pretty simple.

I'll start off with what Carlos mentioned on the Council this morning as a motion. The concern was during the time of the Hind Bank closure, there's no fishing, especially with bottom tending gear. Some of the attendants on the DAP that represent the recreational fishery wanted to know if, you know-- it's very important for them as recreational fishers and the tournament during the time when the pelagics are there, that they use the deep-water shelf as a FAD, especially the dolphin, the wahoo, tuna, bigeye that Carlos had mentioned among other species as swords, and marlin, and so forth. That was an issue.

But the main concern besides that, was one of our members that a part of an organization core wanted to know if they could have or how would they go about getting a special permit to go within these MPAs and hunt for lionfish and what we did is we didn't narrow it down to lionfish. We know the lionfish now are invasive species, but we don't know what the future holds. So, we wanted to say just invasive species. We never know maybe some other thing with four eyes and ten fins might show up, besides the lionfish. So that was one of the inquiries, how they may acquire a permit to eradicate invasive species within these MPAs. Because they have put in a request to go into the East End Marine Park, which is actually a territorial issue and they had put in a request to get a permit and it's still pending with no response from DPNR.

With that said, basically, that's what came about our DAP meeting.

MARCOS HANKE: Thank you, Eddie. Nelson, from Puerto Rico, DAP Chair.

Puerto Rico—Nelson Crespo, Chair

NELSON CRESPO: Thank you, Mr. Chair. Good afternoon, everyone. At the last meeting of our Advisory Panel on March 24, among other things, we were discussing the matter of the MPAs. Puerto Rico has three MPAs in federal waters located at the West part of our island. Due to the short distance between them, and the shared jurisdiction between the state and federal government in Bajo de Sico and Tourmaline, the confusion of regulations, not only among fishermen, but also among enforcement agency, is significant. It's necessary to establish as far as possible amortization of regulation in these areas. This would greatly help to avoid confusion between all parties involved and would facilitate the

little enforcement that exists around on behalf of the fishing and the resource.

The panel agreed that due to the size of our island, trying to create more MPAs would do more harm than good. This would force commercial fishermen to look for more distant areas to be able to carry all their work increasing their cost and putting their life at risk at the same time. And actually, it would create fishing pressure in areas where it currently doesn't exist. Without constant monitoring, illegal fishing would increase and there's a possibility that invasive species reach the area causing great damage to the ecosystem. In Puerto Rico, we have a great number of MPAs that should be taken into consideration if the possibility of creating more MPAs is studied to comply with the President executive order 14008.

This panel agrees that it is necessary to address the issue of land-based pollution and the violation of local and federal law in our protected area without an effective response from state and federal authorities that prefer to look the other way instead of doing their job. It's evident that, unfortunately, in our island, there is any control of this regard. We have the most recent example in Salinas Bay, where the press has catalogued it as an environment crime and an unprecedented ecological disaster.

There is an area that was acquired with NOAA funds and under management of both federal and state authorities where mangroves are destroyed. The area was filled illegally, residents built, most of them, with water and electricity service obtained illegally from the government. Boat ramps are built around, sampling station were destroyed and, of course, irreparable damage was caused to the habitat. According to the press, all this without any state or federal authority doing anything to stop it, although people from the area filed a complaint from the beginning and warned them about the destruction that was going on. And let me tell you, we have many other areas along the island in the same situation.

During and after our meeting, I was talking with several members of our panel and fishermen who approached us, and we all agreed that we have better options to protect our resources. How I've said before, the management plans implemented by this Council are giving good results and it has already been proven that in regions, such as the Caribbean where there is good management, is not necessary to have more MPAs. And the beauty of this is that most of the fishermen respect them. We must develop and outreach and education campaign to impact as many sectors as possible. It's necessary to have an inventory of the MPAs in the island and create an effective orientation sign that does not cause visual pollution.

It can have a QR Code where the visitor can obtain additional updated information of each area.

It was also suggested to manage so that the electronic nautical chart shows where the location of each MPA is and advertised then by tourist agencies, hotel, restaurant, airlines, etcetera. If we don't let know the protected areas that we have, how are we going to take care of it? We also talked about the need to establish a program for the collection of marine debris in all the protected areas on the island like Raimundo Espinoza are doing in the East Coast of Puerto Rico.

Another issue we talked about was the increase of recreational fishermen where many of them become poachers, and this is an issue that must be addresses. This has created conflicts between recreational and commercial fishermen. It is necessary that the recreational fishing license on the island be implementing once and for all. This should have as a requirement the education program at PEPCO and a workshop that brings information about the MPAs and collect the data of their landings. They are not aware that MPAs and other fishing regulation apply equally to them. Establishing a school of fishermen is a topic that is gaining more interest to the point that a senator from the West of Puerto Rico is evaluating the possibility of establishing one in a closed school on the West of Puerto Rico.

Finally, we talked about the need to create more workshops about the management of fishing catches that include fishermen, vendors, restaurants and hotel staff. That concludes my report.

Questions/Comments

MARCOS HANKE: Thank you for an excellent report of the three DAP Chairs. Now, time for questions. Jocelyn?

JOCELYN D'AMBROSIO: Thank you, Marcos. I just wanted to go back to the report from the Saint Thomas/Saint John District Advisory Panel and to just the questions about the conflict of interest.

So, obviously the Council and the National Marine Fisheries Service take seriously any statements or thoughts that there might be a conflict of interest. There are specific rules that apply to Council members and they relate to financial conflicts and there's recusal rules if there's votes on matters that could affect someone's financial interests.

We don't have rules that apply to the Advisory Panel Members on that level. For the SSC, obviously, we're concerned about

objectivity, especially if there's peer review or recommendations for best available science, we want to make sure that persons are able to be objective and avoid any appearance of conflicts where they're reviewing their own research.

But here, it looks like we've spoken before about Sennai Habtes and his participation on the Technical Advisory Panel, and I don't necessarily see any conflict of interest there. I'm not necessarily sure how it might have, his participation or his change in position, might affect his objectivity. But the Council, of course, can look into it, but we've discussed that matter before.

I'm not familiar with the facts of what happened at this most recent SSC meeting. But again, we want to make sure that if persons are involved in research, that they're presenting their research and that they're able to be objective. So, if there's potential management outcomes or recommendations, they might recuse themselves if appropriate and just avoiding any potential conflicts if there's way that they might recommend something that has financial consequences for them.

But again here, I don't know the facts and whether or not there's a conflict there. But these are serious things to consider, and we can continue talking about them. But at least on the Technical Advisory Panel front, we haven't seen an issue in the past, and we want to be careful with researchers just making sure that they're disclosing their association with it and, you know, for example, people have recused themselves from best available science determinations because they want to make sure that they're saying "This is my research, but others can certify it."

I'm not exactly sure what happened at this meeting, but definitely serious allegations and something we'd want to make sure we understand.

MARCOS HANKE: Jocelyn, do you have a question or is it just a statement that you're making.

JOCELYN D'AMBROSIO: Just a statement about conflicts and if there's any other information that folks want to provide.

MARCOS HANKE: Richard?

RICHARD APPELDOORN: Yeah, with respect to the SSC meeting, I didn't see any even avenue for a conflict of interest. The question was about Todd. He was presenting the results from the MER Consultants study. There was no discussion of anything that would involve him or that company doing anything in the future, what we

were requesting is that that study be analyzed, so the results could be put into practice. I was glad to hear that Kevin has sound money to move in that direction, but there was no discussion of anything or any study that his company would somehow be in some advantageous position or advocating.

Now obviously, when we talk about the data needs for the Caribbean. It's up to those who have money to say, "okay, how are we going to handle these things? Is it going to be done through work through the Center or through a grant program? Or whatever." But the conflict-of-interest clauses in those are substantial and if that company were to try to apply in response to some avenue of funding, they'd have to be able to meet those things. If it should ever come up to the SSC for some kind of recommendations, you know, then that person would have to recuse themselves from any kind of voting in that stuff, but none of that was happening at this meeting.

The SSC does not make decisions. We only make recommendations. So, I didn't see where that was an issue. Respecting Julian's view on things, because I do respect Julian. Thank you.

MARCOS HANKE: Julian. Briefly, please.

JULIAN MAGRAS: Yeah. Just a little follow-up. I understand what he's saying, but the feel that I got is, on every opportunity at that meeting-- and the minutes are there. The minutes are there for everybody to listen to. This is not personal. Personal friendship stays outside the door. When we come in the door, we come in the door to do our job. On every opportunity of both days of moving this project to the U.S. Virgin Islands. Every opportunity there was, it was mentioned. I wouldn't go no further to make it argumentative. All I would ask is the committee members of the Council, listen to the minutes and, hopefully, the minute will prove why I have the concern that I have.

So, if we're going to try to push the same project in the Virgin Islands, with MER consultants, the co-founder is Todd Gedamke. I have a problem with him being-- and this happened before where he was taken off of this committee for the same exact reason. Okay? So, all I'm saying, I find it a conflict of interest, and my officials that I speak to on a daily basis, could not believe that this was happening again.

So, I am putting it out there for discussion. I bring to the table what my people ask me to bring to the table, and I also bring my views to the table. That's why I am sitting in the room for. And if I see a problem, it's my duty as the Chair of the District

Advisory Panel for Saint Thomas/Saint John to bring my issue forward.

Now if the decision I made, is made by the Council and by the lawyers that it's not a conflict of interest, well then, we move forward from there. But I'll put it on the table as a conflict of interest. Thank you.

MARCOS HANKE: Richard, and we move on.

RICHARD APPELDOORN: Yeah. So, yeah, I invite the people to listen to the transcripts. The only thing we said was that we needed a similar program in the Virgin Islands.

It was never-- in fact, it was certainly alluded to that this would not be MER that would be doing that. Kevin then told us that that's already moving forward. So, this never came up. I used the term MER like project, meaning a port sampling project that's statistically designed to try and improve port sampling and catch estimates within the Virgin Islands.

At no point, and I mean at no point, were we ever discussing or recommending that Todd or MER Consultants be involved in any program in the Virgin Islands regarding that kind of port sampling program. Thank you.

MARCOS HANKE: Thank you, Richard. Next presentation is-- yes. Vanessa, question?

LIAJAY RIVERA GARCÍA: Okay. I will read it out loud for Vanessa. It says question for the DAP Puerto Rico or Miguel. Were all the members present in the last PRDAP meeting? Was the issue of absences resolved?

MARCOS HANKE: Nelson.

NELSON CRESPO: Well, most of them were present. So, I think we have today, on the closed session, the evaluation for the upcoming members.

MARCOS HANKE: Thank you, Nelson. Miguel.

MIGUEL A. ROLÓN: Nelson recommended some names, and we put them in the SSC. This afternoon, we are going to go into the closed session and tomorrow, the Council will announce membership on each one of the panels, you know? We need to reappoint X many members because their time expired this April 22nd, and we will be able to discuss it tomorrow in the open.

MARCOS HANKE: Thank you, Miguel. Next presentation is Identified Critical Habitats of Juvenile Nassau Grouper in Puerto Rico. I think Evan is the one presenting. Evan Tuohy. Welcome, Evan. The floor is yours.

Identifying Critical Habitats of Juvenile Nassau Grouper in Puerto Rico—Evan Touhy

EVAN TUOHY: Alright. Thank you. Thank you very much to the Council and to the Chairs and everybody for this opportunity to present the research of this small pilot.

GRACIELA GARCÍA-MOLINER: Speak louder.

EVAN TUOHY: Close or closer. Okay. Thank you very much for the opportunity to present the results of this small pilot project that we have been conducting for over the past year and a half.

My name is Evan Tuohy with Isla Mar Research Expeditions. Our project is identifying the critical habitats of juvenile nassau grouper in Puerto Rico. And this was funded by the Caribbean Fisheries Management Council and supported by 787Fishing Charters.

Next slide, please.

Alright. So, the original decline of nassau grouper has been well documented. It dates back to the 1970s with the first implications of plastic population decline that continued into the next decade, into the 1980s, where they were ultimately considered commercially extinct. Which then prompted management and conservation measures to be enacted in 1990. They were listed as no take in the federal waters surrounding Puerto Rico. 14 years later, Puerto Rico followed suit by an enacting the same no take designation in the surrounding waters of Puerto Rico and local waters of Puerto Rico. However, over the past 20 years of this type of management and conservation action, they have shown little to no or somewhat slow signs of recovery.

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This can be contributed to some of their life history characteristics, slow growth, late age at maturity. I'm sorry those shouldn't be there. But I'll continue. Slow growth, late age at maturity and they are a demersal species, meaning that they are closely associated to the habitat, the benthic habitats in which they are found. And they also have a complex two-part life stage, like many other reef fish species, meaning they begin life as a

pelagic larval form, which drift to coastal habitats where they then settle, and they utilize multiple different habitat types and migrate into deeper reefs where they mature and eventually form spawning aggregation.

Now, the majority of the work or research and available data that we have on this species is primarily for the adult life stage and how it relates to reproduction. But the reality of the matter is, given the current population and conservation status, that really any negative effects or implication to any of these various life stages will ultimately have a negative impact on the adult form.

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Alright. So, therefore, we set out to bridge some of the gaps in that information by identifying these habitats used by those sub adult and juvenile life stages as they mature and migrate into the offshore keep your reefs. We began this work in the Northeast side of the island in Luquillo, Fajardo, and the Ceiba areas. This was largely in part due to anecdotal accounts of increased sightings of juveniles both on the reefs and catch for that area.

We conducted 43 scouting expeditions where we located 23 nassau grouper at 15 different sites. They range from the early juvenile sizes all the way up until the adult stages.

Next slide, please.

So, our strategy. We set out to document the size distribution of the nassau grouper from an inshore to offshore gradient in various habitats at three different spatial scales. We chose these three different spatial scales because they directly correspond to either already existing or long-term data sets that are currently being conducted here in the region. So, it gives us a direct comparison to the available data that is already available to us and currently being collected.

Next slide.

Alright. So, the methods. We started at the largest scale possible, conducting-- we scouted the areas that nassau group were reported, those anecdotal evidence. We did this by using large scale long drifts using either scuba or snorkeling. Then we used the information gathered from those sightings, and the habitat characteristics from the areas that we sighted to expand the search into other areas, by exploring other areas with similar characteristics.

Once we compile the database of sightings and locations and abundances and size distributions of those sightings, we then return to these sites and conducted a benthic and topographical assessment to characterize the habitat surrounding where these individuals were sighted. We analyze these results to look at trends by size class. We did this using PERMANOVA to look at distinct groups within habitat type where these individuals were cited, along with both the abundance and size distribution of these individuals.

Next slide.

So, our largest spatial scale was the kilometer, hundreds of meters, or kilometer scale. This essentially corresponds to the NOAA habitat map. What NOAA uses to characterize all the benthic habitats surrounding the island and in the U.S. Caribbean. Once we had a GPS coordinate of the sighting, we then overlaid that onto the habitat map, and we recorded the habitat type. But we also looked at other distances to other available habitats that nassau grouper are known to inhabit but also, the shoreline as well. The distance from shore, the distance to the nearest coral reef, the distance to the nearest mangrove habitat or sea grass bed, things of nature.

Next slide, please.

Further refining that scale, we then went down to the tens of meters scale and basically, we conducted a NOAA National Coral Reef Monitoring Reef Fish Visual Census to analyze not only the fish populations, not just nassau grouper, but the other fish that were the area where the nassau grouper were excited, but also to characterize the benthic and topographical composition of the area immediately surrounding where the nassau grouper were sighted. And that area constituted a 15-meter in diameter cylinder or 7.5-meter radius around the area where the nassau group was identified.

Next slide, please.

And to the finer scale within that cylinder where we surveyed immediately around the nassau grouper, we then conducted a series of photo quadrats using three parallel 25-meter transects laid seven meters apart within that cylinder, where we then laid 18 photo quadrats in that area and took pictures and later analyzed that to identify the species composition and proportion making up that benthic habitat where those nassau grouper were found.

Alright. Next slide.

So, these are the results of those 23 individuals that were sighted with these longer scouting expeditions. As you can see, of those 23, 21 of these fish were all immature, ranging from the early juvenile life stage with six to 15 centimeters all the way up to the borderline transitioning to their adult life stage.

The majority of them were large juveniles, in the size range of 15 to 30 centimeters corresponding to a fish that's roughly settled within that year, maybe a little longer for 30-centimeter fish. But because these were all juveniles, one of the assumptions of these sightings and the subsequent analysis, is that they had settled in or near the habitats where they were encountered. These juveniles aren't going to undergo large scale reproductive migrations that has been reported for this species. And because they're immature, they were thought to pretty much be within the area where they were sighted.

Next slide, please.

So, at the largest spatial scale. Next slide, the kilometer scale. Again, next slide. The results indicate that all of these sightings-- this solely just based in the sighting information overlaying that with the NOAA habitat map --all sightings were found in-- or almost all sightings were found in seagrass beds. So, seagrass beds, and they were also close to shore.

Next slide.

So, a good example of this would be the area of Las Cabezas, where within this bay, we identified multiple areas that had nassau grouper. As you can see from the habitat map and the color-coding scale down there at the bottom, every single sighting was found in continuous seagrass, so dense seagrass beds or seagrass fairly dense of 70 to 90 percent coverage.

As we further analyze some of the result and really got in the water to analyze the benthic composition, we found this later wasn't the best scale to really look at it, which is why we later refined our scale. But as you can see, for the most part, they were all utilizing or found within seagrass beds.

Next slide.

The exception to that would be three of the larger individuals that we found. They were found further from shore. Most of the other group sightings were found about 3 to 400 meters from shore, so fairly close. But these larger individuals were found approximately three to four kilometers on deeper offshore patch

reefs. Which, this does fit what's known about the species, whereas as they mature and grow, they migrate to further offshore into deeper reefs and deeper habitat. So, this does fit into some of the biological information that is present for this species. But one thing I'd like to note was if you just are using the habitat map as classification of these habitats that they are found on, you can see that, yes, it shows that they were found on patch reefs, but the white area completely surrounding that area is listed as unknown. So, there's not much known about that habit.

Based on our large-scale drifts that we conducted or longer drifts that we conducted while collecting this data, I can confirm that this white area is also a continuation of that continuous seagrass bed, indicating that although the larger individuals are using deeper offshore reefs, those reefs are immediately adjacent within a hundred meters to seagrass beds indicating that even as they're reaching adulthood, that seagrass environment is still very important to these migrations and is likely acting as a buffer to these migrations into deeper habitats.

Next slide.

As I mentioned, we located 26 individuals. Now, just using the habitat map alone, we are actually only able to identify the habitats based on the habitat map for 16 of those fish. So, it doesn't really have the resolution to really give us an idea of the types of habitats that you're using solely based on the habitat map. But even then, you can still see that seagrass has an important role. Those top three middle columns, even the artificial habitat was completely surrounded by seagrass. So about 75 percent of all the fish were found in habitats completely surrounded or within these seagrass beds.

Next slide, please.

So, refining our scale to the tens of meters. Next slide.

So, the abiotic footprint. One of the first things we do after we get to the site where we saw a nassau grouper and finished the fish survey, recording the fish that are in the area, we look at the abiotic footprint, which is essentially just an aerial view conducted by the diver where we estimate the proportion of the abiotic coverage of that habitat. And as you can see, sand or these unconsolidated sediments, which are colonized by seagrass. So, this 36 percent sand, those are the seagrass beds. Those are a significant proportion of the habitat, but you can also see that close to or over 60 percent of that area within the seagrass beds

inside that cylinder is some type of hard bottom habitat. Whether it's consolidated hard bottom or rubble habitat. So, seagrass does play an important role, but it's also hard bottoms within that seagrass that doesn't show in the habitat maps.

Next slide.

Analyzing the topographical complexity of these hard bottoms located within the cylinder. They were all fairly low relief. 85 percent of all the hard bottom within these habitats were less than one meter or three feet tall. So, it's fairly low complexity, not very high.

And next slide.

And the same can be said for the soft substrates located within the cylinders as well. And this is the height of the seagrass, the sponges and the Gorgonians and sea fans found within those habitats as well, 80 percent were less than a half a meter, about a foot and a half tall within there. So, these are fairly low complexity environments.

Next slide.

So, the finest scale, the 1-meter scale conducted by the photo quadrats.

Next slide, please.

The results to that were, as most reefs are, they were biologically complex. We identified 36 types of benthic organisms or benthic groups to the nearest species level. But the top three that predominantly stood out in all of the habitat surveyed, where, as I keep mentioning, the sea grass-- well, to the species level, it was turtle grass or Thalassia. Then there was a mixture of some sand. And then, what was covering these hard substrates was predominantly turf and filamentous macroalgae.

Alright? So, it's not necessarily, we weren't seeing-- it didn't necessarily need to be high coral cover, sponge covers or anything like that. This is low relief, low complexity, hard bottoms consolidated by turf sediments.

Next slide.

Alright. So, our main conclusions that we drew from the analysis was: at the largest spatial scales, nassau groupers are found in seagrass beds with some unknown habitats, based on the mapping.

And also, a few were found on patch and or linear reefs, but that's based on the minimum mapping unit given by the NOAA habitat maps.

At the medium scale, we're really refined and start to pick apart what's really going on in the area immediately adjacent to these fish. It was actually small discrete and low-relief patches of hard bottom or hard substrate and surrounded by unconsolidated sediments, colonized by seagrass or turtle grass.

And, again, at the smallest spatial scale, these hard bottoms, they were they were primarily, the predominant biological coverage was turf algae and macroalgae, and then it was also some pavement rubbles and sand and all of them were surrounded, again, by turtle grass.

Next slide.

Alright. So, one thing I'd like to point out is that these essential fish habitats or these habitats used by these smaller individuals, as I mentioned before, were all very close to shore. These smaller juveniles are found on shallower areas near shore habitats. Those being close to shore make these more vulnerable to what's going on land-based, you know, land-based construction development, especially when it's being uncontrolled.

If you're a resident of the Caribbean, you know that is an ever-present threat, an increasing threat, of some of these habitat destruction, coastal habitat destruction. But not only is it really going to affect the coastal communities, but it also affects the near shore communities and resources as well.

Next slide, please.

Another interesting component that was exposed with the analysis and the data is the importance of bays and lagoons acting as nursery habitats to this species. So, the predominant zones surrounding the areas that were surveyed, were either bays and lagoons or bank and shelf zones. Alright? We've surveyed, in our large-scale drifts and surveys, we surveyed three times greater the area in the bank and shelf zones. However, there were 11 times the densities of juvenile nassau grouper located within the bay and lagoon environments in the surrounding area. So that really, kind of, shows the importance of these environments as nursery habitats, and that's largely contributed to the larval retention dynamics of these environments and zones.

Next slide, please.

Another important component as well is on every single site that we surveyed and conducted a fish survey where a nassau grouper was observed, other commercially and ecologically important species were observed as well, but at much higher densities than nassau grouper. So, these are red hinds, the yellowtail snappers, other snapper species, grunts, surgeonfishes, and parrotfishes as well.

So, these are not just important for nassau groupers, but these are important for other extremely important species that contribute to not just the fishery, but also ecosystem function for the area and for the coastal coral reef ecosystems. And if you compare it to a similar species of red hind, the nassau grouper, they still were in very low densities. When you compared to the densities that we saw of juvenile red hinds in the area, the red hinds were still at two to three times greater densities than nassau groupers in these areas.

So, they still have a way to go before they can reach the population statuses of something like a red hind.

Next slide.

So, one output that we had from this project, we were able to develop both a website and a phone application as well.

So, the website, MerosPR. It's a bilingual website. It's focused primarily for the regulations in Puerto Rico, but there's also biological and fish identification information that will help to identify the differences between the different group or species that are commonly encountered here in Puerto Rico. There's also information on the closures, the seasonal and species closures in the island as well. Both the application and the website have an outlet to where the users or various stakeholders, whether you're a commercial fisher, recreational fisher, diver, photographer, where you can actually go and report sightings of nassau grouper or goliath grouper or any grouper that you found in the area, and that will give us a chance to go and further explore other locations and further expand this analysis so we can continue to fill these knowledge gaps on the life history of this species.

Next slide, please.

Alright, the next steps. As I mentioned, this was a small pilot project. It was actually, the funding was continued and funded by the NOAA Species Recovery Grant Program. So, for the next three years, we're going to expand on this project. Continue and expand exploring areas around Puerto Rico and identifying the habitats where juvenile, not just juveniles, but also adult nassau grouper

reside.

We also incorporated some FSA monitoring as well into there. Up until recently, there have been almost no identified nassau grouper aggregations here in Puerto Rico. I say up until recently, there was one on the West Coast. But with another project, we actually were able to identify a second location in Puerto Rico. This is not just for nassau grouper, there were also yellowfin, black grouper and at a different time of the year, we also identified an aggregation of mutton snapper there as well.

So, these this continued FSA monitoring is extremely valuable for assessing long term dynamics and populations over time. Not only that, but it's also a continued priority of the SSC in these District Advisory Panel meetings as well.

We also have an education and outreach campaign as well that we have this project. So, we're going to be talking with enforcement, various fishers, and types of fishers, and community members to develop signage, community signage, further demonstrate and get this information some of it which can be con confusing to users and stakeholders in the area and we're going to be giving workshops to better facilitate that outreach and the distribution of this information to make it easier for everybody in the area.

And lastly, the acknowledgments. This project would not be possible without the following people, captain Marcos Hanke of 787Fishing. He facilitated the field portions of these projects providing decade’s worth of catch information and habitat and his knowledge of the local habitats. Carlos Zayas, of SEAMAP-C, was a vital part of all data collection for this project. We had student volunteers as well from the UPR system, Chris Morales and Charlier Dones, and actually, it was the input of Chris Morales that helped us identify one of the areas of highest densities of nassau groupers in the area. Thanks to his input. And then also, the Pirate Snorkeling Shack Water Sport Rental and Tours, they facilitated equipment usage to be able to access some of these areas that were near shore that were not accessible by boat. Also, I'd like to thank the various stakeholders and contributors to the MerosPR website.

Just to leave you with the final conclusions in the next slide and thank you very much. Any questions.

I also have a copy if anybody's interested. I do have a guide that we have, which will help better identify the differences between the grouper species. There's also information on seasonal closures and closed areas in Puerto Rico as well. And thanks to the Council, we're going to be printing a lot more versions of these in both

Spanish and English and these would be freely available to widely tribute to various stakeholders in the area.

Questions/Comments

MARCOS HANKE: Thank you, Evan. Tony?

LOUIS ANTHONY BLANCHARD: Good presentation. I got a question for you because I'm kind of curious. I noticed that you say the other grouper species that you notice was the coney, the hind, I believe it was?

EVAN TUOHY: Yes.

LOUIS ANTHONY BLANCHARD: Did you notice any other kind of groupers when you were looking for a nassau?

EVAN TUOHY: Yeah. So, we did see in the area, a yellowfin grouper and also comb grouper.

LOUIS ANTHONY BLANCHARD: The what?

EVAN TUOHY: Comb. C-O-M Yeah. It's Mycteroperca acutirostris, is the scientific name.

LOUIS ANTHONY BLANCHARD: Okay.

EVAN TUOHY: I'm sorry. I know. I know. It's not a common grouper species found, but it is present in the Caribbean, but generally at low densities. But that was another one that we did fine.

LOUIS ANTHONY BLANCHARD: And that was all in shallow water, is what you were saying?

EVAN TUOHY: Like, tens of meters from shore. Yes.

LOUIS ANTHONY BLANCHARD: Okay.

EVAN TUOHY: Yep.

MARCOS HANKE: Thank you for the question. I have a question. No graysby on those—

EVAN TUOHY: Yeah. There actually were graysby. In the report, which if anybody is interested in the report, the findings of the report, the detailed findings, I can send that out. But there is a list of all the other commercially and ecologically important species. But grouper species, coneys, graysbys. Graysbys were

actually, fairly low densities, but they were present there as well. Red Hind.

MARCOS HANKE: Yes. Thank you, everyone.

EVAN TUOHY: We did not see any red Grouper, no.

MARCOS HANKE: Let me go to the channel here for record to be clear. Andy?

ANDREW STRELCHECK: Great presentation. You've already answered one of my questions. I'd be very didn't seen the report. You had mentioned money was provided by NOAA Fisheries through a recovery grant program. My office is currently actually working on an ESA critical habitat rulemaking for a nassau grouper. I don't know if you worked with Pat Opay or anyone in my office but would definitely want the information you've collected to help support that work.

EVAN TUOHY: Okay. Excellent. Yeah. Thank you.

MARCOS HANKE: Richard.

RICHARD APPELDOORN: Yeah. Just one quick question. I've seen for a lot of species where you find really small juveniles in sort of unexpected places that water quality is really an important factor in determining whether you're going to find things or not. At least from the pictures you showed, you had really clear water. I don't know if that's just because it makes good pictures, but did you have much variability in that in the places that you were looking at, would that be a factor?

EVAN TUOHY: Yes, there was variability in water quality, especially in the Fajardo area. The closer that you get to the Fajardo River, water quality essentially plummets pretty drastically. Not only did we not find any nassau grouper there, but it also largely impeded our ability to sample those areas. So, just because we didn't find any with our visual and census, doesn't necessarily mean they weren't there. Talking with some of the fishers who are continuing to provide some of their catch data, since we've gone there, they have caught nassau grouper in some of those areas where we haven't been able to survey because of poor water quality. So just because we didn't find them there, doesn't mean that they actually aren't there.

RICHARD APPELDOORN: Yeah. I was thinking more of the very early juveniles. You weren't really [crosstalk]

EVAN TUOHY: Right. Right. I mean and that would be a gear selectivity issue, you know. Like, we're, right now at least, not able to go in and survey those areas based on poor water quality. But.

MARCOS HANKE: Graciela.

GRACIELA GARCÍA-MOLINER: So where do they come from? And the reason why I'm asking is because the Council received a presentation from Miguel Canals, and the connectivity that we have from the sources, which are the spawning aggregations that we already have under management. And one idea would be to backtrack the information using those models to see where they actually come from and to actually help in finding the critical habitat near shore. Where do the drifters end up? Where does the simulations take you? So, you know, that's one of the projects that we have discussed and hopefully, it will come to fruition.

MARCOS HANKE: That's actually going to help to support the idea of analyzing how those protected areas are working. Right?

RICHARD APPELDOORN: [crosstalk] Since we're talking about basically one spawning aggregation in the Virgin Islands as the potential source, genetics might be a way to pin that down as well.

EVAN TUOHY: Since we already know, I have identified areas of sampling; we could potentially get and continue to collect genetic samples to analyze that data as well and to address those questions.

MARCOS HANKE: Are there any other question for Evan? Anybody online? Vanessa? Go ahead.

LIAJAY RIVERA GARCÍA: I can read it out loud. So, the question is, did any of these nassau observations were on the West side of Puerto Rico and near buoy six? It seems like they have some reports of adults around.

EVAN TUOHY: Right. So, that's one of the things. So, given that this was a small pilot project, we refined our search to the Northeast of the island. But based on some of the report data that we have from iMero or MerosPR, we are finding some reports of adults around the buoy six area and also indications of spawning there as well. So, yes, there are some reports on the West Coast. I know some of the avid divers and dive shops that visit there regularly see them, but we have not yet had a chance to go and do that same benthic habitat characterization that we did for this project. But that is in the plan.

MARCOS HANKE: Thank you, Evan. Graciela.

GRACIELA GARCÍA-MOLINER: So, one more thing in terms of developing technology to look at these areas that are really bad water quality that you can't see in front of your nose. So that's another issue that we have because we might have a really good recruitment of juvenile nassau to the area, but we don't know about it. So, there are things that, you know, developing technology that can be used to do that. So, remind me to send you, there was an RFP recently out, for that kind of thing.

EVAN TUOHY: And the one thing I'd like to bring up, and this is just based on my anecdotal observation from being in the water at those sites. So those areas with poor water quality, the preliminary, like, just benthic observational habitat characterization, they were distinctly drastic-- Like, they were drastically different habitats, different benthic compositions, different seagrass compositions, that did differ from what we were seeing based on this analysis. And that's not to say that they still cannot settle there. But whether or not survivorship is high, if they do manage to settle there, that's a completely different question.

MARCOS HANKE: Yes. Thank you very much. Because this is very close to my heart because I've participated since the beginning, I wanted to bring this to the table to all of you. This started with a word that each gave me their anecdotal information. Because of the anecdotal information I was collecting, thanks to Evan and his group, it organized the support to organize this anecdotal information and do a project to make something valuable out of it. This is the pathway, that segue for the presentation that are going to do it on the second day, they're going to also address the same approach. Which way, us as a fisherman, can we support and develop knowledge about our fishery and our species.

And thank you very much, Evan, for the great effort you guys did. I can testify that this has been evolving and including divers, snorkels, tour operators, and other people that can support, with the anecdotal information, but in an organized form, under a scientific method and something well designed like you guys did, to produce information like this that we didn't have before. Thank you very much.

EVAN TUOHY: No. Thank you for the opportunity.

MARCOS HANKE: Seeing no other questions. We are going to adjourn the meeting. It's five o'clock. The meeting is adjourned. Thank

you to all the participants for your patience. I'm sorry about the delay on the agenda, but I think we have a very good discussion. There is something else. I cannot hear.

LIAJAY RIVERA GARCÍA: Just to make it clear, is the presentation of Jannette Ramos today? Or is it going to be for tomorrow?

MIGUEL A. ROLÓN: Tomorrow.

LIAJAY RIVERA GARCÍA: Okay. Thank you.

MARCOS HANKE: Okay. The meeting is adjourned. Thank you, everyone. At 05:30, there's a closed section at this same room, just the Council members. Thank you.

(Whereupon the meeting recessed on April 19, 2022.)

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APRIL 20, 2022

WEDNESDAY MORNING SESSION

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MARCOS HANKE: Good morning, everyone. We are ready to start the meeting. It is 9:05 AM. This is the second day, April 20th, 2022. I will request all the presenters to speak close to the mic and to the people online to raise their hand for questions and people in the room to raise their hand for a turn to speak.

We have a very loaded agenda today. I need everybody to be succinct, quick and effective. I will give you some signs when time is really up, and you need to speed up. Okay? Yesterday there were some things that we need to cover; we went overtime but I asked all the presenters today, to help the Chair run on time. Thank you very much.

The first-- do you want to say something?

MIGUEL A. ROLÓN: Roll call.
MARCOS HANKE: Yes. We will make the roll call on the room first. We are having some technical difficulties. Bear with us.

We are ready now. We will keep going. Let’s make the roll call starting from Cristina, from my left.

CRISTINA OLÁN MARTÍNEZ: Cristina Olán, Council Staff.

LIAJAY RIVERA GARCÍA: Buenos días. Liajay Rivera, Council Staff.

GRACIELA GARCÍA-MOLINER: Graciela García-Moliner, Council Staff.

MARÍA LÓPEZ-MERCER: María Del Mar López, NOAA Fisheries.

CARLOS FARCHETTE: Carlos Farchette, Council member.

JEAN-PIERRE L. ORIOL: Jean-Pierre Oriol, Council member.

LOUIS ANTHONY BLANCHARD: Tony Blanchard, Vice-Chair.

MARCOS HANKE: Marcos Hanke, Chair.

MIGUEL A. ROLÓN: Miguel Rolón, Council Staff.

DIANA T. MARTINO: Diana Martino, Council Staff.

ANDREW STRELCHECK: Andy Strelcheck, NOAA Fisheries Southeast Regional Office.

JOCELYN D'AMBROSIO: Jocelyn D'Ambrosio, NOAA Office of General Counsel.

KEVIN MCCARTHY: Kevin McCarthy, Southeast Fisheries Science Center.

JORGE R. GARCÍA-SAIS: Reni García, invited speaker.

NELSON CRESPO: Good morning, everyone. Nelson Crespo, DAP Chair, Puerto Rico.

JULIAN MAGRAS: Good morning, everyone. Julian Magras, DAP Chair, Saint Thomas/Saint John.

RICHARD APPELDOORN: Rich Appeldoorn, SSC Chair.

HOWARD FORBES: Good morning. Howard Forbes, DPNR Enforcement.

MANNY ANTONARAS: Good morning. Manny Antonaras, NOAA Office of Law Enforcement.

DALILA ALDANA: Dalila Aldana, investigadora invitada a esta conferencia.

MARÍA DE LOS A. IRIZARRY: María Irizarry, Council staff.

STACEY WILLIAMS: Stacey Williams, invited speaker.

ORIAN TZADIK: Orian Tzadik, PEW Charitable Trust.

WILSON SANTIAGO: Wilson Santiago, Puerto Rico Liaison Officer.

JANNETTE RAMOS-GARCÍA: Jannette Ramos-García, Puerto Rico Sea Grant Program.

DIANA T. MARTINO: We are Good.

MARCOS HANKE: Thank you, Diana. We are going to pass now to the virtual attendees. Liajay, please.

LIAJAY RIVERA GARCÍA: Alida Ortiz Sotomayor, Damaris Delgado, Diana Beltrán, Edward Schuster, Jack McGovern, Jesús Rivera Hernández, John Walter, Kate Overly, Laura Cimo, Nicole Greaux, Martha Prada, Michelle Schärer, Rachel Eckley, Rachel O'Malley, Sarah Stephenson, Stephanie Martínez Rivera, Virginia Shervette, Vanessa Ramírez, Wessley Merten, Yamitza Rodríguez, and a non-identified phone number ending with 821. If you can identify yourself, please do so. That would be all in the list.

MARCOS HANKE: Please the person that has just the phone number, write in the chat—

LIAJAY RIVERA GARCÍA: She just identified herself. Vanessa Ramírez. Gracias.

MARCOS HANKE: Ok. Thank you very much. Miguel.

MIGUEL A. ROLÓN: Just for the record. Those two members of the Council, Damaris Delgado and Vanessa Ramírez, are entitled to vote. So, you have the whole committee, the whole Council membership present.

MARCOS HANKE: Thank you very much, Miguel. I just want to remind the people attending this meeting, that we have the dolphinfish study presentation included on the agenda today that passed from yesterday and also a very brief presentation from Jannette Ramos from Sea Grant. Those are going to be just before the break.

We are going to start with the presentation, but before that, Miguel Rolón.

MIGUEL A. ROLÓN: Thank you, Mr. Chairman. This is very quick. We tend to take people for granted but at this time I would like to

recognize the work by Maria Del Mar and Sarah Stephenson and the big boss, Jack McGovern, and the biggest boss this year, Andy Strelcheck. I would like to hear a round of applause for this people. The work that they have done is tremendously important, if you don't know, and they've worked their ass off just to make this Council look good. So, a round of applause for these people. [applause]

MARCOS HANKE: Yes. I want to add to that that it is not just doing a great job it is always forward to trying to do new things to make the job easier and more effective. Thank you very much.

First presentation is Reni García in Understanding Essential Fish Habitat of Queen and Cardinal Snappers and Associated Fish Communities of the Deep-Water Snapper Fishery. Reni.

Understanding Essential Fish Habitat of Queen and Cardinal Snappers and Associated Fish Communities of the Deep-Water Snapper Fishery: From Fishers' Knowledge to Scientific Language— Jorge García-Sais

JORGE R. GARCÍA-SAIS: Buenos días, y gracias a todos.

Este proyecto es un proyecto que está en progreso, es un proyecto que trata sobre un estudio colaborativo entre una parte científica, en este caso yo, y los pescadores de Puerto Rico, y de las Islas Virgen. Básicamente, es un estudio que pretende adelantar el conocimiento de esta pesquería, combinando el conocimiento científico con el conocimiento de los pescadores.

Esta es una experiencia que no es ajena a mi información. Yo considero que posiblemente yo he aprendido tanto de los pescadores como de las clases que he cogido a través de mi carrera, así es que esto es una continuación en esa dirección.

El próximo.

Antes que nada, yo quisiera darle mi agradecimiento por la participación y colaboración de tres pescadores que participaron en este proyecto hasta el momento, aunque pretendemos que sean muchos más. El señor Luis Román de Añasco, el señor Jorge González de Guánica, y el señor Rodolfo Abrahams de San Juan, estuvieron participando con nosotros hasta ahora en este proyecto, que está en pleno curso, en pleno progreso.

Los objetivos del proyecto incluyen documentar la pesquería de pargo de agua profunda, pero más que documentar la pesquería es documentar la experiencia de la pesquería. Documentar la

experiencia de la pesquería mediante salidas con los pescadores al mar. O sea, hacer trabajos con ellos mar afuera. Caracterizar mediante instrumentación oceanográfica y video, las características del hábitat béntico y de las características oceanográficas.

Reni, está muy bien, es que hay un problema con técnico. Es un problema con la traducción que están atendiendo. Un momentito, por favor.

JORGE R. GARCÍA-SAIS: A mí me gustaría tener control, pero-- te voy a hacer así. Me avisan.

MARCOS HANKE: We are waiting for the zoom participants to readjust their settings to listen to the presentation. Thank you for waiting, Reni.

CARLOS FARCHETTE: Thank you, Mr. Chair. Now, before I forget I have a topic for other business at the end of the day. It is fish trap reduction.

MARCOS HANKE: This is a test. Esto es una prueba en español para ver si la traducción está funcionando. Esto es una prueba para las personas virtuales. Por favor, envíen un texto confirmando que están escuchando la traducción. Thank you very much. Go ahead, Reni, and Thank you.

JORGE R. GARCÍA-SAIS: Gracias.

Sí, estábamos en los objetivos. O sea que, uno de los objetivos es básicamente salir con los pescadores, con mis instrumentos oceanográficos y los instrumentos de ellos, que son las caras, las artes de pesca, si es que llevas las calas, las artes de pesca. Así es que, tu llevas las calas, las artes de pesca y yo llevo mis instrumentos oceanográficos, estamos en el mismo sitio, vamos a ver qué podemos aprender de este trabajo combinado.

Próxima.

Entonces, no tan solo sacar los datos, sino compartir la información con los pescadores que salen de sus propias áreas de pesca, con énfasis en dos especies que son de mucha importancia comercial, el cartucho y el cardinal, la muniama del hondo. Aunque, pues, básicamente, estamos incluyendo la comunidad completa de peces, pero, la clave es sacar la información exactamente de donde ellos están pescando y no de áreas generales, etcétera. Sino que ellos puedan ver de dónde ellos mismos están tirando las calas, ¿Cuál es la información que sale de ahí?

La próxima.

Queremos hacer un inventario de todas las especies de peces asociadas con esta pesquería. No tan solo los de importancia comercial, sino todos. Esto nos va a dar una información más completa sobre la comunidad de peces en donde se pescan estas estas especies importantes. Además, esa información nos ayuda, poco a poco, a desarrollar la información necesaria para producir modelos conceptuales de cómo es que funciona esta pesquería y poder hacer planes de manejo en acuerdo a esto.

La próxima.

Queremos describir en detalle la distribución tanto espacial como con profundidad de las áreas de pesca de estas especies en particular, que sabemos que hay una estratificación de especies a través de toda de toda la región.

Próxima.

Queremos también evaluar mediante unas muestras de tejido, la posible conectividad entre Puerto Rico y las poblaciones de cartucho entre Puerto Rico y las Islas Vírgenes, que es parte de una tesis de Maestría que está siendo un estudiante del departamento de Ciencias Marina, María Del Pilar García.

Próximo.

En términos de la metodología. Básicamente, lo que estamos haciendo es salir con los pescadores a sus áreas de pesca con nuestros equipos oceanográficos y poder registrar la información en tiempo real en su área y durante la pesca que ellos están haciendo.

Próxima.

Estamos obteniendo información de captura y esfuerzo de pesca, incluyendo la información de sus métodos de pesca, el número de calazos que ellos-- o sea, no tan solo ver el esfuerzo de pesca desde el punto de vista de lo que se pesca al día, sino-- porque los pescadores ya hemos visto que su día de pesca varía mucho, es el esfuerzo en términos de cuántos drops, de cuántos calazos. ¿Cuánto se pesca por calazo en un día de pesca? La profundidad, las especies que se pescan, los tamaños, la condición de las gónadas, o sea, las condiciones reproductivas, y cualquier contenido que puedan tener en la boca además de la carnada.

Adelante.

Estamos haciendo una serie de perfiles de CTD para para estudiar lo que es la variabilidad y las características de la columna de agua en las áreas de pesca de los pescadores. Esto incluye, la temperatura del agua, salinidad, densidad y profundidad.

Adelante.

También estamos enviando hacia abajo, en la misma área de pesca de los pescadores, una cámara con un housing a prueba de agua, con unas luces programables para ver el hábitat béntico donde mismo están pescando los pescadores.

Adelante.

Además, como había mencionado, estamos adquiriendo unas pequeñas muestras de tejido, y de otolitos en individuos representativos de cada área, para analizar estas tasas de crecimiento y conectividad genética, entre las poblaciones de Puerto Rico y de las Islas Vírgenes.

Adelante.

Esto es unas fotos de los instrumentos que se están usando. El instrumento de la izquierda es un CTD. Es lo que llamamos un mini CTD. Es un instrumento pequeño para embarcaciones pequeñas, que registra temperatura, salinidad, presión, profundidad a alta precisión, y el de la derecha son las luces programables con la cámara, que es el equipo que estamos enviando hacia abajo para fotografía las áreas de pesca.

La próxima.

Cuando hablamos de del hábitat, si ven el título del proyecto, realmente, esto es un estudio sobre el essential fish habitat del cartucho. Como la pesquería del cartucho, y de la muniama del hondo, al igual que todos estos peces de agua profunda, ocurre fuera de la plataforma insular. Fuera de la plataforma insular, no es solamente una masa de agua, sino que hay una serie de masas de agua que se acomodan verticalmente como si fuera un bizcocho de estos de boda, en base a su densidad.

Como ven, se han identificado al menos cinco masas de agua, que están dentro del área del Caribe, el área oceánica del Caribe.

LIAJAY RIVERA GARCÍA: Reni, me vas a disculpar de nuevo, pero el internet se cayó.

JORGE R. GARCÍA-SAIS: Se cayó y el leaser no-- se cayó también.

LIAJAY RIVERA GARCÍA: ¿Y estoy con el ethernet?

JORGE R. GARCÍA-SAIS: Mm, nada que ver. Nada que ver.

MARCOS HANKE: Okay. For the virtual attendees, we have some internet problems. We will let you know as soon as we can fix the problem.

JORGE R. GARCÍA-SAIS: Ahora sí.

GRACIELA GARCÍA-MOLINER: ¿Aquí necesitas que hable?

LIAJAY RIVERA GARCÍA: Sí.

GRACIELA GARCÍA-MOLINER: Okay. ¿Me estás oyendo? ¿Cristina, me está oyendo?

LIAJAY RIVERA GARCÍA: Vanessa dice que el audio está de vuelta.

GRACIELA GARCÍA-MOLINER: El audio está bien. Gracias, Vanessa. ¿Qué más?

LIAJAY RIVERA GARCÍA: ¿Y video se ve?

GRACIELA GARCÍA-MOLINER: Okay, pues, proyecta. ¿Pero ya podemos proyectar y empezar? Ahora, como corremos contra el reloj, ya vamos a ponernos, aunque salgan, tú estás pendiente de todo lo que salga. Okay. ¿Ya estamos?

MARCOS HANKE: Hello, everyone. We are back. Thank you for your kindness and for waiting so long. We will let you know as soon as we start. The group says that we are ready. Reni, please proceed. Thank you.

JORGE R. GARCÍA-SAIS: Gracias, Mr. Chairman.

Me voy a tomar un poquito, yo sé que estamos apretados de tiempo, pero yo me voy a tomar un tiempito para explicar esto, porque esto es la base de todo. Quizás en futuras presentaciones yo pueda ir más específico sobre todos los datos del proyecto que, de hecho, todavía en producción.

Realmente, o sea, lo que le estaba diciendo es que el mar Caribe está altamente estratificado, verticalmente por diferentes masas de agua, que vienen a diferentes densidades, y por eso es que se agrupan y se ordenan de acuerdo a su densidad.

Realmente, la capa de agua mixta es la capa de agua que mayormente está afectando las áreas de la plataforma insular. Sin embargo, las áreas de pesca de pagos de agua profunda incluyen, fundamentalmente, estas dos masas de agua. Son masas de agua, que una es el subtropical underwater, y la otra es del mar de los sargazos. Ambas masas de agua provienen del mar de los sargazos. Aquí están las profundidades y las temperaturas a las cuales se obtiene estas profundidades. Básicamente es la medula del centro de estas masas de agua.

Cada una de estas de masas de agua tiene lo que se llama una firma o un 'signature,' que está provisto por su combinación de temperatura y salinidad. La temperatura y la sanidad son los parámetros o factores que se conocen como factores conservadores. O sea, que no varían de acuerdo a los organismos, porque se conservan. Cada masa de agua tiene sus características de temperatura y salinidad, y, por ende, densidad y se acomodan verticalmente de acuerdo a su densidad.

La próxima.

Estas masas de agua que le estaba hablando, que es el subtropical underwater, y el sargazo sea water, que también se conoce como el agua del Atlántico central, se encuentran al Norte, o sea, en el Atlántico Norte, y son una de las zonas de menor productividad del planeta. O sea, son zonas sumamente áridas en términos de su producción, debido a que están permanentemente estratificadas y debido a que no hay mezcla entre aguas profundas y la capa superficial donde está iluminada y, por ende, ocurre la mayor parte de la producción primaria, o sea, la producción del fitoplancton, pues los nutrientes se agotan. Son áreas que están, lo que llamámos fuertemente limitadas por un nutriente que es el nitrógeno.

Ustedes van a decir, "Pero Reni, cómo es posible, si en el mar del sargazo, que se producen toneladas de sargazo, ¿Cómo vas a decir que esta es un área árida?" Bueno, es un área árida, lo que pasa es que el sargazo produce su propio, o sea, no obtiene su nitrógeno del mar, lo puede obtener del mar, pero lo puede obtener también de la atmósfera, o sea, del aire, básicamente, y por eso su producción no está limitada por nitrógeno, sino que puede producir grandes cantidades y es una de las fuentes más importantes de nutrientes en esta zona, el sargazo per se.

Otra fuente bien importante, que es un proceso bien importante que afecta a las pesquerías de nosotros acá abajo, es la corriente del Golfo. ¿Por qué la corriente del Golfo? La corriente del Golfo es una corriente alta en nutrientes, que es una corriente bien rápida,

que tiene lo que llamamos en oceanografía, una vorticidad positiva, y a veces es tan rápida que se desprende de la plataforma insular y entra como unos anillos, que llamamos anillos fríos, bien ricos en nutrientes a esta zona y, posiblemente, parte de esas zonas de alta productividad puedan entrar al Caribe.

De hecho, la mayor parte del flujo de estas aguas entra al Caribe por los pasajes, pero principalmente por tres pasajes que hay acá abajo, al Norte de Trinidad y Tobago, que son el pasaje de Grenada, el de Santa Lucía y el de San Vincent. La mayor cantidad de flujo viene de ahí.

Próxima.

Hay muchas otras interacciones, o sea, se puede estar una hora hablando sobre esto, pero realmente no hay tiempo.

Este, vamos a hacer lo más importante, que es básicamente presentar los datos que se obtuvieron con los pescadores. Como vemos, estos son los perfiles de temperatura. Aquí están las profundidades cada cincuenta metros, hasta cuatrocientos metros, que es donde ellos pescan, y aquí las temperaturas que van aumentando cada dos grados. Como ve, hay alguna separación en temperatura, esta separación en la capa superficial está relacionada a las diferentes temporadas, está afectada por la temperatura del aire, y vemos claramente la presencia de lo que nosotros llamamos la capa mixta.

La capa mixta básicamente es una zona donde la temperatura no varía con profundidad. Es una temperatura homogénea. Esto es un indicio de mezcla y esto es lo que caracteriza la capa mixta superficial del Caribe. La profundidad de esta capa mixta es importante, porque es lo que mantiene esta área bien mezclada aquí y depende del viento. Mientras más fuerte el viento, más profunda es la penetración de esta capa mixta.

Aquí están las áreas en donde se ha estado trabajando hasta ahora, incluyen Añasco, Bajo de Sico, la Corona del Sur, Parguera, Playa Santa, Caja de Muerto y San Juan. Vemos como la temperatura varía rápidamente después de los setenta metros, ochenta metros. Esta zona de una variación bien rápida se conoce como la termoclina. Y ven cómo vas abajo, ya para los trescientos cincuenta metros, trescientos treinta metros, la temperatura no varía mucho entre sitio y sitio, se mantiene constante. De hecho, todos los estudios confirman que la mayor parte de las variaciones tanto en temperatura como en salida en el Caribe, ocurren en los primeros mil doscientos metros de agua, y después de ahí, la temperatura es básicamente constante, es similar entre área y área.

La próxima.

Este es el perfil de salinidad. Como vemos, capa mixta, la salinidad en esta capa varía mucho de acuerdo a la lluvia, de la lluvia a la escorrentía de los ríos. También varía de acuerdo a o está influenciada por el advenimiento de agua, de lentes de agua del Orinoco y del Amazonas.

Vemos también que hay una zona de variación bien rápida, bien fuerte de salinidad con profundidad, esto lo conocemos como el haloclina, que es un área de donde, no tan solo la salinidad, sino que la densidad, afectada por la salinidad, aumenta también rápidamente y crea básicamente un sello, aquí, entre la masa de agua superficial y las demás masas de agua más abajo. Vemos aquí el máximo de clorofila-- perdóname, el máximo de salinidad que se conoce como la firma principal del subtropical underwater, y más abajo está el sargazo sea water.

De nuevo, la mayor parte de la variación ocurre sobre los trescientos metros. Aquí ya vemos cómo la salida se empieza a estabilizar en base a las áreas después de los trescientos metros.

La próxima.

El perfil de densidad. El perfil de densidad es la resultante de estos dos factores de temperatura y de salinidad. Van a ver lo importante que es para las pesquerías este concepto, porque realmente se separan las masas. No hay conexión entre esta masa de agua, hay muy poca conexión física entre estas masas de agua y la masa de agua de la superficie, aunque vemos cómo se interrelacionan en la próxima laminilla.

Mira, aquí, esto es un estudio de Seijo-Ellis et al., 2019. En realidad, el estudio se realiza en el 2017 al Sur de Saint Thomas. A bordo del Nancy Foster, se tomaron todos estos estos perfiles, temperatu-- lo mismo que les había mostrado, temperatura, salinidad, densidad, y clorofila. Y la razón que traigo este slide es para enseñarle este dato, porque este dato yo no lo tengo en mi proyecto y es sumamente importante.

Lo que vemos aquí, lo que quiero enseñarles es que el máximo de clorofila correlaciona con el máximo de salinidad. Quiere decir que este máximo de clorofila no refleja-- a casi ciento treinta metros, no refleja la producción de clorofila en este sitio, sino que lo que refleja es que aquí es que se está sedimentando todas las células de fitoplancton. Toda esa productividad de esta parte de la capa mixta que ocurre aquí se está sedimentando y se queda estancada en este punto como si fuera un falso bentos. Este falso

bentos está producido por el gradiente de densidad. O sea, que hay una mayor densidad y esas partículas de fitoplancton, básicamente, se quedan sobre esta zona. Y este máximo de clorofila, aquí, este layer, puede ser sumamente importante para explicar la productividad de los cartuchos en aguas profundas.

¿Por qué? Porque hay un montón de-- hay diferentes organismos particularmente los eufácidos y otros copépodos de diferentes tipos de micro zooplancton, que pueden estar haciendo migraciones verticales de esta zona, alimentándose aquí, y luego yéndose abajo nuevamente donde pueden ser capturados por los peces.

La próxima.

Ok, esto es una muestra de un eufácido. Los pescadores, si ustedes ven este tipo de organismo en la boca de los cartuchos, eso es una indicación de que lo que yo le estoy diciendo pudiera estar ocurriendo. Y particularmente quizás no sea un artículo importante en la dieta de los cartuchos, pero sí lo es para los calamares. Y los pescadores saben que donde están los calamares están los cartuchos.

La próxima.

Entonces, ¿cuáles son las fuentes potenciales de productividad que pueden estar sosteniendo estas poblaciones de cartucho y de muniamas en el ámbito de los doscientos o los cuatrocientos metros?

La próxima.

Una es como lo que estaba diciendo, la sedimentación de esta materia orgánica, producida en el surface mixed layer, que una vez empieza a sedimentarse, empiezan a formarse unos microbial loops que le dan un contenido adicional, nutricional a estas partículas y pueden estar creando un nivel, un layer, una zona de alta productividad justo en el borde, entre la capa superficial y las capas profundas donde se pescan los cartuchos.

La próxima.

Nutrientes y zooplancton y material orgánico, pueden estar viniendo de las masas de agua en el Atlántico Norte, tanto del subtropical underwater como del sargazo sea water, a través de estos canales, y ya vienen con su zooplancton, y vienen con su material orgánico. Como le dije, proveniente de diferentes fuentes que están disponibles en esa zona.

La próxima.

Ok, lo que les estaba hablando. El zooplancton y micronecton, que incluyen los eufácidos, también se conocen como el krill, lo que comen las ballenas. Característicamente, esta estos organismos se agrupan en escuelas bien densas, que, de hecho, ahí es donde comen las ballenas, porque de lo contrario, estos pesos no tienen suficiente alimento para la energía que gastan, así que comen en sitios donde hay agregaciones. Y estos estos organismos se caracterizan por tener estas migraciones verticales hacia áreas de donde hay alta alimentación y después bajar para metabolizar en aguas más fría la comida que se come, un proceso que se llama como parachute transport, hacia el fondo.

La próxima.

También hemos visto que el cartucho es un carnívoro oportunista. El cartucho lo mismo come en la columna de agua, que come del fondo. O sea, come de los dos lados. Posiblemente haya unas relaciones ontogenéticas, o sea, que el cartucho va cambiando de hábitos alimenticios y de estrategia alimenticia, según va desarrollándose. Particularmente, la experiencia de los pescadores y lo que comparten conmigo es que los peces pequeños tienden a quedarse en áreas regionales y a alimentarse bastante y dependen bastante del bentos, del fondo, para su alimentación, mientras que los cartuchos grandes, lo que hacen es que se forman en escuelas y van detrás de los calamares, como ellos dicen, corren, y van detrás de los calamares buscando áreas de alta alimentación, lo cual hace sentido, porque si, porque realmente es difícil explicar la productividad de pesca en estas zonas oligotróficas, o sea, de bajos nutrientes y de baja productividad, a no ser que sea que los peces están encontrando áreas de alta concentración de alimentos. Concepto que se conoce como pirámides invertidas. Que se conoce también que aplica para explicar la abundancia de tiburones en las áreas de arrecifes de coral.

Adelante.

Y pudiera haber también una producción de zooplancton e ictioplancton, basada en la re-mineralización de los nutrientes que ya hay en el fondo y que posiblemente eso es una es una fuente de alimentación también.

La próxima.

Esto es una foto que yo tomé desde un ROV a unos quinientos y pico, casi seiscientos pies de profundidad muy cerca de las áreas de pesca, para que vean que, en el fondo, a estas profundidades ya afótica hay bastante producción de coral no simbiótico. O sea, que

básicamente los arrecifes de coral de Puerto Rico aparentemente no están restringidos a la zona de la plataforma insular, sino que allá abajo donde viven los cartuchos y los chillos, también hay arrecifes de coral o por lo menos, comunidades de coral.

Adelante.

Okay, esto entonces, yo quería poner en perspectiva lo que era el hábitat de pesca de estas especies. Una perspectiva espacial. Como vemos, yo paré en las diferentes zonas de profundidad. Tengo que admitir que esto es un estimado crudo, porque estos son áreas de superficie en metros cuadrados, calculadas de forma horizontal. No considera las áreas que están proyectadas verticalmente, como vamos a ver qué ocurre en la mayor parte de las plataformas insulares.

Sin embargo, cabe destacar que las áreas de pesca entre doscientos y cuatrocientos metros incluyen prácticamente un 20 porciento del área total entre cero y cuatrocien-- o sea, básicamente entre cero y cuatrocientos metros, que es lo que incluye esencialmente la plataforma insular, más la pendiente insular en estas islas. O sea, que básicamente toda la zona del promontorio de la isla, incluyendo el slope, lo que llaman el insular slope. Básicamente, está cerca de los cuatrocientos metros. Así es que, básicamente, esta estas profundidades, en Puerto Rico, incluyen casi el 20 porciento.

Sin embargo, en las Islas Vírgenes, y aquí estoy incluyendo, San Thomas, Santa Cruz, San John, son un poco más de que son 6 porciento. Hay bastante mayor área, bastante mayor área en Puerto Rico, y vamos a ver por qué.

La próxima.

Fundamentalmente, esto es un mapa, aquí tienen las zonas profundas. Como le digo, aquí es muy difícil ver las áreas en la escala vertical. ¿No? Y como vemos, a través de prácticamente toda la isla, Islas Vírgenes también, estas áreas están prácticamente únicamente en algunos sitios relacionadas a las pendientes insulares.

Sin embargo, en Puerto Rico, al oeste de Puerto Rico tenemos lo que es Puerto Rico Southern Fault. Esto, básicamente, es una cadena de montañas que unen a la República Dominicana con Puerto Rico. Aquí hay unas zonas de pesca muy importantes y una de las cosas que más justifica que el área oeste de Puerto Rico sea una de las áreas de mayor producción de pesca de pargos de agua profunda y de peces de agua profunda.

Áreas de pesca, aquí están los rabos de Aguadilla, áreas que se conocen de pesca. Aquí, en esta zona de aquí, salimos para pescar las áreas de Añasco. Aquí, increíble, hay una cadena de montaña que parece que uno estuviera en la Cordillera Central, pero submarina. Una serie de montañas aquí en esta zona. Bajo de Sico. Aquí el área de Desecheo y una cosa que los pecadores llaman la Corona del Norte, que es un pináculo que sale aquí al este del Desecheo. Hay otras áreas de pescas famosísima, como le dije, el Bajo de Sico, la Corona del Sur, el Guineo, aquí está el área del Pichincho, con el área del medio, aquí hay otra zona que conocen algunos pescadores que se llama la 178, ellos llaman las 178 brazas, un área de buena pesca de cartucho aquí también.

La próxima.

Aquí, en la en la zona Este, Vieques, Culebra, las Islas Vírgenes, hay una zona bien amplia, de entre cincuenta y cien metros de profundidad, no la hemos explorado, no sabemos de lo que es, quizás los pescadores nos puedan dar más información cuando nos volvamos para las islas vienen a hacer trabajos allá. Sin embargo, vemos que sí, hay unas áreas bien interesantes de pesca, zonas de hábitat, de hábitat de pesca de pargos de agua profunda, asociados al veril, o sea, a la plataforma, a la pendiente insular de las plataformas.

Aquí en el Sur de San Thomas, también hay un área bastante amplia en San Thomas/San John, de entre cincuenta y cien metros. Algunas de estas áreas son áreas conocidas de desove de peces de importancia comercial, como de la cabrilla y los meros, en particular, cerca del área del MCD y de Grammanik Bank.

Adelante, la próxima.

En Santa Cruz, la mayor parte del hábitat está circunscrita a la pendiente insular. Aquí en el área de Lang Bank, un poco más área de pesca, o sea, de hábitat de pesca. Y entonces, la parte Sur, pues es un área bastante amplia, con zonas hasta de cuatrocientos metros, bastante amplia. No conocemos el tipo de hábitat que hay en esta zona, esperamos que con la ayuda de los pecadores de Santa Cruz podamos explorar un poco esta zona de aquí.

La próxima. La próxima.

Ok, pues, yo hice un pequeño ejercicio, reduciendo un poco de los datos que me hicieron llegar del Consejo de Pesca del Caribe. Me dicen que estos son datos que el origen de estos datos es parte de las capturas, para Puerto Rico expandidas, para San Thomas y San

John directa, de los informes pesqueros, entre el 2015 y 2017, que pensé que era un buen tiempo, ya que en el 2018 empezaron a surgir todas las anomalías de los huracanes y de los temblores y de las pandemias y de todo lo demás. Así que 2015 o '17 me parecía un buen período para hacer este análisis, y separé la pesquera comercial solamente de peces, no carrucho, no langosta, no cangrejos, no nada más, solamente peces, para peces que llamo profundos demersales. O sea, los peces de fondo, todos los pargos y los meros de agua profunda; los pelágicos que incluyen el dorado, la sierra, los petos, todo lo demás; lo que es peces costeros de la plataforma; y de los de los costeros pelágicos, eso es básicamente todos los jureles y esos peces costeros; creo que incluí la sierra carita aquí, y el king mackerel lo incluí acá. Aquí está el king mackerel, el peto, y los dorados principalmente.

Como vemos, la captura de peces demersales en el área de Puerto Rico son mucho mayores que en las Islas Vírgenes. Posiblemente esto esté explicado en base a la a la mayor área de cobertura, o sea, en la mayor área de hábitat que hay en Puerto Rico. Pero también hay otras razones porque ya nosotros hemos estado oyendo aquí en este Consejo de Pesca, por mucho tiempo, que hay problemas de ciguatera con pargos de agua profunda en San Thomas. Yo no sé hasta qué punto-- yo francamente no sé hasta qué punto eso es cierto, o si eso todavía aplica, o si se dejan de pescar los peces por la cuestión de la ciguatera, realmente yo no sé, pero lo que sí, es que hay una diferencia bastante marcada entre lo que es el recurso pesquero asociado a estas profundidades en Puerto Rico, comparado con las Islas Vírgenes. Así que, es importante considerar que posiblemente haya unas razones más allá de la cuestión de la ciguatera, sino que el hábitat es mucho más amplio en la plataforma de Puerto Rico.

Adelante.

Aquí, esto es un resumen hasta ahora. ¿Verdad? Básicamente, estamos hablando de diez días de pesca. O sea, de diez salidas con los pescadores. Se han obtenido trece especies en la cala. Hay diferencias en el esfuerzo pesquero. Algunss pescan con boyas, otros pescan directamente con el cordel. Básicamente, en total, en estas diez salidas, combinando los tres pescadores, se han obtenido 251.4 libras de peces landed, o sea, de peces abordados.

Ellos no abordan los tiburones y hay un peso considerable en esos tiburones. Básicamente, quizás pudiera haber sesenta, setenta libras más de tiburones asociado a esto, pero estos no están incluidos. Si estan incluidos en términos de las especies. Aquí tenemos el dusky smooth hound, Squalus, los hexanchus también, pero básicamente el principal componente de la pesquería es el

cartucho a estas profundidades entre doscientos y cuatrocientos metros.

Recogimos ciento diecisiete peces, el total de libras fue ciento setenta y ocho, y el promedio por libra, 1.5 libras por pez.

Yo me quedé sorprendido de la cantidad de muniama que vienen con esa pesca. La muniama, que es una muniama de más de una libra. Es un buen pez de sartén. A los pescadores se los pagan igual, por lo menos en el área Oeste los pagan igual. Así que, estas dos especies realmente son las principales de la pesca a estas profundidades.

La próxima. Ah, déjame, por favor, la anterior, la anterior, que quería hacer un señalamiento rapidito.

Quería decirles que, aunque son diez días de pesca, yo creo que realmente, como se debe medir el esfuerzo de pesca, bien medido, es con los números de drops, o sea, con los números de calazos, en otras palabras. O sea, porque un pescador-- yo he salido con tres pescadores diferentes y los tres tienen un esfuerzo pesquero-- en un mismo día, el esfuerzo pesquero puede ser el doble o el triple uno del otro. O sea, en términos de los calazos. Así es que en términos de la captura por calazo es básicamente dos libras, es lo que yo pude medir allí. Veinticinco libras de captura por día, por pescador.

Con toda la variabilidad que hay entre los tres pescadores, un pescador solamente salió dos días, así es que no es completamente equiparable. Definitivamente el esfuerzo varía entre pescador y pescador.

Adelante.

Además de la pesca de estas especies, nosotros estamos haciendo un esfuerzo por recoger toda la información posible de las especies que están relacionadas a este hábitat, para poder después incluir estos elementos en lo que es un modelo conceptual de esta zona, de esta pesquería en particular.

Hay cosas aquí que yo no sé lo que son todavía. O sea, este puffer salió de casi mil pies de profundidad, y no sé lo que es. No lo encuentro por ningún sitio. Este conger, cada vez que la cala caía en el fondo fangoso en San Juan, salía un conger de esto para afuera. Eso es un problema para el pescador, porque no es fácil sacarlo de ese anzuelo, y a veces vienen dos y tres de ellos en un calazo. El spiny dogfish, es un pez que cuando dice llegar a la cala, es un problema, porque a veces son dos y tres de ellos, cuatro de ellos en una cala. Forman un enredo bien brutal. El

pescador pierde mucho tiempo y energía tratando de sacar estos tiburones de la cala. Es realmente admirable ver cómo esta gente brega con esos peces, ahí, a mano. Aquí vemos el juvenil de un misty grouper, de una guasa. También se coge a profundidades entre seiscientos y ochocientos pies. No es la primera vez que yo lo veía en una pesquería de esta.

Así que estamos haciendo un esfuerzo por recoger estas especies y la información de estas especies. Seguimos tratando de conseguir las identificaciones. Quizás más adelante, incluyamos análisis de tejido para hacer análisis de DNA y ver si podemos conseguir las especies de acuerdo a su contenido genético.

La próxima.

Entonces, las condiciones preliminares del estudio. O sea, la pesquería de pargos de profundidad en el ámbito de los doscientos a cuatrocientos metros está básicamente asociado a la masa de agua del sargazo.

Adelante.

Las características físicas y biológicas de la columna son relativamente estables, y están dominadas por una estratificación permanente y condiciones oligotróficas, o sea, condiciones de poca productividad.

Adelante.

Sin embargo, la productividad aparenta estar bien fuertemente relacionada a la cadena alimenticia del plancton, aunque con un componente béntico también que todavía no hemos podido determinar cuán realmente importante es. Pero sabemos que está asociada aparentemente durante la época juvenil de estos peces, particularmente del cartucho, alimentación directamente del fondo.

Adelante.

La sugerencia mía, según yo lo veo y lo propongo, es que un factor clave que está influenciado y sosteniendo la productividad, de los pargos de agua profunda y su distribución espacial, debe estar relacionada a la alimentación en estos en estos parchos, en estos patches de zooplancton y de micronecton, que puede incluir copépodos, eufácidos, pero particularmente el principal depredador de ellos, que son los calamares. O sea, los calamares van buscando el zooplancton y el micronecton y los cartuchos, saben dónde encontrar los calamares.

Este zooplancton/micronecton con los calamares pudieran estar produciendo lo que se conoce como un discattering layers, y si yo fuera pescador, estaría buscando estos discattering layers en mí ronda. Porque donde están los calamares, van a estar los cartuchos grandes, y eso pudiera ser un factor que pudiera mejorar el performance de la pesquería en esta zona.

Como le dije, les mostré por qué yo pienso esto. Porque básicamente hay mucha pesquería en agua bien poco productiva lo cual quiere decir que estos peces pudieran estar viviendo y fusionando dentro de lo que conoce como el concepto de las pirámides invertidas.

Adelante.

Como les dije, los mayores porcentajes de pesca, de especies de agua profunda en los landings comerciales de los peces en Puerto Rico, relativo a las Islas Vírgenes, pudiera estar influenciada por la mayor cantidad de hábitat que hay en la zona oeste, entre otras cosas.

Y esa es mi presentación, disculpen si me pasé un poquito por mucho. Tuve problemas técnicos, pero cualquier pregunta, con mucho gusto. Esto es un estudio que está en progreso, ya se rendirá un informe detallado completo con estas pesquerías.

De nuevo, agradezco la participación de los pescadores y estímulo a cualquier pescador que esté oyendo esta presentación, o que esté aquí presente, que esté interesado en el en participar en el proyecto, hay una compensación económica para ellos por día de cuatrocientos dólares, y realmente estarían haciendo una contribución bien importante al conocimiento de su propia pesquería. Gracias.

Questions/Comments

MARCOS HANKE: Reni, gracias por la presentación. Gracias por la pasión que pones en lo que hace. Así que seguiríamos comunicandonos. Vamos a tener espacio para dos preguntas.

We are going to have space for three questions. Please be very brief. Tony, Richard, and Nelson.

LOUIS ANTHONY BLANCHARD: Morning. Good presentation, there was a lot of information on this presentation. Now, what I noticed was you mentioned the ciguatera. That, basically, you didn't find any ciguatera in Puerto Rico where they did the fishing. But I know in Saint Thomas there is cases of ciguatera, especially with the blackfin snappers in deep water. Now, I know it was mentioned

before that ciguatera was caused by a microalgae that was found in shallow water. We are talking about deep water now. So, my question is this. How accurate is the assumption that the microalgae that was mentioned is actually the culprit in the ciguatera.

JORGE R. GARCÍA-SAIS: Well, I don't think that anybody has the perfect answer to your question. I think that-- well, what I know is that ciguatera is not just the result of an algae, but actually the combination of algae plus bacteria. So, maybe any specific site can have a different combination of those. I am not sure about that.

My knowledge was that this is a process that was associated mostly with shallow waters. Mostly with areas of the insular shelf. I don't know what is behind the incidence of ciguatera associated with deep water. Particularly in areas where it's mostly aphotic. So, that algae doesn't have any light. So, if it doesn't have any light, how's it a light there? you know. You know what's the dynamics of that?

You know, I frankly can't answer your question because I don't know. All I know is that for years or for decades, I should say, I've heard recognized fishermen of the U.S. Virgin Islands, particularly in Saint Thomas saying, stating, that in part there is limitation on the fishing on this deep-water snapper population because of the ciguatera issues.

I mean, there's a fisherman here from Saint Thomas that knows not much more about that than me. Probably that question should be directed to them.

MARCOS HANKE: Reni, your presentation really was not about ciguatera, right? You just made a point about the ciguatera. I think we can, and we will address ciguatera with other presentations. I would like the questions to be to the point of your presentation, about what you just presented. Miguel.

MIGUEL A. ROLÓN: And also, I think that we are confusing signature water with ciguatera. They are two different things. What you were saying is that these waters, they remain where they are because of the oceanographic conditions. That's important to know. And also, for the record, we have not received any reports of ciguatoxic fish on deep-water snappers and groupers. It doesn't mean that they are there or not. Sorry, we have not received yet, I don't know if Graciela has any record but the people who have given presentations to us before, they questioned those instances and that's why Marcos is saying that this is--

JORGE R. GARCÍA-SAIS: Yes, but I have to answer any questions, or anybody can e-mail me as well or call me or whatever. I'm always willing--

MIGUEL A. ROLÓN: That's what I was going to suggest. Anybody who is interested, please contact Graciela or Doctor Reni García and probably for the August meeting we'll have an update because this is important--

JORGE R. GARCÍA-SAIS: Quite frankly, I appreciate Tony's question very much because I believe that more effort should be addressed to finding out what's going on with ciguatera problem of these deep-waters snapper populations in Saint Thomas. Because if it's something that was temporary or a given time, a given school of fish that went there, or if it's a continuous thing that is being produced all the time. Because otherwise the ciguatera problem may have been banished and you have that resource there open almost pristine fishing for deep-water snappers and--

MIGUEL A. ROLÓN: The point is that we need to discuss this some other time. But we have to be--

JORGE R. GARCÍA-SAIS: That's okay. I just got involved, you know? I'm sorry.

MIGUEL A. ROLÓN: We have to be mindful about these things on the record. You can kill an entire fishery by the wrong information about ciguatera. That happened before in Puerto Rico. So, unless we have specific instances and supported scientific data, we should drop the discussion.

MARCOS HANKE: And there are people working on that. That's why I request the group to be mindful that eventually we're going to address this with the experts working on the field local in Puerto Rico. Tony, just to wrap up, go very quick and I go to—

LOUIS ANTHONY BLANCHARD: Just wrap up. I didn't want to get off course. The point I'm trying to make is there was no cases of ciguatera with the deep-water snappers in Puerto Rico. In Saint Thomas, especially the blackfins, they have a history of that. And I'm not trying to kill our fishery but the point I'm trying to make is, obviously there is something that is different that is going on in Puerto Rican waters, compared to the Virgin Islands waters. And that's the point I was trying to make. As to, if it's really a shallow water microalgae that's causing that problem is not going to be found in that depth of water. That's the point that I was trying to make.

MARCOS HANKE: We're going to-- noted. We're going to take care of this issue later on, at another moment, with a someone working with new data from ciguatera. Richard.

RICHARD APPELDOORN: A comment and a question. The comment is that I'm sure you're aware that Jerry Ault and Steven Smith, did a deep-water snapper pilot sampling program as if, you know, the SEAMAP, for example, or NOAA, or somebody wanted to take over this is the statistics on how to design that. And it was done with commercial fishermen, I think Nelson was part of that, and Roberto Silva and a couple of others.

In that study, they did a [inaudible] calculations using the multibeam stuff for the areas that those were available. So, that might be something you could add to yours to get an idea of still another factor that's affecting the habitat there.

I'll throw out another comment. Blackfin snappers are really the shallowest of the deep snappers, so they could be affected by shallow stuff, especially in their juvenile stages.

So, anyway, the question is you had a lot of camera work. So, was there something that came out of that that said, characteristically, we saw this kind of environment associated with the higher catches versus where you didn't get higher catches?

JORGE R. GARCÍA-SAIS: No pusimos el video. Si, pon el video.

MARCOS HANKE: Reni. Reni. Reni.

RICHARD APPELDOORN: Just give a-- because they are short on time. I was saying, did you analyze the camera images to be able to get-- was there a pattern that emerged about where you found fish versus where you did not?

JORGE R. GARCÍA-SAIS: Well, we've been watching a pattern. You know? Unfortunately, we haven't been very successful with the camera. We have drowned two of them already. The thing is that with the instrumentation that we have, we have little control of knowing at exactly what depth the camera is going down. And it's going down fast. So, when it hits rock-- [laughter]

MIGUEL A. ROLÓN: You have to buy another one.

JORGE R. GARCÍA-SAIS: --it drowns. So here-- can you replay it. Here we dropped it. This is a thousand feet deep. Okay? So, we dropped it at a place where we have taken cartuchos. We take cartuchos. Those are spiny dogfish. We have spiny dogfish or maybe

it's a-- no, that's a vilma. So that's what we have seen.

When we work with ROVs, every time that we went into rocks with a lot of coral and black coral, and a lot of life, I saw a lot more fish there. Every time we see coral formations and stuff like that, chances are you will see snapper. You know? So, there's a reef down there.

MARCOS HANKE: Reni. Reni. Reni, the point of Richard, I think, have to be taken noted for a future presentation when you have more trips out to help, to guide us on better decisions, but we really need to move forward because we're really behind schedule. Nelson.

NELSON CRESPO: Thank you, Mr. Chair. Excellent presentation, Reni.

JORGE R. GARCÍA-SAIS: Not my fault. You know? Not my fault. I mean, call the internet, that's the universe entropy. Whatever.

NELSON CRESPO: Excellent presentation, Reni. I strongly support the integration with the scientific and the fishers because we learn from each other. We know, firsthand, our job and that's going to help us a lot in the management plans in the future. But one thing, when you're talking about the small shrimp, in occasion, we catch the queen snapper with a mouthful of only shrimp. But you are right. When we catch the big cartuchos, we call them the traveler one, the one that has a long tail, they are running behind a big mass of squid and shrimp, and that's where we catch the most of the biggest cartucho.

JORGE R. GARCÍA-SAIS: It has to be. It has to be.

NELSON CRESPO: Yeah. And I see that every year. I am curious in the summary slide that you only caught in 10 trips, only two hundred something pounds of fish. How long did each trip take?

JORGE R. GARCÍA-SAIS: That's what I told you. It varies a lot. It varied a lot. A lot of things happen, you know, in those ten days. You know? I mean, issues with the equipment, issues with the weather, issues with huge fish just breaking up the calas. You know, some fishermen would go the entire day to the point that I was exhausted. Some of them worked half a day and "let's go home." Some of them, for example, worked with a series of boys. So, they have, at any given point, three calas in the water.

NELSON CRESPO: Okay.

JORGE R. GARCÍA-SAIS: So, that's a lot of effort for a given unit of time. Others just fish with one reel and then they go,

they're happy with their twenty-five pounds. They are happy with that.

NELSON CRESPO: I saw in your report also that only small fish were caught, around a pound and a half size fish. I'm wondering where the fish were developed, close to shore or far from shore? Because--

JORGE R. GARCÍA-SAIS: Well, the thing is okay.

NELSON CRESPO: --normally, we got a mix of size.

JORGE R. GARCÍA-SAIS: Okay. I'm going to answer you quickly. It's because one of these sites is in the South Coast. So, you know that the South Coast, you cannot go very far from land because the slope is close to shore, and it's steep. Okay? So, it's right there at the shelf edge. The insular slope is right there at the shelf edge.

In San Juan, we went off El Morro, and it was not far from the coastline, maybe a mile and a half or two miles offshore. In the West, we went to different places. The farthest I think was Corona Del Sur.

NELSON CRESPO: Okay. No. That's what--

JORGE R. GARCÍA-SAIS: The largest fish that we caught was a five pounder.

MIGUEL A. ROLÓN: Okay, guys. I believe that this is a topic of very much importance. I would like to invite Dr. Reni García here just to put you on the line. We have another meeting in August, another one in December and we would like to follow-up with this study. One of the questions they have here, to close your presentation, which by the way, one of the best I've ever seen. It is like being back at school. Especially with the sargassum explanation. What is the long-term goal of this study? And how long are you going be working on the study? How many years?

JORGE R. GARCÍA-SAIS: Well, I believe that from the scientific standpoint, the long-term goal would be to produce, as best as possible, as more detail as possible, the conceptual model of this fishery, from my standpoint. But in parallel with that, we would like fishermen to gain the scientific knowledge that provides them the background to improve their fishery efficiency. You know? Given the economic aspects come about in terms of the equipment and their gear, because it is actually quite surprising, quite admirable that you see this fisherman going offshore and engaging in this

dangerous fishery with the type of equipment they have. Small boats, one motor, old one motor, no radios. It's risky business. They put a lot on it, you know, to bring back those twenty-five pounds.

MIGUEL A. ROLÓN: It's a limited entry natural thing. You probably would be responsible for wiping out the entire fishery just by telling people, "Go and follow the squid, and the big fish will follow you." Reni, do you think--

GRACIELA GARCÍA-MOLINER: Miguel, let me say something. The coral reef conservation program is responsible for the funding for this project. This was submitted by the Council due to the interest of, specifically Nelson and his group because of the changes that they've noticed in the water column at depth. So, that includes all of the reference points that we wanted to look at in terms of the fish community and the habitat. Please notice that these areas where they're fishing are highly not only rugous but have a lot of coral. So, the discussion yesterday on prohibiting trawling activity, activity in the EEZ, and in areas where this fishery takes place, it's of utmost importance.

So CRCP only provides funding for the fishing that it's being done now, and then off to Saint Thomas and off to Saint Croix. We've already been talking about the fishers. But if it's the interest of the Council to continue with a survey like this and it's actually complementary to what the Southeast Fisheries Science Center is doing with Kate Overly and the group, there are sources of funding such as S-K, MARFIN, etcetera from which we could get funding to do this kind of work in the future.

MIGUEL A. ROLÓN: One last thing. This is what I was looking for, thank you, Graciela, because that's what I was pursuing.

We have interest here from fishers in the chat. We put your information in the chat so fishermen can talk to you. So, at the August meeting, we'll have an agenda item. So, we will have an update. I promise that we're going to give you more time, probably the last thing in the evening so people can stay overnight. [laughter]

Then the other thing that you mentioned. The synergy between fishers and scientists on the same boat. Nelson and I were talking because we would like to develop, sort of, a bank of fishers who are-- you know, we have the citizen scientist who want to have future scientist, and this is the right step to go. When we had the presentation by Alida Ortiz, I asked Crespo, here, to present his idea.

So, thank you very much. It has been an excellent presentation, and we will--

JORGE R. GARCÍA-SAIS: Thank you all. I'd be delighted to provide an update on the results of this project later on.

MARCOS HANKE: Yes. And your presentation also created a lot of interest, Reni. We have to put enough time for you to interact with the fishermen and with us to take advantage of your knowledge and experience. But today, we need to speed up. I'm sorry.

Let go-- Nelson, please get contact with-- quick.

NELSON CRESPO: I just want to do a quick recommendation to select the areas where you're going to fish prior to going because to get a balance of each area. That's it.

JORGE R. GARCÍA-SAIS: Nelson, at this point, I'm getting anything I have. You know? I mean, I cannot--

NELSON CRESPO: I can help you with that.

JORGE R. GARCÍA-SAIS: I mean, if you have enough [crosstalk]

MARCOS HANKE: Okay, guys. You can't talk about this offline.

JORGE R. GARCÍA-SAIS: But let me tell you. I'll go anywhere they go. That for sure.

MIGUEL A. ROLÓN: Mi gente, ya se acabó la vaina. Hablen ustedes en el [crosstalk]

MARCOS HANKE: Okay. It's over. Thank you. Let's keep going. The next presentation is Stacey Williams. Stacey, please help me out on something first, because the presentation is Jannette, and she has to go to a meeting in Capitol Hill.

STACEY WILLIAMS: Okay.

MARCOS HANKE: Can you allow her to present very brief slides and we go with you after that.

STACEY WILLIAMS: Yeah. Definitely.

MARCOS HANKE: Thank you. Jannette?

Squid fishing: New Opportunities in Deep Sea Fishing—Jannette

JANNETTE RAMOS-GARCÍA: Buenos días a todos y a todas. Aprovechando la apertura que hizo Reni, que dio su presentación en español, yo me siento mucho más cómoda, y ustedes van a estar más felices de que yo haga mi presentación en español a que la haga en inglés.

Así que les quiero hablar de, precisamente atando la presentación de Reni, que me estuvo espectacular, con mi tema. Les voy a hablar de la pesca del calamar. Una nueva oportunidad de pesca de profundidad.

Próxima diapositiva.

Como todos sabemos, las aguas de Puerto Rico, del archipiélago de Puerto Rico y de las Islas Vírgenes, son ricas en diversidad de especies, tanto económicamente como de peces que se pescan de manera recreacional. Dos de estas especies que se pescan, o que estamos intentando que la pesca se disemine en Puerto Rico o en Islas Vírgenes, es la del calamar de diamondback y el neon flying squid.

Muchas personas disfrutan de comer calamar, pero estamos consumiendo calamares, que viene congelado y que es importado. Mientras tanto, no es hasta ahora que recientemente en las aguas de Islas Vírgenes, los pescadores están pescando los calamares de manera, bueno, los están cogiendo por montones y los están vendiendo.

El Capitán Marcos Hanke Herrero, que es un consumado pescador que ya todos conocemos, se ha encargado de aprender más sobre la pesca del calamar, y está intentando transmitir todo su conocimiento a los pescadores comerciales para que ellos alleguen más ganancias aparte de las pecas que usualmente hacen.

Próxima, Cristina.

Así que la pesca del calamar, se considera una alternativa diferente a lo que ellos hacen normalmente.

Próxima.

Por esa razón, el Consejo de Pesca solicitó que él Fuete y Verguilla, ellos consideraron que era el mejor medio para llevar esta información a los pecadores y a las pescadoras comerciales. Y se produjo una revista, que la tengo en mi poder y la voy a distribuir tan pronto como termine la presentación, se produjo esta revista para entregarla al sector pesquero comercial.

Y que, bueno, pues conozcan un poco de cómo hacer este tipo de pesca que está atada precisamente a la pesca de profundidad. Y en la medida en que un pescador pesca los peces de profundidad con un poco de -- la propuesta es que lo que tienen que invertir para pescar los calamares es muy poco si ellos mismos hacen sus artes de pesca que Marcos hace las recomendaciones en la revista.

La diapositiva final.

Uno de los pescadores que acogió la idea de la pesca del calamar, se llama Francisco Águeda y es de la Villa Pesquera La Coal, en San Juan. Estoy hablando de Puerto Rico porque en Islas Vírgenes ya hay otros pescadores que lo están pescando. Él, hace poco me llamó, ya había vendido un par de ellos en el área de San Juan, y me llamó que había pescado dos calamares, uno de veintitrés libras y uno de veintinueve libras. Uno de ellos lo vendió a un restaurant muy-- uno de estos restaurantes que para para ir a él en San Juan tiene que hacer una cita con mucha anticipación y el otro lo vendió el Royal Isabela, en Isabela, a dieciséis dólares la libra. Me parece a mí que es un-- bueno, en dos calamares nada más hizo sobre ochocientos dólares, aparte de la poca inversión que hizo, de ponerlo en hielo y en gasolina para llevarlo a Isabela. Pero lo que se ganó fue mucho más de lo que se hubiera ganado en un día de pesca.

Así que estamos incentivando a los pescadores. Yo me voy a preparar con el Capitán Marcos Hanke, para que me enseñe a filetearlo, a prepararlo, para yo poder educar a los pescadores, con este tipo de pesca que se está abriendo en las aguas tanto de Puerto Rico y de Islas Vírgenes, que son de las únicas dos islas, según me ha informado el Capitán Marcos Hanke, que no se pesca el calamar. Así que los pecadores de chillos de profundidad, de cartuchos de profundidad, pueden allegar más ingresos pescando calamares.

Última diapositiva.

Gracias al Capitán Marcos Hanke por la excelente labor que está realizando, y por el deseo de educar y traer nuevas alternativas a los pescadores, tanto de Puerto Rico como de Islas Vírgenes. Y gracias al Concejo de Pesca, por confiar en Fuete y Verguilla para hacer el medio, para llevarle esta información a los pescadores, así que gracias a todos y a todas.

MARCOS HANKE: Gracias Janet. Gracias por la presentación y espero que –

JANNETTE RAMOS-GARCÍA: Ah, entonces, si el Consejo está

interesado, pueden cocinar calamares para un nuevo episodio.

MARCOS HANKE: Eso será pronto. Muchas gracias. We will take a 5-minute break and we will go with your presentation, Stacey. Okay? 5 minutes.

(Whereupon, a brief recess was taken.)

MARCOS HANKE: Hello, everyone. We are back trying to make good use of our time. The next presentation is Stacey Williams. Stacey, go ahead. Thank you.

Characterization of Prey Diversity of the Commercially-Important Queen Snapper— Stacey Williams/Diana Beltrán

STACEY WILLIAMS: Thank you, Marcos. Hi. My name is Stacey Williams. Today, I'm going to be presenting with Diana Beltrán about our small project, looking at characterizing the prey diversity of Queen Snappers along the West Coast of Puerto Rico.

Next.

So as many of you know in this room and online queen snapper fishery has become an increasingly important fishery in Puerto Rico and also the U.S.V.I.s. Little is known of the queen snappers in the U.S. Caribbean. What we do know of queen snappers is that they have a far range. They can be observed all the way up to North Carolina down to Brazil. Their depth distribution where fishers catch them usually are between 130 meters. On the Okeanos Expedition in 2018, I was a co-science lead, we actually saw them all the way down to 539 meters, which is our new record for them here in the U.S. Caribbean.

They're assumed, like the silk snappers, to have an ontogenetic relationship with depth. So, there have been juvenile spotted in shallower waters, and it's assumed that these juveniles then move to deeper waters when they grow a little bit larger. Rosario et al. 2006 study found that the spawning of queen snappers peak in October and November. The females mature at a size of 23 centimeters fork length, and males at 31 centimeters.

As Reni mentioned, and also, Rich Appeldoorn, that queen snappers can be associated possibly with areas of high topographic relief. But, as we all know, there's still much more to be known about queen snappers. Virginia Shervette, and also Kate Overly have been doing a lot of life history work, but we still don't know what the habitat preference of queen snappers is and, actually, what do they eat.

So next.

So, in this project, the overall goal was to characterize the diet of queen snappers along the West coast of Puerto Rico. Some of the objectives, from the snappers collected, we wanted to summarize the demographic of these samples and also see if there were any patterns in prey diversity between sexes, the size of the fish and possibly where the fish were collected.

Next.

So, we work closely with 2 fishermen. Thank you, Nelson Crespo. and Luis Roman, in the West coast. Also, Wilson Santiago helped collect some fish in this study. So, the fishermen, right away, put the fish on ice, and the fish were maintained on ice until we were able to collect them, either that day or the next day.

We processed the fish right away. The surfaces were clean with 10 percent bleach because we were collecting the stomachs and making sure that there was no cross-contamination between samples. We measured the fish, fork length, standard length, total length. We weighed the fish, each individual fish. We also took tissue samples. We photographed, removed the gonads, photographed the gonads with tags, and weighed the gonads. We also collected the otoliths from each of the fish. Also, we removed the eyes, and those were sent to Virginia Shervette for her studies. We also removed the stomach samples. Everything was placed in separate bags. The stomach samples were placed in whirl-pak bags, so there was no cross contamination.

All the samples were then placed in a freezer of -20 centigrade. With the otoliths. We rinsed the otoliths and dried them and placed them in separate vials. So, the gonads, eyes, and otoliths were sent to Virginia Shervette, and we sent the stomachs to Diana and Carlos Prada in Rhode Island, and they processed that. And she will go over that methodology later in this talk.

Next.

So, a total of 157 queen snappers were processed for the study. 11 of these queen snappers were actually gutted but we were able to still collect the otoliths. And the queen snappers were fished from November 2019 to July 2020.

As you can see on this map, some of the site information was given to us, like the depth, range of where the fish were collected from and the general area of that site. Some coordinates were given to

us, these are not the exact sites on this map because. I know that these fishing grounds are very sensitive information, and I respect that. But this just gives you an idea of where the fish were collected during our study.

So, we had 7 different locations, like site 6 and Pichincho's and South of Pichincho's, which is not on this map, could possibly be very close to each other. The depth range that the fish were landed were between 256 meters at Bajo Medio and 412 at site 3, which is, like, closer to Puerto Rico. Reni showed the bathymetry really nice. I wish I had that map right now. But if you go to the next slide, you'll see that the total amount of fish caught at the different sites and different sampling times, varied.

At Bajo Medio, we collected most of the samples there. Like, 59 fish were collected at Bajo Medio. So, this is a really important site for queen snappers. Also, Pichincho area, another really important site.

So, next.

Looking at the size of the fish that we processed in this study, you can see that here's a graph of the frequency and the fork length of all the samples. You could see it tends to skew more to the left. So, there were smaller fish collected in this study. But we did collect some big queen snappers. You can see that the fork length ranged from 220 millimeters to 808 millimeters.

And talking about the pounds. Looking at Reni's study, the weight of our fish ranged from four pounds to 23 pounds. So, we were able to process some of the big queen snappers. So, we were lucky in that regards.

So, next.

So, looking at the fork length and how it varied between location and sampling time, there was a significant difference. We used a one-way PERMANOVA based on Euclidean distance measures. So, this is just a nonparametric test. And around Pichincho, actually, those were the larger fish sampled for this study. So, I will go into more of Pichincho later in the talk, of the importance of this site. When we look at the sizes of the fish at the different sampling times in July was actually the time where the fishermen collected the larger fish, in July, and the smaller fish in November.

So next.

We did, just following Rosario et al. 2006 paper to see if we were able also to find a relationship between weight and fork length. As you see on in this graph, there was a really strong linear regression between weight and fork length.

So, next.

Looking at gonads. I'm very grateful for Graciela and Noemí Peña in the laboratory in Cabo Rojo. They were able to sex 110 gonads from the pictures. Out of these 110 gonads, 69 percent were actually males, and 31 percent were females. The pictures to the left, top and bottom are the female gonads, and you could see, like, the differences in sizes. And, also, to the right, top and bottom, are the gonads of male queen snappers.

In our study, we found that actually females were slightly larger than males, and this is known about queen snappers, that female queen snappers tend to be larger than males. So, this also supports other previous studies.

Next.

We also measure the gonadosomatic index, and this is just an index looking at the gonad mass proportion over the total body mass. This is an indicator of reproductive activity. So, there was a significant difference between the sites and also between the sampling times. You can see, like, site 6 is really close to Pichincho. That was an area where the fishers collected snappers that at that moment were most likely reproductive reproductively active. And when we look at the graph to the right that looks at the sampling times, actually, July pops up, and there's that peak in GSI.

This finding actually differs from Rosario et al. 2006 study where they found the peaks to be in October and November. Actually, we're seeing this in in July. There are anecdotal accounts, and Nelson could probably expand on this if there's time at the end of this presentation where they do see gravid females in July and August. So that might be under consideration where the spawning time for queen snapper might be also in July.

So, next.

And then Diana is going to now talk about the pray diversity, and then I will finish the-- I believe she's going to be speaking in Spanish, so if you all want to put your headphones on.

DIANA M. BELTRÁN RODRÍGUEZ: Yeah. Can you hear me?

STACEY WILLIAMS: Yes

DIANA M. BELTRÁN RODRÍGUEZ: Yes. Okay. Yeah, I practiced my part in English, but I think I am better in Spanish. Okay. Thank you, Stacey.

So, after-- después de todo el trabajo que Stacy y su grupo hizo, nosotros recibimos acá en URI, todos los estómagos completamente congelados. Nosotros movimos esos estómagos inmediatamente a nuestro freezer de -80 grados y solamente sacamos los estómagos en el momento de ser procesados todos, porque nosotros no queremos tener ningún problema, en darle la oportunidad a que el DNA se degrade.

Next. okay.

So, para este trabajo, nosotros utilizamos dos diferentes metodologías. Voy a explicar un poquito, pero superficialmente las metodologías. La primera metodología es el barcoding. Esto lo hicimos solamente para los fragmentos que no han sido digeridos. So, nosotros recibimos ciento cuarenta y seis estómagos y estos estómagos fueron puestos en bolsas individuales para también disminuir la cross-contaminación entre los individuos, y como dijo Stacey anteriormente ella utilizó siempre materiales limpios y limpió su mesa cada vez que cambiaba de individuos.

So, cuando nosotros empezamos a hacer la disección de nuestros estómagos encontramos que la regurgitación de este contenido estomacal probablemente ha dividido a la descompresión de estos animales al ser pescados. Es un problema grande. Esta no es la primera vez que se reporta cuando se estudian deep-water fishes. Esto es un problema que se ha visto el en la literatura.

Solamente treinta y cinco de nuestros estómagos, nosotros encontramos fracciones o pedacitos de organismos no digeridos. Ustedes pueden ver en la parte derecha del slide cuáles fueron los organismos que encontramos dentro de los estómagos y pueden ver la diferenciación del grado de digestión de esos animales.

Algunos son fáciles de identificar a simple vista, pero otros básicamente están totalmente digeridos como el que está en la parte baja a la derecha. O sea, en esos momentos es muy difícil ya poder identificarlos a simple vista o usando una clave taxonómica.

Siguiente.

okay. Nuestro primer approach es el de metabarcoding. Esto solo lo

utilizamos con los fragmentos que nosotros encontramos dentro del estómago. Nosotros cogimos esos fragmentos, hicimos varios lavados del fragmento porque queríamos evitar la co-amplificación del marcador, porque esos fragmentos están dentro del estómago, tienen el DNA del queen snapper mezclado también alrededor, y también nosotros queremos amplificar el DNA para poder identificar el origen de esa de esa presa.

Nosotros hicimos ese lavado, hicimos la extracción individual de cada DNA, después hicimos un PCR reaction, donde utilizamos el citocromo oxidase 1, después lo mandamos a secuenciar, o sea, limpiamos ese producto-- no, no, no, no. Limpiamos ese producto, lo mandamos a secuenciar en un sanger sequencing, que es la máquina más común para secuenciar, y obtuvimos unas secuencias.

Cuando nosotros obtuvimos una lista de secuencias, pudimos hacer un BLAST utilizando un software que se llama Geneious, y ese BLAST lo hicimos a través de una base de datos, donde todas las personas que han hecho publicaciones y han utilizado material genético, deben poner su información, que es una base de datos y se llama el NCBI.

En algunos de estos fragmentos tuvimos el problema de la co-amplificación, aun haciendo los lavados y aun diseñando un blocking primer. So, nosotros en ese en ese PCR reaction, utilizamos un primer diferente que diseñamos para tratar de no amplificar esa fracción del queen snappers, y solo amplificar el origen de ese fragmento. En general, con esta metodología, nosotros encontramos siete especies de invertebrados, dos artrópodos, cuatro moluscos, y un isópodo, y además dieciséis especies de peces que fueron encontrados con esta metodología.

Next.

So, aquí tenemos la lista de las especies que nosotros encontramos con esta primera metodología. Si ustedes miran, las más abundantes son los calamares, y eso lo relaciona perfectamente con la información de otros estudios de snappers de profundidad que encontramos, pero la mayoría de estos estudios están hechos en el Pacífico. En segundo lugar, nosotros encontramos los camarones y los camarones que encontramos, las especies identificadas vienen de profundidad también. Eso quiere decir que los queen snappers están comiendo [inaudible] que son demersal, y están utilizando el bentos como fuente de alimento también. Los demás, son muchas especies de peces, pero también, si ustedes miran las fotografías o ve los nombres, muchos de esos provienen de peces de profundidad.

Acá hay algo que te quiero resaltar, porque nosotros acá en estos

resultados estamos reportando todo lo que encontrábamos. Los que tienen ese asterisco rojo, lo que quiere decir es que esas especies también fueron reportadas con los pescadores que fueron usadas como baits. Pero nosotros tenemos evidencia de que algunas de ellas pueden ser también parte de la dieta natural del pez. Por eso es que estamos reportando todo y no queremos sacarla de esta información.

Siguiente.

La segunda metodología es usando el metabarcoding. Este en metabarcoding lo utilizamos, ¿Por qué? Porque lo que queremos acá hacer es identificar las secuencias o el origen de alguna de las presas, pero ya no como el anterior, teniendo un organismo ni una sola secuencia, sino teniendo un mix.

Entonces, como dijimos, la regurgitación había sido un problema grande, solo treinta y cinco de nuestros estómagos tenía fragmentos que pudimos identificar. 107 de ellos venían vacíos, pero vacío significa que venían sin esos fragmentos grandes de presas, pero tenían ese contenido, ese líquido estomacal y también el del intestino que nosotros podíamos utilizar. So, nosotros colectamos ese líquido de cada uno de estos individuos, homogenizamos bien el líquido, y luego hicimos una extracción de DNA de ese líquido, porque tenemos todas las presas posibles que ellos pudieron comer y ya están digeridas.

En este caso, nosotros hicimos una reacción de PCR usando un marcador en específico, el que usamos nosotros es 12S, y luego aquí tendríamos que utilizar otra metodología, la del Next-Generation Sequencing. ¿Por qué? Porque nosotros queremos generar todas las secuencias que hay en una muestra, pero esa muestra es un mix de cosas. Es por eso que tenemos que utilizar ese tipo de metodología.

Después de esto, nosotros te hacemos un trabajo de computadora, ese trabajo es de limitadores, es más o menos limpiar, filtrar, cortar los extremos de las frecuencias, unir secuencias y, eventualmente, nosotros vamos a tener un listado de secuencias, y ese listado de secuencias se va a poder contrastar con diferentes bases de datos. Y esas diferentes bases de datos nos van a dar el nombre exacto de la especie.

Hay algo muy importante que quiero decir acá, y porque esta metodología que usamos es muy buena. Es porque con este método nosotros tenemos la capacidad de ir al nivel de especie. Mucha gente utiliza el COI que utilizamos para la otra metodología y con los peces, especialmente con los peces, el COI no tiene el poder

suficiente para poder llegar a esa resolución. Otra cosa que quiero decir es que treinta y nueve de nuestros estómagos, definitivamente no pudimos trabajarlos con ninguna de las dos metodologías, porque vinieron sin fragmentos y además venían sin líquido por el problema de la de la desproporción.

Nosotros nos encontramos acá cuarenta y tres especies de potential preys, presentes en nuestra especie de interés, que representan treinta y siete géneros y veinticuatro familias.

Siguiente.

Estos son los resultados que nosotros tuvimos. Básicamente, ustedes pueden ver en el eje "x" que nosotros tenemos todos los estómagos puestos allí. Y ustedes pueden ver en el eje "y" el nombre de las especies. Este es resultados con el metabarcoding. Lo que podemos ver es que hay muchos peces que son muy comunes dentro de los estómagos. Acá estamos hablando que-- perdón, pero también tengo que hacer un paréntesis. Acá estamos hablando de la [inaudible] estamos identificando material genético de esas especies dentro del estómago. Y tenemos alguna correlación de cuánto material genético puede haber, si ustedes venden el lado derecho de la gráfica. Pero nosotros en nuestro estudio vamos a tomar esto como solo presencia/ausencia de ella. ¿Ok?

Acá podemos ver unas especies de peces, que son mucho más comunes en los estómagos que otros, como en sigmops elongatus, el myctophum nitidulum, y los que están señalados en rojo.

La siguiente.

Aquí, con esta gráfica podemos ver más claramente este patrón. So, básicamente, nosotros tenemos diez o quince especies que son muy comunes dentro-- o que encontramos material genético y es muy común dentro de todos los estómagos que nosotros estudiamos. Si ustedes ven en las fotos en las fotos que están representadas en la derecha, la mayoría de ellos provienen de peces, que son peces de deep-water fishes.

Siguiente.

Si nosotros trasladamos todo este conocimiento que encontramos con las especies y lo ponemos en un [inaudible] mucho más arriba, que es el de los órdenes, para poder hacer una generalización y entender qué fue lo que encontramos y encontramos que los myctophiformes son del orden más común que nosotros identificamos. Este fue representado por dieciséis especies, dentro de. Y todas esas especies estaban dentro de una sola familia, la familia es la

de mictófidos.

Más o menos, cincuenta y nueve estómagos, que nosotros analizamos, tienen estos mictófidos, y esto quiere decir que el 29 porciento de la composición de la dieta está basado en esos peces. En segundo lugar, tenemos los estomiiformes. Los estomiiformes son representados por once especies en nuestro muestreo y cuatro familias. Y representan el 15 porciento de la composición de la dieta del del queen snapper.

Si ustedes ven la tercera [inaudible] o la segunda, en vez de la tercera, serían los scombriformes. Acá tenemos también una disyuntiva, no nos tomamos una decisión ¿Por qué? Porque de los scombriformes, nosotros encontramos nueve familias. De esas nueve familias, seis familias fueron representadas o fueron reportadas por los pescadores como que se usaron como baits, cuando ellos colectaron las muestras. Pero, de todas maneras, nosotros encontramos tres familias no tiene nada que ver con los baits. Es por eso que los dejamos acá, porque consideramos que hacen parte de la dieta de los queen snapper.

Y el siguiente orden sería los aulopiformes que están representados por cuatro familias y cinco especies y representan el 8 porciento de la composición de la dieta de los snappers.

Siguiente.

Okay. ¿Qué queremos saber acá? Nosotros queremos saber qué tipo de hábitat están usando a esas presas para saber dónde es qué este pez va y come. Básicamente. Nosotros estamos utilizando el texto de Helfman en el 2009. Ellos dividen el deepsea en tres diferentes hábitats. El primero es mesopelagic, después el bathypelagic, y hay uno siguiente, que es el benthal o el benthic. Esas especies de benthal o benthic la única característica que tienen es que están relacionados a vivir cerca del fondo, pero están muy muy cerca del cotinental slope y la profundidad en la que ellos se encuentran es menos de mil metros.

Si ustedes miran en la parte derecha, o sea, nosotros estamos, básicamente, tenemos todos nuestros animales dentro del mesopelagic y bathypelagic area del océanon y algunos que están relacionados con demersal area o con él benthic área. En la parte izquierda lo que yo quise mostrar es cuáles son las órdenes de las especies de presas que nosotros encontramos. Y en qué lugar en esta división están encontradas.

Siguiente.

Si nosotros ponemos todo esto junto, y tenemos la abundancia, tenemos los órdenes y tenemos el hábitat en donde esos órdenes habitan, tenemos básicamente el 54 porciento de la composición de la dieta está ubicada en el área mesopelagica, que el 29 porciento está ubicado dentro de nuestro mesopelagic y el bathypelagic area, y que el 10 porciento está entre bathypelagic y benthal.

So, en palabras generales, este pez se está alimentando del área cerca del fondo. Como lo podemos ver también en los primeros resultados, porque están los camarones, que son una fuente importante de alimentación, pero también ellos están utilizando la columna de agua como alimento. Tenemos otros en menos cantidad que son los-- encontramos unas especies que están asociadas a los a los arrecifes, y nosotros tenemos la hipótesis que esas especies vienen de los animales que fueron capturados más cercanos hacia la costa.

Algo muy importante acá, es que los myctophiformes, están conocidos normalmente como lantern fishes. Es un grupo súper grande y diverso, está compuesto por doscientas cuarenta especies más o menos, y estos ocurren alrededor de todo el océano, de todo el mundo. Y son presas de muchos animales y de muchos[inaudible].

Los estomiiformes, que son los segundos en orden, están conocidos como los dragonfish. Ellos también habitan en el mesopelagic y el bathypelagic área. Pero, estos dos grupos, en especial, forman una fracción-- podemos dar la siguiente, por favor.

Estos dos grupos son una gran fraccion y forman una capa que se llama la capa deep scatering layer. Y esta capa está definida como una capa de un assemblage de peces y de invertebrados, que viven en unas profundidades mesopelágicas que van más o menos de 200 a 1000 metros, y tienen una migración vertical.

So, ¿qué hacen de estos grupos? Estos grupos durante el día van y viven en las capas profundas de este layer, y en la noche ellos suben, ellos siguen como la migración del zooplancton, porque van en búsqueda de alimento y vuelven y bajan en la noche otra vez. Entonces, nosotros tenemos la hipótesis de que lo que está pasando es una transferencia de energía de áreas demersales, hacia las mesopelágicas, y que las bathypelagic preys, ellos están cogiendo estos bathypelagic preys debido a esta fluctuación vertical que hacen estos grupos.

Siguiente.

Toda esta información nosotros-- esto es muy interesante, porque a mí me parece, o sea, no hay mucha información acerca de la

ecología de la alimentación de estos peces. La única información que encontramos, la más reciente, fue hecha en el Pacífico. Y fue hecha con una de las especies más cercanas y hermanas de etelis oculatus, que fue etelis carbunculus y etelis coruscans. En ese estudio, echo por Haight en el 1993, ellos se encuentran básicamente las mismas especies de peces como mayores componentes y la dieta de estos peces allá, en Hawái.

Y también dicen que estos peces allí son como fundamentales en la composición de un mesopelagic [inaudible] community, que usualmente viven cerca de los cien y los setecientos metros, y que también tienen una migración vertical y que más o menos tiene el mismo comportamiento que nosotros estamos encontrando con los de acá.

En ese estudio reportan que encontraron siete especies de peces, dentro del contenido estomacal de peces de profundidad, de esas siete nosotros encontramos dos, pero claro, las metodologías no son comparables porque nosotros estamos utilizando la genética. Nosotros tuvimos la capacidad en este estudio de identificar veinticinco nuevas especies y reportarlas como presas para este para este pez.

Entonces, también ellos encuentran que calamar, que los camarones, que los lobsters, anfípodos, eufausiidos, isópodos y estomatópodos son importantes en la alimentación de este pez allá en Hawái. Entonces, en esencia lo que nosotros queremos transmitir de acá es que el zooplancton en las altas capas del océano son los que mantienen estas comunidades de peces en los mesopelagic environments. Que nosotros ya conocemos que no tienen mucha productividad, y al hacer esto, están soportando la productividad demersal de las comunidades y manteniendo los stocks de los deep-water snappers saludables.

Next.

Eso es todo. Right now, Stacey, va a seguir explicando algunas de las comparaciones que nosotros encontramos con la diversidad de las presas, con los sitios de muestreo, con las diferentes condiciones que nosotros tenemos. Muchas gracias.

STACEY WILLIAMS: Thank you, Diana. So, we wanted to, even though the samples varied between locations, we wanted to see if there was any type of pattern between prey diversity and the different locations. We, actually, if you look at the graph to the right, the number of prey species, and the different locations and you can see that-- and the number in parentheses is actually the number of stomach samples analyzed each of the locations. In Pichincho,

there was high prey diversity in this area along with Bajo Medio.

Can we go to the next slide, please.

In just Pichincho alone, that includes site 6, south of Pichincho, Pichincho, we were able to observe 51 prey species in this area. If we eliminate the possible bait fish species, this would conclude 46 prey species. The ones that contributed that were more common in the stomachs in this area were the bristlemouth fish and different types of lantern fish.

Next, please.

And if you look, Pichincho is a seamount just on the Western side of Desecheo, and I was on the Okeanos expedition in 2018, and we actually were able to survey this area with an ROV and it's impressive. The topographic relief in this area is pretty amazing. These are a couple pictures to the right, from the ROV. The multibeam data to the left, at the site that we dove at with the ROV. And you can see the ledges overhangs in the site. Also, the high diversity of corals and sponges and benthic organisms in this area.

I had no clue that there were maybe some rumors about trolling in this area. But if you look at this site, I would not allow it. For one thing, fishing line, you know, gets caught on these areas because of just the overhangs. But we think that in this area, in particular, just because of this topographic relief, leads to high diversity of the prey species, and possibly that's why queen snappers are prevalent in this area.

So as Diana mentioned and also Reni, this connection between the trophic levels and productivity in this area, I think, needs to be further looked into. But this is an area of interest for queen snappers in general, and a lot of migratory fish species, this is an important area.

So, next.

When looking at the prey diversity between the size of fish, what we did was we followed Gobert et al. 2005 study. They placed the fish in size ranges. We only had two size ranges of fish because there were not really small queen snappers and not really huge queen snappers. So, when looking at the first size range, which was between 203 to 508 millimeters, we were able to observe 40 different species of prey. And then the next size range, which was, this is fork length, 508 to 1016 millimeters, 39.

So, the pray richness did not vary between the size of the fish. However, prey composition did. You can see the three to the left, which are three different types of lantern fish, were characterizing the prey composition for the smaller fish, while in the slightly larger fish, we did see different species of prey items. We have a longray fangjay, and bristlemouth, and another type of lantern fish. So, this should also be further look looked into to see exactly if prey items vary between the size of fish.

So, next.

So, in conclusions, we did find a strong relationship between weight and length of queen snappers, and this has been early reported in Rosario et al. 2006 study. The power parameter that we calculated was 2.8, very close to their study, which I think was 2.84. So, we conclude, along with their study that queen snapper exhibited isometric growth. So, all body part parts grow at the same rate.

What differs from Rosario's study to our study is that we did find a peak possibly in reproductive activity in July. They found it in October and November, so maybe this is to look further into. In our study, we show that metabarcoding is an effective approach to identifying stomach contents of deep-water fish, especially deep-water fish because they regurgitate a lot of their stomach items. So, I have to mention that this is a very fishy talk, and we know that queen snappers target squid.

So, the second approach of metabarcoding, we really targeted the fish. We use markers for fish in particular. So, I think this should maybe, in the future, do different type of markers to see maybe other invertebrates. But this is a very useful approach to identifying the prey species, especially in fish that regurgitate their stomachs.

So, in our in our study, we found that queen snappers, overall, we observed 61 prey species in total. These 61 pray species came from 18 orders, 38 genera, and 31 families.
So, next.

As you see in our talk and also, previously, Reni mentioned, queen snappers are large carnivores. They're very similar to their sister species. What we found in our study is they're mainly feeding on mesopelagic fishes. We believe that queen snappers can be a link between the shallow highly productive environments to the demersal mostly unproductive areas of the deep sea.

Preliminary result show, and more data needs to be collected, that

prey composition may vary between locations, sex, and age. We didn't find a relationship between sex, but we did find one between size, but this would be interesting to see, with age, if there is any type of relationship.

And we believe, along with Reni, that it is essential to incorporate fishers. Their knowledge of this fishery helped this study immensely and their participation. We would not have this fish without them. So, I thank Nelson and Luis for their help in this study.

Next.

So, we would like to thank-- this study was funded by the Council, also Florida Wildlife Foundation and Pew. We give a special thanks again to Luis Roman, Nelson Crespo, also Graciela, Noemí, Orian helped, Wilson Santiago also helped in this study, Virginia Shervette for giving us some of her stomach samples. Also, they've finished processing the otolith and some of the otoliths that were collected in this study were used for Kate Overly's dissertations. So, we're looking forward to seeing those results.

Also, a special thanks, especially, to Braulio Quintero and Katie Flynn. They helped me dissect many of this fish during the pandemic. And to the rest of the students that helped us process the fish and genetic samples. So that's it. Thank you.

Questions/Comments

MARCOS HANKE: Thank you for a great presentation, Stacey, like always. Short questions. Need your help. Tony, then Nelson.

LOUIS ANTHONY BLANCHARD: Okay. It's really more of a statement. I'm comparing this presentation with the presentation that Reni made. I noticed that he made a statement where he thinks, or he believes that CPUE should be measured by the amount of drops. The comparison comment to this is the size of the fish. You see that you cast some very small fish and some very large fish. So, to the end of the day, my statement is this. Sometimes, you need to look at the guys that are actually doing the catching because you got some guys got more skills than other guys.

So, to the end of the day, you're not going to compare, depending on how you look at the data. The data does not actually tell you certain things. But what it could tell me is some of these guys are probably more skilled than other guys. That's why they catch bigger fish, they catch more fish in less drops. So maybe that's an avenue that needs to be looked at when we look at the data.

STACEY WILLIAMS: Thank you.

MARCOS HANKE: Thank you for your statement. Nelson?

NELSON CRESPO: Excellent presentation. It's curious to see that the heavy queen snappers were observed in July and coincides with what we have been seeing for some time, where large queens are being taken during the summer, contrary to what occurred in the past that only plate size species got caught when the high temperatures reach our region, and only occasionally you got a fillet size queen snapper.

Also, we start seeing queens, and this is very important, with guts during the summer. But let me tell you that I have reports that in summer, the fishermen from the North of the island got queen's almost close to spawn. This should be studied in a future project. Maybe depending on the area, the queen snappers have different spawning periods or perhaps the temperature of the seabed or the bottom currents that bring cold waters influence in this activity.

Another thing that I read on the report is about the squid. And, yes, there are occasions where the queens are caught with many little squids in the mouth, and the same thing happens with the shrimp. They become very aggressive when eating and that is when we get our biggest catch.

And I want to ask you, I'm wondering to know if you, on the samples you got from the queens, you got a-- I don't know how to describe it. It is like an orange sponge that we call higo and we only catch that in some season time. When that higo appears, I don't know if the queens like that really good for eating, but we make the biggest catch too when they are eating that piece of-- I don't know if it's sponge or something like that.

STACEY WILLIAMS: I don't maybe Diana could answer that because she processed the stomach samples. We didn't see anything like that in their mouths. So, maybe, Diana, could comment on to that. Diana, if you are there.

DIANA M. BELTRÁN RODRÍGUEZ: Can you repeat the question? Because I was outside, and I didn't hear very well.

NELSON CRESPO: Oh. Sí. Saludos, Diana. Mira, nosotros –

DIANA M. BELTRÁN RODRÍGUEZ: Hola. ¿Qué tal?

NELSON CRESPO: Nosotros, a veces, cuando nos cogemos mucha cantidad de cartuchos, encontramos que los cartuchos tienen como una especie de esponja, nosotros a veces decimos que son huevos de calamares, otros dicen que son esponjas, pero es como una masa que parece una esponjita, con muchos puntitos, color anaranjado que nosotros le llamamos higo. Cuando eso aparece, las capturas de cartuchos son increíbles.

DIANA M. BELTRÁN RODRÍGUEZ: ¿Sabes qué, Nelson? Tú puedes coger-- la próxima vez si tú tienes la oportunidad de coger algunas muestras de esas y ponerlas en el freezer, probablemente nosotros podamos identificarlas acá en el laboratorio, pero mientras yo hice la disección de todos los peces, no, no vimos ese tipo de organismos.

NELSON CRESPO: El problema-- the problem we have with that thing, is that we are trying to save some for Graciela, when we put it on the freezer it dissolves, and it disappears inside the bag. It's melted. I don't know if we take some samples, and you can process it when it's melted.

DIANA M. BELTRÁN RODRÍGUEZ: The order option is-- bueno, si tú puedes también colocarlas en alcohol, ponerlas en alcohol primero y tratar de sacar toda el agua, porque el alcohol lo que hace es sacar el agua de los tejidos y preservar el tejido, y básicamente después ponerlo en refrigeración, y probablemente de esa manera se conserva mejor. O yo te puedo mandar también algunos tubos con algún otros mejores preservantes para poder tener esas muestras.

NELSON CRESPO: That would be great. Going back to your report, another thing that caught my attention, and I got a little lost is where the DNR informed that in 2007 were caught 135 tons, 270,000 pounds of queen and we know that we catch more than and it is never reported, but [inaudible] that I found out the report from the DNR that the biggest catch for queens was during the period of 2007 to 2011 and was a hundred something pounds. Maybe it is an error on the numbers or something like that.

STACEY WILLIAMS: Okay. Yeah. I'll definitely check the report. Yeah.

NELSON CRESPO: Okay. Thank you.

MARCOS HANKE: Thank you, Nelson. And we need to pass now to the presentation for microplastic, before lunch. Let's keep this conversation. I think deep-water snappers create a lot of interest on the Council, and we need to, for sure, in the future, to make a presentation in conjunction with Stacey's group and Reni to

assign some time for this discussion deeply. Thank you. Dalila?

JORGE R. GARCÍA-SAIS: Nelson, tú acabas de traer un punto, que yo creo que vale la pena traerlo, aunque sea para el récord. Tú te refieres a que-- o sea, lo que tú estás implicando es que ¿Piensas que hay mucha más captura de cartucho de lo que se reporta?

NELSON CRESPO: Eso es de hecho, sí. Sí.

JORGE R. GARCÍA-SAIS: ¿Bueno? Ese es el detalle, que posiblemente eso está relacionado a un permiso especial que el que tienen que tener los pescadores para pescar y reportar el cartucho. ¿Qué pasa? Que, si no lo tienen, como no lo tienen, muchos aquí sabemos que hay mucha pesca de cartucho por pescadores que no tienen ese permiso y lo que hacen es que no lo reportan y simplemente van a restaurante directamente lo venden allá.

El asunto es que cuando tú estás pescando chillo, a veces coges cartucho y viceversa, o sea, que esa es una pesca que una vez tú tiras esa cala por ahí para abajo, pues cualquier cosa puede venir. Puedes pescar varias especies, no necesariamente estás limitado a una especie. Pero sabemos que hay gente que simplemente si los cartuchos están jalando van a tirarlos hondo a pescar cartuchos, y entonces no tienen el permiso, no lo pueden reportar. Y, tú sabes, en algún momento alguien tiene que determinar cómo se va a bregar con esa situación.

NELSON CRESPO: I agree with your words. There's a situation that is occurring that a group of fishermen are avoiding to sell to their--

MARCOS HANKE: Nelson.

NELSON CRESPO: Okay. Okay. We'll talk personally later.

MARCOS HANKE: Dalila. Thank you very much for your patience. Please proceed with your presentation.

Microplastics in the Caribbean Study—Dalila Aldana

DALILA ALDANA ARANDA: Bueno, buenos días. I will continue talking in Spanish. I am very happy to be here for different reason in this pandemic period. So, thank you very much for this invitation.

I will talk about microplastics, but I prefer to talk in Spanish. Thank you.

¿Por dónde empiezo para esta presentación?

Decidí escoger cuatro palabras claves. Invitarlos a hacer un recorrido en el tiempo. Después reflexionar en la producción de microplásticos, dos o tres palabras sobre el Caribe, y lo que se hemos hecho en microplásticos.

El tiempo. Había una vez un planeta llamado la tierra, que se formó hace cuatro puntos cinco billones de años. Después aparecieron las plantas, los animales. Y tan solo en los últimos trescientos mil años de esa escala de tiempo, el homosapiens. Entonces, tenemos veintitrés mil veces menos de experiencia que nuestro planeta. Y siguiendo con el tiempo, pero no menos importante. Tenemos tan solo una escala de tiempo de cincuenta años, en los que la humanidad ha producido de manera industrial, todo el plástico que tenemos sobre nuestro planeta.

Esa escala de tiempo representa $.1^{-8}$ en relación a la edad de nuestro planeta. Y tan solo en los últimos veinte años, hemos generado la mitad de todo el plástico que se ha generado en los últimos veinte años. De tal manera que anualmente hay una descarga de nueve billones de toneladas de basura. Y de ese tonelaje el ochenta por ciento son plásticos. Y de ese porcentaje, la mitad son plásticos de un solo uso y generalmente de embalaje lo que usamos para cubrir nuestros alimentos que nos venden, etcétera, etcétera.

Y esto, ¿a qué es igual? Pues esto es igual si pudiéramos recoger toda la basura que hay en los océanos. Representaría cinco bolsas de supermercado llenas de plástico por cada treinta centímetros de playa. O sea, un metro cúbico. Y como la tierra no es plana, y los océanos tampoco, si pudiéramos recoger toda el agua de los océanos, que al menos en México, en nuestro sistema educativo nos lo enseñan mal, diciéndonos que representan el 70 porciento de la superficie de la tierra, nos crean una falsa idea de que hay mucha agua. Si esa agua la recogiéramos, representaría la imagen que ustedes ven, o sea, esa gota respecto a la tierra.

Y entonces en esa gota tenemos toda esa cantidad de basura. ¿Y por qué? Pues, entre otras cosas, pues por nuestro modelo de producción y de consumo. Fíjense, simplemente cada minuto se vende, no se produce, se vende, a nivel planetario, un millón de esas botellitas de agua que son muy prácticas, pero tenemos que pasar, pues, por ejemplo, a lo que trae Graciela. Y esas botellitas, pues representan el veinticinco por ciento de toda la basura plástica que tenemos. Entonces, para el año 2050, ustedes lo saben, habrá más plástico que especies marinas en nuestros océanos.

Y en relación a los microplásticos. ¿De dónde vienen ellos? Pues

vienen de todos los plásticos que usamos y de su fragmentación, y, obviamente, de los productos de limpieza, abrasivos, pinturas, las cremas que usamos para las arrugas, las pastas de lavarnos los dientes. De ahí vienen los microplásticos, ya sea industrialmente los producen como esferas o de la fragmentación de todos los plásticos que usamos.

Y también casi el 35 porciento de las fibras de microplásticos viene de la ropa que utilizamos. Cada vez más, ¿sí? Se utiliza más ropa con fibras de nylon, por diferentes razones, es más el plancharlo, se ensucian menos, es más fácil lavarlos, etcétera, etcétera, que las fibras vegetales como el algodón, el lino, etcétera. El 35 porciento de las microfibras de plástico vienen de la ropa.

Otro aspecto interesante con plásticos y los microplásticos es que son de diferentes polímeros. Y al ser diferente los polímeros, su densidad es diferente y de acuerdo a su densidad a su peso van a ocupar una posición en la columna del agua. De tal manera que habrá plásticos que siempre van a flotar, independientemente de su tamaño, si son macro o micro. Otros que van a estar a media agua y otros que van a estar en el fondo marino. Y obviamente es densidad y este juego de peso a peso estará en función, bien entendido, de la salinidad y de la temperatura. Entonces, los plásticos tienen un juego muy dinámico en la columna de agua.

Además, tenemos el tamaño. El tamaño de esta fragmentación de plástico va desde la clasificación de los nanoplásticos hasta los macroplásticos y, por ende, ellos van a entrar a la cadena trófica en diferentes posiciones, desde nivel de bacterias, fitoplancton, zooplancton, ¿sí? Los primeros pesos que se alimentan como fue señalado en las dos conferencias que me precedieron, que se alimentan del zooplancton, y así sucesivamente hasta los grandes mamíferos. Y, además, pues hay un proceso de bioacumulación.

Algunas palabras sobre el Caribe, la región donde vivimos. El 11 porciento de la captura total mundial viene de nuestras aguas. 10 porciento de la población mundial, aquí vivimos, y obviamente es una de las zonas más biodiversa del planeta Tierra. Pero también es el segundo mar más contaminado por plásticos, de acuerdo a un informe de Naciones Unidas. ¿Y esto por qué? Pues debido principalmente a dos problemas. El mal manejo que hay de la basura en nuestros países, el destino final de ellas, poco reciclado, y sobre todo el no tratamiento de las aguas residuales en nuestra región.

Bien, acerca del estudio de los microplásticos en la región Caribe. Se llevó a cabo una búsqueda en diferentes plataformas, diferentes

buscadores con las palabras claves que ahí aparecen se usaron los tres idiomas francés español inglés para las mismas palabras. ¿No? Microplásticos, Caribe, peces, invertebrados, etcétera. ¿Qué encontramos? Pues, en primer lugar, que la primera publicación sobre microplásticos en el Caribe, data del 2014, esa es la primera publicación. Entonces son temas recientes en investigación y es un interés que ha ido aumentando en la comunidad científica, como lo ven en el gráfico.

Se encontraron cincuenta y siete publicaciones sobre este tema. Con ello se construyó una base de datos con cuarenta y un tópicos. La información de esas publicaciones fue desintegrada en diferentes aspectos y, como está ahí, el sitio de colecta, la especie con la que se trabajó, qué método de análisis utilizaron para los microplásticos, que reportan, si reportan la abundancia, se dan el tipo de polímero, etcétera, etcétera. Y esa información se transformó en una tabla binaria para cada tema, de tal manera que después en esa base de datos uno puede seleccionar quiero lo que exista en peces y uno puede filtrar columna por columna, ir directamente al PDF con él articulo completo.

¿En dónde se están analizando los microplásticos en el Caribe? Pues vimos que la gran mayoría, O sea, el 70 porciento, en sedimentos, pero en sedimentos de playa, no en fondos marinos. ¿Sí? La mayoría de los autores que están trabajando este tema, 70 porciento de ellos lo están haciendo, al final cuentas, en la arena de las playas, que es lo más fácil, lo más barato ir a recoger. Yo salgo, salimos, recogemos la arena que tenemos aquí enfrente. Solamente el 20 porciento ha trabajado con alguna especie Marina del Caribe. Y dentro de las especies marinas del Caribe hay un trabajo con el carrucho, un trabajo en medusas y un trabajo en corales.

¿En dónde se está publicando? Ustedes en el gráfico tienen en el eje de las 'x', la diversidad de revistas científicas en las que están estos cincuenta y siete artículos, y pueden ver que hay una columna que sobre sale, que es donde se está publicando la mayoría que es el Marine Pollution Bulletin. Ahí se está concentrando este tema publicado.

Este es el universo de autores primeros autores que están en el Caribe trabajando con este tema. ¿Qué nos demuestra este gráfico? Pues que hay una gran cantidad de humanos que estamos en este tema. Pero si ustedes se fijan, todos están con una publicación. Es decir, apenitas están incursionando en este tema, con excepción de tres que aparecen en el gráfico, que son dos colombianos con tres publicaciones y un mexicano.

¿En qué idiomas está publicando? A mí me pareció interesante ver esto cuando vamos a lo publicado en revistas científicas indexadas. Obviamente, el idioma en el que se está publicando es el inglés. Lo mismo sucede en lo que encontramos en libros con porcentajes altos. Sin embargo, cuando vamos a las tesis de posgrado, o sea, las de maestría y doctorado, ahí se está publicando en español. Es decir, que en las universidades latinas se está trabajando este tema y esa información se está quedando en las tesis.

Este es un gráfico que muestra la gran diversidad de métodos que se están utilizando para el análisis de microplásticos. Es infinita realmente la diversidad de métodos. Eso tiene bondades, pero también dificultades a la hora de querer comprar algún resultado.

¿Y qué es lo que generalmente reportan los científicos en este tema? Además de la abundancia, reportan mucho la forma de las partículas de microplásticos que encuentra, y hacen una clasificación de formas, esferas, gránulos, pellet, fibras, laminillas, etcétera. Y eso, pues es grato, pero también dificulta porque entre gránulo, pellet y esfera, pues hay que levantarse temprano para saber a qué forma le estás llamando, casi lo mismo.

Los colores son lo mismo. Es otra cosa que se reporta en estas revistas científicas, de qué color eran estas estas partículas de microplásticos. Y eso es interesante porque se puede asociar después el tipo de polímero. Entonces alguien que tiene solamente microscopía óptica para trabajar, pues con la cantidad de microplásticos la forma y el color puede tener una idea del tipo de polímeros que está trabajando, o el tipo de contaminantes que se están asociando, porque muchos de estos colorantes tienen metales pesados para la tinción de las pinturas.

¿En qué unidades se reporta? Pues se reportan-- generalmente lo que hemos visto, el autor reporta por unidad de organismo. Es decir, yo encontré doscientos, trescientos, mil, cien, diez microplásticos por organismo. La mayoría, así lo reporta, independientemente si es una sardina o un tiburón, y luego obviamente la gente que trabaja con arena de las playas, pues por área, pero algunos lo reportan por unidad de peso.

Nuestra investigación, lo que hemos hecho nosotros en microplásticos. Entonces, estamos trabajando con especies marinas del Caribe que son emblemáticas, algunas con protección especial, como es el Carrucho y estamos empezando ya con las Tortugas Marinas.

Nuestra manera de proceder es trabajar con métodos no invasivos. Es decir, no sacrificar ningún carrucho, obviamente imposible de

sacrificar una tortuga u otra especie de protección, y para esto, pues se pueden utilizar estructuras, pues hay n autores que lo han trabajado para n temas como es, pues el pelo, las uñas, las escamas, las plumas, y las heces fecales, la saliva, las heces fecales, se puede trabajar mucho con ello. Nosotros hemos utilizado las heces fecales de varias especies, tanto para cuestiones reproductivas, determinar concentraciones hormonales, y a partir de ahí, ver ciclos de reproducción, y aplicación a vedas de captura pesquera. Y ahora lo estamos usando para ver también contenidos estomacales, tipos de alimentación y más recientemente con los microplásticos.

Entonces, usamos las heces fecales de carrucho. Estos son diez sitios en donde obtuvimos heces fecales de carrucho, que vienen de la parte oriental del Caribe, de la parte centro del Caribe, de la parte Oeste del Caribe y del Norte, hacia Florida, obtuvimos estas heces. Estos son diez sitios de estas cuatro regiones del Caribe. En el caso nuestro hemos asociado tanto la microscopía óptica como la microscopía electrónica, la determinación química de los polímeros y específicamente el tipo de polímeros con la microscopía raman.

¿Qué resultados hemos obtenido? Aquí en el gráfico inferior ven ustedes esos diez sitios de los que vienen las heces de carrucho, en los cuales ven diferentes abundancias de microplásticos. En términos generales, hay mayor concentración de este contaminante emergente en la parte Oeste del Caribe y en la parte Norte, que, en la parte oriental, que es Barbados y las Antillas francesas. Algunas imágenes del tipo, la forma, de ese microplástico.

En esta imagen ven ustedes ya dos fotos en microscopía electrónica que nos permite ver algo interesante en ese mundo microscópico, que es el desgaste que van teniendo las fibras de microplásticos. Y en ese desgaste, en esas fracturas, se asocian otros componentes químicos y, sobre todo, metales pesados. En la parte inferior ven ustedes un espectro que viene de microscopía raman con dos líneas, una roja y una azul. La línea azul corresponde a un banco de información de polímeros, y la línea roja es nuestra microfibra que se asocia perfectamente a la información de ese banco de información. Entonces, nosotros podemos determinar el tipo de polímero, de plástico, que se encuentra en una especie Marina. En este caso, pues es un polietileno que viene mucho de la actividad pesquera.

Otra cosa interesante. Pueden ver en esta imagen, un detalle de la fibra, ¿sí? Ya desgastada, se ve como si fuera una cuerda y ya asociada a esa microfibra. Si es una escala, estamos hablando de diez micras. Ustedes ven un microorganismo que ya colonizó esa

microfibra y ven dos esferas chiquitas que son bacterias que ya han asociado esa microfibra. O sea, esas fibras se vuelven en un universo de comunidad.

Estos plásticos asocian otros componentes químicos. Para la producción de plásticos ustedes saben que se usa mucho el bisphenol y este es un disruptor de la actividad reproductiva. ¿Sí? Tanto en especies marinas como incluso en mamíferos. Entonces, bueno, ahí queda una pregunta, si esto no está asociado a una disminución de actividad reproductiva de carrucho, sobre todo en la parte Norte.

Siguiente. Con las Tortugas muy rápidamente lo mismo. Heces de Tortugas obtenidas en fondo marino y en playa. Aquí les muestro nada más dos fibras encontradas en esas heces, ¿no? Una de ellas, que nos está dando una serie de picos, y en su composición química, pues ahí podemos detectar cloro, en la de abajo flúor. Esos picos de cloro y de flor están asociados a dos tipos de polímero, uno es el PVC y otro es el PVF. Uno está asociado a todo lo que se fabrica con el PVC, y el otro está muy asociado al uso de nuestros autos.

Bien, como conclusiones. En primer lugar, de este análisis, ¿de qué existe de microplásticos en el Caribe? Pues tenemos en dieciséis países del Caribe, al menos hay un estudio sobre microplásticos, que aparecen el país con algún color. Los países en grises es que no tienen ningún estudio sobre este tema. Como siguientes conclusiones, todos los autores que han trabajado en el Caribe con esta con este tema, independientemente playa, en agua o en alguna especie Marina, todos reportaron la presencia de este contaminante.

¿Sí? Obvio que falta una estandarización rápida, eficiente sobre el análisis de microplásticos en el Caribe, pero al mismo tiempo es una oportunidad para proponer un curso en la región Caribe que después nos ayude a hacer estudios a nivel de la región. Y estos métodos no invasivos se han vuelto útiles y sobre todo hoy en día que hasta en las revistas científicas piden todas estas cuestiones éticas de, pues no, maltrato, etcétera, no sacrificio a especies marinas, terrestres, etcétera.

Bien, la otra conclusión es con la información reportada en la literatura. Este es el mapa que construimos con el análisis de sedimentos y con la concentración de microplásticos en sedimentos, donde podemos ver que hay una mayor concentración cúmulo de este contaminante en la parte Oeste del Caribe y en el Norte, respecto a la parte oriental.

De los pocos trabajos que se han hecho con alguna especie Marina, lo que más se ha abordado son peces, que ya lo dijimos, que es

trabajos hechos en Colombia, algunos en México. Muy poca información sobre los invertebrados. Y en este mapa ustedes pueden ver, por ejemplo, los estudios que han sido realizados con peces. ¿No? Igual aparecen en color azul los países en los cuales han hecho un estudio con estos dos temas, microplásticos en algún pez. En todos los demás países del Caribe, no tenemos ninguna información de esta contaminante en peces, que son la base de la alimentación.

Otra conclusión importante de este estudio es que aquellos autores que logran determinar el polímero de microplástico son tres tipos de polímeros, polietileno, polipropileno y poliestireno. Esos tres plásticos están asociados a esas tres cosas que consumimos tan fácilmente. Las bolsas de plástico, los envases de plástico que usamos una vez y tiramos, como son esos que están representados, y no sé cómo le llamen aquí, el poliestireno, que son estas esas blancas que guardan de foam que guarda el calor o el frío, que también muy fácilmente y desafortunadamente en todo el Caribe, usamos tan fácilmente. Pues, la mayoría de contaminación de plásticos en la región Caribe, pues viene de estos tres plásticos.

¿Cuál es el impacto de estos canijos microplásticos? Pues que se asocian, son verdaderas esponjas, de lo que se le llaman los contaminantes orgánicos persistentes, los POPs, Persistent Organic Pollutants. Entonces, la fibra de plástico absorbe cantidades a veces hasta un millón de veces más alta de estos POPs que lo que hay en el agua. Entonces, se convierten en esponjas que captan este contaminante. Estos POPs son generalmente los organoclorados, los insecticidas, los pesticidas, los fertilizantes y son altamente tóxicos. Y, obviamente, pues, esos microplásticos con esos POPs, pues se van acumulando en esa cadena trófica y, pues más temprano que tarde, llegan a nosotros a través de lo que consumimos.

Bien, algunas-- no algunas, una recomendación surgida de este trabajo sería en la parte de investigación, podría considerarse realizar ahora un estudio de microplásticos presentes en varias especies marinas comerciales, como algunas han sido citadas aquí, por ejemplo, los Snapper, ¿sí? Y obviamente cada vez más nos van a exigir tener un código de trazabilidad de lo que se captura, y de lo que se vende. Y cada vez más, los microplásticos va a ser una exigencia sanitaria.

A título de ejemplo, quiero señalar que, en Yucatán-- varios de ustedes conocen la península de Yucatán --se instaló una de las fábricas más grandes de cerveza a nivel mundial, la Heineken. Se instaló ahí por el agua, el acceso al agua. Y ustedes saben que hay un slogan de la Heineken que dice “lo que lo que lleva nuestra

cerveza es agua," obviamente, su cereal es la malta, ¿no? Pero la esencia es el agua. Entonces, instaló por el acceso al agua. Y bueno, esta cervecería nos solicitó, pues que le determináramos qué cantidad de microplásticos tiene su agua y la cerveza que sale.

Yucatán es también un productor de miel a nivel mundial, y Alemania es el principal consumidor. Y Alemania hace años le dijo a Yucatán, a ver, yo quiero una certificación de que no me la adulteres con azúcar. Y en algún momento se adulteró y se frenó esa exportacion. Ahorita Alemania le dijo, yo quiero que me certifiques el nivel de contaminación de microplásticos de tu miel. Entonces, este contaminante es algo que más temprano que rápido nos van a estar solicitando en lo que capturemos y en lo que vendamos o en nuestra producción.

Bien. Y la otra cosa que ya en algún momento lo había compartido con los directivos del Consejo del Caribbean Fisheries, es poder armar una exposición sobre este tema de la contaminación de los microplásticos, que se le denomina ahora también como la contaminación invisible. O sea, no la vemos, pero la tenemos. Y en esa exposición asociar, transmitirle a esta a esta ciencia ciudadana, lo mismo a nuestros pescadores, a nuestras comunidades pesqueras, que nuestro modelo de consumo está ligado a este tipo de contaminación invisible. De tal manera que, en esta ciudadanía en su máxima palabra, quede asociada esta línea de abajo. ¿Sí? Tú usas la botella esta de agua tan fácilmente, pues se va a hacer pedacitos, no se va a desaparecer, no es biocompostable, ¿sí? Y más temprano que tarde va a ir a alguna especie marina, y va a llegar a tu plato. Esa exhibición me parece que sería muy necesaria en nuestra región.

Y obvio para vivir así, y no así, pues tenemos que pararle a esta sopa de plásticos, ¿sí? Y asociar, obviamente, acciones de educación, de divulgación, acciones sostenibles, ¿sí? Y termino con esta frase de Eduardo Galeano, que me gusta mucho, dice "Mucha gente pequeña, ¿sí? Haciendo cosas pequeñas, pues puede hacer grandes cosas."

Y pues muchas gracias por este tiempo y por esta invitación.

MARCOS HANKE: Muchas gracias a usted. Tremenda presentación. La verdad que cada vez que usted presenta, impresiona el mensaje y de la manera tan elocuente por la cual usted lo lleva. Le voy a pedir de por favor que-- nos estemos tenemos que ir al almuerzo por el horario del almuerzo y entonces en el regreso, serían las preguntas tres. ¿Como no? We are going to break for lunch because we need to go for lunch here for the presential attendees. We will be back at 1 o'clock.

(Whereupon, the meeting recessed for lunch on April 20, 2022.)

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APRIL 20, 2022

WEDNESDAY AFTERNOON SESSION

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MARCOS HANKE: Let's restart the meeting. Thank you everyone again. It's 1:09PM. We have follow-up questions for Dalila from the presentation before lunch. Any of the Council members or members that would like to make a question? Tony.

Questions/Comments

LOUIS ANTHONY BLANCHARD: I don't really have a question, to be honest with you. I think it was a hell of a presentation. It had a lot of details to it. And the break down as to where the plastic goes and how it goes there. It was impressive. Now, to be honest with you, I don't know how we will fix this problem, but at least we know exactly what breakdowns are and that's a starting point.

MARCOS HANKE: Dalila, more than a question and observation, you can count on the Council and on the members that are here pretty much if you need any assembling our support to any future efforts to new research or whatever. Will be more -- the fishermen of the Caribbean, a great amount of them, will be more than happy to support you. I'm pretty sure. Nelson?

NELSON CRESPO: I just want to make a comment. It's a reality that the plastic issue is killing us, especially in the water. Recently, I have reports from fishers that are catching mahis with the stomach full of plastic. That is something that's scary, you know. You can count on our association for any help you need okay.

MARCOS HANKE: Dalila, I have a question that is connected to your presentation but is not specific to. The same dynamic that we see on the marine environment, we can expect on land, on the other sources of food that we get. In agricultural activities, on smaller or bigger scale is this is also the same thing with the microplastic going through the food chain on land too?

DALILA ALDANA ARANDA: Si, también. Y podemos poner como ejemplo un alimento tan común como es el pollo, la carne de pollo. El pollo que el humano come a nivel planetario es a través de granulados, de un alimento prefabricado. Y en ese alimento prefabricado

obviamente hay una introducción de plásticos de differentes fuentes. Lo que yo estoy convencida es que los pocos alimentos silvestres que le quedan a la humanidad, uno de ellos es la pesca. De manera muy próxima, van a ir exigiendo-- estoy pensando en el mercado europeo, pero yo me imagino que Estados Unidos va a hacer lo mismo --va a ir pidiendo en su regulación sanitaria, un certificado con la cantidad de este contaminante por unidad de gramo, etcétera. Es una norma sanitaria que se va a ir implementando.

Yo les hacia el comentario de la miel, de Yucatán, que es uno de los principales países exportadores de miel al mercado europeo, y como el mercado europeo, en este caso de Alemania, ya exigen ese certificado. Con el agua de la cerveza de Heineken. Y como he estado en este tema de los microplásticos, he visto también por ejemplo que, China, con las peculiaridades que tiene China y los chinos, muchos de sus alimentos de almejas, en el bloque de seafood, están llevando a cabo una determinación de sus microplásticos. Y ese momento alguien me decía, "Oye, ¿en las heces de nosotros, o sea, en el popo de nosotros los humanos, nos pueden determinar la cantidad de microplásticos que ya traemos?" Y la respuesta es, sí.

La ventaja de trabajar con los microplásticos es que no requieren de un procesamiento para conservar las muestras. Nosotros cuando recibimos una muestra que puede ser el estómago, puede ser un tejido, pueden ser el contenido estomacal, o las heces, lo primero que hacemos es degradar toda la materia orgánica. Tenemos que eliminarla de la muestra. Entonces, si obtenemos una muestra con el apoyo de pescadores y esa muestra se va descomponiendo, se va pudriendo, para efectos del estudio de microplásticos no nos afecta. A los microplásticos no les va a pasar nada. No necesitamos refrigerarla. No necesitamos añadirle un químico especial para conservarlo. Es una gran ventaja trabajar con microplásticos.

Y la información que nos da es infinita. Ese mundo microscópico a mí me ha maravillado. Irme metiendo a las tripas de esa microfibra que ya está desgastada. Ir haciendo determinaciones químicas en esas rupturas de las fibras con respecto a una parte que esta lisa de una microfibra de veinte micras. Es un mundo realmente fascinante.

Entonces, la respuesta, querido colega amigo es, sí. Si hay una transferencia de microplásticos en la cadena alimenticia. Prácticamente, todo lo que consumimos, desafortunadamente, trae ya una carga de microplásticos. Y para contestar, ahorita verbalizando se aclara la mente. Fíjense ustedes, el agua. El agua que todos tomamos, que casa ves más, hablo del Caribe, la tomamos

en botella, ya sea de este tamaño o en Méjico se usa mucho la unidad de veinte litros, es una de las fuentes de mayor contaminación de plásticos que tenemos en nuestros alimentos cotidianos, el agua. ¿Sí?

Si ustedes googlean “microplásticos agua" hay algunas imagines muy interesantes, muy lúdicas en donde nos muestran que, por ejemplo, el agua de del tubo, del grifo, que seguramente algunos de los que estamos aquí sentados todavía tuvimos el privilegio como niños de abrir la llave y tomar esa agua. Hoy por hoy, esa agua tiene menos microplásticos que el agua embotellada. Entonces, esa es la situación.

MARCOS HANKE: Yo le agradezco. Era solamente para redondear su presentación y abrir el campo de visión, verdad. de que las técnicas que usted está trabajando y la pertinencia de su trabajo va mucho más allá que la pesquería. Así que muchas gracias, muchas gracias. Bueno, son las. La 1:17 yo--

It is 1:17 and in order to speed up the agenda, Carlos and I have a report on recreational fishery summit that--

LIAJAY RIVERA GARCÍA: Marcos, Wessley is online.

MARCOS HANKE: Yes, I'm going to go with him.

Recreational Fisheries Summit— Marcos Hanke/Carlos Farchette

MARCOS HANKE: It is very, very short. Basically, the report is that Carlos and I attended this meeting. The meeting was with all the nationwide recreational fishermen and the interaction and connection with the wind farm and aquaculture. And when we went there, they gave us a good perspective of the implications of those developments and what is happening around the nation, but we also supported the presentation by giving the Caribbean perspective and peculiarities of our habitats and fishery and fishing community and so on, and by adding the concept of -- sorry for the repetition -- but the value, the secondary value of a system of aquaculture. I don’t want to go into the weeds with that because eventually we are going to have time to explain it, but this is what Carlos, and I did on the Recreation National Summit. You agree, Carlos, anything quick to add?

CARLOS FARCHETTE: Our esteemed Chair was a panel member as you see on the screen.

MARCOS HANKE: Well, thank you for the picture. Yes, Andy?

Questions/Comments

ANDREW STRELCHECK: Yeah. I had the opportunity to also attend. A couple of takeaways from me that I think are relevant also for the Caribbean. One, there was some discussion about the Federal Fishery Management process and needing to more nimble, move faster.

It was really kind of apparent based on some of the things that are happening on the East Coast of the United States right now with climate change and shifts in fisheries, you've been hearing some discussion of that in terms of potentially shifts in fisheries here, deeper water, changes in migration patterns. So, certainly something I think Russ Dunn will explore as an outcome of the meeting.

And then the other is, we've talked some about recreational fisheries of this meeting the need for defining that universe and identifying that through a federal permit or some other mechanism to quantify fishing effort for recreational fishermen, and so I think that'll be also a priority of the agency going forward. Thanks.

MARCOS HANKE: Thank you very much. And due to some class, that he has to teach and other compromises, we're going to go with Wessley Merten on dolphin fish presentation.

WESSLEY MERTEN: Hello, everyone. Can you hear me?

MARCOS HANKE: Yes.

WESSLEY MERTEN: Excellent. So, I don't know if I'll be sharing my screen or not or if you guys will be driving the presentation. How should we do this?

MARCOS HANKE: One second Wess. We will answer that in a second.

GRACIELA GARCÍA-MOLINER: Okay. You're set to go. Check to see if you can share your screen or if it's us driving.

LIAJAY RIVERA GARCÍA: Do you see our screen? Your presentation?

WESSLEY MERTEN: Yeah. I see the PDF that you just shared.

LIAJAY RIVERA GARCÍA: Okay. Thanks.

WESSLEY MERTEN: Should we just do it that way? I'll just tell you to click forward.

LIAJAY RIVERA GARCÍA: Did you prefer to share your screen, Wesley?

GRACIELA GARCÍA-MOLINER: Yes.

WESSLEY MERTEN: If that's possible, it'd be great. But I know there's been some technical glitches here and there.

LIAJAY RIVERA GARCÍA: It is. I will make you cohost.

WESSLEY MERTEN: Okay. Yeah. It's just having to enable my screen sharing on my end. Thanks.

LIAJAY RIVERA GARCÍA: Now you can share.

WESSLEY MERTEN: Okay. Excellent. So, let's see. Let's go here. okay. Please verify that you could see my screen.

MARCOS HANKE: We can. Go ahead.

LIAJAY RIVERA GARCÍA: Yes.

WESSLEY MERTEN: And it's just the actual whole slide. You don't see the presenter notes. Correct?

MARCOS HANKE: Correct.

Dolphin Fish Studies on FADs—Wessley Merten

WESSLEY MERTEN: Awesome. Alright. Well, thank you all. I feel the suspense has really been mounting with this presentation. Thank you for the flexibility and shuffling things around. My students would have loved to have class canceled today, but the Dean definitely would have liked that.

So, with that being said, good afternoon, everyone. I really wish I could have been there, you know, in the room with you time around, but I just couldn't at the end of the semester and everything. okay.

So, the title of my talk today is preliminary results from eight years of the Puerto Rico FAD system. And it really highlights the research we've been doing since 2014 with relation to the FADs deployed off the North Coast to Puerto Rico. But, you know, full disclosure here, obviously, this is meant to give you comprehensive update, but we are limited on time. So, I'm going to try my best to present the information. That I've prepared.

So, this research was and is funded by the Puerto Rico Department of Natural Environmental Resources, and the Federal Aid and Sport Fish Restoration Dingell-Johnson program of the United States Fish and Wildlife Service.

So much like the December presentation at the Council meeting, I'm going to follow a very similar approach. So, my objective here is to provide you an update, a comprehensive update on the research we've been doing with relation to the FADs. I'm going to use a case study approach just like in December. But first, I'll start with some quick program statistics which will kind of get us thinking about this topic. And then that'll lead into our first case study, which will be on catch and effort and that will take the majority of the talk. And then there will be some additional case studies that we will look at, one, on vessel census, which was our first published paper back in 2018, and then two iterations of that given now that there's a push to deploy submerged FADs. So that's case study 2A and 2B. And then we'll finish off today's presentation with a look at tagging studies and talking about size frequency of dolphin tagged at FADs within the Caribbean Sea. And then a short little segment on Wahoo versus dolphin.

So, some quick program statistics. So, since 2015, there have been 22 FADs deployed within the Puerto Rico FAD system. There are currently six actives. Our group has logged 2,149 catch and effort reports since we started monitoring vessels. And as of December 31st, 2021, there's been 547 dolphins tagged at FADs within the U.S. Caribbean Sea. Of those 22 FADs, 16 surface FADs were deployed, and all of those surface FADs have been actual loss. They were they were lost due to ship strikes or equipment failures or due to storms. And then there's been six subsurface FADs.

So, in June of 2019, due to just personnel constraints, we weren't able to continue to gather the catch reports per trip, but we were able to continue gathering the effort. So, we have logged 2,779 trips. So, that component remains, but obviously, it's a very time-consuming process to communicate with anglers on all their outings. And I was doing that by myself a few years ago, but I'm trying to ramp this back up with a small staff that we're starting to put together.

So, with the funding through this FAD research, we've deployed 31 satellite tags, 27 have been deployed on dolphin, three on Wahoo and one on a silky shark. We've involved 34 vessels with the pelagic data system vessel tracking unit. So, that's kind of like a baseline of our participation in terms of gathering catch and effort reports or just effort reports. But we also interface with a lot of anglers through fieldwork, and there's definitely boats

that we have involved that we don't have the vessel tracking device on, due to either funding issues or just logistical issues.

So, we published one paper. We have one currently in review of History Science and one in prep, and that in prep paper is the one that is the first case study today that I'll start with here in just a second. But based on the conversation yesterday when Rachel presented the working group report from WECAFC, I just wanted to update you all with some quick program statistics on deployments.

So, this was a table I submitted to DNER last March. Basically, it just shows, you know, the different deployment events for the surface FADs. So maximum longevity of those surface FADs was 1,249 days, which is about 3.4 years. The minimum amount of time, one was in the water was 12 days. So, it's likely that FAD either got hit by a tanker or there's equipment malfunction. The average longevity of the surface FADs is quite low, 453 days or about 15 months.

Average time to actually redeploy in the same location was 8.8 months. And these deployments were being led by Legado Azul. And that 8.8 months could have been for a host of different reasons, which I'm not sure are, but, you know, obviously, getting the barge back outfitted with equipment, funding, and stuff like that. So, if you use smaller FADs, you can redeploy in the same sites faster because, generally, as far as I understand, once you have a permit for a location, you can deploy there based on permitting needs and requirements.

Okay. So, hopefully, that got you thinking about this topic now, and we'll get into the first case study. So, one of the things that we wanted to do right off the bat was just trying to see how these boats are utilizing these FADs. And so, obviously, collecting catch and effort is kind of a paramount method to use to do that. And so, one thing that we are, kind of, intitling this work, is vessel trip histories. And so, the study purpose is really to compile quantitative examples of FAD use, catch and effort using vessel tracking systems. With the overall objective to kind of determine the temporal and spatial variation and FAD use and performance.

And so, we're using the Pelagic data system, vessel tracking devices. We're working with charter boats recreational boats, and small artisanal anglers, and we're mounting these devices on the boats and collecting the tracking data. The devices, they're solar powered, they're extremely durable, they're water, heat and wind resistant. They have a dynamic sampling rate, so when the boat slows down, there are more points that are collected, when it

speeds up, there's less points. It basically communicates with cellular networks. Has upload frequency of every six hours, and they're extensible. So, you can actually add on additional sensors which is something we would love to do in the future.

So, I didn't know if I was going to be able to share my screen or not, so I put this slide in here to bypass that. So, there are some really cool methods if you're into that type of thing, but I'm going to bypass this to save time. But I'm happy to answer questions if needed later about those methods.

But for today's talk, basically, I'll maybe presenting four separate vessel trip histories when we started monitoring these boats back in 2016 and 2017. And with each of these examples, I'm going to present this Gantt chart, which basically on your x-axis, you have time, on your y-axis, you have the different units out in the water, whether it be the FADs or the actual boats. So, the gray box here is highlighting the actual boat that we're monitoring. And these colored rectangles represent the deployment of either the vessel tracking devices in the case of the boat or the deployment of the actual FADs. So obviously, the red bars indicate the first deployment event for these FADs. Some Fads were deployed the second time, which is yellow. And then some files were deployed a third time, which is green.

So, these really give you kind of situational awareness in terms of, you know, where the boat is with relation to what FADs are in the water. So, with this particular charter boat, is a large 32-foot charter boat based out of Dorado. We started monitoring this boat in October of 2016. So, with these vessel trip histories, you can start to look at, you know, what this boat is doing over an expansive time. And so, for this particular boat, the first 21 trips, you know, this boat spent time at the FADs nearest to where this boat was based, which is Dorado. So, that's FAD F and FAD E were the closest.

So, we're collecting, you know, back when we first started this, we're collecting the catch and effort and the captains would report their catch as FAD associated, which was defined as caught within a mile of the FAD, or non-FAD associated. And so, for the first 21 trips here, this boat, you know, caught 13 dorado and released two blue marlins associated with the FADs. Non-associated catch was 11 dorado, one wahoo, and one sailfish. Away from the FADs. But, obviously, with these types of data, you can rasterize it and so this roster actually depicts the time of fishing activity per 1.2 squared kilometers. And with these FADs, FAD F and FAD E in the area, you could see that the colors, the yellows, and the reds, and the oranges indicating where the boat was spending more time.

But with these devices, obviously, you can collect a lot of cool statistics. So, we were looking at, you know, average time per trip, average distance traveled per trip, the range offshore, and the total area covered. And you can see those statistics here. But the point I want to make is that the next 44 trips that we were monitoring for this boat, FAD E and FAD F had been lost and so this charter boat basically shifted its effort towards the next closest FAD, and which was FAD G, off of Vega Baja. And during that time, that shift in effort towards the FAD led to, you know, the catch of 32 dorado, the release of one white marlin and one wahoo was caught. Away from the FAD, the boat only caught eight dorado, released two blue marlins, a yellowfin tuna, blackfin, and a sailfish.

So, a higher diversity of species away from the FADs. But at that FAD, it was quite successful, which obviously can help this boat, please the clients and help, you know, obviously, maybe acquire tips and help the bottom line for the business.

In terms of trip statistics, all trip statistics increase for this charter boat due to the loss of the FAD nearest its home port. With a 34 percent increase in area covered for this boat because FAD F and FAD E were not in the water. And so, this was just, you know, the expanse of about, you know, 40 or 65 trips when we started monitoring this particular charter back in 2016-2017.

So now on to the next example. So, this is a near short charter boat based in San Juan Bay. So, it's a small 22-foot center console. So, basically, a lot of the time this boat is fishing within San Juan Bay and the different channels in the back bay. And the FADs nearest this vessel are FAD C and FAD D at this time, which were distributed off of El Morro. And so, the interesting aspect of this type of charter example is it allows you to see when this vessel shifted offshore to actually target pelagic species versus, you know, staying in shore to fish the near shore habitat.

And for this particular boat, over the first four months that we were monitoring it, at the FADs, the vessel caught 17 dorado it released a marlin and two sailfish. Away from the FADs, only seven dorado and one yellowfin tuna. So, obviously, you could see the roster showing a lot of time that this boat is spending at FAD C and FAD D just basically going straight there. And I haven't looked at the weather with respect to these trips, but it likely coincided with nice days when conditions really permitted for the boat to take clients to that location. But the point is this vessel was shifting effort away from near shore habitat. But three times as

many trips were in shore, and about 40 different species were being caught near shore with tarpon, jack crevalle, and snook being the top three species. And so, that just is another unique aspect or vessel trip history for that particular boat.

And so, we move on to a commercial example. So, this boat was active based out of Manatí, and we actually started monitoring this vote in the summer of 2018. There were no FADs present when we started monitoring this particular small scale artisanal angler. And during the first 14 trips, this boat did not do very well in terms of landings. They did have fun though. They released three blue marlins. Obviously, it's a thrill whenever you hook into a blue marlin. But they obviously were out there trying to land fish for, you know, obviously, to make money. They only caught one blackfin tuna during those two weeks. So, not good fishing for this boat during the first two weeks.

Then on July 21st, 2018, FAD F was deployed off of Dorado, and this boat basically started to shift effort directly towards that FAD. And then the next 14 trips, the boat caught 37 dorado and released one blue marlin at the FAD. And with the presence of that FAD now off Dorado, the boat also started to use new techniques in terms of targeting live bait near shore, going straight out to the FAD, and then, you know, chumming and fishing with live bait. And on this particular outing and early of September 2018, caught this really nice yellowfin tuna. And then another trip about a week later, targeting and live bait near shore, and then heading offshore and getting a pretty nice catch of dolphin.

So pretty unique example to see there with this commercial boat, obviously showing kind of different tactics than some of the charter boats. In total, over the first 28 trips we monitored of this commercial boat, the vessel caught 56 dorado at the FAD, and away from the FAD only 18 dorado, with only one of those trips offshore actually producing 14 of those fish. So, they got lucky, and they found a floating pallet or something. So, basically, this vessel was putting a lot of effort towards fishing that FAD when it was present.

And lastly, just a recreational example from a boat off of Arecibo. And so, this vessel, we've monitored for quite a while. Actually, we're still monitoring it to this day. And the unique aspect of this boat, though, is that there's no FADs within range, really, of this boat. The closest was FAD H, when FAD H was present off of Manatí, which is about 20 miles away. But, you know, you could see just the wide range that this boat would fish to obviously enjoy an outing on the water. What this boat did was quite successful. It caught 308 dolphinfishes during these first 81 trips that we

monitored and released a host of different marlin and caught some wahoo and stuff too. But so, the question becomes, how does this type of effort and catch change if you actually have a FAD or a surface FAD present off of Arecibo. And so that's something that we're working to try to address moving forward.

And so, just to summarize here, what you can do with these vessel tracking devices is you can actually look at the time of departure for these boats. And with the near shore charter, generally, they were departing, two times a day and leaving at 06:37, in another trip in the afternoon, 01:30, and 2:00. At times, this boat was shifting effort offshore to fish the FADs. The bigger offshore charter, generally having two trips per day as well, right around the same times, and this offshore charter was shifting effort towards the nearest FAD when those FADs were present. The commercial boats, they were leaving, or this particular commercial boat was leaving as early as 03:30 to get out to the FADs as early as possible to, obviously, get fish before the charter boat or the recreational anglers. And then the recreational angler would leave once a day and generally FADs, 20 miles away, were out of reach.

But in conclusion with this particular case study, you know, these vessel fishing trip histories, they provide quantitative estimates of FAD and non-FAD use on different temporal spatial scale. So, it basically tells us a story of how these anglers are using the FADs, which is something that is important for fishery science and important for fishery management if we acquire enough of these examples. And this method, can be used to assess, use and performance on FADs by sector, which is definitely the approach we're trying to take.

Now I've been using this technology for six years, so there's a lot of issues and situations and problems that can arise. So, these devices need to be assessed daily, in terms of their device health and status. But they're pretty robust pieces of equipment. Obviously, the catch and effort results are only representative of when captains actually report the catch and trip data. And we had about an 85 percent catch report acquisition rate. So, meaning that only 15 percent of the trips we weren't able to get a solid report from the anglers. So, it does represent a good kind of phone survey and way to integrate catch an effort with these devices.

And results can also be used to examine other socioeconomic trends. So, we actually started working with a seafood restaurant we are monitoring their products that they were buying in terms of seafood, the boats that were supplying it. Which offers a really unique aspect into that type of economic data. In terms of, you know, local caught fish. And so, that program was a pilot program,

but we basically were able to do it because of these devices.

These devices are really pretty cost effective. They cost about 500 dollars per device, and they offer about two years of data service. And, obviously, there's going to be additional cost for data management and analysis. But like I presented in December, when you, by virtue of having captains involved in this vessel tracking research, it affords new opportunities to monitor offshore resources during, like, anomalous weather or sargassum episodes. Which is the manuscript I presented in December that's currently in review.

So that was the first case study and then the following case studies I'll present are much shorter in duration. And so, with that being said, I'll just continue here.

And so, this next study was the first one we published in 2018. It was basically using video monitoring to quantify spatial and temporal patterns and fishing effort across sectors at these FADs off Puerto Rico. And so, in terms of the purpose, was really to provide, like, a rapid fishery independent assessment of multisectoral FAD use off San Juan during the first year of the program. And the objective is to determine the temporal and spatial variation in FAD use.

And so, here, we are using these Brinno timelapse cameras. So pretty cheap, a couple hundred dollars per camera, weather resistant housing, and we were just duct taping it and strapping it to the FADs. The cameras take a pretty good resolution, 1280 by 720. They basically have about a 35-millimeter lens field of view. We programmed the cameras to take an image once every 30 seconds, and we set the timer from 05:30AM to 07:30PM, and we did seven three-week deployments between three different FADs.

And using this approach, we're able to get some pretty cool data. So, I'm just going to bypass this slide because I didn't know if I'd be able to present with my screen. But this is what the actual data looks like. So, the I used a couple different video editing software to label the actual data. But basically, you're seeing the raw data and the labels that we would put in. And so, here's a bird. Obviously, lots of bird activity can present obstruction views for the lens at times. But there's the first boat on this particular day. Obviously, you see the time stamp, you see the date.

These boats can approach really close, so you could see the number passengers. You'd see, you know, what gear they're using and different aspects. The power of the engine and stuff like that.

And so, this boat ends up coming fairly close here. There it is right there. You can see the number of rods, the different anglers, there's two onboard there. So, we didn't look at this paper in terms of number of anglers per boat, but here's obviously a larger probably, I don't know, 35, 40-foot boat. So, you know, multiple boats active at the FAD at the same time.

And then at times, you even have the opportunity to see actual fish at the FAD. So, here's a dorado right here in the bottom of your screen. See, the cameras can sense and see wildlife at times. And using this camera data, we're able to classify a hundred and 58 unique boats and actually name them unique boats. This is Rodolfo Abrahams, which obviously is a commercial angler that a lot of you know. And here's Bill Fish, which was a charter that was active back in the in the day. And, obviously, spear fishing, you can see that happening. And then some of the boats that didn't have a name on the whole, we would just name just a random name. So, this I just called Blank Boat. But this Blank Boat was active a lot and they used unique techniques in terms of live baiting and stuff at the FADs.

But so, in terms of descriptive statistics, we basically collected 139 FAD camera days. Just over 233,000 images, which represented about 22.1 percent of a year. We had 158 unique vessels characterized, and there was basically a 2.4 percent vessel detection rate, but 0.7 percent of the vessels were kind of too far out of the range to ID. And we did an ID test and we found that 500 meters was kind of the ID range. So, so pretty unique, you know, type of data collection using these cameras.

And so, in terms of results, we use a logistic regression to analyze the data, and we found that there were significant differences by time of day and by day of week, which probably isn't shocking at all. But statistically, that's what the results told us. And, you know, using this fancy contrast matrix, we're able to show that by time-of-day interval, which is on your y-axis and the activity level on your x, we're able to show that the weekends you have a huge spike in activity at these FADs. And generally, kind of an increasing trend through the week. With early morning hours, which is the time period b of each day, generally having the highest amount of activity.

So, another aspect of this work was to work with QuanTech which is a company that interfaces with NOAA on a lot of survey protocols. When I was living in DC, I went down to their office and I spoke to them, and we put together this cost benefit analysis comparing the video sampling to the other types of methods used by NOAA and other consulting firms. Long story short, you know, it's pretty

cheap to put the camera out and to record the data, and to some extent, it's cheap to analyze the data too, compared to having personnel at ports sampling. Nonetheless, you lose a lot of-- you don't gather any demographic data from the video sampling. You can have lens issues, battery, and power source issues. But when you couple these types of monitoring protocols, you can glean a lot of information.

So, in conclusion on this case study, you know, we conducted a fishery independent assessment of multi-sector fishing effort using video monitoring. It's a pretty cost-effective approach to assess fishing activity at the FADs. You know, a FAD is there, just strap a camera to it and see who is using it and how. Results really kind of serve as like a baseline estimate of FAD use, especially if you deploy the camera right when the FAD is deployed. So, you could then, you know, look at FAD activity expansion or contraction. Results are only representative of daytime fishing efforts. So, we only programmed them for the day. But we need to match these types of data with port surveys. So, that would be helpful to see who is actually fishing the FAD and we could even cross verify. Obviously, with AI, there's opportunities to automate vessel detection through image recognition.

And so, this study, obviously, was done with surface FADs. So, now there's been this big push to deploy submerged FADs. And so, obviously, you can't put a camera at the surface with the submerged FADs. So, what we've done and is something that a lot of researchers that have presented to the Council these past few days have done with different aspects of marine life monitoring is use these loggerhead hydrophones, and we're using these to detect vessels. And so, this is a recently deployed submerged FAD off of Puerto Rico. This is the Camino Del Mar FAD. And so, we're putting these hydrophones on these on these FADs.

And just to kind of give you a lay of the land right now with where these FADs are. Camino Del Mar is Northwest of El Morro, about seven miles. And then you have El Morro FAD, basically, due North. And then last week, Legado Azul deployed two more submerged FADs in this cluster. But so, the actual hydrophone that I'm going to speak to for this brief little segment is on the El Morro FAD.

And so, this is a spectrogram which a lot of the researchers in the room that are listening are probably familiar with. I actually consulted with Tim Rowell, who used to be a student of Doctor Richard Appeldoorn's, and he's used this extensively with some of his research. And he's actually a NOAA employee based out of Woods Hole. But Tim and I spoke last week, and he helped set me up on this.

So, this is a spectrogram. The blue right here showing not much sound activity. This band towards the right side of the spectrogram shows an increase in sound. This next spectrogram shows, a lot of this this green indicating higher sound levels. And so, by virtue of having captains, you know, having these vessel trackers, we were able to act the ground truth that this was an actual visit from this charter boat at the FAD. And the time stamp here is October 26, 2021. So, just several months ago at 04:01 in the afternoon. That coincides with the time stamp of the spectrograms, and this vessel actually caught two nice dorado, making these passes. But by virtue of having the captain with that vessel tracking device, it gave us a unique signature of when this boat was visiting the FAD, which allows us to compile events and then compare to locations where we don't have the vessel tracking devices deployed. So, this is ongoing work. We've gathered three months of sound data, so we have to analyze it, and we're re redeploying those hydrophones. So, we hope to present in the future more about this.

Now the other iteration here of the case study is using these underwater cameras. And I think Doctor Reni García presented something really interesting with cameras. I'm wondering if we're using the same housing. It's like really cool housing for GoPro. Could be deployed super deep. Nonetheless, this is one of the favorite photos I've ever taken, and I actually didn't pull the trigger, I just set the camera to record. But as you can see, there's a dorado here looking down at the lens. You see a nice school bait fish and some other unidentified fish right here close. But we are now gathering this imagery to be able to assess vessels, visiting, and also marine life.

And right now, we have Marissa, our fisheries data analysts, analyzing the data. And she says she's able to count over 300 individual fish in this image. So obviously, you could use this to count individual fish, and you could assess the number of counts per image by time of day. Because we have these cameras recording throughout daytime hours. And so, you could start to get an assessment of how bait changes by time of day, and whether bigger, pelagics are more active at certain times of day.

And to that end, this is a pretty cool image showing two dorado going up towards the surface, possibly interacting, and then another school of looks like some sort of bait fish kind of moving away. But, you know, this really gets me giddy, looking at this type of imagery. I mean, this is the wild out there, and we're seeing images of the wild and so I really am pretty excited about this stuff.

So, to the last case study, I think maybe I'm going a little long here, but nonetheless, this is a quick one. So, in terms of tagging studies, I spoke a little bit to this during the December meeting. But yesterday, during Rachel O'Malley's talk, there were some questions, I think from Tony, about what's the size of fish being caught with these FADs. And so, this is the size frequency of fish tagged and released at Caribbean FADs. And this image right here shows Julien Brossel, one of our big taggers out of Guadalupe. And, typically, he tags a fish takes a quick picture and sends it to us, and that's kind of his style. And so that's kind of the size of the fish that he typically is tagging at the FADs off of Guadalupe. But you know, 24 percent are less than 20 inches for fork length, which 20 inches fork length is the minimum size for dolphin on the Eastern Florida shelf and on up to South Carolina. 33.8 percent are less than 23.5 inches fork length. And 24 inches is kind of the idea being floated for a minimum size in Florida. And also, I've heard of a lot of people within the Caribbean Sea, just anglers, tell me that they would be comfortable with that type of a minimum size. And that's just from their point of view.

So, yeah, that kind of gives you a distribution of the tagged and released fish associated with our program. So, this is Guadalupe, Virgin Islands, Puerto Rico, and Dominican Republic, and the Caymans is really where this data is taken from.

Lastly, this is an update since December. So, we've been starting to tag wahoo around the island of Puerto Rico. Super it about this. This tag surfaced between now and the December meeting. It was a short duration event though. We only got 7.4 days on this wahoo, which is a 47-inch wahoo. It moved about 60 miles Northwest from buoy 6. So, we actually tagged it at a near shore buoy, which is like a FAD. And the tag popped up 14 miles off of Punta Cana.

This scatter plot shows the depth use, and this is in absolute depth. So, meters are on your y-axis, and time is on your x. The cool thing about this scatter of thought is it shows extremely deep diving behavior during the daytime. During the nighttime and crepuscular times, this fish was much more about the surface. And then you contrast that with dolphin. It's very different than dolphins. Obviously, they're serving different ecological niches. But you see the top three scatter plots with dolphin monitored around Puerto Rico. Their diving behavior you see on the kind of outer sides of these scatter plots is deeper during the night, shallower during the day. So just gathering some pretty cool ecological data on these species.

And the last point I'll make here is that this was a geolocated

dolphin that we tagged a few years back, and it was recaptured at a FAD South of La Romana. And when you compare the movement trajectory of this geolocation track towards Punta Cana, a very similar trajectory it took as that wahoo, if you go back and look at that wahoo movement. So, not sure if it is that these fish are using this corridor through here, through the Mona of passage. I noticed some of the depth data that Doctor García presented earlier showing kind of some of those fathoms, those different fathom lines. So, maybe currents are kind of guiding fish this trajectory. Nonetheless, off Punta Cana, there's a lot of FADs, reports estimate of 2,500 FADs around this part of the D.R.

But then, you know, just a few weeks ago, we tagged a dolphinfish, and the tag went the full interval, two weeks, and the fish ended up way down here South of D.R. So, you know, obviously, you know, what percentage of fish are making that trajectory through the Mona passage versus bypassing D.R. completely. And those are big time questions that are really hard to answer with relation to how FADs are affecting migration.

Okay. So, we're here at acknowledgments. So, I'd just like to acknowledge Puerto Rico Department Natural Environmental Resources, and U.S. Fish and Wildlife for funding this research. Huge thanks to Doctor Nilda Jimenez, Damaris Delgado, Kelvin Serrano, Omar Collazo, Johanna Gutierrez, Doctor Craig Lilyestrom, and Doctor Richard Appeldoorn, for getting me involved in FAD research back in the day. And these are all the boats that we're participating with. So, thank you to all those Captains, and I'll take any questions.

Questions/Comments

MARCOS HANKE: Thank you for an excellent presentation and for adapting to our time constraints. Questions from the members. Andy?

ANDREW STRELCHECK: Thank you for the presentation, really impressive research. I'm curious with vessel tracking system devices you're using. What are you using? You implied obviously that they're fairly reliable and fairly inexpensive. I'm curious kind of how that compares to some of the vessel monitoring systems that are applied in other regions in the United States?

WESSLEY MERTEN: Yeah. So, we're using the Pelagic data system vessel tracking devices. So, obviously, these are not VMS units. So, they can be tampered with. Anglers can take them off the boat. So, you know, they're not the gold standard of vessel monitoring. But in terms of monitoring small scale fisheries, the ability to not have them wired to the boat is huge. So, I could just show up

at a dock and have some boxes in my luggage and fish with these boats and strike up a relationship and a conversation and say, "Hey, would you like to participate in our research? I've got this solar powered device. We can cable tie it to your bimini top." It's happened that way. Like, we just start to integrate our research with anglers on that quick of a basis.

You know, one thing that I can do with the Council, or any group can do with the Council is really to have a specific meeting with anglers to expose them to this type of research and the ease of integration and also kind of what we want to do with the data. And by virtue of the Council's ability to reach a lot of anglers and obviously integrate with NOAA, it could spawn a very big program on the island. Whether it would be representative of all the sectors, that's obviously, another question.

I've used a grassroots approach, and I've gathered 34 users, essentially. But we could I could potentially get more. So, the devices are strong though. Some of them withstood hurricane María on these boats. I mean, they are wind and rain and destruction proof.

MARCOS HANKE: Thank you, Wess. A question in terms of the vertical migration between the wahoo and the dolphin. In general, I couldn't see or understand well. On the wahoo, there is a night vertical migration going deeper. And the mahi, if I understand correctly, they have a more variation closer to the surface that they go up and down during day and night, how can I read that?

WESSLEY MERTEN: Yes. So, I don't know if you can see this on the screen again.

MARCOS HANKE: I do.

WESSLEY MERTEN: Can you see it?

MARCOS HANKE: Yes.

WESSLEY MERTEN: Yes. So, all of the black ovals on this plot shows a depth by time for this fish. So, and on the x-axis, you have midnight to midnight. So, basically, on the left side's midnight from one day, you know, obviously, to the next. But they're all kind of aggregated into just time throughout the record. And so, whenever you have these ovals closer to the surface, that means the fish is closer to that location or this depth at that time.

So, you'll see this kind of clustering at noon. If you look at noon, right in the middle of plot and then you go down, you see

all those ovals, that's 50 to 150 meters at noon that that fish was at. If you go up to the actual x-axis below noon between basically 09:30, 10:00 until 3:00, that fish was absent from the upper part of the water column during this monitoring period. Now remember, this is only one fish, this is only 7.4 days, but it is drastically different than what we see with the dolphin. That's the point I was trying to make here, when you go to noon with dolphin. Look at all those points right up at the surface with dolphin. So, using different predation techniques, obviously, because they serve ecological niches that are different.

And so, this is ongoing research. We have a geolocating tag on a wahoo that's supposed to report actually here coming up, hopefully. And so, I hope to continue to update you with this type of comparison as we move forward. So hopefully that addressed your question.

MARCOS HANKE: Yes. It did. Thank you very much. Anybody else? Online, we have any questions?

LIAJAY RIVERA GARCÍA: Marcos, we have questions in the chat. Should I read them?

MARCOS HANKE: Yes.

LIAJAY RIVERA GARCÍA: Okay. Michelle Schärer. Can you say how much more effective the CPUE is with the FAD? Number two. Which method is more effective? i.e., live bait, Avnea or trolling.

WESSLEY MERTEN: Of course, Michelle, would give me the doozies here. So, in terms of the CPUE question, I mean, the problem with our research is that we don't have enough replicates per sector visiting the same FAD to really start to make that stretch to the CPUE world, which is why I presented it from the standpoint of, you know, trip histories. So, unfortunately, I cannot say that, you know, catch per unit effort is higher at the FAD at this current day. In December, I presented that component where some of the boats bypassed the FADs because there were these huge sargassum lines 15 miles out, and they were just going straight there, and they were doing great at that, you know, that natal habitat, you know. So, yeah, I'll just say that I cannot address that one.

In terms of the most effective method, you know, I spent a lot of time fishing for dolphin and, you know, these fish will be finicky, and they won't eat anything that you present to them at times. So, you could live bait them, throw everything you have in terms of live bait, at them, troll, even getting in the water and try to spear one, and they're gone.

So, you know, what method is more effective? For yellowfin tuna, what I hear amongst many of the anglers fishing the FADs is that live bait is prime for those yellowfin tuna. But for dolphin, it's really kind of dependent on other factors that are outside of my current knowledge at this current date.

MARCOS HANKE: Yes. Thank you very much, Wess. And just to add to those variables, it also will depend if you are the first one on the FAD or the second or the third or the-- because the fish, once they are fished or have some pressure, the behavior of the fish changes and those catchability rates or how easy it is to catch or not to catch with live bair or any of those gears will change too. That's just one comment based on my experience.

Thank you very much for your presentation. I don't see any other question.

LIAJAY RIVERA GARCÍA: Yes.

MARCOS HANKE: We do?

LIAJAY RIVERA GARCÍA: We have questions from Yamitza Rodríguez. She says, do you think that our fisheries will sustain the number of FADs proposed? how will you monitor the usage of so many other FADs?

WESSLEY MERTEN: This is another very big, high-level question that is kind of outside of my real ability to answer. Because, you know, the future is kind of unknown in terms of a lot of different factors in fisheries. What I will state is that the Dominican Republic, the latest paper that came out last year, the estimate is that there's 2,500 FADs deployed within their waters. Their landings of dolphinfish have been increasing through the last six to seven years. So, you know, one could argue that those FADs are leading to better landings for dolphin. But in the long term, how is that going to affect their dolphin fishery? That's one question that I've been scratching at for a while. And, obviously, I mean, how are we going to answer that? We can't answer that today.

But so, you know, with the Puerto Rico FAD system, there's been 22 deployed and there's only six active. In Guadalupe, they've got probably, I don't know the exact number, but they've got a lot of FADs. Dozens 30, 40, 50. Yeah. I don't know the exact number. That paper probably states it actually. So, yeah, that's a tough question that Yamitza presented to me. That I can't answer fully.

And then in terms of how one would monitor the usage of the FADs.

Well, that really just comes down to funding because there's a lot of FADs being deployed with no equipment on it, in terms of sensors or monitoring. And to me, that's just a missed opportunity. These are biological platforms that can be used to assess this environment. So, if a FAD's being deployed at the least, we should be deploying some basic sensors to gather data. And that truly is a funding issue.

MARCOS HANKE: Thank you, Wess. Is there any other question online? No? To wrap up, I want to mention that I have the experience on the FAD Working Group and collaborating with Wess, talking to fishermen. I want to mention that the work the Wess is doing, it will allow us to be very informed for better management on the fishery in general, especially related to FAD. And he is on the top of the iceberg in terms of knowledge and technology on this kind of study, which is essential to keep our fishery healthy and to understand the fishery better with the evolution that have been happening related to FADs.

On that regard, thank you very much, Wess, for your leadership on this and on a very, very important approach to FAD fisheries studies and know how. Thank you very much.

WESSLEY MERTEN: Thank you very much Marcos and thank you all, the entire Council. Look forward to seeing you guys in the future.

MARCOS HANKE: Thank you. We're going to go to the next presentation, Alida Ortiz.

Outreach and Education Report— Alida Ortiz

ALIDA ORTIZ SOTOMAYOR: Yes. I'm here. If you have my presentation there, that would be great. Can you put it wide? Great. \ I'm going to give a very short presentation of what we have been doing at the Outreach and Education Advisory Panel.

First of all, I am very, very happy to hear yesterday and today the participation of the fishers in almost all the research, all the work that it's being done for getting information for the management measure for the Council, everything. And I heard yesterday, the word fisher scientist and I think we should take a look at that and talk to the people who are working with the scientists. The scientists who are working with the fishers to see if we can do something like that. But I'm not going to touch that again today.

Next, please.

I'm going to concentrate my presentation to what we received in December for this Caribbean Council five-year strategic plan. And when we read that document, one of the goals is to engage, educate, and inform a variety of audiences to improve public understanding and participation in the Council process, and that means almost everything.

So, with objective 20, we are going to be taking care of objective 20, 21, and 22 now, but that doesn't mean that those are the only objectives of the strategic plan that we are going to keep track of in the outreach and education. Practically all areas of Council work have to do in one way or another with outreach and education. Either to bring information to the Council or to get information to from the Council to the stakeholders.

So that objective 20, that is to use a variety of communication tools for social, cultural, and economic characteristics. That's the one that covers some of the research. But the strategic, the strategy that they put is, to maintain the content of the Council's website to enhance its utility to a variety of users.

We have already, since December, have meetings with the liaisons from each one of the islands to see what is the information that is generating in each one of their areas that should go into the website. Also with the DAP, liaisons and DAPs to get all that information. So, we are working on designing the web page, the way that it can be informative, consistent and attractive, so that people won't go there to get information.

Next.

In that same objective, they have variety of communication tools social, cultural and economic characteristics. And it says to coordinated with management, partners, commercial, recreation, coastal businesses, to get that audience that is not just the fishers. That's why we have had all the meeting with liaisons, DAPs and other people. One of the things that is being recommended is the use of radio and TV to announce the activities of the Council. Remember that we have three different targets. We are Puerto Rico, that has one way of doing things. Saint Thomas/Saint Johns another way and Saint Croix another way. So, we keep working in getting the information to have the best and the widest distribution of information from the Council.

Next.

The objective 21 is to promote the participation of a variety of stakeholders. And it says, to develop a newsletter or somebody to

highlight the Council. That, we are already started having the CFMC meeting highlights and we make a summary, a very, very concise summary of everything that is discussed in the meeting and then put it in the website and also make the recommendation that for more information, they can go to different other areas in the website, to the verbatim, to the presentations that are kept as record in the website.

And we're also working in terms of the free stuff for the entire region, Puerto Rico, U.S.V.I. with the marine protected areas. In the last meeting that we had in February, for the Council, we made a presentation, specially making emphasis that the stakeholders are not only the fishers, but it's practically all the community. Fishing and seafood are important for all our people from the mountain to the sea, and that's something we are working on.

Right now, we're working on the booklet, the illustrated booklet on MPAs. The importance of those MPAs and also where are those MPAs, not just the ones that Council has jurisdiction but also the territorial ones.

Next one, please.

Objective 22 is to improve public and a stakeholder understanding. The strategy that the plan recommends, is to support the MREP, the Marine Education Program, and to develop a specific approach for each one of the islands. That's something that we are doing, that we have been doing all the time. We are part of the MREP steering committee. So, we participate in the development of the curriculum that is going to be used for the workshops and the people who are going to work. So, we are constantly supporting MREP.

Also, at this time, we are going into a project with the department of education of Puerto Rico, where a curriculum for marine sciences, but not just marine biology, marine sciences, is going to be part of the general curriculum for intermediate schools. We will have a pilot project with Para la Naturaleza, with the new school group in the department of education that works with the Montessori schools. This school is in La Parguera. So, we are having meetings. We are selecting materials. We will have workshops with the teachers, so that the students from ninth to twelfth grade, not only see the ocean as the current and the organism that live there, but also as part of the social and cultural part of their history, especially Parguera.

So, we will be giving more detailed information on this in the next meeting because we are having meetings every two weeks to select materials and to see the way they are going to be presented.

Next, please.

I have presented before in the other meetings the placemats and the posters that we have produced for the species, underutilize species or other species that are not the ones that are always asked in Puerto Rico, Saint Thomas/Saint John, and now we are working with the Saint Croix placemats. This one that you see here is the one that we produce with Ruth for Saint Thomas/Saint John, and they have been distributed in the restaurants there.

Also, the Council is collaborating with Sea Grant to put signs in front of those marine protected areas that we are talking so much about them but when you get there, there's no sign, there's no information. We don't know what is there. So, they're going to be working now with the signs for La Parguera, the Natural Reserve for La Parguera, and the Tres Palmas marine reserve.

And the liaisons from each one of the islands have been going to each one of the islands to see where are those reserves and then take photos so that we can see what is in that sign, what other information should be there.

Next.

These are material that you have for the thing. This is the one that we prepared for Saint Thomas/Saint John with the collaboration of Ruth Gomez, Julian, and the liaison. And those are already produced. They have them there. And the placemats were distributed also.

Next.

We have all been working with the Puerto Rico touristic company with their seminar that we are giving once, whenever the tourism company askes us about the sustainable, the responsible consumption of fish and seafood. This is directed to the tourist guides and where they bring their clients and what information should be around so that they understand the information that we have in those posters.

Next.

That's part of the distribution that we are doing with the placemats. And this one, Marcos distributed them in Fajardo.

Next one.

The other ongoing outreach and education projects that we're working with is the recipient book which will finish by the end of this fall, by the August meeting. And then complete the illustrated booklet on the MPAs and begin with the climate change and U.S. Caribbean fisheries. That has been already discussed, and we're working on the art and the text. And we should have fact sheet stickers and info graphics for each one of the Island-Based Fisher Management Plans because even though they are not out, they have been approved and by the time they get out, it will be good to have the same information, but in a way that all the stakeholders can understand it. The best way is to have the most important aspects and put them in simple and easy to read, easy to understand language.

And then the integration of the concepts of marine fisheries in the U.S. Caribbean to the regular education curriculum. I am interested that the students from intermediate school, especially, that Parguera pilot project that they learn to swim. That they learn to live in the water. Many of them are children of families that are fishers, but they don't get too close to the water. And that they see that natural area that they have around them as part of their cultural, of the social, and life that they have.

Next.

This is what we have been doing. If you have any questions or if you have recommendations, I have taken notes today of every presentation that says, fisher participation, fisher contribution because that's part of the things we want to do. Any question?

Questions/Comments

MARCOS HANKE: Thank you for an excellent presentation, Alida. I just want to mention that I spoke to Stacey Williams about the die-off of the diadema, and she will get in touch with you and with Cristina and Miguel to help her out to spread the word and to see how they can coordinate efforts to attend this problem.

I believe she will post some of this information on the chat for people to contact her, whoever is interested to collaborate with her effort to address the diadema. Anybody else have a question or comment?

ALIDA ORTIZ SOTOMAYOR: That'd be great.

MIGUEL A. ROLÓN: From the chat, Michelle says that many fishers listened to VHF Radio on specific channel, and she suggests considering this method for very specific needs by the OEAP. In

addition, Alida-- Yes?

ALIDA ORTIZ SOTOMAYOR: Yes. We will do that. I'm going to take that information out and I'll bring it to the Outreach and Educational Advisory Panel.

Actually, I forgot that in July, we have a meeting of the Outreach and Education Advisory Panel to take a look at the Fishery Ecosystem Plan and the way we can do outreach for the information that they will need to give the people. And this is part of this.

MIGUEL A. ROLÓN: Okay. The other thing is that from the presentation of the Dalila Ortiz this morning, we would like to connect both of you so you can work together to see how we can assist in disseminating the information that she proposed this morning. So that will be a project that can be undertaken under the OEAP activities.

ALIDA ORTIZ SOTOMAYOR: Yes. That's very important. We can.

MARCOS HANKE: Thank you, Alida. I don't see any questions. Cristina, your presentation, please?

Social Media Report—Cristina Olán

CRISTINA OLÁN MARTÍNEZ: Buenas tardes. Good afternoon. My name is Cristina Olán, and I manage the social media platforms for the Caribbean Fishery Management Council.

I will be quick. I just want to share with you some updates with our social media. Those are the numbers of followers in each platform, Facebook, Instagram, Twitter, YouTube.

The content that we usually share is related to seasonal closures, meetings, workshops, educational materials, videos and content produced by other organizations and agencies, local and federal and of course the CFMC monthly bulletin. And now that we can go outside again, I can start again making videos such as the one that I recorded with Nelson Crespo. So, I would like, here, to invite other members of the different panels to do the same thing and I will be more than happy to collaborate and to record those videos. Or in the case of the people in the V.I.s, they can send me material and I will share that material in our social media platforms.

Inbox and direct messages in Instagram and Facebook. Those are wonderful. The amount of people that are contacting us is increasing a lot and they are very interested, recreational and

commercial fishers, on different topics, but the main ones are fish identification, documents, regulations, workshops, and fishing license.

This is this is an example of monthly bulletin. In that bulletin from February, we highlighted Joshua Quetell.

We continue sharing Repaso de PEPCO. That is the material that Wilson presents in the commercial fisher's education program that we use the same material and we put that material on the social media platforms.

Also, I want to highlight again Ita and Ta. WAPA-TV went to their house, and they recorded an interview and also, they cooked for the program and for the presenter Lionfish. Because they appear on TV, our numbers in the YouTube channel increase a lot again. Those videos have been very inspiring for many people, including kids. For example, I was in a workshop a month ago and I met this family. This kid that was very impressed with Ita, and he loves to watch the videos because he sees another kid cooking there.

MIGUEL A. ROLÓN: Cristina.

CRISTINA OLÁN MARTÍNEZ: Mh-mm.

MIGUEL A. ROLÓN: What is WAPA-TV?

CRISTINA OLÁN MARTÍNEZ: WAPA-TV is a local TV station in Puerto Rico and it's one of the main local TV stations.

I also want to highlight J.J. fishing adventures because, again, I have been very impressed on how kids can feel compelled with the material that we share and their families too. J.J. and I know that some of you know him. He is from Saint Cro and his mom has been always encouraging him to fish and to publish material in his social media. His mom manages his page and J.J.'s favorite video is the one of a fisher of Saint Croix. And every time that he and his mom shared a video, people watch the video over and over again. He's lovely.

Also, I want to talk about Ita and J.J. because, again, it's the way that we reach also children and what children can do and how they feel when they see the content and they are the present and the future of fishing too.

We recently opened an ISSUU account. Now we will have a document available for the public, the documents are also in the web page. But now we have that this platform and people can download the

documents too and also, we can share the documents easily in our social media platform such as Facebook and Twitter, for example.

MIGUEL A. ROLÓN: Cristina, what is ISSUU?

CRISTINA OLÁN MARTÍNEZ: ISSUU is a platform that allows organizations or individuals to upload documents and also videos too. You can also allow the people that followed you to download the material from there. One of the advantages of ISSUU is that you can, when you share the material in social media, people can also read that material from their social media platform. Also, you can organize the material by topics, and it improved the way that you can reach that material in the web.

WhatsApp. Wilson and I for more than a year, we have been preparing material, messages and also posts, that we share through WhatsApp, through a broadcast list. I want to thank Wilson for his effort that almost weekly we have been sending information to the fishers through WhatsApp. All the fisheres have been very impressed, and they like what we send. Also, they comment to Wilson, and they have been very thankful for that effort too.

And thanks to all our collaborators and if you have questions I'm here. If not, now you can make some questions again or comments. And again, feel free to share with me your ideas to continue producing material for the social media.

Questions/Comments

MIGUEL A. ROLÓN: Not a question, but a suggestion by Vanessa Ramirez for both, Alida and you. She suggests that we should produce more information material, outreach and education material for fishers regarding lobster, conch, and snapper. We have already posters and all that, but that's something that she suggested for Alida and you to take into consider.

CRISTINA OLÁN MARTÍNEZ: Thank you, Vanessa.

ALIDA ORTIZ SOTOMAYOR: Ya. Ya yo le contesté a Vanessa también.

MARCOS HANKE: On the same lines, maybe exploring the presenters that we had today that are doing a study on deep-water snappers to connect the scientists with the fishing community to whatever preliminary that can be public already, that they feel like it, to support you and to share material for those purposes.

CRISTINA OLÁN MARTÍNEZ: I totally agree. I have been very attentive of what researchers have been sharing during this

meeting. And there is a lot of material that we can use and translate for the people, so that they can reach that material in a language that they can understand. And, of course, thank you. Thank you very much.

MARCOS HANKE: Thank you very much, Cristina. We are going to go for Liaison Officer Report. Cristina, can you help me out with the people online, the ones that are going to present? Who is online?

CRISTINA OLÁN MARTÍNEZ: Yes. Nicole Greaux is online.

ALIDA ORTIZ SOTOMAYOR: Nicole. I see Nicole is online, and Wilson.

CRISTINA OLÁN MARTÍNEZ: She is. Wilson is also in the room. He has a presentation and Nicole is going to talk.

ALIDA ORTIZ SOTOMAYOR: Mavel, I don't see her at all.

CRISTINA OLÁN MARTÍNEZ: No.

MARCOS HANKE: Okay. Nicole, go ahead. Thank you for your presentation or participation.

Liaison Officers Reports
St. Thomas/St. John—Nicole Greaux

NICOLE GREAUX: Hello. Good afternoon, everyone. I am Nicole Greaux, the Saint Thomas/Saint John liaison for the Division of Fish and Wildlife and CFMC. I would like to start off by saying that my counterpart, Marvel Maldonado, is taking care of some very serious personal issues right now. I do want all of us to just think good thoughts for her. She is just having a little bit of an issue that disabled her from being on this call. I do not have a presentation, but I am going to give a brief report on activities that have taken place since January, which is when my last presentation was.

Currently here on Saint Thomas, I have been asked to do education outreach for the Division of Fish and Wildlife with the material that they have available, in regard to the fisheries and also the different species of fish that we have here, and one Eco-School has asked for a fish identification course, which I'm really happy about.

Also, I was asked by the upward bound and by the cultural division of the University of the Virgin Islands to try to get [inaudible] involved with things like cultural aspect of our fisheries, whether it is building fish nets or repairing fish nets, building traps,

and also the skinning of our most popular fish here, which is the triggerfish or the old wife. I've produced a video on that that will be released shortly given to the Council first and then given to the Division of Fish and Wildlife to use in our education and outreach there.

With the Other programs that are happening around the island. Unfortunately, COVID kept us pretty much secluded, now with our ban lifted, I'm very excited to join in with DPNR and DFW to do more outreach and have more gatherings and hopefully have a chance to do education not only to our schools, but also to the local fishers. It has been announced and requested that we are going to get together, the liaisons as well as the department heads, with our main fishing association, which is the Saint Thomas Fishers Association to talk about and discuss better ways to getting information both educational and informative to the local fishermen that we have both here on Saint Thomas and Saint John.

That's it for my report. Thank you all very much.

MARCOS HANKE: Thank you for your report. Wilson.

Puerto Rico—Wilson Santiago

WILSON SANTIAGO: Yes. Good afternoon, everyone. My name is Wilson Santiago. I am the Puerto Rico Fisheries Liaison.

The next one.

So, for my report. On this couple of months, we have been continuing the educational program for commercial fishers, we named it PEPCO. This year, we started with the face-to-face program again. So, the first one was last month in Puerto Real, Cabo Rojo. My other participation as a liaison is supporting Cristina Olán with the CFMC social medias for Repaso de PEPCO. She talked about that in her presentation.

We are participating in the MREP committee meetings for the next workshop in August. We are sending, like Cristina said in her presentation, we're sending educational post via WhatsApp. I want to make a parenthesis in this one and thank Cristina Olán too. She is wonderful making those educational posts. Like she said, the fishers have been very grateful and because of that, I am seeing a lot of what we are talking about, that that the fishers are helping more in scientific studies and everything. I think that the WhatsApp broadcasting educational post are a good target for those fishers because they are they are starting to cooperate more in the scientific. Okay? So, the fishers as well are joining the

all the meetings, the CFMC meetings, and all the workshops. So, the WhatsApp broadcasting list, has been a very huge advance in the outreach for the fishers.

Another participation. As liaison, we have been supporting the fishers with issues and information in the local and federal agencies. We have given educational material for the fisher and fishing communities. We are now, since the last year, given the recreational fishers educational program, that is a virtual one. We haven't started the face-to-face one because of the COVID, but we are giving it virtual.

Next one, please.

So, here's a photo of the PEPCO we made last month. The program completely-- for those of you who don't know a lot of the program. We talk about a lot of educational and informative topics. It is a three-hour workshop. In this workshop, I invite Jannette Ramos from the Sea Grant program. She gave us a very good topic about the lionfish and another fisheries topic. And in all the workshops we invite someone different, with different topics. Okay. In this PEPCO, we have 17 fishers who participated. For all the participants, we gave them a certificate of completion.

The next workshop is going to be next week in April 27, it is going to be in Aguada with the partner Joel González.

Next one, please.

Okay. For the educational program, for recreational saltwater fishers, on March 31st, we gave the first virtual workshop of 2022. The topics were laws, regulation, marine species, and area management in state and federal waters. All these was for the recreational fishers. I want to do a special thanks to Helena Antoun and Cristina Olán, they always support me in this workshop and in other ones.

Next one, please.

Okay. So, as a liaison too, I've been collaborating with Alida Ortiz and the CFMC, the OEAP. I have been working with the MPAs. The last two Saturdays I went-- Cristina, the next one, please. This is a map that you can find in the USDA website and their book about the natural reserve in Puerto Rico. So, the last two Saturdays I have been around the island taking pictures of the bulletin boards that are in the natural reserve and the MPAs in jurisdictional waters and land. Okay? So, we have 22 protected areas that have a bulletin board, with information about the about

the MPA’s or the natural reserve.

Next one, Cristina.

I'm not going to mention all this. But in this one there is a total of 22 of them. The ones that I didn't find any bulletin boards-- there are 17 of them that I didn't find, in any of the areas, the informative board. Okay? So, that is for the record. I am collaborating with Alida with the handbook of the natural reserve and MPAs in jurisdictional waters.

Next one.

Okay? So over here now, I gave them in the December meeting. This are the 17 MPAs in Puerto Rico that have management plans.

Continue and the next one too.

Okay? So, these are some photos that I took this one from the web. Participation of the community and the DNER in some of the MPAs jurisdictional of the MPAs.

Next one.

Okay? Some of the of the bulletin boards that I found in the different areas. Next one. This is more of them. Some of them, I found in the web, like, Caja de Muerto, in Culebra I didn’t have the chance to travel in those areas because I have to take a boat. So, I got them from the web.

Next one.

Okay. For the Puerto Rico fishers issues. We continue with the issues of the commercial fishing license, with the DNR. This has been resolved little by little. The office of the licensing and the DNER are working in all matters to fixing this problem. There are new fishers that have misinformation about the closure, statistic reports, license and permit. That is one of the focuses of the PEPCO program, educational program. We are planning, every month we are giving one in different area of Puerto Rico. I have been coordinating this next week in Aguada, the other month is going to be in the East Coast, North and South.

Okay? Fisher’s issues, like always, low enforcement to watch the closures and illegal commercial fishing in state and federal waters. That is an issue that every time-- it is a big issue for the fishers, you know? The fishers need support with different

funding opportunity too. For that, Jeannette Ramos and other agencies are working with them, directly with them, and helping them with finding the funding opportunities.

Okay? Next one, Cristina.

Okay. For my next step, continue with the PEPCO face-to-face workshop. Continue with the recreational program workshop. We will continue supporting the CFMC social medias and the OEAP. We will continue supporting the fishers with their issues, visiting fishing villages, fishing communities, and giving them educational materials, and everything they need.

Okay? So that is my report. If you have any question, that is my contact information, my phone number, email? Any question?

Questions/Comments

MARCOS HANKE: Thank you, Wilson. Go ahead, María.

MARÍA LÓPEZ-MERCER: Thank you. Maria López, NOAA Fisheries. It is not a question. It's just that I want to say, thank you, Wilson, for always being available for any time that we have questions about regulations or gear types or anything that you're always available and doing a great job as a liaison. Thanks.

WILSON SANTIAGO: Yeah. Sure. Thank you. I want to say something else for Doctor Dalila. If you need any help finding fish for you for your research or anyone finding fish, or contacting fishers, you can contact me. I have a lot of contacts with commercial and recreational features, okay? I can do this portion.

MARCOS HANKE: Nelson?

NELSON CRESPO: Thank you, Wilson. Excellent presentation. Wilson, it is evident the lack of knowledge that the enforcement agencies have, are you planning to establish a permanent education program for the enforcement agencies?

WILSON SANTIAGO: Well, yes. A couple of years back, before the pandemic started, we were making a workshop with the port sampler Jesús León from the East Coast. He has given some of those workshops for the FURA agents and the vigilantes of the DNER. So, yes. Right now, I'm not having any talks about giving those workshops, but yes, we can make them work again. Thank you, Nelson.

MARCOS HANKE: Following up, Wilson, on a historic happening. I just was able to continue 12 years of effort with the US coast

guard assisting them on fish ID and support the effort that U.S. Coast guard does here. Originally, DNR participated on that. For the next year, let's pay attention on the date and to see if we can include the vigilantes on those activities and maybe we can also include the NOAA OLE on it because we have that experience on the back. I think the whole team being there is also an opportunity for the enforcement agents to coordinate and to create those bridges that are so necessary. Go ahead Nelson.

NELSON CRESPO: Marcos, if you need cooperation with fish samples or whatever you think I can help you with, you can count on me.

MARCOS HANKE: Thank you very much. Thank you, Wilson. Thank you all. We're going to take a break of five minutes, a quick break. There are some snacks on the back of the room for the people present, and we come back to try to catch up on the agenda. Thank you for the cooperation.

(Whereupon, a brief recess was taken.)

MARCOS HANKE: The break is over. We are ready to get to the final stretch of the meeting. Everybody's tired, ready to finish the meeting and we have just a few items on the agenda. Please take your seats. And eliminate the background noise on the back, please. The next presentation is me. [laughter]

Now I have to do it quick. Waiting for the presentation to be up there.

Fisher-Scientist Concepts—Marcos Hanke

MARCOS HANKE: Good afternoon, everyone. Before I start, I want to say that the first word on that presentation is very much used on the conversations between many stakeholders, especially between fishermen and scientists. Take note of that. And also, the format of my presentation, everything that is on red is extremely important for you to focus your eyes on it because there is a follow-up implication to it.

My name is Marcos Hanke. I am a B.A. marine biologist from UPR Humacao, Charter operator for about 30 years on the East Coast of Puerto Rico. And I have, as add on to my charter operation, something called 787Fishing Research Projects, which is private initiative.

Next slide.

Special thanks to all the people that are listed in there. Note

that the first list are the people that directly helped me to shape this message up and with some technical support. Also, the recognition of the industry expert, highlight “experts,” Nelson Crespo, Roberto Silva and Tommy Forte. I consulted with them if they saw the event that I'm going to report to you guys today. And they confirmed that it was not being described. They never saw based on their experience.

And also, the same for the experts on the academia and scientists that are listed below, my professor in UPR Humacao, malacologist, Cedar García, Evan Tuohy, Graciela Garcia-Moliner, Juan Cruz Motta, Martha Prada, Megan Davis, Michelle Schärer, Jim Franks, Jesus Rivera-Hernández.

I want to read also to be sharp on my presentation Edgardo Ortiz, Virginia Shervette, Richard Appeldoorn, Diana Beltran, Aida Rosario. Thank you to all of them. And that mental picture that you have there, is the way the Caribbean functions. We need those stakeholders and those participants to work together.

Next slide.

Just for context, Charter observation background. Once we are in the water as a charter-- please, once I mentioned my charter, I put my hat there as a commercial fisherman or recreational fisherman because the same will apply, because there is time in the water that is very valuable in terms of observation.

On this case, I'm going to speak for myself. I'm a charter operator. Home port in Fajardo; Fishing area on the East Coast of Puerto Rico. Pioneer on light tackle, and tarpon fishing for over 30 years. Collaborator on multiple research data collections. But due to the recent interest in documenting lane snapper age, growth and reproductive biology across the U.S. Caribbean, rack carcasses are saved, are fillet and donated to Doctor Shervette’s team and to the fishery lab of DNR. I thank both of them for allowing me to collaborate with them.

Usually, fish carcasses are fed to the tarpon at the cleaning station, but since we started donating the snapper carcass to the research, we developed filtering techniques and other procedures to match the need or to increase the use of those incidental or samples that I can produce from my day-by-day in the water, the same can happen with the commercial fishermen.

And you're going to see that in my presentation has a lot of things written. I will try to run over them. The reason I made the presentation like this is because I want for anybody that wants to

go back to it and read it to really fully understand what I'm talking about, after my presentation.

As consequence, of more careful treatment of the lane snapper and paying attention on August 28, 2021, I first observed a small conch in the stomach of the lane snapper. Immediately, I called Graciela and I said "Listen. I just saw this. This is really weird. I've never seen this before." But I started paying, really paying close attention to it.

Lane sapper are very abundant and a preferred target species for consumption for my clients as part of the sustainable fishing campaign of the Council. Lane snapper availability has been stable, and the abundance has increased over time. In Puerto Rico, on the East Coast, there is no direct lane snapper fishing nowadays. The landings are mostly--

if you can eliminate the bar in below. No? It's okay. I know what it says. No. Don't worry.

It is not a target fishery like we had on the past, nowadays it is basically done by traps and nets and incidental catch, not a direct target fishery.

Next slide.

In order to protect the information that I'm going to present and protect the resource and the value of what I observed, I will share, just for you to know where my home port is and have a general idea. I will not present the specific area of the observations.

Next slide.

Well, science does talk to the fishermen. And this is something that we need to promote. One of the most important references is Randall, in terms of basic biology on fishery and different other aspects, stomach analysis and so on. Randall didn't, on that list of-- Let me read it. One of the most definitive, broadscale studies of Caribbean fish feeding, only mentions queen conch strombus gigas documented in stomachs of the following snapper species: mutton gray, dog, yellowtail. Note, no lane snapper there. Note too, that estimated conch size where 70 to 80 millimeters. Pay attention to the red.

Strombus Gigas are also found in the stomach of grunt species like white grunt, striped grunt. Overall, conch was not common in the stomach of fish samples examined and only tissue was noted. This

is observations and information by Randall. This is extremely important. On the end of this slide, there was no shell found on the guts of the fish when Randall made his observations.

Go to the next slide, please.

Note the very important thing, no lane snapper there, on the list. And Randall made a hypothesis that whatever he saw inside of the Lane snapper that was parts of the conch was an opportunistic feeding. And no shells found on the guts. Highlight that again.

Go ahead.

Talking a little bit about lane snapper even though about everybody here in the room knows, but there is public outside of the room that should know just to put it in the right context. On my charter, lane snapper is one of the most common snapper species along the East Coast of Puerto Rico. It is very abundant in inshore waters and all year-round. Occur on a diversity of depth and habitats.

This is one of the lane snappers that was donated to the stock assessment that is coming up. It was a 38.8-centimeter total length, right? Lane snapper. And there you have also a citation below about lane snapper and the movements and how important it is in terms of the fishery.

Next.

Charter observation. 15-years of observations from fishing efforts on lane snapper presence and abundance in Area-1 and Area-3 -- Highlight every time I mention an area, be mindful that there are two different areas. --on the East Coast of Puerto Rico. Area-1, lane snapper presence/abundance appears to be related to tidal period, color of the water, wind speed, and wind direction. On Area-3, lane snapper presence or abundance is consistent and continuous year-round, does not seem to correlate with any of the things I listed before. Time of the day, moon phase, tide stage, or season. Definitely for me as a fisherman, there was a big difference between one area and the other.

There is information below about the size of maturity of lane snapper. Males, 147 millimeters. Females, 185 millimeters. Another reference. In inches three to nine inches or 10 to 23 centimeters when they mature. Just to give a reference to the public.

Keep going.

Voila. First observation, August 28. First conch, small conc inside

of the stomach of a lane snapper, probably was eaten during the day because I caught this fish like mid-morning. There are no signs of predigesting is had a very vivid color.

Next slide.

Second observation is still on Area-1. Note that what I observed was piece of an operculum attached to some tissue and the external part when the conch is walking or displacing itself, is the part that I am collecting. Right? I observed it on those fish. And something extremely important in all this data it was totally opportunistic. I'm not looking for this. Those are regurgitated at the boat. okay? This was just part of my day-by-day with my clients.

Next slide.

Now on area three, the other area. From January 16 to February 25, 2022, five of eight fishing trips included lane snapper with remains of conch present in the stomach or regurgitated at the boat. It's not a stomach analysis study. It's just that by accident, I was able to observe pieces of conch. Images of the operculum from the conch species regurgitated on the boat were found on the stomach too. Once we were cleaning and processing the fish, there are some images there.

I want to highlight that the images with the different operculum on the part below was one day of 57 lane snappers being caught. Some of them were kept on the cooler and they regurgitated those when I went to clean them because it is just lane snappers that I keep for my clients to eat. They regurgitated on the icebox, right? I was able to count six opercula at that time.

Next.

Area-3. Lane snapper with conch part in the stomach are regurgitated on the boat. Those fish are observed with light barotrauma aided in expelling stomach content via regurgitation. There is a light expansion of the abdomen, and the fish are regurgitating on the water column coming up, but some of the content stay inside of the fish. I have more images. That's very important because the numbers that I'm seeing there, most likely could be higher if the fish didn't expel part of the stomach content on the way up.

Next.

I was really intrigued because all I received was, “Oh, this

information is not recorded. It's great anecdotal information. And let's see, on the best scenario, what you can do in the future." But I couldn't stay with that because I knew there was something different on those observations. I need to find out what it was.

I talked to one of my captains that is a diving instructor. We went to the area, proceeded with a transect, with the GPS location from point A to B. The diver went through a straight line. No slack on the buoy. Conch count was made at one meter in each side of the transect. On the first transect, we tried to make video observation. It was a test. It didn't work out.

The diver, which was Captain Juan, listed at the beginning of my presentation, used, at that time, two square meters of the end of that transect to count the amount of conch on that little area to see how many of them were alive and how many of them were dead or empty. Right? And the characteristics or the situation in terms of the shells, if it was crushed or any other observation. What he found, was total of 13 conchs in two square meters. 11 of them alive and two empties.

Next slide.

Remarkable density observation. Three diving transects. The first one I just described to you; the other ones were just a straight line to count the amount of shells that were there. We didn't address how many were alive or how many were dead. But we have at least a preliminary little data of that ratio, right? Just to give you a little sense of what is going on. At least we know that not all of them were dead or not all of them were alive and there is more research needed.

Anyway, in three transects there were 208 small conchs in 172.8 square meters. That was the sample, which would make 1.2 conch per square meter. When I'm talking conch, I'm talking about any of the three species, okay? I don't pretend to say one species at this point because there are more studies needed. Again, the 13 conchs, 11 alive, two empties.

If-- and this is the part that comes from the naiveness of a fisherman, right? If the density is evenly distributed, on the whole area with a similar habitat and depth, which the area is there, the extrapolation would be 343,029 conchs, present at this place on Area-3. This is remarkable. But there is a study-- thank you to Richard --a study in La Parguera in which it was documented that just 11 percent of the area is where those conchs or species of conchs gather and there is a higher concentration. The size of the conchs that they documented matched the size of the conchs

that we documented. The density that they documented was 0.14 conchs per square meter. Note, that my number was 1.2 conch per square meter, much higher.

Next.

On the continuation of the remarkable density. On Area-3, lane snapper charter fishing ground, the area that I go fishing, where the three transects were made, was an area that is just 2.5 percent of the total area, which is 10,360 squared meters. This area probably could contain, if you used the same density of 1.2, 12,432 small conchs if density are extrapolated from transect findings. If we assume that 1.2 per square meter in 11 percent, like in the Lucarillo Bay reference, we are talking roughly around 45,000 little conchs.

I don't pretend these to be final numbers. Please, scientists don't itch yourself. I just want to show you that we also have, as an industry, the interest to find numbers and to develop research and create preliminary data to understand what is going on in our environment. More research is needed.

Next.

Relevant observations. Lane snapper with evidence of conch species consumption. This is the range of the size of all of them was adult. Small conch species from all transects, 1.2 per square meter. Conch parts from lane snapper mainly consistent of soft tissue close to the operculum. This part of the conch extends out of the shell and is potentially vulnerable to nipping. This is part of my hypothesis, and there are a few things that I would love to share with some scientists to find out what's really going on here.

Double and triple conch clusters was observed during the transects, it was not individuals randomly distributed. You could see pairs and triples together during the transect. No conch shells or fragments were observed inside of the lane snapper stomachs, if that was the case, that will support the idea that a nurse shark or a bigger fish crashed the shell and they ingested and some of those good parts and that will have fragments of conch on it.

We didn't see that, which is consistent with random. No sig-- which is what I say below. Most of the conch individuals observed on Area-3 are strombus pugilis, identified to species using conch shell diagnostics then released specimens alive. And thank you to all the scientists that help me out to identify the most common species by using the shells.

And I want to comment that the operculum of the small conchs about the same size I saw, some of them have a soft surface on the edges of the operculum, others have serrated edge, which is one of the things that is used to distinguish between the species. More study is needed to make sure that besides strombus pugilis, what else is in there?

Next.

Area-1 versus Area-3. Area-1, in 62 fishing trips, I observed in two trips conch pieces, regurgitated at the boat, 3.2 percent probability to see conch on this area opportunistically regurgitated at the boat. Area-3, eight fishing trips, five trips I saw that event happening, 62 percent, which means that 19.3 times more likely to see opportunistically conch being regurgitated at the boat on Area-3 versus Area-1. That's a very strong number right there, right? And probably can guide us on future efforts to really put a method there to answer more questions.

Next.

Questions answer. This is the part that when I was thinking about it, I saw how cool it was to do this effort and to dedicate time money and effort to do this because I feel that I'm representing the capacity of the fishing industry on producing important information to support ecosystem-based management.

Lane snapper, lutjanus synagris, directly feeds on conch species in the waters of the East Coast of Puerto Rico? Yes. That's new. Documenting lane snapper predation on conch species providing important information about ecosystem interaction? Yes. The main species of conch observed so far in Area-3 is Strombus pugilis? Again, thank you very much all the conch specialists that confirmed the conch species by the shell. Thank you to those experts. This is a bridge that cannot be related just because Marcos is a Chairman or a guy that calls people. This is something that needs to be available to all the people from the fishing industry when they want to be supported by scientists.

Next.

Questions to be answered. How or in what matter does lane snapper feed on conch species? Which conch species are consumed by lane snapper? Which species of conch occur in Area-3? What factors drive the relatively high density of conch in this area? Trophic relation relevance? Are there temporal/seasonal shifts in density of conch species in Area-3? What are the habitat characteristics of Area-

3? There are other questions, these are just the ones that I could come up with.

Next.

Historical dilemma. This is an opportunity that this Council in front of us, we have to find the new doors, the new ways of addressing speed on data, engagement, education and capacity building for this area.

A historical dilemma is when you treat an anecdotal information versus scientific information and to make the bridges and the connections in between them. The definition in Oxford language says, not necessarily true or reliable, because it's based on a personal account rather than facts and research. Please don't forget that definition. At the end of the presentation, I'll have a message related to that. That's what anecdotal is. That's correct, right?

Too often we hear from the fishermen, can you help me to document, record, corroborate my observation? I've seen this happen for 30 years. What happens is that it's not on the cycle of research, it's not the priority at this moment and that opportunity gets lost. In the Caribbean, we have a high demand for data. We need to do a better job on this.

Fishmen need to be more participative. This is a call for the fishermen, and this is a call for the scientists.

Next.

Ecosystem-Based Fishery Management. How can ecosystem-based management work better? Must include the best scientific information, tools, models, and data development. In order to do that, new mechanisms to corroborate industry expert observations utilizing rigorous scientific-based methods have to be developed. I call these the doors. Where are the doors that we can knock and be participative on the development of new information based on science? We need to develop those doors.

Pursue new scientific input from all stakeholders for model development and in the decision-making process. This means that industry contributions should not only be limited to anecdotal information. That ends happening that is not so important. It is informative, but it's not so important because the industry doesn't have the same capacity and opportunity to prove their points with a scientific method or to pass through the process.

Next.

Hope is the way to do it. Find scientists that truly recognize your knowledge and experience are valuable. Discuss with the scientists how to move forward starting the data collection and process. Make yourself available to collaborate in scientific study. We heard that today on this room many, many times. Continue requesting support and industry engagement. Participate in formal scientific data collection, especially the ones you recognize the importance and that you can dedicate your time.

New momentum. New momentum is currently related to establish NOAA Caribbean Fishery Branch, current interest in support of fisheries data collection improvement and engagement with the stakeholders. That's an opportunity. I see that, and that's why I'm doing this presentation, because I want to reinforce the need and to reinforce that opportunity.

Make your expert observation count and be part of the scientific process. This is the only way to ensure rigorous and meaningful ecosystem-based management on the Caribbean. When I put that priority of NOAA, Southeast Fisheries Management Center, if you noted, in data collection there is a NOAA ship and a drone. There is not much something elusive to fishermen collaboration or fish dependent data collection. There's probably a new bubble that would need to be put right there. I know they can follow through some of those bubbles, but I see as a very important bubble to be there, another circle that should be there. Graphically or in terms of concept.

Next.

Recommendations. Create a task force and allocate resources at local and national level to guide fisherman on how to collect, document, record and store initial relevant information from fishermen’s perspectives. Support fishers in the design of forms and other digital tools to collect initial data. That doesn't mean that that data is going to end in a full-blown data collection, but at least we have a startup that once the opportunity arrives, we are in better position to start. There's no promise, right? We don't have money for everybody. We don't have people for everybody. But we have to start some way somehow.

To facilitate the engagement of fishermen with researchers, cut costs, and speed up research tasks, propose establishing a list of future potential fishermen scientific collaborators. Industry task force. The list would potentially include information provided by each fisherman on their boats, licenses, target species, areas of

expertise, and specialized skills and license, insurance, etcetera, etcetera. My experience is that most of the researchers spend six months to a year before they make the right content and identify collaborators to do research in the Caribbean. That's something that we can support the system by creating an industry class force.

Must report the research results to industry collaborators. So many times, we are taxis. We take people out there they do the job. We don't receive feedback from the results, And that's the story. The fishermen need to be considered on those results and receive feedback of the results because that's capacity building. You are making them understand what is going on.

Include fishers on future studies in all developmental steps of fisheries-related scientific investigations. For example, include fishing associations, use independent fishers, fishing villages and others. Less anecdotal and more meaningful information is the important thing.

Now remember when we talk about the definition of anecdotal. I'm going to read this very careful because it took up many hours for me to try to put this in the right measure. For me, anecdotal information observations just waiting to be verified and proven true or reliable. These are based on many years of personal observations or professional observations and generations of knowledge rather than facts or research that also change and evolve over time. Just like the anecdotal, right? The anecdotal can change because it's not solid, but science also can change because that's the evolution of life.

Both complement each other and are essential to building the best information available for ecosystem-based fisheries management. What I'm trying to say is that there is no friction here. It's just a need for coordination between the sectors and between the concepts.

Next, this is the citations. Next.

Very briefly, I didn’t know if I needed to put that out there. Most of the people that revised this told me to do it just because I wish more charters and commercial fishermen can follow those steps and do a private initiative like this. 787Fishing Research Project is a private initiative from my charter. Our mission is to opportunistically collect preliminary data from day-by-day in the water. Making observations available to researchers, graduate students, agencies for the future research projects to speed up the process due to our high data need, information need that can

guide us better.

The initiatives nowadays are, barotrauma, deep-water squid that we presented at this Council. We just had Fuete y Vergilla distributed to everybody. Recently, I'm collecting bait fish in relation to the sargassum influx. That's coming up, that will be my next presentation, hopefully, to this to this Council. Lane snapper and Strombus species field observations presented today.

Note that these initiatives are grassroots, private donation of time, effort to support science development follow-up, formal research effort are conducted in collaboration with the research and agencies.

And thank you for your patience and understanding my emotion, my drive to do this. This is not a criticism; it's just trying to lay it out there, opportunities of engagement and opportunities of doing a much better job in terms of how we collect or have access to new information.

Next slide. Questions? Kevin and Nelson.

Questions/Comments

KEVIN MCCARTHY: Thanks, Marcos. Really nice presentation. I was having flashbacks to years ago when I used to work on conch when you were going through all the all of that work. I really appreciate your emphasis on collaborating with the fishers. As I've mentioned in a couple of my presentations, we have some CRP, cooperative research programs kind of things going on both with the gear selectivity, with the-- You know, even with working with fishers in the port sampling, you know, to make sure that when we have people out there, they're doing the best job possible and they can move things through.

One of the ways we like to approach this is that in-- you know, I like the idea of having conversations right at the beginning, so that we can understand and learn from the fishers in various aspects of designing a project. Right? There are things that the fishers bring to the table. There are things that the scientists bring to the table. And getting all of that expertise together I think is a really nice way to start a project. In addition to going out on the water and doing all of that work.

But right from the beginning, talking to one another, and learning what the fishers know, making sure that as scientists we're explaining, "here's what we're trying to do. This is what the project's supposed to do." And then most importantly, at the end

of it, coming back and reporting out. Right? “Here's what we did together. Here's what we learned.” So, I think that's really important.

I like the idea of the way you use the term “capacity building” because a lot of times when we talk about capacity building, we're talking about building more labs or getting more lab space and thinking about capacity on the science side. But I like the idea as well and that terminology of capacity for having a group of fishers that are willing and able to participate in the actual work on the water. So, I think that's a great use of the term. And I really appreciate your presentation. So, thank you very much.

MARCOS HANKE: Thank you very much. Nelson.

NELSON CRESPO: Thank you, Marcos. Excellent. We are connected in mind. We are on the same page. We are seeing that the interest of fishermen in contributing to the management of fisheries is growing day by day. I think that it would be of great benefit for both for both parties, the scientific and the fishery community.

I suggest studying the possibility of creating a bank of fisher scientists for P.R. and the U.S.V.I., trained to support the scientists when they are going to do investigations. Instead of looking from somebody else, they can check on a list of fishers and call them. They can be trained to know how to take otoliths, make measurements, process samples, how to collect info, etcetera. The advantage of this is that the fishers can bring support with knowledge to the field and be involved in the process.

That would be really beneficial for everybody because the fishermen are going to have a stronger trust on the scientific support and then the support is going to have more valid information because it is coming straight from the field. I think, you know, we can take a good advantage of this.

MARCOS HANKE: Thank you, Nelson. Basically, in other wording, I presented the same. Thank you very much for restating that. I want to -- I'm going to give you the word, Julian. I want to highlight this. Today, during this meeting, we have nassau grouper representation by Evan, deep water presentation by Stacey Williams, the work with Reni García, Wess Merten, all of them with a strong emphasis on the fish industry or fishermen participation and the need of more of that participation. I want to highlight that this is already happening and that's something good that talks good about our region and our Caribbean Council. Julian and Andy.

JULIAN MAGRAS: Julian Magras, for the record. Excellent, excellent

presentation. For the years I have known you, Marcos, you have come a long way. You've been putting a lot of really, really good presentations and creating a lot of new avenues for the fishers and the community.

I've been preaching this for a very, very long time with my counterparts, Nelson and Ed Schuster. With the fishermen involvement, I think we can accomplish a lot, lot more and gather a lot more information to fill in those boxes that need to be filled in. I think with the proper training that our work can be validated and be sound I think you can create, like Nelson said, a nice group of individuals, it could be fishers, it could be fisher families, because a lot of the fisher's wives work very close with the fishers also.

I really, really think this is a move in the right direction. I hope that we can continue the discussion. Not only the discussion, but implement this, so when that future comes in, when we sit down to do an assessment, we would have the information that the scientists need in order for them to do their job because we were able to collect it in a timely manner. Thank you.

MARCOS HANKE: Thank you, Julian. Andy?

ANDREW STRELCHECK: So, Marcos, I commend you on your presentation. Clearly showed your passion not only for fishing, but fisheries management. And so, I appreciate that.

A couple of thoughts here. I fully agree with many of your recommendations. Right? I love the idea of a bank of fishermen to support fishery managers, scientist, others in terms of the work that needs to get done. As you and I think would agree, there's millions and millions of questions that could be asked. There's lots and lots of gaps in information. And so, anytime you're working toward, kind of, addressing those questions, you really want to be very thoughtful and strategic in terms of specific questions. What would be asked or evaluated an answered and then more importantly, kind of, setting expectations. How's that data going to be used? What could it be used for if collected in the right manner? So, I think that's where Kevin and his group at the Science Center come in.

But I also see a huge opportunity here where this really needs to be well coordinated. In the South Atlantic, they have a citizen science program, a coordinator that sits at the South Atlantic Council. I'm not suggesting that's the option right here, but it puts the emphasis on that person to help work with industry and coordinate an ask these specific questions that then can feed into

the scientific process. Here, you have the liaisons. We just got liaison reports. Maybe there's some bandwidth or opportunity there to work with them as well.

But I think the key to all of this obviously, kind, of being very specific in terms of questions that can be asked and kind of sequencing that and building the program, right, and building the buy in and support. So, I really love your comments and I look forward to kind of expanding upon this and how we can really improve working relationships.

MARCOS HANKE: Thank you very much. I really appreciate all the support you can give us into the future and we're going to keep for sure the conversation. Richard?

RICHARD APPELDOORN: Yeah. Two things. First, a follow-up, specifically on Nelson's comments.

What he was talking about is exactly what the SSC had as one of its bullet recommendations. It was to train fishermen to be able to be the collectors and to be able to do the monitoring certainly in ways and in intensities or coverages that most programs can't do, you know, without their help.

The second thing, just to go on. So, Marcos, did contact me about this and of course it combined two of my favorite things, conch and connectivity. So, he had me rather captive and I was glad to drop whatever boring thing I was doing probably SSC work. [laughter] And, you know, help him out with this. And, you know, one of the questions was, I think, what somebody mentioned, "Well, how do we use this?" How can this actually serve something the Council really needs to know about? And so, you know, on the one hand, you've well documented that the fish are feeding on these species, and you already have enough for a short scientific note to that regard.

There are other questions, like you said, "Well, how do they actually do this?" That's, outside of watching hours and hours of video, hoping to capture one, I'm not sure how you would do that. But one of the things I had mentioned was, you have two systems here that gives you kind of a replicative comparative systems, because they're not exactly the same, but they're looking at important aspects of connectivity. These fish move around. They've found a resource that's in these bays. You know, how important is the bay to their feeding and the species of the bay? Where are they taking that energy to? Because they'll go someplace and then they'll defecate and urinate and supply nutrients to someplace else.

So, this is the kinds of things, from an ecological point of view, that are important in EBFM. Of course, there's lots of other things too. But to me, that's where the scientific value was. And if I was not retired and banned from the sun, this would be something I'd really be excited to pursue.

So, you really opened up an exciting avenue, I think, and I'm hoping that we can find somebody that pick that up?

MARCOS HANKE: We can follow-up on that. The whole idea is for the information to come through, right? For us all to get informed. Thank you. Cristina.

CRISTINA OLÁN MARTÍNEZ: John Walter is waiting for a turn to speak.

MARCOS HANKE: John Walter, the floor is yours.

JOHN WALTER, III: Okay. Hopefully, my video works. Can everyone hear me?

GRACIELA GARCÍA-MOLINER: Yes.

JOHN WALTER, III: Good. I'm sorry that I can't make it this week to the meeting. I'm really glad that Kevin is able and representing the Center.

Marcos, Mr. Chair, your presentation really resonated with me having spent most of my master's degree cutting open fish stomachs. I share your passion for figuring out what they eat and making sense of it. So that was it's really neat to see. And I think what also really resonated with me was your comment about reaching out to the science community, and it's a two-way street for us to be able to make progress. So, I think Kevin is there; reach out to Kevin. You've got other great scientists that have been very involved in the fisheries and in research. I think that that two-way street between collecting and using the information and knowledge of fishermen and working with science to turn that into actionable management is, I think, the key.

The other big piece of that is the funding to be able to do that because resources are limited. But I will note that there are cooperative research program grant projects that are quite effective in us being able to motivate the funds to address fishery issues. There is also Saltonstall-Kennedy grant program, which a lot of that is to promote fisheries and fisheries marketing and those are going to be announced, actually, today. The FY2022 S-K

grants. So, those are ones that can specifically be used to motivate a lot of this kind of work. I just want to call those people's attention.

And thank you again for the great presentation and acknowledging our Center's commitment to the Caribbean with our new branch that Kevin leads. Thanks.

MARCOS HANKE: Thank you for your timely participation. Thank you. Yes, Miguesl

MIGUEL A. ROLÓN: Thank you. I believe that, not at this meeting, but I would encourage Marcos, Graciela, and Richard, to put your minds together and come up with a study that can be of significance out of the list of topics that the SSC put together. Maybe we can identify a study that will have the participation of U.S. Virgin Island fishers, Saint Thomas, Saint John, Saint Croix, and Puerto Rico, of something that is doable. We can start this year. And for that, we can set aside some money. We don't have a lot of money, but we can set aside some money.

If we can follow this with an example of a survey, of a study that will engage the fishers, this would be an example that can be used for other years, so we can allocate funding. It was mentioned before, we have S-K and other sources of funding.

In addition, yesterday, you mentioned that there is a new, let's say, fishery or new use of fish traps around Puerto Rico. We need to have that information ready for the Council to make any decision. Remember, in the EEZ, you are not allowed to use trap, but there is still the use of traps. I was talking to Reni and, for example, outside Ponce they were doing a survey of the fauna associated to the with the outflows of sewage at a very deep depth, in deep waters, and they couldn't dive there, so they used traps. All of the traps came full of fish. So, there's an interest of having this.

So those two projects. Two opportunities. One project that Marcos and Richard and Graciela can put together with the help of anybody else that is able and willing to join, could be followed this year, to start it this year. And I believe that you should also check with the liaison officers, with the Chairs of the DAPs to see if we can put together that project with the participation of those fishers.

And thank you for your presentation. I believe that it is timely. Thank you.

MARCOS HANKE: Thank you to all for your patience and all the questions. I feel very honored to have this opportunity. I really do. Graciela.

GRACIELA GARCÍA-MOLINER: So, one request would be to make sure that we have the support of the Office of Science and Technology or something like that, because for the deeper water traps, etcetera, we would really like to look at what's in the bottom. What are the habitats that we would be impacting. So, the Nancy Foster was recently here for two missions, you know, mapping and using of an ROV. We do keep in contact with the other NOAA Offices that deal with mapping and habitat descriptions, etcetera. So, I think that we should really find like a point, a person of contact, that can be working with us doing these projects, especially for the deeper water technology that we need.

MARCOS HANKE: We have another item on the agenda and we're going to keep going. We have no other questions. We have enforcement report. I'm going to start with Puerto Rico.

DAMARIS DELGADO: Hello?

MARCOS HANKE: Hello, Damaris. Happy to hear your voice. How are you?

DAMARIS DELGADO: I am good. Nice to hear you too.

MARCOS HANKE: Go ahead.

Enforcement Reports
Puerto Rico—DNER

DAMARIS DELGADO: Nice to see you. From our part since December 2021. We have been acquiring new equipment for rangers for the maritime units. Within that equipment, there are three new utility cards, these are what we call 'cuotas,' for the Maritime units. And we are waiting for six jet skis that would be arriving at any time now. There has been acquisition of vehicles as well. Rangers have been taking trainings, including the ones of skills for interventions, right interventions.

DNER has identified funds to establish a new ranger school, what we call 'Academia' for the rangers, so we can recruit many more rangers as employees. Efforts of patrolling and surveillance in coasts, ramps, docks, and coastal waters around Puerto Rico were conducted. An intervention was carried out with hawksbill turtle that a person was found with one of these species in Aguadilla, and the case was submitted to the legal office.

There have been at least two referrals to Borges, Agent Borges, because these people had taken mackerel species without permits, without the HMS permits. Also, I have one illegal taking of 36 queen snappers without a license. This was also in the Northwest side of Puerto Rico; this was in Aguadilla as well.

So, this is the report that I have for now. If you have any questions.

Questions/Comments

MARCOS HANKE: Thank you, Damaris. Nelson.

NELSON CRESPO: Hola, Damaris. Qué bueno verte. Just a recommendation about the Ranger's Academy. If it's possible, I would like to request to include ID species identification and federal law update for all the new rangers. All we know is that there is a lag, they don’t know all the regulations implemented and sometimes that causes a problem, a misunderstanding with fishers and the Rangers. That's my recommendation.

DAMARIS DELGADO: Thank you very much. So, as Yamitza was explaining in the chat. We have been giving training to the rangers with regards to the law, fisheries law and regulation, and on identification of species.

So, I think, you know, continuing education is always good. Maybe we can try to standardize the times for these type of training with the coordination of the head of the rangers. We could try to do that. As of now, it has been spontaneous. Whenever we our resources, internal resource within DNER, can make it, they coordinate the trainings. But we could try to do something more standardized, like to make sure that, I don't know, maybe two times a year or whatever is needed is conducted.

So, I'm open, you know, to that to those discussions. As a matter of fact, when it was suggested in the chat. I touched base with the director of the Rangers, and I asked her what she would think about it, in terms of more of an official type of training continuing education to the to the rangers being instructed from the head of the rangers. Instead of efforts through our offices within the Secretary of Conservation and Research, and the Bureau of Fish and Wildlife.

MARCOS HANKE: Thank you so much.

DAMARIS DELGADO: So, maybe I could help to gather more rangers

taking the training, maybe. So, thank you for the recommendation, Nelson.

NELSON CRESPO: Thank you.

MARCOS HANKE: We keep in touch with you offline to support any effort you need from us. We're going to have the report from Manny Antonaras, OLE.

NOAA Fisheries Office of Law Enforcement

MANNY ANTONARAS: Thank you. Alright. Good afternoon, everybody. My name is Manny Antonaras. I'm with NOAA's Office of law enforcement. I got a few updates for the Puerto Rico and U.S.V.I. field offices since the last meeting when we presented.

Next slide, please.

These are just a couple highlights of some patrol activity and complaint response that our special agent in Puerto Rico Miguel Borges, and Alex Torero, he's the officer in Saint Thomas.

So, first slide I have here is for Puerto Rico. We responded to a couple of complaints of illegal fishing in Bajo de Sico. So, Miguel along with Alex Torero set up a patrol operation targeting these areas and they actually worked in conjunction with CBP air marine out of Puerto Rico. During that patrol, they conducted boarding with eight vessels. One of those boardings resulted in summary settlement offer that was issued for harvest of yellowfin tuna without the required HMS permit. Another vessel was issued a written warning for having paying customers on board. That vessel had an HMS permit, it was just an incorrect permit. So, Miguel opted to issue a written warning for that particular incident and helped the captain obtain the correct HMS permit.

Special agent Borges has also initiated an HMS investigation that was a result of a social media post involving a fisher that harvested yellowfin tuna. After making contact with that fisherman and determining that there was actually a violation, Miguel also documented that with a written warning and helped that fisher come into compliance.

We had a complaint that came in into the Puerto Rico field office involving some more HMS compliance harvesting yellowfin tuna without HMS permits. And after that case was initiated, a follow-up investigation was conducted with some field interviews. A summary settlement offer was also issued in that particular case. And that one was for a thousand dollars. And then following that

summary settlement, we helped the fisher come into compliance by obtaining the appropriate HMS permit.

Next slide, please.

This is just a few pictures that I pulled out of our weekly report. These top two pictures were from Puerto Rico incidents and actually all of them, but the one in the middle was out of U.S.V.I.

Next slide, please.

This particular one. Okay. So, this is just a follow-up on the Puerto Rico recap. We had another investigation involving a social media post. This complaint came into the San Juan field office as well and involved individuals that appeared to be swimming with dolphins. And so, dolphin harassment has been an issue throughout the Southeast, and we have been receiving reports in Puerto Rico and the U.S.V.I. So, in this case, also provided compliance assistance. The agent was able to contact the tour operator that offers cruising and beach tours and provided outreach education in an effort to deter that activity in the future.

We're also following up on other legal, actually illegal feeding of dolphins. These are specific to Puerto Rico, and the agent in Puerto Rico is working with our office of protected resources at the regional office to address those. We've got a few ongoing investigations. We're also doing outreach education and posting signage when possible. We have in the past worked with some marinas to post signs. I believe I gave an update on one of those incidents during to last meeting.

The last bullet I have here for Puerto Rico was a joint effort with customs border protection, and they offered opportunity for the agent to come in during their custom border protection trade week. The agent provided a brief on our mission authority and sorts of things we do. They CBP has actually been very helpful. They've offered us opportunities for patrols. They they've assisted with providing air assets upon request. And so, we maintain that relationship along with relationship we have with P.R., DNER, and DPNR and U.S.V.I.

Next slide, please.

A few updates on the efforts in U.S.V.I. So, as I mentioned earlier, we have enforcement officer Alex Torero assigned to Saint Thomas. During the past couple months, he worked with U.S. Coast Guard, they initiated two patrols in the EEZ, and this was following some complaints of foreign vessel incursions from the

North. They patrolled North of Saint Thomas and Saint John. No targets during that particular patrol.

Also worked with Howard Forbes group, the officers with DPNR to respond to a complaint of dolphin harassment in U.S.V.I. They conducted some patrols on two separate days and areas harassment was being reported, and those are still being monitored. Note, nothing in terms of actual vessels or subjects documented during those visits.

Then there were-- Let's see. A couple patrols were done. One was a joint patrol with DPNER looking at HMS charter fleet, monitor those. There were three separate land patrols. Again, ensuring compliance with the HMS charter fleet. And then there was also dockside patrol looking at commercial fishery offloads.

And the last bullet I have there involves a complaint that came in that impacted, but the complaint that came in was that folks were interfering with a sea turtle nest habitat. So, the officer in U.S.V.I. responded with DPNR biologists to the area and worked to put up some signage there, you can see along the beach access, in an effort to deter any future harassment. And as you can see there, that sign also post the potential fines for damaging see turtle nests.

Next slide, please.

I wanted to just briefly touch on our SIMP and CITIES activities. So, for those that don't know, we have a growing priority for SIMP enforcement. That's a Seafood Import Monitoring Program. And CITIES, which is actual actually something that the U.S. Fish and Wildlife takes the lead on, but it's something that applies when we're doing our inspections of product that's coming into U.S. ports.

So, we have begun looking at seafood product coming into Saint Thomas and U.S.V.I. And as you can see there, SIMP, Seafood Import Monitoring Program, establishes reporting and record keeping requirements for all imports of specific seafood species. There's 13 of them. And the intent here is to combat IUU or illegal unreported and unregulated seafood product that are caught and/or misrepresentation or falsely labeled from entering into the U.S. So SIMP provides additional protections for things like our national economy, global food security, sustainability of our ocean marine resources.

So, there's, like I said, 13 different species groups, the first 11 were implemented in January of 2018. And then there were two

other groups that were added, that's the shrimp and abalone that came online in December of 2018. So, of those 13 groups, there's 1,100 unique species that are included in the SIMP program. And those are determined based on the species that are most vulnerable to IUU fishing, seafood fraud, or both. And as you can see here, SIMP covers about half of all seafood imports into the United States.

And so, for those 13 species groups, that they're a part of SIMP right now that includes things like-- and again, this is a nationwide program, so it's not specific to the Caribbean. But the species that are currently covered under SIMP are abalone, atlantic cod, blue crab, dolphin or mahi, all the grouper species, king crab, pacific cod, red snapper, sea cucumber, shark species, shrimp and swordfish. And the last one is tunas which covers albacore, big eyes, skipjack, yellowfin, and bluefin.

So, all those species that are coming in are subject to these traceability documents that have to be uploaded and submitted. Our officers and agents use the, it's called the ITDS, International Trade Data System, which is the government single data portal for all imports and exports reporting to trace species back to the point of harvest or production and verify that they were lawfully harvested or produced.

Next slide, please.

That concludes the updates. And I have here contact information for Miguel Borges and Alex Torero. And as I usually do, I included the report a violation link on the bottom.

And let me just add one note before we go to questions. I talked to Marcos about this earlier, but our office is in the process, right now, of doing a five-year priority setting. We do this every five years. So, our current five-year priority is expiring this year in 2022. So, for 2023 through 2027, we are now, you know, in this current year setting in the priority setting process. And what we like to do is reach out to constituent groups, to the Councils, to our partners, our state partners, and federal partners, and ask for input as we set those priorities.

One thing I'd like to do with the Caribbean Council is extend an invite to the DAPs for Puerto Rico, U.S.V.I., Saint Thomas and Saint Croix and ask for inputs from those DAPs but also from local fishers as we consider priorities and priority setting for the next five years. I know there's been a lot of concern with different things that have been brought up through this Council and we have addressed them as best as we can with limited

resources, but the important part of priority setting is getting the information and prioritizing. What we say is "prioritize the priorities" because, you know, everything is a priority to different groups, but we want to do those things as effectively and efficiently as we can in conjunction with our partners.

Questions/Comments

MARCOS HANKE: Yeah. Noted. Sorry to interrupt you. I just want to make sure I don't forget. Please send an email to us to formalize the petition. We took the note from it, and we can coordinate like a virtual meeting with the DAPs Chairs or any other form to do that.

MANNY ANTONARAS: Great. Thanks. And that concludes the brief. I'll take any questions.

NELSON CRESPO: Nelson? Thank you. Excellent. Excellent report.

First of all, the fishing community have started feeling your presence. I know that because they are driving me crazy asking how to obtain the permits, especially for the HMS species and that's good, because I drive Miguel Borges crazy too with all the question they have. I think that it is appropriate if you, in one way or another, can bring some workshop to the local enforcement agency, especially the DNR rangers. Because for example, two weeks ago, one ranger had an intervention with one fisher and wanted to confiscate their catch because he had tunas. "You don't have the HMS permits." But the tunas he had were blackfin tuna and little tunny, which you don't need to have an HMS permit to carry.

Lucky for him, another fisherman that knows the regulation asked the ranger, are you sure about what you are doing? And the ranger, didn't weak about that, made some phone calls, but he didn't give up. He said, "I'm going to give you a break. But I'm going to give you a ticket because you don't have a fire extinguisher." But he didn't want to say, "hey, sorry, you know, I made a mistake."

Also, I think it would be of great help to the fishing community that when Miguel has the time, make an intervention in the PEPCO that Wilson is developing. You can have some talks with the fishers and explain about federal regulation. That would make all the parties be conscientious and work better and try to avoid having problems. Thank you.

MARCOS HANKE: Julian.

JULIAN MAGRAS: Julian Magras, for the record. Great presentation.

On behalf of the Saint Thomas/Saint John District, I had the opportunity to sit down for a couple hours and talk with Alex. And his presence has made a big difference in our area also.

While I was there with him, you know, I gave him a couple of things that I asked him to please look into. I sent in some pictures from a couple of our big food suppliers with mislabeling of species. Within a few days, that problem was corrected. That shows me his passion for what he does. He explained to me what his ultimate goal is and how he wants to move forward and we're planning a meeting coming up here very soon with the Fishermen's Association. I told Manny today, this morning, that we will be inviting him to meet the fishers and his presence and give him give a little introduction and what he's there to do.

He's also looking into a couple other issues with the undersized lobster tails coming in. And also, I was glad to see that the turtle issue made it up there. I received that call at 3:45 am in the morning, about that turtle nesting from some people that go there to lay off beach chairs for the tourists at that beach. And the guy called me, and he's like, "This turtle is nesting." So, I said, "Don't worry about it." I said, "don't trouble it. Secure the area until I can get the people there." I contacted the turtle people, and I contacted Fish and Wildlife, sent them messages and within an hour, they responded.

When they responded, they were having issue with one of the guys that was cleaning the beaches, and he was telling them, "You guys have to leave them. We're going to come back and we're going to take the turtle eggs." So that's what prompted them to get involved. And I'm happy that you guys got involved to protect that nesting.

So, I see great things happening and I look forward to the continual open dialogue. Me and my fishers and whoever else from the U.S.V.I. wants to be involved, I feel that we'd be more than happy and working this five-year strategic plan. I can go back. Since it is going to be the DAP Chair at the meeting, I'll go back and speak with my team and see if any of them have any pressing issues that they would like to make recommendations to that plan. So, thank you again.

MARCOS HANKE: Jean-Pierre.

JEAN-PIERRE L. ORIOL: Manny, just one quick question. Does OLE specifically respond to turtles or other ESA listed species as well?

MANNY ANTONARAS: Yeah. We respond to other, not just specifically turtles, but other ESA complaints as well. Now, we do have, for sea turtles, we have authority and jurisdiction to respond, although we do have a memorandum of understanding with the U.S. Fish and Wildlife service, they typically respond to turtle violations or complaints that are on the beach.

JEAN-PIERRE L. ORIOL: All right.

MANNY ANTONARAS: We respond to those that are on the water. But we can respond to those that are on the beach as well if U.S. Fish and Wildlife isn't present or they've asked us to assist?

JEAN-PIERRE L. ORIOL: So, Puerto Rico and the V.I. are in this unique category where coral is listed as threatened species. I think it's about every week there's a grounding, primarily on the Puerto Rico side. What's the OLE response when there's groundings? Because I know that Coast Guard is usually one of the first ones that are out there just to make sure from a life and safety perspective.

But a lot of times, particularly with the species that have been listed, these are on the threatened list. I was just curious as to, sometimes we get these large swathes of areas that are damaged. And so, what's OLE's typical response from a grounding perspective because chances are, particularly with Orbicella listed, that Orbicella has been impacted for the most part. So, I was just curious as to what that procedure would be or how we could ramp up? Because there are a number of groundings that are taking place and now, they're affecting listed species.

MANNY ANTONARAS: Yeah. We typically respond to groundings. Let me let me go back we will follow-up on groundings. This happens time in the Keys, Florida Keys, for example. And when there's a grounding, typically the FWC or the state agency will respond. They conduct a site assessment and then forward those cases to our office for review. There are a couple different avenues that we can pursue for groundings. But there's also and this may be a better question for our legal counsel. Just because corals are listed, it does not mean there are prohibitions in place.

I'm not sure if Loren Remsberg may be able to address that, if she's online. Do you know Jocelyn, if Lauren.

LOREN REMSBERG: I'm on Manny. Can you hear me?

MANNY ANTONARAS: Yes. Thanks, Lauren.

LOREN REMSBERG: Yeah. That's generally true. I think some coral types are listed as threatened and if there is not a 4(d) rule in place, then there's no actual prohibition on take of those species. But, you know, each grounding would have to be looked into case by case to determine what was there and what the options are.

JEAN-PIERRE L. ORIOL: Okay. And then one quick follow-up.

So, OLE doesn't have its own, let's say, penalty matrix for direct damage. Like, I know the state of Florida does. We kind of mirror what Florida does in terms of from 0 to 10,000 square meters, there's a set penalty. And then over that, there's an ecological assessment for loss of ecological function. But does OLE have a penalty matrix as well?

MANNY ANTONARAS: The penalty schedules are actually set by the Office General Counsel. So, we would refer the case and then they will review it and if warranted issue a penalty. And so, there are cases that can be issued a penalty following, you know, our office referring that case. But then there's also another route that that can be taken with the-- Lauren, what is the group, if you don't mind, the group that does the assessments for the cases that—

LOREN REMSBERG: The restoration center?

MANNY ANTONARAS: Restoration. Yes. Thank you.

MARCOS HANKE: Thank you.

LOREN REMSBERG: I'll just follow-up also. The Office of General Counsel Enforcement section, our penalty policy is a public document. I can share the link in the in the chat. But we do have a schedule for ESA violations, and it takes into account gravity, injury, lots of factors, as well as culpability. So, I'm happy to share that link. But that's what we would look to in assessing a penalty.

MARCOS HANKE: Okay. Thank you very much. Andy. And we have to wrap up, we have to end sharp at 5:00 because we don't have translation anymore.

ANDREW STRELCHECK: So, I'll follow up with Miguel and the Council staff. So, as mentioned, there's a restoration program. So, besides law enforcement penalties, they're going to go out and assess the damage. They're going to determine the remediation that's needed. The cost will be, you know, borne by the person that created the damage and including obviously just review and surveys and work to assess the damage. So, we have a program that's dedicated to that.

We'll get you the points of contact, in case you have future questions.

MARCOS HANKE: Thank you for this life coordination of efforts and clarity. And thank you so much, Howard, for moving his report for the next meeting due to our short time on this meeting. And thank you very much. Okay. The next item on the agenda is other business, Miguel? You're going to—

MIGUEL A. ROLÓN: Tenemos dos cosas de other business. ¿Graciela, ya tu cubriste tu parte de other business o te falta algo? No, no pero para que lo digas ahora.

MARCOS HANKE: If there are any comments in the chat, please help me out. I'm not seeing them. Thank you for the support.

CRISTINA OLÁN MARTÍNEZ: Voy. Michelle Schärer. Is that also still true for the nassau grouper, threatened but no 4(d) rule?

ANDREW STRELCHECK: Yeah. If there's a 4(d) rule for nassau grouper currently. I believe that's the case, that we do not have a 4(d) rule in place for nassau grouper.

MARCOS HANKE: Any other comments? Graciela.

GRACIELA GARCÍA-MOLINER: One comment because I think that the Council would be interested in this. So, Manny, does the SIMP follow the grouper? For example, what they call, we know that is basa, that it is not grouper, that it is some kind of catfish or some homegrown animal, and it actually becomes the grouper specialty in a restaurant. You can tell right from the start that that's not grouper.

So, there is a mislabeling in international trafficking because most of this doesn't come from the local area. That also applies to other fish and shellfish that we get served at restaurants and we know that they are not real, damaging the local fisheries.

So, my question is, do you follow this through the SIMP, or how do people let you know that that's happening.

MANNY ANTONARAS: Yeah. Thanks, Graciela. That's a good question.

So SIMP is only required for the species that are listed. So, in that scenario, if it's truly not grouper then there are no requirements to submit the traceability. That being said, it would still be a violation, a Lacey Act violation, most likely because of the false labeling. If it's an imported product. Yes. So, I

hope that answers your question.

GRACIELA GARCÍA-MOLINER: How do we report it?

MANNY ANTONARAS: Report it?

GRACIELA GARCÍA-MOLINER: Yes. So, how do, I mean, the other day, I had Basa at a restaurant and, you know, it wasn't grouper.

MANNY ANTONARAS: Yeah. And that's something that, you know, all of our officers are doing right now. So, Miguel, that's something Miguel could handle right away. So, oftentimes, when that happens, we will do sampling at the ports or wherever the product comes in. Then, the samples get sent to our lab, it's actually a NOAA lab that does species ID for us.

MARCOS HANKE: Thank you. We are going back to other business. I have a note here about S-K Funding. Are you going to say something, Miguel?

Other Business

GRACIELA GARCÍA-MOLINER: Very quick. So, S-K's Cliff Cosgrove has been emailing us because he's coming to Puerto Rico. S-K funded the part of the queen conch hatchery out of Naguabo. They're interested, they had what used to be called territorial science, so usually Western Pacific and us would submit proposals through that venue at S-K. They don't have it separated like that anymore. But they are coming to Puerto Rico and the Virgin Islands to do some outreach to see if we get more proposals, because S-K provides quite a bit of funding, and they're interested in increasing the number of proposals coming from this area.

They've hosted a number of webinars for how to do it, how to fill out the form, etcetera. Usually, the RFP comes out, the request for proposal comes out in the summer, and it's open for 165 days, so that gives scientists quite a bit of leeway in writing them up. So, I will keep you posted because they would like to do outreach to the Council and to other groups. And through-- yeah. So, we are in contact with them to see if we can increase that. So, as far as S-K, that's one.

The second thing that I have for other business is that we will have a presentation at the next Council meeting or the December meeting-- I don't know which one --on the diadema die-off that is being reported throughout the Caribbean. So, it happens very quickly. It is being considered as big as the 1980's diadema die-off. So basically, we're just coming back on with the diadema and

now it's dying out again. So, we will have that presentation for you at the next Council meeting or the next one after that.

So, the information, if anyone knows or notices, especially the fishers and the divers who are in the water, the die-off of diadema go to the Agrra.org webpage, and they do have the forms there to fill out and provide the information on that die off.

They are monitoring it in the Virgin Islands and in Puerto Rico. So, anyone who noticed anything, please let Agrra know through the webpage. You can always also contact me if you have any information, and we'll pass the information along. Thank you.

MARCOS HANKE: Miguel.

MIGUEL A. ROLÓN: Thank you. Thank you, Mr. Chairman.

At this time, we would like to-- yesterday, we met, and we discussed the membership of the different group that we have, and I have several motions that Diana is going to read for the record. We will start with the SSC.

DIANA T. MARTINO: Okay. It was decided to reappoint the following SSC members J.J. Cruz Motta, Michelle Schärer, Tarsila Seara, Douglas Gregory, Richard Appeldoorn, Vance Vicente, Walter Keithly and Jorge García-Sais.

LOUIS ANTHONY BLANCHARD: So moved.

JEAN-PIERRE L. ORIOL: Second.

MARCOS HANKE: Any discussion? All in favor say, aye.

GROUP: Aye.

MARCOS HANKE: Motion carries.

MIGUEL A. ROLÓN: And then, during the SSC, we would like to announce that Doctor Kevin McCarthy is resigning from the position of the SSC because he is now in a position were he will be passing judgment over recommendations from the SSC and so forth regarding best available information. So, the Center is recommending Doctor Erik Williams. He's an expert in stock assessment. He's very knowledgeable about the stock assessment, the fishes of this area. So, it's a recommendation. I have a letter from the Southeast Fisheries Science Center. If you want to have more information, you can ask Doctor Kevin. But at this time, we'd like to hear a motion.

The Council discussed it yesterday, and they all agreed that he would be an asset to the SSC. So, we need a motion to appoint Doctor Erik Williams.

LOUIS ANTHONY BLANCHARD: So moved.

JEAN-PIERRE L. ORIOL: Second.

MARCOS HANKE: Discussion? All in favor say, aye.

GROUP: Aye.

MIGUEL A. ROLÓN: I would like to take this time to thank you, Kevin. I know that you said in your letter that you will not be divorcing from us. You will be coming in and out. And I'm sure you will have a seat with us whenever Clay Porch cannot make it. I believe that at this time, we'd like to thank him. Doctor Kevin McCarthy has been instrumental in moving forward the issues, needs, projects for the Caribbean and for that, we are really really grateful.

KEVIN MCCARTHY: Thanks, Miguel. Yeah, you're not getting rid of me that easily. [laughter]

MARCOS HANKE: Yeah, Kevin, I want to say that this is what we hear from the fishermen, and this is what I feel as a Chairman of this Council and as a fisherman too. You represent a balance in terms of the view of really looking for the opportunities to make this better and I really appreciate that. Thank you.

KEVIN MCCARTHY: Thanks, Marcos. I really appreciate that sentiment.

DIANA T. MARTINO: Regarding the Outreach and Education Advisory Panel, it was recommended to reappoint the following members. Alida Ortiz, Ruth Gómez, Vilmarie Román, Andrés Maldonado, Gerson Martínez, Esther Vélez, Jannette Ramos, Kim Iverson and Emily Muehlstein.

LOUIS ANTHONY BLANCHARD: So moved.

JEAN-PIERRE L. ORIOL: Second.

MARCOS HANKE: Any discussion? All in favor say, aye.

GROUP: Aye.

MARCOS HANKE: Motion carries.

ALIDA ORTIZ SOTOMAYOR: I have a question. This is Alida. Diana?

DIANA T. MARTINO: Yes. Adyan Rios?

MIGUEL A. ROLÓN: She's already appointed. You don't have to talk about it at this meeting.

ALIDA ORTIZ SOTOMAYOR: Okay. The other ones were appointed also.

MIGUEL A. ROLÓN: No. This is for the appointment where their term expired. Adyan Rios is a new member her time will expire later.

ALIDA ORTIZ SOTOMAYOR: Okay.

MIGUEL A. ROLÓN: She's a member.

ALIDA ORTIZ SOTOMAYOR: Okay.

MIGUEL A. ROLÓN: And also remember-- but that's a good point, Alida, for the group. And also, we have observers, the three liaison officers are observers. And two members of the OEAP, are from the Gulf Council and the South Atlantic respectively, and both Emily and Kim have been instrumental in helping us shape our team to work on outreach and education panel. Thank you, Alida.

ALIDA ORTIZ SOTOMAYOR: Okay. Great. Now I'll be quiet.

MARCOS HANKE: Miguel.

DIANA T. MARTINO: Regarding the Saint Croix DAP. They recommended reappointing the following members. Tom Daley, Virdin Brown, Mike Fuller, David Gubser, Marcia Taylor, William Tobias, Edward Schuster, Patricia Skov, Gerson Martínez, and Michael Funk.

LOUIS ANTHONY BLANCHARD: So moved.

JEAN-PIERRE L. ORIOL: Second.

MARCOS HANKE: Any discussion? All in favor say, aye.

GROUP: Aye.

MARCOS HANKE: Motion carries.

MIGUEL A. ROLÓN: Two members, Robert Thomas, and Michelle Pugh. In the case of Robert Thomas, we thank him for his participation.

There will be a vacancy. During his position, he hasn't shown up to any of the meetings. In the case of Michelle Pugh, Carlos Farchette offered to talk to her about-- she's retiring, so we want to make sure that she can participate and she's willing to participate. Thank you, Mr. Chairman.

MARCOS HANKE: Thank you very much. Is that all for other business?

DIANA T. MARTINO: No. I still have one more.

MARCOS HANKE: Okay.

DIANA T. MARTINO: Regarding DAP for Puerto Rico, it was recommended to appoint Edwin Javier Arroyo, Jose Chaar, Roberto Sánchez González, And Gustavo Alejandro Cruzado Rodríguez.

LOUIS ANTHONY BLANCHARD: So moved.

JEAN-PIERRE L. ORIOL: Second.

MARCOS HANKE: Discussion? All in favor say, aye.

GROUP: Aye.

MARCOS HANKE: Motion carries.

DIANA T. MARTINO: That's it.

Public Comments

MARCOS HANKE: Thank you very much. We are now in public comment. Is there anybody on the chat or visually for public comment. I don't see anybody on the room for public comment. I saw someone for public comment. I'll go with you, just let me hear from the virtual.

CRISTINA OLÁN MARTÍNEZ: Damaris Delgado. She's commenting in the chat. She says, I would like to clarify that we had five cases of illegal capture of yellowfin tunas in the Northwest Coast without HMS permits that were referred to agent Borges.

MARCOS HANKE: Noted. Thank you very much for the clarification, the Damaris. Not hearing from anybody else on the chat. Julian?

JULIAN MAGRAS: Yeah. Julian Magras for the record. I'm going to step out of my role right now to make a statement.

And I'm going to make a statement on behalf of the Saint Thomas

Fisherman's Association. This statement goes to Mr. Louis A. Blanchard better known as Tony. Tony to the back of the room but on behalf of fishermen of the U. S. Virgin Islands and the people of the U. S. Virgin Islands, we would like to take this opportunity to really thank you for an outstanding job that you have done over the last nine years.

I worked very closely with you on a daily basis and worked here with you at the table and you have worked, and you have educated a lot of the fishermen, the older ones and the younger ones. We know it wasn't an easy task that you went through, but you never turn your eye, you never turn the cheek, you kept doing what you do best.

I hope here in the future that, I know you're walking away from this, but we can continue to get your knowledge and experience that you have obtained over the nine years and all the years of fishing. Because you seem to look at things a different way than a lot of us would look at it. Sometimes we might be saying, "Oh well, this is A," but you say, "Wait, we need to look at B also" and it really opens up the door something that could have gone the wrong way and it ended up going the right way because of the way you brought it across.

So once again, on behalf of all of us from the U. S. Virgin Islands I just want to say, thank you for your nine years of service and I look forward to continuing working with you. Thank you. [applause]

LOUIS ANTHONY BLANCHARD: Now, does this come with a care package? [laughter]

JULIAN MAGRAS: A bottle of water.

LOUIS ANTHONY BLANCHARD: Thanks. I guess I'll take that.

MARCOS HANKE: Nelson?

LOUIS ANTHONY BLANCHARD: Thanks for recognizing the effort that I put forward. Really appreciate that.

NELSON CRESPO: I just want to say, Tony, thank you for all the support that you bring to the fishing community of Puerto Rico. You've been really helpful to us. We are never going to forget that. Thanks a lot.

LOUIS ANTHONY BLANCHARD: Thank you. Appreciate that.

MARCOS HANKE: Well, we are ready to adjourn. Well, we already adjourned virtually, now we're going to close the meeting. Thank you very much for your patience, collaboration and for being so kind to the Chairman at this meeting. Thank you very much, guys. The meeting is adjourned. We need the date, Miguel, for the next meeting.

MIGUEL A. ROLÓN: August 11 and 12.

MARCOS HANKE: August 11 and 12. Thank you.

(Whereupon, the meeting was adjourned.)