GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

SHRIMP MANAGEMENT COMMITTEE

Beau Rivage Resort & Casino Biloxi, Mississippi

October 24, 2022

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Billy Broussard.....Louisiana
Jonathan Dugas.....Louisiana
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Dakus Geeslin (designee for Robin Riechers).....Texas
Andy Strelcheck.....NMFS
Joe Spraggins.....Mississippi

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STAFF

Matt Freeman.....Economist
John Froeschke.....Deputy Director
Beth Hager.....Administrative Officer
Lisa Hollensead.....Fishery Biologist
Ava Lasseter.....Anthropologist
Mary Levy.....NOAA General Counsel
Jessica Matos.....Administrative and Accounting Technician
Natasha Mendez-Ferrer.....Fishery Biologist
Emily Muehlstein.....Public Information Officer
Ryan Rindone.....Lead Fishery Biologist/SEDAR Liaison
Bernadine Roy.....Office Manager
Carrie Simmons.....Executive Director
Carly Somerset.....Fisheries Outreach Specialist

OTHER PARTICIPANTS

Chester Brewer.....SAFMC
John Walter.....SEFSC
Nathan Putman.....LGL

John Quinlan.....NOAA
Katie Siegfried.....SEFSC
Farren Wallace.....NOAA

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The Shrimp Management Committee of the Gulf of Mexico Fishery Management Council convened at the Beau Rivage Resort & Casino in Biloxi, Mississippi on Monday morning, October 24, 2022, and was called to order by Chairman Chris Schieble.

ADOPTION OF AGENDA
APPROVAL OF MINUTES
ACTION GUIDE AND NEXT STEPS

CHAIRMAN CHRIS SCHIEBLE: At this time, I would like to call the Shrimp Committee to order, and I will go off the updated member sheet here. Of course, myself as Chair, and Mr. Gill is Vice Chair, Mr. Anson, Mr. Broussard, Ms. Boggs, Mr. Donaldson, Mr. Dugas, Mr. Geeslin, and General Spraggins and Mr. Strelcheck are all members of the committee. All are present today in the room.

The first item on the agenda is Adoption of the Agenda, Tab B, Number 1. Is anyone opposed to adopting the agenda as written? Does anybody have any -- Go ahead.

DR. MATT FREEMAN: Yes, sir. I did want to follow-up to see if, under Other Business, you wanted to receive an update on the progress of the EDM Workgroup.

CHAIRMAN SCHIEBLE: Yes, sir, and I was going to bring that up when we get to that point, but thank you. So, the agenda, and is any opposed to adopting the agenda, Tab D, Number 1, as written? Seeing the Other Business item added, that agenda is adopted as written.

Next up is the Approval of the June 2022 Meeting Minutes. This is Tab D, Number 2. Are there any additions, deletions, or edits to those minutes from the June meeting? Seeing none, the minutes are adopted as presented in the briefing book. Next up on the agenda is the Action Guide and Next Steps, which is Tab D, Number 3, and we'll let Dr. Freeman run us through the action guide, briefly.

DR. FREEMAN: Thank you, sir. For the first item, it's an update on testing and development of options proposed as replacements for the historical cELB devices for the Gulf shrimp fishery. For this item, the committee will receive two presentations related to the testing and development of the current options proposed as replacements for the historical cELB devices for the Gulf shrimp fishery.

The first presentation will be an update from NMFS on its side-

by-side field testing of cellular VMS units and cELB units for the purpose of collecting comparable data for vessel location an estimated speed. The second presentation will be an update from Dr. Nathan Putman, with LGL Ecological Research Associates, on its council-funded pilot study to test the P-Sea WindPlot program for vessel position data collection and on that transmission on shrimp vessels. The committee should consider the presentations, ask questions, and provide feedback. This information does not require any formal committee action.

CHAIRMAN SCHIEBLE: Thank you, Dr. Freeman.

UPDATE ON TESTING AND DEVELOPMENT OF OPTIONS PROPOSED AS REPLACEMENTS FOR THE HISTORICAL CELB DEVICES FOR THE GULF SHRIMP FISHERY
NMFS' SIDE-BY-SIDE PILOT TESTING OF CVMS AND CELB UNITS ON GULF SHRIMP VESSELS

DR. FARRON WALLACE: Good morning. My name is Farron Wallace, and I am the Chief of the FATES Division, which stands for Fisheries Assessment, Technology, and Engineering Support. We are essentially in the service industry, and so we test new technologies that we can put into the fisheries and also deploy into our various surveys. With me today is Dr. John Quinlan, and he did all of the analytics that you'll be seeing on our slides here today, and so, if you want to drill down into some of the data, I will probably have him answer some of those questions.

As you all know, the original cELB program was based on the 3G network, and is no longer support by any of the cell companies, and so, over the last couple of years, fishermen have had to remove their SSDs, or the data cards, and send them to NOAA Fisheries, in order to download them, and so it's quite a process to do that, and it's not timely whatsoever, and a potential alternative, of course, is the cVMS, and that's what this study was all about, is essentially comparing the cELB data with the cVMS data, to make sure we're getting the same types of answers that we would in GPS locations between the two different systems.

There are three different systems that we deployed and tested. We have the Faria system cellular VMS, the Woods Hole Group system, also a cVMS system, and, of course, the bottom of this slide is the old 3G cELB box that had been deployed into the fishery for a number of years.

The GPS technology is -- essentially to use triangulation of the

satellites overhead to estimate the position of the vessel. Those positions are actually quite accurate, within a few meters, the data that we collect these days, and the recording device is -- In the past, we were able to automate the entire data process, where a vessel would get near port and hook up into a cellphone tower, and the data would automatically be downloaded to our office here.

Then one of the things that we also deployed is a data logger, which is a motion sensor, and this is some of the advanced technologies that we're working on to sort of automate that process of determining when somebody is hauling and when haul-back is occurring.

We examined data from five different vessels, the R/V Caretta, which is the shrimp vessel that we have as part of our survey fleet, and also the Southern Journey. We have data that came from three different shrimp vessels, which also had the cELB on each of these vessels, and they carried the Faria cellular VMS. If you recall, we had another three vessels that we actually deployed the Woods Hole data collector, the cVMS. However, two of those vessels were sold, and another one did not fish, and so we do not have any data from shrimp vessels carrying the Woods Hole cellular VMS system.

All of the VMS systems were retrieved from the Woods Hole group, through the Thoriumweb.com, and it's a password-protected webservice, and it's very clean and easy to use, and the fishermen mailed back the miniUSB drives for the device itself, and those will be paired to the cellular VMS. The data were cleaned, to find any overlap and ensure ten-minute ping rates for both sensors, and it was processed and plotted in Matlab.

Here is a plot for the Caretta, and you can see the gold is the cVMS, and the purple is the ELB data, and these tracks -- We can see the gold, when we first got the VMS system, deployed before the cellular system, and so that's why you don't see those tracks completely overlap.

Here, we're zooming-in on several tows, and it's very, very difficult to see the gold here, because it is so tight, and, if you go to the next slide, I think we zoom-in on one of those tracks, and, here, you can start seeing that the VMS data is sort of hidden behind it again, and, again, there's a very, very tight overlap here, and there is a number of tows in here, and each of those straight lines is a tow.

Here is an upper segment of the Caretta, and, here, again, we

can see very tight overlap, and there are a little bit of differences, probably mostly due to when the unit itself is pinging during the tow, because they only ping at ten-minute intervals, and so they don't ping exactly at the same time. This is looking down at the lower portion, and, again, it's the same story here.

Here is a lower segment, and, here, you can see, if you zoom-in, how the different ping rate times -- The difference it makes in the track, and you can see a little bit, but, overall, deploying in the same direction, and we have very, very good correspondence.

Next, we're going to talk about the Southern Journey data, and the Southern Journey is our survey trawl vessel. Now we're going to look at the couple of trip that were made, and we're going to zoom-into some of the data from the upper and lower segments here that you see in the graph.

Here again, we have near-perfect correspondence, and it's because, even though it's ten-minute ping rates, the vessel is traveling much slower, and so we get this perfect overlay of the cellular VMS data and the ELB data.

Next to the lower segment, and we'll zoom-in on this lower segment next, and, again, it's the same story. Because it's a lower steam speed, we can't see a separation, and it's 100 percent overlay in these data.

Unfortunately, the three industry vessels really had no usable data, as neither of the sensors were operating at the same time and/or there was little or no general temporal overlap, and I'll talk more about why this happened in just a second here.

Here is what we're looking at for the -- These are the Faria vessel monitoring systems that were deployed, and you can see we are in the general same area, and so there's a little bit of correspondence, but the data are all over the place, and the upper-hand-left is Vessel 1, and below that is Vessel 2, and then Vessel 3, the data all together from the Faria VMS units stopped working, and so we had no overlap at all in the Vessel 3, and so we were collecting cellular VMS data, but they were not -- The systems were not working correctly, and there has been a substantial number of systems that have failed from Faria, and, unfortunately, they were the ones that we deployed on the three vessels that ended up fishing in part of our study.

The next slide is conclusions, and, number one, we had very good

overlap between the two system tracks, and differences arise due to vessel turning and different ping rates for the two sensors. Slower vessel speeds, as we've shown in the Southern Journey data, really eliminated these differences, and it's very easy to do remote adjustment of the ping rates for the cellular VMS, and it's really clear cut that the VMS data accessed through the Thoriumweb is very easy to use and download data. The industry will have their own separate pages that they could go on and look exactly where they've been in the past trips.

There was a number of people at the Center that worked on deploying these systems, and also making sure that the data were usable, including Becky Smith, Jo Williams, Christian Jones, Jeff Gearhart, and the crews of the Caretta and Southern Journey, and I especially want to thank all three of the industry vessels, and I'm not sure if you got the last slide, but what it is is --

I have a picture of it here, and there's a bulletin that was released from the Woods Hole Group that they had purchased the Faria company, and they replacing all of the Faria units that are now out in the field, because many of them have failed, and so we only have one -- Well, we have several different potential vendors out there, but Faria is no longer -- There it is.

This bulletin just went out a few weeks ago, and, as you can see, if you can scroll down and read this, Woods Hole is going to be replacing all of the systems that are out there right now with their Nemo unit, which we found actually -- I think all the data that came from the Nemo units were quite flawless. With that, I can take any questions you may have.

CHAIRMAN SCHIEBLE: Thank you, Mr. Wallace. Great presentation. I especially like the tracks, and that was a good example of exactly how this works, to kind of get an understanding of this, and does anyone have any questions or comments for Mr. Wallace? Ms. Boggs.

MS. SUSAN BOGGS: I have lots of questions, and so the first question -- At the beginning of the presentation, I thought it said you all were piloting the Faria as well as the Woods Hole, and I would like a little clarification on that, but, on Slide 7, the cleaning is what I don't understand. We have all these tracks, and then we come back down to the next couple of slides, and then you say you're cleaning the tracks, and can you help me understand what does that -- I mean, I guess it's because it didn't match up, and so you're taking out all the mismatches?

MR. WALLACE: I can answer that, and, no, it's not the mismatches. What happens is that the unit will not have a good calculation, and so it will only record a ninety-for that calculation, and so, essentially, it didn't give a correct position, and what the system does automatically is that then, if it doesn't get a usable position, it will take another read of the satellites and then get another GPS coordinate, and so, if that one there looks like it's correct, then it will wait ten minutes to take the next ping, and so the ninety-nine's are just part of the system cleaning, because it shows all the data, those data where we good calculations and those data that we have bad calculations.

MS. BOGGS: I guess this is above my paygrade, but it just -- It seems like we have data, and then it's not matching up, but then I wanted to ask another question, if I may, Mr. Chair. On Slide 19, now we're looking at all the industry vessels, and I apologize that I just went blank on my question, but I was just curious, and so the VMS -- If this doesn't match up here to what the research vessels did, and so what is the difference? How come it isn't matching?

MR. WALLACE: These are -- All three industry vessels were from the same fleet, and so recall that we deployed both the Faria VMS units and the Woods Hole Group VMS units, and all three of the industry vessels installed the Faria, and the Faria are the ones that have had significant problems failing, and, indeed, they failed on all three of our vessels that we had in our study, and that's why the yellow line from the Faria -- Those are GPS coordinates that we got from that unit, and you can tell it's not working.

CHAIRMAN SCHIEBLE: Ms. Boggs.

MS. BOGGS: So are we going to go back to these industry vessels with the Woods Hole and do another pilot, to see how it tracks?

MR. WALLACE: Yes, I think it would be a good idea, and it would certainly me out here if you could find some additional vessels, in the short-term, and we would certainly deploy Woods Hole Group VMS units, and, since they own the Faria group, they now own the Faria group, we no longer will be testing any of the Faria, because they are gone, and so I think it would be a good idea to go ahead and test the industry vessels.

Then I think what it also does is help people get accustomed to VMS units and some of the services that the company will provide.

I really don't think that it will change the conclusions whatsoever, because you can see that all the data we collected from the Caretta and the Southern Journey overlap perfectly. The analysts also have an update, and we were unable to get the slide in here in time, but that update shows that, when we run the VMS data, and compared that to the cELB data, through the effort calculation, we're less than 2 percent difference between the two calculations, using the two different lines of data, one from the VMS and one from the cellular electronic logbook that you're all using right now, and so that has really good correspondence, and, again, I wouldn't expect that we would be seeing any differences.

CHAIRMAN SCHIEBLE: Ms. Boggs has a follow-up and then Mr. Gill.

MS. BOGGS: Well, I think that it's very important that we get it right with the industry vessels, because they are the ones that have to comply, and they are the ones that have to buy-into this program, and so I think that it's very prudent that we go back and we test, with another VMS system, if we're going to ask the industry to go this path. I mean, I'm glad that it worked on the research vessels, but those aren't the ones we're worried about. We're worried about these that are in the industry.

MR. WALLACE: Yes, and it was just unfortunate that it was the Faria units, because we had no idea that the Faria units were having problems, to start with, and it's really -- Then, the vessels that did have Woods Hole Group systems deployed, again, a couple of vessels were sold, and other one didn't fish, and so we don't have the Woods Hole Group data, unfortunately, at this point, and, right now, I'm looking at the trip statistics that John Quinlan put together for estimating effort from the Caretta.

The distance swept for the Caretta's VMS was 96.57 nautical miles, and the data swept using the cELB data was ninety-eight nautical miles, with a difference of about 1.5 percent, and the time swept total was a little bit less than 2 percent difference between the two systems, and, again, this would be my expectations from whether or not you had the Woods Hole Group VMS deployed on a freighter or another industry vessel and paired up with the cellular ELB data, that they would have very similar results.

Note that these are electronic devices, and they do fail. It seems that the Faria VMS systems fail more spectacularly, and we also found some failure of data collection in the cELB, but not

so much in the Woods Hole Group, but it's a fairly small sample size, and so I would certainly support trying to find additional volunteers, in the short-term, and we can deploy those systems.

CHAIRMAN SCHIEBLE: Thank you, Mr. Wallace. Mr. Gill had a question.

MR. BOB GILL: Thank you, Mr. Chairman, and thank you, Mr. Wallace, for the presentation. As I recall, one of the considerations in this testing was the use of the shrimp algorithm to provide the data that you need, and, the plots that we're looking at, did they utilize the shrimp algorithm, or did they come from some other source?

MR. WALLACE: The shrimp algorithm used the data from the Caretta, and those were the statistics that are on your left, with ninety-six miles for the VMS estimated, and ninety-eight for the electronic logbook, and that was just on the Caretta, and so that's multiple tows, and I don't know exactly how many tows that was, and it was quite a few tows of distance swept.

CHAIRMAN SCHIEBLE: Mr. Strelcheck.

MR. ANDY STRELCHECK: Just a comment, I guess, related to Ms. Boggs' statement, and I certainly support, you know, additional buy-in and industry support for VMS, and the presentation that we're going to receive shortly on P-Sea WindPlot, but I think we need to keep in mind that it's been since December of 2020 that the 3G units stopped automatically transmitting, and, with each month and year that goes by, we're, obviously, having less success, in terms of units failing over time as well as getting that information back from industry, and I know we're doing some outreach efforts to try to bolster that, and I'm hoping that that's successful, but we have had a long period of time here without the 3G units automatically transmitting, and I hope that, based on the presentations today, we can continue to move forward and make some progress on ultimately selecting an alternative for this fishery, in the near-term.

One of the things that I think strikes me is that there is buy-in, and then there's, obviously, just kind of the VMS units and how they operate, and VMS units are used widely by the agency already, and so I don't think there's really any surprises, and I think this is what we would expect, obviously, as the outcome, that there would be good alignment with the results, and so I think then it gets to Bob Gill's comment about the shrimp algorithm and is it producing similar results, and that's where I think we could benefit from, obviously, a few more vessels

that are participating and operating in the industry, to compare it up against that shrimp algorithm, and there might be some adjustments that we have to make, based on switching from one platform to another, but I appreciate the Science Center's work and those industry members that volunteered to help us with this.

CHAIRMAN SCHIEBLE: Dave Donaldson.

MR. DAVE DONALDSON: Thank you, Mr. Chair, and I just wanted to support what Andy said, and that I appreciate Ms. Boggs' concerns, but I think we need to come to a solution, sooner than later.

The commission was approached -- When the 3G units were going out of use, the commission agreed to a stop-gap measure to receive the SIM cards and provide that data to the Science Center. When we were first approached, it was going to be a year, and we're in year-two now, and, while we're still able to do that, at some point, that may not be the case, and so, the sooner we can come up with a solution, and a resolution, to this issue, the better.

CHAIRMAN SCHIEBLE: Kevin Anson.

MR. KEVIN ANSON: Thank you, Mr. Chair. Mr. Wallace, thank you for the presentation. I have several questions, and it relates to the performance of the two units, and so the first is how many tracks were covered in total, or an average, per vessel?

MR. WALLACE: In terms of trips or tows?

MR. ANSON: Yes, and that would probably be the easiest metric, is trips, yes.

MR. WALLACE: The only statistics I have in front of me here are those from the Caretta, the distance swept there was a little bit less than a hundred nautical miles, and that was probably like sixty or seventy tows, but I don't have the data in front of me right now. Dr. Quinlan, are you on?

DR. JOHN QUINLAN: Yes, I'm here. I don't have that number in front of me either. I was just checking for it, and I can't find it.

MR. ANSON: All right. Thank you, and just a couple more questions. As it relates to the performance then, there is this comment on Slide 7, where many tracks were not covered by both

sensors, and so I'm just curious as to, you know, what the performance was, as far as not being covered, as it relates to previous, you know, performance, I guess, and, as Andy mentioned, as we go through time, the performance of the cELB may be expected to decline, and so I'm curious as to whether or not the failure rate on the cELB was similar to what had been received, or determined, prior, and then, also, for the VMS unit then, and what was the performance for that unit, relative to expectation or relative to other units, VMS units?

MR. WALLACE: Okay. In terms of the cELB, we don't really have overlapping track, but it's because it wasn't deployed at exactly the same time as the VMS unit, and so that's why we don't have overlapping tracks for all the data from the Southern Journey or the Caretta, and maybe Dr. Quinlan could answer the next part of that.

DR. QUINLAN: Could you repeat the second part, please? I was thinking about that first part.

MR. ANSON: Just, again, referring to the comment that many tracks were not covered by both sensors, and so I would assume then that some of the tracks weren't covered by the VMS, and, if that was the case, what was the percent of coverage, or percent of non-coverage, and then how does that compare to what the performance is for VMS generally, or what you would have the expectation for performance?

MR. WALLACE: Our expectation for performance should be nearly identical tracks in both situations. Again, because we don't overlap on some of these things, just because the units weren't deployed at the same time, and so the expectation is that they would have perfect overlap in all situations.

CHAIRMAN SCHIEBLE: Ms. Boggs.

MS. BOGGS: I have a multipart question, and so, for clarification, the VMS unit that was used on the research vessels was the Woods Hole, and the VMS units that were used on the industry vessels was the Faria, correct?

MR. WALLACE: That's correct.

MS. BOGGS: Okay, and so, to me, we're not comparing apples-to-apples, and we're comparing apples and oranges, because it would seem, to me, that we would run the same equipment on both the research vessels and the industry vessels, to see how they track, and so I would very much like to ask the agency to please

go back and find some more volunteers, and, in my calculations, there's about a thousand shrimp vessels out there, to pilot the Woods Hole device.

That way, we can see how it tracks compared to how it worked on the research vessels, and so then my next part of that question would be, asking the agency to do that, how long would it take to do this pilot? How long would it take to do another pilot using the Woods Hole units on the research vessels and get that information back to the council, and then I have one follow-up question.

MR. WALLACE: The research vessels are done for the season right now, and won't be deployed again until March or April, but, if we want -- If we could work with a team here and try to find some volunteer industry vessels that are fishing now, we could get them deployed fairly quickly. Of course, there's always a turnaround time, because they have to take their data cards and mail them to us, and we have to download that data and then analyze that data, and so all of that takes a fair amount of time, and so it's several months to try to get the data back from the industry vessels that would volunteer to carry a Woods Hole Group system.

Recall that we did have three vessels identified to take the Woods Hole systems, but all three vessels -- Again, two of the vessels sold, and another one didn't fish, and so, just by happenstance, the Faria was on the three vessels that were fishing for this last season.

MS. BOGGS: Well, I wish NMFS would have made a little more effort to try to find some vessels to replace those that sold or weren't available anymore, and we wouldn't be having this conversation right now, but I would like to see us do that pilot, and so then the question -- I thought the VMS information -- Why is it haven't to be sent in? It doesn't just transmit automatically?

MR. WALLACE: The VMS data transmits automatically, and that's correct, but, to do the comparisons, you have to get the ELB data, which, you know, the fishermen will have to mail those to us, and we have to download that data and then analyze that data, and so there's a fair amount of lag time there, and the timeliness isn't all that good, because, as you know, fishermen are really busy, and it's difficult to get them back in a timely manner.

MS. BOGGS: Okay. Last question, and so hopefully we'll do

another pilot with the Woods Hole, and then how long would it take to get that data, the ELB data, and the effort estimates, and then a presentation to the council, so that maybe we can get this off the hands of the Gulf States Marine Fisheries Commission and a program that the shrimpers can use and move forward with? Thank you.

CHAIRMAN SCHIEBLE: Okay. I'm going to try to get this wrapped up, and so we're going to go pretty quick here. I've got one more question from Mr. Broussard, and then I've got a comment. John Walter, go ahead.

DR. JOHN WALTER: Thank you, Mr. Chair. I'm not a member of the committee, but I appreciate the recognition. On just a couple of those comebacks, one thing I will just lament is not having Leann here, because I think the tongue-lashing we might have been getting from Leann would probably have been ear-splitting, but I think she did say that she told you it's not that easy to get all this done, and she's probably right.

We didn't expect the Faria units to fail as badly as they did, and I'm hoping that the industry will make up for that, and it looks like they will, in terms of replacing those units, and I would like to think they also might want to help out, in terms of providing some other units for testing, and perhaps, if we reach out nicely, they may want to do that.

That gets to how and when we're going to solve this, and we all are under a deadline to report to Congress on this topic, in fact, and so it's not just this committee and this council who is interested, but it's also Congress, and I think we have a late-winter or early-spring deadline to report that, which means that we need to redouble our efforts to get units on boats that are now continuing to fish, so that we can set this thing, this issue, behind us and be confident that the remaining VMS units work, that we can extract the data from them and get basically the same answer between an ELB and the VMS, and I think that would put us all in a much happier position to be in, if we do that.

The other thing I will comment on is the algorithm for calculating fleet-wide effort, and that is a little bit different than calculating effort for an individual vessel, because it takes in other datasets to be able to do that. Right now, one of those key datasets that assigns the depth comes from trip interviews, and that dataset has been discontinued, and so we do have the modify the algorithm to be able to assign depth.

Fortunately, it's really easy to do, because, if you know where you're fishing, you can use the bathymetry to assign a depth, and that's what a revision to the code currently is doing, and so we've got a revision to the code. It will be a slightly different time series, and so it's going to have to go back to consideration for what a new threshold may be, and so there's a number of steps in the process that are going to have to happen, and we'll need to consider what the best process is for making that happen.

That is probably reinstituting the technical working group on shrimp effort that had been stood up, and it had been then put on hold for a bit, and I think it's probably the group who carries the institutional knowledge to vet and evaluate the new algorithm for calculating effort. Thanks, and I'm happy to take any questions.

CHAIRMAN SCHIEBLE: Thank you, Dr. Walter. The one comment I had is related to what your comment just was, and, in the inception of this, we had three Louisiana boats that were in the fleet for the monitoring. As an artifact of Hurricane Ida last year, those got sold, and I asked our program manager to solicit the shrimp task force to try to get three additional Louisiana boats to participate, and, because of the lingering effects from Hurricane Ida, that fleet is not at the point where they can add any vessels to this at this point, was the response I got, and so, unfortunately, I can't add any Louisiana boats right now, but we're still trying. Ms. Boggs, are you done? Any other comments or questions? Yes.

DR. FREEMAN: One comment that I did want to make is we will be having another meeting of the Shrimp AP on November 15, and so that would be an ideal time, in my opinion, to get some assistance from the industry in finding potential replacement vessels for the testing, and so that will be coming up in just a few weeks.

CHAIRMAN SCHIEBLE: Thank you. Go ahead.

MR. WALLACE: I would just add that it only takes less than a week to get a system FedEx'd to any individual out there that will deploy it on the vessel, and so that's not part of the issue here. It's getting the data back.

CHAIRMAN SCHIEBLE: Okay. Thank you for the presentation and questions and answers, Mr. Wallace. We will move on to the next agenda item.

LGL'S RESEARCH ON P-SEA WINDPLOT MODIFICATIONS

DR. NATHAN PUTMAN: Good morning, everybody. I will try to zip through it pretty quickly, and I understand that we're on a -- I bet we can get through this quickly.

I am here to talk about our council-funded work to look at some other options for monitoring shrimping effort, and you will hear this soon enough, and so we'll go ahead with the next slide. You're all familiar with why shrimping effort is important and that the 3G networks are -- Go ahead and go to the next slide, and we'll just get into what we've done.

You're familiar with the background, right, and so next slide, and we'll stop here for a second. For this particular project, we are looking at an idea that was proposed by folks in the shrimping industry, in particular some folks with the Southern Shrimp Alliance, and they were wanting to explore whether using the captains' navigational software, which is recording latitudes and longitudes already, could be repurposed as an ELB-like program, and so our group did some work with them to modify the navigational software so that it would record at ten-minute intervals and in a format that could be used in those effort monitoring algorithms.

Then this got picked up by the Gulf Council, working to make this software where it would automatically transmit the data to a server, and so we had an industry-funded component that made progress in terms of recording the data, but it's not a transmitting-type software, and so what we've been tasked with is to update this navigational software, P-Sea WindPlot, so that it electronically transmits its ELB electronic logbook files to a server and then develop a mechanism by which the computers that are using P-Sea WindPlot can connect to mobile communication services, and then we were going to conduct some tests on five commercial shrimp boats and do some troubleshooting, revise the software, and then, by the end of this, which by the end of this I believe is March, is when the contract is up, have conducted secondary tests on twenty additional commercial shrimp boats, to see how things look.

This should be perhaps familiar, our previous results, and we have updated the software, and it does record as -- All the pieces are in place, and let's just say that, for recording and transmitting data using an FTP client. We did a round of desktop testing, and that also -- Everything looked successful, and we have now put this on a handful of boats, and we have installed this new version of P-Sea WindPlot on eight vessels

now, three out of Bayou La Batre, five out of Palacios, none in Louisiana, and not as referenced yet, and we are having trouble, but this has involved about nine trips to Palacios on our side, and we're doing a lot of software troubleshooting, trying to deal with some hardware issues that have come up, and a fair amount of let's say on-the-ground industry engagement.

What we found, in our early tests, were that gappy data was sort of characteristic of what we were coming up with, and what these plots here show are -- The circles are tow points, and then Xs are vessel position, and so, for instance, in this particular example, we had a twenty-one-day trip, with a twelve-day gap, and why? Why is that?

So we've been doing, again, some troubleshooting, on a variety of fronts, and one of the things we did was to get sort of an off-the-shelf solar-powered GPS and stick that on top of the boat, to see if we could figure out what was going on, and this is another trip that occurred, the same configuration, and the circles are the tow points, and the Xs are the position.

We see a gap, a gap there, and you can see the different legs of the trip, one through five, and the P-Sea WindPlot seems to be missing Segment 4, and so, if you go to the next slide, you can see that, in general, there is good overlap between the two devices, but we're just missing 4, and, after getting the captain onshore and talking to him, he turned off his computer for a little while, and so, you know, there's that.

The same captain, going back out, after, you know, not turning off the computer, we have -- You will be able to see it better on the next slide, but we have good correspondence, good overlap, between the devices, and one of the things you might notice though is that there are differences in those circles, right, and so, if you go to the next slide, one of the things that -- This is just a histogram showing the numbers of records within ten-minute intervals, and so that first, on the far-left, is number of positions that were recorded in each of those ten minutes that we're shooting for, and then the far-right column is greater than an hour difference between position locations, and so P-Sea WindPlot, as you can see, is, in general, when it's turned on, recording positions very reliably at ten-minute intervals.

That sort of off-the-shelf solar-powered GPS, and, although in principle, it was programmed to record regularly, it's all over the place, and so, again, not that we were necessarily looking at that as an option for monitoring effort, but, just as an

aside, you can't just get a -- Apparently you can't just get an off-the-shelf GPS device and stick it on top of the boat and expect it to monitor effort well, and so, for instance, we were able to -- You know, we recorded about 12.7 tow days from the P-Sea WindPlot, which, given the length of time, was about right for half of your trip is spent towing and half of it's been spent sitting, sort of sitting, or moving between stations.

Then the solar-powered GPS was only recording 1.7 tow days, and that has to do, I think, just with the erratic timing of when those positions are coming in, and so combining that with maybe low-resolution, low-accuracy, and weird timing, the algorithm doesn't like it.

Here is a longer test, and, again, tow points and circles, and the proportion of records within those ten-minute intervals on the graph below, and it looks great, right, and it's recording every ten minutes, as you would hope, and it's giving you what looks like reasonable, reliable data on where towing occurs, which it is, but let's go to the next slide.

The key thing, when you look at this next slide, is so the top is what has been recorded by P-Sea WindPlot, and then the bottom is what was transmitted to our server, and so what gets transmitted, versus what gets recorded, is different. Well, it's not that they're not overlapping, and what gets transmitted is also what is recorded, but we are not getting everything that is recorded.

If you look at the next slide, this will show it, I think, more clearly, and the yellow dots are what was transmitted to the server, and the blue dots are what was sort of only what was retrieved by the boat's computers, when we manually went down there and were checking on the software and downloaded it from the computers C drive, and so this is a challenge that we are looking into, and one of several challenges, actually, that we are dealing with, in terms of P-Sea WindPlot as a solution for the monitoring effort.

Challenges, there are installation issues, technical issues and people problems, all of which deserve some consideration, and, on the installation side, what we see is, you know, different problems for different computers, and the beauty of this, as an idea, is that you could, in principle, monitor effort with what people have on their boat already, and everyone is comfortable with, but what people have on their boat already are, you know, different versions of Windows, ranging from XP to 11, and, you know, there is just some challenges, in some ways unrelated to

P-Sea WindPlot, just getting, you know, people's drivers to connect to their GPSs and things like that. Anyway. Some installation issues.

There are also some technical issues, and so, for instance, the GPS devices on some vessels are -- You know, the give the wrong dates, and they're not coding it, and there's a problem with the GPS itself being able to correctly decode the information from the satellite, and so, for instance, I was down in Palacios on September 7, and there is a GPS device on one of our boats that was recording that it was January 3, and so that's a technical issue that we're working on.

There are also some -- There have been some freezing issues, and captains have reported P-Sea WindPlot, which, up to this point, on previous versions, did not freeze, after being left on for long periods of time, is. There are some cosmetic issues, where, just like if some of your software gets updated, and maybe a file menu option is in a slightly different place, and some of the captains can roll with that, and some can't, and so that's another issue that we've been -- That we're working on.

Then there's the people problem component, and I'm skipping over a couple of these, and I guess I don't need to, but some of the unique IDs that the ELB files were written were apparently -- They were not -- They were changing between -- On the same vessel, the unique ID was different, and so that makes sorting -- So, if the unique ID on a boat was 1234, and, some records that it was transmitting, it might be 5678, which makes pairing it tricky on the backend, in terms of when it's getting sent to a server.

People problems, some captains just don't like folks messing with their computers, and, since there are a lot of different versions of P-Sea WindPlot, and certain captains are comfortable with sort of, quote, their version of it, and making modifications to that, whether it's tracking the ELB stuff or not, is sort of annoying to some folks.

We've also had a few captains who haven't turned on their hotspots, and, where it was on, it would automatically transmit, but, if it's not, then it won't. Then we've also had, as I mentioned earlier, some captains turning off P-Sea WindPlot at different points in the trip, and leaving P-Sea WindPlot running all the time, as people have said that they do, and, you know, "all the time" means different things to different people, apparently, and so all the time that they're using it, it's on.

I would say sort of our biggest hurdle -- You know, some of the technical issues, and installation issues, are -- We have good ideas on that, but I guess the biggest hurdle is sort of each computer is its own unique set of problems, and it's hard to guarantee, to our volunteers, that what we're installing won't, quote, you know, mess something up, that it won't be different in some way.

The next slide is what we've been working on, and we've done revisions to P-Sea WindPlot software, and we've now set it up where the installer can select the transmission frequency, and so it's not trying to transmit every ten minutes, and it's, quote, in real time, and you could set it to every ten minutes, or every twenty-four hours, and we think that should help reduce the freezing issues of P-Sea WindPlot. That should help.

Installers also now, at this point, can input a shrimp boat's permit number as the unique ID for ELB files, and so, rather than using sort of a randomly-generated one, that gets tied directly to the boat, and, again, that seems like a nice addition for bookkeeping and for pairing it with landings and things like that in the future.

We've also revised the function that sends out the ELB files from a vessel's computer to the server, and it's basically a more aggressive function to get all of the files on the C drive to a server, rather than -- So hopefully we will not miss as many as we did, like showed in that blue and yellow plot from earlier.

Then a final function is now the installer can select for the ELB program to use either the GPS time or the computer's time as the record, so that -- Sort of based on which one is more accurate, and so, if your computer is saying that it's October, and your GPS is saying that it's February, you can opt to use the computer's timestamp, rather than the GPS's, or vice versa.

The next steps, we are going to do a lot more desktop testing of the revised P-Sea WindPlot software, sort of a dedicated running for twenty-four hours a day, trying, as much as possible, to click on it and try to break it as much as we can, and we're going to restrict this --

We've got that new version, and those changes have been made, and we've got that version of P-Sea WindPlot on one boat, and they're going to just leave it at one boat for now, to try to minimize annoyances and sort of future pushback from captains of software being glitchy, and our aim is to organize for a late-

November rollout, to sort of make use of the period around Thanksgiving, when a large number of shrimp boats are in port, and we will hopefully be putting the latest version of P-Sea WindPlot on boats at that point and have a large number, a large sample size, to look at and see the result from those.

One additional thing, and so we've been, you know, logging in for lots of trips and lots of engagement with shrimpers, at the captain level on up to owners and sort of SSA level, and we've been, you know, keeping folks in the loop about sort of the status and challenges of P-Sea WindPlot for this industry, and, you know, one of the things that we are also pairing with this is -- So there's been some interest, within the industry, for a looking at a stand-alone device that a group is producing called a ZenVMS, and they have shared with us some of their data that we have run.

They've got a couple of volunteer boats looking at that as an option, and we have shared -- They have shared some of the data with us, and we've run it through the shrimp effort algorithms, and, on a single-boat basis, it looks fairly good, fairly reliable, and what our plan is as well is to, with this sort of late November rollout, put out a handful of those ZenVMS devices with P-Sea WindPlot, and that should be helpful for a couple of things, one of which will just be to have multiple points of comparison, similar to, I guess, the paired study that Farron Wallace presented right before this.

With that, let's go to the end of this next slide, reminding folks of the goals and timeline, and those green Xs are things that we've completed, and the purple is in progress, and we've moved some of these items a little bit, and so that install software and hardware component -- We're moving that to sort of the November and to -- Probably just the end of November, into the beginning of December, depending on when boats start leaving.

That software and hardware revision continued on into October, and that might also continue into November, after this initial round of testing, and, with that, I will take any questions that there's time for.

CHAIRMAN SCHIEBLE: Thank you, Dr. Putman, and so we are way behind schedule here with this committee, and our previous chair for this committee would have never allowed this to happen, and so I'm just going to say that we're going to take a couple of quick questions and move on, and do we have any for Dr. Putman?

DR. PUTMAN: I will be around this evening, if there are questions, and I'm happy to talk, and I understand that we need to move along.

CHAIRMAN SCHIEBLE: Okay. I think we also have some -- Andy, have you got a question? Go ahead.

MR. STRELCHECK: Dr. Putman, thanks for being here. Great presentation, and, obviously, this is why we do pilot studies, and this is why we do the research, and you have outlined a pretty significant number of challenges, and so I'm just kind of curious, from your perspective, kind of what you're seeing, how much of this do you think is insurmountable, versus can be resolved through technology, and it seems like a lot of the challenges relate to just, you know, whether it's the user having to operate the system or the actual technology itself, which widely varies across of these platforms.

MR. PUTMAN: That's a great question. I mean, I have my own, I suppose -- There are still some things that we can test, right, that I have outlined. I am not -- I would say that there are certainly some hurdles that seem challenging to resolve, and, you know, one of the things that we've heard from some of the captains, and owners, is that, well, maybe we should just leave the computers that the guys use alone and just get a new computer and put it on there, and then it's going to run just fine, because, you know, we would do all -- It would, probably.

I mean, we would still want to do the pilot testing, and there's lots of things that will run just fine, trust me, but then, at that point, you have an entire computer to buy, and I'm not sure that it is -- You know, on paper, it seems elegant enough. In practice, there's some problems. I think we will have a very clear idea, by the end of November, how practical this actually is, is kind of my personal feeling.

MR. STRELCHECK: Then, building off of what Farron presented, and, obviously, we had the challenges with the Faria units, and it seems like there's a huge opportunity here for the vessels that are working on your study to potentially have VMS units also onboard, just for a direct comparison of those two, and I don't know if that's something that, you know, those that you're working with would be willing to consider, but I feel like that's a huge opportunity for us.

DR. PUTMAN: I mean, that seems like a great idea to me, and, I mean, I could just leave it at that. Yes, it sounds like a great idea to me. Farron -- We've been corresponding about some

other things, like monitoring bycatch, and he was asking whether we might be able to put a cellular VMS on one of those bycatch boats, and I had mentioned that, yes, we're doing some of this work as well, and so, you know, we'll see. I would be happy to have those conversations about how to do that, and maybe not all twenty boats are going to want a VMS onboard, and we haven't gotten twenty boats lined up exactly either.

You know, I'm not too worried about it, and it will be close to that, I bet, but I suspect that a handful would be reasonable, and, you know, there are certainly folks in the shrimp industry -- They like this ZenVMS technology as an option, and so we're definitely open to testing, and helping test, and I suspect that the -- None of these things should come at an additional cost to the council, and, I mean, I wouldn't think.

CHAIRMAN SCHIEBLE: Okay. Thank you. Any further questions for Dr. Putman? Dr. Walter.

DR. WALTER: Thank you, Dr. Putman, and great presentation. I like seeing this move forward, and I think we have a real opportunity in perhaps partnering to try to get as many options on the table, and I think what we're seeing here is that there's challenges and pros and cons of any of the potential options for monitoring, and this council needs all those options on the table and to see them tested and get them actually on the water and have data come back to be able to make a final decision.

I'm pleased to see the ZenVMS as a potential new additional option, and I think competition is great, but, if we can get more on those boats, then I think that will bring more data to ultimately a final decision on which way to go forward, and so let's talk more about how we can partner.

DR. PUTMAN: Sounds great.

DR. WALTER: Great. Thanks.

CHAIRMAN SCHIEBLE: All right. Any further questions? All right. With that, we have the last item, Number V, on the agenda, which is Other Business, and I think Dr. Freeman is going to give us a very brief update on the Empirical Dynamic Modeling Workgroup.

DR. FREEMAN: Thank you, Mr. Chair. I believe we have Dr. Katie Siegfried on the webinar, and I believe she was going to provide short verbal update.

DR. WALTER: Katie, are you there, or do you want me to read out, because Katie gave me a little brief on where we are with that, but, Katie, if you want to say it in your own words, and I think she might have been on.

OTHER BUSINESS
UPDATE ON EDM WORKING GROUP

DR. KATIE SIEGFRIED: Thanks, John, if you could fill in, and, Matt, if you could fill in any gaps that there might be, and I just prepared this, and Matt was there, and so the third EDM Workgroup call was held on September 5. I'm getting a lot of feedback, and is that on my end?

DR. FREEMAN: You're clear for us, I believe.

DR. SIEGFRIED: Okay. Good. I just can work it through then, as long as you all can hear me fine. We were happy to have most of the appointed participants there for all of the three meetings, and we had a lot of stakeholder participation, and Steve Munch let us through the EDM modeling approach, and Lew ran all of the meetings, covering the data issues and then which data could be included in the models, and then we wrapped up with the management needs for shrimp.

Our last meeting focused mainly on management, and we just don't want to provide a model that does not meet the needs of management, as has happened in the past, and our SS model actually was overly complicated for the potential risk to the shrimp stock, and that was very clearly coming from the stakeholders during all of our EDM sessions.

The EDM research team will continue on with their work, with the advice and industry guidance that they received during those workshops, and then the idea is that the Center will have the capacity to run those EDMs in time for the SEDAR 87 shrimp research track assessment. The EDM will be a candidate modeling approach for SEDAR 87, but we will have to go through the process to decide on a final modeling approach to be used for management advice.

To that point, Matt, do you want me to say a little bit about the SEDAR 87 research track planning process, or do you want me to just stop at the EDM wrap-up?

DR. FREEMAN: I would say, if you could do that briefly, that would be helpful, since, as you mentioned, the EDM would potentially feed into the SEDAR track.

DR. SIEGFRIED: Okay. Sure. To the point of the SEDAR 87 research track assessment, that planning process is underway, and Ryan Rindone, for instance, is one of our planning team members, and he is there and can reflect anything that I forget during this little recap, but the Center is taking the lead writing role for the terms of reference, so that we can tailor the meetings to address the relevant data and modeling issues.

This isn't a first-time assessment, and it's more of a going back to the drawing board, and so we think that it's important to start off with the best terms of reference that address data issues that we know from previous assessment efforts.

The white, brown, and pink shrimp are going to be part of the research track, though we understand the pink shrimp data are much sparser. At this point, we are identifying participants, nailing down a schedule, and one of the things that we discussed that's particularly important is how the data were group results, and all of the shrimp data were group results that have been conducted in the previous years and will be incorporated, like effort by catch estimation, et cetera.

We anticipate that those data and methods will be reviewed before SEDAR 87 and won't have to be reviewed then, and we plan to approach that using a CIE desk review, and that's all I have for you, Matt.

DR. FREEMAN: Thank you, Katie, and so, just to quickly summarize, the SEDAR 87 planning team has met twice via webinar, and, as Katie mentioned, we've had three webinars for the Shrimp EDM Workgroup. Tentatively, staff has discussed having information from the Shrimp EDM Workshop go to the Shrimp AP and to the SSC in March of next year.

CHAIRMAN SCHIEBLE: Okay. Thank you, Dr. Freeman, and thank you, Dr. Siegfried. I appreciate the impromptu presentation. Does anybody have any further questions or comments for the Shrimp Committee? Seeing none -- Ms. Boggs.

MS. BOGGS: So are they going to bring the fishermen into the shrimp research track, and is that what I'm understanding, or when will they do that?

MR. RINDONE: When we have the research track assessment, it will go through a similar process of like looking at the data, looking at the model build-out and how the data are fitting into the model, and then a review, and there will be opportunities

for fishermen to be involved at each of those stages, and so, when we get to that point, and we're scheduling out the assessment workshops, we'll solicit volunteers, like we do for any other SEDAR assessment.

MS. BOGGS: Thank you.

CHAIRMAN SCHIEBLE: Okay. Seeing no other questions or comments, I would like to adjourn the Shrimp Committee.

(Whereupon, the meeting adjourned on October 24, 2022.)

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