GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

MEETING OF THE STANDING SCIENTIFIC AND STATISTICAL COMMITTEE

May 5, 2026

STANDING SSC VOTING MEMBERS

Trevor Moncrief.....
Luiz Barbieri.....
Harry Blanchet.....
David Griffith.....
Tiffany Hopper.....
Jack Isaacs.....
John Mareska.....
Paul Mickle.....
Jim Nance.....
Daniel Petrolia.....
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STAFF

Matt Freeman.....Economist Analyst
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C.J. Sweetman.....GMFMC
Dr. Ted Switzer.....FWC

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The Meeting of the Gulf of Mexico Fishery Management Council Standing Scientific and Statistical Committee convened via webinar on Tuesday, May 5, 2026, and was called to order by Mr. Trevor Moncrief.

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MR. TREVOR MONCRIEF: All right. We're good to go. All right. Cinco de Mayo. It's going to be a good day. Today is G-FISHER Awareness Day, otherwise known to Ted as just another Tuesday. I'll start here with a statement, and then we'll go through the attendance.

Good morning. My name is Trevor Moncrief, and I am the chair of the Scientific and Statistical Committee of the Gulf Council. We appreciate everyone's attendance and input in this meeting. Representing the Gulf Council is maybe Mike Allen, and maybe C.J. now. Gulf Council staff in attendance includes Carrie Simmons, John Froeschke, Ryan Rindone, Lisa Hollensead, Matt Freeman, Verena Wang, Sarah Gardiner, Emily Muehlstein, and Jessica Matos.

Notice of this meeting was provided to the Federal Register, sent via email to subscribers of the Gulf Council's press release email list, and was posted on the council's website. Topics to be covered during this modified meeting include a presentation on the Gulf Fishery Independent Survey of Habitat and Ecosystem Resources, G-FISHER. We'll have public comment, then we'll have Other Business.

This webinar is open to the public and is being streamed live and recorded. A summary of the meeting and verbatim minutes will be produced and made available to the public via our website. For the purpose of voice identification, and to ensure you are able to mute and unmute your line, please identify yourselves by stating your full name when Jess calls your name for attendance. Once you have identified yourself, please re-mute your line. We will be using the raise-hand function to help me recognize you to speak. Jess will type the names up on the memo pad on the screen. Your show, Jess.

MS. JESSICA MATOS: Okay. Jason Adriance. Luiz Barbieri.

DR. LUIZ BARBIERI: Luiz Barbieri.

MS. MATOS: Harry Blanchet.

MR. HARRY BLANCHET: Harry Blanchet. David Chagaris. Not here. David Griffith.

DR. DAVID GRIFFITH: David Griffith.

MS. MATOS: Tiffany Hopper.

DR. TIFFANY HOPPER: Tiffany Hopper.

MS. MATOS: Jack Isaacs.

DR. JACK ISAACS: I'm here.

MS. MATOS: John Mareska.

MR. JOHN MARESKA: John Maresca.

MS. MATOS: Paul Mickle.

DR. PAUL MICKLE: Paul Mickle.

MS. MATOS: Trevor Moncrief.

CHAIRMAN MONCRIEF: Trevor Moncrief.

MS. MATOS: Jim Nance.

DR. JIM NANCE: Jim Nance.

MS. MATOS: Dan Petrolia.

DR. DAN PETROLIA: Dan Petrolia.

MS. MATOS: Sean Powers. Andrew Ropicki. Steve Saul. Steven Scyphers.

DR. STEVEN SCYPHERS: Steven Scyphers.

MS. MATOS: Ralph Townsend.

DR. RALPH TOWNSEND: Ralph Townsend.

MS. MATOS: C.J. Sweetman.

DR. C.J. SWEETMAN: C.J. Sweetman.

MS. MATOS: Thank you.

CHAIRMAN MONCRIEF: All right. We've got the attendance done. We'll go to the agenda. First up, we have Adoption of the Agenda. Does anyone have any items they want to add or retract, given we only have one today, and, if not, I believe we need a motion to go ahead and move that one forward.

DR. NANCE: I move we adopt the agenda.

CHAIRMAN MONCRIEF: All right. Jim, motion.

DR. GRIFFITH: Second.

CHAIRMAN MONCRIEF: There we go. It sounded like Mr. Griffith. Item Number 2 is Review and Approval of the Minutes and Summary from the February 2026 SSC Meeting. Does anyone have any changes or see anything in the minutes they want adjusted? If not, we'll need a motion to move those forward.

DR. NANCE: I move we adopt the minutes.

CHAIRMAN MONCRIEF: Jim. I need a second.

DR. HOPPER: Second.

CHAIRMAN MONCRIEF: There we go. All right. I guess, first off, you saw Ryan's email, and certainly our thoughts are with the folks with the fire, and we're glad there wasn't any injuries. It's certainly never a good thing, but thanks for letting us know about that, Ryan, and now it's on to you for the scope of work.

PRESENTATION: GULF FISHERY-INDEPENDENT SURVEY OF HABITAT AND ECOSYSTEM RESOURCES (G-FISHER)

MR. RYAN RINDONE: All right. Thank you, sir, and so Dr. Ted Switzer, from Florida Fish and Wildlife Research Institute, and his crew are with us today to review G-FISHER, which is the Gulf Fishery Independent Survey of Habitat and Ecosystem Resources, and this is a composite video survey that blends the efforts of several regional video surveys in the Gulf to form a more comprehensive view of relative abundance by species.

Dr. Switzer and his team are going to review the development process for G-FISHER, how its data products are created and applied for stock assessment and management purposes, and we'll also talk about how the program adapts to survey limitations and emerging needs. You guys should review the information presented, ask

questions, and provide feedback to Ted and his team and the council, as appropriate.

CHAIRMAN MONCRIEF: Take it away, Ted.

DR. TED SWITZER: Thanks, Mr. Chairman. I will need sharing access. There we go. Can you confirm you can see the first slide?

MS. MATOS: Yes.

DR. SWITZER: All right. Thanks. Thanks, everybody. Good morning. I appreciate the opportunity to talk about G-FISHER and what we've been up to the last decade or so. I know this is becoming more commonly used for a lot of needs, in terms of assessment and interim analysis, and so it's good to talk through where we've come from and where we're going.

This is not the entire G-FISHER team, but these are some of the key players, that are most of which online today to help answer any questions or contribute to the discussions that will come from the work that we talk about.

As Ryan mentioned, I'm going to talk about three main components today. The first is the development and current status of the G-FISHER survey, including why we've done what we've done. I'll briefly touch on the application. Again, I'm not going to get in the analytical weeds, but give you a sense of what we've done to integrate data from the historical surveys and the new survey, and then, finally, touch a little bit on known data gaps, known limitations, and how we're trying to address those as we move forward in the next several years.

Starting with the development of the survey, I think it's important to remember that these efforts started way back in the late 1980s as the first fishery-dependent survey to try to capture population associated with reef habitats in the Gulf. It was initially developed as a trap survey, as you can see there in the upper panel. However, due to selectivity, the inability to catch certain species, Chris Gledhill began implementing cameras, basically to get a sense of fish behavior in and around the trap. We came to realize that that provides useful data, and so, in the early 1990s, this transitioned to primarily a video-based survey.

The maps in the lower part show the initial sampling frame for the early Pascagoula SEAMAP Survey. At the time, there was almost no mapping data available, and so these sampling blocks were determined based on available bathymetry data, and so they focused predominantly on some of the highest relief, well-known features,

that we see in the Gulf. Most of these are focused along the shelf break from Texas all the way to the Florida Keys.

After about a decade of work with a sampling frame, these data were submitted and accepted for use in SEDAR 7 for red snapper. At the time, there was recognized utility of the data provided by the survey, but an independent review by the Southeast Fisheries Science Center noted that this survey could be improved upon by increasing the sampling frame, particularly on the Florida shelf, which would require more detailed mapping data because, on those shelf habitats, we didn't really have a good sense of that, and so this led to future efforts by both NOAA and FWRI to address these known data gaps.

In terms of the initial evolution of the survey, again here's the sampling frame of that initial SEAMAP video survey from the early 1990s. With some supplemental funding in 2006, the NMFS Panama City Lab was able to expand on the inner shelf in the northeast Gulf of Mexico, and, subsequently, that was expanded by FWRI throughout the West Florida Shelf and off of Tampa Bay and Charlotte Harbor.

With some NFWF Gulf Environmental Benefit Fund funding, FWRI was able to expand their survey and cover the entire eastern Gulf beginning in 2014. It's important to remember that, while these surveys had some differences in terms of design, available habitat information, et cetera, all three groups worked collaboratively throughout this process to ensure that we were using identical technology, and, as we evolved the technology over time, we were consistent in that approach, in terms of maintaining field of views and resolutions, et cetera, for the video system that we talk about.

Now, two main components to this survey. One is the habitat mapping component, again to build the underlying sampling frame. In the eastern Gulf, this has been predominantly conducted via side scan sonar, the Kline 3900 you see there that contains -- It maps at about 445 kilohertz resolution.

From the outset, we've implemented standardized and random mapping surveys. In the inset, you see the long transects are those that would have been conducted on natural reef habitats, because that is essentially a prospecting type of survey. The squares were designed to center around artificial habitats, to begin to provide more detailed estimates of habitat coverage of those sites, as well as what habitats might be surrounding that, and so these have been predominantly new randomized surveys.

We have been, over the last several years, conducting a subset of rescans, or remapping surveys, annually to get a sense of the temporal stability of the habitats we identify. These initially were focused on areas that were impacted by hurricanes, that we would expect maybe a greater degree of change, but we've implemented those eastern Gulf-wide in the last couple of years.

Here's an example of what one of those mapping surveys looks like in the upper image. That would be a geoTIFF that was produced by a survey. With these mapping surveys, we have multiple overlapping transects that allows us to correct for positional inaccuracy if the towfish moves, due to currents or whatnot, and so, in this case, this standard survey, we would have three overlapping passes, data processed to produce that geoTIFF image, and then, currently, we manually digitize that to, one, draw polygons around reef features, and those are the blue and the green polygons that you see on that image, and then, second, we will classify those habitat types.

In the left, you see the variety of habitat types we feel we can identify via interpretation of side scan sonar, and so, in the eastern Gulf, we have geological, biogenic, and anthropogenic habitats, and a variety of habitat types, or geoforms, within each of those, and the information provided by this will allow us to quantify the area and composition of habitats throughout the eastern Gulf.

The lower-right shows essentially what one of those products might look like, and we actually use these side-scan habitats in our site selection process, and so, for example, we might select one of those grids, and those are 0.1 nautical mile on a size of microgrids. We would select a grid that contains the targeted habitat of interest, and then we will select, within that polygon, a random point for actually sampling that habitat site.

Here's a few examples of the side-scan habitats on the upper panel and the video groundtruth imagery on the bottom. This has been an iterative process, over the last fifteen or so years, to help refine our ability to identify these habitats. Again, these are five of the more common natural habitats we see in the eastern Gulf. Again, we have similar imagery for all the habitat types we see.

Now, in the western Gulf, there's some degree of side scan mapping, especially on the shallow shelf habitats that we'll talk a little bit more about later, but, in the deeper environments, the focus has been predominantly on multibeam sonar, and here's some example imagery of that.

We've developed, more recently, with some new data products that are produced following a method developed by Alex Ilich at USF, that processes these multibeam data, derives a variety of terrain attributes, and we've been exploring the ability to automate classification following the same type of classification we see with the side scan in the eastern Gulf. We're still evaluating exactly how well these match, but, preliminarily, they look to perform pretty well.

Now, the video methods we use are stationary, stereo-baited underwater video arrays, or S-BRUV. You see some example imagery here. These are deployed on the bottom for at least thirty or so minutes to record about thirty minutes of video. These are all baited systems, baited with a combination of Atlantic mackerel and squid. Historically, we had independent four orthogonal cameras you see on the lower image there. More recently, we've integrated into a full spherical camera system that you see on the right.

Now, in terms of video annotation, historically, and the standard practice moving forward for the most part, is to process one of those camera images for abundance. The image is randomly selected among the images that are facing the habitat, and so, again, we'll choose based on the reef habitat that we're sampling. We process a total of twenty minutes of continuous video for abundance.

Our metric is maxN, or the maximum number of individuals you see on a single screenshot and so the upper-left is what a historical video read would look like. The bottom is an example of choosing one of those frames from the full spherical camera reads.

We also, from video, record a variety of habitat metrics, including type and composition of substrate and attached biota, relief, habitat complexity, et cetera, that are all potentially informative covariates for subsequent analysis, and we actually process habitat from all the cameras and not just a single camera that we read for fish.

Now, there's been some debate in literature regarding the use of maxN of a single camera. Especially for schooling species, we may see cases where the counts are biased low, because all the individuals cannot fit on that single screenshot, and so what we've done, for a subset of videos over the last five or so years, is actually process the full spherical camera reads as well. An example up in the upper-left is I think greater amberjack, where you see the single camera read on the X-axis and the corresponding spherical camera read on the Y-axis.

The objective here is, one, to evaluate what the effects of this potential bias are, and, two, whether it could be corrected, and I'm not going to talk in a lot of detail about this today, but, for the most part, we're seeing, for these species, a linear calibration between the single and spherical camera, and so, in terms of relative abundance, it really doesn't matter.

All that correction would do would scale up the index, and so the resultant standardized trend wouldn't really change, but these types of calibrations may be important for things like these absolute abundance type studies, where you actually want to get a sense of what the true abundance is at a site. We typically don't continue with these reads, because that's much more time intensive. For most of the managed species, we think we've got a pretty good calibration coefficient now that we can apply that as needed.

I'll remind you that these are actually stereo cameras as well. Historically, up through about 2008, we relied on lasers to obtain measurements of fish. The number of measurements we obtained was pretty small, because fish had to be really in the right position for that to work, but, since the late 2000s, we've been using stereo imagery to obtain measurements.

Our reliance has been predominantly on using the SeaGIS software, and the process involves these calibration cubes you see in the upper imagery. We process all cameras through these calibrations at the beginning and end of each year, to make sure that we have appropriate calibration to use for these measurements.

The lower panel shows an example of what processing in SeaGIS might look like, where we have imagery of fish on both the left and the right side, and we're able to obtain these stereo images. We then are able to obtain length measurements that you see highlighted in the yellow box.

What's also important is these processes provide estimates of accuracy of the imagery, and so, for example, it's the RMS, is typically what we use, and that allows us to filter out measurements that might be suspect, and it's important to remember that it's not just the unusually high measurements, again, a six-meter triggerfish that raises a flag, but even realistic measurements could be biased if they're especially at high aspect angles from the camera. All measurements we obtain are fork length, because, again, we don't have the fish in hand to do actual total.

So, again, as I mentioned, we worked closely through the years to ensure that, despite some design differences, that our in-situ

sampling methods were as consistent as possible. However, and we'll talk more about analyses here in a little bit, we realized early on that, ultimately, the best approach would be to integrate these under a single unified design, and, in 2020, we did that, through funding from the RESTORE science program, as G-FISHER, and this involved really two components.

One, it involved integrating these historical surveys under a new design, and, second, it involved a tremendous increase in the sampling intensity and coverage of habitats throughout the Gulf to provide a much more robust dataset moving forward.

Now, a lot of details can be provided in this paper we published a few years ago, but, to inform the design, the more detailed analyses were focused in the eastern Gulf, again largely because we had five years of intense sampling that was funded by that NFWF Gulf Environmental Benefit Fund, and so we were able to conduct assemblage-level analyses, including all species that are part of the Gulf Council's FMP, to delineate spatial strata and habitat strata, and this was done through these CART analyses to identify breaks that contributed to differences in assemblage composition.

We used variables or metrics that could be determined a priori, and so, again, for location, it would be latitude, longitude, and depth. For habitat, it was things like relative relief in the area footprint of the side scan polygons. Again, we didn't use in situ habitat data, because those are things that are difficult to build into a design, and then we optimized allocation as a function of both habitat availability for the identified sampling strata, as well as managed species richness.

As a result, we end up having a Gulf-wide spatial stratification, where the survey domain is broken down into six broad regions and three depth strata, near shore to deep. The sampling frame stretches from ten meters to 180 meters. On the inside, inside of ten meters, providing habitat mapping data via either multibeam or side scan is incredibly time intensive, to the point that it would take multiple hours to conduct a survey, and so it's challenging to provide data in those shallow environments, hence why we cut off the boundary there.

We use black and white low-light cameras, and, with those cameras, we're able to obtain imagery without lights, under ideal conditions, to about 180 meters, and so that's really what drove the depth bound there. To extend deeper, we would need to have lighted systems, which, as you can imagine, imparts influences on fish behavior, and so you can't just integrate those data together.

In terms of natural reef, we developed a three-by-three factorial design, where we have three levels of increasing relief from low to high-relief habitats, and three levels of increasing reef feature size from small to large, and here's imagery of what those habitat types look like in situ.

Then, for those nine strata, and those spatial strata identified earlier, we summarize both the habitat availability and managed species richness to develop the optimal allocation scheme that you see in the lower-right.

I do note that, for both this and the artificial habitat assessment that I'll talk in a second, we did fourth-root transform the habitat, because there are a couple of regions of just broad habitat coverage that would have otherwise dominated our sampling, and so, to ensure a little bit better balance of design, we down-weighted that by fourth-root transforming the habitat availability.

We also ensure that we have a minimum of two samples per sampling strata, and so we have the ability to estimate variances, if we eventually move to a full design-based index, and, for natural reef habitats, we have essentially nine habitat strata, nine spatial strata, in the eastern Gulf, and so a total of eighty-one different strata. A very similar design for the artificial habitats where we have, again, three --

MR. RINDONE: Ted, we've got a hand.

DR. SWITZER: Okay.

MR. RINDONE: Go ahead, David.

DR. GRIFFITH: I'm sorry. I raised my hand quite a while ago, but I wanted to ask you about the habitat selection and whether -- I think you had mentioned that, as you learned more about the habitats, then you would kind of alter your sampling methods, and is that right, or did you just continue random sampling in the same patterns?

DR. SWITZER: Yes, and it was random through 2019, where there was no stratification based on habitat type. It was just whether we identified natural or artificial. Beginning in 2020, we've implemented this new design, where we actually have a habitat stratification scheme to it.

DR. GRIFFITH: Okay. Well, thank you. That answers my question.

DR. SWITZER: Yes. Not a problem. So very similar for artificial reefs. The one caveat is that we don't have complete coverage, and so many of the artificial reef strata are absent in some of the spatial strata. I think somewhere around forty-five different combinations of strata in the Eastern Gulf for artificials.

Now, the eastern Gulf, like I said, we were fortunate that we had a lot of oil spill funding that helped build the sampling frame. Again, that funding was only available to the states, and so NOAA, at the time, could not obtain that, and so, in the western Gulf, the goal is to eventually mimic the same approach in the eastern Gulf, but we're a little behind the eight ball, in terms of the data we had available to start the project.

When we transitioned to G-FISHER, we had very limited coverage of mapping data, very little data on the actual shelf, and so, again, there were some large spatial gaps to address there. On the shelf break, they were mostly focused in areas of those initially identified sampling blocks and areas just outside of those, to extend the knowledge, and so it wasn't really random, and you couldn't use that to estimate overall habitat coverage in the western Gulf, and, again, like I said, spatially restricted.

As we transitioned those mapping data into a G-FISHER-type stratification scheme, we found that, for some of the strata, we didn't have enough fish data to estimate true managed species richness, and so, as an interim approach, that we're currently still following, to a certain extent, we included one unnatural, or unclassified natural habitat, because there are some blocks that have been sampled for years that we didn't have mapping data for, and we didn't want to automatically exclude those, because that potentially could change the catchability of the survey.

We allocated effort proportional to the habitats that we had available, and, again, we'll talk a little more about the new randomized mapping data we've been collecting, but, as we get more information, particularly on the shelf, we've adjusted this effort annually to allow us to sample those newly identified habitats, and we're getting close to the point that we think we have enough information to begin to optimize the survey in the west, similar to the east, potentially for either next year or the following year.

Now, a little better case for artificials, because there's a lot of knowledge of the distribution of artificial habitats, including things like platforms and shipwrecks and pipelines, et cetera, and so we were able to compile all available information into a sampling frame. Again, we didn't have historical fish data to

optimize based on species richness, but we did use the proportional allocation scheme for these habitats as well.

The end result of a typical G-FISHER sampling year is what you see here. We typically will sample about 2,000 randomized sites annually, skewed, again, more towards the natural reef habitats, because that dominates based on area, and so probably about 80 percent natural coverage and 20 percent artificial coverage per year.

One thing I don't have listed here is we also have a suite of about 110 or so fixed station sites we've been sampling annually, and these are sites that were chosen under the historical three survey designs, and the three survey spatial footprints, and so those are essentially anchoring points that allow us to potentially validate indices moving forward, to make sure that we're following similar trends that we would see historically.

That's, again, a general overview of kind of where we've come from, and now I'm going to transition to a broad overview of the applications of our data, and so, again, the primary application is for assessment and management, both for key inputs to stock assessments as well as increasingly these interim analyses, and some of these initial thoughts arose from the fact that, for a number of years, we would -- Each survey would provide an index for the assessments.

They would evaluate those, and they were all found to be suitable, based on the data collection processes and the analytical processes. However, they would often -- As you can expect, because they cover different areas, and in some cases they cover different portions of the population, you might see conflicting trends, which are challenging to account for within a given assessment, and so often we would default to the SEAMAP Pascagoula survey as the longest time series.

A caveat to note here is that it really wasn't possible to throw all these surveys and data into a generalized linear model, because there were definite differences in the habitat variables available. Particularly, the Pascagoula SEAMAP survey did not have the side-scan-derived habitats. There were a couple of key differences in how relief was coded, and so it wasn't really possible to throw all the data into a GLM and make it work appropriately.

What we did was work with Mary Crispman to develop an approach that would allow us to combine these data into a single index, and that also would allow us to account for differences in the

available explanatory variables among the three surveys, and Kevin's paper has a lot more details in the initial approach that we've used, and we've tweaked it a little bit through time, as we've learned a little bit more.

One thing to keep in mind, and this is especially for those of you that are seeing potentially old reports, or old working papers, and new ones, what used to be called the combined video index is now the G-FISHER index. It's essentially the transition of the time series, and so those, depending on whether you're looking at old or new reports, essentially are interchangeable.

The approach is essentially to devise a weighted design-based index using available data, but it's based on post-stratifying the survey data into these new habitat strata, and so we first fit classification and regression trees on the presence-absence data for a given species, and, again, I think that's an important point to make, that we have to do an analysis that's species-specific. It's not something we can apply globally among all the species.

Then we post-stratify the survey into these habitats based on relative proportion positives, and so medium would be kind of the average proportion positive throughout the time series. Low would be strata that have less than half the proportion positive for that species, and high would be those that have double the average proportion positive, and the bottom shows an example of a variety of potential explanatory variables that might go into the actual model, and so, again, presence-absence of species related to all these variables.

Here's what one of those resulting CART outputs might look like, and, again, similar to how we devise the sampling frame, this CART identifies nodes based on the ability to predict the likelihood of having a presence and absence for the species, and so the information up here gives you the breakdowns of exact values where that break happens, and you can follow this through.

In this case, and I forget what example species this might be, but it's a function of depth, latitude and longitude, the actual geoform code, those habitats that you see coded on side scan, as well as presence and absence of soft coral, and so, if you follow that through, those nodes are then color-coded based on that post-strata habitat.

Node 10 and 12 both would have been classified as a low likelihood of proportion positive. Beside that, the N gives you the number of samples that fell under that category. The yellow would have been that medium, or moderate, frequency of occurrence, and the

green would have been the high, and the upper panel shows what a map of that might look like, and so some of these are due based on space, and some of these are due based on habitat, but it essentially gives you a distribution of sites of those different strata.

That ends up being the strata that we use for post-stratification and for the subsequent design-based index, and those are conducted independently for each of the three surveys, because they all differ in respect to their available covariates.

Now, to define the habitat weighting process, first, we use the overall footprint of the surveys that you see in this upper-left panel to get an estimate of how much total area they cover. We then use the randomized mapping data, which, because it's random, is representative of the unmapped area that you see in the lower-left here, to get a sense of what proportion of that habitat is actually reef habitat.

In this case, if the blue would have represented the entire SEAMAP area, and the inset would have represented the randomized mapping area, we would say that about 55 to 60 percent of the mapping area would have been non-reef habitat, and so about 45 percent would have been, and that adjusts to estimate how much total reef habitat there is in the historical survey domain.

Then, as I mentioned earlier, we have not stratified our sampling effort by habitat type, and so we essentially assume that the percentage of sites that fall into those three habitat types are representative of the proportionality of habitat within that survey domain, and so you might have this result you see here for species X, where here's how much SEAMAP coverage there would be broken, down by low, medium, and high, et cetera, and so these estimates of how much habitat there are then go into our final weighted habitat approach.

Again, as I mentioned, it's important that these only involve historical data. We don't use post-G-FISHER data, because we've changed allocation in 2020.

The final index values, you see an example here of how those indices in the right then translate to a final index, and so, for the index, we actually then model maximum -- Or maxN, our abundance data, and not presence-absence, and we provide habitat weights at the stratum level.

That is at the year level, the survey level, and the habitat stratum level, and these are weighted by the habitat proportion to

sum to one, and so, for example, in this early time period, where there's only the SEAMAP survey, the three SEAMAP strata would then proportion sum to one, and so that's scaled depending on what surveys are available for that time series. Again, these final index values are generated using negative binomial error distributions, and so the bottom gives you the result index from combining these different components.

Now, we've done this for a number of species. We don't do this for all species, and some species are somewhat problematic, and we'll touch on some caveats here in a second, but one of the benefits of combining these data from these surveys is that we do have a dramatic reduction in our underlying CV, and, also, by including a broader spatial coverage of data, we tend to have a more reliable estimate of overall population trends.

Now, this is actually a summary from pre-G-FISHER, and this has only continued to grow, but, to give you a sense of how important the data from this video survey have become, in terms of contributing to most attempts to assess species, several of these were, I think, part of the data-limited SEDAR that we did a while ago, that didn't result in a lot of management advice at the time, but, in many cases, G-FISHER, or the precursors to that, were the primary data source available.

We're going to go through a few examples here. As I mentioned, the one kind of negative of the approach that we use is that we can't just generate a one-size-fits-all approach that we apply to all the data, again like a generalized linear model would do, and so we do have to go through this whole process every time we analyze a different species, because they vary differently based on their distribution.

You know, some are eastern Gulf only, some are Gulf-wide, based on habitat preferences, and some might not exist in deep environments, and not have been well-indexed by the SEAMAP survey, for example, and, as you're all aware, it seems like every species assessed has a very different delineation of the stock boundary, and so, especially when it comes to the habitat weighting component, we do have to adjust that based on how the spatial breakdown is for every single species.

The good thing is the robustness of G-FISHER, especially on the last decade or so, allows us some flexibility to break down the data into some of these finer-scale assessment blocks that maybe some other surveys really don't do as well, and I'm just going to walk through, briefly, three recent case studies of data for actual assessments, the triggerfish, which was a Gulf-wide index, snapper

subregions, and the hogfish, which was definitely a unique approach in the eastern Gulf.

You've seen the interim analyses recently, but here are some pending assessments that will be coming your way, and so, starting with SEDAR 100, gray triggerfish, it's probably the most straightforward approach to this. It's a natural-reef-only index, and it's Gulf-wide.

Again, for this survey, we have not included the new data that are coming on the shelf for the western Gulf, because we don't have a long-time series for those. For this initial approach, it's just using the historical SEAMAP footprint, for the most part.

One of the components we do examine when we are doing this, to see if it's even appropriate to combine this, is to look at size composition data, to make sure there's not a dramatic shift as the different surveys come online, and the upper-right panel shows that.

You have data from the SEAMAP surveys, east and west, Panama City, FWRI, and then the G-FISHER surveys, and, for triggerfish, while some surveys have a lot more robust size composition dataset, we're not seeing a dramatic change in size composition or selectivity among those, and, in this case, the resultant index that you see is in the left.

One thing we've begun to explore a little bit of is actually weighting these indices, or weighting the size composition data, so that the percentage of sizes within the strata, or the surveys, are weighted. This is a nice approach, but it's something that we really can only do when we have a fairly robust dataset. There are some species that we don't have nearly as many sizes as we do for triggerfish, and, in those cases, it tends to be somewhat difficult.

Red snapper was a bit of a different beast. As you're well aware, we have a three-region model. For the western Gulf, we didn't have to do a combined index, because that was SEAMAP only, and so we did two combined indices for the eastern Gulf, one for the central component and one for the east.

Now, you'll notice that the time series of these two differs dramatically, and that's due to the length of robust data that we have for these two regions.

Again, as we talked about triggerfish, we also, again, looked at the size composition, which for red snapper seemed to be pretty

spot on. For red snapper in the central component, we can go back to the 1990s because the SEAMAP survey was very robust in this region, going back even that far, whereas, in the east, only a small portion of the east, which is actually the southeast part of the Gulf, was sampled by the SEAMAP survey.

That sampling effort was very haphazard, based on whether funding was available or the ship could make it, and so, for the east, we felt we needed to truncate the index to 2010, when we had fairly good sampling coverage.

The one unique thing we did with red snapper was we examined the potential for an artificial reef index because, again, as we know, they tend to be fairly closely associated with these habitats, and so, with the NFWF funding, we had artificial reef sampling going back to 2014, or 2015, and you can see the distribution of those sites here, where, again, red dots are where red snapper are present. Much better coverage in the central region, but we've had enhanced G-FISHER coverage throughout the entire eastern Gulf beginning in 2020.

Ultimately, we decided that the data were too sparse in the east to go back prior to G-FISHER, and so we did a short index for that region. It would be a longer time series in the central region.

Now, the panel felt that these data were informative, and the approaches in the survey were appropriate, but, ultimately, they were not recommended for use for red snapper. The primary reason for that is that, if you have data from independent indices that are folded into the same assessment model, they're weighted relatively based on their CVs, and so, with artificial habitats, they probably represent only about 2 percent or so of all reef habitat in the eastern Gulf, and so giving them roughly equal weight to the natural habitat index was probably not appropriate, and so the panel recommended that, as we move forward with incorporating artificial reefs into our indices, that we explore including those as a different strata in the weighted G-FISHER approach.

Again, I think that's something important to keep in mind, especially as we talk about expanding artificial reef work in the west, which, again, at this time, we did not have the time series to do so.

The final example I'm going to talk about, in terms of indices, is hogfish. Now, hogfish was very unique, in terms that it has a very different stock ID boundary. Based on genetic data, it looks like the boundary is essentially due west of Florida Bay, and so,

despite G-FISHER being a Gulf survey, there was both a Gulf, which is most of the survey domain, and an Atlantic index developed for hogfish. We also were able to incorporate artificial reefs Gulf only, due to the sparseness of data in the Atlantic.

Here's what the Atlantic survey index looks like. Again, we were able to bring this back to 1993, because we have a fairly decent coverage of the Keys reef tract from that SEAMAP survey, with some notable temporal gaps, and so there's a lot of year gaps that we see here, where either sampling was not conducted, or it was only conducted in maybe a small, spatially-restricted area in this area. The index is able to expand through the whole time series, but we have, again, more robust data in the last decade or so.

For the east, again, we initially made the attempt to generate an index going back in time. However, because of a few things, and, one, you see, in the lower-right, a dramatic difference in the size composition of hogfish in the areas that the SEAMAP survey was conducted, much larger, and some of those -- That sampling domain is really beyond where you typically see high abundances of hogfish. They're not as deeply distributed as some of the other taxa, and the decision was made to truncate since 2006, but we were able to incorporate artificial habitats into this index.

In addition to the traditional indices that you're used to seeing, we are heavily tied into ongoing modeling efforts, particularly Dave Chagaris' West Florida Shelf red tide models. Our habitat mapping data are the primary source of his underlying spatial maps that you see here on the right. These aren't the most recent versions, because we've just provided him a few more years of data, but these give you the percentage of habitat within these boxes, the grids that fall under a collapsed G-FISHER strata, and so this includes artificial and natural and three relief categories, but it collapses over the rough spatial scale of this.

Both this and the fish data that we're producing are key inputs into this model, and we'll see some updated analyses for gag here in the next couple of months.

I don't really have a chance to talk through a lot of this, but our objective is really to provide data that's useful for a variety of different reasons, and, with the RESTORE project, we have some other competing objectives that our project team is working on, but we've designed the survey to deal with and address a variety of questions, from synchrony of trends among similar species, to the importance of habitat spatial scales, to habitat dynamics, and a variety of other questions, and so you'll probably see more of this coming, coming down the pipeline, but, again, I'm not going

to talk a lot about that today.

The final thing I want to touch on is how we're adapting the survey moving forward, and, again, it's a long-term time series. You don't want to do a whole lot of changes, because the concern is always that are the changes due to changing populations or changing methods, but we do know that there are some issues, and some gaps that we need to address, and we're doing so in the best way we can to try to make that happen within the context of the current survey design.

The first I've touched on a little bit earlier, is this whole notion of artificial reefs. Again, they are -- While they're maybe not numerically dominant, in comparison to natural habitats, they are locally important. The dynamics, the fishing dynamics, are different in these habitats.

Some species rely on these in a different preference than natural habitats, and so we've always known, and felt, that it's important to account for these in our survey. We were able to do some exploratory work with the NFWF funding in the eastern Gulf, mainly just to assess the feasibility of sampling these.

Again, some of these are really high relief, and we're dropping camera pods, and could we do so successfully without losing gear, and the answer to that has been yes, for the most part. With the good habitat mapping data we have, we have the ability to pinpoint gear deployment pretty effectively that we're sampling the reef, but not losing gear, and so that's using standard methods, and, for most of the artificial habitats in the eastern Gulf, it has been pretty effective.

As we saw with hogfish, we're to the point now that we have a sufficient time series to integrate into existing indices. What we're also seeing is we may have the ability to generate indices for new species, for example goliath grouper, where you would not really be able to develop a natural reef index in the Gulf, due to the sparseness of data, and we see, potentially, some ability to do that, and so it's expanding the index portfolio that we have of the survey.

We're doing the same in the western Gulf, but the western Gulf has a unique habitat that we don't see much of in the east, and that's these oil rigs, or oil platforms, and, with these, dropping a standard camera is not going to be incredibly effective, for a number of reasons, primarily because the fact that their distribution extends the entire water column, and so we see species that are distributed fairly differently.

Here's some example data that we've collected in some pilot surveys over the last first three or four years of G-FISHER, where you see the species on the X-axis, and their percentage of occurrence on the Y-axis, and you see things like, like seriola, rivoliana, and barracuda in the upper part, and you see gray snapper in the upper and the middle part, and you see a lot of species concentrated in the bottom, and so a bottom-only deployment in these areas is going to be ineffective, in many cases.

The approach that we've developed, and some of this has been based on input from LDWF as well, is a full vertical water column transect, where essentially we drop a camera at a standard rate throughout the water column, and we're able to annotate for maxN, and so, for some species, maxN may occur at the top, and for some it may occur at the bottom, et cetera.

Now, we have a very short time series. Again, although G-FISHER started in 2020, we couldn't start in the western Gulf, because of COVID, and we have a short time series. Typically, you need a minimum of five years of data before you have some reliance for an abundance estimate, and then we also have to evaluate, at some level, how do we best incorporate this into G-FISHER.

Again, we don't want to have the same problem with red snapper, where we just throw a separate index in there that's not appropriately weighted, and so we're exploring approaches of how to do that, but know that data from platforms are beginning to be available, and be forthcoming, in the next year or two.

The second problem we know we've had in the western Gulf are these large spatial gaps, where historically you saw very few sampling locations, or reefs, on the actual shelf, and we know that the habitat dynamics in the western Gulf are very different than in the east.

In the East, there's abundance of habitat, natural on the shelf, and it's not nearly as abundant in the west, but, as we've begun to collect mapping data on those shelf habitats, we're seeing that it's largely a lack of mapping effort, and not a lack of habitat. There are quite a bit of habitat in that region. It's different, and we see an example of the side scan data in the lower part here.

These small-scale features are kind of like potholes that you would see in the eastern Gulf, and, again, this isn't necessarily a new thing. The initial Great Red Snapper Count identified all these reef anomalies, where you're seeing these red snapper on this presumed non-reef habitat, and what we're seeing is that it

actually is hard bottom, but it's just fairly small scale.

We've begun to build this sampling frame of these habitats on the shelf, and done some exploratory work, and we're seeing, by and large, that most of these do contain red snapper and a few other reef species, and so the relative importance of these habitats for red snapper is something that we're interested in, particularly in terms of how the expanding spatial problem will influence our index, whether an area has to be treated separately, because maybe these are smaller red snapper than what we've historically sampled, or whatnot, but these are definitely important habitats and things we're beginning to explore more fully.

Now, for both those components in the western Gulf, the other challenge we have is this issue of poor visibility, and you can see a map, on the upper-right of the transmissivity. Again, essentially, the orange and red areas are areas that are very difficult to obtain useful optical data, and so, on the bottom, where we're sampling the oil rigs, the very, very bottom, we might not get useful data, and some of those potholes we just mentioned are kind of hit and miss, in terms of whether the visibility is useful, and it’s never an issue in the eastern Gulf, but definitely an issue in the west.

In some areas it's ephemeral, and, you know, sometimes in a year it might be fine, and otherwise it's not. Others, it's essentially a permanent feature of just the water quality dynamics of the western Gulf.

Now, if it had just limiting field of view, and, you know, we're only able to see two meters instead of ten meters, those are things we can account for in stat models, but, if we have completely unusable video, it's a problematic issue that we know we need to address, because there's large areas that we're not really accounting for very well.

Now, there's a couple approaches we're developing to deal with this. The first is the use of acoustic cameras, and here's an example that you see from the eastern Gulf, where we have good visual visible data, and so you see that the boxes on the left are the fish that we're seeing. They're very similar to the fish we're seeing on the acoustic camera on the right, and so, again, all of this, we're trying to develop and validate and calibrate approaches in the eastern Gulf, where we know we have the optical data to link it to, and then the goal will eventually be to apply this to the western Gulf, and so we’re beginning to collect a large volume of data from these acoustic surveys.

Now, what we're seeing is that it's fairly easy to identify fish on the acoustic cameras, but, at present, species-level ID is not going to be great, and so the other tool we're throwing at the problem is this application of environmental DNA, and so I'm not sure how familiar folks are, but the concept is that all things in the ocean are shedding DNA.

Some of it is just based on skin, and it could be feces, and it could be gametes, and it could be all kinds of stuff, and so there's a lot of this DNA in the environment, and we can collect water quality samples, and amplify and process this DNA, and get a sense of what species were within that area within the fairly recent time period, based on, you know, how far water currents may come, how fast the DNA degrades, and those types of things.

We've developed a lot of tools with G-FISHER to make this process much more effective. One of the first things we learned, in terms of the environmental DNA work, is that the DNA reference library, especially for the Gulf, was very poorly developed. Many of the common species that you thought we would have data for, we didn't, and so we started with a significant investment in building out the DNA reference library for predominantly the managed reef fish that we're most interested in.

There's also wasn't really a great sense of how you should go about collecting DNA. There's a lot of different approaches. You could do a precipitation method, which requires very small amounts of water. You could do a filtration method, which requires a lot, and the result you see here on the right is that, by filtering water, we actually get a much better return on investment, and so we've developed best practices for how to collect and process environmental DNA, and there's the primers that you use.

Basically, it's what sequences you use to identify species, and sometimes the general primer, that gives you relatively okay community structure coverage, may not be great for a particular species of interest, and so there's a lot of effort ongoing to optimize the primers for the most important species.

Now, there's also two approaches that you can do for environmental DNA, depending on what your interest is. We focused historically a lot on what's called metabarcoding, and that allows us to essentially get a community perspective for the environmental DNA, which is good from a multispecies perspective, and it allows us to look at, you know, presence-absence related to what we see on video, and so things like detection probability, but there are also alternative approaches, that are a little more involved, that allow us to actually quantify environmental DNA, and so the qPCR

methods, and that is something that we're really exploring, in particular in relation to this acoustic camera work, because it may be something that's actually very much akin to a relative abundance metric that you see on video.

By applying things like a combination of acoustic cameras and environmental DNA, we hope to develop an approach to provide some information in these low-visibility environments in the west. We still have a lot of R&D to do, but that's the approach we're going for. Go ahead, Trevor.

MR. RINDONE: Yes, and we've got a question from John Mariska.

MR. MARESKA: Ted, thanks for the presentation so far. Just a quick question on this graph right here. Your taxa counts, are those just fish, reef fish, or does that include invertebrates as well?

DR. SWITZER: This was just reef fish. Invertebrates require very different primers. Now, the good news is that, the samples you collect, you amplify all the DNA, and you have that as a reference material, but, depending on what tax you're interested in, you need a different primer, and so, for example, if you wanted to filter our historical data for say Rice's whale, which is something that's easily doable, they would need to come up with a different primer to run through that, but that is exactly something we've talked about doing as well, particularly for the protected corals that we see throughout the Gulf.

MR. MARESKA: Okay. Thank you for that.

DR. SWITZER: No problem, and so probably one of the biggest bottlenecks we have, in terms of providing especially interim management advice, is the idea of data timeliness. Video annotation by video readers is incredibly labor intensive, and so about 2,000 of our videos are collected a year, and so we finish that up somewhere around August or September of a given year.

We estimate it probably takes about 10,000 total man hours, or maybe a little more, to process all those videos, and so, currently, we tend to have about a fifteen-month lag time between when the survey is completed and data first available, which, again, is not ideal, but there's two approaches to deal with that.

One, you could throw twenty or thirty people at it, which will help, but what we're also trying to incorporate, at some level, is this machine learning approach to helping to annotate these videos, and I'm not going to go into a whole lot of detail with that today.

We're in the process of still developing and evaluating our models, and how we're going to tackle this, and the plan, I believe, is to present a proposed pipeline to the SSC by the end of this year.

Again, getting input on things like how frequently should we change our reference library, and what kind of uncertainty are we willing to live with, et cetera, but, to give you a sense of what this looks like, here's an example, and this is a bit out-of-date.

We have a much more refined model now, but, essentially, you run the video through VIAME, and it identifies what it thinks are fish. It gives its best guess, and you see the labels here, and so you see red snapper, red porgy, and occasionally you see an unidentified, but so it gives its best guess, and then it also gives a confidence level for that guess, and so we have the ability to identify thresholds.

You know, are we happy with things that are 90 percent confident, or 80 percent confident, and do we need to have -- Could we be a little less confident, and accept some more uncertainty there, but, essentially, what we're developing now, and Matt can talk about this, and Matt Campbell is on the line, if there's questions now, but it's essentially a human loop process.

We don't envision ever simply turning AI loose on these videos and just trusting all the data. There's going to have to be at least some level of follow-up, at least uncertain taxa, and, some of the more ecosystem non-managed taxa, we may never have enough reference imagery to really get a good handle on, but we do think we could dramatically decrease the amount of time to process these videos.

I can't tell you exactly how much, but our hope is to reduce it dramatically, to be more in line with some of the other survey data that you see, and, again, it’s not really talked about here, but we're also exploring whether we can automate some of the measurement components to that as well. Measurements aren't nearly as time intensive as the actual video reads, but, again, if we can automate anything, that saves time and gets data to you guys much more rapidly.

The other thing that's already in place, to a certain extent, is turning over routine indices of abundance for view by you and others, and so you've probably all seen the SEAFish website. It's something that the Southeast Fisheries Science Center has developed that, for somewhere around fifteen or twenty managed species, it produces standard indices for all the surveys that are used in the actual assessments.

The capture surveys have been integrated for a while, and Kate Overly has led efforts to integrate the G-FISHER data, following the protocols that we've used for these analyses as well, and so, yes, we produce focused interim analysis as requested, but, essentially, what the plan is, it's that, every time that we update the data for another year, these indices will be updated, and so it's something you can review at your leisure.

Overall, G-FISHER, the video survey data in the Gulf, has come a long way over the past three decades. I think we're doing better than we did in the early 1990s. It's currently the most comprehensive survey of reef fish and habitats in the Gulf. It's robust, at about 2,000 or so sets a year, and, again, the reason we're giving this talk is that you're seeing this a lot more, and we want you to have a better understanding of how the indices are developed and where the data come from.

Now, we're still continuing to evaluate all components of this, you know, whether it's how we analyze the data, whether it's data gaps, like acoustics data, et cetera, and we're not resting on our laurels. We know that there's improvements we need to make, and there's other things we can do to improve the data, especially for the ecosystem-based type approaches.

We've identified limitations, in many cases, and we're trying to develop solutions that will address these while not influencing the trends that we see from the resultant data, and so our hope is that, as we move forward in the next several years, the G-FISHER data will continue to be more robust, and more useful, for all of your needs.

Now, I do need to bring this up, because there's always questions. I mean, people are excited about G-FISHER, and, currently, there's an expiration date. We are in our renewal phase of the NOAA RESTORE Science Program grant, and that will fully fund sampling through 2028, and processing of those data, and maybe a little bit of sampling in 2029, but, currently, there is no funding on the back end of that timeframe, and so, without enhanced funding, that data will largely cease. Some of the surveys could be supported by SEAMAP, but definitely nowhere near the extent that we're doing currently.

Now, we do have some inroads to this. We've already begun, as of 2025, to integrate the state partners and in a limited way, again based on unavailable funding, and, again, this is a map of what state partners were able to sample last year.

I did note that Mississippi, while they didn't sample in 2025,

they have two readers that are helping process some of the data, and we also have some LBRs that are going through the federal system to hopefully fund G-FISHER moving forward through the SEAMAP umbrella. Nothing firm, and nothing is in place. We've had at least positive conversations with some of the regional senators and congressmen, and so the hope is that this will continue, because we know that the data are important.

Anyway, that's all I've got, and so that accesses the G-FISHER story map. There's a nice ArcGIS story map that talks about a lot of these things in more detail. Check that out if you're interested, and, obviously, if there's questions, either myself or some of our team can answer those. Thanks.

CHAIRMAN MONCRIEF: All right. Thank you, Ted. Yes, and I think there's going to be some questions here, and I think a little bit of discussion, and so I've got some, but I'm going to hold them until after everybody else has asked, and so you all go ahead and raise your hands, and let's get those names up on the board if we've got them. All right. There we go. We've got one. Go ahead, C.J.

DR. SWEETMAN: Thanks, Trevor, and I appreciate the presentation, Ted. I just kind of want to highlight kind of where the council is going, as you all are aware, relative to how assessments are going to be done with the change in federal resources that are available.

I do believe that there is going to be more of a reliance on more data-limited approaches and, as Clay likes to call it, not the Cadillac of stock assessments, and I think we have realized, relative to the value of surveys like G-FISHER, relative to how we can manage it in a more timely manner, and particularly we saw that for lane snapper, and I know other species are being looked at too with G-FISHER.

Certainly I just wanted to highlight that, the importance of surveys like this, and so I appreciate the very detailed overview of G-FISHER, Ted. I think this is a great program, and certainly I would be an advocate for maintaining something like this in the future here, given the funding situation, and so just really appreciate it. Very good program. Thank you.

CHAIRMAN MONCRIEF: All right. That's one of my comments off the board, and so C.J. got that one. Dr. Nance, go ahead.

DR. NANCE: Thank you, Mr. Chair. Ted, that was a great presentation. I learned a great deal about G-FISHER, and I

appreciate those efforts. The question I have is, I mean, you look at the dots on the Gulf, and it's really more towards the eastern Gulf. Does that -- Turbidity and things like that, does that in any way tend to inflate the eastern over the west, as far as abundance and things like that for different species?

DR. SWITZER: So it may at some level, but the habitat weighting approach we think will account for that at some level, and so we actually do upweight the western Gulf data, based on the area that that it represents, but it's also -- Because it's largely a function of habitat availability.

There's definitely more total available habitat in the west, or in the east than the west, even with the mapping data we're finding on the shelf, I think, and so I think we're -- The approaches that we use are accounted for that, to at least some extent.

DR. NANCE: Okay. Thank you.

CHAIRMAN MONCRIEF: All right. Harry, go ahead.

MR. BLANCHET: Thank you. Very interesting, of course, and I had a ton of questions, and I was hoping that there would be some other hands raised before I start sounding like I'm picking on somebody, and I apologize for that in advance.

First off, thinking in terms of the western Gulf of Mexico, you've mentioned some existing data sources, and some you did not mention, and I don't know if you had looked, or started working toward getting or not, and the State of Louisiana has done some side scan and multibeam work around a lot of the artificial reef placements, but also in their planning areas, and so you have some good coverage of some areas that is scattered with toppled oil platforms, or moved oil platforms, or other forms of artificial reef, but also some characterization of the water bottoms.

That was done by Chuck Wilson, going back into the 1980s, and that was followed up by other people along the way, and I don't know how much of that is still available, but you might check with the artificial reef program, with Wildlife and Fisheries, and see what they've got.

The other major source of that side scan or multibeam data that I'm aware of in the western Gulf of Mexico, and it’s been kind of a pet peeve of mine for a long time, is that a lot of that has been scanned by various and sundry oil companies in some of their pipeline surveys, assessments, when they're doing bids or trying to evaluate potential for drilling opportunities, and they're

going to have some surface information, along with the subsurface information, and BOEM may have access to some of that.

I haven't picked on anybody from that group recently, but there may be some way to obtain a lot of information, at relatively little cost, without having to go back and re-plow that ground, and so I just encourage a couple of -- Chasing down a couple of possible data sources for the western Gulf.

DR. SWITZER: Well, thanks. I think definitely the state stuff I think is potentially a good mine. I know we've tried for years the BOEM angle, and essentially it gets shut down.

MR. BLANCHET: Have you tried going the other route and looking at some of the bigger players in the Gulf, things like the Chevrons or Shells or BP's, some of those folks that have actually -- The oil companies themselves, because BOEM themselves may not want to give away third-party information, but it might be something that some of the oil companies themselves might be able to do.

DR. SWITZER: Like with BP, I know that there was a proposal to have that released as part of their settlement, but they balked at that, and that doesn't mean we can't keep trying, because, again, your point is exactly that, and they don't care about the surface. It has nothing to do with their prospecting, and so that's not really that important to them, but it is to us.

MR. BLANCHET: I just -- I feel that, the more times we ask, and ask in different ways, then perhaps it might eventually get to somebody who cares.

DR. SWITZER: Definitely. Appreciate that.

MR. BLANCHET: The other question I had was a little bit different. Thinking in terms of the western Gulf, you listed different depth distributions of various species of seriola. I have a hard time with seriola, unless it have it in my hand. How do you do that?

DR. SWITZER: That's definitely a challenge. If you look at the historical video data we have, when they get to be a certain size, our folks feel fairly confident, and, again, we stress to never guess, but the small ones -- You can actually look at -- They're just almost impossible to identify, and so our data for seriola really picks up somewhere around 300 or so millimeters. Anything smaller than that, we just can't identify them very well.

MR. BLANCHET: Okay. Thank you. I'll let other people speak.

CHAIRMAN MONCRIEF: Thank you, Harry, and I guess where they're at with those seriola -- I mean, you've got almaco that are ten to forty pounds, and so those get pretty easy to chop up a little bit. Luiz, go ahead.

DR. BARBIERI: Thank you, Mr. Chairman. Ted, thank you for the great presentation and overview. As you know, of course, I have been following this very closely from the very beginning, but even I learned a lot today. I think this overview was super helpful, super informative, and I want to thank you and the team, you know, all of those folks listed on the screen, for all the help bringing all of this together, because I think it's an excellent presentation, and exactly what I was hoping we would have.

My question is more in line -- I guess it's a continuation of an issue that Harry raised, right, in terms of shaking the tree and seeing if other things start falling, in terms of availability of data to supplement what we have here.

My conversations with you, over the last maybe three to six months or so, have included like the effort, right, to move forward with a federal legislative budget request, a federal appropriation, to potentially expand G-FISHER and have more explicit participation from other Gulf states. Can you expand on that for me a little bit?

DR. SWITZER: Yes, definitely, and so, even currently, with a fairly well-funded program, there are areas that are just challenging for our program to get to. For example, the southwest Gulf, Texas, it's just challenging for NOAA to get there, based on ship availability, weather, those types of things, and so getting other states involved to help with regionally-challenging areas, and, again, as we expand onto the shelf, things like the platforms, and, actually, the Louisiana Department of Wildlife and Fisheries does a fair bit of the platform sampling moving forward with this program, and so getting them to help like in the shallow areas is something important.

One thing to keep in mind, and this is, again, a challenge we're going to have, at some level, is, for example, Alabama has been doing a lot of work in the coastal areas for a long time. We have been unable to access mapping data from there, due to the fact that, the second it comes to Florida, it's open to the Sunshine Law, and anybody can request it at any point in time, and so that's also a challenge that we face in terms of accessing these additional habitat sources, is that they have to be willing to let them become public knowledge.

DR. BARBIERI: Yes, and that makes sense. Yes, and it is a challenge, but, you know, something I think that we need to think about, right, because getting G-FISHER to continue evolving over time, to become a broader sort of a consortium, a science consortium that's, you know, broader, in terms of integration of state and federal partners, I think would be a plus for all involved, and so thank you, Ted. Sounds good.

CHAIRMAN MONCRIEF: Luiz, I 100 percent agree, and that will be some of my comments there at the end. Tiffany, go ahead.

DR. HOPPER: Thank you, Mr. Chair, and, as many other folks have said, Ted, thank you for the great presentation. This has been really informative. To follow up on one of the questions earlier, and I may not have fully understood this, but you mentioned that, originally, the systems were using those older orthogonal-style cameras, and then you had moved to that spherical camera system, and, as I understood it, you mentioned comparing the single frame of the spherical camera versus the entire spherical camera image.

I was wondering what the comparability looked like between the older versus new-style cameras, and, thinking about that specifically, I know the state collected data in Texas last year, and was still using that older-style camera, so I'm just wondering what impact that might have on comparing datasets with different cameras that are being collected at the same time.

DR. SWITZER: Good question. The old cameras and the new cameras, they're the exact same camera itself, and so it's the same resolution, the same horizontal and vertical field of views. The spherical ones are only just stitching off all those together.

DR. HOPPER: Okay.

DR. SWITZER: So a single screen for the single camera is the same as a single screen for the spherical camera.

MR. HOPPER: All right. That makes sense. I appreciate that clarification, and the other question, or point I wanted to bring up, is it’s really interesting with the potential use of some of this eDNA to address some of the visibility issues over here in the western Gulf, and I know we've had some challenges when we've tried to do similar eDNA work, and so I am curious as to what kind of success you guys are having addressing some of the types of issues we've seen.

I know our genetics folks had some issues with DNA primers, that had biases in amplification, and so I'm just wondering whether or

not you guys are seeing similar type issues, or is that just still a work in progress?

DR. SWITZER: It's mostly still a work in progress. If we can access -- Give Kate Overly the ability to talk, and she's actually spearheading our eDNA component of the project, and she can probably speak much more to that than I can.

CHAIRMAN MONCRIEF: Let's go ahead and do that.

MS. KATE OVERLY: Can you hear me?

CHAIRMAN MONCRIEF: Yes.

MS. OVERLY: Okay, and so we do have some issues with that. It's in review right now, and we have a comparison paper, that Ted mentioned, looking at that versus our video data, versus our filtration data, and what we found was a lot of the commercially-important species -- We used 12S with the MyFish primer region originally for the first five years of G-FISHER, and what we found is that, for families like Lutjanidae and Serranidae, we don't really get the differentiation that we need to the species level with 100 percent confidence across all species within those families.

We actually just received funding internally through NOAA, through something called the Omics Strategic Initiative, and so we have a project, this summer, where we are developing optimized metabarcoding primers for those -- I think it's seven families, and so it's Carangidae, Serranidae, Lutjanidae, all of our problematic ones, basically, and hopefully we'll come up with a better primer to be using for metabarcoding, and so, Tiffany, I can definitely keep you in the loop on that, because those would be publicly available as soon as we have them, you know, developed for anyone to use, and that will be a lot better suited for the Gulf.

It's just some of this work in the Gulf is just getting started, whereas the Pacific, where those original 12S primers were developed, it's better suited for their species, and so that's kind of a little update there, but we can definitely keep you further updated.

DR. HOPPER: Thank you. Very much appreciated, and I appreciate that extra insight.

MS. OVERLY: Yes. Absolutely.

CHAIRMAN MONCRIEF: All right. We've got John. Go ahead.

MR. MARESKA: Hi, Ted. Thanks again for the presentation, and so I'm kind of looking at slide 53, your optimal survey limitations, and so, as the SSC was reviewing greater amberjack and triggerfish, it was very well noted just the lack of success of capturing fish in the western Gulf, all the way to Alabama, and that matches up with your optical survey limitations, and so, moving forward, until you can get the acoustic cameras, and get all the bugs worked out, is there something that can be done in the interim to help improve the sample size, particularly in those areas where you have these optical limitations?

DR. SWITZER: That's a good question. Again, Matt Campbell probably knows a little more about the percentage of sites that we don't have usable data. I don't -- I mean, I think it's significant, but I don't think it's like 90 percent or something, and so I think we are getting at least a signal, and most of the banks, I think, are really well sampled, and so I think we tend to get pretty good data there. I can't think of anything that would be directly comparable to fit into the model. Do you have any ideas, or thoughts, John, on what you were thinking?

MR. MARESKA: Well, I know Zach Zuckerman has been working with Matt on those drop cameras, and just wondering the success he's been having, if he's been having much success with those drop cameras, and could that be an option, given, you know, the visibility issues, and the nepheloid, particularly at the bottom, and I'm assuming your optical survey limitations are really at the bottom, where the G-FISHER cameras are currently working.

DR. SWITZER: Yes, but the same thing, and like the platform is the same thing. The bottom is not -- In some of those areas, it's not visible. The problem is most of the fish are in that area, and so it's not -- Like you can't really do a water column sample in most of the natural reef habitats especially, and it's not going to give you anything, but triggerfish are one of the species we're focusing on with the eDNA work, and so that might be something that would be useful, at least as a presence-absence type of metric.

MR. MARESKA: All right. Thank you.

CHAIRMAN MONCRIEF: All right. Any more hands? I'll cover a couple of these points. Not, again, specifically, but kind of run through them. I'm going to go ahead and make mine, and then we'll get Harry after that.

All right, and so what C.J. said I think, was spot on. Essentially, we're going to be -- I think this group, and not trying to read the tea leaves or anything, but there's going to be increased reliance on some level of index-based management, or some quicker, higher-throughput product that allows us to be able to make changes a little bit more readily, especially with decreased resources, at the assessment level, or timelines, or whatever else you want to say.

With that, I think the conversation here has been kind of circling around what my overall thoughts have been. One is that, essentially, if you look at the map, I think, if we can bring it up for the overall sample, and let's go to that 2026 selected sites, and that's slide 24.

I think the point that the eastern coverage across the shelf, versus the west having some level of impact, I think that's a decent concern to have, at least in this state, and Luiz's point about bringing this in as, you know, essentially a conglomerate, a consortium, a group-wide effort across all the states, I think is a very pointed one, because, just like what Louisiana said, Mississippi has mapping data across our artificial reefs as well, and we can access those areas pretty well.

Now, when it comes down to the last comment, where it talked about essentially visibility, and the nepheloid layer, and all those impacts, and finding something in the interim between, we've been doing work, and I think it has shown a fair amount of success, in basically the 360-degree drop camera route that shows that there is a visible layer at nearly all times of the year, outside of the very hot summer months of July and August sometimes, but there is always a clear layer in that water column.

Ted, I understand your point of those fish are always on the bottom, and so you're still missing them, and I understand where that's coming from, but that's not what we've seen in our sampling. It seems to be that those fish are oriented into that clear layer. They could follow the camera down and be there, and then, on the platform side of things, they're typically scattered across that layer, and, once you get to the bottom, to the shell bed, yes, there are fish there, but typically they're the juveniles that are sitting on the shell bed for some level of coverage.

I think, all in all, given the need of this program, the benefits that it is going to be able to provide, and the reliance that the council is going to have for federal management of species, coupled with, you know, trying to read those tea leaves, and trying to expand this coverage to make sure, you know, it's pretty much

covering all the different stock distributions, especially those that are truly Gulf-wide and not just Florida-centric, I think there's a pathway here to have some meaningful conversation about finding a way to incorporate state-specific sampling of state areas in a meaningful way and increase the overall sample size here.

I think all the points -- I mean, of course, the thanks for the presentation is on the spot, right, and we appreciate you coming and doing it, but I think all these points that have been made kind of join into that one notion of this can be a larger partnership, and we can increase sample size, and, while it may stray, or potentially not be exactly how it's executed in some areas, I think there's a pathway here that we can get meaningful data across the entirety of the Gulf, even with those visibility issues, because there is the possibility of doing it. I think we've proved that over on our side, and we're happy to share some of those videos at any time, and so those were my comments. Feel free to respond. If not, we can move to Harry. I think he had his hand up.

MR. BLANCHET: I think Matt had his hand up. Maybe go to Matt, since I had a bite already at the apple.

CHAIRMAN MONCRIEF: All right. Matt, take your bite.

DR. MATT CAMPBELL: Sure, Trevor. Just to reflect what you said, we're finding very similar results, and so we're at about, I think, five years on that data after this year, and so I think we'll be able to start really producing information off of those artificial reef drops and the vertical transects themselves. I agree with you that we're picking up very good data in there.

It's just that nepheloid on the bottom that you don't see things, and so I think you're right that it's rich to explore, and, again, yes, there's a lot of habitat in there that's difficult for all of us to sample.

It's nice in the east, where we have, you know, two other partners that work with us. In the west, we're just building that up, and so LDWF last year did a great job, as did TPWD, picking up data in the inshore Louisiana and Texas areas, because, otherwise, it was essentially the NOAA Pascagoula facility trying to do all of the work, and so, yes, that's going to be important, I think, moving forward, and, yes, I agree that getting those water column data now, and pulling those data in, it's starting to show us pretty good results there.

Then, yes, more expansion on like eDNA, and coupling eDNA with

acoustic signals, so we can start translating that information into biomass kind of signals, I think offers a reasonable pathway forward, a lot of R&D that we need there, but I think that there's a good reason to believe that we're going to be able to cover the ground here in the near future, and so I was basically going to say more or less what you said, Trevor, is that we're seeing pretty good results there, and so we would love to, of course, continue that, and talk with anybody who is working in this, in that particular domain, and expanding that work, and so that's what I had to follow-up on there.

CHAIRMAN MONCRIEF: All right. Perfect. Yes, and I think -- You know, I think one of the aspects of this is that, you know, the gear, the size of the gear, the ability for, you know, the state fleet, if the state doesn't have a large-scale vessel to be able to do that work on or anything else, and I feel like there is some opportunity at least to try to, you know, at least find a pathway that will work, and so I appreciate those comments. Harry, go ahead and take another bite.

MR. BLANCHET: Okay, and this is going back to something that Luiz alluded to of trying to develop basically a network for this project. One of my pet peeves has been the number of management boards, or commissions, or units that get involved, and I'm trying my best to encourage maintaining these within existing frameworks.

You know, we already have a SEAMAP component, and it would seem that, if we want to expand state surveys for acoustic, or eDNA, or visual surveys like this, that that could all be done within the SEAMAP, if the funding was appropriately siloed to be specific to those characteristics, so that we're not in the same boat as we have been in the past, where that pot of money gets sometimes gets divided in ways that the SEAMAP Committee might have issues with, and I'll leave it at that. Thank you.

DR. SWITZER: Well, thanks, Harry, and just a quick comment to that, and so the LBR that we submitted had specific language to make sure that it goes to the Gulf SEAMAP, so that it's not, like you said, partitioned to other regions.

MR. BLANCHET: Thank you. Yes, and I would say you might want to have it also, as a part of that partition, specify that, you know, a certain fraction of it needs to go to the states, or something like that, so that so that you don't end up with it funding another four days of big white boats. Thank you.

DR. SWITZER: Yes, and that was definitely part of it, again, and that's really what's limiting state involvement now, is just,

essentially, what states have done is reallocated their available vertical longline funding to what they can do for this program, and so definitely the goal would be to up that significantly.

MR. BLANCHET: Thank you.

CHAIRMAN MONCRIEF: I would just add to Harry's point, before we get to you, Paul, that, while Mississippi isn't sitting on the SEAMAP Committee formally, we had we have put funding toward this effort, to a degree, and I would like to be able to see us get a little bit more heavily involved, at least on that aspect of it, because I do think we've got -- You know, we've got a pathway to start contributing, even, you know, within funding and all that stuff, because, obviously, our state fishery is a priority to us, just like it is everybody else, and not just the Gulf-wide aspect, but also being able to cover both of those simultaneously is a is a good thing. Go ahead, Paul.

DR. MICKLE: Thanks, Trevor and Ted. That was a great talk. I really enjoyed it. I learned a lot of new things going on. It was very informative, and it's good to see Matt and everybody on this talk. It's just a really good effort.

As it moves forward, I'll try to tie -- I might tie into Harry's comments, and Trevor's comments, and then end with a potential suggestion, and a question, I guess, but it just seems like, when the Gulf-wide efforts, and we all have to understand that standardization is a very hard thing in this case, with these methodologies, obviously, with the different regions, and the water clarity, and we have the acoustic cameras, and we have the visual cameras.

We have eDNA, and we have a lot of tools, and then the SEAMAP data as well, and standardization should be our goal, right, and in our conversations of how we can get Gulf-wide, because that's where the value comes in, obviously, with stock assessments, which is what we're all tasked to focus on with these efforts, but I think it just seems like, with what Harry was saying, and I agree with completely.

The funding streams seem to go out in somewhat of a silo effort, and it works very well in certain regions, but Gulf-wide efforts are difficult, because certain areas -- Everyone wants to make their efforts efficient, more efficient, but, when that happens, when folks start taking on the ability to change methodologies, then you lose standardization.

We all want an increase in our region's efforts, and get the most

bang for the buck, but, every time that seems to happen, there seems to be a loss of standardization. It just needs to be a Gulf-wide program.

If we can marry these methodologies together, where it is somewhat cost efficient, and then either Gulf States or someone comes in and says -- Or SEAMAP, and I don't know, with various successes, and can it be standardized, and there is no liberties on any type of methodologies, or spatial selection of any kind, or temporal, then we can start to approach what we have stumbled on in the past as far as Gulf-wide standardizations.

It is not an easy thing to do. I make it sound easy, but it is certainly not, but it just needs to take a lot of strength in certain circles to make sure we try to do our best in those efforts, and I think we are getting a lot better in those efforts, as far as Gulf-wide standardization.

The last thing I will say is we do have these very valuable tools, but I just wanted to bring up a potential other one is the passive acoustics. The cetacean world is getting good at it. The reef fish world in the Caribbean is starting to get really, really good at it, and they are identifying species presence-absence just from the passive acoustics. It is very cheap to do, from what I understand, and I know very little about it, but it is starting to show some promise, and it seems like it could be another arrow in the quiver we could use, and, again, there is no water clarity constraints with that.

You can groundtruth it in clear water with visual cameras, and the Gulf might be a great place to take passive acoustics even a step further as identifying quantitative metrics we can have. Thank you.

CHAIRMAN MONCRIEF: Thanks, Paul. Yes, the standardization question has always been the one that always seems to kind put a hindrance on things, every now and then, of trying to move forward quickly, but it is an essential step in this process. Go ahead, Luiz.

DR. BARBIERI: Thank you, Mr. Chairman. I'm coming back to take another bite of the apple myself, but, you know, all of the comments that you made, and Harry, and now Paul, right, that mentioned SEAMAP, and, I mean, this, for me, has been a little bit confusing, I guess because I'm still drawing on my understanding of our data collection systems that have been, you know, in place for a long time, and Ted is talking about G-FISHER as being more integrative, where he had that slide with the arrows that combined

everything under G-FISHER.

Ted, it might be helpful if you could help us better understand, right, how SEAMAP falls into this, and, despite the good comments that, you know, all of you have made, and, you know, Harry started talking about the SEAMAP, and funding, and all of this, and Paul continued with the standardization, but how does SEAMAP fit into this G-FISHER picture, and how could that be used as a way to basically facilitate that broader cooperation and integration of different data sources into this approach?

DR. SWITZER: Sure, Luiz, and I can comment on that, and it's one of those things that, essentially, G-FISHER is SEAMAP. It's funded externally, largely by the RESTORE Science Program, but the initial Pascagoula survey was 100 percent SEAMAP funded, and so that has been SEAMAP since the outset.

The initial West Florida Shelf work that Florida did was 100 percent, or 90 percent, SEAMAP funded, and so those were SEAMAP-funded programs specifically.

What has happened is, again, as the vertical longline survey was discontinued, three states, Alabama, Louisiana, and Texas had some of those funds available, and so those funds were reallocated to help support the component of the SEAMAP program.

There is a SEAMAP reef fish subcommittee, and even a SEAMAP habitat mapping subcommittee, that I don't know that they've met in a while, but, essentially, the G-FISHER/SEAMAP protocols are currently the standard Gulf-wide protocols, and so it’s already well embedded. It’s just that some of the funding that’s supporting the bulk of the work is coming through RESTORE, and so I don't see a whole lot changing once this transitions hopefully to a SEAMAP program.

Again, I think things like Trevor mentioned are perfectly legitimate to explore, but, again, as Paul said, I think there needs to be calibration trials, to make sure we can integrate the data as a Gulf-wide index. All the tools we've talked about, acoustic cameras, eDNA, we're developing and calibrating in the east, where we have the visual data to validate that, and, once we're confident that we have a quantitatively-reliable relationship, then the idea would be to apply it to the west.

If that doesn't work, then we have to come up with a plan B, but, again, the hope is that, with all other SEAMAP surveys, we have some sort of standardized currency that we can apply Gulf-wide, and I don't know if that really helps or not, but that’s --

DR. BARBIERI: It does. It does, Ted, yes, and that's exactly what I was looking for. Thank you.

CHAIRMAN MONCRIEF: Thank you for those comments. John.

MR. MARESKA: Yes, and so I would just like to add on to what Ted was saying as a SEAMAP subcommittee member, and so Ted brought this to the SEAMAP subcommittee back in 2022, and so we have been following the G-FISHER protocols using SEAMAP funds, but the group has also been working with us to explore other methodologies to address some of the issues that we discussed back in 2022, and visibility being a big issue in the western Gulf.

Alabama built cameras to do the drop surveys, but we haven't been assigned any sites to use that gear, and so we've been using the spherical cameras currently, or actually just last year, and so we spent 2023 trying to build up the cameras, and all the equipment, and that was Gulf-wide. In 2024, things didn't work out logistically very well, and I think 2025 was the first year that the SEAMAP states were able to sample Gulf-wide, and is that right, Ted?

DR. SWITZER: That's correct. That was also the first year we had the full training on video reading processes and stuff, and so we're getting there. It will take a couple years, but I think we're in the right direction.

MR. MARESKA: This is a process, and it's not going to happen overnight, and so those are my comments. Thank you.

CHAIRMAN MONCRIEF: Does anything ever happen overnight in this world? Go ahead, Paul.

DR. MICKLE: A question for Ted. Is there a formal effort in the calibration process, and then I have a comment after that. If you said it in your presentation, I missed it, and I do apologize, but is there a formal effort in calibration between the methodologies?

DR. SWITZER: So, with the eDNA and the acoustic stuff, there is, essentially, and it's essentially mirroring what we've done with the single camera and spherical camera calibration works, and, again, we're working on hopefully publishing that fairly soon, but, essentially, all the sites we have work, we're doing acoustic -- In the eastern Gulf, acoustic cameras, eDNA, and the optical compared.

Now, what we don't have, and I don't know where this fits into the

hierarchy, you know, is an evaluation metric of what level of correlation is really sufficient to implement other components. That's something we'll have to I think bring to you guys once we have some data to compare. It's very similar to what we're talking about with the application of this VIAME automated image processing. You know, what level of agreement do we need to have before we can transition from a manual read to a VIAME read?

DR. MICKLE: Trevor, can I comment on that?

CHAIRMAN MONCRIEF: Yes. Go ahead.

DR. MICKLE: Okay. Ted, I agree completely. I think the VIAME sheds a lot of promise, and I'm really excited about it, and, to your point about I guess the calibration process, I'm going to look at it through what we do with our physicochemical spatial models. Really, it's a validation calibration process, through literature review, and that's how you get those metrics we're bringing in, and getting the true metrics on the back side of the calculation.

When you think about it, the video data is the groundtruth, right, and so the measured data, and I'm speaking as a modeler right now, but then, you know, with the model data, that would be the potential other two methodologies where you're actually calibrating, like you're stating, and so, like I said, a very standardized approach that, when it does reach the peer review level, you have those quantitative metrics to carry through and really start expanding out these quantitative metrics on a Gulf-wide scale.

I guess, if you want to use that model or not, of how the spatial modelers do it, it seems successful, but, again, those aren't used for stock assessments, and so I understand the quantitative outputs are a little bit, you know, apples and oranges, but, again, it's trying to help with navigating somewhat of an unknown methodology calibration validation effort. Thank you.

DR. SWITZER: I definitely appreciate that, and, from our perspective, I think, especially given the sampling intensity, we're okay with increased uncertainty. We want to make sure what we do in all of those doesn't impart a bias that then is interpreted as either a population increase or decline.

CHAIRMAN MONCRIEF: All right. Thank you for that, Paul. I'm going to put on two hats, real quick. The first hat is, as someone who deals with Mississippi fisheries, I would love if we can engage between you all's group and ours, as the state agency, to figure

out where we can fit within all this.

Like I said, we've been doing on and off work for the last couple of years, to see if this was theoretically possible within our waters on a year-round basis, or where it should be prioritized, and it sounds like you all have been doing the same, and so we would love to hear, you know, essentially where we might be able to fit into this, understanding that we do have a little bit of support at the state side for this kind of work.

Now, taking off that hat and putting on the SSC hat, I feel like, Ryan and C.J., if you're still on, it seems like, and correct me if I'm wrong, that this is likely going to be the first-swipe index that's looked at for a large amount of species that will be undergoing assessment throughout time, and even when there's concerns that come from the public, or anywhere else from the fishery directly, and is it -- Do you all think this is probably going to be the first index that's looked at for a majority of the species that exist on the shelf?

MR. RINDONE: I think it would be high on the list. I mean, it depends on the species and what kind of problem we're talking about. There might be other indices that might be more appropriate to look at in some cases, but the thing about G-FISHER that's great for its consideration for stock assessments, and consideration for management procedures and things like that, is, if you're looking like on the slide that's up right now, the distribution of sample sites across the Gulf, this is where people fish.

If there's a signal that's being picked up by the fishermen, in terms of CPUE, or changes in length composition, or something like that, and we're hearing things are going up or down for whatever animal, it's highly possible that we can see what that signal looks like in this fishery-independent index and validate what we're being told is happening on the water, and so that's a great tool for fisheries managers to have at their disposal to be able to, you know, check one thing against another like that.

To what C.J. said earlier about G-FISHER being considered for some of these index-based management procedures, I mean, we already use it for a couple of different interim analyses for different species, and it is highly likely that it will be strongly considered for others.

CHAIRMAN MONCRIEF: I would agree with every point you made, and it matches the logic test of how many fish are out there. Well, we looked at them through a camera, and so it helps pass the logic test with stakeholders, as well as we're going through and

providing this across the board, and so that's another important check box.

MR. RINDONE: Yes, and we can't drain the Gulf and count them that way, unfortunately, but, you know, being able to see them on video is reassuring.

CHAIRMAN MONCRIEF: Absolutely. Go ahead, Matt.

DR. CAMPBELL: So I just wanted to point to a couple of funded studies that we're doing. We're starting off in some Caribbean work, to do essentially a calibration, following very much what Paul Mickle pointed out across gear types. We've got a MARFIN in to do the same thing in these structured habitats in the west Gulf, and so, as that develops, we would be happy to coordinate with folks on collecting those data, and doing those analyses, to try to get that method really solidified.

The hard part, when you're doing the index work, of course, is you've got your survey you've got to conduct, and so trying to build in calibration work on the side is out of the survey, and you're taking sample out of a survey to do that, and so hopefully that funding comes through, and, if it does, we would be happy to coordinate with folks and collaborate on that work, and so fingers crossed we get a little bit of help on MARFIN here this year to do that in the west Gulf in particular, and that will include not just the acoustic cameras, but as well as shipboard acoustics, similar to kind of an approach like what the Great Red Snapper Count was attempting to do.

CHAIRMAN MONCRIEF: All right. Thank you, Matt. John, one more swipe.

MR. MARESKA: No comment. I just forgot to lower my hand.

CHAIRMAN MONCRIEF: He relinquishes. All right. Do we have any other hands up? Ryan, is there any other items on this topic you feel we didn't cover or might need to discuss for the council discussion?

MR. RINDONE: The purpose of presenting all this was for the development of you all's knowledge about the index, because it is a very important index and survey that operates within the Gulf. Significant resources, as has been detailed, have been put into combining these video surveys into this composite that's currently being done across the region, and, like was previously mentioned, we expect this to be of great use in the future for a number of species, and so it's important for you as SSC members to have a

good grasp of how this survey works, how it has changed through time, and what's on the horizon, because you're going to see it again, and so, really, it's your group, Mr. Chair, and does anybody on the SSC have questions or things that, you know, they would like more clarification on, or want to talk through more, and so this was for you all.

CHAIRMAN MONCRIEF: All right. With that, do we have any hands up? I think the premise of the group is that they -- Overall, we've had some positive sentiment, and we definitely see some areas that there could be some expansion. I think we listed the single-species concerns through the amberjack discussion, and likely with, you know, at least around triggerfish a little bit, as far as coverage and all that, but it's not to say that, you know, it's something lacking, but it's something that we could, I think, build toward, and I believe there is probably some positive sentiment across every state partner to get involved and help meet that goal as well. I see two hands up there, but I don't see a name. What do we got? Our colleague from the Science Center. Katie, go ahead. Dr. Siegfried.

DR. KATIE SIEGFRIED: Can you hear me now?

CHAIRMAN MONCRIEF: We got you.

DR. SIEGFRIED: Great. Thank you so much. I wanted to not take a bite of the apple until everybody had their fill, and so that's why I raised my hand at the last minute, and I hope that's okay, and I appreciate the opportunity to talk.

I see about three veins of thought here in the presentation, and I just, you know, wanted to reiterate everybody's thanks. Ted, and the whole G-FISHER team, are always there and ready and willing to go over G-FISHER when we bring it up for interims, and it's very helpful for them to go over the data with the SSC, and the methodology.

That being said, I do hope we can get a little bit into the weeds, because of the way this affects the assessments, and all I wanted to talk about, Ted, is a few issues with -- You know, that we brought up recently with triggerfish and gag, and just a broad brush stroke here, and so one of them is the CART approach.

I just wanted to be clear that the CART model is run over the whole time series. It's not specific to when each of the surveys came onboard, correct, and so get basically a weighted average of the habitat types across all years, and is that right?

DR. SWITZER: That is correct.

DR. SIEGFRIED: Okay, and so, when we've talked about this at each individual SEDAR, the G-FISHER team has been open to potentially truncating, if there's an appropriate time to truncate, or addressing our concerns about that, because, as you can imagine, depending on the species -- Like gag is different from triggerfish in the way the survey picks it up, and so sometimes there's a need to truncate based on when surveys have come onboard, based on the species that we're looking at, and then also, you know, whether the selectivity or catchability are modeled explicitly, which usually we try not to do that for surveys, because the idea is there's some model-based assumption, or, sorry, design-based assumption that we don't need to model catchability separately, and so, you know, Ted, is that something you would agree is appropriate species-by-species?

You said that a little bit through your presentation, that it's species-specific for the index, but I just want the SSC to know that the G-FISHER team is open to those approaches, and we've executed those in the past.

DR. SWITZER: Absolutely, and I guess a couple of side comments to that. Again, we are always evaluating approaches. At some point, we do think we can transition to a complete G-FISHER design index, but that's not where we are quite yet, and I think something that's been coming up with the gag discussions is there's a lot of intermediate steps that we go through, and we evaluate, before we move forward.

Those are things we have not provided, because, again, this is -- It's different than a traditional GLM, where you have standard, you know, diagnostics and residuals and stuff. There's a lot of very similar types of things for G-FISHER that we could produce if that was ever of interest, and I think we're working with that with gag a little bit more now, in terms of what those intermediate products might be, and how they might be useful, and so we're always open to that. Definitely.

DR. SIEGFRIED: Great. Thanks, Ted. Like I said, your team has been amazing when it comes to that, and we really appreciate it. It's just important the SSC know that, when we say a G-FISHER index, it may be different species to species, even the years used, and even the region used.

Like we've been having this discussion in the red snapper webinars, about the difference in the signal from the west, and so, you know, the discussion about the optical gear is very important, because,

the three veins that I was referring to, one is the usefulness in the assessment, and the second one is sort of where are you all moving forward, because I think G-FISHER is basically a marquee survey in the Gulf, and moving forward with these collaborations with the states sounds promising, as long as the calibrations are done like you mentioned, Ted. Then the automation is a big deal for us, for the usefulness of this index for interims and management procedures.

The second thing on my mind is the automation, which I know you say is going to be ready to discuss later in this year. Do you think there will be limitations to which species we could get more timely G-FISHER indices for, based on the difficulty in identifying them with the machine learning?

DR. SWITZER: So, again, Matt can chime-in if I misspeak here, but, right now, the current limitation is what the available reference imagery library is, and so some of the early models we've been developing are working well for a lot of the species that common in the west and the central Gulf, but they started to fail when the overlap with things in the east, and so one of the things we've been working on, for the past six months or so, is really beefing up the reference library for the species in the southeast Gulf, and so I think that's the main limitation, aside from, again, the ecosystem species are always going to take some level of review from staff, but we're hopeful that we can get a pretty good first cut for at least the key species that you're probably going to want an annual interim for.

DR. SIEGFRIED: Well, that's great, and, you know, to -- I don't remember everybody that said it, but I think C.J. and Trevor and others mentioned, you know, wanting to get some sort of corroboration of what's on the water, and, the more timely data, the more likelihood, you know, we'll move towards that. Matt, I see your hand up, and do you want to say something about that before I say my final question to Ted?

DR. CAMPBELL: Sure. To reflect what Ted said, it is species-specific, and we can provide that to you, Katie, which ones we can anticipate that we're going to be pretty solid for with automation. Things like red snapper, it works nicely.

Things like gag, that is not as common, and so it goes to the training library that trains these models themselves. The more imagery you have, the better the model will do, and so gag, which you don't see a lot of, it doesn't perform as nicely, and then there's some specifics that can trip you up a little bit in there.

Essentially, we've got everything up into the cloud, and so we're going to be able to really optimize the speed at which the automation works, and we'll go from maybe ninety days down to a week to produce data, and then it's going to be a human-in-the-loop question of -- I think Ted alluded to this too earlier, and there's a tradeoff between how much human intervention into that data do we want, versus precision.

Right now, we're doing a lot of the underlying analytical work to get on solid ground for you guys, and provide the kinds of metrics hopefully that provides you the underpinnings to say we're pretty solid that these data are trustworthy, and so that's kind of where we are. I think we're pretty solid, actually, for the nine or ten primary species that we provide data for, and so red snapper, and gray triggerfish it does really nicely with, as you can imagine, as a fish species.

Red grouper, nice modeling and things on it that are really very apparently. It's when you get close specifics, and so it's going to be species specific to which -- The degree to which we can produce that rapidly, and so more on that, and we're looking to essentially exercise a lot of those analyses through the summer, and into the fall, and looking for a CIE review on that come fall, and so we'll have independent experts looking at what we did and helping us out on the analysis part of that, and so more to come.

DR. SIEGFRIED: That's great. That sounds perfect. Thanks, Matt. I'm excited about the CIE review, too. I think that's going to really help, you know, the buy-in for that.

Just one final thing, Ted, and I had a question about artificial reefs. We've talked with your team quite a bit about whether to include or not include artificial reefs, and do you have -- I don't know if the SSC can provide guidance, you know, but which species do we expect an artificial-reef-specific dataset to be hyperstable, for instance?

Like if we -- There's some species we think that artificial reef data should be excluded, and, you know, your team has done that for us in the past. Is there a rule-of-thumb that you think can be provided, or the SSC can provide there, and then, if so, is that extended towards which species we might want to pay attention to when it comes to providing a full combined index, or a full Gulf-wide survey for, and I just -- I see a lot of differences amongst species, and it's difficult to throw the whole dataset at it, with, you know, everything you've got, and I hope you know what I mean, based on our previous conversations.

DR. SWITZER: 100 percent, and, honestly, we're in the same boat. When it comes to integrating as a weighted approach in the G-FISHER, at least in the eastern Gulf where we've done it so far, ultimately, it doesn't have a lot of influence, because artificials are maybe 2 percent of the entire available habitat, and so it's -- Whether it's hyperstable or not, it's not going to have any real influence in the actual resulting index.

Where I think -- Again, the SSC comments might be useful here, and it may give an external perspective of things like fishing dynamics, since those are areas that are typically very well targeted by the industry. It would be a different story in the west, I think, when the artificials on the shelf itself are probably a higher percentage of available habitat, and we haven't thought that through yet.

DR. SIEGFRIED: Okay. Thank you, and I want to reiterate, Trevor, that I appreciate the team's willingness to work on these analytical issues when we're trying to incorporate the full time series back to the 1990s, and I understand the SSC's frustration when we've shown them indices, but I just want to be clear that, when we reanalyze these data, it's not because we question G-FISHER as an enterprise. We very much value it, but sometimes it doesn't fit the purpose, or the need, and so that's why we might reanalyze things, but, in general, we're very supportive of this program. Thanks.

CHAIRMAN MONCRIEF: That's perfect. That's a good sentiment to have. I think, on your artificial reef question, I mean, I understand the hyperstability concern. I think, like Ted said, as you move further west, the artificial reef complexes make up a majority of the biomass associated with each one of the fisheries.

For Mississippi, and I know we're a small drop in the bucket, but the fishery exists on those artificial reef structures, and they certainly represent a bulk of the accessible biomass to the fishery, and so I really feel like they shouldn't be excluded, and kind of my point earlier that, if there's a pathway to be able to use things like drop cameras that are currently being integrated in, or looked at, or examined for the possibility of being integrated into the overall, at least our state would love to be a part of that, just because we think it would be beneficial overall for the signal that we're getting.

It would be beneficial for the assessment, and for just the, you know, the region-specific index monitoring of, you know, what the fishery is looking like, and so I think the artificial reef thing -- While I understand the concern, I think it just plays a very

pivotal part as you move east to west into the Gulf. Harry, go ahead. You still there, Harry? We might call that one a ghost hand. Does anyone else have any comments back to Katie's comments, which I very much appreciate? Am I all alone in here? Anybody else?

MS. MATOS: No, and you're there. Harry, we can't hear you if you're speaking. You'll have to unmute.

CHAIRMAN MONCRIEF: All right. It looks like we've have a second hand up. Let's go to that one. Luiz, jump on in.

DR. BARBIERI: Thank you, Mr. Chairman. Well, I don't have any additional questions. I just want to thank Katie for joining, right, the webinar, since she leads the Gulf assessment enterprise there out of the Science Center, you know, just because this conversation -- A lot of the points that she brought up, right, those are things that we have been struggling with along the way.

This presentation today, really the idea, as Ryan and you explained, Trevor, is really to try and clarify all these issues associated with the survey, but also have clarification on how this now fits into the assessment frameworks that, you know, we have in place and planning for the future, and so her comments about, you know, selectivity, and calibration, and artificial versus natural, all of those things, as you know, are issues that we struggle with as we go assessment-by-assessment for different species, and so, Katie, having you here to raise those points, and participate in the discussion, has been very helpful. Thank you.

CHAIRMAN MONCRIEF: Absolutely. I echo that sentiment. Harry, I'm giving you one more shot, and we're going to wrap it up. All right. If you're there and can't speak, then send an email over to them, and we'll try to get those comments, if they need to be sent over. No other hands up that I can see, and so let's go ahead and say a final thank you to Ted and his group for being online and available for questions, and Katie being here to help out with this conversation I think was a good one.

I think we've got a good wrap around this program, that has the utmost importance, and certainly has hopefully a bright future ahead of it for Gulf fisheries management. I think with that, that wraps up that item. We've got Public Comment first, and then Other Business, and is that right?

MR. RINDONE: Yes. Public Comment first.

CHAIRMAN MONCRIEF: Public Comment. All right. If there's anybody

from the public on the line that wishes to speak, go ahead and raise your hand, and they'll get you taken care of. Bueller? Bueller? All right.

MR. RINDONE: Nobody.

CHAIRMAN MONCRIEF: Not seeing anything, all right. That moves us into the last item, which is Other Business. Anybody have anything burning on their conscience they want to bring up?

MR. RINDONE: I've got something.

CHAIRMAN MONCRIEF: There he is.

OTHER BUSINESS
SEDAR 100 REVIEW WORKSHOP APPOINTMENTS

MR. RINDONE: I need suckers for the SEDAR 100 review workshop for Gulf gray triggerfish. We need two SSC members to serve as reviewers, and we need a chair. This workshop, this review workshop, for gray triggerfish will be held in Tampa from August 11th to the 14th, and so, Mr. Chair, if I could, I need two SSC members to be reviewers and then one more to be a chair.

CHAIRMAN MONCRIEF: I know we've got some folks who love triggerfish around here.

MR. RINDONE: Well, Dr. Simmons cannot be a reviewer, and so --

CHAIRMAN MONCRIEF: She'll be there regardless, and so her input is --

MR. RINDONE: I have no doubt.

CHAIRMAN MONCRIEF: All right. Let's see if we can get a couple. Luiz, and I would bet he's going to volunteer as chair.

DR. BARBIERI: You are correct, Mr. Chairman, just because, you know, I think I can -- There are others who are more knowledgeable, right, about triggerfish that I think can step in and serve as reviewers, but, you know, since this is close to home, and I'm no longer involved in chairing the SEDAR 98 review, I'll volunteer for this one.

CHAIRMAN MONCRIEF: Perfect. Appreciate it. Do we have any other volunteers on the line to participate in this one? If not, Ryan will be volun-telling again at some point. Raise now or forever -- Raise now or be contacted by Ryan shortly. Don’t hold onto

anything. All right. Harry. He's back. Harry, does that raised hand indicate you as a volunteer for triggerfish?

MR. RINDONE: I don't think so for the review workshop.

CHAIRMAN MONCRIEF: We still don't have you, Harry. All right. Ryan, you want to just reach out to folks and try to fill in?

MR. BLANCHET: I just got unmuted.

CHAIRMAN MONCRIEF: All right. There we go. Go ahead, Harry.

MR. BLANCHET: Sorry for the -- My initial comment was supposed to be very brief. I was just going to suggest we didn't get a full list of all of the species that are being considered under the eDNA, and I wanted to mention sharks as being one of those groups that might want to be considered. It's not really under the SSC's purview, but it's kind of out there, and it's one of those things that could use some more information.

CHAIRMAN MONCRIEF: All right. Appreciate that comment. All right. Ryan, are you still trying to track somebody down, two more volunteers?

MR. RINDONE: I'll hunt and gather.

CHAIRMAN MONCRIEF: All right. I'll be tentative, but I think I've got something scheduled for that exact time, but --

MR. RINDONE: Okay.

CHAIRMAN MONCRIEF: You can do it. All right. With that, we have wrapped up all the items of this meeting, and I'll take a motion to adjourn.

EXECUTIVE DIRECTOR CARRIE SIMMONS: Mr. Chair?

CHAIRMAN MONCRIEF: Carrie, go ahead.

EXECUTIVE DIRECTOR SIMMONS: Thank you, Mr. Chair, and so I know Ryan sent a doodle poll to you all yesterday regarding a short kind of interim meeting we wanted to have on the shrimp bycatch for finfish, and some recommendations that are coming out of the working group, and so I know we originally sent it out for 8:30 to 12:30, but we might need to extend that.

I would hate for us to get into a situation where we run out of time. You know, if we end early, that's fine, but maybe we'll

have a short lunchbreak, and then maybe schedule until 3:00, just in case, because we'll have to get through general methodology, its application to red snapper, and then its application to gray triggerfish, and so he'll be sending that out, to let you guys know, and so thank you, and just to make sure we have enough time for that. Sorry about that.

CHAIRMAN MONCRIEF: You're good, and I agree. Given the complexity of that topic, I think it's probably worth trying to overshoot rather than undershoot. I've got Jim, and then Paul. Jim, go ahead.

DR. NANCE: Thank you, Mr. Chair. On that issue, is there any -- Can we have it on maybe to look at other dates too? That day is just out for me, but any other day in May is fine, but I just hate to miss that one, but, if that's the day, then that's the day, but thanks.

CHAIRMAN MONCRIEF: Thanks, Jim. Go ahead, Paul. Dr. Mickle.

DR. GRIFFITH: I just wanted to mention that date, Jim, is in June. It's not May 24th, and I think it's June 24th, isn't it?

MR. RINDONE: Yes.

CHAIRMAN MONCRIEF: All right. June 24th. Re-evaluate, Jim, and let Ryan know on the email. Paul, go ahead.

DR. MICKLE: Yes, and I just wanted to mention two quick things. I just want to say that we're all thinking about USF, and what happened there, and we're all thankful that there were no injuries reported. It's just we're all biologists, and very sentimental folks, and we keep a lot of things in our offices, and I'm sure there's loss there, just, you know, data and all these things that we're going to learn about, but I really hope they reach out for anything they would need, and I want to say we're here for them.

The last thing I'll say is we've had a loss with Dr. Jim Franks has passed away, and we all know Jim Franks. I don't have to even explain how much of -- He was just an icon in what we do, and he really made impacts that will be seen for a long time, and it's a huge loss, and I just wanted to mention those words as we close.

CHAIRMAN MONCRIEF: I appreciate that especially, Paul. Anybody who met Jim met a wonderful human being, and likely a lifelong friend, and, obviously, yes, his impact here is surely missed, and, yes, tough news all the way around.

All right. Any other business from anybody else? If not, we'll go ahead and wrap this thing up and put a bow on it. Ryan, do we need a motion to adjourn, or do we just end the meeting?

MR. RINDONE: You can just end the meeting.

CHAIRMAN MONCRIEF: I am hereby ending this meeting, and I appreciate everyone's attendance and conversation. Thank you, everybody.

(Whereupon, the meeting adjourned on May 5, 2026.)

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