GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

HABITAT PROTECTION AND RESTORATION COMMITTEE

Crowne Plaza @Bell Towers Shops Fort Myers, Florida

June 21, 2022

VOTING MEMBERS

Bob Gill.....Florida
Patrick Banks.....Louisiana
Susan Boggs.....Alabama
Leann Bosarge.....Mississippi
Dave Donaldson.....GSMFC
Jonathan Dugas.....Louisiana
Bob Shipp.....Alabama
Joe Spraggins.....Mississippi
Greg Stunz.....Texas

NON-VOTING MEMBERS

Kevin Anson (designee for Scott Bannon).....Alabama
Billy Broussard.....Louisiana
Dale Diaz.....Mississippi
Phil Dyskow.....Florida
Tom Frazer.....Florida
Peter Hood (designee for Andy Strelcheck).....NMFS
LCDR Lisa Motoi.....USCG
Robin Riechers.....Texas
C.J. Sweetman (designee for Jessica McCawley).....Florida
Troy Williamson.....Texas

STAFF

Assane Diagne.....Economist
Matt Freeman.....Economist
John Froeschke.....Deputy Director
Beth Hager.....Administrative Officer
Lisa Hollensead.....Fishery Biologist
Ava Lasseter.....Anthropologist
Mary Levy.....NOAA General Counsel
Natasha Mendez-Ferrer.....Fishery Biologist
Emily Muehlstein.....Public Information Officer
Ryan Rindone.....Lead Fishery Biologist/SEDAR Liaison
Bernadine Roy.....Office Manager
Charlotte Schiaffo.....Administrative & Human Resources Assistant
Carrie Simmons.....Executive Director
Carly Somerset.....Fisheries Outreach Specialist

OTHER PARTICIPANTS

David Dale.....NMFS

Jessica McCawley.....FL
Clay Porch.....SEFSC
Andrew Richard.....NOAA

- - -

TABLE OF CONTENTS

- - -

The Habitat Protection and Restoration Committee of the Gulf of Mexico Fishery Management Council convened at the Crowne Plaza @Bell Towers Shops in Fort Myers, Florida on Tuesday morning, June 21, 2022, and was called to order by Chairman Bob Gill.

ADOPTION OF AGENDA
APPROVAL OF MINUTES
ACTION GUIDE AND NEXT STEPS

CHAIRMAN BOB GILL: I would like to call the Habitat Protection and Restoration Committee to order. The roll call is Mr. Banks, Ms. Boggs, Ms. Bosarge, Mr. Donaldson, Mr. Dugas, Dr. Shipp, Mr. Spraggins, and Dr. Stunz. We are all here.

With that, Tab P is the location of the documents for this committee, and the first one is Number 1, Adoption of the Agenda, and does anyone have suggestions or changes to the agenda? Seeing none, any objection to adoption of the agenda as written? Seeing none, the agenda is adopted as written.

Next, we move on to Tab P, Number 2, the Approval of the January 2022 Minutes. Any comments or changes or suggestions on the minutes from January 2022? Seeing none, any objection to adoption of the minutes as written? Seeing none, the minutes are adopted as written.

The Action Guide and Next Steps, Tab P, Number 3, Dr. Hollensead, if it would be all right, we'll do that on an item-by-item basis, and so if you would go ahead with that for the first item forthcoming.

ESSENTIAL FISH HABITAT GENERIC AMENDMENT

DR. LISA HOLLENSEAD: Thank you, Mr. Chair. The first agenda item that we have today is working through the Essential Fish Habitat Generic Amendment. I had hoped to have a web tool available for this meeting, and we have consolidated a lot of the data required to construct that tool, but we just haven't come up with a good way to illustrate it just yet, and so, rather than cause more confusion with a web tool that is supposed to move smoothly through -- We're still working on that, but the generation of that tool sort of came about because quite a few council members had some further questions.

For example, this document brings in some sort of unique techniques, and so there were some questions of what have other councils done, and have they done something similar, and then there was also some questions about can we look at the

approaches a little bit more, as well as each of the methods and assumptions and things like that, and so that, in itself, is its own presentation, and so, while the web tool is being developed, I just wanted to present that information for you. Whenever you're ready, we can pull up that presentation.

Just a little bit of background, and the council is mandated to describe and identify essential fish habitat, or EFH, for all fishery management plans by life stage, and those life stages are below, and they are eggs, larvae, post-larvae, early juvenile, late juvenile, adult, and spawning adult.

Along with that, the council is also mandated to update those descriptions every five years, and, at the moment, staff is working on developing an amendment to address all of those requirements simultaneously, and, like I said, a couple of council members had asked more questions about the methods being considered, and so it is a good idea to probably look at that a little bit more, because that will be sort of the foundation for the rest of the document, and so to make sure that everybody understands and has the opportunity to ask any questions about those approaches as we go through.

Here is what the draft options currently look like, and there are four alternatives, each using a little bit different methodologies. Alternative 1 would be a no action, and so it would retain the current descriptions and identifications of EFH in the Gulf of Mexico, as outlined in Generic Amendment 3.

Now, this approach used what I will go through here in a little bit, but it currently uses data from the NOAA Habitat Atlas, which collected data from 1986, and so it's a bit outdated. Also, that generic amendment was implemented about twenty years ago, and so it's probably time to update that, and so that's what Alternative 2 would do. It would keep the same methodology as outlined in Alternative 1, but it would use more contemporary habitat data sources, as well as updates to the primary literature, in terms of species life stages.

Alternative 3 instead says, well, I'm not going to necessarily think about too much of these linkages between habitat and species occurrence, because there's a lot that I may not know, and so I might just look at sort of the species occurrence and where does it occur at, and so this is going to use a non-parametric kernel density estimate approach, and it's going to use fishery-independent and dependent sources from the paper, which is available in your background materials, an approach for that alternative, a little further on in the presentation.

Then, finally, we have an Alternative 4 that's going to use a boosted regression tree modeling approach, and this is going to say, hey, I actually know a little something about the occurrence of the species and, as well, something about the habitat, and I can actually then use the model to inform some of those outputs, and so those are what the draft options currently look like, and so the first methodology that I'm going to go would apply to Alternatives 1 and 2.

What this approach does is it breaks the Gulf into these five ecoregions, as outlined here, and so it breaks it up into those first, and then it says, okay, we've got a list of habitat types, and it's everything from submerged aquatic vegetation, mangroves, and presence of reefs, these sorts of things, and so here is the twelve characterizations for habitat type, and so it says, sort of within these ecoregions, where do you find these types of habitats.

Then, also, understanding that depth plays a role in fish habitat selection, it says, okay, then we're also going to break the Gulf further into these boundaries by depth contour, and so you have an estuarine boundary and a nearshore and an offshore boundary.

Then there's the constructions of these life history tables, and this is an example for gag grouper. I just want you to pay attention to sort of those first four columns, and, just for an example, just to sort of break it down into this little piece here, say something like early juveniles, and, in Ecoregions 1 and 2, and, if you recall, that's sort of more off just the coast of Florida. Then estuarine nearshore habitats are mostly associated with seagrass and mangroves, for example, and so you will put all of those pieces together, based on this life history table.

These life history tables were constructed from the primary literature, and so what people have published and found, and we can use that to inform that, okay, we've got several papers out that suggest that juvenile gag grouper are associated with seagrasses, and so we begin to pull our seagrass maps, and our nearshore boundaries and things like that, and we start to look at where they may be, in terms of our description for EFH.

We're going to take all of these elements, and, just conceptually, we're going to clip them together, and so where do they overlap, and then, from that, can we get an idea of what essential fish habitat would look like for juvenile through

adult gag grouper, and so you get a map that's constructed like this, and so this is an example of what that might look like.

Some of the assumptions for using this methodology, it says that all species use this available habitat equally, and so, anywhere you're going to find seagrass, you're going to find, you know, juvenile gag grouper, for example, and we certainly know that's not the case, right, and they tend to aggregate in spaces, some more than others, even if seagrass is available.

The species habitat selection is completely known and published, and so using primary literature here to inform these life history tables, and so that says, you know, we have completed lots of research, and we know exactly where some of these things are, and that's certainly a big assumption right there.

There's no accounting for physiochemical variables, and so, for example, there's no water temperature, and salinity sort of goes into these determinations, and it's mostly focused on structure and habitat features. There is some water column features in the habitat, and that's when you end up with the very broad descriptions of EFH, where it's almost, you know, the complete EEZ, and so that's sort of a broad approach to it.

The good thing about this approach is we do have at least some information for all of the species listed here, and so, even for a lot of species where we would like to use some more technical approaches, we just simply don't have the data, but, for these species, we do have at least something that will allow us to, you know, describe and identify EFH, and, in contrast, the next two approaches that I'm going to talk about, which will be used to inform potentially Alternative 3 and Alternative 4, these are the only species we have enough data to use.

It's a really small subset of that larger list that I had just mentioned, and so Alternative 2 is largely going to have to be the only alternative that would be available for most of the species we manage here in the Gulf, and so the next two methods will only deal with these species that we have on the board here.

The data sources being used here is this Gruss paper from 2018, and, again, it's available in your background materials. It's basically an aggregation of data from twenty-seven fishery-independent and seven fishery-dependent datasets throughout the Gulf of Mexico, data collected from 2000 to 2016, using a variety of methods listed down there below in that last bullet, and so these data are being used to inform the methods that I am

going to talk about next.

First, I will talk about this non-parametric kernel density estimator, using a nearest neighbor approach and the presence only, and so I will call that presence only, and then the boosted regression tree model, which looks at presence-absence of the species, plus some habitat.

First, going into the presence-only method, for species where you may observe that, okay, I've gone out with my vessel, and I have surveyed an area, and here is my observations of my critter, and, in this case, we're going to use gag grouper, and so this is where I have identified species as they happen, and so you can draw a large circle and say, okay, that's my area of extent here for the species distribution, and, back in the olden days, that is what they used to do, especially like in the avian literature, and it was nice, because it was fairly easy to do.

It was very easy to compare between studies, or over time, but one of the things that is difficult about this is you see there's a lot of blank space there, and so there's a lot of area that, you know, is sort of overestimating the actual distribution that we were just looking at by area.

What we can kind of do is try to break down this observation of occurrence here into ideas where we can get sort of, okay, what's my core area, and what might I be interested in conserving, for example, or identifying for essential fish habitat, and so that solid black line that circles sort of the highest occurrence, 50 percent occurrence, that we have in a very small area, to get that core area.

As you go out to the dotted line, and the solid-blue line, you start to get more of an extent area, which is the larger range, but my focus of my study, or my question, or my conservation goal, might be more into that core area, and so that allows you to sort of differentiate that and sort of, you know, describe the distribution in a little bit different way.

One of the ways that you can do this is you can use this analysis being performed in R, and there's a number of ways to sort of draw these circles, and how do you decide that, well, how am I going to draw my circle, and what is it going to look like, and examine isopleths, and how do I go through and do that?

For a lot of species -- For example, if you draw like sort of big circles like that, you might encompass an area where you

know the animal isn't there, a canyon or something, or land, if you're thinking about fish, and so one of the things that they've come up with is using this nearest neighbor analysis, and so it says that I'm going to determine how I draw my circles around my observations by my observations.

That way, you can sort of cut through areas where you know, for example, there is an island, or something like that, and so you can begin to draw your circle about your observances, using the nearest neighbor to do that, and so how you pick how many nearest neighbors the model is going to consider will affect your outcome, and so you need to have a little bit of an idea, during that decision point, of how confident do I feel that that was the correct thing to tell the model, in terms of I need you to think of this many neighbors, as your draw your isopleth, or your circle, around your observances.

This R package is nice, in that it will allow you a little bit of a diagnostic plot, and so that top-left plot will give you an idea, and so what you want to see is something like this, like a plateau going all the way across, and so, on the X-axis, you have the number of nearest neighbors that you may want to consider, and then, on the Y-axis, you have your area, and so you want to see a line just like this, which you wouldn't want to see as some big spike, perhaps, in the middle, because that would tell you there is some outlier out there that's having a really strong influence on where you're drawing your circles about your observations and your area.

You can think of it in a linear regression, you know that one point that is way out on the top-right of your graph, and so you don't necessarily want to see that, and so, for example, this is adult gag grouper, and so that looks pretty good, and then, on the bottom-right, this is giving you an idea of the edge-to-area ratio, and so, again, you have the nearest neighbor consideration on the X-axis and the edge-area ratio on the Y, and what you don't want to do here is you don't want your map to look like Swiss cheese.

You don't want to overfit everything, and so when you've got, for example, that red line that's really high, and that spike sort of levels out, you wouldn't want to choose something in that fifty range, because you're overfitting things like that, and so you want to be able to smooth it out, so that you have a little bit more values of what you consider to be a nearest neighbor and to not overfit.

The next slide, it will give you something like this, and so

this is adult gag grouper. Those areas in red symbolize sort of the core area of use, and so this is where you see some higher densities, and then that lighter blue would be the larger extent of the area.

Some of the assumptions here is you don't have any habitat linkage, and so it says I know the animal is here, and I don't really understand why, but, if your conservation goal is to say that, well, I understand that -- I don't know these things, but I am really interested in this habitat that might be in use by my critter, and so this might be the goal for me.

To give you an example, actually -- Or there's not a lot of habitat linkage, and so, for example, this similar approach is used by HMS, and so when you have a lot of water-column species, marlin and sharks and things like that, that aren't -- That don't seem to be selecting any kind of structured bottom, necessarily, and an approach like this might be helpful.

This also says there is no major difference in sampling gear selectivity, and we know that's probably not the case, and that catchability is equal across habitat types, and, again, that's probably not the case, right, and so trolling over some sort of really high-structured rock or something, a reef, and you probably don't have the same catchability as over sand.

Certainly an absence is a true zero that you're measuring presence only, truly, and it's not that the fish was there, and you just missed them, and so there's quite a few assumptions there. That was the presence only, the kernel density estimate, and that would be Alternative 3.

This is now going into the approach that would be used to inform Alternative 4, and so this is a presence-absence, and so what this says is it says, okay, I have my sampling event, and one of two things happened. I caught my fish, or I didn't, and so it was either present or consider it absent, and then, while I was also sampling, I measured a suite of environmental variables, and so it tells the model that I have an idea of what the environment was like when I caught the critter, and I also have an idea of what the environment was like when I didn't catch the critter, and you can start to compare those, and that's what the model output will let you know.

I am not going to go too deeply into this, but what it basically means, conceptually -- What's nice about these models is it sort of uses this hierarchy to say, okay, I've got all these variables that I am interested in environmentally, and I'm going

to sort of boost it out in this classification tree, but what's nice about this is it can say something to you, and so, if you're running a model, for example, on water temperature, and it comes out as explaining most of the variability and when you see the critter and when you don't.

Now that say, hey, water temperature seems to be important, it will let you know, like along that continuum, where that inflection point is, where you maybe saw what's a good water temperature and what is a bad water temperature, and what did they seem to be selecting to, and did they seem to be avoiding a -- What water temperature that actually is, what value, which is nice, because something like dissolved oxygen is going to have a domed relationship. Generally, they're going to like that sort of medium dissolved oxygen. They don't like the really low, and they may not necessarily like the really high, and so this model can handle that.

Then, after it makes that determination, it will then move down to the other suite of variables, and we kind of move down this tree, and so you create these trees, and you've got these bifurcations of where I see the critter and where I don't.

MS. LEANN BOSARGE: I didn't know if you wanted questions during or after, and so you made the comment that, with this model, you have -- You go out and you do some sampling, and so you've caught the fish, right, and, in that sampling, you also have some other information, like what was the habitat like and I guess maybe what was the water temperature there like, and so my question is, that data that you're pairing up with that specific sample, is that truly observed data for that individual catch, or is it modeled data? Like, generally speaking, we're modeling the habitat, and you caught this fish here, and so the model says the habitat would look like that, and which one is it? Is it an observed data, or is it a modeled data that is being paired with the actual samples?

DR. HOLLENSEAD: It's the observed, the first scenario that you mentioned, and so I'm on the water, and I bring the fish up, and I'm also taking those environmental information.

This model gives you some -- Here, for example, are some of the outputs, and this is, again, for adult gag grouper, and, unsurprisingly, gear comes out pretty quickly, and then bottom depth, bottom temperature, and, as I said, this is just a general example, but you'll get graphs that come out like this, so that you've got an idea of the relative influence of how that measured variable is influencing presence and absence.

Then you get these charts like this, and this is sort of what I was talking about, and the axis titles are a little small on those, but, for example, bottom temperature and how you might read that, and anything along zero says there's sort of no selection, no preference. Anything above zero, it seems to be that the animal is selecting for that, and that seems to be driving, you know, where you're seeing your observations, and then, anything below that, it's almost as if the fish is avoiding it. Above zero, they seem to be selecting for those, and, at zero, they seem to be avoiding it.

Anyway, you can get some plots that come out like this and get an idea and get a better understanding. It certainly helps when you're interpreting the results a little bit, so that you can get an idea of what exactly the data is trying to tell you.

This is sort of the outputs, the visual outputs, from this sort of modeling, and, again, this is adult gag grouper, and those sort of warmer yellow colors lets you know that, hey, this is where you're seeing most of your occurrences, and then that would be your sort of focus for you describing your EFH.

Again, there is quite a few assumptions here as well. You're assuming that your uncertainty is adequately captured and correctly quantified, and there are ways to get an idea of just sort of how uncertain it can be, and so this modeling approach is nice, in that at least you can have some determination of what that might look like, and you're also assuming that all appropriate model variables are included and independent, and now we can go through and look at some of those variables, and, any ones that are really highly correlated, you can decide which ones you may look at and run a suite of various things, until we get an idea of what we think is perhaps the best model approach, but, again, that's the assumption, and, again, that the absence is a true zero.

Just to review, the EFH descriptions, for most species, will have to use habitat association tables, use that approach, and so, as you recall, that other table that I had, that had that list of lots of the managed species, Alternative 2 is going to be the only viable alternative there, because we just don't have enough data, and so a few species do have data available for some of these more technical approaches that I just went through.

All three of these approaches have a number of assumptions, and so depending on what sort of our EFH description goals are, and

so, again, we're working on the web tool to hopefully, you know, lay this out and be able to do some comparative analysis, but, as of right now, I do have the habitat spatial layers metadata, and so, especially for the habitat layers, that we could use in Alternative 2, and it's in the background materials, as well as the research paper that was used to inform Alternatives 3 and 4.

The EFH methods that are used in other regions, to sort of compare, hey, what are they doing, and like, for example, the Mid-Atlantic and the Pacific do sort of have sort of a la carte, what species -- They may use a different methodology for describing EFH, and they don't have one that's just across-the-board for everything, and so some regional councils do things a little differently, and so those are all available as background.

The next step would be to complete that web tool, to help visualize things, so I don't have to do as much talking, and as well as keep those raw spatial data layers, and so we'll have the raw data layers that everyone can look at and then see, for each method, or each alternative, what those maps would look like, so you can get a better idea of how they would be different between the alternatives.

Then present that web tool to the SSC, to get their recommendation on it, and their input as well, and then, I guess for today's meeting, I've got a copy of the document that we can look over. Because we've been working on -- Like I said, it is important to -- This is the foundation of these various approaches, and we've been working a lot on that, and so the IPT hasn't really met to go over the document yet, because we wanted to make sure the SSC, and the council, was amenable to these approaches, if we were going to potentially write them up.

The document hasn't really changed. Mr. Chair, you had suggested some language for the purpose and need, and I do have that in there, just a little holding place for that, so the IPT can review it, but that's the only thing that has really changed in there, but we can certainly pull up the document if you want.

One of the questions, I guess, that I would pose to the committee -- We've got David Dale on the line as well, and he is from the Habitat Division there at the SERO office, and so he could perhaps provide some insight, if you would like to call on him, Mr. Chair, but one of the questions that I guess I just wanted to consider is certainly we do have these other approaches that we could use, but the committee is not necessarily bound to those.

If the committee was interested in just updating -- Using the same methodology that we have in Generic Amendment 3, which was that Alternative 2, that is something that we could -- It's a viable option that we could go with, and it works for most of the species, and it would streamline the document a bit.

When I presented this information to the SSC, they were interested in, well, if you've got the data, it would be interesting to see different approaches, and certainly, when it gets to the policy portion and writing up the document, it gets a little bit more complicated, but I'm happy to take any input that the committee may have, in terms of that document, or any other questions that they have about the approaches. I would be happy to take any questions at this point, Mr. Chair.

CHAIRMAN GILL: Thank you, Dr. Hollensead. Are there questions or comments? Patrick.

MR. PATRICK BANKS: Thank you, Mr. Chair. This is really interesting to me, and you mentioned other councils, and what are the examples of other councils that have used each of these approaches?

DR. HOLLENSEAD: I don't know of any councils that use necessarily all three, and like, for example, the North Pacific -- They can use something like the boosted regression tree model, and they use a max entropy model, and so it's like the Ferrari of models kind of thing, but they have got a lot of really good groundfish data, and things like that, that they can really use, and we're a little limited, in the Gulf, on what we can do.

As I mentioned, HMS uses that kernel density estimator, and then you've got all the way to like -- I believe the South Atlantic and the Caribbean use more, and David Dale can certainly correct me if I've got this wrong, but they use more of like a depth stratum, and so it's very qualitative, and so the councils do things very differently, depending, and, Bernie, if you wouldn't mind pulling up that background document for me, and it's Tab P, Number 4(e).

I tried to put it together in a table, what the various council uses and which alternative in the document being considered today would be -- In the Gulf, that it would be sort of analogous to, and then I've got the weblinks available to each of their habitat pages, if you wanted to read a little bit more about their methodology, but every region does it a little

different, and so it's interesting.

CHAIRMAN GILL: Dr. Stunz.

DR. GREG STUNZ: Thanks, Dr. Hollensead. That was a very informative and very thorough presentation, I thought, and one you had mentioned -- This wasn't my original question, but you just mentioned about going ahead and updating what we have, using the current methodology, which I think is a good thing, because that's the easiest, and we can just move forward, but I certainly would, in there -- With the approaches that you've got, whether it's the kernel density or the boosted regression tree, and like you presented this with the draft options, but are those mutually exclusive? I mean, do you have to do one method or the other, or can all of these methods inform EFH, at the end of the day?

DR. HOLLENSEAD: You could, and so each species -- If you have the data, and, for each of the subset of species that we had, all the shrimp species, you could either use Alternatives 2, 3, or 4, and so I don't think that I would use Number 3 or Number 4 for one species. Now, there are some species that, in that larger table that I pulled up, as well as red snapper I think, that you can only use Alternative 2, and Alternatives 3 and 4 would not be available.

DR. STUNZ: Right, and so I'm saying you would just choose -- In other words, you would just choose whatever method is appropriate for that particular species, and I thought we were saying, okay, well, you've got to use Alternative 4 for everything, and you have the flexibility to --

DR. HOLLENSEAD: Correct. Yes.

CHAIRMAN GILL: Dr. Froeschke.

DR. JOHN FROESCHKE: Just to maybe clarify it, for all of the species we have enough information to execute Alternative 2. For some of the species, we have enough information to do Alternative 3, which really requires information about the distribution of the animals, but not necessarily the corresponding environmental information at the time of sampling or capture.

Alternative 4 requires both the information about the distribution and the presence and/or absence, as well as the complementary environmental information, and so, as you go further down, you require more information for the species and

life stage, and so there's a smaller subset of the data for species that we could actually do that for, and so the question is do we -- For the species that we have that available, do you want us to try to attempt those models and provide that analysis, or do you want to use something like Alternative 3, that we have the data for everything?

The benefit to that would be we could remove those other ones, perhaps, but you may not be using the full extent of the data that we have available for the species that we have, and that's what we're trying to get some information on.

CHAIRMAN GILL: Dr. Hollensead.

DR. HOLLENSEAD: Just to follow-up on John's, the subset of species that we do have information for, that's just for the juvenile and the adult life stages, too. For example, for red snapper, we would have to use Alternative 2, and so, when you start breaking it down by life stages, you realize you've got very limited data.

CHAIRMAN GILL: Patrick.

MR. BANKS: That may have answered my question, and I guess I was listening to Dr. Froeschke talk about having the presence-absence information, and then something about the environment as well, for Alternative 4, but isn't Alternative 2 based on the scientific literature that showed those things in a particular habitat? I thought I remembered hearing something that Dr. Hollensead said about Alternative 2 is based on the habitat where the literature shows that we found these animals before.

CHAIRMAN GILL: Dr. Froeschke, to that point?

DR. FROESCHKE: Yes, I'll try, and so Alternative 2 -- The way that it works, and so there are tables. Based on the literature for a given species, say red drum, and, through a series of expert evaluations and life stages, we say, okay, adult red drum, essential fish habitat types, of which there are recognized habitat types, and they are submerged aquatic vegetation, oysters, hardbottom, those kinds of things, and so then we would look to -- Then there are I think five ecoregions, ranging from Florida to the western Gulf, and so, within those -- So, for example, red drum might be categorized as Ecoregions 4 and 5, habitats as SAV and oyster, and I'm guessing there's probably more than that, and so then you would -- That's how you would generate -- You would look at Ecoregions 4 and 5, and you would identify the map regions of SAV and oysters, and that

would be the EFH.

There wasn't any specific sampling, whereas the Alternative 4 would rely on, for example, scientific surveys, SEAMAP or other things, where they have actually done sampling, and so you went out with a boat, with a gear type, and said, yes, there are fish here, or there are not.

CHAIRMAN GILL: To that point, Patrick?

MR. BANKS: Yes, and so the difference then -- I think what I'm hearing is, under Alternative 2, if you have SAV, for example the Chandeleur Islands in Louisiana, and there's lot of SAV there, but it was not shown as habitat for juvenile gag, but had it actually been sampled there, then that would be data included in Alternative 4, and is that the difference?

DR. FROESCHKE: In that particular example, for gag, it probably wouldn't show, because that ecoregion with the Chandeleur Islands is probably not recognized as the EFH, because gag don't really just biographically occur in that region. The sampling, there really isn't a linkage between biological sampling of -- Really, Alternative 2 is based on historical distribution and abundance codes of common or absent and things like that, and it's much more crude, but it casts a wider net, and so, if you used Alternative 4, and you went there and you actually sampled, you could perhaps include that in there.

CHAIRMAN GILL: Susan.

MS. SUSAN BOGGS: I was thinking about the question that Greg asked, and I had to pull it up and look, and so you have a different -- For Alternative 2, you can do all those species, and, if you pull gag grouper, red grouper, red snapper out, and do like Alternative 3 or 4 -- Okay, and so you can separate them? Okay. Thank you. Just clarifying.

CHAIRMAN GILL: Dr. Stunz.

DR. STUNZ: Dr. Froeschke and Dr. Hollensead, and so were you all asking, from the committee, like your advice of what to do when you have more data for some of these? Okay, and so I think my advice would be that you -- Whatever you have the data and you have the analytical tools that gives us the best picture for essential habitat, that's what we should do.

That's me saying that as a council member, and, me saying that as a scientist, and I know that these are a heck of a lot of

work, and so I don't know what distribution of workload and that kind of thing -- How much time and effort that takes, and, I mean, obviously, if we're asking you to do something that's going to be a lot of work, I don't know.

The last quick thing, related to that, is that I would assume that, once you get the perfect EFH description, all of this informs the web tool, in one way or the other, and, I mean, I would not want that to -- I mean, I think the web tool can be very useful and good, and that's just informed by whatever modeling approach you take.

CHAIRMAN GILL: Dr. Froeschke.

DR. FROESCHKE: To the first, we're very lazy programmers, and so we'll automate this, and so, once we get it working, we'll make it work for whatever species that comes up after that that we have identified, and, yes, we will try to incorporate this, and we kind of talked about it.

Essentially, we will go through and visualize, okay, Alternative 2, and you can visualize, or select, the number of species and life stages that we have data available, which in fact is all of them. Then you look at Alternative 3, and it's going to be a smaller set, and Alternative 4, and so, eventually, theoretically, you can say, for Species X, Y, and Z, in each life stage, we want to use Alternative 4. For these other ones, Alternative 3, and the remainder Alternative 2, or something to that effect.

CHAIRMAN GILL: Kevin.

MR. KEVIN ANSON: I'm not on your committee, and thank you for recognizing me. Just to follow-up a little bit, or carry on that conversation, the question that Patrick had, I'm just trying to understand a little bit more about the model and the process for Alternative 2 and having the presentation, the slide, that describes that, and it's presence only, and the assumption is there's no habitat linkage, but I find that -- I heard what you said, and I'm just, you know, trying to reconcile that with the charge at-hand, which is try to identify which species is associated with a habitat, essential fish habitat, and so, essentially, we're still trying to use -- There is a link there to habitat. Thank you.

CHAIRMAN GILL: Dr. Hollensead.

DR. HOLLENSEAD: You can probably blame that on my poor

PowerPoint skills, and it should have been more not as much focus, I guess, and so I mentioned before that HMS will use it, and so it's not that they're saying there is no linkage, but it's just saying, for these water-column-associated species, it's really difficult to pin down, you know, some of these things.

You've got such an extent of water temperatures and things like that that it's hard to really hone-in, and so they use this Alternative 3, this presence only, as a way to describe their EFH, and so it's not that there is no habitat linkage, and there certainly is. It's just that the model, in order to describe it, doesn't account for it as much relative to some of the others, would be a better way to put it.

CHAIRMAN GILL: A question that I have -- Well, I have several, but, Dr. Hollensead, you said that you had presented this to the SSC, and did they provide any feedback, in terms of direction, in which they suggested that the focus would be variable, or did they just put in a more generalized good work and keep on going, or how did that come out?

DR. HOLLENSEAD: They sort of recommended the avenue that Dr. Stunz had mentioned, that, if you have it available, and you would like to pursue that -- Quite a few members mentioned that they are interested in more refined descriptions of EFH. A lot of times, that other alternative being suggested for Alternative 2 is really broad descriptions of EFH, and so, if you have the whole EEZ listed as EFH, it's not particularly helpful, and so, if the data was available, they suggested that.

CHAIRMAN GILL: Thank you, and the other thought is, relative to Dr. Stunz's comment about workload versus inclusion or not, my take is that workload isn't really the issue, because what that will drive is the extent of the process and how long it will take, but that's not the strong driver here. The driver here is to define EFH in a sufficiently-adequate manner, given the state that we are, and is that correct?

DR. HOLLENSEAD: Yes, that's correct, and most of the work for Alternative 3 certainly can be -- For Alternative 2, we've got all the layers, and so that shouldn't take much time. Alternative 4 does take a little bit more time, and there are some diagnostics, and there are some things that we want to double-check before we run the model and those sorts of things.

MS. BOSARGE: Just a question about Alternative 4 and the actual sampling and the work involved in trying to piece this together,

and so, in Alternative 4, you use a real samples, and it has a habitat associated with that sampling, and so, essentially, are we going to be taking like all the historic SEAMAP tows for -- We only have five species, I think, that we can do that for.

We can do it for gag grouper, red grouper, red snapper, shrimp, and Spanish mackerel, and, for those, we're going to pull out any SEAMAP tows that caught one of those species, and we're going to pull the rest of the data stream that goes with that particular SEAMAP tow, the location and the habitat type, whatever else they took, and you're going to have to do that for the life history of SEAMAP, and then what other data streams are we going to be using for that, where we're actually going into individual tows, with the limited data?

CHAIRMAN GILL: Dr. Hollensead.

DR. HOLLENSEAD: Not off the top of my head, but there is a table in the Gruss paper that goes through every single one of the surveys, the fishery-independent and the fishery-dependent, and there is quite a few of them, and I can pull it up, but it would be from all of those.

CHAIRMAN GILL: Leann.

MS. BOSARGE: So I'm thinking about workload, and so that's going to all -- If we go this route, then the Science Center is going to have to aggregate all that data for each species and get it into a usable format, or who is pulling all that, on a tow-level basis?

DR. FROESCHKE: We've already done. We had to do all of that in order to get this, and so we worked directly with Dr. Gruss, who provided the data, and we formatted it for our needs and have that available, and so, to me, the question isn't necessarily the workload, because we pretty much have done the groundwork for that, and it's more of a policy consideration, in that are you comfortable with perhaps a mismatch of different kinds of information for different species, and the consequence might be, of that, is, for some species that you know more about, you might have a much more geographically-refined EFH, as compared to something that is very broad for other species.

This might be an opportunity for David Dale to weigh-in on that. In terms of providing EFH consultations and things, there are perhaps benefits to having a more broad geographic footprint of EFH, versus the scientific nexus to refine and make smaller, and that's sort of what refining is, and I'm just kind of trying to

visualize, in my head, where you might have two species that have similar life history, one you know a lot about, and one you know less about, and so, if you use the one with Alternative 2, the geographic footprint of EFH might be quite large. For something you know more about, it might be much smaller, even though it looks at where the species might be relative to life history and distribution.

CHAIRMAN GILL: I have a couple of questions. One is is eDNA being used as part of the determination of presence? Is it envisioned to be utilized, since that's basically what tells --

DR. HOLLENSEAD: I know they're attempting some looking at eDNA for some species, and like oceanic whitetip I believe there's a new project going on to try to do that, and it's difficult in large portions of the ocean, and it's mostly used in river tributaries or things like that.

I think that work is beginning, in terms of if it can be used in a broader sort of sense like that, and, like I said, the oceanic whitetip is the one that comes to mind, but, right now, for this document, no.

CHAIRMAN GILL: So that says the presence data is survey, catch data, and I'm probably missing something, but that's largely it, correct? So the presence determination doesn't distinguish between residual and transitory, and is that correct as well? Dr. Froeschke.

DR. FROESCHKE: Are you talking about something that's a resident, versus something that's migratory? If you went to a given spot on one day and sampled king mackerel, and they were there, but, next Tuesday, they may not be there?

CHAIRMAN GILL: Yes.

DR. FROESCHKE: That's kind of one of things -- If you think about Alternative 3 and kernel density, and so the rationale for HMS, when they use that, is the habitat -- The relationship of why animals are at a particular place at a point in time is certainly related to habitat, but it may not be to benthic habitat features, and it might dynamic variables, like sea surface temperature or fronts or eddy's or currents and things, and so the mechanistic relationship isn't readily visualized in a map.

You can't map a current that's not static in time that's associated, and that's why they tried to use that and said these

are the areas that, on balance, that tend to be used more frequently, although we don't have the nature of that relationship mechanistically defined, but here it is, and so, for dynamic species, like king mackerel or something, it might be more appropriate to do that type.

CHAIRMAN GILL: Thank you. Dr. Hollensead.

DR. HOLLENSEAD: Mr. Chair, I was going to let you know too that David Dale, from the Habitat Division, has got his hand up, and he may be able to elucidate some of the things that Dr. Froeschke was asking about.

CHAIRMAN GILL: Thank you for that. I hadn't noticed. David Dale, please.

MR. DAVID DALE: Good morning. This is David Dale at the Habitat Conservation Division Southeast. John was asking if it was -- I've heard a couple of people ask the question of if it's okay if we use different methods for identifying and describing EFH, and I absolutely think it is absolutely okay for us to use different methods.

The EFH regulations and National Standards direct us to use the best available, and so, if we have different methods that constitute the best available, we should use those, and the EFH regulations encourage us to use higher levels of information for identifying and describing EFH, when that information exists, and it actually encourages us not to designate EFH, if we don't have the information, or it can't be inferred by other methods, and so that question is relatively easy to answer.

I heard some concern that, if we use different methods, we might refine EFH, and, by "refine", I think I hear our EFH identifications and descriptions might result in a smaller geographic area being identified and described as EFH, and I think that's okay too, because our regulations actually encourage us to focus EFH on those habitats, and it provides us some regulatory definitions of waters and substrates necessary for spawning, feeding, breeding, and growth to maturity for the major life stages of a fish. There's a lot in the EFH regulations that tell us to hone-in on the most habitats and areas that are actually necessary.

CHAIRMAN GILL: Thank you, Mr. Dale. Kevin.

MR. ANSON: Thank you, again, for recognizing me, and so it might be for Mr. Dale, this question, and so I'm curious then as

to, going forward, as we review this document, and the Alternative 3 and Alternative 4 that's currently in the document -- They provide a range of various metrics, based on the results, and so, relative to the way my understanding is, it would kind of lean more towards the conservative, if you will, or trying to throw a wider net over what would be classified as EFH.

I guess, you know, just because, statistically, they do produce these values, or you can use these ranges, versus the other way, it's just kind of a there or it's not there, presence or absence, as to what kind of guidance we might, you know, want to receive, or additional information we might want to see, in a future discussion, if that's in fact where we go, when we have more time to maybe try to evaluate that, because it is -- I think it would very much constrict, if you were to choose like Option a in the two alternatives, versus where we are today, I think. Thank you.

CHAIRMAN GILL: Thank you, and so my sense of the committee is that proceeding by including Alternative 3 and 4 is where we want to go, and do I see any objections to that approach? Not seeing any, is there any other further comment or questions about the generic amendment and the document? Susan.

MS. BOGGS: I understand the workload, but it would not be easier, if we're trying to streamline this document, to stick with Alternative 2, for those species that we know, and then to pick Alternative 3 or 4 for the other species, to have the data available, and then further develop this document, down the road, because we talk about getting bogged down and not moving ahead, and at least we could move forward with this document, but continue to look at other methods for these other species, in an attempt for proceeding with trying to, I don't know, grow into Alternatives 3 or 4, with those other species.

CHAIRMAN GILL: My understanding is that's exactly what the plan is, going forward, particularly given the amount of information we currently have, and, as was expressed, utilize it for 3 and 4 where you can, and Alternative 2 then becomes the default for everything else. Susan, did you have a follow-up?

MS. BOGGS: I guess that's not how I understood it, and that's why I was --

CHAIRMAN GILL: Leann.

MS. BOSARGE: I was thinking, maybe for the next time that we

see this, and so you showed us, I guess, the outputs from either Alternative 3 or 4, and I think Alternative 4 for gag grouper, and is that what you showed us? Okay. Alternative 4.

Maybe if we could see what Alternative 2 looks like for gag grouper, then we could kind of compare the two. Like let's see how much we really refined it, right, to see how much bang for our buck we're going to get by going through, you know, the in-depth analysis, and do we need the Cadillac, or do we just, you know, need the bicycle, and I don't know, and so that would help me, I think, compare.

I would also like to see shrimp, and we have a lot of finfish, and shrimp is a little different, and especially when you get into habitat. You know, there's a lot of the Gulf of Mexico that has not been mapped to that degree, you know the habitat for shrimp, and we have lots of coral that we haven't mapped at this point, much less mud bottom and sand bottom and limestone bottom and things like that, and so I think I would like to see what that output looks like for shrimp when you put in -- I guess you're putting in every single observer tow from the last fifteen years, individual tows, and the location and the shrimp and the type of bottom for that particular tow, and every SEAMAP tow, right, and I'm surprised that that data was that easy to pull together.

I mean, because we have these conversations when we talk about stock assessments, and how long it's going to take just to pull the data for one particular species, and so I'm just really surprised that we have tow-level data, by individual species, ready to go into these models, with all those other supporting things, especially with SEAMAP being carried out by the state partners and this and that, and, I don't know, and it's surprising, but, anyway, I would like to see shrimp, and I would like to see what the difference is in Alternative 2 versus Alternative 3 and 4 for shrimp.

If it's only just -- You know, if Alternative 2 has curved edges, and Alternative 3 was a little more refined around the edges, I'm not sure it's worth the workload for staff and everybody else involved to go to those lengths, but I won't know until I see it, right?

CHAIRMAN GILL: Dr. Hollensead.

DR. HOLLENSEAD: Thank you for that input. That's what the web tool -- What we would like to achieve. Right now, we do have it all in one place, but we would have to like click through, and

it's not organized the way we would like, so that you can bop right between, and so that's what we're working on, but we didn't want to pull it out yet, because it wasn't quite ready for primetime.

CHAIRMAN GILL: I am looking to close this action out. Mara.

MS. MARA LEVY: I can't let you close it yet. Well, just to that point, I think, in the document right now, there is gag for each of the alternatives, right, and it shows -- There is maps in there that shows the results for gag, for Alternative 1, 2, and 3, so you can see that, and then I would just say that I have no problem with looking at the results of all the different alternatives, because I think that's what you're going to do anyway, but then to say, after you've looked at the results, that you might not pick something because it's not much more refined -- I mean, we use the best available data you have, and, if you decide you're not going to do that, then there needs to be some sort of record and explanation for that, when you get down the road.

I just encourage you to move forward with this, because it has taken a lot of work, and it is going to take a lot of time, and, the more we can progress on this, the better, because it's kind of been lagging, with everything else that's been going on as well.

CHAIRMAN GILL: Thank you, and so any final input on the generic amendment, before we move on? Seeing none, thank you, and so, Dr. Hollensead, if you would provide the action guide for the develop the Aquaculture Opportunity Area Atlas for the Gulf of Mexico, plus, if you would, the DEIS for the AOA.

RESULTS OF THE AQUACULTURE OPPORTUNITY AREA ATLAS FOR THE GULF OF MEXICO

DR. HOLLENSEAD: Thanks, Mr. Chair. We will have a couple of presentations by Mr. Andrew Richard, who is in the room with us, I believe, and so we appreciate having him here, and he's got quite a few presentations to go through.

NMFS and SERO will provide an overview presentation of the results of the Aquaculture Opportunity Area Atlas for the Gulf of Mexico, and this atlas was developed by the National Centers for Coastal and Ocean Science, and so it uses the spatial suitability model and incorporates multiple data layers that result in identification of those potential options for those AOAs.

Then, following that, Mr. Richard will also provide a presentation on the publishing of the Notice of Intent to prepare for the Programmatic Environmental Impact Statement for the Gulf of Mexico AOAs, as well as a public scoping period, and so the committee and council are encouraged to ask any questions, provide feedback and comments to Mr. Richard, and, should the committee decide to request that staff draft a more formal comment letter on the behalf of the council, a motion would be needed.

CHAIRMAN GILL: Thank you, Dr. Hollensead. The atlas is Tab B, Number 5, and the DEIS for the Aquaculture Opportunity Areas is Tab B, Number 6, and there are multiple parts to that as background. Mr. Andrew Richard, welcome, and thank you, sir. You have the floor.

MR. ANDREW RICHARD: Good morning. Thank you, Mr. Chair, and thank you for the opportunity to talk about some of our aquaculture work that we have ongoing in the Gulf of Mexico. I am really excited to be here today, and it's my first council meeting, and so we're excited to present and be here in person, and so thank you, again, for that opportunity.

My name is Andrew Richard, and I'm the Regional Aquaculture Coordinator for NOAA Fisheries Southeast Regional Office. I am onboard in May of 2020, and so I've been working virtually, and so, again, it's great to be here in person and be able to present to you.

Today, I will be presenting a couple of presentations on our aquaculture work, including the effort to identify aquaculture opportunity areas in the Gulf of Mexico, as well as provide an update on some aquaculture projects and interests in the Gulf of Mexico.

My first presentation will be presenting the results of the Aquaculture Opportunity Atlas for the U.S. Gulf of Mexico, and I will be presenting today on behalf of Dr. Ken Riley, from the National Center for Coastal Ocean Science, who, unfortunately, could not be with us here today, and so I'm going to do his work, and the work of his team to develop this atlas justice, and I hopefully will be able to answer any questions that you have, but I believe that Dr. Riley is also calling in, and so he may be able to answer any questions that I may not be able to.

For a little bit of background, and really the driver for the development of this Aquaculture Opportunity Atlas for the Gulf

of Mexico, as well as the effort to identify aquaculture opportunity areas, in May of 2020, the Executive Order Promoting American Seafood Competitiveness and Economic Growth was issued, and, under Section 7, NOAA Fisheries was directed to identify geographic areas that may be suitable for commercial aquaculture development as well as develop programmatic environmental impact statements to assess the impact of siting aquaculture in those locations.

The Executive Order called for a total of ten aquaculture opportunity areas to be identified over the course of seven years, and those locations could be identified in state or federal waters, or, for this first round, we're looking exclusively for areas in federal waters. In future rounds, if a state expresses interest in having aquaculture opportunity areas identified in their state waters, and that's something that would be able to be considered.

The efforts identify aquaculture opportunity areas as a planning exercise, combined with marine spatial planning as well as environmental review. It does not change any of the permitting or regulatory requirements that permit offshore aquaculture, and it is purely a planning effort.

In November of 2022, the Aquaculture Opportunity Atlas for the Gulf of Mexico was published. With this publication, it is the most comprehensive marine spatial planning effort ever conducted in U.S. federal waters for any ocean industry. It contains more than 200 different data layers and four sub-models that feed into the spatial analysis that is used to look for areas that are suitable for potential aquaculture areas.

It contains over 150 maps that tell the story of how the ocean is used in the Gulf of Mexico, and it is informed by comprehensive stakeholder engagement, and many of you were part of that stakeholder engagement and the development of that Aquaculture Opportunity Atlas. We had over 150 stakeholder meetings, specific to the Gulf of Mexico, to help on this work.

The Aquaculture Opportunity Atlas is also a great blueprint framework for future aquaculture opportunity area initiatives in other regions, as well as informing other ocean pioneering industries, and so a significant component of this Aquaculture Opportunity Atlas is that it is a peer-reviewed, stand-alone technical memorandum from the National Center for Coastal Ocean Science.

They utilized the Center for Independent Experts, which is often

used for fisheries management work and stock assessments, and it also complies with MSA Standard 2 for scientific integrity. The reviewers were highly skilled in marine spatial science and were located outside of the U.S., and these are the institutions that they were associated with at the bottom of that slide.

The reviewers provided over 300 specific comments, and they didn't identify any major flaws with the work of the Aquaculture Opportunity Atlas. They characterized the work as robust and state-of-the-art, and they did have some recommendations there, as you can see in the bottom-right-hand corner of that slide, and that was information and comments that were incorporated into the atlas.

As you can see here on the screen, this is the initial study area for the Aquaculture Opportunity Atlas for the Gulf of Mexico. As I noted in a previous slide, the area that was initially looked at for identifying aquaculture opportunity areas was the federal waters of the Gulf of Mexico. Through stakeholder engagement, we were able to sort of narrow down that framework of where we would look for aquaculture opportunity areas.

The aquaculture industry indicated that they need a minimum depth of at least fifty meters, to be able to survive storms, and that any locations in excess of 150 meters would greatly increase the cost and engineering requirements for projects outside of those areas, and so that band that you see there in the Gulf of Mexico is largely driven by that depth parameter of fifty to 150 meters in depth.

There was no maximum or minimum distance from shore, and that was identified through stakeholder engagement, and the areas that we are looking for in the Gulf of Mexico are suitable for all types of aquaculture, be in finfish, shellfish, or seaweed aquaculture, and the work of this planning effort was to identify geographic areas that could support three to five commercial-scale aquaculture farms, and so we're looking for areas between 500 to 2,000 acres, which, in the Gulf of Mexico, is a pretty small area.

Here we have a list of the data inventory that was included in the Aquaculture Opportunity Atlas. Southern California is also another region where aquaculture opportunity areas are being identified, and so you can see the comparison of the data that was utilized to help inform the work of the atlas. As you can see under the data layer section, those are actually the four sub-models that went into the spatial suitability modeling, like

national security, natural resources, industry navigation, and transportation of both fishing and aquaculture.

As you can see, for most of those categories, the Gulf of Mexico does have more data layers, and we are dealing with a larger space. The one difference you might see, and might be of note, is toward the bottom, where you see the difference between the fishing and aquaculture data layers, where southern California has a significant number more, and that was largely driven by the fact that, in the Gulf of Mexico, there are multiple species management plans, and so approximately the same number of species were considered, fisheries were considered, but, because they're combined in the Gulf of Mexico, that number might be a little bit lower.

I'm not going to get into a ton of detail on exactly how the suitability model works, but, essentially, that study area that I showed you in that last slide there is overlaid with a grid of -- A hexagonal grid that is approximately equivalent to ten acres in size, and that area is overlaid for each of those suitability models, and the different data layers are incorporated there, and each data layer is given a score, depending on the type of data, ranging between zero and one, one being the most suitable for aquaculture development and zero being the least suitable.

Once those sub-models are overlaid on top of one another, you end up with a suitability model there, like in that picture with the red, the orange, and the green, and so the areas that are red are areas that are not suitable for aquaculture development, and so those are areas like submarine cable and oil and gas infrastructure, and those are areas that get zeroed-out in those suitable models, and so, when one of those layers has a data layer that incorporates that zero into the model, it zeroes it out for the entire suitability model.

As you can see there, there are other uses that are kind of pointed out in that graphic there, and you can see that there is increased fisheries-related work there, and this is off of southern California, as an example, and so that color is not red, but it is also not green or blue, which are the more suitable areas, and it just denotes that it is a busy ocean space, and there's a lot of activity that's occurring in that area, making it less suitable than areas where there is not that sort of activity.

This is the final suitability results for the Gulf of Mexico, and so you can see there that red are areas that are unsuitable,

based on the work of the atlas, and, if you look closely, in the west study, the central study area, as well as the east study area, you can find some areas of blue, and so those sixty clusters, that are kind of difficult to discern in those maps, show the areas that are highly suitable for aquaculture development.

As you can see, the southeast study area is completely and entirely red, and that was due to some consultation with the Department of Defense, who identified that aquaculture isn't compatible with the Department of Defense work that was occurring in that southeast area.

I mentioned that there were sixty clusters of highly-suitable area that were identified in the work of the atlas, and those sixty clusters actually totaled about 1.1 million acres and provided approximately 30,000 potential aquaculture opportunity options. Only the top nine options were brought forward, through the work of the atlas, and there was an additional dispersion rule that was applied in identifying these potential aquaculture opportunity options, and so we end up with three potential options in the west region, three in the central region, and three in the east region, and so we have two 2,000-acre and one 500-acre site for each of those areas.

That just happened to be the way the data worked out, and it wasn't done by design, and it just kind of shaped up that way, and I will talk a little bit more about those areas in my presentation of the programmatic environmental impact statement.

These are the potential aquaculture opportunity area options that the atlas identified, and, as you can see, there is three off of Texas, three off of Louisiana, and three off of the Gulf coast of Florida. The closest location to shore out of these options is Location C-13, and that's approximately five nautical miles from shore, and the furthest is C-3, which is about seventy-two nautical miles from shore, and so the majority of those are between forty and sixty nautical miles offshore, throughout the Gulf.

The atlas told a bunch of really, really important stories, and one of those stories, that I know that Dr. Riley likes to talk about, is a strong collaboration with our Sustainable Fisheries Division, with the councils, with our fishing industry, to help tell the story of the fishing data that was incorporated into the Aquaculture Opportunity Atlas, and so it's just a really important piece of the puzzle, and it was really a great opportunity to tell the story about where and how we're

utilizing the space in the Gulf of Mexico for fishing, and we hope that the Aquaculture Opportunity Atlas can be used as a tool, and a blueprint, for other future planning initiatives for aquaculture, as well as other ocean industries.

I know Dr. Riley also likes to end this to show the team that he was working with to develop that document, and it's a very comprehensive document, and it was a multiyear process to collect data and to develop the Aquaculture Opportunity Atlas, and it's something that couldn't be done without his team, as well as all the stakeholder input that we've received from the council, and the industry as well, and so I'm happy to take any questions that anybody might have about the results, and I think we may have Dr. Riley online as well.

CHAIRMAN GILL: Thank you, Mr. Richard. That was very interesting. It's one of those things that we'll be seeing more of this as time goes along. Are there questions from the committee of Mr. Richard? You all need some more coffee. Mr. Chairman.

MR. DIAZ: I've had my coffee, I promise. Mr. Richard, I just want to make a comment, and I see C-13, that you've got off the mouth of the Mississippi River, is the closest one to shore, but, when I think of that area, as far as a dockside facility to work out of, I'm not sure it's closer than some of the other ones, but it may be, and I don't know, and I think Venice would be the first place that people could get to to, you know, have some dockside area to work. Anyway, I was just wondering if you could speak to that, if you consider the distance from port, and is it still the closest one?

MR. RICHARD: The atlas does make note of the distance from shore, as well as the point of closest infrastructure that could support those aquaculture opportunity areas. I am not sure if it is the closest to potential infrastructure from that point specifically, compared to some of the other ones, and that may be the same approximate distance from shore and infrastructure, but the atlas, I know, does discuss that detail.

CHAIRMAN GILL: Other questions from the committee? Leann.

MS. BOSARGE: No, and I just wanted to commend you and your whole crew. I mean, I think you all did an amazing job, and I think that the tool that you created, this mapping tool, your atlas, I think it can be used for a host of different things, and you've really put all the hard work into it, to make it very simple for other people to piggyback and use that, and I can see

where it would be extremely helpful in the planning for wind energy.

I mean, you have all the layers there that are vital, that are the other users of the sea, and you can, you know, with the click of a button, see what your impact may be, or not be, and I just wanted to say thanks for all your hard work, especially your work with the shrimp industry. We appreciate that.

I would be remiss if I didn't point out that I think it was C-11 that, during that Shrimp AP meeting in December, we had a couple of members of the AP that said, you know, those are some of my pretty important shrimp grounds, in one little piece of that C-11 that you had, and I don't know if you went back and maybe revised the box at all for C-11, and moved it a little bit, in one direction or the other, and can you speak to that, or if it's still that original area, as you had it proposed?

MR. RICHARD: The locations that were presented at the Shrimp Advisory Panel back in December are the same locations that you see on the map here. We did take note that there were some comments that were received that identified some potential conflict with the fishing grounds that are in that area, shrimping grounds in particular, and so that's information that could be brought forward into consideration during our programmatic environmental impact statement of those areas, and we're also open to receiving comment during that programmatic environmental impact statement noting that information, regarding locations of where aquaculture opportunity areas are identified.

CHAIRMAN GILL: Leann, to that point?

MS. BOSARGE: So can you consider that my comment at that point and put it on the file, so I don't have to go to another meeting and give it to you? Thanks.

MR. RICHARD: You got it. Thank you.

CHAIRMAN GILL: Dr. Froeschke.

DR. FROESCHKE: My question for the areas, for example Area W-4, where wind energy may also be planned in that area, in the event that both of them were considered suitable in a given area, who wins, and/or how does that work?

MR. RICHARD: I will make note that the locations that are off of Texas there, within that W-1, W-4, and W-8, are not located

in any of those wind planning areas, and that was something that was looked at and considered, and I will speak to how we're making sure we consider that in the programmatic environmental impact statement as well, as far as our cooperating agencies working with us.

The effort to identify aquaculture opportunity areas is a planning process, and so, ideally, when a project, a physical project, is proposed, it would happen right away, at least from our perspective, but, with those areas that are off of Texas, they don't overlap the planning area.

CHAIRMAN GILL: Patrick.

MR. BANKS: Back to Leann's point, and, just to confirm though, you all did consider the shrimp effort data in your planning of C-11, correct?

MR. RICHARD: That's correct. The shrimp electronic logbook data was incorporated into the atlas.

CHAIRMAN GILL: To that point, Leann?

MS. BOSARGE: Patrick, they really did a great job of trying to avoid some of those areas, and what they did for the Shrimp AP was to actually bring us some zoomed-in, which was really nice. Like we're getting the thirty-thousand-foot view here, but they brought us zoomed-in pictures of each one of those sites, and we kind of went through each one of them with the shrimpers in the room, and that one off of your state down there, that's a pretty vital area for the shrimpers, and I'm sure for Louisiana, and most definitely from the Gulf in general, and so we do hope that, as we continue this process, that maybe we will be able to go back and take that particular site and tweak it just a little bit, to get it out of those shrimp grounds.

It just seems sort of silly, and it's all about, you know, providing food to the country, right, and so, if we're already providing food to the country from that area, we want to push out the wild fleet, the wild-caught fleet, in order to grow fish there, and, you know, that's a tough one for me to stomach, because it seems kind of contrary to the goal here, and so I hope we can adjust that.

CHAIRMAN GILL: To that point, Patrick?

MR. BANKS: Leann, if they considered the shrimp data that comes from NMFS, why -- Where is the disconnect between they

considered it and said this was a good opportunity area, but then you heard from shrimpers saying this is not a good area, because we shrimp like crazy in here?

MS. BOSARGE: Well, I think that comes into the weighting, and so they consider it, but, just because there's shrimping there, it doesn't mean that they say we won't do aquaculture there, all right, and everything gets a weighting factor, and so I'm sure like national defense things -- That's a no-go, if we're doing something, but shrimp -- We've got some wiggle room, right, and so, just because we're shrimping there, it didn't mean that they wouldn't necessarily put aquaculture there, but they really did do a very good job of trying not to do that, and that was the only site, really, I believe, that we found where they -- It's not the whole acreage, and it was just a little portion up there that might be an issue, and so I'm hoping we can work with them on that one site.

CHAIRMAN GILL: Robin.

MR. RIECHERS: When you were talking about the interaction between the wind farms and aquaculture, and you basically -- I think you alluded to the fact that you all were making sure they weren't in the same area, and is there any specific reasons, biologically, infrastructure-wise, that you wouldn't necessarily site those two in the same area? In some respects, there might be even some possibilities of using up less overall area in siting consecutively or near one another.

MR. RICHARD: I will say with those areas, off of Texas in particular, there's just different depth requirements, and the depth is a real driver on why there's not sort of an overlap, or a compatibility, but I will say that there are projects currently being funded by the Atlantic States Marine Fisheries Commission to look at co-location of aquaculture with wind infrastructure off of -- I believe off of New York and Virginia and a bunch of different locations off the east coast.

MR. RIECHERS: Isn't the depth issue really one of anchoring though? I mean, there are different anchoring methods, aren't there, and it's just some are more costly than others, as I'm recalling?

MR. RICHARD: Yes, that's correct, and that study that I was referencing there is actually looking at shellfish, which has a different rigging and anchoring system.

CHAIRMAN GILL: C.J.

DR. C.J. SWEETMAN: Thank you for recognizing me, Mr. Chair. I'm not on your committee, but I'm just curious. In the Gulf of Mexico model, we talk about shrimping, and what other fisheries were included in there? You mentioned six fisheries.

MR. RICHARD: I would have to look specifically at the list. I can't recall them off the top of my head, but, you know, all the major -- I know reef fishing fisheries management, and I know reef fishing was definitely included in there, but I can't speak to the other ones.

CHAIRMAN GILL: Dr. Frazer.

DR. TOM FRAZER: Thanks, Mr. Chair. Right before this, we had a presentation of essential fish habitat for gag, for example, and, when I look at the figure that was provided, using one of the alternative approaches to that, it seems to straddle this E-4, or E-1, E-3, and E-4, I guess, and so to what degree was the essential fish habitat information considered in the process, as opposed to just fishing?

MR. RICHARD: All the essential fish habitat data was included in the work of the atlas. In addition to that, there was both observed and modeled hardbottom that was considered as part of the data analysis that was incorporated in the atlas, and an additional thousand-meter buffer from any of those observed core model areas, and that's a requirement in the Gulf of Mexico for siting aquaculture, and it's an EPA regulation that generally relates to oil and gas infrastructure, and it's also applied to aquaculture, and so these areas are buffered away from that, in addition to considering that data in the atlas.

DR. FRAZER: Thank you.

CHAIRMAN GILL: Are there further questions or comments from the committee? Seeing none, thank you, Mr. Richard. That was most informative, and I'm sure we will be seeing more in the future, and so, if you would go on to the DEIS, I would appreciate it. Sorry. Leann.

MS. BOSARGE: It's not for Mr. Richard, and I was just wondering, in general, and so, if we're also considering state waters for some of this siting, what, I guess, level of analysis, for these same types of layers, is happening in state waters, or is that being carried out by your group, too?

MR. RICHARD: Because this first round of aquaculture

opportunity areas was focused on federal waters, there is not an ongoing sort of state waters analysis that is occurring specific to aquaculture opportunity areas, but I do know that there are several states that are looking at doing their own sort of approach modeled after the atlas work to look at that, Florida being one of those states.

MS. BOSARGE: Does your atlas actually flow over into state waters, or did you only do federal waters? Do you have those layers for state waters?

MR. RICHARD: There are layers available for state waters, but the focus of the atlas was restricted to federal waters.

CHAIRMAN GILL: All right, sir. On to the DEIS.

NOTICE OF INTENT TO PREPARE A PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT FOR AQUACULTURE OPPORTUNITY AREAS IN THE GULF OF MEXICO

MR. RICHARD: All right, and so the Executive Order on American Seafood Competitiveness and Economic Growth, under that Section 7 that directed NOAA Fisheries to identify aquaculture opportunity areas, it really can be broken down into two areas, and so there is the effort to identify geographic locations suitable for aquaculture, and then there is the directive to develop a programmatic environmental impact statement that assesses the impacts of siting aquaculture in those locations, and so you can kind of look at it as phase one is the atlas and phase two is this programmatic environmental impact statement.

I am going to present information on the notice of intent to prepare this programmatic environmental impact statement, as well as the scoping process, which was initiated on June 1 of this year, to support the development of that programmatic environmental impact statement.

As I noted, on Wednesday, June 1, NOAA Fisheries published, in the Federal Register, a Notice of Intent to prepare a Programmatic Environmental Impact Statement to identify aquaculture opportunity areas as well as to initiate public scoping. A notice of intent gives information, obviously, on our purpose and need, preliminary alternatives, expected impacts, as well as the timeline and information on our cooperating agencies that we would be working with.

That notice of intent kicked off a sixty-day public scoping period that will conclude on Monday, August 1. We've had two

virtual scoping meetings so far, where we've received public and stakeholder input, and that was on June 6, and well as June 16, and we do have an upcoming virtual scoping meeting, which will be on Tuesday, June 12, and so that's upcoming as well.

As I indicated that we would providing information on our cooperating agencies, and the agencies that we're working with collaboratively, to develop this programmatic environmental impact statement. The Gulf of Mexico is a vast area, and there's a lot of federal agencies with jurisdiction on aquaculture, as well as also using that space out there in the Gulf of Mexico, and so, for this programmatic environmental impact statement, we've invited the U.S. Army Corps of Engineers, the EPA, and BOEM, as well as the U.S. Air Force, to participate as cooperating agencies in the development of this programmatic environmental impact statement.

We have all regions and districts of the Corps and EPA represented on our cooperating team, our cooperating interagency team, and the U.S. Air Force is represented, of course, as well, and I noted some questions regarding wind planning, as well as aquaculture development, and that was also one of the drivers for including BOEM in that conversation as well, to make sure that the information we're including in our programmatic environmental impact statement considers the most up-to-date information regarding wind planning and development.

We're also using with the U.S. Fish and Wildlife, as well as the U.S. Coast Guard, in a lesser role with those participating agencies in the document, given their role in regulating and authorizing aquaculture. Our interagency team consists of over twenty-six members, and it seems to be a constantly growing team, but we're very welcoming and excited to have representation from all these federal agencies with us working on this programmatic environmental impact statement.

The goal of this programmatic environmental impact statement is to help it -- Help make sure that it informs future permitting and environmental review processes for future aquaculture projects, just to make sure that we're planning for the future of aquaculture development in the Gulf.

Our proposed action is to consider identifying one or more aquaculture opportunity areas in the federal waters of the Gulf of Mexico and to evaluate the impacts of siting aquaculture in those potential locations. Again, I would like to emphasize that this is a planning process, and there are no specific aquaculture activities that are being permitted or proposed or

evaluated, and this is merely a planning exercise to assess the potential impacts of siting aquaculture in these locations.

The idea is that potential aquaculture projects proposed at a later date and sited within these aquaculture opportunity areas would benefit from the upfront analysis that was conducted in this programmatic environmental impact statement, and so that would create efficiencies for them in their permitting process, as we know a lot more information about these locations.

The purpose and need for our proposed action is, obviously, one of the significant drivers for that was the Executive Order on American Seafood Competitiveness and Economic Growth, and it's also to utilize a scientific approach to inform offshore marine aquaculture planning. We're looking to find areas that could be suitable for multiple offshore aquaculture projects, as well as to address the interest and concerns regarding offshore aquaculture and siting.

The purpose of this also addresses the need and the increasing demand for seafood, as well as promoting American seafood competitiveness, food security, and economic growth, while sustaining and conserving marine resources.

Public comment involvement is extremely important to this process. As I noted, on June 1, we kicked off our sixty-day public scoping period, and that will conclude on August 1. Following the conclusion of the scoping period, we will publish a scoping summary, and we will post that through our Aquaculture Opportunity Area DEIS website, and so that's publicly available for all to review. After that, we will begin working with our interagency team to start developing the programmatic environmental impact statement.

Once that draft programmatic environmental impact statement is made available to the public, through a notice of availability, that will kick off at least a forty-day public comment period, where we will solicit, or seek, comment towards the development of that draft programmatic environmental impact statement. Following that public comment period, we will consider, as well as respond to, those public comments, and that will be done in the final programmatic environmental impact statement, and, again, one of the main takeaways from this is that this is a planning document, and the stakeholder feedback that we receive during these scoping periods will be extremely important in helping to inform the development of this programmatic environmental impact statement.

Here's just a timeline that kind of shows what that process looks like overall, and, as you can see, it is a two-year process, and that's directed under the Executive Order, that we complete each programmatic environmental impact statement in two years, as well as the regulations, and so we are kicking off our public scoping period here in the summer of 2022.

By fall of 2023, we expect, and anticipate, having a draft programmatic environmental impact statement that will publish with a notice of availability, and that will kick off that forty-day public comment period. After incorporating any revisions that might need to be made into that draft programmatic environmental impact statement, we expect to publish the final programmatic environmental impact statement in the spring of 2024, with a record of decision potentially being published in the summer of 2024.

Two years is definitely a very ambitious timeline for doing this work, and the Executive Order did not come with any additional resources for us to carry out this work, but I think we're well positioned to be able to really take a good shot at getting this accomplished within the two-year timeline of the Executive Order.

Some preliminary ideas we had for the alternatives to consider in the programmatic environmental impact statement are focused around the locations, or the aquaculture opportunity options, identified in the atlas, and so we are considering identifying one or more of these locations as aquaculture opportunity areas in the programmatic environmental impact statement, and so NMFS will determine the number and scope of alternatives that are explored in the programmatic environmental impact statement, and that will obviously be informed by stakeholders, as well as our cooperating agency and interagency team that we're working with to develop this programmatic environmental impact statement.

As this is a programmatic environmental impact statement, it will also contain a no action alternative, which would consider the effect of not doing and not carrying forward this planning process, to help inform future aquaculture development in the Gulf.

Now I'll talk real quickly about the different sites, and this is -- If you're really interested in diving into each of these locations, I highly recommend checking out the Aquaculture Opportunity Atlas. There is just a wealth of information about each of these locations, and they're broken down individually within that work, but this is just kind of a general depiction

of the areas that are there.

W-1 is a 2,000-acre site about thirty-five nautical miles east of Port Mansfield, Texas. W-4 is about -- It's a 2,000-acre site fifty nautical miles southeast of Port Aransas. W-8 is a 500-acre site, fifty-eight nautical miles southeast of Freeport, Texas.

C-3 is depicted as a 2,000-acre site, approximately seventy-two nautical miles from Pecan Island, and Morgan City is the closest point of infrastructure. As I noted in my comments earlier, the atlas does identify these significant points of infrastructure. C-11 is a 2,000-acre site forty-one nautical miles off of Port Fourchon. C-13 is a 500-acre site about five nautical miles south of South Pass in Louisiana.

E-4 is a 2,000-acre site about fifty-eight nautical miles off of Clearwater Pass. E-3 is a 2,000-acre site forty-nine nautical miles southwest of Tampa, Florida. E-1 is a 500-acre site that's fifty-six to fifty-eight nautical miles from Fort Myers. Again, if you're interested in kind of diving into the details about those locations, the Aquaculture Opportunity Area Atlas is a great resource for that, and we also have links through our aquaculture opportunity area website.

CHAIRMAN GILL: Mr. Richard, we have a question from Leann.

MS. BOSARGE: If you could go back to that last slide, and so, staff, I think you have a slide that you could pull up for us for that C-11, and just before -- I won't be here in August, okay, when you come back, and so I just kind of wanted to visualize that for people around this table, when we say that it's a fairly significant shrimping area.

We actually have the shrimp effort slide for that that is overlaid on your potential area there, and sometimes a picture is worth a thousand words, and so, staff, if you could pull that up, and I think it was emailed to you, just real quick, if that's okay, Mr. Chairman. I can tell you it's important all day long, but I think, when you see it, you will go, oh, that's important.

CHAIRMAN GILL: Leann, how about if we continue on with the discussion and bring this up later, while that bring that up? Thank you. Mr. Richard, back to you. I stand corrected.

MS. BOSARGE: Then if you can zoom-in on that C-11 option for us, please, ma'am. It's on the screen, and you just have to

zoom-in. There you go. There's the little square box that is the proposed area, C-11, and that's the little square box that you see in that red area, and that red area is intense shrimp trawl grounds, and so it is very important, because that's kind of like a heatmap that you're looking at, and so the red areas are extremely heavily trawled, and that's right off of Louisiana, and, boy, they can get crazy down there, and so I don't know if we might want to adjust that one.

CHAIRMAN GILL: Thank you, Leann. Bernie, if we could go back to the presentation.

MR. RICHARD: All right, and so our notice of intent also contains what we are calling prompts, and so these are pieces of information and feedback of opinions and data and analyses on information that we're looking for stakeholders to provide -- To help inform the development of this programmatic environmental impact statement.

I am not going to read through all of them, but, if you're interested, we have them posted up on our website, as well as the notice of intent, and so maybe you can look through those, and so, obviously, we're looking for information that can help inform the scope and the reasonable range of alternatives that we propose in the programmatic environmental impact statement, the type of aquaculture we analyze, as well as suitable species, gear, regulatory and monitoring and reporting requirements and things like that.

We are also interested in potential adverse, beneficial, neutral, or cumulative impacts for the biological and physical environment, as well as impacts, social impacts, economic impacts, impacts to the cultural environment. We're also looking for information on the promotion of environmental justice, diversity, inclusion, and considering the alternative locations proposed in the notice of intent, as well as impacts to underserved communities, both beneficial and adverse.

We're also looking for impacts, information and impacts, on climate change on aquaculture and the siting of aquaculture, as well as other activities that might be planned, including things like wind planning, and areas highlighted within the notice. Additionally, any other information that stakeholders might feel is pertinent to helping us develop this programmatic environmental impact statement.

I'm sure I don't have to explain too much to the group here how to provide comments, but we are accepting comments via mail and

electronically, and so there's some instructions and information on where to do that, and then we also are, additionally, having a virtual public comment meeting on July 12, is our next one, is our third and final virtual public scoping, and there is the information for that, and I will just note that, if you are planning on calling and listening in, the audio is necessary through the phone line, to get access to that.

That concludes the information on the programmatic environmental impact statement and the notice of intent, and I'm happy to answer any questions that anyone might have.

CHAIRMAN GILL: Thank you, Mr. Richard. Are there questions or comments from the committee? Kevin.

MR. ANSON: Thank you, Mr. Chair. I'm wondering -- So some of the data layers that were used could potentially change over time, and so have you all given much thought as to when the next reevaluation, or analysis, of those data layers could occur, which would maybe alter the footprint, if you will, going forward on trying to address the issue of improving, or increasing, domestic supply of seafood through aquaculture, and, specifically, I guess, I take that the existing infrastructure for oil and gas platforms -- If a platform exists, or a structure or pipeline or such exists there, that would probably exclude that, or give it a very low score, but they are supposed to remove those after a certain period of time, and so, again, the landscape will change, and have you all given much thought to that?

MR. RICHARD: The work that is developed within the Aquaculture Opportunity Atlases are a static document, and they are a snapshot in time. I will acknowledge, however, that, any time an aquaculture project is proposed in the Gulf of Mexico, there is siting analysis, but it's done in the National Center for Coastal Ocean Science, and it helps to support and inform sort of those spatial planning and spatial siting components to that, and so the information is considered at a later date, when those projects are proposed, and so that information is included, but acknowledging that the atlases are sort of a snapshot in time, based on that information that is available, the best available science at the time.

CHAIRMAN GILL: Patrick.

MR. BANKS: Just a quick question. Going to what Kevin had asked, and it brought the question to my mind, and, if there's an oil and gas platform -- If it's not a producing oil and gas

platform, was that a positive score for an aquaculture opportunity area or a negative? I know that some folks feel like some of these decommissioned oil and gas platforms have some potential for aquaculture, and so did you guys look at that as a positive or a negative?

MR. RICHARD: I'm not sure if it was looked at as a positive or a negative, but the idea was that these aquaculture opportunity areas, the options that were identified in the atlas, were capable of supporting three to five commercial-scale farms, and so, if there is existing infrastructure surrounding those oil and gas pieces of infrastructure, like, you know, pipelines and things like that, that might have excluded some, but maybe not all, and I can certainly follow-up with Dr. Riley and find out exactly how it was handled though and get back to you.

CHAIRMAN GILL: Other questions or comments? Kevin.

MR. ANSON: Patrick asked a similar question, but he got a little bit different answer, and so the reason I asked my question was for the issue of conflict of interest, in that, yes, they may want to be retained there for habitat for reef fish species, for instance, but there are some issues with maintenance and navigation and those types of things, and so, for those areas that otherwise would score, you know, favorably for aquaculture, but they currently have a structure there, at some point in time, that structure will be removed, and so they could, just because, or just so that they wouldn't impact other fisheries, for instance -- They could be used, I guess, as a good candidate for aquaculture, because they're already out of that, you know, use, if you will, for other competing uses.

CHAIRMAN GILL: Other questions from the committee? I have one, Andrew, and that is that, prior to the Executive Order, the agency was involved in something, and I don't remember the nomenclature, but one-stop permitting for aquaculture, and, today, is that still ongoing, and, two, is that integrated into whatever work was done, or is being done, and integrated into the current process?

MR. RICHARD: I am not familiar with that work, and I did come onboard in May of 2020, and so there are some things that do predate me, and, you know, obviously, with the court ruling on the aquaculture fishery management plan, there is no regulatory authority that we have over aquaculture in the Gulf of Mexico, but I can certainly check on that and follow-up.

CHAIRMAN GILL: I appreciate it. Thank you. Further questions

from the committee? Seeing none, Mr. Chairman, I would recommend that we take a fifteen-minute break at this time, in accordance with the agenda.

MR. DIAZ: I agree. Let's take a fifteen-minute break and start back at 10:15. Thank you, Mr. Chairman.

(Whereupon, a brief recess was taken.)

CHAIRMAN GILL: Dr. Hollensead, if you would give us the next action guide item for the Ocean Era and Manna Farms Update.

UPDATE ON OCEAN ERA AND MANNA FISH FARMS PROJECTS IN THE GULF OF MEXICO

DR. HOLLENSEAD: Thank you, Mr. Chair. Again, we'll have Mr. Richard that is going to provide a presentation, giving that update for the Ocean Era and Manna Fish Farms projects. The committee is encouraged to ask him questions and provide comments related to those projects, as it relates to the ongoing efforts discussed in relation to the previous agenda items.

CHAIRMAN GILL: Mr. Richard.

MR. RICHARD: Thank you, Mr. Chair. All right, and so, while I was here, I definitely wanted to make sure that I took the opportunity to provide an update on a couple of aquaculture projects in the Gulf of Mexico that I know are of interest to some of you in this group.

I wanted to provide an update on the Ocean Era project, the Manna Fish Farms project, and also a new and emerging integrated multitrophic project in state waters, and so I'll be happy to provide an update on those projects.

I will start with the Ocean Era/Velella Epsilon project, and so, for those of you who aren't familiar with this project, it's a single submersible cage finfish aquaculture pilot project that's proposed about forty-five nautical miles southwest of Sarasota, Florida. They plan on raising almaco jack, of the F1 variety, and that cage is capable of holding about 2,000 fish.

They are looking to complete one cycle of production, which should take approximately twelve months, and it should yield about 80,000 pounds of production, in total. The project requires federal permits from the U.S. Army Corps of Engineers and their Section 10 permit, as well as the EPA --

CHAIRMAN GILL: For those that are out in the audience virtually, we've got a technical difficulty, and we'll get it corrected and be back online shortly.

(Whereupon, a brief recess was taken.)

CHAIRMAN GILL: All right, Mr. Richard. It looks like we're back to operation here, and if you would continue, please, sir.

MR. RICHARD: Thank you, Mr. Chair. That was exciting. I did note here that the federal permits that are required for the Ocean Era/Velella Epsilon project are an Army Corps of Engineers Section 10 permit, as well as a U.S. EPA NPDES permit, and those applications were both submitted back in November of 2018.

As I noted, those applications were submitted back in November of 2018. In September of 2020, the EPA issued the NPDES permit, or the discharge permit, for the project. In October of 2022, that permit was --

CHAIRMAN GILL: Look on it as a challenge, Mr. Richard. Please proceed, sir, as best you can.

MR. RICHARD: I will give it a try, and so, as I noted, in September of 2020, the EPA issued their NPDES permit for the project. In October of 2020, that permit was petitioned for review by a group of environmental organizations. The EPA's Environmental Review Board was tasked with overseeing that review process, and the claims that were made during that permit issuance was that it violated the Clean Water Act, NEPA, ESA, and that an MMPA authorization was needed for the project to proceed.

More than a year after that, on December 9, 2021, the EPA's Environmental Appeals Board held oral arguments for the issuance of that permit, and, on May 6 of 2020, the Environmental Review Board issued their finding, denying the review in part and remanding the permit in part, and so denying the review in part found that the claims of the permit issuance violating the Clean Water Act, NEPA, ESA, and that the Marine Mammal Protection Act authorization were needed were not founded.

However, they did remand the permit in part, and what the Environmental Appeals Board asked the EPA to do was to provide clarification on the statement that was made within the permit language that said that no unreasonable degradation of the environment would occur, and there was a conflicting statement that said that that unreasonable degradation was not likely to

occur, and so the Environmental Appeals Board wanted the EPA to work to clarify what their position was on that, as a statement is needed to justify that NPDES permit, that issuance, and the ocean discharge criteria that the project cannot create unreasonable degradation of the environment.

The slide that I have here is actually out-of-date, because there was a recent update, last week, in that case, and so the EPA remedied that remand, and they clarified their position, and they actually reissued the discharge permit for the project, and so the EPA has issued that permit. In thirty days, that permit will become effective for the project.

The U.S. Army Corps of Engineers is still working on issuing that Section 10 permit, and we expect that that is something that could occur within the next month or so, and, more recently, the project proponents indicated that, within four to six months following the issuance of that permit, that they would be prepared to stock the cages out in the Gulf of Mexico.

Another project in federal waters of the Gulf of Mexico that is just starting to get underway is the Manna Fish Farms project, and this project is proposing a submersible net pen system, culturing finfish aquaculture, about twenty-three nautical miles southeast of Pensacola, Florida. The project will aim to culture red drum, F1 red drum, and a full-scale production would produce somewhere around 3.9 million pounds of annual production, and that's with all twelve cages functional.

The federal permits required for this permit are similar to the Ocean Era project, in that an Army Corps Section 10, as well as a U.S. EPA NPDES permit would be required, and so, recently, the project submitted both the Army Corps Section 10 permit application, as well as the EPA's NPDES permit application, and that occurred in April.

The EPA deemed that the permit application was complete in May of 2020, and the Army Corps does not issue an equivalent sort of determination for the project, although they have indicated that the information they need is there to proceed.

We are anticipating that this project could require an environmental impact statement, as there may be impacts that are significant in nature, and it doesn't necessarily guarantee that there would be, but there might be some that would be appropriate for an environmental impact statement to potentially be conducted for this project.

If it is an environmental impact statement that's required to assess the impacts of the project and permit issuance, NMFS would be the lead agency, under a separate section of the Executive Order, under Section 6, which directs NOAA, NOAA Fisheries, to lead the environmental review process for projects that require an environmental impact statement for projects that are in federal waters and also require two or more federal permits or authorizations, and so, in this instance, if it was an environmental impact statement, it would trigger NMFS being the lead on the NEPA for that project.

That formal NEPA determination will be made in the near future, working with the cooperating agencies and the interagency team, which consists of NOAA Fisheries, the EPA, and the U.S. Army Corps, and we anticipate that public scoping would likely take place for this project sometime in the fall.

Then a newer project that's come onto the radar, and it is in state waters, but it may be of interest to this group as well, is the Integrated Multitrophic Aquaculture Demonstration Project, and this was an RFP that was put out by the Gulf States Marine Fisheries Commission in the fall of 2021, and it is an award of about $1.8 million to support the culture of native finfish, bivalve mollusks, and macroalgae within an integrated multitrophic aquaculture system.

The focus of that project is to involve -- To undertake research, training, and education involving students, fishermen, and farmers, as well as regulators, to help inform the industry, regulators, and the public on IMTA methods and systems in warm-water environments, and so traditional and existing projects utilizing integrated multitrophic aquaculture in the U.S. and in state waters have been focused more on cold-water environments, and there's a couple of projects off of Maine and New Hampshire that utilize this method, and this would be adapted to sort of the more warmer-water environment of the Gulf of Mexico, with selection of varying species.

As I noted, this project would be in state waters of the Gulf of Mexico, and it would also explore economic viability of the project, as well as monitor environmental data throughout the iteration of the project.

The Dauphin Island Sea Lab was awarded that funding, and they're working cooperatively with the University of Southern Mississippi, the University of New Hampshire, Mississippi-Alabama Sea Grant, as well as Mississippi and Alabama Aquariums, and so it is a wide coalition of groups that are working on this

project together.

It is a multiyear project. As you saw on the slide regarding the permitting for the Ocean Era project, they take a couple of years to move through the permitting process for that, and we're hoping that this will be something that moves a little bit quicker through that process, but it will be a multiyear effort.

The project will implement and utilize the AquaFort IMTA system. As I indicated, this is a system that was developed by the University of New Hampshire, and there's actually some operational platforms, up in the Northeast, culturing steelhead as well as blue mussels, and so it's a currently a system that's already in use, and it will be adapted to being utilized within the Gulf of Mexico, in the state waters.

They're working with NCCOS on some of the preliminary siting. They are looking for areas of water between fifteen and eighteen meters in depth, in state waters of Mississippi and Alabama, and so it is on the outer edge of those state water boundaries where they're looking, but that's the general area that they're considering for this project, and they do have stakeholder outreach planned for this project in the future, and the project still is in its early and planning phases, and so there's more information that will be learned as we kind of move through that process and meet with the team on that.

This is just an example of what that looks like, and it's a pretty small setup. It's about thirty-foot-wide-by-about-fifty-foot long, and, as you can see, the kind of poles in the center there are the cages where the finfish are raised, and then on the perimeter is where you would have shellfish species, as well as any sort of seafood species that's raised as well, and the idea is that the waste from the higher-trophic-level species within this system would help to feed the additional downstream lower-trophic species within that project, and so that's just an example of what that looks like. I am happy to stop there and answer any questions about any of these projects that anyone might have.

CHAIRMAN GILL: Thank you, Mr. Richard. That was a very interesting presentation. Are there comments or questions from the committee? Leann.

MS. BOSARGE: No, and there's no comments on that, and I had one just in regard to aquaculture, before we leave aquaculture.

CHAIRMAN GILL: Go ahead.

MS. BOSARGE: I was thinking back to the in-depth picture that we pulled up, right, and that had to do with shrimp. That overlaid the shrimp trawling on the Aquaculture Atlas areas, but have we presented those in-depth drawings to like our longline fishermen, our reef fish fishermen, and overlaid their effort and gotten their feedback? I think -- It seems like hook-and-line gear -- That's going to maybe be okay, and that actually might be good for them, possibly, but I think, with longline, that may be in the same category as shrimp, where they're kind of mutually exclusive.

If you put a whole host of aquaculture pens there, I'm not sure you're going to be able to longline right there anymore, and so I was wondering, and have we presented that to those fishermen yet, or can we do that in the future, before they get too far down the EIS path?

CHAIRMAN GILL: Dr. Hollensead, do you have an answer to that? Have we done it yet?

DR. HOLLENSEAD: I do not believe we have done it yet, no, and I am looking over to Dr. Froeschke, but I don't think we have.

CHAIRMAN GILL: Are there plans to do so?

DR. FROESCHKE: Not yet, but we certainly could try to make that happen.

CHAIRMAN GILL: It does seem like a good idea, to be inclusive and appraise them of the information, so that they could provide whatever feedback may be germane. Leann, it looks like you have another question?

MS. BOSARGE: Well, I was just going to throw out a comment, that -- So I don't know if our Reef Fish has a whole lot of membership from the -- I was thinking some of those eastern Gulf longliners, and it seems like we don't have a lot of membership there, and so we just -- I think we should be cognizant. We have zero, and is that what you're saying?

When we put this in front of our APs, maybe the IFQ AP, the ad hoc one, might have some representation on it, but it might be good to go before both groups and extend a special invitation to those longliners, to just come and be in the room, and we have public comment at every one of those, and, you know, get some good feedback on the record there.

CHAIRMAN GILL: Good idea. Thank you, Leann. Dave.

MR. DAVE DONALDSON: Thank you, Mr. Chair. Thank you, Andrew, and I appreciate the presentation, and you mentioned, with the Ocean Era project, that they submitted their permits in 2018, I believe, and it's now 2022, and I know that -- I know that there were some issues with the initial permitting and whatnot, but that seems like an extraordinary amount of time to get through the permitting process, and did COVID play a role in delaying that, because it seems even longer, and it shouldn't take that long, and it just seems like an inordinate amount of time to get things going.

MR. RICHARD: Yes, a four-year process is typically a pretty extensive timeline to be able to permit something that requires an environmental assessment, which means that it has no significant impacts that were found for that proposed project. COVID definitely had a role in delaying sort of that latter half of the process, kind of drawing that out, and it was just very difficult to have sort of the required information put together to kind of move through that process, but, generally, a year, or two years, to develop an environmental assessment, or to really thoroughly analyze the effects of a project, and it could take around that time, and so COVID definitely played a role in kind of delaying that process.

CHAIRMAN GILL: If there is no further questions -- Dr. Frazer.

DR. FRAZER: Thank you. The slide before this one, if you could go back one, or maybe not, and that's okay, and it was a reference to an integrated system in the Northeast, right, and I noticed that the species involved there was steelhead trout, which isn't native to that, and one of the kind of criteria for the Gulf of Mexico projects has been that they are not introducing potentially -- Or non-native species, and how did that happen? Any idea?

MR. RICHARD: There is a lot of steelhead production that has historically occurred in the areas of the Northeast, and, as you indicated, in the Gulf of Mexico, the use of native species is something that all the industry applicants that I've talked to so far have been interested in utilizing, and the IMTA project, as it's proposed, will be using native species, like redfish, or possibly some other species there, but, because of the historical use of that aquaculture species up in the Northeast, it's something that is authorized in that region.

DR. FRAZER: As a quick follow-up, if there's an event in the

Gulf of Mexico, for example, whether it's a red tide or something like that, how does that figure into the planning and the permitting process here? Is there a plan for those types of events?

MR. RICHARD: Yes, and so every aquaculture project that is proposed undergoes an environmental review process, whether that's an environmental impact statement or whether that's an environmental assessment that occurs, and so the impacts of red tide to the aquaculture project, as well as the aquaculture project to red tide, potentially, are something that is considered during that environmental review process.

In addition to that, under the EPA's NPDES permit program, there are different plans that aquaculture operations are required to develop, and some of those are, you know, emergency action plans, best management practices, and things like that that speak to and address how those sort of issues are handled. If there was let's say a red tide bloom near an aquaculture project, how they would react, and so that's all information that is considered upfront through that environmental review process and is implemented by the farm.

CHAIRMAN GILL: Thank you. Susan.

MS. BOGGS: Well, I have a different question, but, to follow-up with Tom, I'm assuming all of this information is available to the public?

MR. RICHARD: Yes, and so all the environmental review process for the Ocean Era project -- The EPA actually has a really well-designed website that lays all that information out. As we move forward with the Manna Fish Farms project, if it's determined to be an environmental impact statement that's required for that project, NOAA Fisheries is also directed, under the Executive Order, to develop a website that publicly posts all the information about the project, so the public has an opportunity to review and inspect that.

MS. BOGGS: Yes, because I'm thinking about tropical occurrences and things like that, but what I was going to ask, and I'm probably getting in the weeds, and I know, but just food for thought, and so you don't have to answer, and we talk about these areas, these AOAs, and how they're going to be developed, but what happens once these fish are raised?

I mean, do we know what the steps are? I mean, what are they going to do? Do they come out, and are they tested, or make

sure that they're viable to go out on the market? I mean, who markets them, and is the Manna Fish Farms now considered a commercial fisherman, where they take those fish to the market? I mean, what happens after this process? I mean, how do we know that these fish are good fish?

MR. RICHARD: Speaking to the health of the fish when they are stocked, when they go into those pens, they are going to require health certifications, to make sure that those fish are healthy when they are stocked into a project. Speaking to where those products could potentially be sold, those are market-level decisions that are made by individual applicants, and those are things that are also analyzed as potential impacts in any sort of environmental review document that is developed, and so depending on where they plan on selling their products.

I will have to look and see what exactly the health requirements would be for testing seafood that's being landed, and those are seafood that are domestically produced in U.S. federal waters of the EEZ, and so I would have to look to see if there's any sort of requirements that are in place that require any sort of food safety health testing for landing of seafood products.

MS. BOGGS: So, as a follow-up to that, I mean, if these -- I don't know what to call the people that raise these fish in these aquaculture farms, but, when they are harvesting the fish from those farms, I'm assuming, and I don't know how else to say it, but do they have to meet all the requirements that a commercial fisherman has to meet, all the equipment and the things? I mean, do you see what I'm saying?

There's a lot of things, in my mind, that -- I know I may have opened a Pandora's Box, but, you know, recreational fishermen have certain criteria, and the charter fishermen have certain criteria, and, I mean, what -- Why should they get more of a benefit -- Not a benefit, but not have to meet these other requirements that other -- Because I look at this as commercial fishing, I guess is where I'm going with it.

MR. RICHARD: Mara.

MS. LEVY: I will answer that by saying we did have a Gulf aquaculture plan, right, and the court decided that the agency doesn't have the authority to regulate fishing, and, so at least in the Gulf of Mexico, in the Fifth Circuit's jurisdiction, we don't have the authority to do that, under the Magnuson Act. This council does not have the authority to regulate aquaculture like it does commercial fishing.

To the extent that there is interest in doing that, it's through legislation, right, something that, you know, would clarify that the agencies and the councils have that authority, at least in this area of the country.

MS. BOGGS: You're right, Mara, and I had forgotten that, but I just -- So, really, this is just informational, and we have no jurisdiction over this, and so I guess --

CHAIRMAN GILL: Leann.

MS. BOSARGE: However, we did have a review. We had a presentation on those sorts of items that Susan was talking about, at least the part where it's post-harvest, or right before harvest, as far as the condition of the fish, you know, for human consumption. We had a presentation from someone, and I don't remember who, Susan, to this council, and we raised some of those questions, and they actually told us, you know, that's actually something we're working through right now, and we have to figure those types of things out, you know, because ranchers -- If they grow cattle, or anything else, there is testing protocols there, before you can put that into commerce for human consumption.

Any seafood product that's imported into this country that is aquaculture, there is testing protocols, before you put it into commerce in this country, and so I think that is something that we could probably use some more feedback on. I assume it will fall under the USDA, or FDA, instead of NMFS and NOAA, but there has to be some sort of protocols there, before -- Other than just, well, it was good when we put it out there, but then we grow it for some period of time, and we need to know it's good again before we eat it.

CHAIRMAN GILL: Kevin.

MR. ANSON: Just to follow-up on Susan's question, since Andrew is here, I mean, to the extent that the agency can, you know, provide some guidance to those partners, the companies that are putting those structures in the water, when the Corps -- When they have to apply to the Corps for a permit to put said structures out, the agency has the opportunity to comment, based on the designs that are offered, relative to like MMPA and ESA-type issues, correct?

MR. RICHARD: Yes, NOAA does have a role, under the Endangered Species Act, as well essential fish habitat provisions of MSA,

to consult on those aquaculture projects that are being proposed.

CHAIRMAN GILL: I am going to wrap this section up, and Mr. Richard, will you be around Friday for Full Council, when we get back to this subject again?

MR. RICHARD: I won't be physically here, but I can certainly listen in and be able to participate in that hybrid environment.

CHAIRMAN GILL: If you would, I think that would be great, given all the questions and discussion we've had.

MR. RICHARD: Sure.

CHAIRMAN GILL: Thank you, sir.

MR. RICHARD: Thank you, Mr. Chair.

CHAIRMAN GILL: Dr. Hollensead, if you would get us the action guide on the next subject, America the Beautiful, Thirty-by-Thirty CCC Area-Based Management Sub-Committee Update.

AMERICA THE BEAUTIFUL THIRTY-BY-THIRTY CCC AREA-BASED MANAGEMENT SUB-COMMITTEE UPDATE

DR. HOLLENSEAD: Thank you, Mr. Chair. This is going to be an informational verbal report on the update for the evaluation of conservation areas in the U.S. EEZ, and that update will be provided by Dr. Froeschke. In your background material, the report has been made available for your review, and he is going to go through that and pull out some of the highlights.

That committee continues to work on that report, as part of the CCC, that sub-committee, as requested for NOAA for additional GIS analysis necessary for this project, and so the committee plans to prepare a peer-reviewed journal article later this year, based on this report, and so I will hand it over to Dr. Froeschke.

DR. FROESCHKE: All right, and so I just have a brief update on this, and just the background of this is this -- The Area-Based Management Committee, as well as the America the Beautiful report that preceded this, was part of the Executive Order 14008, which as the Thirty-by-Thirty initiative, with the goal of to conserve 30 percent of the land and sea by 2030.

The CCC, in their fall 2021 meeting, developed a committee to

provide some background work and inform this process for each of the respective regions, and so we formed a group of council staff, and we had some NMFS support, and so it was each of the eight regional management councils, and we worked collaboratively to evaluate the areas, management areas, in each of our respective regions and apply conservation metrics to them.

The first kind of goal of this is we had to develop a definition, a working definition, of "conservation area", which we did, and it's in the report. We went through all of our areas, and I serve as the staff support in the Gulf, and we applied them to the various management regions, and there are maps in the report, kind of to summarize those findings.

What we found, high-level, is that we need some additional GIS support, one to contribute to the atlas, and two to homogenize the various efforts.

There's a lot of different components to the GIS work that seem to be beyond the capacity of any one region at this time, and so the CCC, in response to the report -- They approved a motion requesting special funding from NOAA Fisheries for the amount of $50,000 for additional contracted GIS work to support this effort. To this point, we have not received the -- The CCC has not received a response from NMFS on that.

The CCC approved a motion requesting that NOAA convene a meeting with the CEQ, to discuss the report and then include the Department of Interior as well, and so the sub-committee representatives will be Eric Reid and Dave Witherell and Mike Louisi. That's going to be coming.

Since the most recent CCC in May, we continue to meet, and we had kind of a brief wrap-up on what happened there, and then we're going to have another meeting scheduled to work out two components.

One, in the conclusion, or at least my perspective was that the application of the methods of the definition of "conservation" perhaps wasn't entirely consistent among the regions, and so I think we need some additional peer review and things, to make sure that we're all doing it in a compatible way, and that may lead to some slight revisions to the areas estimated for the regions, and so I think we're going to continue to work on that.

Then we did commit to drafting a peer-reviewed manuscript for publication, based on this work, and so that's what we'll be

working towards for the October CCC meeting. That's all I have for now.

CHAIRMAN GILL: Thank you, Dr. Froeschke. Any questions or comments on this topic? Mr. Chairman.

MR. DIAZ: Thank you, Mr. Chair. Dr. Froeschke, you said that you all were using a working definition of conservation areas, and so that's the working definition that the CCC working group came up to, to actually move forward some work, and have you all ever received an official definition of conservation areas, or is that still something that is yet to be determined?

DR. FROESCHKE: Thank you for the question. The short answer is, no, we have not. The guidance we've received is that was going to be a higher-level policy decision, and so we await that guidance, and so that's why we developed our own working definition that we could use to work through the process, for our purposes, because, otherwise, we were stuck.

CHAIRMAN GILL: Patrick.

MR. BANKS: I have made this comment before on this situation, but, in reading the definition that you guys came up with, an established geographically-defined area in the Gulf of Mexico that has plan management or regulation of environmentally-adverse fishing activities, we have that all over the Gulf of Mexico.

Provides for the maintenance of biological productivity and biodiversity, yada, yada, yada, we have all that over the Gulf of Mexico. We have the entire Gulf of Mexico acreage that is a conservation area, and so I would vote that we've already got 30 percent of our area done, because the entire Gulf fits that definition.

CHAIRMAN GILL: Dr. Froeschke.

DR. FROESCHKE: That same line of thinking was raised by myself, and perhaps others, throughout. I mean, we have limitations on catch limits, and, by definition, we have the 30 percent SPR and all these sorts of other things that are in place, and that's not been resolved at this point.

CHAIRMAN GILL: Further questions or comments? Seeing none, the last item on the agenda is Other Business, and so does anyone have any other business that they would like to bring up at this time? Seeing none, we stand adjourned.

(Whereupon, the meeting adjourned on June 21, 2022.)

- - -