

1 GULF OF MEXICO FISHERY MANAGEMENT COUNCIL  
2  
3 HABITAT PROTECTION/RESTORATION COMMITTEE  
4

5 Sandestin Golf and Beach Resort Miramar Beach, Florida  
6

7 June 3, 2019  
8

9 **VOTING MEMBERS**

10 Patrick Banks.....Louisiana  
11 Doug Boyd.....Texas  
12 Glenn Constant.....USFWS  
13 Dale Diaz.....Mississippi  
14 Phil Dyskow.....Florida  
15 Paul Mickle (designee for Joe Spraggins).....Mississippi  
16 Greg Stunz.....Texas  
17 Ed Swindell.....Louisiana  
18

19 **NON-VOTING MEMBERS**

20 Kevin Anson (designee for Scott Bannon).....Alabama  
21 Susan Boggs.....Alabama  
22 Leann Bosarge.....Mississippi  
23 Roy Crabtree.....NMFS  
24 Dave Donaldson.....GSMFC  
25 Jonathan Dugas.....Louisiana  
26 Tom Frazer.....Florida  
27 Martha Guyas (designee for Jessica McCawley).....Florida  
28 Lance Robinson (designee for Robin Riechers).....Texas  
29 John Sanchez.....Florida  
30 Bob Shipp.....Alabama  
31 Lt. Mark Zanowicz.....USCG  
32

33 **STAFF**

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37 Mara Levy.....NOAA General Counsel  
38 Natasha Mendez-Ferrer.....Fishery Biologist  
39 Emily Muehlstein.....Public Information Officer  
40 Ryan Rindone.....Fishery Biologist & SEDAR Liaison  
41 Bernadine Roy.....Office Manager  
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43 Carrie Simmons.....Executive Director  
44

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3 Traci Floyd.....MDMR, MS  
4 Susan Gerhart.....NMFS  
5 Ken Haddad.....ASA  
6 Pete Harwell.....NOAA OLE  
7 Peter Hood.....NMFS  
8 Chris Horton.....Congressional Sportsmen's Foundation  
9 Dylan Hubbard.....FL  
10 Stephanie Hunt.....NMFS  
11 Bill Kelly.....FKCFA, FL  
12 Kai Lorenzen.....GMFMC SSC  
13 Kelly Lucas.....University of Southern Mississippi, MS  
14 Lawrence Marino.....LA  
15 Mike Meeker.....Manna Fish Farms, MS  
16 Carole Neidig.....Sarasota, FL  
17 Clay Porch.....SEFSC  
18 Lisa Schmidt.....Palm Harbor, FL  
19 Nick Spiliotis.....TX  
20 Joe Spraggins.....MS  
21 Jessica Stephen.....NMFS  
22 Christian Waska.....Pensacola, FL

23  
24  
25

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1 The Habitat Protection/Restoration Committee of the Gulf of  
2 Mexico Fishery Management Council convened at the Sandestin Golf  
3 and Beach Resort, Miramar Beach, Florida, Monday afternoon, June  
4 3, 2019, and was called to order by Chairman Patrick Banks.

5  
6 **ADOPTION OF AGENDA**  
7 **APPROVAL OF MINUTES**  
8 **ACTION GUIDE AND NEXT STEPS**  
9

10 **CHAIRMAN PATRICK BANKS:** We have a very short agenda for this,  
11 and we're going to run through this pretty darned quick.  
12 Members of this committee are myself, Dr. Mickle is Vice Chair,  
13 Doug Boyd, Glenn Constant with the U.S. Fish and Wildlife, Dale  
14 Diaz, Phil Dyskow, Dr. Stunz, and Mr. Swindell.

15  
16 The first item on the agenda is Adoption of the Agenda, if I can  
17 entertain a motion to accept. Motion by Dr. Stunz, and it's  
18 seconded by Mr. Swindell. Any opposition to the motion? Seeing  
19 none, the motion carries and the agenda is adopted.

20  
21 The next item of business is Approval of the April 2019 Minutes.  
22 Are there any changes to those minutes? If none, I will  
23 entertain a motion to accept those minutes. We have a motion by  
24 Mr. Swindell, and it's seconded by Dr. Stunz. Moving on to the  
25 third item, Dr. Mendez-Ferrer will take us through the Action  
26 Guide and Next Steps.

27  
28 **DR. NATASHA MENDEZ-FERRER:** Thank you, Mr. Chair. For this  
29 session, we only have one item, and this is Agenda Item IV. Dr.  
30 Lucas will be presenting about Manna Fish Farms' plans for  
31 finfish aquaculture in the Gulf of Mexico, and she will go over  
32 the species of interest, the project design, and the status of  
33 the permits. For this session, the council members can ask  
34 questions and make recommendations, but we will not be voting.

35  
36 **CHAIRMAN BANKS:** Thank you. Dr. Lucas, welcome back to the  
37 council.

38  
39 **MANNA FISH FARMS, GULF OF MEXICO FINFISH AQUACULTURE OPERATIONS**  
40

41 **DR. KELLY LUCAS:** I want to thank you all for allowing us to  
42 come present to you all today. It's good to see some of you  
43 that I miss seeing your faces, and, some of you that I didn't  
44 know when I left, I look forward to talking with you.

45  
46 I am Kelly Lucas, and I am the Director of Aquaculture of the  
47 Thad Cochran Marine Aquaculture Center at the University of  
48 Southern Mississippi. Before I begin, I just wanted to say that

1 Senator Cochran passed away this previous week, and today was  
2 his memorial service. He was a huge supporter of aquaculture  
3 and research and education, and I am very honored to have my  
4 center named after him, and my condolences to his family.

5  
6 For this project, I will be acting as the agent, and I'm going  
7 to introduce you to our team as well as introduce you to the  
8 applicant, who is here as well.

9  
10 Just a general overview for you. Like I said, I'm going to  
11 introduce you to the team, and we're going to talk about the  
12 applicant and introduce you to Manna Fish Farms and provide you  
13 with some information that you saw in the presentation kind of  
14 about the timeline, where we are, what remains to be done, and  
15 we'll talk about the site requirements and a little bit about  
16 the species information, how we did the site screening, and go  
17 over some of the cage design and draft information for that and  
18 talk a little to you about the production as well as feed usage.

19  
20 To begin, I'm going to ask -- My team is here, and so, when you  
21 get to the point where you ask questions, I am happy to let them  
22 address you. I think most of them are in the back of the room,  
23 standing up, but Donna Lanzetta is the CEO and Founder of Manna  
24 Fish Farms. She's in the very far back of the room there.

25  
26 Mike Meeker is COO of Manna Fish Farms, and he is also the  
27 inventor of the Storm Safe Submersible Cage, and he is here, and  
28 he gladly will can answer any of your engineering-related  
29 questions that you have.

30  
31 Reg Blaylock is with us today, and he's the Assistant Director,  
32 and he's helping a lot with the biology-related information, and  
33 was unable to be here, but he with the Hydrographic Science  
34 Center that was responsible for the baseline environmental  
35 survey work. Stephanie Otts is with us, and Stephanie is from  
36 the University of Mississippi, and she also represents  
37 Mississippi-Alabama Sea Grant as well as the Sea Grant Law  
38 Center, and she is responsible for the outreach related to this  
39 project.

40  
41 Michael Chambers is with the University of New Hampshire and New  
42 Hampshire Sea Grant, and he was unable to be with us, and his  
43 team will be responsible for modeling of the cages at New  
44 Hampshire. Ken Riley, James Morris, Lisa Wickliffe, and Jon  
45 Jossart are with the NOAA National Center for Coastal and Ocean  
46 Science, and they're a part of this project team, and Ken Riley  
47 is here with us today. Dan Warren with P&C Scientific, LLC is  
48 our marine archeologist for the program.

1  
2 NOAA NCCOS was extremely helpful, as you all will see through  
3 the presentation, with all the siting and screening-related  
4 information.

5  
6 Manna Fish Farms is located in New York, and they are committed  
7 to being sustainable and transparent through this process as  
8 well as best aquaculture management practices, which is a global  
9 program for certification that you subscribe to. They are  
10 currently permitting finfish farms here in the Gulf of Mexico as  
11 well as in the Northeast, off the eastern Long Island Sound of  
12 New York, and I did have somebody point out a typo to me today,  
13 and so please, if you're looking at the presentation and you're  
14 going to Manna's website, it is mannafishfarms. I did leave off  
15 an "a", and I apologize.

16  
17 I also would be remiss not to point out a lot of the agency help  
18 that we had here. Jess Beck, who is the NOAA Aquaculture  
19 Coordinator from the Southeast Science Center has been an  
20 extreme help, and Tyler with the EPA, and Brad Andrews with the  
21 Corps of Engineers has been an extreme help, as well as Portia  
22 Sapp with the Florida Department of Agriculture. It's been an  
23 extreme help in getting us through this process.

24  
25 Here is just a timeline of past events and how we got to where  
26 we are, and so some of which you will see. The University of  
27 Southern Mississippi was awarded a grant from the Gulf States  
28 Marine Fisheries Commission, and, as part of that grant, one of  
29 the things we were doing is looking at permitting a commercial-  
30 scale demonstration aquaculture farm in the Gulf of Mexico. We  
31 were awarded that in June of 2018, and one of the first things  
32 in the grant we were supposed to do is find an applicant, the  
33 person that was going to run this finfish farm in the Gulf of  
34 Mexico.

35  
36 Actually, as I was preparing to go out and make some contacts, I  
37 got a call from a mutual person on this grant, Michael Chambers,  
38 who said, hey, I've been working with Manna Fish Farms, Donna  
39 Lanzetta, and we're going to be testing some of their cages in  
40 our aquaculture site, and I think she's interested in doing  
41 this.

42  
43 After a lot of conversation, we were committed to a lot of the  
44 same goals and being transparent and being sustainable and  
45 really helping to educate throughout this process, and so we  
46 signed the MOA with Manna Fish Farms in August of 2018. Shortly  
47 after that, we discussed with NOAA's team about the farm areas  
48 of interest, and so you'll see a little bit about the siting

1 criteria that we asked them for when we went out to screen for  
2 what areas we wanted to site this farm in. They did this  
3 analysis for us in the fall of 2018.

4  
5 In that timeframe is when the judgment came down that basically  
6 said that NOAA should not regulate aquaculture through the  
7 Magnuson-Stevens Act, and that final judgment was issued in  
8 November, and so we did have a lot of discussion about how do  
9 you proceed, knowing this, because we were operating previously  
10 under the Gulf aquaculture permit rule, and here we are now in  
11 the situation where, as somebody pointed out to me, we're now no  
12 different than any other region.

13  
14 Well, we are. We may now be operating under the same rules as  
15 every other region, and that kind of leveled the playing field  
16 there, but we had something that was unique. We had a process,  
17 because the council had started the GAP, the Gulf Aquaculture  
18 Permit, Plan, and that meant that the agency work was being  
19 done, and all of those conversations were being had. They had  
20 formed an interagency working group, and they were communicating  
21 with one another, and, luckily for us, even after the judgment  
22 came down, they were willing to keep that synergy going and find  
23 a way to work through this.

24  
25 Whereas we're now on a level playing field, I will say we're  
26 unique, in that we have that line of communication going on, and  
27 so we've been working with them, and we continued some parts of  
28 that plan, even though it wasn't necessary anymore.

29  
30 We did go ahead and complete the pre-application checklist that  
31 had been created by NMFS, and we used that to supply the  
32 information for the interagency briefing, which we held in  
33 December of last year, and, during that phone call, and you're  
34 on the phone with all the agencies, and NOAA was there, the EPA,  
35 the Corps of Engineers, BSEE, BOEM, all of your Department of  
36 Defense agencies, really the whole alphabet, the Fish and  
37 Wildlife Service, and a little bit of everybody was on the call.

38  
39 As you will see moving forward, the site we chose is in a  
40 military area, and so we did request some information, on that  
41 phone call, from the Department of Defense as to if they would  
42 be willing to allow aquaculture in that area, and they went  
43 through the process at that time, since we asked the question,  
44 of looking to see if it was going to be okay.

45  
46 As you will see, they issued the clearance from the Department  
47 of Defense of using this area in February, which really allowed  
48 us to move forward with a baseline environmental survey, which

1 is all the bathymetric surveys, and so just kind of a how we got  
2 to where we are.

3  
4 There is still a lot of things we have to do, and so we are --  
5 We just finished all the bathymetric survey stuff last week, and  
6 they're in the process of processing it all today, and I've been  
7 hearing updates, and so we surveyed 724 acres, and so we need to  
8 find 120 acres within that seven-hundred-plus that this farm can  
9 operate on, and so we're looking to do that.

10  
11 We still have to do the effluent modeling, which will not be  
12 done by us. That is through the EPA and NOAA. What we will do  
13 is supply them with information about our feed and the amount of  
14 feed we plan to use and the supplier, and they will model it on  
15 their end.

16  
17 The structural modeling is performed by us, and that will be the  
18 University of New Hampshire through some guidance that has just  
19 recently been issued by NOAA about structures and things that  
20 need to occur as part of this, and they will be modeling not  
21 only for your everyday conditions, but for storm events, and  
22 they do have Hurricane Michael storm information, and so they  
23 can model for that storm event as well.

24  
25 They will start that structural modeling after we actually pick  
26 the site, so that we know exactly what the conditions are in the  
27 area for them to use, and we're going to also take a little bit  
28 more current information. From what we understand, the area  
29 that we're looking at has higher currents in September, August,  
30 and the October area, and so we want to actually record those  
31 currents over that timeframe and put that into the modeling as  
32 well.

33  
34 We still have to go and apply for all the permits, and so the  
35 EPA's permit, the Corps of Engineers Section 10 permit, and then  
36 get the Coast Guard authorization for navigation.

37  
38 Here is a little bit about the scale of the project. When we  
39 started, and I told Ken -- I was like, the Louisiana/Mississippi  
40 line all the way over through the Florida Panhandle, and right  
41 in the middle of Mississippi, and I thought that was a good  
42 location there. Our depth requirements are fifty to fifty-five  
43 meters, and so that is based on the cage. If you want to ask  
44 questions to the engineer, you can, but you want to be able to  
45 submerge the cage far enough down and still have enough water  
46 depth below the cages so that, when a storm comes through, that  
47 you are mitigating for those waves.

48



1 We had a couple of preferred ports, and the object there was to  
2 minimize the farm to the port distance, but trying to avoid user  
3 conflicts and habitat conflicts and things of that nature, and  
4 getting into port as well. We had some basic requirements for  
5 water temperature and current speed that is needed for  
6 aquaculture, and we did expand our species list after the Gulf  
7 Aquaculture Permit moved away, and so there was a whole bunch of  
8 species that we were considering. We have since narrowed that  
9 down, and a lot of that is based on biology and what is known  
10 about species and the availability of species in our area.

11  
12 Red drum is the species that rose to the top. There is local  
13 brood stock available for red drum, from Florida, and genetics  
14 is done through tissue samples and fin clips and can be  
15 retained. You can move the F1 progeny into the cages, and so  
16 having that species that was already local and available, and  
17 red drum is one of the most known, in terms of aquaculture  
18 especially, in the U.S.

19  
20 Then I think you all heard a little bit about almaco jack when  
21 Neal Sims' group was here, and that's another species that could  
22 be a contender, but the production levels for the fingerlings  
23 probably isn't large enough just yet, and so maybe something in  
24 the future, and so there is still a list of species that can be  
25 available, but that is the species that we're moving forward  
26 with.

27  
28 In terms of looking at siting, as you can see by this map, some  
29 of the criteria that I told them was looking between fifty and  
30 fifty-five meters from the Mississippi/Louisiana line all the  
31 way over through the Panhandle. What you're seeing here is the  
32 suitability, and so red is not very suitable, moving towards  
33 blue, which is suitable, and you will see kind of all these  
34 things they had to consider, and this is not the whole list that  
35 they had to consider. They probably cannot fit the whole list  
36 on this screen, but these are the ones they get the most  
37 questions about, and so here is a list of the data that was  
38 considered in this project, and then their siting model, of  
39 course, is on the side, and I will show you how it kind of works  
40 here.

41  
42 Again, Ken Riley with NOAA is here to answer any questions about  
43 their siting tool, but, if you see the gridded area in the  
44 screen, and this would be like your area of interest for your  
45 farm, and you have that submarine cable moving across, and  
46 clearly that now becomes a less-compatible area, because that is  
47 a conflict area, and so they do this data layer after data  
48 layer, to get to what is the relative suitability.

1  
2 Just some maps for you all's convenience there with your  
3 navigational channels as well as some of the other things, like  
4 your disposal sites that are included, and the black ring that  
5 you're seeing there is kind of the thirty-nautical-mile distance  
6 to port ring into Pensacola. The Sites A through E there, we  
7 kind of worked with siting to move through which one may be the  
8 most conducive.

9  
10 Again, this is just another look, and this actually added the  
11 military operating zones, and so you can see this is just an  
12 operating zone, and it's not the danger no-go zone, and so this  
13 allowed us to have the conversation with the Department of  
14 Defense about if this would be allowable in their area. Again,  
15 a map that a lot of us are more common with seeing, and you can  
16 see some of the, in this case, artificial reef designated areas  
17 near the site.

18  
19 This is the vessel traffic assessment, which is part of the  
20 reason that Site E was more preferred than some of the others,  
21 and you can clearly see Site B or Site A might have a higher  
22 problem with some of the traffic in the area, versus Site E,  
23 where there is no tug or tow traffic moving through the area.

24  
25 Here is another map looking at the artificial reef areas that  
26 you see, and you can see Site E getting close to -- I think  
27 that's the bar kind of right there on the edge. This is the  
28 shrimp trawl effort from 2004 to 2013 for all those sites, and,  
29 again, in this case, this is the sum, and so the sum of how many  
30 trawls were in those areas from 2004 to 2013, and, on the corner  
31 kind of area of the actual scanned bathymetry there, you can see  
32 two, and so a couple of areas where there was two shrimp trawls  
33 within that 2004 to 2013 area.

34  
35 These are some of the preliminary results, and this was our  
36 multibeam that was taken in April, and you can see a slight  
37 ridge through the location. The black ring that you see was the  
38 area that we were surveying around, and that was kind of Site E.  
39 However, I will say that Site E hasn't been finalized, and so we  
40 hadn't finalized that area, but that was just what we used when  
41 we were doing the bathymetric survey, to make sure we buffered a  
42 good distance around the area.

43  
44 This your Storm Safe Submersible Cage System and the engineering  
45 plans on that system and just a couple of images for you to see  
46 kind of what it looks like when the thing is being constructed.

47  
48 This is the Storm Safe Cage site plan. A little bit about the

1 cages, we're planning on using eighteen of these, and they are  
2 9,000-cubic-meter cages, and we are planning to arrange them  
3 kind of in this circular array. The ring that you see, the  
4 black circle in the middle, because we've had some questions  
5 about this, that's just a circle.

6  
7 It is not a structure, and there's nothing there, but it's just  
8 to show that we arranged those cages in a circle, and so there  
9 would be open flow there, so that boats could go through, and  
10 you could have a feeding barge in the middle that's feeding, and  
11 you want to be able to access through that area. The cages are  
12 galvanized steel. Like I said, the nets actually do submerge.  
13 They raise and lower, and they can do so for either the  
14 conditions, water currents, and/or for storms.

15  
16 We will be doing the structural modeling after we select the  
17 area, and so I think the first plan is to look at deadweight  
18 anchors and see if we can accomplish maintaining the structures  
19 under deadweight anchors, and, if we can't, then we would move  
20 to an embedment anchor.

21  
22 Here is our production timeline, with some feed usage in there,  
23 and I will say there is multiple ways to calculate feed usage,  
24 and so this is just kind of a first pass at it, and these  
25 numbers may likely get refined as we move forward, but, in year-  
26 one, we'll be putting out two cages, and so, in years-two  
27 through three, we're looking at four cages, and so the number  
28 that you see in the middle was to help us estimate the feed  
29 based on stocking, and so you stock two cages, and then you wait  
30 a while and stock another two cages.

31  
32 Years-three through four, where we have twelve cages out there,  
33 you would have some stocking scenario where you stock four, and  
34 then you stock four later, so that you are harvesting kind of  
35 throughout, and the same thing for the final, where we get to  
36 the eighteen cages.

37  
38 Just a little bit more about the feed information. Like I said,  
39 this will probably get refined, and we have been talking to  
40 companies about feed suppliers, and it will be some kind of a  
41 slow-sinking pellet with 35 to 50 percent protein and about 10  
42 percent lipid. There are some actual red-drum-based diets on  
43 the market, and so we're looking at those first, and so that  
44 information will get refined as we submit that to the EPA.

45  
46 We plan on -- In the beginning, when we only have two cages out  
47 there, we might be feeding by vessel, maybe by hand or through  
48 some device there, and then you're going to move to some type of

1 feeding barge or a feed buoy system.

2  
3 What are the next steps? Well, we're here to do a stakeholder  
4 event after this, and we appreciate the council allowing us to  
5 piggyback on this, and we also want to hear from you. We know  
6 what we know, and we don't know what we don't know, and so you  
7 all represent the stakeholders, and you all are stakeholders,  
8 and so you may know more information about the site or things we  
9 need to consider, and so we certainly want to hear from you as  
10 well as hear from the others at this event afterwards.

11  
12 We have completed the baseline environmental survey for now,  
13 and, like I said, they are completing their processing, and we  
14 will have a marine archeologist that looks at it first, and then  
15 we will start trying to finalize where the 120 acres is within  
16 that 700 acres that we're looking at. After that gets finalized  
17 is when we start the structural modeling, and, prior to that, we  
18 intend to talk to NOAA Protected Resources, especially about  
19 materials and gear and structure-related items that we need to  
20 consider, so that we're able to deal with marine mammals and  
21 marine turtles in that area.

22  
23 We are going to provide all of our feed information to the EPA,  
24 so that they can do all of their effluent modeling that needs to  
25 be done for the discharge permit as well as submit for the  
26 permits, and, in order to submit for those permits, and I know  
27 we didn't talk about a couple of things, which everybody always  
28 brings up, but, as part of the permits to the EPA, as well as  
29 the state's best management practices for the Department of  
30 Agriculture, there's a lot of plans, and one of those plans is  
31 an environmental monitoring plan.

32  
33 That plan will include the baseline sampling that you do before  
34 you put one fish in the water at all, and then, after that, you  
35 will set how you monitor, how often, the frequency, and all of  
36 that, and that will be worked through the EPA, and so that has  
37 to occur before you put a fish in the water, and so that will be  
38 a plan.

39  
40 As part of that plan, you also will have your quality assurance  
41 plan that goes along with it, how do you make sure that the data  
42 is controlled for and the quality assurance is there, and so  
43 that will be attached to that plan.

44  
45 Other plans are the best management practices plan, which both  
46 the EPA has as well as the Department of Agriculture, and so we  
47 will have those two plans. Some of them have similar stuff, and  
48 some of them require more information than others, as well as

1 all of our emergency response plans. An emergency response is  
2 not just how you deal with a hurricane, but it's how you deal  
3 with escapes, how you deal with a spill coming off your boat,  
4 how you deal with somebody who runs into your equipment, and so  
5 all of those things will be included in kind of the emergency  
6 response plan.

7  
8 Other plans that you will operate under is a facilities  
9 operations and management plan and your maintenance. You want  
10 to make sure that you are training your staff and that you're  
11 taking care of maintenance, your basic operations, all your  
12 biosecurity, and your health management, which will require that  
13 you have an aquatic vet that works with you. There's a lot of  
14 plans, and so I know there is still a lot to be done, and so I  
15 would really like to hear from you all and answer questions that  
16 you all have, so that we consider these things moving forward  
17 with the farm.

18  
19 **CHAIRMAN BANKS:** Thank you, Dr. Lucas. Any questions for Dr.  
20 Lucas and her team? We have some time for some questions. Mr.  
21 Diaz.

22  
23 **MR. DALE DIAZ:** Thank you, Dr. Lucas. That was a good  
24 presentation. How long does it take to bring red drum to market  
25 from the time you put them out as fingerlings until the time you  
26 can harvest them?

27  
28 **DR. LUCAS:** Less than a year, and it depends on the size that  
29 you put them out as fingerlings, but we're looking at either  
30 stocking them out as fifty-gram fish and pulling them out when  
31 they are 1.4 kilos, and so you could get that done in a year.  
32 Another option would be to have a nursery net inside the cage,  
33 where you move the fish out at a little smaller size, maybe a  
34 thirty-gram fish, and so it may take them a little bit longer,  
35 but, basically, the production is you will stock and pull out --  
36 You could stock and pull out within a year.

37  
38 **CHAIRMAN BANKS:** Ms. Guyas.

39  
40 **MS. MARTHA GUYAS:** I've got a couple, Dr. Lucas. Is it just now  
41 red drum and almaco and striped bass is off the table at this  
42 point, and the other species, or are you maybe thinking striped  
43 bass, too?

44  
45 **DR. LUCAS:** Well, the only one we're -- Striped bass is  
46 certainly one we were considering, because that is the species  
47 that Manna is looking at in the Northeast, but it's not a  
48 species that we have done any work on. There's actually a list

1 of species, but we are moving forward with red drum.  
2  
3 **MS. GUYAS:** Okay, and you said the red drum would be from  
4 Florida, and we can talk about striped bass, and I might have  
5 some insight into that one a little bit, and maybe some  
6 challenges for that one, from what I understand.  
7  
8 **DR. LUCAS:** There were challenges, I think, at the higher level  
9 with that, and so that's part of why it moved further down the  
10 list of species.  
11  
12 **MS. GUYAS:** Yes, but, if you did that, I assume it would be  
13 Gulf?  
14  
15 **DR. LUCAS:** Yes.  
16  
17 **MS. GUYAS:** Perfect. Okay. You are probably all over this,  
18 because you've been talking to Portia, but you will have to get  
19 a permit from FWC as well.  
20  
21 **DR. LUCAS:** Yes, and, as I understand, Portia runs the CZMA-  
22 related aspects of the -- Yes, we've been talking to Portia.  
23  
24 **MS. GUYAS:** I will stop there for now.  
25  
26 **CHAIRMAN BANKS:** Dr. Frazer.  
27  
28 **DR. TOM FRAZER:** Thank you, Kelly. That was a good  
29 presentation, and I was going to hit the striped bass thing too,  
30 but we'll follow-up on that later. When you provide the EPA the  
31 data for the NPDS permits, do you know what you're shooting for?  
32 Do they give you a criteria of any kind?  
33  
34 **DR. LUCAS:** We have a list. I mean, they do have some basic  
35 kind of information that they're looking for, in terms of you're  
36 going to survey the benthic environment, you will survey the  
37 water chemistry parameters and stuff, but they don't have kind  
38 of a layout of what the plan should look like, and so they did  
39 supply some of information of these are the type of things that  
40 we are looking for, but they haven't specified the details of  
41 what you need to provide.  
42  
43 **CHAIRMAN BANKS:** Ms. Bosarge.  
44  
45 **MS. LEANN BOSARGE:** I just wanted to say thanks. We get a lot  
46 of guest presentations, and that was impeccable, it really was.  
47 It was very thorough, and you know me. I ask a lot of  
48 questions, but you really did. I mean, you gave us almost all

1 the information that we could have wanted, and I just wanted to  
2 say thank you for that, and thank you for looking at the shrimp  
3 trawl effort. I really appreciate that. As you said, it's not  
4 an area that is heavily trawled, and so, as far as the shrimp  
5 industry goes, we like that site. That will work for us. I was  
6 wondering. Are you going to put any lighted buoys out of any  
7 sort for night traffic? Are you thinking about that?

8  
9 **DR. LUCAS:** I think the Coast Guard -- We will have to meet the  
10 Coast Guard's requirement for this.

11  
12 **MS. BOSARGE:** So they will require that. Okay. Great. Then we  
13 had some guidelines on medications that could go into the feed  
14 when we had an FMP, and so that's kind of out the window now,  
15 and so what are the new guidelines? Is there a set of  
16 guidelines that you all follow? Is it through a different  
17 agency or something like that?

18  
19 **DR. LUCAS:** Yes, there are some federal regulations and what is  
20 allowed, in terms of how you can treat fish, and one of the  
21 things about fish is you have to show what disease a fish has  
22 before you are even allowed to treat it, which is a little bit  
23 different than how it operates in other industries, and so we  
24 will follow all the federal guidance that currently exists for  
25 that, and, like I said, we will have an aquatic vet that  
26 actually looks at what needs to be done.

27  
28 **MS. BOSARGE:** Okay. Then will the fish be -- I don't know if  
29 this is the right word, but will they be sterile? Are you going  
30 to put fish out there that, if they escape, they could make  
31 babies?

32  
33 **DR. LUCAS:** They could, and so it's local brood stock for that  
34 reason, if there was a chance of escape. That would be a local  
35 genetically-diverse fish, and so you're sourcing local brood  
36 stock and trying to maintain some diversity in the brood stock  
37 for that.

38  
39 I know that Florida has some things with how they operate  
40 genetics, and so we will stick to all of those guidelines for  
41 them, since there isn't currently necessarily any federal-level  
42 guidance.

43  
44 **MS. BOSARGE:** Okay, and so those are like genetic engineering  
45 guidelines that Florida has?

46  
47 **DR. LUCAS:** There is no genetic engineering. We will not be  
48 doing any genetic engineering, but they do have some information

1 out there for genetics.

2

3 **MS. GUYAS:** Like they have got to be F1, for example.

4

5 **CHAIRMAN BANKS:** Mr. Boyd.

6

7 **MR. DOUG BOYD:** Dr. Lucas, thank you. Obviously, you all have  
8 done a lot of due diligence. This is an incredible presentation  
9 and lots of detail, and Leann basically asked my question. I  
10 was going to ask about bioengineering, but, again, you have  
11 obviously done your homework, and you're going to use brood  
12 stocks that is natural genetics rather than bioengineered, and  
13 so thank you for your presentation.

14

15 **CHAIRMAN BANKS:** Traci.

16

17 **MS. TRACI FLOYD:** Thank you, Dr. Lucas. As you know, in  
18 Mississippi, we have a small commercial red drum fishery, and  
19 it's on a quota system, and it's staggered throughout the year,  
20 just to keep the price steady. Do you have any thoughts on what  
21 this might do to the price when your product reaches the market?

22

23 **DR. LUCAS:** Thanks. Mississippi and North Carolina actually  
24 both have some fishery, which together is less than 200,000  
25 pounds total, and so that's like 50,000 fish, if you looked at  
26 it as a four-pound fish. We have looked at that.

27

28 The rest of the red drum coming in is imported, and so it is  
29 aquaculture, and so aquaculture is out there, and that is where  
30 -- That is probably the majority of the fish we eat in our  
31 restaurants, is imported fish, and so I can't -- I can look at  
32 some economic modeling, to see what it may do. I can say what  
33 it's done in other areas, where, even in the salmon industry,  
34 where you did see kind of a dip initially, and then the salmon  
35 harvesters started marketing themselves really well, and now  
36 they command a premium price. For red drum, it could be  
37 something similar to that.

38

39 I think there's a lot of different scenarios of what could  
40 occur. The one thing I know will occur is that there will be  
41 more red drum, and there will be more domestic production of red  
42 drum, and so it gives all of us more opportunity to eat that  
43 species, and so I do know that, but we can look at some economic  
44 modeling and see.

45

46 **CHAIRMAN BANKS:** Dr. Stunz.

47

48 **DR. GREG STUNZ:** Thanks, Kelly. As the others said, it was a



1 great presentation. I had a separate question for you. The  
2 pictures that you showed when you had the eighteen array of  
3 pens, and they're above water, obviously, and so you can see  
4 them, again, but that octagon shape will be below the surface of  
5 the water when it's deployed then?  
6

7 **DR. LUCAS:** You will always see some structure at the top. You  
8 will always see that, but the nets themselves are --  
9

10 **DR. STUNZ:** They're below. So the picture you showed is  
11 deployed then, the pictures you had there?  
12

13 **DR. LUCAS:** Yes.  
14

15 **DR. STUNZ:** My real question though is, obviously, you will have  
16 to follow the Coast Guard for lighting and obstruction and all  
17 of that, but are you restricting how close recreational  
18 fishermen can -- You're, obviously, creating, probably, a nice  
19 FAD, a super-duper FAD, that is fed, and so are you restricting  
20 the distance that recreational anglers can --  
21

22 **DR. LUCAS:** That is actually one of the things we can't  
23 restrict. We did talk with the Corps about this and the EPA.  
24 The way it is now, there is no kind of restriction. If you  
25 think about a rig or something that's off, don't tie up and  
26 don't do that, and you want to make sure they know, but there is  
27 no way to really restrict that now.  
28

29 We hope to talk with the recreational and commercial fishing  
30 industry, and we do think we will attract fish, and we do think  
31 it will be a good opportunity for them to even catch some more  
32 fish, but make them aware of where lines are and things like  
33 that, and so they risk -- They won't risk running into us, and  
34 we won't risk being in each other's way.  
35

36 **CHAIRMAN BANKS:** Ms. Bosarge.  
37

38 **MS. BOSARGE:** Just out of curiosity, we've had your presentation  
39 and one other recently on siting and aquaculture, and both of  
40 them ended up choosing areas off of Florida, which it looks like  
41 you will probably do, and is there an issue as you go west, as  
42 you were looking through all of this? Do the oil and gas  
43 industry have a big issue if you're on top of their lease block?  
44 I was just wondering. What is it that seems to make Florida the  
45 way to go?  
46

47 **DR. LUCAS:** Well, seeing as I'm from Mississippi, I was really  
48 rooting for this to be in Mississippi, and we did find some

1 areas kind of in the western south of Mississippi, kind of south  
2 of Alabama, and the distance from the port made it really  
3 difficult, in terms of economics, and so, whereas we did find  
4 some suitable habitat, it was just way too far offshore to  
5 logistically run operations and safety of your employees, and  
6 others as well, in that distance that we would be off there.

7

8 **CHAIRMAN BANKS:** Any other questions? Mr. Swindell.

9

10 **MR. ED SWINDELL:** Thank you, Dr. Lucas. It's good to have you  
11 here. I'm sorry that LSU beat Southern Miss, but that's the way  
12 it goes, but I'm not real sorry.

13

14 **DR. LUCAS:** He is only partially sorry.

15

16 **MR. SWINDELL:** I do have a couple of questions. What kind of  
17 netting -- I assume you're using netting around the frame.

18

19 **DR. LUCAS:** Yes.

20

21 **MR. SWINDELL:** How heavy is the netting? Is the netting going  
22 to last?

23

24 **DR. LUCAS:** I am so glad that you asked that question, and I'm  
25 glad the engineer is here, and he's probably working his way up,  
26 hopefully, if not before I said it, but now to answer those  
27 questions.

28

29 **MR. SWINDELL:** While he's coming up, do you have something in  
30 New York? Do you have something operating up there now?

31

32 **DR. LUCAS:** No. She is currently going through the permit  
33 process in New York as well.

34

35 **MR. SWINDELL:** Okay, and so you don't have one in the water yet?

36

37 **DR. LUCAS:** He does have cages in the water, but not in New  
38 York, but I will let him answer your question. This is Mike  
39 Meeker.

40

41 **MR. MIKE MEEKER:** Hi, everyone. The question about the netting,  
42 that's an excellent question. In the industry, it's evolving  
43 all the time, and so we have Kevlar-based netting that is shark-  
44 proof, in effect, and seal-proof, and there is a copper-based  
45 type of netting, and so there's lots of options, and they are  
46 all proven in ocean conditions.

47

48 **MR. SWINDELL:** How are you keeping this thing floating?

1  
2 **MR. MEEKER:** That's another good question, because it wouldn't  
3 be good if it sunk. If you look at the -- I can explain the  
4 design, real quick. There is vertical spars, kind of like an  
5 oil rig, and there is three different chambers in each of those  
6 vertical spars, and so the variable buoyancy is in the middle  
7 and the bottom. The top part of it is permanent buoyancy, and  
8 so it's calculated very carefully to make sure that, even with  
9 growth on the nets or anything, there is lots of reserve  
10 buoyancy to keep it floating, and so did that answer your  
11 question?

12  
13 **MR. SWINDELL:** Yes. How are you going to make this system  
14 stable in the water column?

15  
16 **MR. MEEKER:** Well, because the lower buoyancy chamber -- It's  
17 like the keel of a ship. There's a lot of weight down there,  
18 and so the cages have been in the water for over four years, and  
19 it's proven even in ten or twelve-foot waves, if we don't sink  
20 it, that it's very stable. It just bobs a little bit and hardly  
21 moves.

22  
23 **MR. SWINDELL:** Do you anchor it?

24  
25 **MR. MEEKER:** Yes, for sure.

26  
27 **MR. SWINDELL:** That was the point of my question.

28  
29 **MR. MEEKER:** That's a great point.

30  
31 **MR. SWINDELL:** Are there several anchors or one anchor?

32  
33 **MR. MEEKER:** What has been tested, both at UNH and my personal  
34 experience, is, off of each one of the spars, there is a single  
35 anchor, and, as Kelly said, it could potentially be a deadweight  
36 anchor or an embedment anchor, whichever works the best, and so,  
37 off of each spar, if you draw a transect line from the center of  
38 the cage through the spar, there is one anchor for each of the  
39 spars, and so there's not a lot of rope. There's not a network  
40 of rope, which contributes to not ensnaring whales and that,  
41 which has become an issue.

42  
43 **MR. SWINDELL:** Well, and also the amount of area that you're  
44 taking up from fishing around it and so forth, and I was just  
45 wondering about all of that scenario, and that's a lot of area  
46 that you're going to have to be worried about people fishing and  
47 getting hung up with potentially recreational fishing gear and  
48 so forth.

1  
2 **MR. MEEKER:** Well, it's going to be interesting to see how that  
3 works out and how close people can come to fish. In my  
4 operation, I have found, and I'm not saying that's how it's  
5 going to end up, but, in my operation, people can come within  
6 twenty-five meters to fish. That is the regulation, and it's a  
7 Fish and Game regulation, and what I did was I just said to  
8 people that, if you want to come closer, instead of dropping an  
9 anchor and potentially getting tangled up, then just come up and  
10 tie up on the lee side of the cages.

11  
12 Now, that's not generally done, and so the answer to that is the  
13 fishing is almost certainly going to be better. In every case  
14 around my place, and in every case that I know, the fishing is  
15 better, and so it will be up to the NOAA and the Army Corps to  
16 come up with what they think is a reasonable distance that the  
17 anglers can come up.

18  
19 **MR. SWINDELL:** Are you able to lower this thing when stormy  
20 weather is coming?

21  
22 **MR. MEEKER:** Yes, and I just wanted to clarify one thing for the  
23 other gentleman's answer. This whole structure, when it's  
24 submerged, is down. That includes all the steel structure, the  
25 walkways and everything, and so it's all submerged, and the  
26 beauty of it is, in a storm situation, and we're modeling it for  
27 that, and I've got a lot of experience already, you generally  
28 say that the wave height -- Say it's a thirty-foot wave. You  
29 want to go at least thirty feet down from the static water  
30 level, and then you're generally believed to be out of about 90  
31 to 95 percent of the energy from that wave.

32  
33 That's why Kelly said that we need fifty meters, and so the  
34 actual vertical spars are fifteen meters deep, and so we want to  
35 be able to go deep enough in those storm situations to get out  
36 of that energy, 90 to 95 percent of the wave energy, and still  
37 have some room on the bottom below it.

38  
39 **MR. SWINDELL:** Okay, and so you're proposing that you're  
40 eventually going to have eighteen of these cages in the water,  
41 and is that right?

42  
43 **MR. MEEKER:** Yes.

44  
45 **MR. SWINDELL:** So that's going to take up a pretty good area,  
46 and it's a lot to manage, and so I am glad to see that you're  
47 looking at fish that are native to the Gulf of Mexico, and I  
48 think that's a good -- That makes me feel a lot more comfortable

1 than bringing something else in that shouldn't be here, and so  
2 good luck to you. That's all I can tell you.  
3  
4 **MR. MEEKER:** Thank you. I mean, if you have any other  
5 questions, obviously, the other team members --  
6  
7 **MR. SWINDELL:** I just wanted to feel comfortable that the thing  
8 is stable and that you're going to be able to protect it and  
9 that we're not going to have trouble with vessels, and I don't  
10 know what you're going to do about lighting and everything else,  
11 but, if that will all be addressed, I'm satisfied. Thank you.  
12  
13 **MR. MEEKER:** Yes, and there is lots of areas around the world  
14 that have worked on that, buoys and reflectors and lights, and  
15 that will all depend on what you want, or what the Coast Guard  
16 wants.  
17  
18 **MR. SWINDELL:** The one that you have is a galvanized steel, and  
19 part of it is galvanized?  
20  
21 **MR. MEEKER:** Correct. Yes, it's all water-resistant, galvanized  
22 steel.  
23  
24 **MR. SWINDELL:** So far it's okay?  
25  
26 **MR. MEEKER:** great. It's guaranteed for twenty-five years, so  
27 they say and so I have found so far.  
28  
29 **MR. SWINDELL:** Thank you.  
30  
31 **CHAIRMAN BANKS:** All right. Thank you, guys, for the  
32 presentation, and just a reminder that they will be around for a  
33 while, if you have any additional questions. Kelly is an old  
34 hat at this, and she knows that we'll track her down if we have  
35 some more questions.  
36  
37 **DR. LUCAS:** That's right. We're going to do the stakeholder  
38 event, and so it will probably take us a little while. You all  
39 will be clearing out, and we'll set up our posters for the  
40 event, and you can walk around and learn more, and you can get  
41 even further in the weeds than we talked about here, and I  
42 appreciate you all allowing us to piggyback on your event and  
43 provide me with feedback and allowing me to present to you all  
44 today.  
45  
46 **CHAIRMAN BANKS:** Thank you, Dr. Lucas. Moving on to the next  
47 item, is there any other business to come before the committee?  
48 Seeing none, the committee has concluded.

1  
2  
3  
4

(Whereupon, the meeting adjourned on June 3, 2019.)

- - -