

GULF OF MEXICO FISHERY MANAGEMENT COUNCIL
SUSTAINABLE FISHERIES COMMITTEE

Marriott Plaza San Antonio, Texas

August 7, 2017

VOTING MEMBERS

- David Walker.....Alabama
- Patrick Banks.....Louisiana
- Roy Crabtree.....NMFS, SERO, St. Petersburg, Florida
- Dale Diaz.....Mississippi
- Tom Frazer.....Florida
- John Sanchez.....Florida
- Greg Stunz.....Texas
- Ed Swindell.....Louisiana

NON-VOTING MEMBERS

- Kevin Anson (designee for Chris Blankenship).....Alabama
- Leann Bosarge.....Mississippi
- Doug Boyd.....Texas
- Glenn Constant.....USFWS
- Pamela Dana.....Florida
- Dave Donaldson.....GSMFC
- John Greene.....Alabama
- Martha Guyas (designee for Nick Wiley).....Florida
- Campo Matens.....Louisiana
- LCDR Stacy McNeer.....USCG
- Paul Mickle (designee for Jamie Miller).....Mississippi
- Robin Riechers.....Texas

STAFF

- Steven Atran.....Senior Fishery Biologist
- Assane Diagne.....Economist
- Matt Freeman.....Economist
- John Froeschke.....Fishery Biologist-Statistician
- Douglas Gregory.....Executive Director
- Beth Hager.....Administrative Officer
- Karen Hoak.....Administrative & Financial Assistant
- Ava Lasseter.....Anthropologist
- Emily Muehlstein.....Public Information Officer
- Bernadine Roy.....Office Manager
- Carrie Simmons.....Deputy Director

OTHER PARTICIPANTS

- Pam Anderson.....Panama City Beach, FL
- Charlie Bergmann.....NOAA

1 Chris Bianchette.....USCG
2 Eric Brazer.....Gulf of Mexico Reef Fish Shareholders Alliance
3 Chester Brewer.....SAFMC
4 Bubba Cochrane.....Galveston, TX
5 Connor Cochrane.....Galveston, TX
6 Susan Gerhart.....NMFS
7 Shepherd Grimes.....NOAA GC
8 Leslie Hartman.....
9 Dylan Hubbard.....Madeira Beach, FL
10 Mark Hubbard.....Madeira Beach, FL
11 Alison Johnson.....Oceana
12 Jason Klosterman.....Destin, FL
13 Bonnie Ponwith.....SEFSC
14 Andrew Ropicki.....Texas Sea Grant
15 Chris Schieble.....LA
16 Jessica Stephen.....NMFS
17 Hanna Tillotson.....FL
18 Kevin Wheeler.....
19 Jim Zurbrick.....Steinhatchee, FL

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[PAGE 12](#): Motion to move forward with the document that approves the new turtle release gear and modifies our framework process to allow the specification of new release gears for turtles and other protected resources. [The motion carried on page 12.](#)

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1 The Sustainable Fisheries Committee of the Gulf of Mexico
2 Fishery Management Council convened at the Marriott Plaza, San
3 Antonio, Texas, Monday afternoon, August 7, 2017, and was called
4 to order by Chairman David Walker.

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

10 **CHAIRMAN DAVID WALKER:** I would like to call to order the
11 Sustainable Fisheries Committee. The members are Greg Stunz,
12 Patrick Banks, Roy Crabtree, Dale Diaz, Tom Frazer, John
13 Sanchez, and Ed Swindell. The staff is Mr. Steve Atran.

14
15 The first item of business is Adoption of the Agenda, which is
16 Tab E, Number 1. Is there any changes or additions to the
17 agenda?

18
19 **MS. LEANN BOSARGE:** I have one item, if we have time, to add to
20 Other Business, if that's okay, please, sir.

21
22 **CHAIRMAN WALKER:** That's okay. Any other changes to the agenda?
23 Seeing none, the agenda is approved. The next item of business
24 is Approval of the June 2017 Minutes, which is Tab E, Number 2.
25 Is there any changes or revisions to the minutes? Seeing none,
26 the minutes are approved. We're on to the Action Guide and Next
27 Steps, Tab E, Number 3, and Mr. Atran.

28
29 **MR. STEVEN ATRAN:** Thank you, Mr. Chairman. We've only got a
30 few items on the agenda. The first is a discussion on the
31 protocol for authorizing sea turtle release gear. Mr. Charlie
32 Bergmann from NMFS is going to give a presentation describing
33 some of the protocols and procedures that are in use to protect
34 sea turtles with interactions from the fisheries.

35
36 Dr. Froeschke will then present a discussion paper that he has
37 written about potential new sea turtle release gears that could
38 be used in the reef fish fishery. No action is necessary, but
39 the council may wish to consider modifications to the framework
40 procedure to allow these new gears to be approved for use
41 without an amendment to the fishery management plan, and so you
42 will need to decide if you want to follow that course of action
43 or not.

44
45 Following the sea turtle release gears, we've got several
46 presentations related to lionfish. Dr. Frazer is going to give
47 a presentation highlighting the research that he has been doing
48 on lionfish in the Gulf, and then, after that, because we had

1 been talking quite a bit about lionfish at the previous council
2 meeting, there was a request to find out what the states are
3 doing, and so we've asked each of the states to just give a
4 brief discussion of what's happening as far as any research or
5 monitoring or actions to reduce the lionfish. Some of the
6 states have PowerPoint presentations, and some of them we've
7 just got a verbal discussion, and so we'll go through the state
8 representatives on that. Then, finally, Other Business, if we
9 have time, what Leann Bosarge's other business is.

10
11 **CHAIRMAN WALKER:** Okay. I guess we will start with Dr. Frazer.
12 Is that right?

13
14 **MR. ATRAN:** No, the first item is Protocol for Authorizing Sea
15 Turtle Release Gear, and we'll begin with a presentation from
16 Mr. Bergmann.

17
18 **CHAIRMAN WALKER:** Okay. Mr. Bergmann, are you ready? It's
19 going to be Tab E, Number 4(a).

20
21 **PROTOCOL FOR AUTHORIZING SEA TURTLE RELEASE GEAR**
22 **PRESENTATION**

23
24 **MR. CHARLIE BERGMANN:** Currently, new technologies and fishing
25 practices are always evolving. We test different equipment
26 where ideas are given to us from the fishing community, and
27 we'll either decide basically if the concept is workable, and
28 then we put it out in the field and test it.

29
30 This usually takes about six to nine months, once we start on
31 it, but, currently, to get it implemented as an allowable gear
32 to be used by the fishery, it has to go through an FMP. What we
33 would like to see at some point would be to set it up into a
34 notice type of thing that can be sent out as these gears and
35 technologies are developed.

36
37 The history of all this, the protocols, started in 2004, as a
38 result of experimentation with the pelagic longline fishery and
39 a closure on the Northeast Distant Waters Area. We put out
40 Technical Memorandum Number 524 in June of 2004, based on the
41 results from this work in the Northwest Atlantic.

42
43 Then, in 2005, you got your bi-op for the reef fish fishery, and
44 the change was in 2005, and we put an updated tech memo out in
45 December of 2008. Things were rolling along, and you have
46 another bi-op, and we put a new tech memo out in 2010, just a
47 year later.

1 Here we are now in 2017, and we have a tech memo that we have
2 had ready to put in place since the first of 2015, and we were
3 waiting until we can get the new equipment that's in the tech
4 memo into an FMP so that we can put the memo out and folks can
5 go about their business with the new gear. Again, this slide is
6 just what I just threw out there.

7
8 The memo in 2008 was one to support, like I said, 18A, and then,
9 in 2009, the bi-op came out, and we had to do another tech memo,
10 but what this one in 2008 did is it put in some new tools and
11 new handling practices. It established a point of contact for
12 the fishing community, and this point of contact was also the
13 one that would go out and do training workshops throughout the
14 fishery.

15
16 Like I said earlier, when we get new equipment in, we test it,
17 and then the bi-op says that it will be put in the Federal
18 Register once it's been approved, but now, like I said, it has
19 to go through an FMP process, and the FMP process, as you all
20 are well aware, takes two to three years from concept to
21 completion on a fast track.

22
23 The tech memo that came out in 2010 supported your bi-op for
24 2009, and it added new dehookers, and it incorporated the South
25 Atlantic and the Gulf measures and the protocols.

26
27 In October of 2015, the draft memo, the current one we're trying
28 to get in place, added a collapsible hoop net and a new
29 dehooking device. The collapsible hoop net came about on the
30 need for these smaller boats that are in the reef fish fishery
31 to have storage areas.

32
33 If you look on the back wall here, that's the requirement size
34 currently. This is the net that we're asking to get placed in.
35 It's made with steel cable. You release it, and it pops open to
36 a larger net than that, and they can pick up the animals and
37 bring them aboard and remove the gear.

38
39 The dehooker is one that a charter boat captain asked me to look
40 at, and we did extensive testing with it. What it does is it
41 rotates the hook out, and, on circle hooks that are 10/0 and
42 less, it works magnificently. Again, this is part of what we're
43 trying to get done here today, or the process started today.

44
45 Now, I have to apologize for these next two slides. They are
46 basically the same thing. They're just two different biological
47 opinions, and what they're really saying is NMFS, along with the
48 councils, have to come up with a mechanism to release these

1 protocols and add new equipment in a timely fashion.
2
3 The new technologies are going to continue, and, as they
4 continue, we need to be able to get them into the fishermen's
5 hands quickly, so they can find mechanisms that are more
6 suitable for their fishery. NMFS and the Gulf Council are
7 mandated, through the different biological opinions, to promote
8 gear development and update the protocols. A procedure must be
9 in place to allow this to happen. Thank you.
10
11 **CHAIRMAN WALKER:** Is there any questions or comments?
12
13 **MR. BERGMANN:** I would like to say one other thing. A lot of
14 folks say, well, that's just more stuff that the guy has got to
15 carry, but, if they were caught fishing with some, but not all,
16 of their sea turtle gear requirements, I believe the summary
17 settlement is \$1,500, and so it's fairly significant.
18
19 **CHAIRMAN WALKER:** Thank you, Charlie. Mr. Greene.
20
21 **MR. JOHNNY GREENE:** Hi, Charlie. Thank you for your
22 presentation. Now, this applies to all vessels with federal
23 permits, right?
24
25 **MR. BERGMANN:** That's right. It's charter boats and headboats
26 and commercial vessels.
27
28 **MR. GREENE:** But not private recreational?
29
30 **MR. BERGMANN:** No.
31
32 **MR. GREENE:** Okay. With that being said, I was boarded earlier
33 this summer, and they wanted to basically see all of my turtle
34 devices, and, fortunately, I had everything that was asked.
35 However, one of the questions I had is that some of the examples
36 -- For example, the twelve-inch pliers that were given, the
37 pliers I had were not that specific brand.
38
39 They were understanding that it was similar, but, whenever they
40 got down to twelve-inch, stainless steel, longnose, needle-nose
41 pliers, I felt like the young inspector who was on the boat was
42 doing the best he could, but I don't know that he really
43 understood exactly what that was.
44
45 I don't know if there is -- Because there is a little bit of a
46 lapse, because twelve-inch, needle-nose pliers could be one
47 thing to one guy and another, and so, when you put the example
48 down here, is it possible to have a photograph? I know you've

1 got the books, and I know you have walked around and handed them
2 to every one of them, and I think you've handed me about three
3 of them, and I'm still trying to keep up with it, but, in that
4 book, I believe there is photographs of that. Now, is that
5 circulated around to the enforcement guys throughout the states?
6

7 **MR. BERGMANN:** Yes, it is.

8
9 **MR. GREENE:** Then they should have all of that.

10
11 **MR. BERGMANN:** Right.

12
13 **MR. GREENE:** Anytime you get boarded, people, especially on a
14 charter, they get real nervous.

15
16 **MR. BERGMANN:** Johnny, if the boarding was done through the
17 Coast Guard, they have a boarding book, and it's kind of like a
18 checklist. They go down this dehooker and check and this
19 dehooker and check. A lot of times, they will see that
20 stainless-steel requirement, but, if you look in the list the
21 council has put out, it also lists a pair of pliers that are
22 fifteen inches, and those were purchased through Harbor Freight,
23 and, while they're corrosive resistant, they certainly aren't
24 stainless steel.

25
26 **MR. GREENE:** Okay. I understand, but I just wanted to make sure
27 that that was available to them. I just wanted to bring it up,
28 because it's something we have to deal with. Now, the deal that
29 we battled right off the boat was about having to carry a car
30 tire on the boat to support the turtles. Then it was relaxed to
31 a boat cushion and some other stuff. Could you elaborate a
32 little bit on that? Is there any potential for anything
33 different, or is that still the regulation?
34

35 **MR. BERGMANN:** The regulation for the tire is actually more
36 suited to the pelagic longline vessels, and the cushioned
37 surface, a boat cushion or some type of a cushioned surface, is
38 more in line with the reef fish fishery.

39
40 The part of cushioned surface that I do not agree with, and I
41 strongly advocate against, is the use of a life ring or a life
42 preserver. They are both approved to do, but, if you're using
43 one for a life preserver for a turtle, you're going to have to
44 have enough life preservers that aren't being used for a turtle
45 onboard the boat.

46
47 If you use a life ring and those barnacles that nobody likes to
48 talk about on the carapace, if they were to scratch that life

1 ring, or the horns on the flippers scratch that life ring,
2 you've got to buy a new life ring.

3
4 **MR. GREENE:** I understand, and that kind of points to where I
5 was going with that comment about the cushion, because some guys
6 want to carry a little Type IV throwable type device on the boat
7 and have it there, but it also negates into that, because a lot
8 of the guys, through some of the fishery stuff I've been
9 involved with, were not aware that they have to have additional
10 equipment if they're going to claim that to be for a turtle. It
11 can't be for a turtle or a passenger, whichever comes first.

12
13 **MR. BERGMANN:** Right.

14
15 **MR. GREENE:** I just wanted to make sure, because that was
16 something that I really felt like was lost through the process,
17 and, honestly, I hadn't really thought about it, and I try to
18 read up on this stuff, but it was one of those things, and so I
19 appreciate you making those comments.

20
21 **MR. BERGMANN:** Yes, and, just to go along with that, I was
22 recently doing some workshops down in southwest Florida, and a
23 commercial reef fish captain relayed to me that he had gotten a
24 ticket for not having a separate life jacket for the turtle.

25
26 **CHAIRMAN WALKER:** Mr. Anson.

27
28 **MR. KEVIN ANSON:** Thank you, Charlie, for the presentation. I
29 think I have answered one of the questions that I had with the
30 handouts that were just sent to the council members. In the
31 amendment, it just shows a picture of a collapsible net, and
32 there are no dimensions, as far as the width and the depth and
33 that type of thing, and it might have -- Another question I had
34 related to the dimensions that were selected -- I mean, how much
35 testing did this go through?

36
37 I guess I am -- Looking at the photo that's in the amendment,
38 the depth of the net looks like a couple of feet, potentially,
39 and so I'm just wondering -- I know you have to kind of measure
40 the effectiveness of the net to keep the turtle in the net while
41 it's being removed from the water and put on the boat and make
42 sure it doesn't fall out or anything, but, for the certain-sized
43 vessels and everything, did you test that, to make sure that you
44 at least had a minimum depth, but not too much depth, where it
45 would make it difficult for the people on the boat to pull the
46 turtle up and it would get banged up as it's coming over the
47 side?

48

1 **MR. BERGMANN:** Four years.

2
3 **MR. ANSON:** Thank you.

4
5 **MR. BERGMANN:** Just as an aside, it has to be thirty-one inches
6 in diameter. The depth of the net is thirty-eight inches, and
7 the mesh can't be larger than three inches, and it has to
8 support a hundred pounds, and that's not pulling it up
9 horizontally. That's, obviously, pulling it up vertically.

10
11 **CHAIRMAN WALKER:** Okay. Any more comments or questions? Doug.

12
13 **EXECUTIVE DIRECTOR DOUGLAS GREGORY:** I just wanted to note to
14 everybody here that Mr. Bergmann is going to have a workshop on
15 some of this today after this meeting, whenever it ends. Are
16 you still planning to do that? Yes. I just wanted to let
17 everybody know. He can demonstrate the different gears and talk
18 to people individually.

19
20 **CHAIRMAN WALKER:** Leann.

21
22 **MS. LEANN BOSARGE:** Mr. Bergmann, I will try not to keep them
23 too late. Therefore, it won't make you run too late on your
24 evening either.

25
26 **MR. BERGMANN:** I am at your disposal until tomorrow morning.

27
28 **CHAIRMAN WALKER:** Thank you, Charlie. Any more questions or
29 comments for Charlie? Seeing none, let's move on. Thank you,
30 Charlie. Next, we have Discussion Paper, Tab E, Number 4(b),
31 and Dr. Froeschke.

32
33 **DISCUSSION PAPER**

34
35 **DR. JOHN FROESCHKE:** Good afternoon, everyone. I and the IPT
36 prepared a short discussion paper to complement the presentation
37 that you just received. It really doesn't cover any new ground,
38 other than what we just discussed here.

39
40 There is some background information about the reef fish and the
41 obligations to consider reasonable activities to reduce
42 interactions with sea turtles. The discussion paper just points
43 out the two new gear types that Mr. Bergmann discussed, and so
44 the question for you all is do you want to embark on a process
45 to consider approving these new gears for use in the reef fish
46 fishery and do you want to consider changes to the framework
47 procedure that would allow this, or perhaps other gears, to be
48 more easily incorporated for us in the future? I will stop

1 there.

2

3 **CHAIRMAN WALKER:** Dr. Crabtree.

4

5 **DR. ROY CRABTREE:** I think we -- I mean, I am fine with
6 approving these new pieces of gear, but I think we need to
7 modify the plan to allow us to do this through framework, and
8 hopefully through an abbreviated kind of framework process, and
9 I think that will address some of the concerns that Charlie
10 raised about how long it takes to do this, and so I definitely
11 think, John, we want to incorporate this into the things we can
12 do through a framework amendment.

13

14 **CHAIRMAN WALKER:** Anything else, John?

15

16 **DR. FROESCHKE:** No, but, if that's the process that the
17 committee wants to go, it would be helpful for us to get a
18 motion to that effect specifying the actions that you would like
19 us to go.

20

21 **CHAIRMAN WALKER:** Okay. Dr. Crabtree, would you like to put a
22 motion up?

23

24 **DR. CRABTREE:** I move that we move forward with a document that
25 approves these new types of gear and modifies our framework
26 process to allow the specification of new release gears for
27 turtles and other protected resources.

28

29 **CHAIRMAN WALKER:** Is there a second? Second by Dale. **Any**
30 **objections to the motion? Seeing none, it passed.** Is there
31 anything, John?

32

33 **DR. FROESCHKE:** No, that's what I need.

34

35 **CHAIRMAN WALKER:** Thank you, John. Okay. We're going to move
36 on here now, it looks like to Dr. Frazer. This is going to be
37 Tab E, Number 5, and it's Lionfish Research Overview.

38

39

LIONFISH RESEARCH OVERVIEW

40

41 **DR. TOM FRAZER:** All right. Thanks for letting me chat a little
42 bit about lionfish. I'm going to try to get us back on
43 schedule, to the best I can here, and so I'm going to move
44 through these first slides pretty quickly, but this is some work
45 that's been done in my lab over the last couple of years, and
46 it's primarily focused in the Cayman Islands, but I think the
47 findings are certainly relevant to what's going on here in the
48 Gulf of Mexico.

1
2 Again, a couple of quick acknowledgements and some funding
3 agencies, but the point here is that a lot of graduate students,
4 Morgan Edwards, Patrick Gardner, Jessica Diller, and a couple of
5 others, contributed to this work, and certainly it couldn't have
6 been done without all the people that live on Little Cayman
7 Island, because it certainly affects their livelihoods.

8
9 This is actually an animation, and I can't see it from here that
10 well, but the important thing here is to note that -- This is
11 from the USGS, and it actually shows the chronology of the
12 invasion, and, for those of you who haven't seen this, one of
13 the things that is important about it is that lionfish first
14 showed up along the Atlantic coast and the Gulf of Mexico, and
15 they really expanded north along the Atlantic seaboard before
16 they moved over into the Bahamas and ultimately in the Caribbean
17 Region and then, finally, into the Gulf of Mexico.

18
19 What makes this particular invasion really interesting, from an
20 ecological perspective, is the geographic scale and the
21 timeframe in which it happened. It's really unprecedented in
22 that regard.

23
24 Again, it's not -- It's something that we haven't seen a
25 magnitude of this event in the marine environment with regard to
26 invasion, and lionfish, in many locations, occur in extremely
27 high densities. In the areas where I worked in 2010, when they
28 started to get really abundant, lionfish often exceeded 600 fish
29 per hectare. There are similar estimates of that order of
30 magnitude in the Bahamas and other places now. In the Gulf of
31 Mexico, obviously, it depends on the type of habitat that
32 they're occupying, but that's a lot of fish in a not so big of
33 an area.

34
35 Why has the invasion been so successful? Again, lionfish are
36 presumed to have few natural predators, and the key word there
37 is "presumed". They certainly have some predators, but the
38 predators are naïve, but we know that lionfish are learning to
39 be consumed by things like snappers and groupers and moray eels
40 and sharks and things of that nature.

41
42 I am going to give you a little story, and I told this to Roy
43 the last meeting, but, when I first started working in Little
44 Cayman, one of the things that was interesting is that the dive
45 masters in that area quickly recognized how potentially
46 devastating this might be to their industry, and so they were
47 trying to figure out how they might get natural predators in the
48 system to consume lionfish, and so they fed them, and I am not

1 condoning necessarily the activity, but that's the fact of the
2 matter.

3
4 They offered lionfish to things like Nassau groupers on the pole
5 spears, and it took a little while for the predators to actually
6 learn how to consume the lionfish, because, of course, there are
7 venomous spines, and they're pretty conspicuous features, but,
8 over time, the groupers learned how to handle the lionfish.
9 They learned how to orient them and consume them in a way that
10 they weren't getting spined, and so that was in about 2010.

11
12 In about 2012, an interesting thing started to happen, because,
13 after the groupers learned how to handle the lionfish, they
14 realized that the divers themselves were actually not very good
15 hunters, and so, when the divers entered the water and there was
16 a spear visible, the groupers would actually swim to the diver
17 to let him know that he acknowledged that he or she had a spear,
18 and then they would swim quickly to the reef and identify a
19 lionfish, so that we didn't have to spend a lot of time looking
20 for them ourselves. As soon as we shot them, they would be
21 there to eat them.

22
23 In about two years after that, and it was kind of a progression,
24 and it's a really interesting one, and so we didn't really
25 necessarily have to feed the lionfish to the groupers anymore.
26 They were actually seeking them out on their own, and, in 2015 -
27 - There is actually a number of videos floating around now that
28 shows that the grouper are capable of consuming these lionfish
29 without any human intervention.

30
31 I had another graduate student, and I didn't show this slide,
32 and her name was Jessica Diller. One of the interesting things
33 that she did as part of her project actually is she tethered
34 lionfish on a number of reefs and seagrass beds in Little Cayman
35 Island, and she tethered these fish in the marine parks areas
36 that are highly visited by dive masters and are heavily culled,
37 and what she found was there was about 100 percent mortality,
38 which is pretty amazing if you go back to the assumption that
39 these guys have few natural predators. In fact, in a very short
40 period of time, these predators are learning to consume the
41 lionfish.

42
43 She also tethered fish in areas outside of the park that weren't
44 visited as frequently, and the important thing to note there is
45 that, even though the mortality rates weren't 100 percent, they
46 were pretty high still, 60 or 70 percent, and so there is some
47 learning going on, and I think that's important, because, as the
48 invasion matures and animals learn how to adapt to their

1 presence, I think we're going to see some differences in their
2 behavior and their biology as well.

3
4 I have talked about things that might feed on the lionfish, but
5 the important thing here is that lionfish themselves are
6 voracious predators. They consume a large proportion of their
7 body weight on a regular basis, and that's about 1 to 4 percent
8 daily.

9
10 By the time they're about 100 to 200 millimeters in size,
11 they're primarily piscivorous, and so that means that they're
12 eating things that we care about. They're eating snappers and
13 groupers and, in the coral reef systems that I'm working on in
14 the Caribbean, they're also eating things like parrotfishes and
15 other herbivores, and that's certainly a concern.

16
17 This is just, again, a probably a year-one lionfish, and there
18 is -- You can see a fish hanging out of its mouth in the top
19 picture, but this is very typical, and that bottom photograph is
20 about sixteen or so fairy basslets and a butterfly fish, and so,
21 again, it just drives home the point that these lionfish are
22 capable of consuming a lot of animals at any one particular
23 time.

24
25 Even though they can get to be several hundred millimeters in
26 length, they don't tend to change the size of their diet though
27 as they age. Actually, they tend to prey primarily on smaller
28 fish, about ten centimeters in size or less, and so that's an
29 interesting thing about their biology too, and I will get back
30 to that in a second.

31
32 Again, natural predation is an issue, or it's a concern that has
33 led to their success. They eat a lot, as I said before, and
34 they grow pretty quickly. They mature by about one year of age,
35 when they're a little less than 200 millimeters in size, and so
36 that's pretty quick.

37
38 This is an age-and-growth curve here, and it's for all of the
39 fish, and we collected these data in about 2014, and so it's
40 just slightly after the invasion began in Little Cayman, and so
41 that's why we don't have a lot of fish that are beyond five
42 years of age. There is some indication that the females grow
43 much faster than the males, and I suspect though that these
44 growth characteristics may change over time, as their biology
45 and ecology changes in response to predators learning to eat
46 them and things of that nature.

47
48 I spoke briefly about reproduction, and we don't know a lot

1 about it, in the sense that reproductive behavior has not really
2 been observed in these guys. We assume that they're pair
3 spawners, based on some evidence in other parts of their range,
4 but, again, the reproductive behavior itself has never really
5 been observed. This picture is as close as we've got, and this
6 is from a diver on one of the resorts on Little Cayman, but,
7 again, we don't know exactly what's going on with that, as far
8 as their behavior.

9
10 What we do know, based on their biology and their physiology, is
11 that they are prolific spawners. Again, I said before that they
12 mature early, at one year of age, and they can reproduce year-
13 round, and so I had another graduate student, Patrick Gardner,
14 as I mentioned before, who did a really nice piece of work.

15
16 Essentially, he confirmed, by a number of different approaches,
17 that they mature at about 190 millimeters in size, and, again,
18 that's one year, and females can release up to 40,000 eggs in a
19 batch. You go, well, there's a lot of fish that release a lot
20 more eggs than that, but the issue with these guys is they can
21 do it every two to three days, and so that's a huge concern.

22
23 We have been working on this for the last couple of years,
24 trying to improve on this over the course of the whole year,
25 because we were concerned about that two to three days. People
26 said it's not representative and it's faster than what they see
27 in North Carolina, but I would point out that, even in North
28 Carolina, it's three to four days, but, some places in the
29 tropics, it may be just closer to two days in general, and so
30 that's a lot of reproductive output and something that we need
31 to get a handle on.

32
33 All of these things say, well, when you have this large
34 population, an unconstrained population of lionfish, that poses
35 a severe threat to the ecology of the systems that they're
36 occupying, and it's certainly a management issue.

37
38 One of the things that we wanted to know, in our sites in Little
39 Cayman, is in fact if these guys are having a negative
40 ecological impact. We just assume that they are, but one of the
41 things that you have to do is actually go out and collect the
42 data to determine whether that's true or not.

43
44 Here again, this is the study site that I work in. I tend to
45 work in the Cayman Islands for this particular project, and it's
46 about ninety miles or so south of Cuba, and it's a small island.
47 It's about one kilometer in width and about ten kilometers wide,
48 and there is less than 200 residents, year-round residents.

1 There is no real anthropogenic impacts, in the sense that they
2 don't have any like nutrient issues negatively impacting the
3 reefs.

4
5 Most of the island is de facto a marine protected area, and so
6 there's limited fishing. It maintains a relatively intact
7 predator assemblage. You've got a large population of snappers
8 and groupers and sharks and all of those types of things, and so
9 it's a really nice system to look at how a healthy system might
10 respond to an invasion like this and to contrast with something
11 where you have a heavily-impacted system and a lack of
12 mesopredators.

13
14 We started an experiment in 2012, and I'm just going to talk
15 about the first three years of that experiment, because it's
16 probably the best data that we have, but we monitored, on the
17 reefs around Little Cayman, lionfish densities at six sites, and
18 three of those sites were essentially removal sites and three of
19 those sites were sites where we left the lionfish intact.

20
21 Every quarter, we would go and we would remove lionfish from our
22 removal sites, as you would expect, and we would census the
23 native fish population as well as the lionfish, and then we
24 would remove the lionfish, to maintain the treatment over the
25 three-year period, to try to test this idea of what the impact
26 was going to be on the native fishes. How many fishes were they
27 consuming? Were they affecting the diversity, the evenness, the
28 richness, or things of that nature?

29
30 The first question we have is how well do we maintain the
31 treatment, and there is two lines here, and the top line is the
32 control sites, where we didn't remove the lionfish, and the
33 bottom line is the removal sites, and the data are expressed on
34 a per-transect basis, because one of the things we were looking
35 at on these reefs is the whole island is surrounded by
36 essentially a wall.

37
38 We were looking at depths from the top of the wall at about
39 forty feet down to about a hundred feet, and so we had several
40 transects along the depth gradient, and what you see here though
41 is, on average, the number of lionfish on the removal sites was
42 five times less than it was on the other sites, and so it's not
43 perfect.

44
45 Even at this level of effort, we can't completely eradicate the
46 lionfish on that scale, and it gives you an idea of kind of the
47 nature of the problem you have as a manager in trying to get rid
48 of them, but, for experimental purposes, I think we did a good

1 job that way. The control sites, on average, there's about 250
2 to 300 fish per hectare. On the removal sites, there is less
3 than fifty, ten to fifty.

4
5 Again, how did the native fish assemblages respond? About 25
6 percent more native fish at the removal site, and so that's
7 exactly what you would expect, right? But the sky wasn't
8 falling here, and it's not that the lionfish removed all of the
9 native fishes on these sites, and I think that's important to
10 know, because there is a lot of really nice work that's been
11 done out there, particularly in the Bahamas, by Mark Hixon and
12 Mark Albins, two students, and Isabelle Cote and Stephanie Green
13 and others, and it's been really nice work, and they have tended
14 to work in the Bahamas and work in isolated patch reefs, because
15 it's really cool to do that, from an experimental perspective,
16 because you can isolate things.

17
18 It's not surprising, I think, if you have a predator on a small
19 patch reef that has adapted to eat fish, that they're going to
20 eat them all, and so, when you get these estimates of 75 percent
21 or 95 percent removal, that's not a shocker.

22
23 What is more important, I think, is to try to figure out what's
24 happening in the real world, when you've got more contiguous
25 reef systems, things that are intact, animals are moving back
26 and forth, and what this shows, at least over a three-year
27 period, is that you didn't get complete removal of these native
28 fishes. You just have a 25 percent reduction.

29
30 With regard to richness, again, some of the things that we're
31 interested in is not just the number of fishes, but it's the
32 diversity of fishes, the species richness, the evenness, all of
33 these ecological things that we care about, and there is no
34 treatment effect.

35
36 There is certainly some variation in time, but it's not very --
37 I wouldn't say it's not ecologically significant. The number of
38 species that you're seeing on any given transect is about
39 fifteen. There are certainly more than that, but that's just
40 the average number of fishes per transect.

41
42 If you look at the diversity, again, it's almost
43 counterintuitive. There is no real strong negative impact of
44 the lionfish on the diversity, per se, but what you do see is
45 variation within time. That's the panel on the left, and the
46 panel on the right says that there is some within-site
47 variability, and that, again, is to be expected, I think, given
48 just the inherent variability that you see in natural reef

1 systems.

2
3 I just showed you diversity, and evenness, which is kind of the
4 proportion of species in the assemblage, is fairly uniform
5 across these sites. Again, not a lot of variability and no
6 treatment effect.

7
8 The take-home messages here, I think it's that the ecological
9 impacts of lionfish are going to be scale and context dependent.
10 I think, if you're working on small patch reefs in the Bahamas
11 or elsewhere in the Caribbean, I think you're going to see a
12 pretty marked influence of predators on those native fishes.

13
14 I think, if you're looking at artificial reefs in the Gulf of
15 Mexico, which are essentially small, confined units, you're
16 going to see pretty marked effects as well, but, when you look
17 at more contiguous kind of natural low-relief systems, I think
18 that those impacts are going to be probably ameliorated a little
19 bit just by nature of the habitat type.

20
21 Again, there were certainly more native fish at those sites
22 where we removed lionfish. One of the things that I should have
23 said earlier and I didn't is that there is a healthy population
24 of mesopredators on these sites to begin with, and so, even
25 though lionfish are abundant, they only represent about 30
26 percent of the mesopredators there, and so there's a lot of
27 predation going on on the site to begin with.

28
29 With regard to the other variables or indicators of interest,
30 the richness, the diversity, or the evenness, no effects that
31 way, and so I didn't put a slide in here about the fisheries
32 kind of implications, the things that we might consider going
33 down the road or people should be thinking about, and one of the
34 things we don't have hardly any information on is natural
35 mortality rates. I think that's key when you're looking at any
36 fishery type of thing.

37
38 Again, we don't have much information about reproduction, other
39 than what we get from the physiology, and so we don't know how
40 much of that reproductive potential is realized, as opposed to
41 just potential, and we know very little about the post-
42 settlement survivorship in the early life history ecology of
43 these guys, and so there's a lot to learn there, and so I think,
44 with that said, I am going to try to keep us on track, and I
45 will take any questions.

46
47 **CHAIRMAN WALKER:** Any questions or comments? Dale.

48

1 **MR. DALE DIAZ:** Thank you, Tom. Good presentation. I just want
2 to make a comment. I went to the South Atlantic Fishery
3 Management Council meeting in June, and, during public
4 testimony, one of their commercial fishermen had mentioned that
5 he had gutted two amberjacks on his last trip and those
6 amberjacks had consumed lionfish.

7
8 **DR. FRAZER:** Yes, and that's good to hear. When I was at MREP,
9 for I guess the last meeting, there was a couple of longliners
10 there that indicated as well that some of the groupers had
11 consumed lionfish as well, and so, to me, this is good news, and
12 I think the systems are doing what you would expect them do, and
13 I think that they're responding to the presence of lionfish.
14 Animals will learn how to eat them, and we'll have to see how
15 the systems kind of compensate for their presence.

16
17 **CHAIRMAN WALKER:** Kevin.

18
19 **MR. ANSON:** Thanks, Dr. Frazer. You may have mentioned it
20 earlier, during your presentation, but you had a slide in there
21 about the 600 fish per hectare here in the Caribbean, and I'm
22 just wondering what's the number for IndoPacific reefs, as far
23 as the number of lionfish that are observed per hectare?

24
25 **DR. FRAZER:** That's a good question, and, surprisingly, you
26 would think it would be easy just to go back to the IndoPacific
27 and say, hey, what are they doing there and how come they're so
28 successful here, and one of the reasons that we don't know a lot
29 about lionfish and their natural habitat, or natural range, is
30 because they're not super abundant, and so they're probably
31 certainly an order of magnitude, maybe two orders of magnitude,
32 less than their abundance.

33
34 **CHAIRMAN WALKER:** Patrick.

35
36 **MR. PATRICK BANKS:** Dr. Frazer, I appreciate the presentation.
37 It was very interesting. Your Slide 13 talks about the threat
38 to the ecology, but then your results didn't show a lot of
39 threat, at least based on what I saw, and so what is your
40 conclusion in that regard? Do you feel like that the ecosystem
41 is going to be able to withstand lionfish?

42
43 I guess where I'm going with it is, based on your last slide and
44 the comments about amberjack eating them and grouper eating
45 them, is maybe we shouldn't be as worried about them as we
46 thought. I don't know.

47
48 **DR. FRAZER:** I am going to step back a little bit, and one of

1 the things I wanted to do when I was setting up this talk is, I
2 mean, there is a legitimate reason to be concerned about these
3 guys, and, for all the reasons that I said, they grow fast, and
4 they mature early, and they reproduce potentially a lot, and
5 they have a potentially huge impact on the native fish
6 assemblages.

7
8 I think, as I said in the last slide, it's probably scale and
9 context dependent, and these systems that are relatively
10 healthy, where you have a large predator assemblage, I think
11 that those systems are fairly resilient.

12
13 I think if you go to places -- I will just use something that is
14 not going to be in our bailiwick a little bit, but I think if
15 you were going to go to like the Dominican Republic or Haiti or
16 something like that, where they have a pretty impacted
17 situation, and you put things like lionfish on there, I think
18 they're going to have a disproportionate impact, a negative
19 impact, potentially, on those systems.

20
21 Having said that, what I would also say is that those systems
22 lack entirely mesopredators, and so, from an ecological
23 perspective, maybe any mesopredator is good, and so I don't have
24 the full answer to your question. I do, personally, think that
25 healthy systems will be able to handle and deal with lionfish.
26 I think that those systems that are compromised in some way are
27 going to have a tougher time doing that.

28
29 **CHAIRMAN WALKER:** John.

30
31 **MR. JOHN SANCHEZ:** Thank you. In your travels and here
32 domestically, when you see lionfish derbies and these types of
33 activities encouraging folks to go out and capture lionfish, do
34 you see that having really any significant impact on the
35 population and helping accomplish its intended objective?

36
37 **DR. FRAZER:** I am going to, again, preface my answer to this by
38 saying I don't think it hurts to remove them. I think one of
39 the reasons that we initiated this particular study was to try
40 to figure how far you would have to drive the lionfish numbers
41 down to see a positive impact or a positive effect, and it was
42 really an interesting exercise actually, because what happens
43 is, at least in Little Cayman, is we depended very heavily on
44 the dive community there.

45
46 The dive masters, after they were done with work, would come out
47 and they would go kill lionfish, and the reason they were doing
48 that, obviously, was to try to make sure that they had a

1 healthy, intact ecosystem, but they also consumed the lionfish.
2 They ate them in the local restaurants and things like that, and
3 it was worth their time to do that, but they also enjoyed doing
4 it.

5
6 The problem is, when you get to a relatively low density and you
7 don't get the catch per unit effort, then it's no longer worth
8 their time, because maybe they're only getting ten lionfish in a
9 trip or twenty lionfish in a trip, and that's a tricky thing,
10 because we didn't know, and we still don't know at this point,
11 how far down you have to drive those populations in order to
12 reap the positive benefits and whether or not we might have to
13 subsidize that activity in some way to do that.

14
15 With regard to your specific question about the derbies and
16 things of that nature, I think we need to do a little bit more
17 work there and to quantify, again, how many fish were there
18 before they started and how many fish were there after they
19 removed them and was there a response in the biological
20 community, and we don't often do that, just because we just
21 assume that what we're doing is good, but I don't want to leave
22 a negative taste in people's mouths and say it's not good. It
23 certainly doesn't hurt, but I'm just not sure if we can evaluate
24 fully the effectiveness of it.

25
26 **CHAIRMAN WALKER:** Dave.

27
28 **MR. DAVE DONALDSON:** Thank you, Mr. Chairman. I'm not on your
29 committee. Thanks for your presentation. You mentioned them
30 that they're harvesting them down there in the Cayman Islands,
31 and is it mainly spearfishing or traps? How are they harvesting
32 them?

33
34 **DR. FRAZER:** There is no trap fishing allowed in the Caymans.
35 In fact, there's no spearfishing either, but they have allowed
36 you to get a permit to spear lionfish, and so they do a good job
37 at it, for sure.

38
39 **CHAIRMAN WALKER:** Any other questions or comments? I have one
40 comment, or actually a question and then a comment. What about
41 the depth have you noticed, as far as the abundance of fish at
42 different depths?

43
44 **DR. FRAZER:** You can find them extremely deep, and so we had an
45 ROV, for example, on some of these reef walls that was well past
46 a thousand feet, and we got our ROV stuck, but, as it was stuck
47 and taking pictures, there was lionfish swimming around it, and
48 there is other -- Lots of times, there's some marine surveying

1 companies that will call me from various places in the world,
2 but they will find lionfish at thousands of feet in the
3 Atlantic, on old wrecks and things of that nature, and so they
4 can settle most anywhere.

5
6 I find them in mangroves and seagrass in less than a foot of
7 water, and so they're not limited in any way by depth. The real
8 question is whether or not you remove them within divable kind
9 of depth limits and whether or not they kind of move back into
10 those shallower waters and kind of repopulate.

11
12 I think some people are working on that right now, but, once
13 they have settled in, they are pretty site-attached. They don't
14 tend to move a whole lot. The other thing I did notice, over
15 the last five or six years, is that they move less, certainly,
16 as things learn how to eat them, and so they're not out prowling
17 around anymore, certainly in the Little Cayman area.

18
19 **CHAIRMAN WALKER:** Thank you. I had one comment. That was just
20 really some stunning photos there, and, if you ever need to see
21 how they interact with a 320-pound swimmer after this week, give
22 me a call.

23
24 **DR. FRAZER:** I've got that in mind, man. I've got that in mind.

25
26 **CHAIRMAN WALKER:** Thank you, Dr. Frazer.

27
28 **DR. FRAZER:** All right. Thanks for having me.

29
30 **CHAIRMAN WALKER:** Okay. We're going to move on to Lionfish
31 Actions by Federal and State Agencies. It looks like first is
32 National Marine Fisheries Service and Ms. Gerhart. This is
33 going to be Tab E, Number 6(a).

34
35 **LIONFISH ACTIONS BY FEDERAL AND STATE AGENCIES**
36 **NMFS**

37
38 **MS. SUSAN GERHART:** Thank you. I wanted to talk about some of
39 the requests that the National Marine Fisheries Service
40 Southeast Regional Office has gotten relative to lionfish, both
41 research and testing of equipment.

42
43 We've gotten several different types of requests. Exempted
44 fishing permits are the major type of request we've had. As you
45 know, exempted fishing permits are for limited testing of
46 equipment, and it's been on a limited scale, as well as a
47 limited timeframe. Here is a few different organizations that
48 have requested or are working with us on applications for EFPs.

1
2 We also have some LOAs, which are for scientific research. An
3 LOA is a letter of acknowledgement. Research is exempt from
4 fisheries regulations, and we issue letters of acknowledgement
5 for those to have onboard, showing that they are doing research.
6

7 Dr. Steve Gittings has been working on different types of traps
8 and things like that for lionfish, and I will show you a little
9 bit of that in a minute, and he has also been looking at the
10 effects and the impacts on the environment, and so he's been
11 issued an LOA. There is also -- I don't have it up here, but we
12 recently got a renewal for the University of Ontario, I believe,
13 and they're doing some research as well, and we've issued them
14 an LOA.

15
16 In addition, we have been working with a group called Lionfish
17 International recently about a new gear type that they were
18 interested in using for lionfish, and, again, I will talk about
19 that in a little bit more detail in a minute.

20
21 Some of the purposes of the EFPs in particular are to test
22 effectiveness of different gear types. As Dr. Frazer mentioned,
23 there is a lot of effort in shallow water, but there are still
24 lionfish in deep water, and that deep water is mostly out in
25 federal waters, and so they're looking at ways to also deplete
26 the lionfish in the deeper water.

27
28 There is an interest in developing a commercial fishery, and
29 there is somewhat of one now, but, again, that's mostly in state
30 waters, because those are the shallower waters, and then also to
31 promote lionfish to consumers is the goal of some of these
32 projects.

33
34 Some of the gears -- First of all, the one that Dr. Gittings is
35 working on is a FAD-based purse trap, and that is what you see
36 pictured here. A FAD is a fish-attracting device, and the idea
37 here is to attract the fish without using bait, and lionfish are
38 sort of like cats.

39
40 If you have ever had a cat, you know if you put a box, or even a
41 piece of paper, on the floor, they have to go sit on it, and so
42 lionfish are the same way. If you put something with structure
43 down there, they want to go to it, and I don't have the video,
44 but Dr. Gittings has shown video of where they put down one of
45 these FAD-based traps and immediately lionfish go swimming
46 towards it, because they have to see what it is, and they like
47 to hang out between the structure of the FAD.

48

1 You can see it's sort of a cylinder. It's actually soft, and
2 it's got protrusions that kind of give structure that the
3 lionfish like to hang out with. The idea here is to not attract
4 other fish by using bait, and, because the lionfish like the
5 structure, they're more attracted to this than other fish,
6 although, obviously, in this picture, that's not what you're
7 seeing.

8
9 Other gear that the other EFPs are looking at are to modify
10 lobster traps with different-sized openings, as well as some of
11 them are looking to put video recognition gear on there to allow
12 the traps to actually open only for lionfish versus other fish.
13 Others, mostly in the South Atlantic, are looking at modifying
14 sea bass traps, and then this new type of gear is based on a
15 remote operating vehicle, or ROV, which is remotely operated.

16
17 It has basically a vacuum-type structure on it to suck up the
18 lionfish and then a containment device attached to that to hold
19 the lionfish until they are brought to the surface and
20 transferred to the vessel, and I will talk a little bit more
21 about that in a minute, too.

22
23 Some of the issues, from our viewpoint, are, first of all, fish
24 traps are prohibited in the Gulf of Mexico and South Atlantic.
25 The council did that, and that went into effect, I believe,
26 fully in 2007, and so these traps are what we're giving the
27 exempted fishing permit for. The people are being exempted from
28 the restriction on not using traps, but we can't manage a
29 fishery by EFP. The EFP are for limited time and scope, and so
30 we can't continue to do this.

31
32 If we want to allow a fishery, a commercial fishery, to be
33 established in the Gulf of Mexico, EFPs are not the way to do
34 this long-term, and we would also like to see some scientific
35 rigor in these studies. We have a lot of disparate studies that
36 different people from different areas are doing, and a lot of it
37 is looking just at how well the traps catch lionfish, but we
38 would like to see more structure to these studies.

39
40 Another issue is the number of traps. Now, this council
41 prohibited fish traps for a reason, because there is a lot of
42 impacts to the habitat as well as protected resources from
43 having traps, and some of these studies have a lot of traps that
44 they want to put out, and so we want to look at that. Then,
45 again, of course, what are the impacts of these different types
46 of traps relative to either what they were before modification
47 or these new things that are being developed?

48

1 Some of the scientific needs that we see relative to lionfish
2 EFPs, LOAs, et cetera, is we want to look at these studies as a
3 whole. We don't want to have a lot of different things going on
4 that aren't connected. We would like to see kind of a plan, a
5 framework, within which to put all of these different studies
6 that are being brought forward and to think about questions that
7 we want to address from a scientific perspective.

8
9 Certainly fishermen are interested in both the effectiveness and
10 efficiency of these different types of traps, but obviously we
11 want to look at what kind of bycatch they are responsible for,
12 and entanglement is a big issue with traps, because of the buoy
13 lines can entangle turtles and other protected species.

14
15 Also, we have to be concerned about the movement of traps on the
16 bottom and how that impacts the bottom structure and any other
17 impacts that there are, and so one of the things we really
18 wanted to do is understand, when reviewing these applications,
19 is what's the appropriate sample size to answer each of these
20 questions and what methodology should be used.

21
22 Some next steps that we're looking at is we have, in a couple of
23 weeks, a workshop with some scientists at our Science Center as
24 well as others to kind of look at how to set a framework for all
25 of these studies, and it will form the objectives and the
26 design. Then we can take all the applications that we have and
27 review them in the context of this framework and how they might
28 fit into that.

29
30 In support of that, one of the things we want to do is a
31 programmatic environmental assessment. We do EAs all the time,
32 but a programmatic one would be something that hopefully could
33 cover all the potential studies and gears that would be in there
34 and look at those impacts, much like we do with our EAs, but
35 this would set something up so that each time, for each
36 individual application, we wouldn't have to do a separate EA.

37
38 Then we can take what we have already and decide, with those
39 applications, which questions are we going to address, and
40 that's part of this overall framework, and are the methodologies
41 and sample sizes appropriate to answer those questions. This
42 will also allow us to take any future applications and see if
43 they can fill any of the gaps that we still have.

44
45 Long-term goals here are to, of course, allow a commercial
46 fishery in the EEZ to take place. We can't really manage this
47 under an FMP, because obviously the goals of an FMP are to
48 sustain the population, which is exactly the opposite of what

1 we're trying to do with the lionfish, but what the council can
2 do is approve gears for use in the Gulf of Mexico.

3
4 Two different routes that I am going to talk about are the fish
5 trap prohibition itself, and can we do some sort of exemption to
6 that to allow traps to be used for lionfish, and then this idea
7 of new gears that are being proposed and how the council can
8 allow or prohibit those types of different gears.

9
10 First of all, the trap exemption. In the box here, you see the
11 current regulations prohibiting traps, and we would need to
12 revise these regulations through some sort of FMP action in
13 order to do that. If you look in there, you see there already
14 are some exemptions. These are for historically-used traps for
15 crustaceans, specifically blue crab, stone crab, and spiny
16 lobster. Obviously those are traps that can be used in the
17 Gulf, and so they were exempt from this prohibition on traps.

18
19 There is a possibility that we could make an exemption for
20 lionfish traps or maybe, even more broadly, invasive species.
21 We could consider some sort of type approval, similar to what we
22 have for bycatch reduction devices for shrimp nets, where, if
23 someone comes up with a new type of gear, or, again, similar to
24 what we saw with the turtle gear, if someone comes up with them,
25 then we go through an approval process, testing by the Science
26 Center and making sure that that does what it's supposed to do
27 and, in this case, probably prohibit take of bycatch or other
28 fish species, and then have that kind of approval, but we would
29 want to have some sort of limitations.

30
31 We don't want hundreds of thousands of traps out there in the
32 Gulf, because of the potential impacts, and, of course, the
33 council -- This is the reason the council prohibited fish traps
34 in the first place, and so we would want to consider limitations
35 on who or how many traps could be allowed in the Gulf.

36
37 Relative to the allowable gear, I wanted to talk a minute about
38 this, because, as I said, we are working with one organization
39 who is interested in using a new type of gear. We have, in the
40 federal regulations, a whole list for each council of what is
41 allowable gear for FMP fisheries as well as non-FMP fisheries,
42 and these two that I show up here are the sort of generic non-
43 FMP fisheries, and, of course, for commercial, there is no trap
44 allowed there, but anything that's not on that list is
45 prohibited for use, and our General Counsel has looked through
46 this list and has looked at this newly-proposed gear, and it
47 does not fit the description of anything that's on this list,
48 and so, how does that come about?

1
2 Well, this is a little bit different than what the council
3 usually does. Instead of creating an allowable gear or doing a
4 regulation or amendment to allow a gear, in this case, the way
5 the regulations are stated, it's that the council would have to
6 prohibit the gear, and so whoever wants to use the gear needs to
7 notify the council. Once they receive a complete notification,
8 the council has ninety days in which to do something to prohibit
9 that gear, and they can do that through an emergency action, for
10 example, to prohibit that gear, if that's what they wish to do.
11 If the council does not do that within ninety days, then the
12 person can use that allowable gear, or can use that gear that
13 they proposed.

14
15 It's sort of a difference between how the council usually works,
16 in that we have to allow something. In this case, we would have
17 to prohibit it or it would be allowed to be used by that person.

18
19 Now, the notification that they give us is actually very similar
20 to an EFP application, because it not only has to describe the
21 gear, where it's used and how it will be used, but, also, the
22 last two bullets you see, they need to talk about anticipated
23 bycatch and also the impacts on the bottom structure.

24
25 It is more than just saying I want to use this gear and if you
26 don't say no than I can go use it. They have to actually have
27 some information to us, and so we've been working with Lionfish
28 International to put together this notification, to make sure
29 it's complete, and then they are preparing to send this to the
30 council potentially sometime in September, and so they expect to
31 come before you in October to take a look at this and
32 potentially make a decision. I think that's all we have for the
33 NMFS presentation, and, if you have any questions, I will take
34 those now.

35
36 **CHAIRMAN WALKER:** Does anyone have any questions? Seeing none,
37 we will move on to Mr. Glenn Constant with the U.S. Fish and
38 Wildlife. This is going to be Tab E. All of these are going to
39 be in Tab E, these presentations, and this is Tab E, Number
40 6(b).

41
42 **USFWS**

43
44 **MR. GLENN CONSTANT:** I am going to outline Fish and Wildlife
45 Service's activities and interest in regards to lionfish a
46 little bit differently. In our mandate, I guess, it's more from
47 a coordination and funding aspect of managing lionfish, and so I
48 think it's important to understand where Fish and Wildlife

1 Service's interest and organizational structure originates, in
2 terms of how we -- We don't do as much research and development,
3 like Dr. Frazer talked about, or gear development, but we do
4 have kind of a national Aquatic Nuisance Species Taskforce that
5 represents the congressional authorization for Fish and Wildlife
6 Service to engage in invasive species management.

7
8 It is thirteen federal agencies and fifteen ex-officio partners.
9 The Gulf States Marine Fisheries Commission has a seat on that
10 body, and they outline, at the very high level national kind of
11 planning level, what Fish and Wildlife Service's interest and
12 activities in invasive species should be and how we engage that.

13
14 For lionfish specifically, the coordination and research and
15 funding and control in management, part of that national plan,
16 which there is a website there if you're interested in some fun
17 reading, is where they acknowledge the interest and need for
18 lionfish, at least the specific species that is the invasive
19 species in the Gulf right now, and there are other aquarium
20 species that we still want to look into prevention and early
21 detection and response, but, for the invasive species in the
22 Gulf that we're talking about, it's no longer a question of
23 whether or not we're going to prevent those or control their
24 expansion.

25
26 It's whether or not we can find the right place to invest
27 funding, so that we get the kinds of advances we need in the
28 science that Dr. Frazer mentioned and kind of supporting the
29 development of the new gear types and so on.

30
31 The structure of the Aquatic Nuisance Species Taskforce, like
32 all federal bodies, starts with the taskforce and then it
33 branches out from there. The one important thing about lionfish
34 to note is that the national-level taskforce has elevated
35 lionfish to a pretty high status of importance.

36
37 You can't see this very well, but, in the red box to the bottom
38 right, there is an ad hoc committee that reports directly to and
39 functions directly under this kind of high-level plan that
40 exists that the task force oversees, which means that there is a
41 lot of interest in that.

42
43 There has been some feed up into the taskforce, which funds and
44 kind of connects downstream to the local level to determine what
45 funding needs exist, and we will get back to that chart again in
46 a second, but that ad hoc taskforce was tasked with coming up
47 with the lionfish management plan, and so, a couple of years
48 ago, this came out.

1
2 It goes more towards the specific needs and funding needs and
3 interest, and, again, with the invasive species, their findings
4 in this management are that controlling management -- We're at
5 the controlling management stage and the need to assess the
6 impacts of lionfish invasion, to better determine where we need
7 to put funding, and so this plan asks questions like what are
8 the implications of different lionfish densities on the
9 abundance of reef fish, and, moreover, do these abundance or a
10 reduction in the numbers associated with lionfish presence
11 translate into decreased recruitment and impact to the fishery
12 as a whole.

13
14 Our role is to communicate directly with the ad hoc committees,
15 the Fish and Wildlife Service, to take their message to the
16 states as well as to bring kind of more direction on the need
17 for those things upstream, back to the taskforce.

18
19 The other part of the structure that's important, I think, in
20 understanding how we can influence funding and get funding
21 appropriated to the right places, is the boxes that go out to
22 the side, which represent the regional panels. It's structured
23 much like the council around the fisheries management
24 organization.

25
26 They report at a more local level, or dig deeper into the
27 details of different invasive species management needs at a
28 local level, and so the Gulf and South Atlantic Regional Panel
29 would be the panel that services the footprint that the council
30 is active in, and it, again, is an advisory panel and is tasked
31 with communicating up to the panel what the interactions down to
32 the field level are determined to be important places to put
33 resources.

34
35 The website listed there too, if you're interested, hosts the
36 GCSARP, or Gulf and South Atlantic Regional Panel, and it has a
37 list of meetings that go back to about 2002. All the
38 presentations from their meetings are on this website, and they
39 do a pretty good job of listing all the invasive species issues
40 that they deal with, but there's a lot of lionfish literature
41 and information there as well, if you're interested.

42
43 The other thing that the regional panels do is facilitate the
44 further distribution of resources down to the lower levels. The
45 first level is the state, and so the states that have approved
46 management plans get, I think, \$50,000 a year to help develop
47 the kinds of needs and research or management activities that
48 they think are appropriate at the state level, and so it may

1 look different in Louisiana than it does in Florida or
2 Mississippi, in terms of what the needs are, but the regional
3 panel provides a place to kind of roll that up and get state
4 management interest, through these management plans, into the
5 regional level and then back up to the national level.

6
7 We also have Fish and Wildlife Service Regional Aquatic Nuisance
8 Species Coordinators, and so that's another conduit back up to
9 the regional and national scale for issues that, at the regional
10 level, are important, and we have a small grants program that
11 the Gulf States Marine Fisheries Commission administers for us.
12 It's probably about \$150,000 or \$180,000 a year, and it funds
13 things like lionfish control programs in the Southeast,
14 evaluation of attractants and traps as potential mitigation
15 methods for lionfish management, and a lot of outreach kind of
16 activities, but these are small grants, as the program name
17 indicates, and addressing things at a regional scale and dealing
18 with the science needs that answer questions about recruitment
19 and population metrics associated with lionfish and the
20 recolonization of reefs after we have knocked the populations
21 back and those kind of things at a large scale really require
22 something a little bit larger in scope.

23
24 Our assessment of where we can best kind of help to advance
25 lionfish into the future is summarized, I guess, in this
26 regional kind of more comprehensive push to do things like, in
27 the instance of exempted fishing permits -- If we are going to
28 look into making these gears safe and reduce the probability
29 that they damage other fisheries through bycatch, once these
30 gears are established as appropriate, maybe consider, through
31 taskforce development, like Susan was talking about, and
32 consider the simultaneous deployment of these gears at sites
33 where we're already doing kind of fisheries-independent
34 monitoring, so we can get the correlations that we were
35 listening to Dr. Frazer talk about earlier.

36
37 Overall, I think our push would be for a larger-scale, uniform
38 assessment, factors that deal with relative abundance, community
39 trends, and maybe density-related recruitment, and maybe some
40 movement studies to determine whether or not there are places
41 that these derbies and fish reductions are appropriate and
42 places where maybe they aren't as effective or aren't as
43 damaging to the fish recruitment and so on.

44
45 This is one of those kinds of studies that was recently
46 conducted in the South Atlantic, and so they did like 3,000
47 sites, from North Carolina down to the Key West part of Florida
48 and deployed chevron traps with video cameras at established

1 monitoring stations, and so this was an ongoing Southeast Reef
2 Fish Survey. It's an ongoing study that they added a lionfish
3 component to and came up with kind of a value-added way to get
4 to the kind of information they were looking for.

5
6 Overall, I think, again, our ability to advance the ideas that
7 bodies like this and the states individually deem most
8 appropriate and most meaningful come through communication back
9 upstream. I think the council's voice is important in helping
10 us to make that case at the ANS Taskforce level, which does have
11 an influence on what the federal agency allocations are to deal
12 with things like lionfish.

13
14 Again, we also have the Aquatic Nuisance Species Program, and we
15 can fund some other projects regionally, but those are still
16 very kind of small-scale complementary projects, opportunistic
17 chances to do things like derbies and so on. Of course, there
18 is always the Deepwater Horizon Gulf Restoration Funding that I
19 think we should still be aware of.

20
21 Specifically, in the NRDA part of that funding, the lionfish, or
22 invasive species control, is acknowledged and pursued as an
23 appropriate restoration metric, and so things like lionfish
24 density control for the purposes of improving survival of reef
25 fish are the kinds of things that you might want to consider
26 promoting and suggesting as restoration measures in the future.

27
28 There is also a mention of the need to control invasive species
29 in this other resource pot of funding, which is the mesophotic
30 and deep benthic communities pot of money, in the interest of
31 maintaining coral habitats by promoting appropriate fish
32 assemblages in association with those habitats.

33
34 That is kind of, in a nutshell, where we are in our strategy and
35 activities moving, and mostly, again, it's about coordination
36 and trying to help in directing funding to efficient and
37 meaningful ways, and I think, like Emily said earlier, there is
38 a lot of calm, savvy, lion hunters out there who get their
39 Facebook message out, and so we pay attention to that as well.
40 I think that's all I have.

41
42 **CHAIRMAN WALKER:** Thank you, Glenn. Is there any questions for
43 Glenn? Dale.

44
45 **MR. DIAZ:** I mostly just have a comment. First, I would like to
46 commend your agency for supporting the Aquatic Nuisance Species
47 Taskforce and the regional panels. I know they have probably
48 been around for about fifteen years, and, in our area of the

1 Gulf, I think they're constantly chipping away at aquatic
2 invasive species problems, and they're making a big impact over
3 time, and, without you all's support and keeping all this stuff
4 going, it would have fallen apart before now, but, looking back
5 over the fifteen-year period, in probably in any one year, I
6 don't know that I could point to a lot of things, but,
7 collectively, over time, just constantly tackling one thing
8 after the other, they're making a lot of progress, and so I
9 appreciate you all's dedication and support, and I think you're
10 making an impact, and so thank you.

11
12 **CHAIRMAN WALKER:** Thank you, Dale. Any more questions or
13 comments for Glenn? Seeing none, we will move on. We have
14 Florida next. It's going to be Tab E, Number 6(c) and Ms.
15 Tillotson. Thank you.

16
17 **FLORIDA**

18
19 **MS. HANNA TILLOTSON:** Thank you for giving Florida the
20 opportunity to come here today and share what we have been
21 working on as far as lionfish control efforts. Again, I'm with
22 the Florida Fish and Wildlife Conservation Commission, and we've
23 got a lot to share with you today, and so I will try and make it
24 speedy.

25
26 Anyway, so, given obviously the first reportings of lionfish
27 being off the coast of Florida, it's been on our radar for the
28 longest, as far as the other Gulf states and other areas along
29 the coast of the U.S., and so the Florida Fish and Wildlife
30 leads a lot of these control efforts and management efforts
31 within the state, and a lot of it has been on a reactive level,
32 and so we haven't had the opportunity to deal with certain
33 programs that we could put in place on a proactive level, but we
34 work with the other Gulf states and other areas, to assist with
35 their efforts in order to do so.

36
37 In the meantime, we have put in place a variety of control
38 programs and all sorts of agency initiatives, in order to
39 minimize the human health, safety, environmental, economic, and
40 all of the adverse impacts, because of invasive lionfish, that
41 we're now having to deal with.

42
43 We have relied on three basic strategic initiatives, and so
44 obviously increasing awareness, working with the public and the
45 stakeholders, in order to educate folks of all ages about the
46 issue, in order to prevent it and any future related impacts,
47 and so, also, increasing removal efforts and incentivizing folks
48 to remove lionfish from waters is certainly one of our main

1 programs and also working with stakeholders in order to promote
2 the consumption and the commercial market of lionfish. I will
3 elaborate on a lot of these issues moving forward.

4
5 Obviously, when we look at invasive species, they sort of throw
6 a wrench in the system, as far as how we're regulating their
7 populations and controlling how people are reacting to them, and
8 so, when we look at invasive lionfish, it's pretty much been a
9 huge -- That was our first issue that we had to deal with in the
10 State of Florida, is how are we going to be regulating them,
11 treating them, as far as a fishery, if they are continuing to be
12 as successful in spreading their range as they appear to be.

13
14 As you can see here, there is a lot of text, but, basically,
15 this is looking at a timeline of some of the -- It's basically
16 the deregulation that Florida has taken in order to make it as
17 easy as possible for folks to remove lionfish from waters, and
18 so we have basically made it that you don't even need a
19 recreational fishing license. There is no closed season, no bag
20 limit.

21
22 All you need to have is just basically approved lionfish-
23 specific harvesting gear, and we have put in place a lot of
24 incentives, essentially to encourage their removal and also to
25 prevent any future damage of any other invasive species into
26 marine systems.

27
28 As I go through this presentation, I will discuss some of our
29 control efforts that we have put in place, and a lot of our
30 programs are began upon outreach, and so a lot of our programs
31 are increasing awareness and encouraging just public awareness
32 and stakeholder action, and so I will go through some of these
33 control efforts and then also some of our other programs that we
34 have put into motion, and, again, these programs have really
35 been on the spectrum since the early 2011 and 2012.

36
37 We now have two lionfish staff that are specifically staffed
38 within the entire Florida Fish and Wildlife for these efforts,
39 and so it's a lot of -- We work with a lot of stakeholders and
40 rely on working with a lot of partnerships in order to make a
41 lot of these efforts come to fruition.

42
43 First things first are we needed to develop a control plan, and
44 so, with various workshops and working with stakeholder input on
45 developing a short-term and also a long-term control plan on how
46 we're going to be handling the impacts of invasive lionfish.

47
48 These priorities were based on education and outreach and

1 research and monitoring and removal and control and monitoring
2 and then data management and then also some regulatory
3 considerations, and so, with a lot of stakeholder input, we put
4 together a plan of action items under each of these five
5 priorities in order to basically put into place some action
6 items that we would want to be working towards in order to
7 achieve these priorities within our control plan.

8
9 The first draft of this was published or put out in 2016, and we
10 will continue to work on this on a yearly basis to update --
11 Touch base and see where we are and see where the program is
12 evolving, because invasive lionfish is a quickly evolving
13 program.

14
15 There is a lot of moving parts, and so certainly keeping tabs on
16 where the program is heading will be very important as we move
17 forward, and so, in doing so, in this upcoming spring of 2018,
18 FWC will host its second lionfish summit, and that's basically a
19 collaboration of stakeholders and researchers and a lot of other
20 folks, just to, again, touch base and continue to make sure that
21 all of those lines of communication are open as we're moving
22 forward.

23
24 In order to implement this control plan and any types of action
25 items, obviously we're dealing with a large stakeholder
26 community and also a very diverse stakeholder community, and so
27 not only are we dealing with divers and non-divers, but we're
28 dealing with the elderly, and we're dealing with our youth
29 within our schools, and so we've developed a messaging kind of a
30 plan, where we would like to have a call to action for each when
31 we're communicating with the public.

32
33 That way, we're able to communicate effectively and that there
34 is still -- We're reducing any misconceptions, and we're able to
35 really get our messaging across, and that will really prove to
36 be effective along all of our agency initiatives.

37
38 One of our largest platforms, as far as how we're covering the
39 state, is we have a traveling outreach booth, our Be the
40 Predator Booth, and so it's basically a platform in order to
41 provide information to the public, and so, again, we're out at a
42 variety of different types of events, and that's where a lot of
43 our current messaging -- We want to ensure that it's factual and
44 that we're reducing any misinterpretations, because we're still
45 seeing, even now, when it's been almost thirty or thirty-five
46 years that lionfish have been off of the coast of Florida, that
47 we're still hearing that people think these fish are poisonous
48 and not venomous. Anyway, it's just making sure that our

1 messaging is factual and that we're getting that out into the
2 media, and that's certainly one of our priority initiatives.

3
4 We have various types of print material that we're distributing
5 at these events, and, again, it's just making sure that we're
6 communicating that effectively, and that's where we'll really
7 make a difference.

8
9 As we heard earlier, in the earlier presentations, it's that
10 diving and spearfishing is the most effective way to remove
11 these lionfish, and so one of our goals of a lot of our
12 presentations and workshops that we conduct around the state is
13 to get divers more comfortable with removing lionfish, because
14 that's presently our most effective way to remove lionfish.

15
16 We have various workshops, where we're working with divers on
17 how to remove lionfish effectively and safely and also how to
18 fillet a lionfish, and so we're working with a lot of chefs and
19 seafood dealers just on knowing where the spines are and knowing
20 how to safely handle them, because they really are not as scary
21 as they appear, and so we just want to eliminate those barriers,
22 in that sense.

23
24 In addition to that, we have a lot of -- We recognize that our
25 youth and that education is very important, as our future
26 stakeholders and our future folks in this industry, and so
27 working with getting invasive species curriculums into
28 classrooms, especially around Florida, where it's shocking that
29 people are still so unaware of the issue, even when they live in
30 a coastal city.

31
32 Again, one of our largest initiatives, in order to just increase
33 awareness and also combine a lionfish tournament with a festival
34 is we have a Lionfish Removal and Awareness Day, and it was set
35 in place by our commission, and so we've had three events now,
36 and it's a statewide event, where basically, over one weekend --
37 In the past three years, from 2015 to 2017, we have removed over
38 30,000 lionfish within that tournament alone, just over that
39 weekend.

40
41 You can see that, in a short amount of time, there can be a lot
42 of effectiveness for the number of lionfish removed and, also,
43 we have held over twenty-four events around the state during
44 that same weekend, and so, by combining these types of events,
45 it has been very effective, as far as Florida is concerned,
46 with letting people taste lionfish for the first time.

47
48 A lot of people don't get the opportunity to do so, and also to

1 just really build a sense of community, and I will get into this
2 in a little bit, but a lot of these larger tournaments help with
3 a lot of our recreational harvest tracking and just kind of
4 getting an idea of some of the -- Where the lionfish are coming
5 out of the water and those sort of harvest numbers.

6
7 Again, kind of switching gears a little bit, when we -- We talk
8 about how lionfish are most effectively removed by diving, and I
9 would like to show you some of our commercial harvest data that
10 we have from Florida, and so, as you can see here, we are first
11 seeing lionfish being commercially harvested in 2011, and so
12 it's fairly new, as far as our commercial tracking of it, and,
13 as you can see, primarily in the first couple of years, lionfish
14 were caught as a bycatch within a lot of the stone crab and
15 lobster trap fisheries.

16
17 As you see, in the past couple of years, it has increased
18 exponentially almost of how much we're seeing that diving is the
19 most effective method of removing lionfish, and so that's
20 currently where we stand, and we are working with a lot of other
21 stakeholders and a lot of researchers on increasing our
22 effectiveness with traps and other types of innovative
23 strategies, because, with talking with a lot of our commercial
24 divers, they are having to now go to deeper waters and areas
25 farther offshore in order to catch these lionfish, and so it's
26 really diving, as it is effective, giving our landings number,
27 it's really not the most cost-efficient way to be removing these
28 fish.

29
30 In doing so, recognizing now that, since diving is the most
31 effective way to date, because none of our traps have been
32 permitted, that we, FWC, work with a lot of organizations around
33 the state in order to encourage these tournaments and these
34 lionfish derbies.

35
36 We sponsor a lot of these derbies, and we also keep track of
37 their calendar on our website, and we encourage derbies to
38 happen, just because, right now, they are primarily very
39 effective, and there have been studies that have shown that,
40 looking at the reefs prior to a derby and then after a derby,
41 that there is considerably less lionfish on those reefs, and it
42 definitely merits more research, as far as how long that reef
43 will stay cleaned, quote, unquote. It's certainly, on a short-
44 term scale, proving to be an effective method of removals.

45
46 Here, from 2014 through 2017, Florida has promoted lionfish
47 derbies, and, as you can see, they are primarily during the
48 summer months, when most folks are diving, but there is around

1 thirty derbies a year, and they are removing an average of
2 around 20,000 lionfish in each of those derbies, and so it's --
3 Every effort counts at this point.

4
5 Again, it also provides a great way to increase our tracking of
6 recreational harvest, because, at this point, all we have is our
7 commercial landings, and so these tournaments are a great way to
8 get an idea of what areas of the state are having a lot of
9 lionfish being removed from, and they provide us with an area of
10 focus for the future.

11
12 Unfortunately, these days, nobody does anything for free
13 anymore, and so, if you're not a commercial harvester, where
14 you're getting rewarded for your efforts, we have a lot of
15 programs in place in order to encourage a lot of the
16 recreational harvest of lionfish.

17
18 Our removal incentive programs are just another way to encourage
19 removals from Florida waters, and so we have various statewide
20 programs. The Lionfish Challenge has been going on for two
21 years, as well as a Panhandle Pilot Program, because there has
22 been a focus in the Panhandle, because of the high density of
23 lionfish population in that area.

24
25 Both of these programs just provide an incentive for
26 recreational and commercial harvesters, and so, when we look at
27 our lionfish challenge from last summer, it's a great
28 collaboration between dive shops, divers, and other agencies,
29 and so we work with them, and they help us cover the entire
30 state, because we're unable to do so, and so this allows divers
31 to turn in their lionfish after they have harvested them and be
32 rewarded for their efforts.

33
34 This was last year, and we are able to track that there was over
35 16,000 lionfish that were removed and submitted to this program,
36 and so, again, this is increasing our recreational harvest
37 tracking, and, this year, our 2017 Lionfish Challenge, the coin,
38 in the top portion of the slide, that coin, if you had harvested
39 lionfish, would allow you to obtain an additional spiny lobster
40 per day during the two-day sport season, and so we have various
41 resource incentives also in place in order to encourage removal
42 efforts.

43
44 Lastly, our Panhandle Pilot Program incorporated various
45 resource incentives as well as you could name an artificial
46 reef, and so divers that had removed lionfish throughout the
47 Panhandle counties were able to be eligible for various
48 incentives, and so, in this program, over 9,000 lionfish were

1 removed.

2
3 Lastly, our Reef Rangers Control Program is an incentive in
4 order for divers to report their harvest, and so we're realizing
5 that, nowadays, a lot of people aren't -- Lionfish are not as
6 novel, and so a lot of people are not coming in off the water
7 and reporting their harvest.

8
9 There are certain -- We encourage people to report it to the
10 U.S. Geological Survey and other areas, in order to continue
11 just to keep track of where these lionfish are coming from and
12 the depths that they're coming out of, but another incentive we
13 have in Florida is utilizing our public artificial reef system,
14 where divers can adopt a reef and pledge to remove lionfish off
15 of that reef.

16
17 Obviously it increases our awareness of where lionfish are and
18 how dense they are and how often divers are having to visit
19 those reefs in order to clean their populations from those
20 reefs.

21
22 As I mentioned earlier, since around 2011, lionfish have become
23 very popular within the commercial market within Florida, and
24 so, within Florida, there is only a saltwater products license
25 requirement in order to commercially harvest and then sell your
26 fish, and so that's fifty-dollars a year, and so that's pretty
27 relatively easy in order to be eligible to harvest and sell your
28 lionfish commercially.

29
30 We encourage divers to sell your fish commercially, but,
31 however, it's a fine line we walk, because we don't want it to
32 become a managed fishery, and, when talking with a lot of
33 commercial divers, they are marking down sites that they go to
34 that they left some little lionfish down on those reefs, and
35 they will go back and visit those sites in a couple of months,
36 when the lionfish are larger, and so we don't like hearing that,
37 but it's also a reality of the situation now, that a lot of
38 these divers are having to be diving into deeper and deeper
39 waters. When you're down at that depth, you don't have much
40 time down there to harvest those lionfish.

41
42 What we're finding is that, obviously, the demand is certainly
43 there. People are realizing that lionfish are tasty, and they
44 want to sell them and have them in their restaurant, but the
45 supply, at this point, just can't keep up with it with it only
46 being a diver-caught fish at this time.

47
48 Anyway, it's exciting that a lot of our seafood restaurants and

1 grocery stores in Florida are wanting to carry lionfish, and
2 they're interested in handling them safely, but it's just being
3 able to get a consistent supply of them now is where we stand.

4
5 I am going to end with our social media efforts. Again, in
6 order to just keep track of this quickly-evolving program, and
7 in order to make sure that the current and factual message is
8 being put out to the general public and to a lot of our folks
9 that we work with, we maintain various -- Our website within the
10 agency website as well as a Facebook page, and we post YouTube
11 videos for various tips and handling and fillet techniques.
12 Just maintaining those is a great way for us to get feedback
13 from the public and from a lot of our stakeholders.

14
15 Moving forward, we certainly are encouraging folks to get
16 involved, and we're continuing to work on a lot of our outreach
17 efforts, because, with any invasive species program, that's
18 obviously the best way that you can get anyone to take action,
19 but we are excited about a lot of the funding that we've
20 received in order to encourage folks to develop some innovative
21 strategies, and so we look forward to helping folks be able to
22 develop ways that these removal efforts can be something more
23 innovative than a diver-caught fish.

24
25 We will continue to work with a lot of researchers and other
26 folks working on these innovative strategies and traps, in order
27 to hopefully develop something bigger and better than a diver
28 removal of fish, and so, with that, I will take any questions.

29
30 **CHAIRMAN WALKER:** Thank you, Ms. Tillotson. Any questions?
31 Doug.

32
33 **MR. BOYD:** Thank you. I appreciate your presentation. Just a
34 couple or three questions. What is the optimum size for a
35 commercial lionfish?

36
37 **MS. TILLOTSON:** Good question. In the beginning, certain
38 wholesale dealers had size limits. They only wanted fish that
39 were at least eight or ten inches. Now, a lot of places have
40 completely eliminated any size requirements, and they are
41 willing to buy any size fish, and so there are different types
42 of cooking methods using the smaller fish, or you can smoke the
43 smaller fish. Any way to really just encourage that divers are
44 removing all sizes of the population is one way that -- They are
45 pretty much desperate to purchase any sized fish, and they will
46 make use of it somehow.

47
48 **MR. BOYD:** One other question. How long does it take to fillet

1 or render the meat out of a lionfish, knowing the spines and
2 everything that you've got to deal with?

3
4 **MS. TILLOTSON:** Good question. A lot of folks do remove the
5 spines altogether and then they fillet the fish, but we
6 recommend just to leave them on, and you really can just fillet
7 it like any other fish. It doesn't take much longer. You just
8 want to be careful to avoid the spines that are on the top of
9 the body and the bottom of the body, but it doesn't take any
10 longer than any other snapper or hogfish or anything like that.

11
12 **CHAIRMAN WALKER:** Any other questions? I just have a comment.
13 I have heard that the dip is pretty tasty that they have off of
14 Pensacola. I have heard of some of the tournaments they have,
15 and some of the guys were saying the same thing, that they're
16 having to go into deeper and deeper water, and I've actually had
17 some spots of mine that they were kind of a mystery to me what
18 was going on, and so I had them go and dive and remove the
19 lionfish, and the reef fish actually picked back up.

20
21 **MS. TILLOTSON:** Great. Thank you. I appreciate it.

22
23 **CHAIRMAN WALKER:** Thank you. Let's see. Next, we've got
24 Alabama, and Mr. Anson is going to be Tab E, Number 6(d).

25
26 **ALABAMA**

27
28 **MR. ANSON:** Thank you, Mr. Chair. I don't have a formal
29 presentation, but I'm just going to read a few items. It looked
30 like Dr. Frazer had a good opportunity to educate that goliath
31 grouper, in that last spot there, to eat some lionfish.

32
33 The Alabama Marine Resources Division received approximately
34 \$39,000 from the Gulf States Marine Fisheries Commission
35 Invasive Species Program over 2013 and 2014 to conduct
36 monitoring surveys of eighteen reef sites off of Alabama and to
37 conduct outreach among the Alabama fishing and diving community
38 through AMRD staff attendance at boat shows, coastal
39 conservation expos, and seven lionfish tournaments, where
40 biological data were also collected from lionfish entries.

41
42 In addition, the funding also helped to establish the Alabama
43 Adopt a Reef Program, which is a web-based reporting tool where
44 registered users have the option to adopt a reef of their choice
45 or just select other reefs to report information, but they would
46 provide information on the condition of the reef as well as the
47 number of lionfish observed and harvested from the reef, so we
48 can keep track of those reefs over time, potentially.

1
2 We don't have a lot of divers in Alabama, or at least those that
3 are reporting through the program, and, for the last several
4 years, we've received just fifty-two reports. 82 percent of the
5 428 observed lionfish from those reports were reported as
6 harvested, however.

7
8 The Marine Resources Division has funded fishery-independent
9 monitoring conducted by Dr. Sean Powers at the University of
10 South Alabama to support a habitat-based assessment for reef
11 fish species and remotely-operated video cameras on one of the
12 sampling gears used in his research, and lionfish are counted
13 with the cameras among randomly-sampled reef sites, both
14 artificial and natural.

15
16 The average number of observed lionfish are multiplied by the
17 estimated number of reefs to obtain an estimate of the total
18 number of lionfish. In 2016, Dr. Powers estimated there were
19 approximately 250,000 lionfish in Alabama's offshore artificial
20 reef zones.

21
22 Lionfish can be commercially sold through purchase of a hook-
23 and-line license, a commercial hook-and-line license, and sale
24 has to go through a licensed seafood dealer. However,
25 commercial landings have been very low in Alabama. A lot of
26 them are taken over to Pensacola, the ones that are caught by
27 Alabama divers.

28
29 There may be lionfish in Mobile Bay. Part of this presentation,
30 one of my colleagues in the Alabama Department of Conservation
31 and Wildlife and Fresh Water Fisheries Division, they support
32 research with a researcher from the University of West Florida,
33 Dr. Alexis Janosik, and they are using EDNA to try to find
34 sturgeon in Alabama rivers and in Mobile Bay.

35
36 She has detected EDNA of lionfish in upper Mobile Bay, just
37 south of the interstate there, and so very freshwater
38 conditions, deep water however though, and we have heard of
39 reports of people catching red snapper there as well, but she
40 has also identified some lionfish in upper Mobile Bay. That is
41 the extent of what is going on in Alabama.

42
43 **CHAIRMAN WALKER:** Thank you, Kevin. Is there any questions or
44 comments? Okay. Then let's move on to Mississippi. That is
45 Tab E, Number 6(e), and Dr. Mickle.

46
47 **MISSISSIPPI**
48

1 **DR. MICKLE:** Thank you, Mr. Chairman. I will be quick, as we
2 are over on time. Mine is just an oral presentation. I wanted
3 to go through just a little bit about the history of what
4 lionfish has pretty for our story for Mississippi.

5
6 As far as funding, real quick, for Mississippi, the Lionfish
7 Response Unit, in 2012, was a fund that went through the U.S.
8 Fish and Wildlife Service, and the U.S. Parks Service
9 contributed, with our state, and we did some early pilot dives,
10 to see if the presence were in our waters, and indeed they were.

11
12 Then the Mississippi Gulf Fishing Banks, along with the
13 Deepwater Mafia, which are fishing and diving groups in
14 Mississippi, have been participating in volunteer surveys and
15 surveys at that point.

16
17 This year, we have initiated \$50,000 of funding, through my
18 agency on its own, identifying that lionfish indeed is a
19 problem, and we have initiated, with Mississippi Gulf Fishing
20 Banks and the Deepwater Mafia, with a true standardized protocol
21 and monitoring in certain sites, and so, again, artificial reef,
22 natural reef, and baseline standard areas without structure, to
23 see what kind of interaction there is going there with the
24 habitat types with the control sites.

25
26 Then, moving on into the primary gear, it is diving. I would
27 like to add that we do hold the world record for hook-and-line-
28 caught lionfish. They are very hard to catch on hook-and-line,
29 but we did certify it in our state record protocols two years
30 ago, and it ended up actually being a world record, and so I had
31 to go through the IGFA certifications, and it passed as the
32 world record caught on hook-and-line, and so we obviously have
33 large fish in our waters.

34
35 It was caught in very, very deep water, and I like to add that,
36 being in the northern Gulf, early indications -- We have seen
37 some movement of that more steady temperature offshore of
38 probably holding that resident population year-round, and
39 there's a lot of seasonality with our presence and absence of
40 lionfish, because of the cooler winters.

41
42 Again, there is a lot of unknowns. We are early in the process.
43 It really all started in the early 2000s, with very rare
44 instances of call-ins to my agency. Then, after that, in about
45 2011 or 2012, Alex Fogg was a graduate student, and he was
46 initiated at the Gulf Coast Research Lab, to start his research
47 there, and I remember that I worked with him, and we were
48 worried that we weren't going to get enough samples in

1 Mississippi, and so he really spread out wide, Gulf-wide, to get
2 some samples, and he did not have a problem getting samples
3 within our state waters as well as outside. He has done his
4 thesis, and he has published his thesis, and it's really
5 wonderful work.

6
7 Our own Jim Franks in Mississippi, as we all know him very well,
8 has promoted the take of lionfish, and he's got it on some
9 menus, and he has promoted it in some tournaments, and I would
10 like to add that, as far as state species and non-federally-
11 regulated species, at our dealers, it was the highest paid price
12 per pound in 2016. Obviously there is a demand there, even in a
13 state like Mississippi, where it's not a dominant species of
14 landings, but, again, through diving commercially, it seems to
15 be somewhat of a viable business plan, at least at this point.

16
17 I would like to point out that, although we are early in our
18 understanding and research of it, we don't really understand
19 what's going on with lionfish and our types of habitats. Dr.
20 Frazer's presentation was very wonderful, and we learned a lot
21 from it, but, again, those trophic levels seen in the Caribbean,
22 those reef types, are very different from our artificial and
23 natural reefs in the northern Gulf of Mexico, and so
24 understanding the trophic dynamics of having that species in our
25 waters are not truly understood.

26
27 Alex Fogg, that graduate student that I mentioned earlier, had
28 done a lot of research on age structure and reproductive
29 structure and histology with Nancy Peterson at the lab there,
30 and it was confounding to see what was actually going on with
31 reproduction and age level, what's going on with lionfish and
32 the size and the reproductive capabilities of the species even
33 in our northern Gulf waters.

34
35 We have tournament fishing categories, and, when we did certify
36 that state record, we got a little bit of pushback. I got a
37 couple of calls saying why are you promoting this invasive
38 species, and I just didn't really understand that. We're
39 promoting the removal of the species. We are not promoting the
40 species itself, and they can get mad at me if I put a minimum
41 size take on them, but I don't think that's going to happen.
42 With that, I will take any questions.

43
44 **CHAIRMAN WALKER:** Any questions or comments? Patrick.

45
46 **MR. BANKS:** How big was that state record?

47
48 **DR. MICKLE:** How big was it, I don't want to tell you wrong, but

1 was the world record, and I will say that. I can bring it back
2 to you. I can get it for you, if you want.

3
4 **CHAIRMAN WALKER:** Any other questions or comments? Paul, I
5 appreciate that. Let's move on to Louisiana here, to Tab E,
6 Number 6(g). Excuse me. Let's back up to Texas. Our host
7 state here is going to be Tab E, Number 6(f). Mr. Riechers.

8
9 **MR. RIECHERS:** Thank you, and, council, please let me introduce
10 Ms. Leslie Hartman. She is going to be giving the presentation
11 for us. Leslie is our Ecosystem Team Lead out of Matagorda Bay,
12 but she also has served kind of as a key point person for
13 aquatic invasives for coastal fisheries and for the department,
14 and so with that, Leslie. Thank you.

15
16 **TEXAS**

17
18 **MS. LESLIE HARTMAN:** I'm just going to give you a real quick
19 overview of what we've done. Our outreach efforts have been
20 limited, because, thus far, they're not really visible in our
21 bays, in our nearshore waters, and so what we decided to do was
22 learn from all the other states and get a proactive effort
23 going. This takes the form of four different parts. We have
24 our outreach efforts, a state management plan, we're working on
25 research, and some limited removal.

26
27 We found we had outreach material, and we have at least four
28 outreach materials generated by the State of Texas. We are big,
29 and we needed four, but there was a piecemeal evolution, as
30 people recognized that it was an issue, and just regenerating
31 stuff to hand out, and so we had multiple efforts.

32
33 We also have this wonderful thing that we've just done. In
34 2015, the Texas legislature gave Texas Parks and Wildlife some
35 invasive species money, and we were able to direct some towards
36 our texasinvasives.org webpage, which is kind of our homepage
37 for all things invasive, and this is just a component of it
38 where we now have a place where you can actually actively report
39 lionfish, which, up until -- Pretty much this was in August, and
40 this is August 7, but this is a place that we can now go and
41 start tracking where people are starting to collect their
42 lionfish and start monitoring that a little tighter. It also
43 gives a way that tells you what to do with your lionfish.

44
45 This is a wonderful marketing campaign that we also just started
46 with those same 2015 monies, and this is very specific to
47 pathway prevention. Invasives come in through a lot of
48 different pathways, and this one is specific to aquariums, and,

1 in here, we use the lionfish as kind of our poster child of what
2 not to do, and so we are using it to create awareness and
3 hopefully stop new introductions and educate people to the
4 alternatives to dumping their little pet Leo into our local
5 waters, and you can see there that we have don't let your pets
6 become pests.

7
8 As the rest of the states, we are planning to make this material
9 available to share. Now that it's been created, we do want to
10 start to share it, and we've already had, through our campaign,
11 120,000 ads that have reached aquarium enthusiasts. Of those,
12 over 11,000 have clicked on and followed that link, and please
13 understand that that just dates from June 22 through August 31,
14 and so we are really excited with that, and we plan on making
15 some more materials from this baseline.

16
17 Additionally, put on a Lone Star Lionfish Symposium, and it's
18 working on its third year. What they decided to do there is
19 we're going to bring in every expert we know. We know
20 biologists are not going to be able to address this issue, and
21 we're going to need engineers, and we're going to need outreach
22 specialists, a variety of different backgrounds, and so our
23 state plan is going to have these seven component parts.

24
25 What can we do about protection areas, outreach, research,
26 policy, control and management, funding sources, and uses and
27 markets? What we've tried to do is get ahead of the curve
28 there, and that's why we can take the time to do it as
29 thoroughly as possible and also get the State of Texas on the
30 same page, so that we're not having four of the same outreach
31 materials generated.

32
33 For that symposium, these were our participants over the last
34 two years. You can see we had Shell Oil and the Texas Shrimp
35 Association, and we even had UT and A&M all in the same room,
36 and a lot of people see the need to kind of get ahead of this.

37
38 Additionally, Texas Parks and Wildlife, in conjunction with A&M,
39 did a small study. What we're trying to see is will these
40 lionfish be able to be caught in a preexisting trap that is
41 currently available off the shelf, and we did find that they
42 preferred the square, basically the crab traps, and not so much
43 the popup trap.

44
45 We tried a little bait study. They are only keyed to live bait,
46 and we did find that, at least in the limited study we did, that
47 mortality begins at fifty-five parts per thousand, which still
48 leaves most of Texas coastal waters, as well as the rest of the

1 Gulf of Mexico, a little bit vulnerable, and so not new stuff,
2 but definitely trying to get a step on that.

3
4 Removal efforts, we do have an intentional removal effort, NOAA
5 does, with the Flower Garden Banks National Marine Sanctuary.
6 They are going into their third year of doing that, and it's an
7 invitational only. When you're diving that deep and when you're
8 handling venomous fish, you don't want to take out somebody who
9 just got their dive card, but numbers on retrieval have been
10 fairly low. The weather was bad, and the visibility was bad
11 this last year, and so it's still down in the hundreds, but they
12 expect that to pick up, unfortunately.

13
14 There is some incidental removals. Texas Parks and Wildlife,
15 our Artificial Reef Program, as we go down and can remove some,
16 we do. The Harte Research Institute, they also, as part of
17 their research efforts, will remove, and also our recreational
18 anglers are starting to catch and remove in Texas. It's not
19 very much. We have a couple of places where we know where have
20 some really -- Packery Channel, down in Aransas Bay, we know
21 that they are easily accessible. That was Texas, in a nutshell,
22 and does anybody have any questions?

23
24 **CHAIRMAN WALKER:** Kevin.

25
26 **MR. ANSON:** Thanks for the presentation, Leslie. Where did you
27 get the email list, or did you use an email list, for the
28 aquarium, to outreach to the aquarium owners? How did you
29 acquire that?

30
31 **MS. HARTMAN:** Actually, as I understand it, and, Robin, you can
32 redirect, but we actually -- There is Google Ads, and we paid
33 for advertisement, and so we targeted that. You can target to
34 aquarium enthusiasts. There is like Google words that will
35 cause our popup banner and the follow-up to occur.

36
37 **MR. ANSON:** Thank you.

38
39 **CHAIRMAN WALKER:** Any other questions?

40
41 **MS. HARTMAN:** Thank you.

42
43 **CHAIRMAN WALKER:** Thank you. Next, we're going to move on to
44 Louisiana, and that's Tab E, Number 6(g). Let's get Patrick to
45 introduce Mr. Schieble.

46
47 **LOUISIANA**

1 **MR. BANKS:** It's Chris Schieble, and I will introduce Chris to
2 you guys. He is going to start helping on some Gulf Council
3 matters for Louisiana, and I am thankful to have him. He has
4 been with us for about five years, and he's had a long career so
5 far in finfish research, and so his knowledge is vast, and I am
6 very happy to have him. Go ahead, Chris.

7
8 **MR. CHRIS SCHIEBLE:** Thank you for the introduction. I
9 appreciate it, and, being the last one, just in case everybody
10 is starting to get hungry, the good news is that this is a short
11 one, and so I will get through this fairly quickly.

12
13 In Louisiana, we have brought this kind of to the attention of
14 the manager's radars fairly recently. It's not been a
15 heightened topic, I guess until probably a few years ago, and
16 one of the major stumbling points in Louisiana is that it's not
17 a huge recreational diving area, obviously, because of the
18 turbidity.

19
20 It's not like Florida, where it's clear all year-round. We only
21 have certain times of the year where you can really dive
22 effectively, and so it has not been brought to light with our
23 recreational community as much as it should, but, also, it's one
24 of the topics that I think, as managers, that we need to put on
25 the front of our radar, and so that's what I am trying to do in
26 our agency, as much as possible.

27
28 I am not going to go into depth on the biology. We've heard
29 really good synopses so far today of all of that, but I want to
30 make a point here that, recently, we went to our state
31 legislature and presented a general synopsis of all invasive
32 species in the State of Louisiana, and it included lionfish, for
33 the first time.

34
35 We had things like channel apple snails, and we had salvinia,
36 and how we manage all of those and handle them, but this was
37 included for the first time, and we gave a basic rundown on the
38 biology of the species, just so they know what happened with the
39 spread as well as what is happening with it biologically.

40
41 One of the interesting things that we've done is our Fisheries
42 Research Lab down in Grand Isle has put together a project that
43 was funded through our state wildlife grants program, and they
44 used what they called the rover diving technique to basically go
45 to the limits of recreational diving to survey all the standing
46 leg platforms in the Gulf that they thought they could get to
47 within the reaches of the depth of diving, and so that's about
48 120 feet.

1
2 That's another limiting factor. As you know, in Louisiana, it
3 gets deep very quick as we get off of our shoreline, and so we
4 have a lot of platforms that are in very deep water that are not
5 accessible through recreational diving techniques.

6
7 Our lab basically studies the species richness and relative
8 abundance of all fish assemblages at multiple standing leg
9 platforms using the rover diving technique, and, also, it was
10 part of the artificial rigs to reef program, and, interestingly,
11 and you can see the parts that I highlighted in red there, but
12 red snapper were observed in 60 percent of these surveys, while
13 lionfish were observed in 63 percent of these surveys, and so
14 they actually outnumbered them, in most instances.

15
16 Twenty-eight families were observed. Of those twenty-eight
17 families, eighty-four individual species were observed at these
18 platforms. They found that the rover diving technique is a good
19 method to use on these types of situations and structures in the
20 Gulf, and divers of various skill levels can still make good
21 assessments of populations of abundance of species around these
22 platforms. I think that continued monitoring would be helpful
23 for us at these platforms. Like I said, diving is not exactly a
24 year-round activity in Louisiana.

25
26 Most recently, we were solicited by Reef Savers, a nonprofit
27 that is trying to target lionfish specifically, and they came
28 and approached us with an experimental gear permit, and we found
29 that we really don't have many issues with it at all. We have
30 added a few requirements to address some bycatch and reporting
31 that we would like to see, and also the experimental gear notice
32 of intent was recently approved by our state commission, and it
33 allows our secretary to issue the permit for the experimental
34 gear.

35
36 We plan to have this permit effective probably by the end of
37 this month. It should get passed through, and that will be when
38 the change becomes effective that they can utilize this gear
39 thereafter.

40
41 We are mostly interested in the bycatch data, as I said before,
42 and also to check the usefulness of the gear itself. We see
43 that it looks great as you set it on a flat bottom, but I'm not
44 sure how well the FAD is going to stand up inside the trap when
45 it's deployed in different topographies on the bottom, and so it
46 will be neat to find out how that works, if it does or not.

47
48 Last, but not least, what I have here is our invasive species

1 coordinator's contact information. If you have any questions
2 that come down the line, this is the guy to coordinate with
3 locally in our department, and he is the head of that program,
4 and I would like to take any questions, if you have them.

5
6 **CHAIRMAN WALKER:** Any questions or comments? Seeing none, thank
7 you for your presentation.

8
9 **MR. SCHIEBLE:** You're welcome.

10
11 **CHAIRMAN WALKER:** Okay. Did I miss anybody that had any
12 questions? Okay. No questions or comments. That takes us on
13 to Other Business, and I think, Madam Chair, you had some other
14 business.

15
16 **OTHER BUSINESS**

17
18 **MS. BOSARGE:** Yes, I had a couple of things, but I will try and
19 -- There is one, really, that I thought would be ideal for this
20 particular committee, and that's why I put it on there, and so
21 the two things, and one we can discuss during the committee
22 report, if we need to, but I wanted to make sure that we had --
23 We talked about the descending devices at the last meeting, but
24 we never really gave any -- We didn't have any motions, and we
25 didn't give clear guidance on exactly which route or no route
26 that we want to take on that. We can talk about that later, if
27 we need to.

28
29 While we are talking about some of these funds that were
30 available -- So you see on my paperwork on the desk here, and I
31 remind myself of Corky Perret, and now I'm even cutting things
32 out of the newspaper to bring to the meeting.

33
34 This is going to be for Mr. Constant eventually, but this was an
35 article that was in the *Sun Herald*, which is a local Mississippi
36 paper, and the headline is "Biggest Dead Zone Ever is Recorded
37 in the Gulf of Mexico".

38
39 This year, I think it's measured to be 8,776 square miles, or
40 about the size of New Jersey, which is a record. The large dead
41 zone is caused mainly by nutrient pollution, primarily from
42 agriculture and developed land runoff in the Mississippi River
43 watershed, and that's continuing to affect the nation's coastal
44 resources and habitats in the Gulf. That is from the article.

45
46 Essentially, when I read it, I thought, well, you know, I wonder
47 if some of these restoration funds, which there are a lot of
48 them -- It would take a fund of that magnitude to actually

1 really address a problem that spans this type of -- Because this
2 is not just a marine ecosystem. This is coming from a land-
3 based ecosystem all the way out to us and affecting our fish,
4 but, because it is affecting marine habitat, are there any
5 efforts with the BP RESTORE funds to somehow maybe start to
6 address some of this runoff that's coming down and affecting us?

7

8 **CHAIRMAN WALKER:** Glenn.

9

10 **MR. CONSTANT:** That's a pretty complex question for 5:29, but so
11 the -- Like everything in the Gulf, it's yes and no. I think
12 there are, depending on what funding source you're talking
13 about, there are stipulations about what it can be used for.

14

15 I guess, if there is an interest in doing things like nutrient
16 reduction, I'm guessing, as part of the tact in management
17 restoration action you would be pursuing in terms of reducing
18 the dead zone, the criteria they use, I think, are -- If you're
19 talking about NRDA, the NRDA funding probably is the most
20 appropriate pot of money to go after, in terms of what you're
21 talking about.

22

23 The criteria are tightly tied to the restoration return, and so
24 how much do you get for investing, specifically with respect to
25 the injured resources, and so, the further away you get from how
26 many more fish do I get for spending these dollars, the lower it
27 goes down on the priority list, and so, yes, it's definitely
28 within the purview of the approaches in restoration, water
29 quality and improving coastal estuaries and marine conditions.
30 That is certainly acceptable restoration. It's a matter of how
31 it gets prioritized in the system.

32

33 **MS. BOSARGE:** Okay. That sounds good. I might want to see a
34 presentation on that at a later council meeting, when it's not
35 5:30 in the afternoon, and we can delve into it further and
36 maybe see, you know, what's there, and I really think that would
37 be an amazing project to look at. I mean, the dead zone -- The
38 smallest dead zone recorded was in 1988, and it was fifteen
39 square miles.

40

41 We're at over 8,000 square miles now, and so surely there has
42 got to be some sort of decent reward there, from a fish
43 restoration standpoint, if we can start to minimize that back to
44 the footprint that it had in the late 1980s, and so maybe we'll
45 follow-up with you at another meeting and you can give us
46 another presentation, sir.

47

48 **MR. CONSTANT:** Sure. I would be glad to, and there's also some

1 other folks who have already kind of dug into this, and so we
2 can maybe connect with some other folks.

3

4 **MS. BOSARGE:** Perfect. I knew you were a well-connected man.

5

6 **CHAIRMAN WALKER:** Is there any other business? Seeing none, the
7 Sustainable Fisheries Committee stands adjourned.

8

9 (Whereupon, the meeting adjourned on August 7, 2017.)

10

11

- - -