SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

ECOSYSTEM-BASED MANAGEMENT COMMITTEE

Holiday Inn Brownstone Hotel
Raleigh, NC

December 5, 2011

SUMMARY MINUTES

Ecosystem-Based Management Committee

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Karen Raine
Dick Brame
Lt. Col. Bruce Buckson
Jeff Herod
Dr. Jack McGovern
Phil Steele
Dr. Theo Brainerd
Doug Boyd
Otha Easley
Dr. Louis Daniel

Other Participants Attached

The Ecosystem-Based Management Committee of the South Atlantic Fishery Management Council convened in the Roosevelt Ballroom of the Holiday Inn Brownstone Hotel, Tuesday afternoon, December 5, 2011, and was called to order at 5:00 o'clock p.m. by Chairman Duane Harris.

MR. HARRIS: I'm going to convene the Ecosystem-Based Management Committee. Okay, the first item on the agenda is approval of the agenda. Are there additions or changes to the agenda as published? Wilson.

DR. LANEY: Well, Mr. Chairman, if you wanted to you could switch Item 5 and Item 4 and move those two presentations up to the beginning of the meeting.

MR. HARRIS: Yes, that's what I'm intending to do; so without objection if you will allow me the latitude to move some things around. Okay, seeing no other comments on the agenda, the agenda is approved. Next is the approval of the September 13, 2011, Ecosystem-Based Management Committee minutes. Are there additions or corrections to those minutes? Seeing none, is there any objection to approving those minutes? Seeing none, the minutes are approved. Okay, the first item that we're going to do today is under Item Number 5, and that's an update on lionfish research by Dr. Jim Morris.

DR. MORRIS: Thanks, Duane, it's a pleasure to be here again and to see everyone. I guess it has been a couple of years since we've had a formal lionfish update, so I look forward to talking with you about this issue. I'll try to be brief. I realize that talking about lionfish may get the stomach juices flowing and whatnot, but we will try to be brief.

I'm not going to be able to really go into much of the biology and ecology that we did in the last presentation, but I have brought handouts. One is a quick-fax document on the biology and ecology and all the invasion history and everything that we went over the last time; so rather than rehashing that, I thought we would talk about emerging findings and things that are underway now and stuff that is new since the last time we updated you.

I would like to talk about lionfish and will end with a couple of other emerging invasive issues that we are working on as well. Most presentations that I give on this issue, I like starting out with this slide which is a photo-shot rendition of a really mean lionfish. I use this slide to talk about that this is not a supernatural being that is taking over our planet.

This is a fish and it is constrained by the laws of physics and biology and all the things that influence our native fishes, but there are some new and there are adaptations that are occurring and environmental forces that are happening with a species that continue to puzzle us.

In that context I'd like to share a few of these with you just to revisit for a moment how we ended up with this problem. I want to remind folks that we definitely had lionfish sightings that predated Hurricane Andrew. That seemed to be a fact among many circles that this was a Hurricane Andrew introduction in South Florida. That is not the case.

We in fact have sightings going back to 1985 which predated Andrew. We believe that largely this issue came out of the marine ornamental aquarium trade, and it's one of more than 40 different marine ornamentals that we have found in the waters of South Florida, this one, of course, being one that has become established.

We have put out a field guide for non-native marine fishes of Florida, which is assisting us by providing a watch list. We're working with USGS, U.S. Fish and Wildlife Service and others and NGOs such as the Reef Environmental Education Foundation to continue to monitor marine ornamental sightings in South Florida.

There continues to be great attraction with many federal entities and state entities in terms of this effort of being responsible pet owners and so we continue to work with them in those initiatives. So just to see where we are in terms of the invasion timeline, this is an animated map that the folks with the USGS Non-Indigenous Aquatic Species Data Base produced for us.

I almost get this from them on a weekly basis, and it shows the spread of lionfish beginning as established in 2000 and then spreading to the Bahamas in 2004, the rest of the Caribbean from then until the present, and now we are looking at a complete invasion of the southeast U.S., the Caribbean; and as of this year in 2011 spreading into the Gulf of Mexico. There you can see the invasion as it stands in terms of sighting since the last couple of weeks. I think this was updated two weeks ago.

The timeline of this invasion has been fast. We're talking in less than a decade this marine fish invader has spread throughout the entire temperate Atlantic Basin. In thinking of this in terms of an ecological and in terms of an invasive species standpoint, I created this graphic to sort of show us where we are.

This is a classic population growth rate and increasing time graph that shows that with most invasive species you have essentially a lag period followed by an exponential growth phase followed by at some time a peak in the invasion, and then that invader will eventually reach an equilibrium whether it be competing with itself. We think of kudzu on the side of a forest is competing with itself, it becomes dependent that way, or in competition with native species in terms of environmental or biotic resistance.

If you think about this in terms of lionfish we can essentially phase this in terms of from '85 until 2000 we may have been in this lag time; and then from 2000 until we don't know when, we're going to be in the exponential growth phase. I can tell you, though, that because we only have begin seeing lionfish in the Gulf of Mexico that we're nowhere near a maximum spawning stock biomass of lionfish, that we are continue to see lionfish recruitment increase for a relatively long period of time because we have essentially the entire Gulf Basin to continue to become invaded as well as the density is continuing to increase in the southeast and Caribbean.

It's hard for me to put a date on where we might see a peak in this invasion or when we might begin seeing density dependence begin occurring. In that context it is quite alarming to think that we may not even be anywhere close to a maximum spawning stock biomass in this invasion. This is what we expect in terms of the eventual geographic spread projection.

This is based largely upon temperature tolerance of this invader so we're talking from the North Carolina/Virginia Line down possibly to the northern coast of Argentina and the entire southeast U.S., Gulf of Mexico, Caribbean. This is assuming that they can jump across the Amazon Delta, which is somewhat of a soft barrier. We will have to see.

Numerous studies have been underway for the last ten years. At our laboratory we have been working on a number of those in terms of documenting the basic biology and ecology of this invader. We can tell you that just from working with partners and their own observations that we are seeing densities increasing still across many types of habitats. We can see as many as hundreds of lionfish per acre. There are definitely site-specific densities.

You can see quite high variability as you can see with our native fishes across these habitats. If you're interested more in the specific biology and ecology, please see the handout. It pretty much documents what we know and it breaks it down by subject matter. I'll be happy to talk with any of you about those findings after the presentation or during questions if you have any specifically burning issues.

I would like to provide a few highlights of things that have come up in the last couple of years, since our last update. One is a question of are lionfish long-lived? This is a lionfish otolith from an aquarium, a captive-held lionfish in a Seattle aquarium that lived for 33 years. This has been a big question for us is what is the lifespan of lionfish?

We couldn't go to the native range and find any age-and-growth studies and, of course, in the Atlantic we'd have to wait for 30 years to determine if lionfish would live 30 years in the Atlantic, so this is just a hint. I'm not sure if this is an artifact of captivity or whatnot, but here we do have in fact an example of a lionfish that lived for 33 years in an aquarium.

They know that because they remember when they put him in tank and this fish died recently and so we're able to look at the otolith. We do have lionfish well over ten years of age that we have caught in the Atlantic in our age-and-growth studies, and we have an age-and-growth study coming out soon. This has large implications for the invasiveness and the invasion biology if they are long-lived just because of how it increases individual lifetime fecundity, so this is an interesting problem.

There is lots of attention. This is the million dollar question; what eats lionfish, what might limit them in their invaded range? I wish I could tell you that I'm confident or that we are confident that our natural native predators are going to be limiting lionfish in the Atlantic. The reality is we're seeing lots of species that may be preying on lionfish, but none of the native predators are we finding are eating lionfish with any consistency to the level that we would expect them to be able to impose significant predation mortality to the extent that it could control lionfish densities. There has been a study this year looking at grouper and lionfish correlations, and there is some possible correlations there suggesting that grouper may be controlling lionfish, but I can tell you that there is lots of criticism of that study in terms of the study sites and known removals of lionfish from those locations. That's just one data point and we need to look at that carefully.

The other thing is there is lots of attention in terms of spear fishermen spearing lionfish and then releasing them into the water and grouper coming and eating lionfish and whatnot. That's fish feeding and we have lots of opinions about the ecological issues with fish feeding and it's not a natural process, and that remains to be seen if that can have any effect in terms of the learning of these native predators.

I can tell you from the lab experiments that we've done and looking at this fish in situ in the field that our native fish recognize lionfish as a venomous fish. It has aposematic coloration, which means that this is a universal warning coloration pattern and our native fish definitely recognize lionfish as a venomous fish and they respond that way to the fish.

Here is an example of some work that was published in NAGEO in the past year of shark feeding of lionfish. Like this, I used this osprey/lionfish picture all the time because it just shows what it means to be a natural predator. Osprey, of course, are a natural predator, but osprey are not contributing significantly to the predation mortality of lionfish, and that really helps us in teaching that principle. It doesn't matter that osprey eat lionfish; they're not going to control them.

So, what are the ecological impacts that we are gathering and that are being documented? We are seeing changes to the reef fish community without a question. There is some great work happening right now in the Bahamas looking very specifically at this by a graduate student at Simon-Fraser University. Her name is Stephanie Green.

We have been working with her over the years, and we're really excited about her work because she has been looking at patch reefs. She is removing lionfish and looking at the response of the fish community to those removals. She has been looking at native reef fish densities as it relates to lionfish densities, and work is showing for sure that there is an impact.

There is that bioenergetic impact that is happening over the reef as a result of lionfish consumption of those native reef fish. There is some work recently released by Lesser and Slattery this year that attempts to document consumption of herbivores fishes by lionfish and demonstrate an increase in algae as a result of the reduction of herbivores fishes in the mesophotic coral zone and a subsequent decrease in coral biomass as a result of increase in algae.

This is the first of these sort of cascading impacts scenarios that we have been concerned about for some time. Again, this is an N of 1. There needs to be additional studies looking at this. It's just one of the many types of impacts that can be observed. A number of diet studies beyond the one that I did in 2009 are coming online.

We are seeing the same trend in terms of lionfish are generalists carnivores. Their diet is reflecting the more abundant prey items on the reef, and they are generalists. They are feeding on mostly what is easy for them to feed on around them. I do want to point out, though, that the scale of ecological impacts is quite site-specific, and there are many parameters that we learning that are, of course, influencing the type of impact that they're having, and it's specific to habitat type as well.

There is not a quick answer to this in terms of what are lionfish impacts because it depends on the site, it depends on the site dynamics and recruitment, and it also depends on the time of year that you're looking. If we look issues that you as a council would be interested in, for me I continue to be concerned about the impact of lionfish on stock rebuilding efforts.

I hesitate to say it but we really have no new findings other than some diet studies that really get us further down the road on this major question. We do know that we have diet and space overlap with snapper and grouper. This niche takeover scenario is that we continue to think about and to talk about is still on the table largely because by removing snapper and grouper through fishing we have a scenario now where lionfish are coming in and potentially occupying that vacant niche on the reef.

There is obviously some controversy around that logic and difference of opinion, and that's fine, but we have no data and we have no evidence to show either way with this, and this is a very, very complicated issue to try to get our head around. We do know that we have lionfish preying on species of concern such as Nassau grouper.

Although it's hard to know what an increase in predation mortality on Nassau grouper or any of your grouper juveniles, economically important juveniles, how much additional predation mortality is occurring because of lionfish and then what is the impact of that in terms of stock rebuilding.

I recently had an interesting experience which taught me an enormous amount about sampling design for the diet of reef fish in general, but in this case lionfish. I actually had a Dan Rather film crew on board. We were out sampling lionfish out at the Naco, a shipwreck right off of Beaufort, and I had sampled lionfish there many times over the years, but on this particular day we collected about 50 lionfish and a majority of them had vermilion snapper in their stomachs and multiple vermilion snapper juveniles in each lionfish stomach.

That taught me a valuable lesson and the lesson is that when looking at lionfish impacts or the impacts of consumption of lionfish on native reef fish, that we really have to look throughout the year and we have to be more mindful of what are the local recruitment dynamics of those economically important species.

Because, if we're not sampling at a time when vermilion snapper are recruiting to the reef, then we're going to miss that impact on those economically important species. I can tell you that all of the diet studies that we've done so far have not robustly looked across all seasons and across recruitment time periods of those economically important species.

I'm sure that if we looked harder that we would find the presence of economically important species in their diet. It varies, of course, with the recruitment patterns of those juveniles. Socio-economic impacts continue to grow. Major shifts in staff duties are happening specifically in national parks and marine sanctuaries and states.

We recently did a survey in the Caribbean looking at the amount of effort that is happening in terms of management because of lionfish in the coral reefs. I was astounded that many of these

very small Caribbean island governments are dedicating a significant amount of staff time to his issue. Bycatch of lionfish is increasing, we think, and occurring now and increasing in lobster trap fisheries.

There is a reef project underway which is looking specifically at the impact of lionfish on the trap fishery because we now have trap fishermen – you can see the bottom left picture – coming in with a significant amount of lionfish bycatch in the lobster trap fishery. What impact is that having on the fishery itself? The traps coming back with lionfish; do they have less lobster?

What is the additional handling time, what is the economic loss as a result of this invasion? This is something that we can actually quantify in terms of dollars and impact to the fisheries, so we are really, really interested in that, because few times can you put a dollar amount to an impact on an invasive species, and this is one that we can do this fishery.

Human health impacts continue to be an item of concern. I was astounded to realize in this past year that there have been deaths related to lionfish stings. There have been deaths related to wasp stings and bee stings as well, but we can't take it off of the list of potential impacts. This was not on our radar earlier, but it was pointed out to us that in the Pacific there have been cases that are very rare and it doesn't occur very often, but there have been cases of deaths.

We have documented many different types of human symptoms as well as confirmed those in the literature and at least one paralysis case that lasted four hours. The long-term effects of envenomations are unknown, though, and we are having some fishermen now coming to us and telling us about being stung multiple times, whether they would be clearing live fish out of traps or spearfishing for them and whatnot, that is having some long-terms issues related to numbness and nerve damage around the sites where they have been stung.

We're concerned about that and are working with medical professionals to try to understand more about that. I can tell you that high densities of lionfish, of course, lead to high encounter rates; so if you're handling lionfish frequently, whether you're clearing them from traps or you're diving or spearfishing on the reef, the more lionfish there are, of course, the higher the encounter rate, and so we are seeing an increase in envenomations.

Management actions underway, by the work with the National Park Service, they went through an amazing process to develop a National Lionfish Response Plan. It really paved a lot of the way for how to do that. We've been working closely with our National Marine Sanctuaries Program to develop and think about control plans for largely the Florida Keys National Marine Sanctuary.

We have a control plan in the Florida Keys but it's time to look at that again and we are looking at it again together, as well as Flower Gardens this year has come online because of the invasion in the Gulf. We, of course, a couple of years ago worked on a South Atlantic Fishery Management Council Invasive Species Policy, so that is now in place.

Jeff Herod is going to speak after me and he has been the driver of an ANS Task Force Lionfish Control Plan Process and to begin that, and he'll probably tell us more about that in his talk, but

that is going to be an interesting maturity for this issue. And then we are working on various control tools largely for marine protected area managers, including models and best management practices.

This is a lionfish manual, the cover of a lionfish manual that we hope to release in January, and it has taken us a couple of years to write this manual, but it is essentially a How To Guide for coastal managers on all things related to lionfish, how to develop an education outreach program, how to develop a control program, a monitoring program, what are the research questions and how do you go about those to support your monitoring and control efforts, and then various legal considerations.

I can tell you that the Caribbean is extremely concerned about this problem. I was not prepared for the intensity and the demand for information from the Caribbean on this, and it makes sense now because of the coral reef based economies that exist in the Caribbean. Most of the tourism and most of the economies depend on the coral reef, and they're very concerned when a coral reef fish invades their coral reef.

I have been working with the state department, everything from help working with Caribbean coastal managers developing local control plans to feeding them information in terms of lionfish biology and ecology, train the trainers kind of things, and the state department has been very supportive of that.

I recently had a call from the state department. Apparently the prime minister of Curasol was on the radio talking about blaming the U.S. for this introduction. There are foreign assistance requests that are happening regularly, and the intensity of this issue in the Caribbean is definitely something that continues to grow and bringing this issue further in terms of maturity.

We are now working with Stephanie Green at Simon-Fraser. A big part of her work is developing a model to essentially develop control measures for lionfish that reflect the impact on the fish community, and these are control targets that will inform managers – and it's published in this manual that will inform managers about how to assess the baseline fish community, how then to assess the lionfish densities and then to set control targets, whether it be 20 lionfish per acre or a hundred lionfish per acre, where they can mitigate those impacts on the fish community because they are quite site-specific, as we mentioned before.

We in NOAA have been servicing much of the community on this "Eat Lionfish" effort. There is lots of interest in adding this fish to the menu. Probably all of you have in some time in the past have seen some of this media coverage, whether it be a national media magazines and newspapers. We still don't think, of course, we can eat our way out of this invasion. That has never really been something that we thought we could do.

It remains, though, on the table as one of the best long-term strategies for providing marine protected area managers with removal incentives that they can run with their programs to try to remove lionfish, because we really have no other long-term incentives to offer. We'd go bankrupt really quick if we try to do bounties or if we try to do – people get tired of spending

their own money in terms of removing lionfish efforts and things like that. There have been some issues of late with ciguatera. We knew this would come up.

Ciguatera is a reef fish issue and not just a lionfish issue, so, of course, we have some locations in the Caribbean that are reporting high levels of ciguatera in lionfish. We totally expected that; and while the FDA has been very concerned about that, we consider that to be just a part of what was going to happen and have always included that component in the messaging about eating lionfish.

Recently I was in Mexico at the Gulf Caribbean Fisheries Institute annual meeting, and it's just amazing the interest by local chefs. They have a very aggressive program there to control lionfish in their national parks and along the Yucatan Peninsula. We have been working very closely with Mexico on this.

Essentially they're getting higher prices for lionfish than grouper in many of these seafood restaurants in the Yucatan. It is working there to provide some feedback and support for fishermen to be able to control the invasion in these parks. Where do we go from here? I mentioned earlier that the Caribbean is where a lot of interest and intensity is right now because of the invasion.

We have a number of biology and ecology assessments that are underway. We're continuing to work on bioenergetics and refining what we know about the metabolism and the energetics of this fish. Like I said before, the age and growth is important to us as well in terms of population dynamics. We need to and will continue to work to do a better job of documenting ecological and economic impacts.

I can tell we do not really have a good sense of the seasonal dietary changes of this fish as it relates to recruitment of economically important species and we need to get a better handle on that. We are developing the lionfish manual, which will be that desktop reference for managers. We're developing a web portal, which will be an international team that is working to facilitate broader training and media tools, training videos and things like that.

We are working on a regional strategy with these international partners for the Caribbean, for a consensus among coastal managers that the control of lionfish is important and why it's important and the scale of economic impacts that are being observed in and around the Caribbean, and then working with many MPA managers on this issue in trying to understand really what does control mean; what does it mean in terms of economics, what does it mean in terms of ecological impacts.

In terms of research needs, we met this year. We had a workshop down in Miami. We had a NOS/National Marine Fisheries Service Workshop to try to get our head around what is known and what our priorities are. I also provided the results of this workshop to you. We discussed control and education outreach and management and all these things.

Then we looked at a set of overall priorities, everything combined. At the end of the day you have to get to your number one what is the most important and what is number two and what is

number three. We went through that process and we essentially came up with the economic impact assessments across all sectors as being the number one priority, because we really do not have that data and we cannot demonstrate to the public or to people that are making decisions about the impacts of invasive species without being able to say what is happening in terms of economics.

Then number two, the effectiveness of developing a lionfish fishery; number three was the impacts on economically important species. Obviously, two and three are related there. And then number four was develop the need for spatial and temporal target removals for MPAs. So, where are going with this?

We have a number of different budget initiatives and conversations that are happening. We're continuing to work with many different partners to try to get our head around this issue, and I hope that even this talk today will continue this dialogue with the council and continue to think about and at least keep this issue on our radar.

I would like to bring up a couple of emerging issues. One is we may be undergoing an invasion of Asian tiger shrimp. We have been monitoring with USGS and the South Atlantic and Gulf Panel on Aquatic Invasive Species. We are working very closely with USGS on this. We have begun developing a tissue repository similar to that we do for lionfish at our Beaufort Lab.

The reason that I say that we may undergoing an invasion – and I say "may" because it will take two or three more years of data and sighting observations to know this – but we have seen a background level of Asian tiger shrimp for the last almost ten years, twenty to thirty or so per year, but this year we have seen hundreds.

Many shrimpers that we've talked to have seen them this year. There have reports of hundreds being landed in a particular shrimping week. We have multiple individuals coming to us from the Gulf and from North Carolina waters as well throughout the year. I believe we had almost 30 or more collected just in North Carolina this year. We're not sure about this.

We know they probably are coming from aquaculture, shrimp farms likely in Caribbean. There are no penaeus monodon shrimp farms in the U.S. right now that we know about, but there are some active and have been active penaeus monodon shrimp farms in the Caribbean so we think they may be coming from either an established population in the Caribbean where we're getting sporadic recruitment up into the Gulf and southeast or annual shrimp farm releases, and that we're just not sure.

We're working on genetic analysis and we hope to know more about this in the upcoming months. We continue to see other marine ornamentals appearing along the coast of South Florida. This issue that brought us lionfish is continuing today. This is a press release that I hope is out – I believe it is out as of now – that documents three non-native fishes found in Florida recently, including a panther grouper, which you see there on the front of the field guide on the top left, spotted scat and yellow tank. We're going to have to monitor this and continue to see if any of these additional species become established like lionfish. Thank you for your attention and I'll be happy to answer any questions, although we're probably out of time.

MR. HARRIS: Thank you, Dr. Morris. I appreciate your being here. John, question?

MR. JOLLEY: Yes. I doubt that there is any evidence, but have we gotten any evidence on fecundity versus age and growth – it may be a little early year – and is there any evidence or might we look at in the future evidence for the quality of the eggs and the survival of the larvae versus older fish. I know you know what I'm getting at. We have discovered recently that many of the older fishes actually get better at it as they get older unlike human beings, and that could be of considerable importance to us in the future with this fish.

DR. MORRIS: Well, we won't go there. In terms of fecundity what we do know is we do know fecundity because I measured it and we looked at size-dependent fecundity. Lionfish release two gelatinous masses. There are about 15 to 25 or so thousand eggs per egg mass. They essentially are reproducing throughout the year.

We were able to document reproduction every month of the year in North Carolina as well as in the Bahamas. They appear to be reproducing or releasing eggs every three or four days, and so the annual fecundity of an individual female is somewhere on the order of 2 million eggs per individual.

When you think of it in terms of invasive species, that's really spreading out the probability that you are going to be successful if you're releasing your eggs all the time throughout the year. They're pelagic; they're buoyant eggs. The egg mass disintegrates in a few days and then the larvae are pelagic and disburse in ocean currents for about 30 days. We know they settle between 26 and 35 days to reef habitats.

We have been interested in larval mortality forever. The problem is it's really, really hard to estimate. As a matter of fact, we really estimate it for our native fishes that we've been looking at for a long time, and the error around those numbers is very large. I can tell you, though, that there is a hint that predation on lionfish eggs in the native range may be one of the possible controlling parts of their life history. It is just a hint; we really have no more than that.

That's just talking to old-timers and people in the Philippines and in other places that know a little bit about this fish and have been watching it for their lifetime. We haven't documented any egg predation in the Atlantic. There actually is some evidence that there may be an ichthyotoxin associated with this egg mass; some earlier work where they released the eggs into a tank and the feeder fishes swam to the other side.

How all that is happening in the Atlantic with our native fishes I'm not sure, but if you were able to offer lots of money and say, "Go, James, and study something that you think is going to make a difference to this problem in terms of understanding how this invasion has occurred rapidly and how it's continuing to grow so fast," that's one of the first places I would look is in the early life history.

MR. PHILLIPS: You talked about the diet study; did you check any of the other reef fish other than lionfish to see if they were feeding on vermilion snapper say at the same rates?

DR. MORRIS: No, we didn't. That would be a good thing to know, for sure.

MR. HARTIG: Jim, we saw probably the largest year class we have seen last year in the estuaries where I am, in the high-salinity estuaries in the South Florida area where the introductions first occurred, but we got kind of passed over for a number of years and then all of a sudden in the last two or three years we have seen this increase in the estuary. Do lionfish go through ontogenetic shifts like our snapper? I mean do they at a certain age come out the inlet and then migrate to the reefs like our reef fish do or do they stay in the estuary when they grow up and start growing there?

DR. MORRIS: We have to remember we're really in the beginning stages of this invasion and so I think what patterns we see are going to be somewhat stochastic because we're in the beginning. It's a very dynamic event that is happening right now. That being said, it doesn't surprise me. Lionfish physical tolerance is quite high for temperature, 10 degrees Celsius to 35 degrees Celsius. That's actually comparable to many of our native tropicals as well.

Their salinity tolerance is what you would expect for the type of system they have. We can get lionfish down to 14 or 15 parts per thousand long-term. No problem; they can adjust. I have a PhD student at the University of Florida who in his dissertation is looking specifically at salinity tolerance and the rate and looking at potentially how much influx might we see in more riverine systems and more estuarine systems, but it's not surprising we will see just somewhat stochastic and random recruitment I think into estuaries and into river systems.

North of Florida that's not an issue because they're going to die in the winter, but in mangrove systems in the Caribbean, I'm not sure about the Gulf there – you know, this is a marine tropical reef fish. I'm not sure about its going into waters that have higher turbidity and whatnot and the turbidity clarity preference of this fish. It's not surprising and something we definitely need to watch. The thing that concerns me most are the interactions with other fisheries, of course, and it's another venomous fish.

MR. HARRIS: Thank you, again. David, what is your pleasure?

MR. CUPKA: Well, we hoped to get through presentations. My understanding is that Jeff can give it the first thing in the morning, but we'd have to do it before the AP Selection. Well, we'll start with your presentation in the morning.

MR. HARRIS: It's scheduled at 8:30. Well, this committee will stand in recess until 8:30 in the morning.

The Ecosystem-Based Management Committee of the South Atlantic Fishery Management Council reconvened in the Roosevelt Ballroom of the Holiday Inn Brownstone Hotel, Wednesday morning, December 6, 2011, and was called to order at 8:30 o'clock a.m. by Chairman Duane Harris.

MR. HARRIS: I'm going to reconvene the Ecosystem-Based Management Committee and get back to where we ended yesterday. The first item that we're going to take up this morning is a

presentation by Jeff Herod on an update on U.S. Fish and Wildlife Service Programs Addressing Coastal and Marine Invasives.

MR. HEROD: Thank you very much for the opportunity. Today what I would like to talk about are aquatic invasive species. Unlike James Morris' discussion yesterday, it's going to be little bit broader than a single species, but you'll see a theme for lionfish that follows through. I want to give you a little about who I am as I'm presenting this information.

I started in 2010 with the U.S. Fish and Wildlife Service Fisheries Program as the aquatic invasive species coordinator, and that is in Atlanta, Georgia. Prior to that I've worked in various places. We talk about the top three for invasive species issues. I've worked in the Everglades on a aquatic invasive species.

I've worked in the San Francisco Bay Delta Area on aquatic invasive species. I've also worked on terrestrial work in California, Nevada; working with the genus nerodia, which is the genus for water snakes that were introduced into California. Out in the Pacific Islands I worked on every from the coconut rhinoceros beetle to brown tree snakes to eradication of rats on remote islands.

I've worked on invasive species for about ten years and basically what it has been building towards is trying to hone my skills in bio-security, which is a theme that will run through this, which is basically protection of assets, looking at how you prevent the introduction of invasive species, and it's a more holistic approach than going species by species and trying to control.

I think it bends well with the theme here of an ecosystem-based management. I'm going to talk a little bit about the issue of invasive species just to give you a backdrop. I'll talk about some the coordination efforts and partnerships and some of the structures that are available to the council as far as coordination and people who share this theme or the concern for invasive species in ecosystem management and also give you a flavor for U.S. Fish and Wildlife Service efforts in coastal and marine environments, which we're not really that active in, but for aquatic invasive species and some other issues I just wanted to demonstrate that we are a partner in these environments and habitats.

In general when we talk about invasive species we talk about the economic, the environmental, ecological and human health concerns. There was a project that was funded in 2001 by the U.S. Fish and Wildlife Service for USGS to do a summary report on invasive species in the southeast region, our Region 4. Basically the summary was that there were 231 non-native fishes, both marine and freshwater; 33 crustaceans. We had one mammal; 22 mollusks; and 60 freshwater vascular plans.

In 2011 I just funded the revision of this project and there will be a ten-year update on it. We expect to have that next year, and we expect to see that there will be an increase in both non-native fishes and a significant increase in mollusks. I want to talk about the economic impacts; $120 billion annually to the U.S. economy for invasive species impacts.

A state-specific example I'll provide here is Florida; it's control of hydrilla in its lakes. Two Florida lakes were overtaken by hydrilla and recreational use was lost at those lakes, and that

resulted in $10 million annually in lost revenue. Impacts to our threatened and endangered species; currently half of the species that are listed in the recovery plan or somewhere in the listing package it listed one of the threats being invasive species.

That could be through direct predation, habitat alteration or actually a disease or disease vector. There are structures in place in legislation that supports agencies' implementation of control strategies or prevention actions for invasive species. In 1990 it was NANPCA. That was revised in '96 by the National Invasive Species Act. We also have the Executive Order 13112, which was signed in by President William Clinton.

There is also species-specific and I gave one example here, Brown Tree Snake Control and Eradication Act, and then many bureaus and agencies also have specific directives that mandate actions to prevent or at least consider invasive species in project planning or in actions for management.

I'm going to talk a little about the coordination structures in place. As I mentioned, I'm the coordinator for aquatic invasive species for the southeast region for the Fish and Wildlife Service. Our region is depicted here in this graphic from Kentucky to Arkansas down to Louisiana across the Gulf Coast, Puerto Rico, the Virgin Islands, up the Atlantic Coast to North Carolina.

The other hat I wear is for the Southeast Aquatic Resources Partnership, which I am the aquatic nuisance species coordinator for that partnership. That's actually 14 states. We pick up Virginia, Missouri, Oklahoma and Texas. The reason I illustrate these two geographic regions is that within these regions the states have aquatic nuisance species coordinators. That is a network that I use to implement projects and also get feedback on issues that are important to the state and across the region.

Higher up we have the National Aquatic Nuisance Species Task Force, and I have the website listed here if you'd like to go and look for more information. The Aquatic Nuisance Species Task Force is co-chaired by U.S. Fish and Wildlife Service and NOAA. It approves the state aquatic nuisance species plans. A lot of its activities are done through ad hoc committees for pathways such as recreational use or for species-specific control plans like the lionfish, and I'll talk a little bit about that later on.

Another way that the task force accomplishes its activities is through regional panels. This graphic depicts the regional panels for the whole U.S. broken out. State membership in a regional panel is up to the state, and so there is redundancy. I'm very active in the Gulf and South Atlantic Regional Panel, and that will be another item I'll talk about a little bit later related to lionfish. I'm also very active in the Mississippi River Basin Panel.

Again, the panels, the way that they function is the state aquatic nuisance species coordinator attends these panels, brings issues from the state forward or seeks actions that are shared across state plans where the panel itself can implement an action that would benefit more than one state. I wanted to talk a little bit about funding some of the projects that we fund, and one of them that the U.S. Fish and Wildlife Service funds are the state ANS plans.

In this graphic, it's dated January 2010, several states have now changed their status. On the graphic, green are states that have approved plans. Blue are states that have plans that are drafted, which means that they drafted a plan, they have submitted it to a task force for review. In white states there is no action been done for a plan.

In this graphic Texas and Arizona just in November have approved plans, so those changed to green. In the state of Florida they have a combination plan of both aquatics and terrestrial. Because it has both types, the Aquatic Nuisance Species Task Force cannot provide approval for that plan, so Florida does not receive any funding for its plan.

I'm going to talk a little bit about lionfish and marine fishes and projections that I'm funding in 2011. Some of the projects will be ongoing. As you saw in James Morris' presentation, there was a guidebook for non-native marine fishes. That is a project that is funded by the U.S. Fish and Wildlife Service. We're continuing that funding.

The next step in this project is to develop a rapid-response plan. Currently the activities are when a marine non-native fish is reported, there are several people who respond to that report and try to capture that fish. An example is the panther grouper. They respond on site. They work through the state and other partners to develop how they're going to respond to this, what they're going to do when they actually capture the species and then where that species would be acquisitioned.

Another project I'm funding is with NOAA and the U.S. Virgin Islands, and this is to look at ciguatera in lionfish. This is a project that NOAA and U.S. Virgin Islands thought was a high priority; and since we are moving forward with a lionfish national management plan, we share their concern for this issue and we decided to fund it.

We have another project that we're funding through REEF with Dr. Lad Atkins, and in this project he is looking at lionfish impacts to the commercial lobster fishery as well as the lionfish derbies that many of you may have heard of where they actually hold a derby where people collect lionfish and then they actually show people how to treat the flesh and then actually how to cook and serve lionfish.

Part of the outcome for this project is to see are we getting information out there about the impacts of lionfish as well as this control effort of actually removing lionfish from reef areas. We're also involved with the Invasive Lionfish Ad Hoc Control Committee, and I want to spend just a little bit of time to show you the process that we went through to take a very local issue shared by maybe a couple of states and how we went through the process to get a national management plan started.

Basically what happened were several of the partners came to me and said that we have an issue with lionfish, it's impacting some of our commercial fisheries, we think it's going to impact the ecology in certain areas, what is the process we need to raise this issue? One of the things we did is we put together the subject matter experts for a panel. We presented to the regional panel, which was the Gulf and South Atlantic Regional Panel of the task force.

They made a recommendation that we wanted the panel to take this issue up to the task force and recommend an ad hoc committee be developed to scope the issue completely. We did do that. The task force agreed with that; they created an ad hoc committee. The ad hoc committee scoped out the issue over four months, which resulted in basically a recommendation from the ad hoc committee saying that this is truly a national issue; coordination needs to be implemented at a wide scale; and the geographic scale we think would be from the Gulf of Mexico all the way up the Atlantic Coast, and that this was the role for the task force.

The task force agreed with this in the November meeting and we are charged with expanding our membership and we will begin working on a national management plan in January. We hope to have that done in one year. The process to get the issue from a local issue all the way up to getting a national management plan thus far has been a little bit over a year.

Moving away from a species-specific, I want to talk just briefly about HACCP. HACCP is Hazard Analysis and Critical Control Point Planning. It's a planning tool that we use to reduce the risk of moving invasive species unintentionally. We provide this training free of charge. We have a website that you can go to get the material.

I also travel to agencies' offices to actually provide the training. Basically it's a five-step process. It allows you to look at an activity, where the risks are in that activity for moving what we call an non-target, something that's not essential to that process, how you control and monitor to make sure that non-target does not move with your activity. It's a pretty simple process.

Most of the training is two days. At the end of that, it results in a draft plan. Most plans are finalized within about three weeks of that. So far we've provided training to the Park Service, other U.S. Fish and Wildlife Service offices, TVA, and currently I'm working with the Cooperative Invasive Species Management Areas in Florida implementing HACCP.

Continuing with the theme of pathways and sort of in conclusion of this presentation, I wanted to put some ideas out there. Some of the partners that I'm working with and some of the projects we're looking at developing for fiscal year 2012 are looking at components of management and particularly fish-attracting devices and how those interact with aquatic invasive species; also looking at assets, oil platforms, vessels, bio-fouling where we see hull fouling or other movement of materials that's not intended to move with those assets.

The question has also been raised do we have a comprehensive understanding for surveys of aquatic invasive species, both the composition and the proportions of aquatic invasive species that occupy ports and harbors in the southeastern U.S., and there are always issues that are raised with aquaculture and some of the equipment used with aquaculture, and what risks are associated with aquaculture and how do we manage those risks. With that, I hope you found that there was something useful in this presentation and that you consider me a resource. I've put my information up there for you to contact me. At this point I'll take any questions.

DR. LANEY: Thanks, Jeff, for taking the time to come and give us the presentation. A lot of folks sitting around the table here, at least most of the state folks and the federal folks are

involved in sampling programs of one sort or another, so what do we do if we find a critter in our sampling program that we don't recognize; to whom do we report that?

MR. HEROD: That's a very good question. We have a network, a data base infrastructure set up within the southeastern U.S., and we've actually shared it nationally. With USGS there is the non-indigenous aquatic species data base, which is housed in Gainesville, Florida. I provide funding to that data base.

What I ask folks to do is to report those particular species that they have at the end of their field season to USGS, and it goes into a national data base. It's free of charge to use. You can actually go in and check sites where you're going to be sampling to see what invasive species is already there.

In addition we have a hotline, which is 877-STOP-ANS. That hotline is a 24/7 person-manned operator system where it actually directs a call to my by blackberry and two other blackberries in the U.S. We then work through our network of state coordinators and people on the regional panels, and we can actually get people deployed to respond to and onsite usually within about 24 to 48 hours.

We have used this hotline to respond to spiny tail iguana reports. We get vague reports of some kind of grass on my boat trailer. We actually provide a response. We meet with the people who are reporting. These are typically just everyday recreational boaters or anglers who, you know, they've seen a caiman or this or that, and we respond to all terrestrial and aquatic.

It also gives us that chance on the follow-through of giving them some information, letting them know that when they reported that issue that somebody did respond, that we do have response to it, and that their efforts were worth something to them. That hotline, all that information also feeds into this national data base.

We have that data base and I would recommend that people take look at it. The new interface that was put on it last year through our grant uses Google map, so it's a pretty straightforward kind of setup, and you can go down to I think it's eight-digit HUC and you can actually see multiple species or you can target a particular species if there is an interest.

MR. JOLLEY: I can't help myself; is Florida the worse state in the nation in invasive species?

MR. HEROD: It has a substantial issue with invasive species, yes. There are several hotspots in the U.S., and it happens to be one of them due to climate. It has a lot of material, a lot of species that come in and out of it as well, and so it's just going to be prone to have more species in it. It's a substantial undertaking for the Florida Fish and Wildlife Conservation Commission to address particularly the aquatic issues, which are a little more difficult when you get into anglers who would like to use a certain resource but also maintaining that in certain areas where you still protect your natural areas.

MS. McCAWLEY: I would request a copy of the presentation, if we could get a copy of that?

MR. HEROD: Yes.

DR. LANEY: Jeff, before you send the presentation, if you could include another slide that shows the contact information and the hotline number that you gave us for the USGS Gainesville Lab there for reporting. But, relative to John's comment, it's not just Florida, John. It is a lot of port cities especially and in particular Chesapeake Bay has a lot of species I think that could potentially move south.

My question for Jeff is do you know if there is a list somewhere or maybe that USGS report that you referred to – and maybe that will be updated, but what this council I think would be most interested in is what is already out there and what is the potential for it moving into our area from either the Caribbean to the South Atlantic or from the Chesapeake Bay and the Mid-Atlantic to the south, because I know the Chesapeake Bay has got the, what, green crabs and mitten crabs and rapa whelks and a whole bunch of other stuff like that.

MR. HEROD: Yes, the report that will be completed next year will give us sort of the broad overview of what the trend is. We expect that we're probably going to be somewhere between a 3 to 5 increase in the number of introductions. Not all introductions result in establishment and spread.

It's really hard when we start to try to project a large scale where or what the next invader is going to be. A lot of resources are going in the direction of prevention. I like to deal with the pathways when I talk about whole filing acqaculture, live bait. A lot of these issues are the places where we need to understand what risk is involved and then how do we manage that risk.

It's not to bar any one activity but it's how do we manage that and provide the best cost benefits or at least the best decision support to folks who have to make those management decisions of if we're going to be involved in this particular activity, what is the risk involved with that. There are some activities moving forward looking at risk assessments and sort of using climate match as one way to go through a suite of species that are in the trade right now and looking at potential overlap within the U.S. We have about 1,200 of those species done, but they're ready for release yet. They're still preliminary or draft. That effort is actually going to be feeding into our injurious wildlife listing activities.

MR. HARTIG: Do you all deal with the marine algae?

MR. HEROD: I have in the past, caulerpa?

MR. HARTIG: Yes, caulerpa in particular.

MR. HEROD: Yes, when I was in California we worked on caulerpa. There is a national management plan for caulerpa. It has a whole suite of activities and the partners who are working on those activities. There is still a working group. The same thing with Chinese mitten crab, those are the primarily two. The European green crab, there is a national management plan for that, but I'm not sure how active it is. But as far as national management plans that have a species focus, those are the only three that I would consider coastal or marine. A lot of activity

recently has been done for brown tree snake, Asian carp, New Zealand mud snail and now we're working on lionfish.

MR. HARRIS: Last question, Jeff, and again thanks for being here and sharing this information with us, but I just wondered if you got a call about the black mamba that bit the prospective buyer in St. Mary's, Georgia, last week.

MR. HEROD: No, I did not.

MR. HARRIS: That could be another invasive species that has escaped into our world. I'm sure it won't stay in Georgia to Florida, obviously, Jessica, but in any event. The item on the ecosystem agenda is status of catches versus quota for octocorals.

MR. STEELE: I'll do that, Mr. Chairman. In 2010 we got about 12.4 percent of 50,000 colonies. For 2011 the e-mail we got in just recently indicates that about 7 percent of the 50,000 colonies have been harvested.

MR. HARRIS: Questions for Phil? All right, moving along the next item is the status of the Comprehensive Ecosystem-Based Amendment 2.

MR. STEELE: CE-BA 2; the notice of availability of the amendment was published back on September 26th with the comment period ending November 25th. The proposed rule published on the 9th of November with the comment period also ending on November 25th. The final rule package I have been informed this morning is going to the front office sometime today or tomorrow and will be winging its way to headquarters forthwith.

MR. HARRIS: Questions for Phil about CE-BA 2? The next item is the report from the Coral AP meeting, Anna.

MS. MARTIN: I reviewed a little bit of what the Coral Advisory Panel Meeting had to say yesterday regarding the Spiny Lobster Amendment, but I wanted to go over the remainder of their recommendations to the Ecosystem Committee and the council. Again, these are recommendations from the meeting that was held October 25th and 26th in North Charleston.

The advisory panel did make some recommendations to modify a few of the coral habitat areas of particular concern. Again, this was based on research that NOAA has conducted for the past three years, focusing their efforts on the South Atlantic Region specifically. These are revision recommendations based on that work.

The first recommendation is to extend the Oculina HAPC boundary to include new mounds that were discovered during a research cruise this summer. There were two areas of high relief Oculina Coral Mounds and bottom habitat discovered outside of the HAPC boundary. These were suspected from regional bathymetric charts and were later verified this summer with multi-beam mapping and groundtruth with ROV data.

One proposed area from the advisory panel would be an addition to the HAPC that would extend from the northern boundary of the HAPC up to the St. Augustine area. This would add close to 400 square miles incorporating habitat in areas off of Daytona and Titusville. The second region is to the west.

It's not depicted in this map, but it is another recommendation to extend the area to the west of the current boundary, primarily between the two satellite areas of the original HAPC boundary. This recommendation from the AP would add approximately 75 square miles of habitat. The second boundary revision recommendation from the AP does include new lophelia areas that were discovered off of the coast of Jacksonville and west of the existing Stetson-Miami Terrace HAPC, bounded approximately by the 200 meter depth contour in these following areas.

This recommendation from the advisory panel proposes a 639 square mile addition to the HAPC, which is originally just under 23,000 square miles. Some of the scientists on the panel do believe this to be a site of permanent upwelling with temperatures here much colder in the shallower areas than they originally suspected to be at these depths.

What they found here wasn't just a sprig or two of lophelia but it was a well-established ecosystem of lophelia coral community. There is a section of the proposed expansion that falls within the North Florida Marine Protected Area, and also the proposed expansion does impact Shrimp Fishery Access Area 1, which is the thin pink sliver there on the existing boundary.

The third HAPC revision recommendation from the advisory panel includes an extension of the Cape Lookout HAPC area off of North Carolina, so this recommendation proposes an eight square mile extension of the HAPC, which is originally around 122 square miles. Again, this is a recommendation that stems from a multi-beam bathymetry mapping trip and discovery of lophelia mounds in areas north of the current boundary.

The AP also recommended possibly other areas where surveys have indicated the presence of deepwater coral resources, so these are areas that would be proposed in the future at a later date, but they would be based on NOAA's Deep Sea Coral Working Group Team whose final report on the research they've been conducting in the South Atlantic will be finalized during the summer of 2012 and subsequently submitted to the council later next year, so this is just a recommendation about there could be possibly other recommendations from the panel coming as a result of the report.

The next recommendation from the AP is in regards to an update to the Oculina Experimental Closed Area Evaluation Plan. This is a report that is due to be delivered to the council in March of 2014, so this recommendation from the panel is in reference to initiating an update to the research section of the plan.

The third AP recommendation is about coral researchers discussing an increasing number of blackbelly rosefish observations that are made in deep coral habitat and particularly in the newly discovered lophelia areas off of Jacksonville. This is not a commercial fishery in the South Atlantic but it is in other regions, and the AP feels that there could potentially be a commercial

fishery in the South Atlantic. This is a recommendation to work with the Snapper Grouper Advisory Panel on this issue to provide them with information and discuss the concern.

The AP also has a recommendation for council support to identify future funding sources for continued investigations at the Snowy Wreck Marine Protected Area. The actual wreck within the MPA is the area in question here, so this is an area that lies on the outer quadrant of the MPA in waters much deeper than around 800 feet.

Recent assessments from Steve Ross with UNC-Wilmington do show that the wreck is closer to 400 feet long. Originally they suspected this wreck to have been much smaller in size. They do feel it originated from the late 1800's so the AP had some discussion of the fact that this could be of significance archeologically. They did find lophelia presence at the wreck site; however, the lophelia there is unknown.

If you'll recall during the September council meeting this was an item for consideration in CE-BA 3, but here we have just set a research priority; the intent being that some on the AP feel that this should be more of a research priority coming from the council rather than a specific measure at this time.

The recommendation is a request for securing a three to four research cruise that would give scientists the data they feel is necessary that they don't have now, and this would include a one-year environmental monitoring study. Again, basically there are a lot of questions about this area that they would like to be able to answer.

The next recommendation is an output from that shallow water lophelia discovery off of Jacksonville. Some of the AP scientists are interest in further examining the western boundary of the Stetson-Miami Terrace HAPC because they do feel it's a site of a permanent upwelling. Again, this is another recommendation for making this a research priority.

The advisory panel recommends that the council coordinate with NOAA to ensure that information presented in a couple of the interactive deep sea coral data bases, which are the SEADESC format and also a data base maintained by the Deep Sea Coral Research and Technology Program, that information be provided to the council for inclusion in the IMS server that is posted off the council's website.

They also recommend continued coordination with NOAA vessels that have multi-beam capability to assist in mapping many of the unsurveyed sections of the HAPCs. Next the AP discussed there are some hurdles with accessing information on coral protected areas on our current website, and Sandra Brooke touched on this a little bit yesterday during here SERMA presentation.

This is a recommendation that refers to improvement with consolidating the information in a visible locale and to work with partners to streamline this information to ensure that the council is seen as the source for information on many of the protected areas.

The next item, the advisory panel recommends that the council coordinate with Bureau of Ocean and Energy Management, BOEM, to encourage that requests for usage or lease of any of the areas within the HAPCs have sufficient and appropriate mapping and resource characterization and other information that would help to ensure they can avoid the deepwater coral areas and habits within a potential lease site.

The final recommendation from the advisory panel tags along with this previous recommendation as far as including a provision with the council's energy policy statement that would help to ensure these agencies reviewing the requests for lease of areas have the appropriate mapping information of coral protected areas included within the energy policy statement. That in a nutshell is output from the Coral Advisory Panel Meeting.

MR. HARRIS: Thank you, Anna. Any questions? Ben.

MR. HARTIG: Duane, could or Anna enlighten me. I can't remember what the regulations are in the Oculina HAPCs now, if we extend those areas to the north, what regulations will change?

MR. HARRIS: I can't enlighten you. Anna, can you? Kim is getting the brochure, okay. While we're waiting on that, Charlie, you go ahead with your question and then we'll come back to that.

MR. PHILLIPS: Anna, did the advisory panel – I'm thinking about the Royal Red Fishery and if you move it to the west; is that going to interact to cover the Royal Red Fishery? I think you said there was a sliver of something in there, so tell me how that's going to work.

MS. MARTIN: Well, certainly, fishery activity would need to be analyzed before this is pursued much further. That does impact the Fishery Access Area 1. Let the me pull up the picture of the map again. If you can see the dots there at the bottom near the access area, those or VMS tracks so you can see they are within the proposed area that the AP is suggesting here. There is likely some trawling activity taking place in this area.

MR. PHILLIPS: Is that Royal Reds or rock shrimp or which fisheries are these?

MR. HARRIS: Both of them are considered deepwater shrimp fisheries, and both of them were involved in the original discussion of this HAPC area. I'm not sure I was ever clear on who was doing what in the area. I thought both were going on, obviously.

MS. MARTIN: It's potentially both fisheries. It could possibly be in waters too deep for the rock shrimp, but again this is VMS tracks, and that's a fishery that does require VMS.

MS. SMIT-BRUNELLO: I think it was Ben's question about what was currently prohibited in the Oculina HAPC and then obviously what would extended north, if this is what you did, so in the Oculina Bank HAPC no person may; one, use a bottom longline, bottom trawl, dredge, pot or trap; two, if aboard a fishing vessel, anchor, use an anchor and chain or use a grapple and chain; three, fish for rock shrimp – so no person may fish for rock shrimp or possess rock shrimp in or from the area on board a fishing vessel.

DR. LANEY: So if the council elected to pursue expanding these areas; is this something we would explore via CE-BA 3?

MR. HARRIS: Yes, this is part of the CE-BA discussion that we'll have next. David.

MR. CUPKA: I was going to ask Anna if she could maybe expand a little bit on these action items that are part of that report.

MS. MARTIN: The advisory panel had some discussion about tubastrea, which is the invasive orange cup coral. If you recall in CE-CA 2 there was some interest among the AP for excluding this species from the FMU in order to pursue some types of eradication. When the council was deliberating about that, it was decided there really wasn't a whole lot of information about this species, and so it was left as is and maintained within the management unit and also because law enforcement pointed out some identification issues with this type of coral versus a number of others primarily down in Florida.

This is an action item that the AP is working on developing a subcommittee, if you will, to work on an issues paper about the orange cup coral to eventually present to the council in some form or fashion. The next action item on the report is in regards to – I guess before my time working with the Ecosystem Committee and the Coral Advisory Panel, there were some questions about the final delineation of the boundaries in Comprehensive Ecosystem Amendment 1 with the HAPC designation.

Some on the AP had some questions about how the final coordinates were eventually approved and implemented upon – there was I guess some areas in the northern Stetson-Miami Terrace HAPC that had some irregular boundaries, and Sandra pointed this out yesterday. The AP just wanted a factual presentation about the end process of their designation.

MR. CURRIN: I guess an observation and then either a comment or perhaps a question. The observation is it's apparent to me that if there is significant shrimp trawling going on in these areas as indicated by the track, it is very unlikely that there is viable oculina or lophelia, for that matter, colonies. They don't mix very well and thus the regulations we put in place.

I don't how long, Anna, the tracks – over what period of time these tracks represent fishing activity. I guess it may be more informative if we could put some dates on when the fisheries occurred on those tracks. It may be that fishermen were just up there trying stuff or encountered coral and went, whoa, this is not good; and even though they show up as a VMS track, it may not be an area that the folks are fishing in on a regular basis.

If we have that capability, maybe putting some dates on those tracks would be informative. I guess you understand the concept; perhaps people have fished up there in the past but aren't fishing regularly now and it may not be a huge concern even those tracks are present on the map.

MR. HARRIS: Thank you, Mac, that's a good suggestion. David.

MR. CUPKA: I agree with Mac; and those of you who were around then will recall we spent a lot of time working with the industry on this, and at some point we need to get the Shrimp AP back involved in this if we're going to consider taking some action because there was a lot of time and effort spent in trying to delineate these areas. If we need to get a better picture on what is going on where and when, one way to do that would be to involve the Shrimp AP if we move ahead on some of these things.

MR. HARRIS: I agree. Wilson.

DR. LANEY: I certainly agree with what David just said about getting the Shrimp AP involved in it. You and I were at the meeting. It's my understanding that the recommendations for expansion were based on the more recent data that do show that there are viable lophelia colonies in those areas, Mac, despite the fact that there may have been trawling there. I think they're making the recommendations based on the existence of additional deepwater resources that merit protection in the AP's view.

MR. HARRIS: Yes, that is true, Wilson, but at the same time Mac is right. We don't know when those trawls or those attempts to trawl in areas were made, and it may not have even been trawl attempts. They may have just been sounding the area and determining whether they thought they could trawl in the area.

If we get the Shrimp AP involved and get more specific information on when those tracks were made in that area, I think that will inform us and inform our decision in the future. I will say this; this Coral Advisory Panel is one of the best advisory panels I have ever worked with in my time on this council. It's really a great group of folks and really do a good job working with us.

Any questions for Anna on the Coral AP Report? Our next item on the agenda is a report from the Habitat AP. Roger was going to be here. Well, he was here yesterday when we were supposed to have done this, but he is not here this morning, so Gregg is going to come up and give us the report from the Habitat Advisory Panel and Eco-Regional Coordination Meeting.

MR. WAUGH: Roger is attending a South Atlantic Conservation Cooperative Workshop that's here in town where they're developing a strategic plan. He sits as a member on that group, so that's why he is not here this morning. I just wanted to touch on the major recommendation, and Duane and Wilson were there to see all the work that has gone into this. Chris Elkins is here and he is on Habitat AP.

We're planning at one of the meetings next year to have a workshop where you all will be able to access this information through this newly developed dashboard, and it will give you a better idea of what resources are available. I want to right now just touch on the major comments that would feed into the list of items for CE-BA 3, and these are the Habitat AP recommendations.

You all were sent this presentation so I'm just going to touch on the recommendations and I'll be glad to answer any questions if there are any. You can look at the preliminary rationale, you have this information as well, for more detail. They are recommending consider designating

EFH-HAPCs for speckled hind and Warsaw grouper, and there is information showing the distribution.

On the issue of powerhead prohibition, they are recommending we consider a coast-wide prohibition in the South Atlantic Region; potential Coral HAPC modifications, consider expansion of Coral HAPCs if habitat is present in areas under consideration; also co-designate them as EFH-HAPCs if expansion is warranted. There are a few figures showing some of that information.

Then as far as research items, which gets into a little longer term, but some of these issues are identified in this list for CE-BA 3; to investigate other habitat closely associated with the existing Snowy Wreck MAP; sampling is ongoing inside and outside the MPA. Request a research priority for the examination of habitat impacts in the wreckfish fishery and deep-dropping, and they pointed out these potential impacts may be point impacts.

Recommendations on ecosystem linkages looking at forage fish; enhancing the description of the roles; consider development of a policy document to protect forage fish. In terms of nearshore or hard bottom; enhance information on nearshore or hard bottom use by snapper grouper species; clarification of nearshore and relief associated with it.

There are other recommendations supporting research and EFH designation of habitats; evaluating the issue of sand berm creation as habitat; and readdressing the existing EFH policy statement on beach dredge and fill activities and related large-scale coastal engineering projects. Some of this information has recommendations that will go into your consideration for CE-BA 3 and others are what the Habitat AP will be working on next year; develop a framework for new South Atlantic Council policy statement for protection and restoration of habitat and ecosystem functions in the South Atlantic Region.

Roger wanted me to mention also that there will be continued work refining that digital dashboard. As I mentioned, Duane, Wilson and Chris were there and they can talk with you one on one about that a little more. We had a little bit of a demo and continue working with the Florida folks to expand that and make it easier to access all the information through our website. That's it, Mr. Chairman.

MR. HARRIS: Thank you, Gregg; and just to add to that, there is just some phenomenal work going on that. You know, you sit here and you listen to Roger go through go through his five-minute reports and you get barely a flavor of what is going on. When you sit through an entire Habitat AP meeting and Coral AP meeting, you really do get a much better idea of the work that's going on in this area. It's pretty amazing! Questions for Gregg? Seeing none, the next item on the agenda is a review of CE-BA 3 and measures for consideration. Anna.

MS. MARTIN: This is Attachment 4 in the Ecosystem Briefing Book. Some of this is information you've just heard from me, but I wanted to review with you the list we currently have on the docket for considering in the next ecosystem amendment. We do have a general timing schedule set forth for the amendment.

We're seeking council approval for public scoping during this meeting. The scoping meetings will be held the last of January and beginning of February in 2012. The IPT can begin to work on specific actions and alternatives after we seek the public's input on these measures. The committee will convene again in March to review the public scoping, the actions and alternatives that are developing and theoretically would review and approve the document for public hearing in June of next year.

Public hearings would then be held later in the summer and eventually the document would be finally reviewed during September or December of next year. Gregg kind of mentioned the ideal timeframe for these ecosystem amendments during the September meeting. I wanted to give you a little bit of background on each of the items for consideration we have so far.

The first measure would expand coral habitat areas of particular concern that were designated in CE-BA 1 and earlier. The three coral HAPC expansion recommendations, as I just reviewed with you, are based on NOAA's Deep Sea Coral Research and Technology Program's work. They have focused their work in the South Atlantic for the past three years. They're shifting focus to the West Pacific Region, I believe, during the coming year.

These are recommendations from the Coral Advisory Panel, and they are on our list for consideration in CE-BA 3. As I mentioned, the advisory panel recommends an extension of the boundaries of the present Oculina HAPC. The AP recommendation extends the northern boundary by approximately 393 square miles, up to off of St. Augustine, and extends the western boundary by approximate 75 square miles between the current HAPC satellite sites.

The AP also recommends that the boundaries of the present Stetson-Miami Terrace HAPC be expanded in areas off of Jacksonville to include the area west of the existing boundary that is bounded approximately by the 200 meter depth contour. This is a recommendation from the AP that proposes a 629 square mile addition on to this HAPC.

The next item is a recommendation from the Coral AP to extend the boundaries of the Cape Lookout HAPC, and that would be an extension of the northern boundary. This recommendation proposes an 8 square mile extension of the original boundary that was originally 122 square miles. Those are the HAPC recommendations on the docket for this amendment.

MR. CURRIN: Anna, maybe you can answer this. It's pretty apparent when you look at that proposed extension or recommended extension for Cape Lookout that it's only half roughly of the width of the already established HAPC. Is that because no sampling was done in that deeper area? I think we talked about this when we first started doing this, that there were obvious gaps in between some of these things and that if and when we get to the point we can actually survey all of this, we're likely to find these corals in these gaps in between.

Here is another example of once I think Ross can get the sub time to go out there and look at this area deeper than the green shaded area, odds are he is going to find the same thing he found just to the south of it in the blue area. I don't know, maybe it's a matter of comfort level of the council and taking a leap of faith and going ahead and extending that as an entire area northward

off the existing HAPC and we eliminate some of these curves and bumps and small areas that are very difficult to enforce.

MR. HARRIS: Thank you, Mac. Since this is going out for public scoping, it certainly would be easy for us to do that and get public comment while we're out there. If we don't include that additional area for public scoping, then we obviously will not be able to do anything if we do move forward with it in the future. It's up to the committee as to whether you want to do that and, Mac, you can make a motion to extend that area to encompass the entire width of the existing HAPC. If you would like to, I'll entertain that.

MR. CURRIN: Duane, at this point I'm a little uncomfortable doing it. Maybe I need to talk to Steve Ross about it and if it provides me some more comfort, then maybe we can consider that in the future or maybe this is the best way, just send out stuff that we know where the corals exist and then just start adding them as we identify them. There is a missing logic or something there in my mind, anyway, and it may just be my warped mind.

MR. HARRIS: Okay, Monica is going to correct what I just said.

MS. SMIT-BRUNELLO: Why would you jump to that conclusion?

MR. HARRIS: Because it has happened before.

MS. SMIT-BRUNELLO: I wanted to add some additional information. Just because if you leave that area as is and you don't extend it as you were talking, Mac, it doesn't preclude the council from even in this document going forward in the future with adding that area. In other words, when you take some things out to scoping, that's what you're doing, you're taking these items out and you can get additional information which may change or lead you to change your position or change the action, whatever. So, just because you haven't expanded the area, it doesn't mean you can't include it in this document, but you have to have good rationale for including it.

MR. CUPKA: Yes, I agree, Mac, I think there is a good chance once we get out there that we are going to find some additional area, but I don't feel real comfortable assuming that is going to happen. I'd rather do it based on actual information that we have. I agree with you, I think there is a good chance, if and when they get out there, they're going to find it, but I wouldn't feel good moving ahead just based on that assumption.

MR. HAYMANS: Mr. Chairman, just a question; as far as procedure do you need a motion for each one of these recommendations or how does that work?

MR. HARRIS: I think we need a motion if there is a recommendation to change any of those. Otherwise, I think we can take them as an all-encompassing recommendation to go to public scoping for CE-BA 3.

MR. HAYMANS: This may be the way the screen is, but that small additional block that is up there, is there a slight angle in that block compared to the existing?

MR. HARRIS: It appears to me there is.

MR. HAYMANS: Well, the only reason I mention it, if it's such a slight angle and the report we heard yesterday regarding enforcement of odd angles, that seems to be something you could straighten it just a little bit and make it a nice straight line, but it could be just the map.

MR. HARRIS: Other comments or questions? Okay, Anna, go ahead.

MS. MARTIN: The second measure on the list currently is a powerhead prohibition off of North Carolina. Again, this is something that North Carolina has brought forward to the council in a letter dated March of 2011 to consider taking action to prohibit the use of powerheads in federal waters off of North Carolina.

This is in response to concerns of localized depletion of larger snapper grouper species. I believe also DMF developed an issues paper that was circulated to the council earlier this year as well about this issue. The Snapper Grouper Advisory Panel met this fall and I know we will be receiving a full report later in the week from Bobby Cardin, but they did have some discussion about this measure.

They did not make any specific recommendations, but I just wanted to point out they did have some lengthy discussion here. Several of the advisory panel members stated that the use of powerhead is not highly regarded by the public. They also discussed that the council consider this measure throughout the South Atlantic and not specific to federal waters off of North Carolina.

MR. HARTIG: Anna, was it the Habitat AP suggested that powerheads should be prohibited in the entire area?

MS. MARTIN: Yes, Gregg pointed that out in Roger's Habitat AP Report, so they did comment on this issue as well.

MR. HARTIG: Well, based on that and the conversation that I had with Don DeMaria at length just before this meeting, I'm going to go ahead and move that we consider the powerhead prohibition throughout the region.

MR. HARRIS: There is a motion; second by Charlie. Mac.

MR. CURRIN: Ben, I'm fine with that but I don't want us to lose the option to only prohibit them in North Carolina. I'd like to see that as a separate action or alternative such that if the prohibition in the entire South Atlantic meets with great resistance, that North Carolina is prohibited from moving forward with the proposal that has already been made.

DR. CRABTREE: And I think that's fine, Mac, but you're going to have to explain why it's different circumstances off of North Carolina if we decide not to ban it. I looked through all this and I really don't see anything about why is it we want to ban powerheads. All I see there is it's

not highly regarded by the public, but I don't really see anything in here as to what the problem is banning powerheads would address.

I think that needs to be laid out more clearly in the scoping document. I'm curious what is the problem here? I understand in North Carolina there are some guys coming up from other areas using powerheads and people don't like it when other people come in with new gears, but what is the problem we're trying to address?

MR. HARRIS: Okay, to that point, Mac and then Michelle.

MR. CURRIN: Yes, Michelle probably has got a better answer than I do, but just from discussions at the AP meeting this fall, there were several folks that mentioned it's both a plus and a minus, the selectivity of powerheads. It allows the guys to pick out the individual fish they want. They usually pick out the biggest fish. They often fish spawning aggregations. So there is a removal of these very valuable individuals to the fisheries that aren't often encountered or as regularly encountered with hook-and-line gear. That was just one of the points.

DR. DUVAL: To just add to what Mac said, also part of the reason that this came forward was that was the advice of legal counsel to our state's Marine Fisheries Commission. Previously South Carolina had enacted a prohibition in their state waters and asked the council to complement it.

Based on the way our rules are written, in order for us to do this similar thing we would need to have the ability to complement federal rules in state waters. That's why North Carolina is specifically coming to the council asking for simply the prohibition off of North Carolina waters and not to the exclusion of other states that may still want to employ this gear.

MR. PHILLIPS: Obviously, you can be selective with the powerheads, but I have also heard about some of the divers putting lights down at night and drawing the grouper to them, making them a very efficient fishery. There are pluses and minuses, and we may want to consider doing species-specific, allowing amberjack possibly and not grouper or something. I don't know how to skin this cat.

MR. CUPKA: Mr. Chairman, I was just going to point out I guess one of the things that surprised me a little bit during the discussions at that Snapper Grouper AP meeting is the fact that there is a separate market for fish harvested with powerheads because it's supposedly a higher quality fish. I wasn't aware of that before and I thought that was kind of interesting and is probably maybe a plus for using those at least as far as the commercial industry is concerned.

MR. HARTIG: Roy, I think the conversation I had with Don he thought probably this gear has run its course in its usefulness in the snapper grouper fishery. We have rebuilding plans in place for most of the species, gag in particular. We have some areas off of Florida that are closed in the deep water, and we have seen a number of large gags that have congregated in those areas.

Unfortunately in the cold waters during the summertime those larger fish get pushed off those closed areas into the shallower waters. In that colder water they're not susceptible to the hook-

and-line fishery as much. We catch some but not near as many as the divers do, and those larger fish are selectively moved by that gear that are protected most of the year in closed areas.

It has a disproportional impact on the larger fish. The other thing is hook-and-line gear has a much less chance of catching the largest fish just because of the size of the fish that you're actually trying to capture. Most of the time those fish, when they're hooked, get you off in the rocks and cut your line or twist wire off.

That gear is much more susceptible to harvesting those larger fish than the other gear allowed in the snapper grouper fishery. Those are two other extenuating circumstances. Another circumstance that is arising now is that powerheads are being used to selectively remove Goliath groupers from certain spots where divers no longer want them to be.

That gear is much easier to shoot a Goliath grouper and actually remove it from that area than you would trying to free shaft it because they're much harder to shaft than they are powerhead. He also had a concern about some sand tiger sharks being removed from a specific wreck by a specific powerheader. Those are some of the concerns that he had, so that's some other important information.

MR. WAUGH: Just to remind you where we are in the process, this is just to develop really a list of items to take out to scoping. We've run into difficulty before when we take a public hearing document out to scoping the public feels like, well, you guys have already made up your mind. This is really just to get an idea of here is what the council thinking needs to be addressed; what do you, the public, think other items are to be addressed? Then when we come back at the March meeting we'll winnow through that list and then talk about developing actions and alternatives that you want to address in CE-BA 3.

MR. HARRIS: Thank you, Gregg, for trying to get us back on track. Jessica.

MS. McCAWLEY: I just had a question about this. It just says powerhead prohibition. I'm wondering if that's a prohibition on harvest but people could still carry powerheads for personal protection. That's what is allowed in state waters in Florida, so I was just looking for some clarification here.

MR. HARRIS: I think that's what was intended. Michelle.

DR. DUVAL: That was certainly North Carolina's intent. We didn't want to prohibit the use for safety. Also to Charlie's point about species-specific use of powerheads, that was something that was actually an issue paper that was given to the council earlier was North Carolina did not feel that powerhead harvest should be prohibited for amberjack as you're suggesting. Based on the life history characteristics of those species, we were seeing very large amounts of hog snappers being harvested with powerheads, so that is really just where this came from. Thank you.

MR. HARRIS: There is a motion on the table. I think the desire of the maker of the motion, and you can correct me if I'm mistaken, is to just have this as another item for consideration and not

remove North Carolina's specific request for prohibition of powerheads for the snapper grouper fishery but add this as one other option to take out to scoping. Is that correct? John.

MR. JOLLEY: One last comment; I'd be a little concerned about the law enforcement aspect. If we get to where we're prohibiting powerheads and you're allowed to carry one for protection, how do you enforce it because you can still kill these fish, and all you've got to do is get back in the boat and stick a spear in it. A lot of times when you powerhead a fish, it doesn't even break the skin.

MR. HARRIS: Yes, I have lots of concerns about this but I'll leave those for later. There is a motion on the table. Are you through with discussion; you ready to vote? **All in favor say aye; opposed same sign. Okay, one in opposition, so we'll take that out to public scoping as well.** Okay, the next item, Anna. Mac first.

MR. CURRIN: No, not necessarily and maybe I can save you some time. **I'd be willing to make a motion, Duane, that we also include the items regarding the expansion of the Coral HAPCs in CE-BA 3 and also consideration of development or expansion of HAPCs for speckled hind and Warsaw grouper in CE-BA 3; those three basic issues at this point at least go out for scoping for inclusion in CE-BA 3.**

MR. HARRIS: Okay, there is a motion on the table to kind of move us forward to take those items out to public scoping. Is there a second to the motion; second by Wilson. Discussion on the motion.

MR. WAUGH: Which ones were we doing?

MR. CURRIN: The Coral HAPC expansions.

MR. HARRIS: Yes, let's go ahead and get it perfected.

MR. CURRIN: I don't know what the numbers are but I'm going to try to keep it general and I want to include all of those that were recommended by the Coral and Habitat APs; all the expansions.

MR. HARRIS: Including Oculina.

MR. CURRIN: Yes.

MR. HARRIS: Including the Snowy Wreck; including the Stetson-Miami Terrace expansion.

MR. CURRIN: All of those; and the other was a recommendation by one of those APs, and I think it was Habitat to consider development or establishment of HAPCs for speckled hind and Warsaw grouper to aid the council's additional action hopefully in the near future to look at dealing with bycatch of those species, management measures for them.

MR. HARRIS: Okay, we've split this into two motions and I don't know if that was required but on the board it's two motions, and I assume from Wilson that is okay with the seconder? Okay, let's take the first motion.

MR. CURRIN: Let's combine them into one motion just by removing that motion there. My motion was to include them, the previous motion on powerheads.

MR. HARRIS: Okay, one motion. Michelle.

DR. DUVAL: It is my understanding that the recommendation from the Coral AP with regard to the Snowy Wreck was to have this as a research item to gather additional information and not to propose additional expansion of the Snowy Wreck at this time. Can Anna confirm that, please?

MS. MARTIN: Michelle, that is correct, the Coral Advisory Panel would like to gather more information on the wreck within the MPA. That's their recommendation to make this a research priority. I think what Gregg presented, the Habitat AP is recommending the Snowy Wreck be designated as – I'd have to defer to Roger but he isn't here.

MR. CUPKA: Mr. Chairman, I was just going to say if we're considering actions that would were recommended by APs, that Measure 3 I think was also recommended, which is to look at fishery impacts on the wreckfish fishery and also deep-dropping. I don't know if Mac wanted to include that since he was talking about AP recommendations.

MR. CURRIN: I do not, David, to answer your question. I just pulled up the Habitat AP's recommendations and these were research items for Snowy Wreck MPA and the wreckfish fishery and deep-dropping; investigate other habitat closely associated with the existing Snowy Wreck MPA. Sampling is going on outside. I agree with Michelle, and I don't think there is any indicated expansion at this point by either of these APs for the Snowy Wreck; so if that's part of that, let's take that out of the motion. We do want the speckled hind and Warsaw in there, which is what you just took out.

DR. LANEY: Mr. Chairman, to make it absolutely clear, we're referring to Measure 1 and Measure 4 in the list of draft measures for consideration; so it is Measure 1 – Mac, am I correct in this; that is the expansion of the Coral Habitat HAPCs – and Measure 4, which is the protections for mid-shelf fisheries species undergoing overfishing, speckled hind and Warsaw grouper.

MR. HARRIS: That is correct; is that correct, Anna?

MS. MARTIN: Yes.

MR. HARRIS: Okay, there is a motion and a second. Otha.

MR. EASLEY: I don't know if this is to this motion or could be handled elsewhere, but enforcement appreciates the straight lines, et cetera, on the APs, but along those same lines, both figuratively and literally, back when CE-BA 1was introduced enforcement had an issue with all

the different curves and a couple of hundred waypoints. I'm wondering if this is a good time to put in the attempt to reduce those numbers.

MR. HARRIS: Well, I think when the council actually takes this up to move it forward and to have a list of alternatives, we can do that. I'm not so sure taking it out to public scoping is going to do us a lot of good. We can simply tell the public that that is law enforcement's desire to reduce the number of waypoints and make the lines as straight as possible. Unless somebody feels differently, that's what I would recommend.

Okay, motion on the table. **The motion is to move to consider the Coral HAPC expansion recommendations by the Coral Advisory Panel and the Habitat Advisory Panel; and to consider the advisory panel recommendations for designating HAPC for speckled hind and Warsaw grouper for scoping; Measures 1 and 4. Any objection to the motion? Seeing none, that motion carries.**

MS. MARTIN: We have a couple of other measures on the list for consideration for public scoping. I will walk through those with you now and I guess ask whether the committee wants to include those on the docket for public scoping in addition to what Mac has already recommended.

The third item is in regards to the commercial wreckfish fishery and potential impacts on bottom habitat. As you recall this is an issue that surfaced in the first Comprehensive Ecosystem Amendment in regards to whether gear impacts from the commercial wreckfish fishery jeopardized the integrity of deepwater coral habitat.

The council chose to address this in a future plan amendment, thus the inclusion on the list right now, because it was unknown at the time if harvest techniques did have impacts on bottom habitat. That is where we currently are with this issue. This, as you know, is a gear type that is allowed within the habitat areas of particular concern.

The Coral AP had verified that there are dense aggregations of wreckfish on the Stetson-Miami Terrace HAPC, but they don't have any documented spawning activity. Again, we don't know of any data to analyze on this measure that we didn't have during the first ecosystem amendment when this was discussed and considered. That is kind of where we stand, and it would be my request to ask the committee whether or not you want to include this on the list thus far and see what the public has to say about this measure.

MR. CURRIN: Duane, my inclination is not to include it. We don't know anything about it. We're unlikely to have research develop as a result of our intent to look at this to inform us. I think it would put us in a very risky position of having to make a decision without any information.

Rather than push for and try to seek resources to perform this sort of science, I would rather see us push for resources to generate more data on the fish stock itself to inform our assessments. I think that would put us a whole lot further ahead than looking at potential impacts from gear use

in an area that's so deep it would be terribly expensive to try to generate information. I would suggest that we not include either of these in fact in CE-BA 3.

MR. HARRIS: Well, said, Mac. Wilson.

DR. LANEY: My sense from being at both of those AP meetings was that this one really should be more of a research recommendation to gather information about whether or not there is an issue there or not. I guess I would concur with what Mac said.

MR. HARRIS: Isn't that already a research recommendation that is in either CE-BA 1 or 2? Don't we have that as a research recommendation; does anybody remember? We can find out.

DR. LANEY: It seems to me there was discussion of that and I thought it was included in one of those previous amendments.

MR. HARRIS: If it wasn't, it was intended to. But, no, I agree with you, Mac, we're not going to have any additional information on which to inform our decision. If we made a recommendation, I don't see how NOAA Fisheries could approve it, anyway. Is there any desire by anyone on the committee to include either of these two for public scoping for CE-BA 3? Seeing none, we will not do so. Michelle.

DR. DUVAL: Mr. Chairman, as Wilson pointed out to me, we did vote to include for scoping a potential measure to prohibit all powerhead use in the South Atlantic Region, but we did not take a specific vote on a powerhead prohibition off North Carolina, which was the original measure I believe. Is it clear enough from the record that it is our intent to include that in the scoping so we don't need a separate motion? I just want to make sure that's clear.

MR. HARRIS: It's clear to me; but if it would be clearer to the staff, we can have a motion. What would you prefer? Do you want a motion or are you clear?

MS. MARTIN: At this point I think a motion would be preferable, if you don't mind.

DR. DUVAL: Then I would move to include Measure 2 in the CE-BA 3 scoping document, the powerhead prohibition off of North Carolina.

MR. HARRIS: Second by Mac Currin. Discussion. Any objection? Seeing none, that motion is approved. Anna, is there anything else?

MS. MARTIN: Okay, we have one more measure on the list, and this was brought forward to us from the Florida Keys National Marine Sanctuary. Their advisory council met in August of this year and passed a resolution supporting designation of Snapper Ledge as a sanctuary preservation area, so this would be a no-take area within the National Marine Sanctuary.

This is included in CE-BA 3 because of the council's authority to manage under the National Marine Sanctuaries Act. The area under consideration includes a unique highly concentrated fish ledge called Snapper Ledge and a gully area and also a hard bottom section currently being used

as a coral transplantation research and repopulation study site. Here is a picture of the area in question. It's the little red dot down in the Sanctuary jurisdiction.

MS. SMIT-BRUNELLO: Well, I'm just a little confused. If you could go back to the motion, you're asking that the council designate something as a sanctuary preservation area?

MR. HARRIS: That's what it appears to me. I don't know if we have that authority or not. I think this is consistent in that the Sanctuary comes to us with respect to management of species, but this seems to be a little different than what we've done in the past.

MS. SMIT-BRUNELLO: Yes, and I wasn't advising the council when the Florida Keys National Marine Sanctuary was first designated, I guess, or the two sanctuaries were melded into one. I know there was a lot of involvement with this council in that whole process, but I don't recall ever seeing that the council designated something as a sanctuary preservation area. In fact, I don't know that the council actually has that authority.

I know that under the Sanctuary Act I believe, like you just said – and we're more familiar with the Grays Reef I think because we have more interaction with them I guess as they've tried to amend their management plan and all that, so the sanctuary folks come forward to the council with fishing regulations in certain areas and then the council looks at those and blesses them or doesn't bless them and then we work it out and I'm familiar with this.

MR. CUPKA: Gregg can maybe correct me if I'm wrong on this, but I thought that under our agreement with them that we certainly have the authority to establish fishing regulations. In fact, if they want to establish fishing regulations, I think they're required to come to us first to see if we wish to do anything.

I agree that this is a little different but I think they're asking us to not allow fishing in a particular area. I don't know that we would actually designate it a sanctuary preservation area, but I think we could take action to prohibit fishing and that would have the same impact and maybe it would help them.

Maybe they feel like we could get something in place quicker than they could through their process; I don't know. I think the end result is the same but I don't think we would actually get to designate it a special preservation area, but we could preclude fishing in that area as I understand it.

MR. WAUGH: Yes, Mr. Chairman, that is my understanding. They want us to in essence make this an MPA where there is no fishing allowed. Again, this is put on the list to get the public's thoughts and then we'd figure out what specifically we want to do at our March meeting.

DR. CRABTREE: Do we have any kind of a request from the Sanctuary, Gregg, saying what it is they're asking us to do?

MR. WAUGH: This surfaced at the – was it the Coral AP meeting or the Habitat AP meeting?

MS. MARTIN: This was a conference call with Myra and Sean Morton.

DR. CRABTREE: Well, I would think if we're going to move on this we would want the Sanctuary to send us a written request saying exactly what it is they're asking us to do so there is no confusion about it.

MR. WAUGH: Yes, and the way this surfaced was on a conference call with their staff. This is something that just recently occurred; and when we explained to them we were going out to scoping and developing this amendment, they offered at that time – and we can certainly go back to them and get further clarification as to specifically what we're doing.

Again, they said, "Well, if you can this is something that we're going to be working on; could you take it out and include it such that you could complement the regulations with a prohibition on fishing." Again, since it's just going out to scoping we can follow up with them and get more specifics.

MS. SMIT-BRUNELLO: Okay, that's helpful information. I think you would change the measure that goes out to the public, though, and you would want to call it a marine protected area instead of a sanctuary preservation area and that sort of thing. You have authority for marine protected areas but not sanctuary preservation areas.

MR. MAHOOD: Sean Morton initiated all this on a conference call. He is going to be at our March meeting and go over this. It was part of a conference call. As a matter of fact, Gregg and I were digging back through the archives trying to find our memorandum of understanding that we had with the sanctuary people that dated back to some of the early dealings we had relative to who had what authority to do what.

They contacted us because of this memorandum of understanding, and we have first chance of setting any regulations on the fish that would pertain to the sanctuary area. We've been kind of moving ahead on this. They're going to come in March and give a little bit more detail. Also, when we were talking about this, we broached the possibility of this group we're putting together between the Gulf Council and the South Atlantic Council and state of Florida to deal with some of the fish issues down there of including these folks also since they have a role in it. This is kind of how this is moving ahead right now, relatively informal through one conference call to date.

MR. JOLLEY: Any spawning aggregation importance associated with this site?

MR. HARRIS: Does anybody know? Gregg doesn't know.

MR. MAHOOD: We don't know. One of the reasons they approached us because what they're doing, they're redoing a number of things but it's long term, and they're more interested in having us involved in some of the immediate things they'd like to see done, and I think that's why they approached us because we have that ability that they may not have.

MS. McCAWLEY: Well, one of my questions was just answered. My other question is what is the timeline for that South Florida Committee? It sounds like the Sanctuary wants this in place before that committee would meet. Do we know anything about the timeline on that?

MR. MAHOOD: Their timeline – and correct me if I'm wrong anybody that was on that conference call – they're looking several years down the year themselves of their re-evaluation. Certainly, our group would be in place and talking and making plans before that.

MR. HARRIS: I'm trying to move us along; and Myra is shaking her head, yes, that's the case. It is a long-term timeline. Is there any desire to change sanctuary preservation area to MPA and include this for public scoping or do you want to just move on at this time and have this as an item for future consideration? Roy.

DR. CRABTREE: Well, I think if we leave this in here we need to change sanctuary preservation area to MPA.

MR. HARRIS: That's why I just asked; is there any desire to change that and leave it in or do you want to consider it at this time or not? David.

MR. CUPKA: I'd make a motion that we change the wording to MPA and at least take it out to scoping and get some comment. I'm assuming in March we'll find out more about what the Sanctuary's people are actually going to do. I don't see any problem in us at least including it in scoping to get some public input, but the wording does need to be changed.

MR. HARTIG: Second by Ben Hartig.

MR. CUPKA: Okay, there is a motion and second. **The motion is change the wording in Measure 5, "Snapper Ledge" to an MPA as opposed to a sanctuary preservation area and take out to scoping.** Discussion on the motion. Jessica.

MS. McCAWLEY: Yes, just one more point. I believe that the Florida Keys National Marine Sanctuary uses the words "sanctuary preservation area" as synonymous with MPA, so I think I would put both in there maybe so that the public knows what you're talking about and so the public is aware of the Sanctuary calling it a SPA would also know that's it an MPA zone. I'm just suggesting adding both things so that the public is aware of those topics; if this is going to be a document that the public sees, to have both of those items listed on there.

DR. CRABTREE: Well, I think that's something you can explain in the discussion or something, but I think the fact is we don't have any authority to establish a sanctuary preservation area. I'm not even sure what that entails as a preservation sanctuary area, but I think they regulate diving and all sorts of things that we don't have authority over in it.

MR. HARRIS: Further discussion on the motion? **Is there any objection to the motion? Seeing none, that motion carries.** Anna, is that it?

MS. MARTIN: That's it.

MR. HARRIS: There was going to be an update on ecosystem activities in the South Atlantic Region, but Roger was going to do that. If there are any questions, you have his report that was e-mailed to everyone. If there any questions, you can ask him at full council. Is there any other business to come before the Ecosystem-Based Management Committee? Ben.

MR. HARTIG: In direction to the staff on this powerhead issue, how we've always addressed it before is we addressed the diving component harvest as part of the entire snapper grouper complex. In this analysis I'd like to see the harvest of gag grouper separated out hook and line and powerhead; hog fish, hook and line and powerhead; greater amberjack hook and line and powerhead; those three species in particular to look at the harvest of that gear for those three species that is their major target species.

MR. HARRIS: As direction to staff; is that okay with everyone? Okay, any other business to come before the Ecosystem-Based Management Committee? Seeing none, we are adjourned.

(Whereupon, the meeting was adjourned at 10:05 o'clock a.m., December 6, 2011.)

Certified By: _____ Date: 3/6/12

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ECOSYSTEM-BASED MANAGEMENT COMMITTEE MEETING
December 5, 2011
Raleigh, NC 27605

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Chris Elkins	919 417 3171	tarheelboatworks@gmail.com	" "

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ECOSYSTEM-BASED MANAGEMENT COMMITTEE MEETING
December 6, 2011
Raleigh, NC 27605

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Chris Elkins			

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Invasion history

- Lionfish was first documented as established off the coast of North Carolina in 2000.
- Two visually identical species (*Pterois miles* and *P. volitans*) of lionfish were introduced into the Atlantic via the U.S. aquarium trade beginning in the 1980's.
- Lionfish are widespread throughout the Southeast U.S., Caribbean, and are presently invading the Gulf of Mexico.
- Lionfish are expected to invade South America as far south as the northern coast of Argentina.
- Lionfish have established throughout most of the Caribbean in less than five years.

Biology

- Lionfish may live decades and reach sizes up to 47cm (19 inches).
- Lionfish inhabit all marine habitat types and depths (shoreline to over 1000').
- Lionfish possess venomous spines capable of deterring predators and inflicting serious stings and reactions in humans.
- Lionfish temperature tolerance is approximately ~10 – 35C.
- Lionfish become sexually mature in less than one year and spawn in pairs.
- A single female lionfish spawns over ~2 million eggs/year.
- Lionfish eggs are held together in a gelatinous mass and are dispersed by currents.
- Lionfish larval duration is ~25 days.

Ecology

- Lionfish can reach densities higher than 200 adults per acre.
- Lionfish are generalist carnivores that consume >70 species of fish and many invertebrate species, with prey exceeding half the lionfish's body size.
- Many lionfish prey are commercially, recreationally, and ecologically important.
- Native predators have been observed to exhibit avoidance for lionfish.
- Lionfish have very few parasites compared to native species.
- Lionfish exhibit site fidelity.
- Lionfish have high affinity for structure and feed primarily during dawn and dusk time periods.

SIMON FRASER UNIVERSITY

Information provided by James Morris **james.morris@noaa.gov**
NOAA National Centers for Coastal Ocean Science
Updated Dec 5, 2011

Invasive Lionfish Facts

Ecological impacts

- Impacts to biodiversity and resilience of coral, hardbottom, and artificial reefs.
- Potential reduction of ecologically important species such as cleaners, herbivores, and forage fishes.
- Interactions with other reef stressors could exacerbate lionfish impacts (e.g., ocean acidification, fishing impacts, etc.)
- Cascading impacts across food webs is possible (e.g., predation on herbivores, increased macroalgae, decreased coral biomass).
- Potential impacts to species if concern (Nassau grouper, Warsaw grouper, speckled hind, striped croaker, key silverside).
- Scale of ecological impacts is high in magnitude and geographically broad (North Carolina to the Caribbean and the Gulf of Mexico).

Socio-economic impacts

- Potential impacts to stock rebuilding efforts for commercially important species.
- Economic losses for commercial fishermen include loss of fishing days when envenomation occurs and reduction of native species catch rates.
- Potential economic loss in the trade of native marine ornamental species.

Human health impacts

- Lionfish sting symptoms include tachycardia, hypertension, hypotension, seizures, chest pain, abdominal pain, swelling, pain, and subdermal necrosis at the sting site, and temporary paralysis to all extremities.
- Long term health impacts of repeated envenomations are unknown.
- Divers, fishermen, and swimmers are at increased risk of envenomation at locations where lionfish have reached high densities.
- Envenomation risk to bathers/swimmers increases at locations with structure such as piers, breakwaters, and confined tidal swimming pools.
- Lionfish, similar native reef fish, may cause ciguatera fish poisoning in some locations.

Control

- Control plans that support sustained removals can significantly reduce local lionfish densities.
- Tools for local lionfish control include commercial harvesting as a food fish, harvesting juveniles for the aquarium trade, sport tournaments, and adopt-a-reef and other citizen-based removal efforts.
- Based on current technology, lionfish eradication at the regional scale is likely not feasible given the expansive depths and geography of lionfish habitat.

Information provided by James Morris **james.morris@noaa.gov**
NOAA National Centers for Coastal Ocean Science
Updated Dec 5, 2011