SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL
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SUMMARY REPORT

Habitat Protection and Ecosystem-Based Management Advisory Panel
Crown Plaza Hotel
Charleston, South Carolina

May 21-22, 2019

Members of the South Atlantic Fishery Management Council (Council)'s Habitat Protection and Ecosystem-Based Management Advisory Panel (AP or Panel) convened on May 21 at the Crown Plaza Hotel in Charleston, South Carolina, to discuss topics pertaining to the conservation of fish and fish habitat and activities advancing Ecosystem Based Fishery Management (EBFM) in the region. The Panel operates on consensus therefore no motions are provided.

[**NOTE**: A full transcript of the meeting is available at: https://safmc.net/download/HabEcoAPMin_May19.pdf; the meeting agenda and overview may be found at: https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/AgendaOverviewHabEcoAPMeetMay19.pdf]

The Advisory Panel (AP) was convened by AP Chair Anne Deaton (North Carolina Division of Marine Fisheries; also Chair of the NC Subpanel). Chair Deaton asked that members and guests provide introductions. The following AP members were present: Anne Deaton (NC), David Webb (FL), Paul Medders (GA), Thomas Jones (GA), Dr. James Geiger (SC), Bob Martore (SC), Capt. Bill Parker (SC), Capt. Jeff Soss (SC), Laura Busch (US Navy), Dr. Laurent Cherubin (NOAA-CIOERT), and Dr. Steve Ross (UNC-Wilmington). Dr. Jennifer Bucatori (USDOI, BOEM) was present as proxy for Bran Hooker. Dr. Wilson Laney (NCSU, Department of Applied Ecology) was introduced as a newly appointed AP member who has been designated as the Council's Regional Habitat/Ecosystem Scientific Liaison. Council members present included the Chair and Vice-Chair of the Council's Habitat Protection and Ecosystem Based Management Committee, Steve Poland (NC) and David Whitaker (SC) respectively. Council staff present included Roger Pugliese, Julia Byrd, Cierra Graham and John Hadley. Roger reviewed the changes to the agenda. The AP approved the agenda as modified, and the minutes from the November, 2018 meeting as transcribed. Chair Deaton asked all members to keep the Fishery Ecosystem Plan Two-Year Road Map in mind during the meeting. Dr. Geiger requested that at some point during the meeting, staff or NOAA personnel brief the AP on the budget forecast as it applied to the South Atlantic.

The following topics (**bold font**) were addressed during the meeting by the *indicated presenters*. Links are provided to the presentations given to the meeting participants, and a summary of the

presentation and any recommendations by the AP to the Council or staff are provided below each topic heading.

Mapping/Characterization of South Atlantic Deep Water Ecosystems through Deep Search Cruise on the NOAA Ship Ron Brown and NOAA Ship Okeanos Explorer 2019 South Atlantic Cruise Plans. *Presenters (via webinar): Kasey Cantwell and Caitlyn Adams, NOAA Office of Ocean Exploration and Research, and Heather Coleman, Deep Sea Coral Research and Technology Program.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach2_Deep%20Search%202019%20Ron%20Brown.pdf

https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach3_2019%20Okeanus%20Explorer-%20SA%20Expeditions.pdf

Ms. Cantwell and Ms. Adams briefed the AP on deepwater coral and sponge discoveries off the South Atlantic and on bottom and habitat mapping plans for the remainder of 2019 and 2020. Meeting participants viewed excellent video and photographs of some of the explored sites. Deep Search is a four-and-a-half-year project co-sponsored by the Bureau of Ocean Energy Management, USGS, and NOAA. The goal of the project is to understand the ecology and distribution of sensitive deep-sea habitats within BOEM's Mid and South Atlantic planning area. Multiple seep and deepwater coral sites were visited. A significant discovery included a vestimentiferan tube worm at Pea Island and Kitty Hawk seeps off NC. This species had never before been documented in the Atlantic Ocean. Multiple dives were made within the Coral HAPC. Ms. Cantwell advised that The Windows to the Deep Expedition will again work in the southeast and plans 21 ROV dives during summer 2019. All their mapping priorities were identified by the South Atlantic Fishery Management Council, through working with Roger Pugliese and Dr. Chip Collier, as well as through the folks at the Southeast Deep-Sea Coral Initiative and Monitor National Marine Sanctuary. Ms. Coleman noted that a story map of site characterization reports around different regions of the country is available, and the Southeast has the most site characterization reports of any region up on this platform right now. AP members noted how much more information about these sites now exists than was the case historically.

Discussion and Recommendation(s): AP members and staff were pleased and impressed by the amount of mapping and biodiversity data which have been generated during the last 15 years, and NOAA presenters thanked the AP and Council staff for their continued support and input. *The AP recommended that the Council recommend to all relevant agencies to add designated sentinel sites for monitoring and sampling, looking at long-term change in deepwater habitat condition, basing site selection and protocol on shallow-water coral sentinel site monitoring methods and recommendations of expert deep-sea ecologists.* Dr. Ross was asked by Chair Deaton to work with other members to refine the wording of this recommendation (see below). The presenters noted that dives would be occurring between June 21 and July 11, and anyone could view the work live at oceanexplore.noaa.gov.

Ecosystem Considerations: Prey supporting Dolphin Wahoo Fisheries and Scoping Overview for adding Bullet and Frigate mackerel as Ecosystem Component Species in the Dolphin Wahoo Fishery Management Plan. *Presenter: John Hadley, SAFMC Fishery Economist.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach4_Scoping%20Document%20for%20Bullet%20and%20Frigate%20Mackerel%20as%20EC%20Species.pdf

https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach5_Bullet%20and%20Frigate%20Mackerel%20Scoping%20Presentation%20For%20HAP.pdf

John Hadley noted the Council is considering adding Bullet Mackerel and Frigate Mackerel as ecosystem component species in the Dolphin Wahoo Fishery Management Plan (FMP). Other prey species were considered but focus will be on these two species for the present. John noted that the Dolphin Wahoo Plan covers the entire US East Coast from Maine through the Florida Keys, therefore any action taken could affect multiple other FMPs. The SAFMC was requested to consider this addition by the Mid-Atlantic Fishery Management Council (MAFMC) after the MAFMC proposal to add the two species to their Unmanaged Forage Omnibus Amendment was not approved by NMFS. Wahoo have a particularly strong reliance on Bullet and Frigate mackerels, and the two mackerel species have been observed as the most dominant forage, by mass and number, in Wahoo diets. Dolphin tend to have a more diverse diet and a lower reliance on the *Auxis* species, but the Bullet and Frigate mackerels have been identified as important prey for dolphin at times. John reviewed the commercial and recreational landings for the two mackerel species.

The National Standard Guidelines define ecosystem component species as a stock that a council or the Secretary has determined do not require conservation and management, but which is desired for listing in a fishery management plan in order to achieve ecosystem management objectives. The Council must specify ecosystem management objectives for any designated species and should consider a list of ten factors when deciding whether a stock or a species requires conservation and management. The ten factors include: the importance of the stock to the marine environment, the economy, or user groups, whether the stock is caught or is a target of a fishery, whether a stock can develop a fishery, resolve conflicts, whether a fishery management plan can help a fishery resolve conflicts, improve the stock, or enhance the economic condition of a fishery, and the extent to which a fishery is already managed. John noted that adding the species will require an amendment and that there are several options for how to proceed. He reviewed examples from multiple councils and noted that the SAFMC has multiple options for moving forward. The Council would potentially take final action on any amendment around September or December of 2020 and looking at implementing regulations in the spring of 2021, or summer of 2021.

Discussion and Recommendation(s): The AP members agreed that the presentation was excellent and well-covered all the information. Discussion focused on the reliability of landings estimates, importance of the two species as prey (Mr. Poland summarized his diet work for the AP), whether addition of the two species would tax Council resources, and the fact that this AP had already made a recommendation to the Council to add the two species. Roger confirmed that was the case, noting that the Council has taken the issue out for scoping, and reminding the AP of what had happened with Chub Mackerel. Mr. Poland clarified that the Council was seeking additional input from the AP and encouraged the AP to recognize that any action encompasses the entire East Coast and not just the SAFMC geography. Chair Deaton noted that the FEP contains an action item which entails addressing council forage science priorities, including predator dependencies. The AP discussed whether there was sufficient data to support designating other species, in other SAFMC fisheries, and agreed that for the present, the Dolphin Wahoo fishery is significant, and the data supporting designation of Bullet and Frigate mackerels is highly robust. A work group of the AP was assigned the task of developing a specific further recommendation for the Council's consideration (see below).

Status Report on SAFMC Citizen Science Program and Engagement of AP in the Research Prioritization Process. *Presenter: Julia Byrd, SAFMC Citizen Science Program Manager.*

https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach6_SAFMCCitSciOverview_HabitatAP_May2019.pdf

Julia Byrd gave an excellent presentation to the meeting participants on the Council's Citizen Science program which was initiated in 2016. After a workshop was held, the Council formed a Citizen Science Committee and recruited five action teams in the following topical areas: Volunteers, Data Management, Projects & Topics Management, Communication and Education and Outreach, and Finance & Infrastructure. The teams met in 2017 and 2018 and held over 50 web meetings to consider best practices and develop recommendations. All of the information is available on the Council's web site. Julia highlighted key activities from 2018 and reviewed plans for 2019, including updating citizen science research priorities. Once the Council adopts their overall research and monitoring plan, staff and the Citizen Science teams will work to develop the citizen-science-specific research priority document. That will be done by the Citizen Science Operations Committee, working in collaboration with the new Citizen Science Projects Advisory Team, and via input from a Citizen Science Project Portal to be established on the Council's web site. Julia briefed the meeting participants on the two current Citizen Science projects, Scamp Grouper releases and FISHstory.

Discussion and Recommendation(s): The AP and staff had an extensive discussion regarding how best to generate input from the AP and provide it to the Citizen Science Committee and full Council; how citizen-science-generated data would be used, and how volunteers could be trained and motivated. The AP ultimately decided to brainstorm ideas collectively, possibly via a fall webinar, and provide those back to Julia for consideration by the Action Teams and Council staff.

Documenting Occurrence and Impacts of Extreme Events and recent hurricane impacts on North Carolina and South Carolina Fish Populations. *Presenter: Dr. Wilson Laney, AP Member and Regional Habitat/Ecosystem Scientific Liaison.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Attach7_SAFMC%20Habitat%20AP%20Hurricane%20Fish%20Impacts%20NC.SC.05.21.2019.pdf

Wilson noted that Roger had asked him to update a presentation for AP use that a friend had asked Wilson to prepare for a local Raleigh, NC, service club, documenting the impact of recent hurricanes on fish, habitats and fisheries. The presentation focused on impacts resulting from hurricanes Florence and Michael which occurred in 2018, and on river basins in North and South Carolina but Wilson noted that hurricanes are frequent throughout the South Atlantic and affect all four South Atlantic states. The storms have had extensive adverse impacts on fish populations, habitats and fishery infrastructure and fishing, both commercial and recreational. Wilson noted that many colleagues had provided information and data for the presentation. Much of the impact results when dissolved oxygen levels become suboptimal or reach zero and fish and other aquatic organisms die. Water quality is also compromised by inputs from both natural floodplains, and point-sources. Atlantic Sturgeon throughout NC and portions of SC, and the Striped Bass population in the Cape Fear River, were particularly hard hit, with multiple documented mortalities. American Eels, which we tend to think of as particularly resilient and tolerant of poor water quality conditions, were also subject to heavy mortality in those areas where oxygen levels were suboptimal. Unknown at this point is how the extensive flooding may have impacted several endemic freshwater fish species which occur only in NC and SC. Wilson noted that documentation of storm impacts was hampered by the extensive flooding which prevented field staff from observing kills and measuring water

quality. There has been some financial assistance provided to commercial fishermen to compensate for their losses resulting from the storm.

Discussion and Recommendation(s): The presentation prompted extensive discussion by the AP regarding how to proactively address hurricane impacts to fish and fisheries. It was noted that hurricane frequency and intensity appear to be increasing due to climate change and that under the present NC governor, this fact has been acknowledged. It was also noted that while we cannot control the storms, there are actions that can be taken to reduce or ameliorate their adverse impacts. Multiple AP members (Mr. Webb, Dr. Geiger, Mr. Medders) and Council member Whitaker gave specific examples of local or state actions and studies or methods (eDNA) that could be useful in this regard. Dr. Laurent noted that in addition to the hurricanes, harmful algal blooms have increased in frequency and are also a concern. Increasing coastal resiliency could address both the storms and the blooms. The AP and staff agreed to pursue compiling information on what the four states are doing with respect to addressing climate change, and work toward the development of a draft policy for consideration by the Council. Roger noted that his position on the CCC and that body's charge to update the Essential Fish Habitat (EFH) consultation guidance could be part of this effort.

Update on Southeast Connectivity and Adaptation Strategy and Conservation Blueprint. *Presenter: Roger Pugliese, SAFMC Senior Fishery Biologist and Dr. Rua Mordecai, South Atlantic Landscape Conservation Cooperative*.
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Link%20to%20Presentation%20-%20SECAS%20Update%20May%2019.pdf

Dr. Mordecai gave a detailed presentation on the Southeast Connectivity and Adaptation Strategy (SECAS) and Conservation Blueprint. Details may be found on the SECAS and SALCC websites. Rua noted that currently, the Blueprint addresses the marine environment only off the South Atlantic, but that there are plans to expand marine coverage into the Gulf of Mexico.

Discussion and Recommendation(s): Roger noted that the information developed by SECAS and the SALCC feeds nicely into the AP's future activities. All AP members were encouraged to visit the SECAS and SALCC websites to review the Conservation Blueprints and consider how those might be useful to the AP and Council.

May 22, 2019

Update on BOEM research and energy development activities with a focus on Renewable Energy in the South Atlantic region. *Presenter: Dr. Jennifer Bucatori, USDOI, BOEM.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Attach8_SAFMC%20update_May2019_BOEM.pdf

Dr. Bucatori presented the update to the AP, Council members present, and staff. She walked us through the BOEM leasing and renewable energy development process, site assessments and all of the projects on which they are currently working. She advised that the South Atlantic Regional Task Forces would be meeting in late summer 2019. The permits issued for the seismic surveys were discussed, and Jennifer reviewed the Marine Minerals Program and associated studies, in particular their work on offshore sand shoals within the Council's jurisdiction, which includes acoustic tagging and detection of selected species such as Atlantic Sturgeon and Red Drum. The study benefits as well from tagging done on other species, by other research teams.

Discussion and Recommendation(s): The AP expressed great appreciation for the work that the US Navy, BOEM, National Park Service (at Cape Canaveral National Seashore), U.S. Army Corps of Engineers, and other agencies are doing to gain an understanding of ecosystem ecology offshore, especially on the sand shoals and at wind energy sites. There was extensive discussion of how these data may be useful in assessing environmental impacts and conducting EFH consultations. There were no specific recommendations from the AP membership.

SECOORA Activities and Draft RCOOS Plan. *Presenter: Debra Hernandez, Executive Director, SECOORA.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Presentation_Hernandez_SECOORA_RCOOS_PlanMay19.pdf

Debra briefed the AP on the SECOORA mission, annual meeting in Wilmington, NC, and their five-year plan. The plan has three focus areas: ecosystems, marine operations, and coastal hazards and climate variability. Each of the three sections has six additional sections, which Debra reviewed. Debra indicated that what she would like to have from the AP is feedback on whether they have the right stuff in their plan, and whether are there any major gaps, either in documenting what is already going on or what science is needed related to observing and modeling. Essentially, have they captured what sort of the key things are that should be addressed? Debra spent some time going over their activities in detail.

Discussion and Recommendations: The AP recommended that capes and sand shoals be included in the ecosystem priority habitats for investigation by SECOORA. Members also supported any efforts to conduct additional acoustic tagging studies on selected species of interest (Tripletail, Red Drum, and Atlantic Sturgeon were mentioned); studies on species distribution shifts; and the addition of temperature and salinity monitoring to SECOORA stations. Everyone agreed that it was important to try to document environmental variability and how it influences species distribution and production. The hope is that new and emerging technologies will improve and enhance our ability to do so.

Applying Innovative Technologies to Characterize Fish Habitat and Spawning Events: Understanding Soundscapes: Wave Glider and Acoustic Technology. *Presenter*: *Dr. Laurent Cherubin, NOAA, CIOERT.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Attach13_%20Cherubin%20Innovative%20Tech%20Characterize%20Fish%20Habitat%20and%20Spawning%20Events.pdf

Dr. Cherubin gave a fascinating and exciting presentation to the AP, Council members and staff regarding the use of acoustic technology to document the offshore ecosystem. Basically, technology now enables scientists to monitor the "soundscape" of the ocean. This enables us to document spawning aggregations and sites, and to better understand the behavioral ecology of species whose auditory emissions are distinctive. Wave gliders in use have the ability to detect acoustic signals and are also monitoring DO, temperature, pH, depth, and salinity, and to even quantify biomass in the water column. Laurent explained how the signals from the equipment are used to document the biomass and species present, and their activity. Laurent noted that researchers can obtain a comprehensive vision of the spatial extent and temporal dynamic of fish spawning aggregations, and can get a consistent, efficient, low-cost, unmanned assessment of FSA status through time. You can get a real-time alert system of boat traffic and fishing activities, because, if we can classify fish sound, we can also classify noise, which can be classified in which you can find boat noise or any other anthropogenic sound, basically, and it could be a seismic survey or anything, piling activities or

anything, basically. The ultimate goal is to get abundance estimates of spawning aggregations. Laurent proceeded to show the AP multiple examples of how the technology has been used to document spawning and other aspects of individual species.

Discussion and Recommendations: The AP was inspired by the work that Dr. Cherubin and colleagues have done, and enthusiastic about possibilities for future work on Council SMZs. Dr. Cherubin was asked to provide copies of any of the work that has been published.

DOISTS Webinar – Anthropogenic Sound Sources – Pile Driving and Wind Turbines.
*Presenters***:** *Chris Knowlton, Assistant Director at the InnerSpace Center; Dr. Jim Miller, Dr. Kathleen Vigness-Raposa and Dr. Jakob Tougaard.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach12_DOSITS%20May%2022%202019%20Webinar.pdf

Knowlton et al. gave their presentations to the AP. The presentations addressed the noises associated with piledriving, and the potential impacts to habitats and biological organisms, methods for reducing impacts, and how the sound field propagates throughout the water column. Dr. Tougaard discussed noises emanating from operating wind farms. Curtains of air bubbles can be effective for reducing noise under some circumstances.

Discussion and Recommendations: AP members and others on the webinar asked questions and answers were provided. There were no specific recommendations resulting from the presentations.

Refinement of the AP Recommendations developed on the previous day. *Presenter: Chair Anne Deaton. [No presentation here, just text on the screen.]*

Discussion and Recommendations: Chair Deaton presented the wording developed by the two work groups. After further discussion, the final wording for presentation to the Council was as follows:

Consensus Statement

Bullet and Frigate Mackerel as Ecosystem Components
At the Fall 2018 Meeting of the SAFMC Habitat and Ecosystem Advisory Panel presentations were made outlining the significant scientific data identifying the importance of frigate and bullet mackerel as forage prey for wahoo and dolphin. In keeping with renewed efforts by fisheries management entities to proactively address potential threats to currently unmanaged species in addition to the growing emphasis on developing ecosystem management approaches the AP recommended that the SAFMC begin monitoring the bullet and frigate mackerel species.

This issue was revisited by the Habitat and Ecosystem Advisory Panel at the Spring 2019 meeting. The AP strongly recommends the Council take proactive actions for bullet and frigate mackerel due to sound existing science regarding their importance as prey for wahoo and dolphin. Additionally, the AP feels that dedicated scientific study should target bullet and frigate mackerel in conjunction with other identified forage prey to enable the future development of comprehensive Fisheries Management Plans.

NOAA Fisheries EBFM Activities for the South Atlantic Region: Status and Timelines for Completion of Deliverables supporting FEP II: Addressing NOAAs EBFM Implementation Plan – Status and Timelines for Completion of South Atlantic Ecosystem Status Report, South Atlantic Climate Vulnerability Analysis and Multi-Species Production Modeling. *Presenter: Dr. Todd Kellison, Dr. Kevin Craig, NOAA, Beaufort Laboratory.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Attach10b_NOAA%20Fisheries%20EBFM%20Implementation%20Plan%20for%20the%20South%20Atlantic%20(May%202019).pdf
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Late%20Materials/Presentation-%20NMFSSEFSC%20SA%20Ecosystem%20Science%20Activities%20May%2019.pdf

Todd indicated that he and Craig would be talking about three different sort of ecosystem or ecosystem and climate related activities that are being led right now by the Southeast Fisheries Science Center: those are development of a South Atlantic ecosystem status report, a South Atlantic climate vulnerability assessment, and then a multispecies or aggregate production modeling effort that is focused on the South Atlantic, although that has also taken on a Gulf component as well. Todd noted that they would also speak a little bit to the relevance of those efforts to the Fishery Ecosystem Plan and the roadmap and also the just-finalized NMFS South Atlantic Ecosystem-Based Fishery Management Implementation Plan. Todd and Craig addressed the work that NOAA-Fisheries has done to address ongoing and projected future changes in the ecosystem as a result of the changing climate, and how the changes will impact protected species, as well as commercially and recreationally valuable species. Todd addressed the Climate Vulnerability Analysis which is to be conducted for many of the species in the South Atlantic. Craig briefed the AP on the production models on which they are working.

Discussion and Recommendations: AP members asked questions and agreed that it was important for the SEFSC to continue regular briefings to the AP and Council and transfer the information that will be very useful for making management decisions.

FEP II Implementation Plan - Two Year Roadmap: Preliminary Review of Actions and Status. *Presenter***:** *Roger Pugliese, SAFMC Senior Fishery Biologist.*
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach11_SAFMC-FEP-II-Two-Year-Roadmap-March-2018%20(1).pdf

Roger briefed the AP and set the stage for additional review and discussion and status that's going to happen between now and the October AP meeting. One of the first objectives Roger highlighted was under Action 1 under the food webs, and this really gets to the issues of forage and prey and predator, and he noted the important aspect under this action is the issues of identifying species and data. He highlighted the fact that we are formally advancing the discussions under Ecopath and Ecosim modeling and diet complexes, not only building it for the existing, but really setting the stage for understanding the information across all the other species and moving that in, so that that can be collected through our existing fishery-independent and dependent surveys, and so that's an ongoing and initiated process. Another important aspect of the roadmap is patterns of managed species and species distributions. Roger also addressed ongoing actions looking at climate variability and noted the need to continue coordination.

Discussion and Recommendations: The AP discussed the need for additional coordination with the state subpanels. Roger, Anne and Wilson will work on coordinating with the state subpanels and gathering additional information, in between Habitat AP meetings.

Update on Development of Next Generation South Atlantic Ecopath with Ecosim Model.
Presenter: Roger Pugliese, SAFMC Senior Fishery Biologist.
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach15_SA%20Ecopath%20Model%20Path%20Forward%20May%202019.pdf
https://safmc.net/download/Briefing%20Book%20Habitat%20AP%20May%202019/Attach16_Okey_SA_Ecopath_Model_April_2019_updated.pdf
Roger provided the update on the Council's next generation Ecopath modeling work. The modeling work group, and the Council's Science and Statistical Committee (SSC) will be reviewing and refining the model and developing methods for use in addressing management questions. Some of the potential questions that may be addressed with the model include looking at the interaction between Red Snapper and Black Sea Bass, and between sharks and their prey, based on distribution information.

Discussion and Recommendations: AP members asked questions and there was some discussion but no specific recommendations were made.

Other Business: The only other business was the October meeting, and the dates have been set for October 22 through 24. Roger noted that the AP will be meeting at FWRI. We're going to be staying at the Hilton right down the road from them, and so we can walk to there, and then we can go to all the local establishments. It's an easy run from there. It's the 22nd through 24th, and so we'll be starting first thing in the morning, and so the travel time will be covered from the 21st through the 25th.

The AP adjourned at approximately 3:22 p.m.