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Overview & Recommendations

JOINT MEETING OF THE HABITAT ADVISORY PANEL AND CORAL ADVISORY PANEL

October 26-28, 2004

Francis Marion Hotel
387 King Street, Charleston, SC 29401

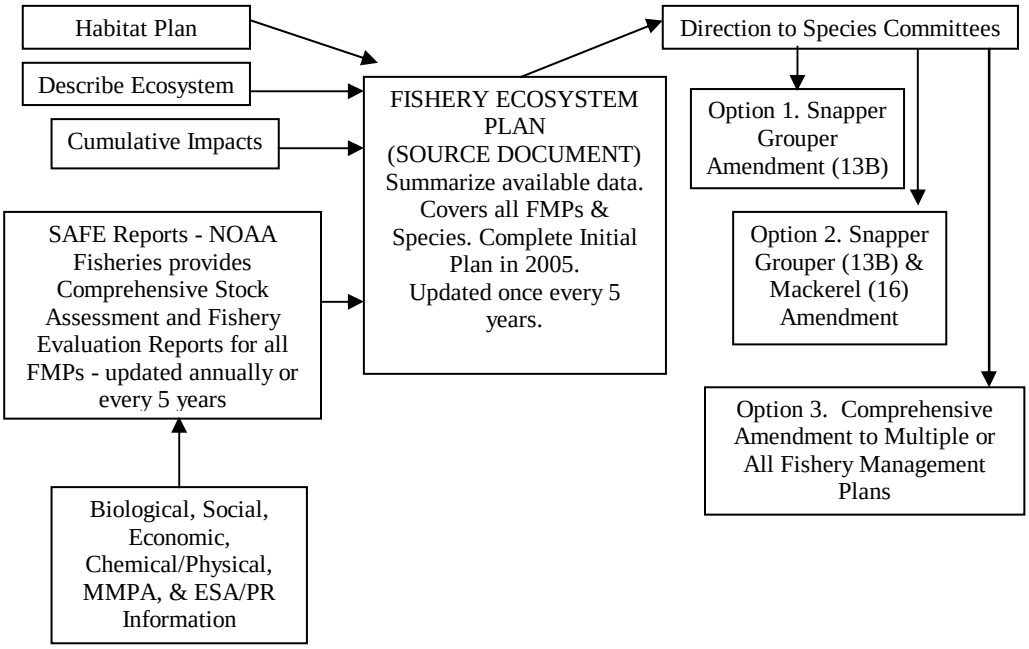
Issues addressed at this meeting included: 1) Ecosystem Pilot Projects and Action Plan for the Evolution of the Habitat Plan into a Fishery Ecosystem Plan for the South Atlantic Region; 2) The SAFMC Comprehensive Habitat and Fishery Ecosystem Plan Page and Coral and Benthic Habitats Internet Mapping Server; 3) Research Efforts on the Charleston Bump Essential Fish Habitat-Habitat Area of Particular Concern; 4) Deepwater Coral Habitat Research and Recommendations for Protection; 5) The Draft *Oculina* Closed Area Research and Monitoring Plan; 6) Gas Pipeline Development: Assessing Impacts on Nearshore and Deepwater Coral Habitats, Coordinated Council and NOAA Fisheries Comments, and Implications for Energy Policy Refinement; 7) Potential Actions for Comprehensive Ecosystem Amendment; and 8) Illegal Harvest of Living Coral.

1) Ecosystem Pilot Projects and Action Plan for the Evolution of the Habitat Plan into a Fishery Ecosystem Plan for the South Atlantic Region: With the Habitat Plan as a cornerstone, the Council is developing an ecosystem-based approach to resource management. Evolution of the Habitat Plan into a Fishery Ecosystem Plan (FEP), and transition from single species management to ecosystem-based management, will require a greater understanding of the South Atlantic Bight ecosystem and the complex relationships among humans, marine life and essential fish habitat. This effort will provide a more comprehensive understanding of the biological, social and economic impacts of management. The Habitat Plan will serve as the basis for the FEP. Updated life history and stock status information on managed species and the characteristics of the food web they exist within will be incorporated as well as social and economic research needed to fully address ecosystem-based management. Writing Teams (composed of AP members, experts from state and federal agencies, universities and Council staff) will review, update and expand existing chapters of the Habitat Plan and incorporate this material into new chapters for the FEP (e.g., Ecosystem Modeling and Research Needs to support Ecosystem-Based Management). The major areas to be addressed in the developing FEP and Comprehensive Ecosystem Amendment include the following:

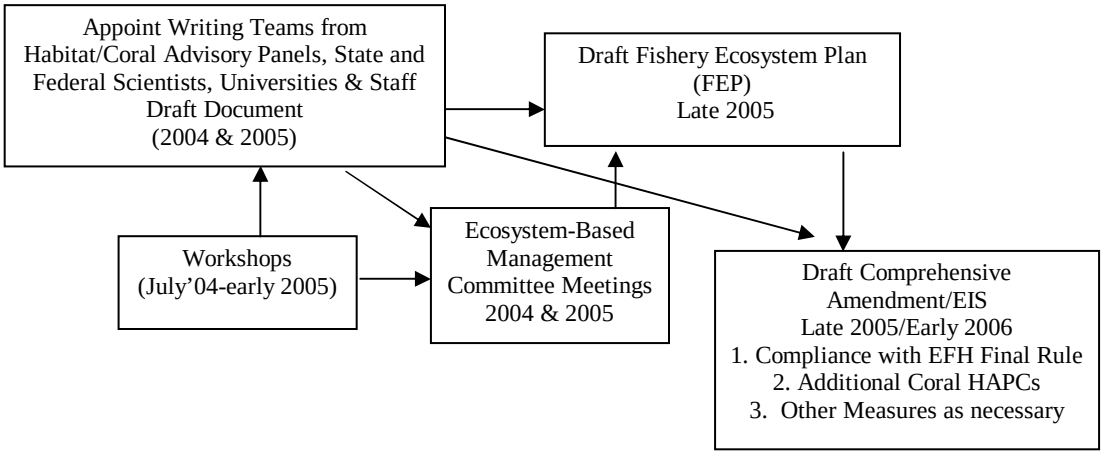
1. Define the geographical boundaries of the ecosystem, including characterization of its biological, chemical and physical dynamics;

2. Assess ecological, human and institutional elements of the ecosystem:
3. Develop a conceptual model of the food web;
4. Describe the habitat needs of different life history stages for all managed species (including protected resources);
5. Calculate and characterize total removals (i.e., landings, effort, catch location, discards, and bycatch);
6. Develop indices of ecosystem health (e.g., biological indicators):
7. Establish long-term monitoring; and
8. Develop appropriate management including catch limits, gear regulations, zoning, etc.

5-Year System-Wide Evaluation



Draft Timeline 2004/2005



2) Habitat/Ecosystem Page and Coral and Benthic Habitats Arc Internet Mapping System(IMS): Tina Udouj with the Florida Wildlife and Research Institute (FWRI) presented a summary of the developing Comprehensive Habitat and Fishery Ecosystem Plan web site and

Internet Mapping Server (IMS). Panel members were requested to provide comments and recommendations that will aid in the further refinement of the Ecosystem site and IMS to better support regional ecosystem management.

Additional Background: The South Atlantic Council and the Florida Wildlife Research Institute (FWRI) partnered to develop a Comprehensive Habitat and Fishery Ecosystem Plan page that is accessible from the South Atlantic Council's web site. FWRI is hosting an Internet Map Server (IMS) application with links to bottom type data that can be downloaded, associated metadata, substantial program information for the Council and links to related sites. The Web site is operated and maintained at FWRI in partnership with the South Atlantic Council. The Internet Map Server (IMS) component of this project brings the power of Geographic Information Systems (GIS) technology and Image Analysis tools to ordinary Internet browsers. The Coral and Benthic Habitats IMS will be an effective tool for displaying, sharing and querying coral, habitat and ecosystem information across the South Atlantic region. Researchers have a unique opportunity to access video and still imagery archives of coral and benthic habitats served from this site.

3) Research Efforts on the Charleston Bump Deepwater Essential Fish Habitat –Habitat Area of Particular Concern (EFH-HAPC): In 1998 the Charleston Bump was designated an EFH-HAPC for a number of managed species as part of the South Atlantic Council Habitat Plan and Comprehensive Habitat Amendment implementing Essential Fish Habitat in the South Atlantic Region. Over the last number of years a great deal more research has been conducted in the area including more extensive mapping and characterization of this unique system. Dr. George Sedberry, with the South Carolina Department of Natural Resources provided an update on research conducted at the Charleston Bump EFH-HAPC.

4) Deepwater Coral Habitat Research and Protection: Dr. Steve Ross with the University of North Carolina at Wilmington (UNCW) and John Reed with Harbor Branch Oceanographic Institute (HBOI) made presentations on research conducted on deepwater coral distribution and characterization in the South Atlantic Region. Andy Shepard, Director of the UNCW/NURC was contracted to coordinate the preparation of the reports prepared for the Council. The presentations encompassed research conducted to date and presented in the following reports developed for the Council:

GENERAL DESCRIPTION OF DISTRIBUTION, HABITAT, AND ASSOCIATED FAUNA OF DEEP WATER CORAL REEFS ON THE NORTH CAROLINA CONTINENTAL SLOPE (Ross, 2004); and
DEEP-WATER CORAL REEFS OF FLORIDA, GEORGIA AND SOUTH CAROLINA: A SUMMARY OF THE DISTRIBUTION, HABITAT, AND ASSOCIATED FAUNA (Reed, 2004).

Council staff provided an overview of the integration of the establishment of new deepwater coral HAPCs into the Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment development process. Panel members discussed the information provided to further refine previous recommendations on the establishment of new deepwater coral HAPCs in the South Atlantic Region. In addition, Council staff provided an overview of the preliminary development of a deepwater coral research and monitoring plan.

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS
The Advisory Panels unanimously recommend that the following sites be designated as deepwater coral HAPCs. Other possible sites off North Carolina identified by Dr. Ross

should be considered for designation at a later date pending the acquisition of additional data. In addition, an area of recently identified *Oculina* occurs between the existing two satellite coral HAPCs and should be considered when adequate information becomes available.

Regulations in proposed deepwater Coral HAPCs:
Recommended management measures in all the deepwater coral HAPC sites include the following:

A) prohibit the use of bottom longline, bottom trawl, dredge, pot or trap;
B) prohibit anchoring, the use of an anchor and chain or grapple and chain by any fishing vessel;
C) prohibit fishing or possession of shrimp from the area;
D) prohibit the possession of all species regulated by the coral FMP.

Clarification: To prohibit the collection of gorgonians in coral HAPCs (this would prevent any allowable harvest presently permitted under the coral plan, however, biomedical or taxonomic collections could occur with appropriate permits). The Council should investigate avenues to prohibit anchoring by all vessels. The Panels identified a future research priority to determine if damage is associated with other gears that may come in contact with the bottom (e.g., planers and downrigger weights).

Future considerations in FEP development:
Explore the possibility for managing the deepwater corals and habitats that are not presently covered under some existing regulatory mechanism.

(Note: Dr. Bob George provided a letter to Doug Rader with possible deepwater *Lophelia* sites. It was the consensus of the Panels that the areas are likely already covered or are not adequately documented. If additional detailed information on new areas is provided, the areas could be considered in future reviews for possible coral HAPCs.)

A) Proposed Cape Lookout *Lophelia* Bank HAPC and
B) Proposed Cape Fear *Lophelia* Bank HAPC (summarized from Ross, 2004)
The Cape Lookout and Cape Fear *Lophelia* Banks areas are very rugged with some banks covering a vertical rise of 50-80 m in a distance of a kilometer or less with the most common in a depth range of 350-450 m. These features are very abrupt and may function as mini-seamounts. The banks occur in areas of high currents, and create eddies that retain nutrients and larvae. The *Lophelia* Banks off North Carolina are relatively isolated from the surrounding areas and are composed of almost pure *Lophelia pertusa*. It is often the only species present, although there are a couple of other hard coral species. The invertebrate community is quite diverse with *Galatheid* crabs appearing dominant and Echinoderms being common. Sea stars and brittle stars are common, including *Novodinia antillensis*, and *Ophiacantha bidentata* (brittle star). The brittle star, at the end of its range, is incredibly abundant. Several sea urchin species are present. The squat lobster, *Eumunida picta* is common. Other decapods include *Bathynectes longispina*, and *Rochinia crassa*, a spider crab. The fish species include *Idiastion kyphos* (a deepwater scorpaenid, known from only five or six specimens collected in the Caribbean), *Scyliorhinus meadi* (a cat shark), wreckfish, *Polyprion americanus*, and *Physiculus karrerae* (collected and observed a number of times). While a lot of data has been gathered over the last four years the coverage is still restricted. The cat shark they have observed has been seen several times, tightly associated with coral habitat. Some of these species, thought to be rare, may in fact just be associated with a specific habitat type. Other fish included *Lophiodes beroe* (a goosefish), *Beryx decadactylus* (red bream), *Helicolenus dactylopterus* (black-bellied rosefish) and *Conger oceanicus*. Red bream may be present in

commercially fishable quantities. The rosefish and conger eel also may have commercial potential. *Laemonema melanurum* (coral hake), *Laemonema barbatulum*, *Nzumia aequalis* (a rattail), and *Hoplostephus occidentalis* (a roughy). Some of these species may have some commercial potential and it is uncertain if these species might be using the coral mounds as spawning habitats. *Myctophid* species occur in association with the reefs in dense numbers, and certainly can serve to transfer energy from the surface layers where they travel at night, to the bottom layers. Researchers indicate the canyon system of the Point, off Cape Hatteras, hosts a very different species composition than the *Lophelia* Banks. The deep coral reefs seem to have similar habitat functions as shallow coral reefs (increased faunal diversity, concentrated foods, obligate fauna). There seems to be a primary group of fishes unique to these habitats. Threats to these habitats include degradation of the coral habitat itself from fishing activity, energy exploration, cable laying, the over exploitation of coral dependent species, and others. The three *Lophelia* banks off North Carolina are the northernmost know on the Atlantic Coast until reaching Canada. The North Carolina banks are similar to each other but differ from those on the Blake Plateau. The fish community seems tightly coupled to the corals.

Threats: Researchers have noted that we should learn from the *Oculina* Bank and move rapidly to protect these diverse unique deepwater coral habitats. In addition, European deepwater corals have suffered extensive damage from trawling activities and the technology while not extensively used in the South Atlantic to fish deep systems exists. In addition, Panel members are very concerned over potential delay in implementing regulations once the word is out about these new habitats. In developing the regulations to protect the HAPCs fishing and non-fishing threats, including potential ones should be analyzed for each site.

Research Needs: Characterize and map the extent and distribution of the deepwater coral habitat, determine which biological resources are unique to or are dependant on deep coral bank habitat, determine the status of these complex habitats and their associated communities, including the origin of dead coral.

Future Action: Other undocumented *Lophelia* sites exist off North Carolina and future investigations should be conducted so if additional deepwater coral habitat exists, they can be considered for coral HAPC designation.

C) Proposed Stetson Reef Coral HAPC (summarized from Reed, 2004)

The Proposed Stetson Reef Coral HAPC is on the outer eastern edge of the Blake Plateau, approximately 120 nm SE of Charleston, South Carolina, at depths of 640-869 m. Over 200 coral mounds up to 146 m in height occur over this 6174 km2 area that was first described by Thomas Stetson from echo soundings and bottom dredges. These were described as steep-sloped structures with active growth on top of the banks. Live coral colonies up to 50 cm in diameter were observed with a camera sled. *Enallopsammia profunda* was the dominant species in all areas although *Lophelia pertusa* was concentrated on top of the mounds. Densest coral growth occurred along an escarpment in the Region. Stetson reported an abundance of hydroids, alcyonaceans, echinoderms, actiniaria, and ophiuroids, but a rarity of large mollusks. Detailed geological maps of this region also indicate numerous coral mounds. Recent fathometer transects indicated dozens and possibly hundreds of individual pinnacles and mounds within the small surveyed region, which is only a fraction of the Stetson Bank area. From our fathometer transects, two pinnacle regions were selected. Three submersible dives were made on “Pinnacle 3” and four dives on “Stetson’s Peak” which is described below. A small subset of the Stetson Bank area was first mapped during six fathometer transects covering approximately 28 nm2, in which six major peaks or pinnacles and

four major scarps were plotted. The base depth of these pinnacles ranged from 689 m to 643 m, with relief of 46 to 102 m. A subset of this was further mapped with 70 fathometer transects spaced 250 m apart (recording depth, latitude and longitude ~ every 3 seconds), covering an area of 1 x 1.5 nm, resulting in a 3-D bathymetric GIS Arcview map of a major feature, which we named Stetson's Pinnacle. Stetson's Pinnacle was 780 m at the south base and the peak was 627 m. This represents one of the tallest *Lophelia* coral lithoherms known, nearly 153 m in relief. The ridges were covered with nearly 100% *Lophelia* coral rubble, 15-30 cm colonies of live *Lophelia*, and standing dead colonies of *Lophelia*, 30-60 cm tall. Very little rock was exposed, except on the steeper exposed, eroded faces of the ridges. Towards the top of the peak, colonies of *Lophelia*, 30-60 cm tall, were more common, and some rock ledges had nearly 100% cover of live *Lophelia* thickets. The top edge of the pinnacle was a 30 cm thick rock crust which was undercut from erosion; below this was a 90o escarpment of 3-6 m. The peak was a flat rock plateau at 625- 628 m and was approximately 0.1 nm across on a S-N submersible transect. Dominant sessile macrofauna consisted of scleractinia, stylasterine hydrocorals, gorgonacea and sponges. The colonial scleractinia were dominated by colonies of *Lophelia pertusa* (30-60 cm tall) and *Enallopsammia profunda*, and *Solenosmilia variabilis* were present. Small stylasterine corals (15 cm tall) were common and numerous species of solitary cup corals were abundant. Dominant octocorallia consisted of colonies of Primnoidae (15-30 cm tall), paramuriceids (60-90 cm), Isididae bamboo coral (15-60 cm), stolonifera, and stalked Nephtheidae (5-10 cm). Dominant sponges consisted of Pachastrellidae (25 cm fingers and 25- 50 cm plates), Corallistidae (10 cm cups), Hexactinellida glass sponges (30 cm vase), Geodia sp. (15-50 cm spherical), and *Leiodermatium sp*. (50 cm frilly plates). Although motile fauna were not targeted, some dominant groups were noted. No large decapods crustaceans were common although some red portunids were observed. Two species of echinoids were common, one white urchin and one stylocidaroid. No holothurians or asteroids were noted. Dense populations of Ophiuroidea were visible in close-up video of coral clusters and sponges. No large Mollusca were noted except for some squid. Fish consisted mostly of benthic gadids and rattails. On the steeper upper flank, from 671 to 625 m the density, diversity, and size of sponges increased; 15- 50 cm macro sponges were more abundant. Massive *Spongosorites sp*. were common, Pachastrellidae tube sponges were abundant, and Hexactinellida glass sponges were also common. On the peak plateau the dominant macrofauna were colonies of *Lophelia pertusa* (30- 60 cm tall), coral rubble, *Phakellia sp*. fan sponges (30-50 cm), and numerous other demosponges were abundant. No large fish were seen on top.

D) Proposed Savannah Lithoherms and East Florida *Lophelia* Reefs Deepwater Coral HAPC
(summarized from Reed, 2004)

The Savannah Lithoherms lie to the west, on the western Blake Plateau. It is shallower, 490-550m, deeper than the North Carolina sites. The currents are strong due to the proximity of the Gulf Stream. The Savannah Lithoherms include coral debris, coral thickets including octocorals and sponges. The thicket communities usually are on the edges of the ridges with a lot of standing dead coral which provides habitat for many other species. The system is extremely diverse with multiple trophic levels representing a whole ecosystem. The taxonomy for many species is being worked up now and includes a new species of gorgonian. Bushes of black coral and bamboo coral which both have commercial value are present. Researchers are concerned that as soon as this information is published someone may try to harvest it.

The proposed East Florida *Lophelia* Reefs HAPC is located at the foot of the Florida-Hatteras slope, near the Georgia border to as far south as Jupiter, Florida. Depth is 700-850 m, about 2500 feet, dropping into the Florida Straits. Adjacent muddy slopes are primary habitat for golden tilefish. Once off the muddy slopes there are a whole string of pinnacles. The bathymetry in the area includes hundreds of pinnacles with peaks from 25 to hundreds of feet with an average height of 100 feet. Due to the low resolution of existing charts many of the pinnacles are presently

undocumented and unknown to fishermen. In May 2004, a cruise was conducted off the east coast of Florida to investigate purposefully selected unique bathymetry; every area visited was a *Lophelia* reef, even ones identified on fishing charts. The extent of these *Lophelia* reefs emphasizes the need direct effort to map these unique areas. The 300 newly-discovered *Lophelia* reefs and lithoherms are from a quarter to half-mile in diameter, with an average height of 100 feet, up to 500 feet with all coral and hard bottoms occupied by living organisms.

E) Proposed Miami Terrace Deepwater Coral HAPC (summarized from Reed, 2004)
The Miami Terrace Escarpment reefs habitat includes gorgonians and all the hard corals. Many of the organisms may contain cancer fighting compounds which could be isolated and synthesized. The Miami Terrace is a 65-km long carbonate platform that lies between Boca Raton and South Miami at depths of 200-400 m in the northern Straits of Florida. It consists of high-relief Tertiary limestone ridges, scarps and slabs that provide extensive hard bottom habitat. At the eastern edge of the Terrace, a high-relief, phosphoritic limestone escarpment of Miocene age with relief of up to 90 m at depths of 365 m is capped with *Lophelia pertusa* coral, stylasterine hydrocoral (Stylasteridae), bamboo coral (Isididae), and various sponges and octocorals. Dense aggregations of 50-100 wreckfish were observed here during submersible dives in May 2004. Previous studies in this region include geological studies on the Miami Terrace and dredge- and trawl-based faunal surveys in the 1970s primarily by the University of Miami. *Lophelia* mounds are also present at the base of the escarpment (~670 m) within the axis of the Straits of Florida, but little is known of their distribution, abundance or associated fauna. Researchers have found thickets of *Lophelia*, *Enallopsammia*, and *Madepora* growing on elongate depressions, sand ridges and mounds. Large quantities of *L. pertusa* and *E. profunda* have also been dredged from 738-761 m. Recent submersible dives and fathometer transects at four sites indicated the outer rim of the Miami Terrace to consist of a double ridge with steep rocky escarpments. There were considerable differences among the sites in habitat and fauna; however, in general, the lower slopes of the ridges and the flat pavement on top of the terrace were relatively barren. However, the steep escarpments especially near the top of the ridges were rich in corals, octocorals, and sponges. Dominant sessile fauna consisted of the following *Cnidaria*: small (15- 30 cm) and large (60-90 cm) tall octocoral gorgonacea (*Paramuricea spp., Placogorgia spp., Isididae* bamboo coral); colonial scleractinia included scattered thickets of 30-60 cm tall *Lophelia pertusa* (varying from nearly 100% live to 100% dead), *Madrepora oculata* (40 cm), and *Enallopsammia profunda*; stylasterine hydrocorals (15-25 cm); and Antipatharia (30-60 cm tall). Diverse sponge populations of *Hexactinellida* and *Demospongiae* included: *Heterotella sp., Spongosorites sp., Geodia sp., Vetulina sp., Leiodermatium sp., Petrosia sp., Raspailiidae, Choristida, Pachastrellidae*, and *Corallistidae*. Other motile invertebrates included *Asteroporpa sp. ophiuroids, Stylocidaris sp*. urchins, Mollusca, Actiniaria, and Decapoda crustaceans (*Chaceon fenneri* and *Galatheidae*). Schools of ~50-100 wreckfish (*Polyprion americanus*), ~60-90 cm in length, were observed on several submersible dives along with blackbelly rosefish, skates, sharks, and dense schools of jacks.

F) Proposed Pourtales Terrace Deepwater Coral HAPC (summarized from Reed, 2004)
The Pourtales Terrace, or "The Humps" as it is referred to by the local fishermen, is a shallower site, about 300 meters. The area is about ten miles due south of Alligator Reef. The whole terrace is comprised of Miocene-age rock with lots of pinnacles up to a hundred feet in height and a whole series of deepwater sinkholes that have not been described. One that has been investigated goes to 1800 feet in depth, and has sheer rock walls with abundant organisms. Researchers indicated that the bottom of one of these sinkholes is covered with dugong rib bones, verifying that manatees lived off Florida over ten million years ago. The principal fish seen there was snowy grouper, along with different eels. This was the only site where the snowy grouper was seen.

The Pourtalès Terrace provides extensive, high-relief, hard-bottom habitat, covering 3,429 km2

(1,000 nm2) at depths of 200-450 m. The Terrace parallels the Florida Keys for 213 km and has a maximum width of 32 km. Reed et al. (2004a) surveyed several deep-water, high-relief, hardbottom sites including the Jordan and Marathon deep-water sinkholes on the outer edge of the Terrace, and five high-relief bioherms on its central eastern portion.. These submersible dives were the first to enter and explore any of these features. The upper sinkhole rims range from 175 to 461 m in depth and have a maximum relief of 180 m. The Jordan Sinkhole may be one of the deepest and largest sinkholes known. The high-relief area of the middle and eastern portion of the Pourtalès Terrace is a 55 km-long, northeasterly trending band of what appears to be karst topography that consists of depressions flanked by well defined knolls and ridges with maximum elevation of 91 m above the terrace. Further to the northeast of this knoll-depression zone is another zone of 40-m high topographic relief that lacks any regular pattern (Gomberg, 1976). The high-relief bioherms (the proposed HAPC sites within this region) lie in 198 to 319 m, with a maximum height of 120 m. A total of 26 fish taxa were identified from the sinkhole and bioherm sites. Species of potential commercial importance included tilefish, sharks, speckled hind, yellow-edge grouper, warsaw grouper, snowy grouper, blackbelly rosefish, red porgy, drum, scorpion fish, amberjack, and phycid hakes. Many different species of Cnidaria were recorded, including Antipatharia black corals, stylasterine hydrocorals, octocorals, and one colonial scleractinian (*Solenosmilia variabilis*).

The Tennessee and Alligator Humps are among dozens of lithoherms that lie in a region called "The Humps" by local fishers, ~14 nm south of the Florida Keys and south of Tennessee and Alligator Reefs. Three dives were made on Bioherm #3, approximately 8.5 nm NE of Bioherm#2. Bioherm #3 consisted of two peaks 1.05 nm apart with a maximum relief of 62 m. The North Peak's minimum depth was 155 m and was 653 m wide at the base, which was 217 m deep at the east base and 183 m at the west side. The minimum depth of South Peak was 160 m and was about 678 m in width E to W at the base. The surrounding habitat adjacent to the mounds was flat sand with about 10% cover of rock pavement. From 213 m to the top, generally on the east flank of the mound, were a series of flat rock pavement terraces at depths of 210, 203, 198, 194, 183, and 171 m and the top plateau was at 165 m. Between each terrace a 30-45 degree slope consisted of either rock pavement or coarse sand and rubble. Below each terrace was a vertical scarp of 1-2 m where the sediment was eroded away leaving the edge of the terrace exposed as a horizontal, thin rock crust overhang of <1 m and 15-30 cm thick. The top of the bioherm was a broad plateau of rock pavement with 50-100% exposed rock, few ledges or outcrops, and coarse brown sand. Less time was spent on the western side, which was more exposed to the strong bottom currents. The west side of South Peak sloped more gradually than the eastern side, had more sediment, and no ledges were observed.

Fish Communities (summarized from Reed et al., 2004a)
A total of 31 fish taxa, of which 24 were identified to species level, were identified from submersible videotapes and were associated with the deep-water sinkholes and high-relief bioherms. Few studies have directly documented deep-water fish associations with deep-water reef habitats in the western Atlantic. Most of the work has concentrated on the Charleston Bump region of the Blake Plateau off Georgia and South Carolina (Sedberry, 2001). Ross (pers. comm.) reported the following species are common to both the deep-water Lophelia reefs on the Blake Plateau off the Carolinas and those of this study: *Chloropthalmus agassizi, Helicolenus dactylopterus, Hoplostethus sp., Laemonema melanurum, Nezumia sp.*, and *Xiphias gladius*. Species most common to the high-relief bioherms included deepbody boarfish, blueline tilefish, snowy grouper, and roughtongue bass. Some species were common at both the sinkhole and bioherm sites and included snowy grouper, blackbelly rosefish, and mora. In addition to the moribund swordfish observed in the Jordan Sinkhole, a swordfish was observed from the NR-1 submersible on top of Pourtales Terrace. Species of potential commercial importance included tilefish, sharks, speckled hind, yellowedge grouper, warsaw grouper, snowy grouper, blackbelly

rosefish, red porgy, drum, scorpionfish, amberjack, and phycid hakes. Any of the features, both sinkholes and bioherms, could be overfished very easily since only a few individuals of the larger grouper species were present at any one site.

Benthic Communities (summarized from Reed et al., 2004a)
The benthos at the bioherm sites was dominated by sponges, octocorals and stylasterids. A total of 21 taxa of Cnidaria were sampled or observed and 16 were identified to species level. These included 3 species of antipatharian black coral, 5 stylasterid hydrocorals, 11 octocorals with one possible new species, and 1 scleractinian (*Solenosmilia variabilis*). Eight species were associated only with the Pourtalès sinkholes and not the bioherms; these included two species of antipatharians; the octocorals *Paramuricea placomus*, *Plumarella pourtalesii*, *Trachimuricea hirta*; and the scleractinian *Solenosmilia variabilis*. Although Gomberg (1976) found evidence of skeletal remains of the colonial scleractinians *Lophelia* and *Madrepora* in sediment samples from the terrace, we did not see any colonies at our dive sites. Sponges identified from collections included 28 taxa. Five species of stylasterine hydrocorals were *Distichopora foliacea*, *Pliobothrus echinatus*, *Stylaster erubescens*, *S. filogranus*, and *S. miniatus*. On the flat pavement adjacent to the base of the mounds, stylasterids and antipatharian black coral bushes were common along with sea urchins and sea stars. The densities of sponges, stylasterid hydrocorals and octocorals were very high, especially on the plateaus and terraces of the bioherms on the Pourtalès Terrace. Maximum densities of sponges (>5 cm) on the plateaus ranged from 1 to 80 colonies per sq. m. Stylasterid coral densities ranged from 9 to 96 colonies and octocorals from 16 to 48 per sq. m. Densities of sponges and stylasterids also dominated the terraces and slopes of the bioherm sites but generally in lower densities than the peak plateaus whereas the octocorals generally had higher densities on the flanks (1-80 colonies per sq. m).

5) Oculina Closed Area Research and Monitoring Plan: Council staff provided an overview of the draft Oculina Closed Area Research and Monitoring Plan. This plan is part of a developing overall Evaluation plan for the Oculina Closed Area which encompasses Research and Monitoring, Outreach and Law Enforcement. Panel members were requested to provide comments and recommendations that will aid staff in the completion of the draft plan.

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS:
A) The Council should call this a management plan;
B) We reiterate the need for enforcement;
C) The Panels support maintaining a strong outreach and education component;
D) The first priority research need is mapping and characterization of the habitats; and
E) The second priority research need is to understand the role of the site relative to

generating fish in surrounding areas (including spawning areas, movements around the area, and identifying stocks around the site).

6) Gas Pipeline Development: Assessing Impacts on Near-shore and Deepwater Coral Habitats: Myra Brouwer with Council staff made a presentation on gas pipeline development, the coordination of Council and NOAA Fisheries comments, and the implications for Energy Policy refinement. Douglas Rader addressed the coordinated revision process for the Habitat Policy Statement on Energy Development to address gas pipeline development as well as other emerging energy processes.

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS:
Revise the Energy Policy through a coordinated effort including Council staff, Jocelyn Karazsia, NOAA Fisheries Habitat Conservation Division, a recently hired intern with Environmental Defense and the Habitat and Coral Advisory Panels. Additional issues for consideration include identification of proposed deepwater coral HAPCs and the use of conservation easements to generate funding streams for underwriting needed management and research.

7) Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment Development: Panel members were requested to provide comments on the potential list of actions for consideration in a developing Comprehensive Ecosystem Amendment. Discussions revolved around a draft list of proposed measures for the Amendment.

SUMMARY OF POTENTIAL MANAGEMENT MEASURES FOR THE SAFMC COMPREHENSIVE ECOSYSTEM AMENDMENT:

CALCULATE AND CHARACTERIZE TOTAL REMOVALS (i.e., landings, effort, catch location, gear type/usage, discards, and bycatch including marine mammals and birds)

1. Identify all users:
   A. Require a permit to fish for, harvest, or possess any EEZ resource for all:
      (i) Commercial vessels (includes commercial and for-hire)
      (ii) Private recreational anglers

2. Calculate and characterize removals:
   A. Continue to implement the Atlantic Coastal Cooperative Statistics Program – catch and effort (trip tickets, logbooks & MRFSS); discards, bycatch and protected resources; socio-economic…..

   If a permit is required for private recreational anglers, the methods used to calculate catch and removals from anglers could be modified to sample from a known universe (permit holders).

   This alternative assumes completion of work to link the permits and logbook/landings databases in the southeast.

3. Compliance with the Essential Fish Habitat (EFH) final rule:
   A. Refine Essential Fish Habitat (EFH) and Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) designations.

   B. Identify new Essential Fish Habitat (EFH) and Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) as necessary.

C. Address measures to reduce impacts of fishing and non-fishing impacts on Essential Fish Habitat (EFH) and Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) as necessary.
(i) Establish "Allowable Trawling Areas"

4. Coral, Coral Reef and Live/Hardbottom Habitat Fishery Management Plan:
A. Establish additional Coral Habitat Areas of Particular Concern (HAPCs) – gear prohibitions from existing HAPCs would apply within these new HAPCs.
B. No action

5. Enforcement/Data Collection/Safety at Sea:
A. Require VMS on all commercial, for-hire and private recreational vessels. Private recreational vessels could use a "chip" that is imbedded in existing electronic gear or some type of acoustic monitoring.
B. Require VMS on all commercial and for-hire vessels.
C. Require VMS on all commercial vessels.

6. Changes to other Fishery Management Plans
A. Snapper Grouper - establish management units and move to unit-based management:
(i) Red porgy - allow increase in harvest (rebuilding)
(ii) Black sea bass - reduce catches (overfishing/overfished)
(iii) Vermilion snapper - reduce catches (overfishing)
(iv) Snowy grouper - reduce catches (overfishing/overfished)
(v) Golden tilefish – reduce catches (overfishing)

B. Mackerel
(i) Atlantic king mackerel - reduce TAC to address expected effort shift from snapper grouper regulations.

C. Protected Species Interactions:
(i) Recommendations to Take Reduction Teams
(ii) Recommendations to States
(iii) Recommendations to ASMFC

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS:
Comprehensive Amendment Measures: the FEP provide the foundation to develop an allowable trawling area for the deepwater trawl fishery noting adequate information should be available to define the fishing area from the VMS system required for the rock shrimp fishery. This measure could enhance protection of unique habitat values of deepwater coral/habitat including the proposed deepwater coral HAPCs and deepwater EFH-HAPCs including the Charleston Bump EFH-HAPC.

Suggested the long-term implementation of Ecosystem Management include developing allowable gear zones considering gear use and location of historic fisheries.

Fishery Ecosystem Plan
State Breakout Session Summaries:
Break-out sessions of the four state habitat sub-panels (coral AP members selected which panel discussion to join) brainstormed on what can be included in the FEP for habitat protection. Panels were asked to come up with two lists: one for inclusion in the plan next fall and the other to be implemented in the long-term.

North Carolina Sub-panel breakout session:

Short-term list for draft plan:

- Add reverse osmosis discharges to the list of threats, especially where the discharges are in freshwater.
- The big push for development of rural areas in NC is being done under nationwide and other general permits, and therefore undergoes no review causing general environmental degradation in Primary Nursery Areas.
- A cumulative impacts analysis and an assessment of the impacts of coastal development on fishery habitat quality should be included.
- Incorporate some of the NC areas of *Lophelia* identified by Steve Ross into the list of proposed MPAs, or some other protective mechanism.
- The plan should designate nursery areas for Council species.
- Include as much information in the plan as possible that maps the location of effort expended, since that will help to highlight habitats used by the species.
- Model the impacts of coastal development on the fisheries, i.e., highlight the connection between habitat degradation, and the loss of fishery productivity, noting that all the management measures in the world will be ineffective, unless habitat quantity and quality are maintained.
- Include lists of researchers who are doing habitat work, as well as the kind of work they are doing, to facilitate identification of work that can be directly linked to development of better ways to protect fisheries and habitat sustainability. This would identify current areas of research that we can use to evaluate management measures.
- Specify, to the extent we can do so, the necessary freshwater inflows for sustaining spawning and nursery habitats, as well as nearshore ocean habitats. This might be a long-term need, but there is some information that we might be able to include now.
- Support the development of indicators of ecosystem health that can be used throughout the Council's jurisdiction.

Long-term items:

- Develop habitat-production relationships for all species, especially for species associated with deepwater corals. We noted that this will take a long time to develop, but would provide a better science basis for convincing society that adverse impacts should be avoided.
- Identify those habitats for which mapping is incomplete or non-existent, and identify resources and strategies for obtaining the information. This should include mapping of subtidal oyster bed habitats, and Submerged Aquatic Vegetation habitats.

South Carolina Sub-panel breakout session:

- Recommend requiring all commercial and for-hire vessels (charter and headboats) have Vessel Monitoring Systems to identify area fished related to habitats.
- The FEP better define ecosystems so we will have a better ability to prioritize how the Council will formulate management regulations.
- Identify different uses of habitats in state versus federal waters, such as management areas, and research areas.
- The plan should provide the vehicle for development of flexible or adaptive management.

Georgia Sub-panel breakout session:

- Identify water flows, particularly in the Savannah and the challenge to define a desired outcome, ecologically.

- Concern over the proliferation of downstream coastal development, especially docks, as well as the development of more isolated areas, such as coastal hammocks.
- Concern over manatees and discharges that might bring them into harms way.
- The occurrence of exotic species, such as green mussels, and making sure their impact is included in the FEP.
- Harbor impacts, and need for regional consideration given to such harborification.
- The occurrence of disease relative in blue crabs and penaeid shrimp, and the changes in susceptibility as a consequence of runoff and need to allocate funds to deal with this issue.
- Possible additional EFH-HAPCs could include: cool water seeps that provide needed refugia for certain species; good quality, small watershed, coastal streams that might be relatively unimpaired, and serve as baseline systems

Long-term items:

- Include the impact of sea-level rise on the barrier islands and marsh systems in coastal GA.
- Airborne deposition of mercury and other contaminants.

Florida Sub-panel breakout session:

- The FEP needs to include headwaters to the bluewaters, in order to effectively deal with the ecosystem. All aspects have to be addressed for this to be a true ecosystem plan.
- Human interactions aspects have to be included, including harbors, coastal development, beach nourishment, land use changes.
- Water management operations, related to effluents, both the good and bad of it, contaminants, as well as nutrients. Both increases and reductions in discharges need to be considered.
- Exotic species need to be included.
- The food web needs to be considered, for the entire range of a species.
- The whole universe of management measures should be evaluated in the assessment, not just particular ones.
- Online reporting as a possibility for recreational fishermen.
- Relative to calculating total removals, there needs to be some system in place for ensuring full disclosure of information.

8) Illegal Harvest of Living Coral: At the request of Council staff, David Dale, NOAA Fisheries, Habitat Conservation Division briefed the Panels on the issue of illegal harvest of live coral. He indicated that the cases investigated appear to involve Indo-Pacific corals in aquarium shops, or illegally-harvested live rock, or cultured live rock. He noted he had hoped to have information from the agent, but didn't have the numbers yet. He will keep the Panels and Council posted on this issue. Jenny Wheaton, FWRI indicated that they do all the identifications for enforcement, and they haven't seen any increase. If information can be provided to her, she will try to track down the extent. Terry Gibson noted that he felt the issue is rampant in South Florida and a case was recently made. Stephen Blair noted that nearshore small cases are harder to prosecute and follow.

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS:
The Panels agreed that the frequency and extent of this activity needs to be explored to determine if this issue is perception versus reality.