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Overview and Summary of Recommendations

JOINT MEETING OF THE HABITAT ADVISORY PANEL AND CORAL ADVISORY PANEL

June 7-9, 2006

Wyndham Grand Bay Hotel
2669 South Bayshore Drive
Coconut Grove, Florida 33133

Issues addressed at this meeting included: 1) Habitat and Ecosystem Webpage and Internet Mapping System; 2) Deepwater Coral Habitat Research and Management including the Development of a Deepwater Coral Research and Monitoring Plan for the South Atlantic Region; 3) Sargassum Research; 4) Listing of Elkhorn and Staghorn Corals as Threatened under ESA; 5) Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment Development; 6) Snapper Grouper Amendment 14 - Deepwater Snapper Grouper Marine Protected Areas; 7) Summary of Updated SAFMC Energy Policy Statement; 8) Liquified Natural Gas (LNG) Pipeline Development: Assessing Impacts on Nearshore and Deepwater Coral Habitats; 9) Research Associated with Proposed LNG Pipeline Development; 10) Windfarm Development in the South Atlantic Region; 11) Initiation of the Development of a SAFMC Aquaculture Policy; 12) Invasive Species: Lionfish Research and Proposed Workshop; 13) Development and Management of Regional Ocean Observing Systems; and 14) National Habitat Plan and Southeast Aquatic Resources Partnership

1) Habitat and Ecosystem Webpage and Internet Mapping System

Roger Pugliese introduced the development of tools to support the move to ecosystem management included the Habitat and Ecosystem Internet Mapping Server and the Habitat and Ecosystem Section of the webpage. Tina Udouj of the Florida Fish and Wildlife Research Institute (FWRI) presented a summary of the development of the Habitat and Ecosystem webpage and Internet Mapping Server (IMS). Myra Brouwer conducted a live presentation detailing information presented and process involved in accessing the Habitat and Ecosystem section of the webpage. Roger Pugliese demonstrated access and use of the Internet Map Server. 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 Fish and Wildlife Research Institute (FWRI) partnered to develop a Comprehensive Habitat and Ecosystem webpage that is accessible from the South Atlantic Council's web site. FWRI is hosting an Internet Map Server (IMS) application with links to downloadable bottom type data, associated metadata, substantial program information for the Council and links to related sites. The sit was transitioned to a web portal and is now operated and maintained through contracts with Mapwise Inc. and accessible and updated by Council staff. 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 IMS will be an effective tool for displaying, sharing and querying coral and benthic habitat data and other pertinent ecosystem information across the South Atlantic region. In addition, researchers have a unique opportunity to access video and still imagery archives of coral and benthic habitats served from this site.

JOINT HABITAT AND CORAL AP RECOMMENDATIONS

- Add metadata records;
- Develop a mechanism for adding new data;
- Add available water quality information;
- Provide permission to access detailed data and get the latitude and longitude;
- Expand data inland to include watershed and estuarine data;
- Incorporate available LIDAR data including states' data are from the estuary and within three miles of shore;
- Include 35 years of North Carolina data that is now all digitized;
- Add or link to Dade County data; and
- Investigate adding 30-year water quality database for Biscayne Bay, which is not web-accessible.

2) Deepwater Coral Habitat Research and Protection

In December 2004 the Council approved management actions proposed by the Habitat and Coral Advisory Panels to establish new deepwater coral HAPCs for inclusion into the Comprehensive Ecosystem Amendment.

2004 Reports to Council and Advisory Panels-

Dr. Steve Ross of the University of North Carolina at Wilmington (UNCW) and John Reed of the Harbor Branch Oceanographic Institute (HBOI) made presentations 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 for the Council. The presentations encompassed exploration and characterization conducted to date on deep water coral habitats in the South Atlantic region. The following reports developed for the Council summarize this information: *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 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

Proposed Deepwater Coral HAPCs

The excerpts below are from S. Ross' report and provide a more detailed description of each proposed site off North Carolina.

Cape Lookout Lophelia Bank A:

Aside from a few maps there are no published data from this coral mound. Between summer 2000 and summer 2004 Ross et al. (unpubl. data) sampled this area extensively using a variety of methods throughout the water column. Their major method for collecting bottom data on the reef proper was the Johnson Sea Link (JSL) research submersible. Fifteen dives were made on coral mounds in this area and observations from these totaling nearly 33 hours (bottom time) are the basis of the descriptions of habitat and fauna below. Preliminary observations suggest that this area contains the most extensive coral mounds off North Carolina; however, it must be emphasized that data are lacking to adequately judge overall sizes and areal coverage. There appear to be several prominences capping a ridge system, thus, presenting a very rugged and diverse bathymetry, but there are also other mounds away from the main ridge sampled. The main mound system rises vertically nearly 80 m over a distance of about 1 km, and in places exhibits slopes in excess of 50-60 degrees. Sides and tops of these mounds are covered with extensive colonies of living Lophelia pertusa, with few other corals being observed. Dead colonies and coral rubble interspersed with sandy channels are also abundant. Extensive coral rubble zones surround the mounds for a large, but unknown, distance (exact area not yet surveyed), especially at the bases of the mounds/ridges, and in places seem to be quite thick. These topographic highs accelerate bottom currents which favor attached filterfeeders. Because fishes are somewhat disturbed by submersibles, data on the fish community has accumulated slowly; however, this group is quite diverse on the coral habitat. Ross et al. have so far identified over 43 benthic or

benthopelagic fish species on and around these coral banks. Of the twenty five total fish species occurring on prime coral habitat of Bank A, nine dominate the data. Beryx decadactylus usually occurs in large aggregations moving over the reef, while most other major species occur as single individuals. Many of these species are cryptic, being well hidden deep in the corals (e.g., Hoplostethus occidentalis, Netenchelys exoria, Conger oceanicus). The morid, Laemonema melanurum, is one of the larger fishes abundant at every site with corals. This fish seems to rarely leave the prime reef area. Trash and entangled fishing gear were observed on this reef, suggesting some level of commercial fishing pressure. Initially the most impressive biological aspect of these coral mounds (aside from the corals themselves) was the well developed and abundant invertebrate fauna. We have not yet detected major differences in the invertebrate fauna among the three North Carolina banks; therefore, this paragraph is relevant to all three areas. Galatheid crabs (especially Eumunida picta) and the brisingid basket star (Novodinia antillensis) were particularly obvious, perching high in coral bushes to catch passing animals or filter in the currents. One very different aspect of the North Carolina deep coral habitat compared to the rest of the South Atlantic Bight is the massive numbers of a brittle star (Ophiacantha bidentata) covering both dead and living coral colonies. These are perhaps the most abundant macroinvertebrate on these banks. In places the bottom is covered with huge numbers of several species of anemones. The abundance of filter feeders suggests a food rich habitat.

Cape Lookout Lophelia Bank B:

Except for a few maps there are no published data from this coral mound. Between summer 2001 and summer 2004 Ross et al. (unpubl. data) sampled this area using a variety of methods throughout the water column. The Johnson Sea Link (JSL) submersible was the major method for collecting bottom data on the reef proper. Five dives were made on coral mounds in this area, and observations from these totaling 10.4 hours form the basis of the descriptions of habitat and fauna below. The least amount of data are available for this area. Mounds appear to cover a smaller area than those described above, but here again better mapping data are needed. These mounds rise at least 53 m over a distance of about 0.4 km. There is a small mound away from the main system and in general these mounds were less dramatic than those described above. They appeared to be of the same general construction as Bank A, appearing to be built of coral rubble matrix that had trapped sediments. Extensive fields of coral rubble surrounded the area. Both living and dead corals were common on this bank, with some living bushes being quite large. Preliminary analyses (Ross et al. unpubl.) have identified 11 fish species from this bank, but it is clear that the species list would be much higher in this well developed habitat if there were more samples. The dominant fish species appears to be Helicolenus dactylopterus, followed by L. melanurum, H. occidentalis, L. barbatulum, and N. exoria. Although H. dactylopterus can be common on all habitats, it clearly occurs most often around structures. It is intimately associated with the coral substrate, and it is very abundant around this reef habitat. The invertebrate fauna on this reef system does not appear substantially different from Bank A

Cape Fear Lophelia Bank:

Aside from the map in EEZ-SCAN 87 Scientific Staff (1991) there are no published data from this coral mound and no indication that it was sampled before the studies initiated by Ross et al. (unpubl. data) between summer 2002 and summer 2004. Ross et al. located this bank based on estimated coordinates from the USGS survey (EEZ-SCAN 87 Scientific Staff 1991). As above, the JSL submersible was the major method for collecting bottom data on the reef proper. Seven dives were made on coral mounds in this area, and observations from these totaling 15.4 hours were used to describe the habitat and fauna. Sampling in this area was focused on a relatively small area, but data are lacking to accurately estimate the size and area covered by coral mounds or rubble zones. These mounds rise nearly 80 m over a distance of about 0.4 km, and exhibit some of the most rugged habitat and vertical excursion of any area sampled. This mound system also appears to be of the same general construction as Banks A and B, being built of coral rubble matrix with trapped sediments. Fields of coral rubble are common around the area. Both living and dead corals were common on this bank. The greatest numbers of large fishes were observed on this bank. Twelve total fish species were observed here, but as above, this list should increase with increasing sampling effort. As on Banks A and B, decadactylus was the most common fish, followed closely by Polyprion americanus (wreckfish). So far, of the three North Carolina banks, this is the only area where wreckfish have been observed, and on some dives 8-10 large individuals were seen swimming slowly along the sides of the ridges. However, it is very likely that wreckfish occur on the other banks. As on the other two banks, L. melanurum was common here, always on prime reef habitat. Conger oceanicus (always large adults) and Myxine glutinosa were both frequently observed on this bank. The invertebrate fauna on this reef system does not appear substantially different from Banks A and B.

The following excerpts are from J. Reed's report for proposed HAPC sites off SC, GA and FL.

Region D: Stetson Reefs, Eastern Blake Plateau (from Reed, 2002a; Reed et al., 2004b): This site is on the outer eastern edge of the Blake Plateau, ~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 (Stetson et al., 1962; Uchupi, 1968). 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 (=D. 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 at Region D1. Stetson et al. (1962) reported an abundance of hydroids, alcyonaceans, echinoderms, actiniaria, and ophiuroids, but a rarity of large mollusks. The flabelliform gorgonians were also current-oriented. Popenoe and Manheim (2001) have made detailed geological maps of this Charleston Bump region which also indicate numerous coral mounds. Recent fathometer transects by the PI indicated dozens and possibly hundreds of individual pinnacles and mounds within the small region that we surveyed which is only a fraction of the Stetson Bank area (Reed and Pomponi, 2002b; Reed et al., 2002; Reed et al., 2004b). 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 ~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 linear distance from the south base to the peak was ~0.5 nm. The lower flank of the pinnacle from ~762 m to 701 m on the south face was a gentle slope of 10-30o with a series of 3-4 m high ridges and terraces that were generally aligned 60-240o across the slope face. These 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. Some rock slabs, ~30 cm thick, have slumped from these faces. From 701 m to 677 m the slope increased from ~45o to 60o. From 671 m to the peak, the geomorphology was very complex and rugged, consisting of 60-90o rock walls and 3-9 m tall rock outcrops. 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. The north face was not explored in detail but is a vertical rock wall from the peak to ~654 m then grades to a 45o slope with boulders and rock outcrops. 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.

Region C: Savannah Lithoherms, Blake Plateau (from Reed, 2002a; Reed et al., 2004b): A number of high-relief lithoherms occur within this region of the Blake Plateau ~90 nm east of Savannah, Georgia. Region C is at the base of the Florida-Hatteras Slope, near the western edge of the Blake Plateau, and occurs in a region of phosphoritic sand, gravel and rock pavement on the Charleston Bump (Sedberry, 2001). Wenner and Barans (2001) described 15-23 m tall coral mounds in this region that were thinly veneered with fine sediment, dead coral fragments and thickets of Lophelia and Enallopsammia. They found that blackbellied rosefish and wreckfish were frequent associates of this habitat. In general, the high-relief Lophelia mounds occur in this region at depths of 490-550 m and have maximum relief of 61 m. JSL-II dives 1690, 1697 and 1698 reported a coral rubble slope with <5% cover of 30 cm, live coral colonies (Reed, 2002a). On the reef crest were 30-50 cm diameter coral colonies covering ~10% of the bottom. Some areas consisted of a rock pavement with a thin veneer of sand, coral rubble, and 5-25 cm phosphoritic rocks. At Alvin dive sites 200 and 203, Milliman et al. (1967) reported elongate coral mounds, approximately 10 m wide and 1 km long, that were oriented NNE-SSW. The mounds had 25-37o slopes and 54 m relief. Live colonies (10-20 cm diameter) of E. profunda (=D. profunda) dominated and L. pertusa (=L. prolifera) was common. No rock outcrops were observed. These submersible dives found that these lithoherms provided habitat for large populations of massive sponges and gorgonians in addition to the smaller macroinvertebrates which have not been studied in detail. Dominant macrofauna included large plate-shaped sponges (Pachastrella monilifera) and stalked, fan-shaped sponges (Phakellia ventilabrum), up to 90 cm in diameter and height. At certain sites (JSL-II dive 1697), these species were estimated at 1 colony/10 m2. Densities of small stalked spherical sponges (Stylocordyla sp., Hadromerida) were estimated in some areas at 167 colonies/10 m2. Hexactinellid (glass) sponges such as Farrea? sp. were also common. Dominant gorgonacea included Eunicella sp. (Plexauridae) and Plumarella pourtalessi (Primnoidae). Recent fathometer transects by the PI at Savannah Lithoherm Site #1 (JSL II-3327) extended 2.36 nm S-N revealed a massive lithoherm feature that consisted of five major pinnacles with a base depth of 549 m, minimum depth of 465 m, and maximum relief of 83 m (Reed and Pomponi, 2002b; Reed et al., 2002; Reed et al., 2004b). The individual pinnacles ranged from 9 to 61 m in height. A single submersible transect, south to north, on Pinnacle #4 showed a minimum depth of 499 m. The south flank of the pinnacle was a gentle 10-20o slope, with ~90% cover of coarse sand, coral rubble and some 15 cm rock ledges. The peak was a sharp ridge oriented, NW-SE, perpendicular to the prevailing 1 kn current. The north side face of the ridge was a 45o rock escarpment of about 3 m which dropped onto a flatter terrace. From a depth of 499 to 527 m, the north slope formed a series of terraces or shallow depressions, ~9-15 m wide, that were separated by 3 m high escarpments of 30-45\o. Exposed rock surfaces showed a black phosphoritic rock pavement. The dominant sessile macrofauna occurred on the exposed pavement of the terraces and in particular at the edges of the rock outcrops and the crest of the pinnacle. The estimated cover of sponges and gorgonians was 10% on the exposed rock areas. Colonies of Lophelia pertusa (15-30 cm diameter) were common but not abundant with ~1% coverage. Dominant Cnidaria included several species of gorgonacea (15-20 cm tall), Primnoidae, Plexauridae (several spp.), Antipathes sp. (1 m tall), and Lophelia pertusa. Dominant sponges included large Phakellia ventilabrum (fan sponges, 30-90 cm diameter), Pachastrellidae plate sponges (30 cm),

Choristida plate sponges (30 cm), and Hexactinellid glass sponges. Motile fauna consisted of decapod crustaceans (Chaceon fenneri, 25 cm; and Galatheidae, 15 cm) and mollusks. Few large fish were observed but a 1.5 m swordfish, several 1 m sharks, and numerous blackbelly rosefish were noted. A fathometer transect by the PI at Savannah Lithoherm Site 2 extended 4.6 nm, SW to NE , mapped 8 pinnacles with maximum depth of 549 m and relief of 15-50 m. Submersible dives were made on Pinnacles 1, 5 and 6 of this group. Pinnacle 1 was the largest feature of this group; the base was 537 m and the top was 487 m. The south face, from a depth of 518 to 510 m, was a gentle 10o slope, covered with coarse brown sand and Lophelia coral rubble. A 3-m high ridge of phosphoritic rock, extended NE-SW, cropped out at a depth of 510 m. This was covered with nearly 100% cover of 15 cm thick standing dead Lophelia coral and dense live colonies of Lophelia pertusa (15-40 cm). From depths of 500 m to 495 m were a series of exposed rock ridges and terraces, that were 3-9 m tall with 45o slopes. Some of the terraces were ~30 m wide. Each ridge and terrace had thick layers of standing dead Lophelia, and dense live coral. These had nearly 100% cover of sponges (Phakellia sp., Geodia sp., Pachastrellidae, and Hexactinellida), scleractinia (Lophelia pertusa, Madrepora oculata), stylasterine hydrocorals, numerous species of gorgonacea (Ifalukellidae, Isididae, Primnoidae), and 1 m bushes of black coral (Antipathes sp.). Deep deposits of sand and coral rubble occurred in the depressions between the ridges. The north face, from 500 m to 524 m was a gentle slope of 10o, that had deep deposits of coarse brown foraminiferal sand and coral rubble. Exposed rock pavement was sparse on the north slope, but a few low rises with live bottom habitat occurred at 524 m. Dominant mobile fauna included decapod crustaceans (Chaceon fenneri, 15 cm Galatheidae), rattail fish, and 60 cm sharks were common.

Region B: Florida Lophelia Pinnacles (from Reed, 2002a; Reed et al., 2004b)
Numerous high-relief Lophelia reefs and lithoherms occur in this region at the base of the Florida- Hatteras Slope and at depths of 670-866 m. The reefs in the southern portion of this region form along the western edge of the Straits of Florida and are 15-25 nm east of the Oculina coral banks Marine Protected Area (MPA). Along a 222-km stretch off northeastern and central Florida (from Jacksonville to Jupiter), nearly 300 mounds from 8 to 168 m in height (25- 550 ft) were recently mapped by the PI using a single beam echosounder (Fig. 11; Reed et al., 2004b). Between 1982 and 2004, dives with the Johnson-Sea-Link (JSL) submersibles and ROVs by the PI confirmed the presence of Lophelia mounds and lithoherms in this region (Reed, 2002a; Reed et al., 2002; Reed and Wright, 2004; Reed et al., 2004b). The northern sites off Jacksonville and southern Georgia appeared to be primarily lithoherms which are pinnacles capped with exposed rock (described in part by Paull et al., 2000), whereas the features from south of St. Augustine to Jupiter were predominately Lophelia coral pinnacles or mud mounds capped with dense 1-m-tall thickets of Lophelia pertusa and Enallopsammia profunda with varying amounts of coral debris and live coral. Dominant habitat-forming coral species were Lophelia pertusa, Madrepora oculata, Enallopsammia profunda, bamboo coral (Isididae), black coral (Antipatharia), and diverse populations of octocorals and sponges (Reed et al., 2004b). Paull et al. (2000) estimated that over 40,000 coral lithoherms may be present in this region of the Straits of Florida and the Blake Plateau. Their dives with the Johnson-Sea-Link submersible and the U.S. Navy's submarine NR-1

described a region off northern Florida and southern Georgia of dense lithoherms forming pinnacles 5 to 150 m in height with 30-60o slopes that had thickets of live ahermatypic coral (unidentified species, but photos suggest Lophelia and/or Enallopsammia). The depths range from 440 to >900 m but most mounds were within 500-750 m. Each lithoherm was ~100-1000 m long and the ridge crest was generally oriented perpendicular to the northerly flowing Gulf Stream current (25-50 cm s-1 on flat bottom, 50-100 cm s-1 on southern slopes and crests). Thickets of live coral up to 1 m were mostly found on the southern facing slopes and crests whereas the northern slopes were mostly dead coral rubble. These were termed lithoherms since the mounds were partially consolidated by a carbonate crust, 20-30 cm thick, consisting of micritic wackestone with embedded planktonic foraminifera, pteropods, and coral debris (Paull et al., 2000). A recent echosounder transect by the PI revealed a massive lithoherm, 3.08 nm long (N-S) that consisted of at least 7 individual peaks with heights of 30-60 m (Fig. 12; Reed and Wright, 2004; Reed et al., 2004b). The maximum depth was 701 m with total relief of 157 m. Three submersible dives (JSL II-3333, 3334; I-4658) were made on Peak 6 of pinnacle #204B which was the tallest individual feature of the lithoherm with maximum relief of 107 m and a minimum depth at the peak of 544 m (Reed et al., 2004b). The east face was a 20-30o slope and steeper (50o) near the top. The west face was a 25-30o slope which steepened to 80o from 561 m to the top ridge. The slopes consisted of sand and mud, rock pavement and rubble. A transect up the south slope reported a 30-40o slope with a series of terraces and dense thickets of 30-60 cm tall dead and live Lophelia coral that were mostly found on top of mounds, ridges and terrace edges. One peak at 565 m had dense thickets of live and dead standing Lophelia coral (~20% live) and outcrops of thick coral rubble. Dominant sessile fauna consisted of Lophelia pertusa, abundant Isididae bamboo coral (30-60 cm) on the lower flanks of the mound, Antipatharia black coral, and abundant small octocorals including the gorgonacea (Placogorgia sp., Chrysogorgia sp, and Plexauridae) and Nephtheidae soft corals (Anthomastus sp., Nephthya sp.). Dominant sponges consisted of Geodia sp., Phakellia sp., Spongosorites sp. Petrosiidae, Pachastrellidae, and Hexactinellida. Further south off Cape Canaveral, echosounder transects by the PI on Lophelia Pinnacle #113 revealed a 61 m tall pinnacle with maximum depth of 777 m. The width (NW-SE) was 0.9 nm and consisted of at least 3 individual peaks or ridges on top, each with 15-19 m relief. One submersible dive (JSL II-3335) reported 30-60o slopes, with sand, coral rubble, and up to 10% cover of live coral. No exposed rock was observed. This appeared to be a classic Lophelia mud mound. The second dive site (JSL II-3336) at Pinnacle #151 was also a deep-water Lophelia coral reef comprised entirely of coral and sediment. Maximum depth was 758 m, with 44 m relief, and ~0.3 nm wide (N-S). The top was a series of ridged peaks from 713 to 722 m in depth. The lower flanks of the south face was a 10-20o slope of fine light colored sand with a series of 1-3 m high sand dunes or ridges that were linear NW-SE. The ridges had ~50% cover of thickets of Lophelia pertusa coral. The thickets consisted of 1 m tall dead, standing and intact, Lophelia pertusa colonies. Approximately 1-10% were alive on the outer parts (15-30 cm) on top of the standing dead bases. There was very little broken dead coral rubble in the sand and there was no evidence of trawl or mechanical damage. Most of the coral was intact, and the dead coral was brown. The sand between the ridges was fine and light colored, with 7-15 cm sand waves. The upper slope steepened to 45o and 70-80o slope near the upper 10 m from the top. The top of the

pinnacle had up to 100% cover of 1-1.5 m tall coral thickets, on a narrow ridge that was 5-10 m wide. The coral consisted of both Lophelia pertusa and Enallopsammia profunda. Approximately 10-20% cover was live coral of 30-90 cm. The north slope was nearly vertical (70-80o) for the upper 10 m then consisted of a series of coral thickets on terraces or ridges. No exposed rock was visible and the entire pinnacle appeared to be a classic Lophelia mud mound. No discernable zonation of macrobenthic fauna was apparent from the base to the top. Corals consisted of Lophelia pertusa, Enallopsammia profunda, Madrepora oculata, and some stylasterine hydrocorals. Dominant octocoral gorgonacea included Primnoidae (2 spp.), Isididae bamboo coral (Isidella sp. and Keratoisis flexibilis), and the alcyonaceans Anthomastus sp. and Nephthya sp. Dominant sponges consisted of several species of Hexactinellida glass sponges, large yellow demosponges (60-90 cm diameter), Pachastrellidae, and Phakellia sp. fan sponges. Echinoderms included urchins (cidaroid and Hydrosoma? sp.) and comatulid crinoids, but no stalked crinoids. Some large decapod crustaceans included Chaceon fenneri and large galatheids. No mollusks were observed but were likely within the coral habitat that was not collected. Common fish were 2 m sharks, 25 cm eels, 25 cm skates, chimaera, and blackbelly rosefish.

Region G: The Miami Terrace Escarpment (from Reed et al., 2004b)
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 (Uchupi, 1966, 1969; Kofoed and Malloy, 1965; Uchupi and Emery, 1967; Malloy and Hurley, 1970; Ballard and Uchupi, 1971; Neumann and Ball, 1970). 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 (Reed et al., 2004b; Reed and Wright, 2004). Dense aggregations of 50-100 wreckfish were observed here by the PI during JSL submersible dives in May 2004 (Reed et al., 2004b). Previous studies in this region include geological studies on the Miami Terrace (Neumann and Ball, 1970; Ballard and Uchupi, 1971) and dredge- and trawlbased faunal surveys in the 1970s primarily by the University of Miami (e.g., Halpern, 1970; Holthuis, 1971, 1974; Cairns, 1979). 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. Using the Aluminaut submersible, Neumann and Ball (1970) found thickets of Lophelia, Enallopsammia (=Dendrophyllia), 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 (Cairns, 1979). Recent JSL submersible dives and fathometer transects by the PI at four sites (Reed Site #BU4, 6, 2, and 1b) indicated the outer rim of the Miami Terrace to consist of a double ridge with steep rocky escarpments (Table 1; Fig. 6; Reed and Wright, 2004; Reed et al., 2004b). At Miami Terrace Site #BU4, the narrow N-S trending east ridge was 279 m at the top and had a steep 95 m. escarpment on the west face. The east and west faces of the ridges were 30-40o slopes with some near vertical sections consisting of dark brown phosphoritic rock pavement, boulders and outcrops. The crest of the east ridge was a narrow plateau ~10 m wide. At Site #BU6, the crest of

the west ridge was 310 m and the base of the valley between the west and east ridges was 420 m. At Site #BU2, the echosounder transect showed a 13 m tall rounded mound at a depth of 636 m near the base of the terrace within the axis of the Straits of Florida. The profile indicated that it is likely a Lophelia mound. West of this feature the east face of the east ridge was a steep escarpment from 567 m to 412 m at the crest. The west ridge crested at 321 m. Total distance from the deep mound to the west ridge was 2.9 nm. Site #BU1b was the most southerly transect on the Miami Terrace. An E-W echosounder profile at this site indicated a double peaked east ridge cresting at 521 m, then a valley at 549 m, and the west ridge at 322 m. The east face of the west ridge consisted of a 155 m tall escarpment. 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.

Region H: Portales Terrace Lithoherms (from Reed et al., 2004a)
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 (Jordan, 1954; Jordan and Stewart, 1961; Jordan et al., 1964; Gomberg, 1976; Land and Paull, 2000). 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. The JSL and Clelia submersibles were used to characterize coral habitat and describe the fish and associated macrobenthic communities. 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 (Jordan et al., 1964; Land and Paull, 2000). 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 (Table 4). 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).

Tennessee and Alligator Humps, Bioherms #1-4- Pourtalès Terrace (from Reed et al., 2004a) 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 by the PI on Bioherm #3 (Clelia 597, 598, 600; Aug. 2001), approximately 8.5 nm NE of Bioherm#2 (Fig. 15). 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 30-45o 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 (from Reed et al., 2004a)
A total of 31 fish taxa, of which 24 were identified to species level, were identified from our 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 (C. Paull, pers. observation). 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. However, the fish densities that we saw at any of the sites were in insufficient numbers to suggest commercial or recreation harvest. In fact, 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 (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 1-80 colonies m-2. Stylasterid coral densities ranged from 9-96 colonies m-2 and octocorals 16-48. Densities of sponges (1-2 colonies m-2) and stylasterids (1-20) 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 m-2).

2006 Updates to the Council and Advisory Panels

Updated reports on deepwater coral habitat distribution and characterization in the South Atlantic Region were presented by John Reed with the Harbor Branch Oceanographic Institute and Steve Ross with UNCW/USGS. That updated information was used to formulate modifications to the proposed deepwater Coral HAPCs.

JOINT HABITAT AND CORAL AP RECOMMENDATIONS

Proposed Deepwater Coral HAPCs:

- The above proposed deepwater coral HAPCs should be expanded based on new research and data compiled for the Council and presented to the Advisory Panels by John Reed and Steve Ross. Specifically, the large central area should be expanded to connect Stetson Reefs, enlarge somewhat to the north to include newly documented sites and enlarged west to include the 400 meter isobath.

- The large central area should be connected with the Miami Terrace C-HAPC, also using the 400 meter isobath as the western boundary.

- The Miami Terrace C-HAPC should be expanded to the edge of the EEZ to the east (to include mound and pinnacle structures that extend toward and into the

Bahamian EEZ. The western boundary should be extended to include the 300 meter isobath to include newly documented deep coral habitat.

- Expand the Portales Terrace C-HAPC to cover newly documented deepwater coral habitat.

- Recognizing that deepwater ecosystems are not closed, and do have connections internationally, the Panels request the Council interact with the Bahamian government and Department of State, to work with them to find ways to collaborate on research as well as protection measures. The Council could communicate with the Bahamian government directly or through the U.S. Departments of Commerce and Department of State.

Regulations in proposed deepwater Coral HAPCs:
The original recommendations by the Advisory Panels are restated as follows: *Recommended management measures in all the deepwater coral HAPC sites include the following: prohibit all bottom-disturbing activities, prohibit harvest of corals, and compile a list of threats. The intent would be to prevent any allowable harvest presently permitted under the coral plan, in any deepwater coral HAPC. To prohibit the collection of gorgonians in coral HAPCs - clarify the prohibition would not apply to biomedical or taxonomic collections. To prohibit any type of anchoring. To identify the potential damage associated with other bottom gears (e.g., a future research priority - if damage occurs with the use of planers and cannonball weights).*

The Panels reaffirmed their recommendation that damaging gear be precluded. In addition, the Panels requests the Council consider establishing allowable gear to identify appropriate, non-damaging gears. Non-fishing impacts would be fully covered in the Fishery Ecosystem Plan and in future habitat policy statements.

Development of a Deepwater Coral Research and Monitoring Plan for the South Atlantic Region
The Habitat and Coral Advisory Panels fully endorse the completion and full implementation of a Deepwater Coral Research and Monitoring Plan.

Development of Rapid Assessment Tool (SEADESC) and Integration into Habitat and Ecosystem IMS
The Habitat and Coral Advisory Panels strongly endorses the completion of the processing of existing SEADESC information and presentation in the IMS.

3) Sargassum Research and Management

The Habitat and Coral Advisory Panels after being presented a summary of research conducted since the implementation of the Sargassum FMP made the following recommendations based on the complexity of this pelagic habitat and its role as EFH.

JOINT HABITAT AND CORAL AP RECOMMENDATIONS
Establish zero harvest of Sargassum through the Comprehensive Ecosystem Amendment.

Researchers would be allowed to sample under scientific collecting permits with appropriate reporting.

4) Listing of Elkhorn and Staghorn Corals as Threatened under ESA

After receiving a briefing on NOAA's recent decision to go forward with listing of these two species as threatened under ESA the Habitat and Coral Advisory Panels made the following recommendations.

JOINT HABITAT AND CORAL AP RECOMMENDATIONS

- The Habitat and Coral Advisory Panels work with NOAA Fisheries, during the 4(d) rulemaking, to identify appropriate conservation measures for inclusion in the recovery plan.

- Work to address ecological problems and threats (including the recovery of Diadema) and maintain genetic diversity is highest. Some of the fledgling restoration operations that are underway need more funding.

- Education needs to be a huge component of this effort with a simple message, such as "Don't mess with the coral," being very effective. Funding for education, is just not enough.

- Letters from the Council can make a difference with those receiving them, so the Council should work with the AP to prepare comments as appropriate during the NOAA rulemaking process for Acropora listing and that any comments or recommendations be fully captured in the FEP.

5) Fishery Ecosystem Plan and Comprehensive Ecosystem Amendment

After receiving a briefing on the status of the FEP and CEA the Habitat and Coral Advisory Panels made the following recommendations.

JOINT HABITAT AND CORAL AP RECOMMENDATIONS

The Advisory Panels strongly endorse continuing movement toward ecosystem based management through the development of the FEP.

The Fishery Ecosystem Plan should:

- Cover the tremendous transition that is taking place as small fishing villages are being destroyed by development. The Council has charged the Social Science subcommittee with developing the data that we need to address the threats and challenges to working waterfronts and a workshop to address this is coming up;

- Include a good economic evaluation;

- Quantify ecosystem services;

- Provide a link to each existing ESA Recovery Plan;

- Accurately characterize fisheries (e.g., Atlantic Menhaden purse seine fishery no longer exists in North Carolina.);

- Provide information on how offshore shoals provide EFH. Applications for alteration of offshore shoals have been submitted and a workshop on how they provide EFH is scheduled in several weeks. Such areas off North Carolina are important during the wintertime for striped bass, Atlantic sturgeon and other species. In addition, offshore soft substrates are import habitat for polychaetes and other species. Federal agency partners are working on the passage through FERC-licensed facilities, but there are many others that aren't federally-licensed, and use the state priority lists for dam removal, where they exist, in the FEP to recommend some priorities.

- Update, revise and include the Council's water flow policy, written in 2004, especially to address the Roanoke and Savannah Rivers.

JOINT HABITAT AND CORAL AP CONCENSUS RECOMMENDATIONS:
Panel members were requested to provide comments on the potential list of actions for consideration in a developing Comprehensive Ecosystem Amendment. Discussions revolved around the existing list of proposed measures for the Amendment and the following recommended modifications are:

Comprehensive Amendment measures should:

- Establish and protect expanded deepwater Coral HAPCs;

- Establish a zero harvest for Sargassum;

- Address octocorals harvest and quota level while considering octocorals as EFH;

- Establish provisions to allow for the discovery of new octocorals species and new compounds (biomedical products), but not for mass exploitation and harvesting of species; and

- Consider invasive species highlighting lionfish in FEP and proposed or future Ecosystem Amendment.

6) Snapper Grouper Amendment 14 - Deepwater Snapper Grouper Marine Protected Areas

The Habitat and Coral Advisory Panels were presented with the current proposed alternatives for the establishment of Marine Protected Areas for deepwater snapper grouper species and made the following recommendations.

Recommendations of the Coral and Habitat and Environmental Protection APs:

1. The sites endorsed originally by these APs captured more valuable habitat than the alternatives added later.

2. Moving sites off-shelf greatly reduces fishery and habitat conservation value by failing to protect juvenile habitat and that for other snapper-grouper species using the shelf break, where place-based management is especially invaluable. Failure to include shelf-break reefs in the deepwater MPAs will necessitate future actions in nearby locations.

3. Sites ultimately approved should contain significant quantities of high value habitat. Many of the sites reviewed did not have adequate survey data to fully characterize them.

4. Sites ultimately approved should be managed to ensure: a) effective education, b) effective outreach, c) effective enforcement, and d) adequate research and monitoring.

5. Adequate resources must be found for this task. Lack of adequate resources will doom this initiative.

6. Implementation of these recommendations must consider the impacts on displaced fishermen and coastal communities.

7. Site-Specific Recommendations:

Snowy Wreck Deepwater MPA:
Alternative 1 is preferred because it contains more of the target habitat. Both alternatives contain relatively little of the target habitat. If the focus is the Snowy Wreck itself, a separate much smaller box can be drawn around the wreck. If other alternatives are proposed they should capture more high-value reef habitat.

Northern South Carolina MPA:
Alternative 2 is preferred to Alternative 1 because it contains more of the target habitat and better data on reef fish reproduction. Alternative 3 has significantly less value than either Alternative 2 or 1. The eastern half of Alternative 2 has little to no data.

Central South Carolina MPA (Edisto MPA):
Alternative 1 is highest priority based on available information, including recent 2005 survey data. Alternative 2 has much less habitat.

Charleston Deep Reef MPA:
The alternative is not supported because there is no evidence of appropriate high-value habitat in the site. If the sole purpose is to establish a deepwater artificial reef, the site should be surveyed prior to placement of any material, to verify that existing high value habitat in that site will not be damaged.

Georgia MPA (Tilefish MPA):
Alternative 1 is preferred because it provides significant tilefish habitat and evidence of snowy grouper use. Neither alternative has abundant, documented reef habitat.

North Florida MPA (Mayport MPA/St. Augustine):
Alternative 1 is strongly preferred based on the available fish and habitat data. Alternatives 2 and 4 have much less documented high value habitat. The others are unacceptable based on the lack of evidence for high-value habitat and fish use.

Sea Bass Rocks MPA (St. Lucie Hump):
This alternative is strongly endorsed based on evidence of high-value habitat, including Oculina coral, and fish usage.

Florida East Hump MPA:
This site is strongly endorsed based on data indicating high-value habitat and use by target species. It also includes deepwater coral habitats recommended by the APs for C-HAPC designation.

Vessel Monitoring Systems
The Advisory Panels endorsed strong and effective enforcement but felt that other APs (e.g., Enforcement) were in a better position to recommend specific measures.

7) Updated SAFMC Energy Policy Statement

Myra Brouwer with Council staff made a presentation highlighting the revisions to the Energy Policy completed through a coordinated effort including Council staff, Jocelyn Karazsia NOAA Fisheries Habitat Conservation Division, Maggie Sloan an intern with Environmental Defense and the Habitat and Coral Advisory Panels.

The Advisory Panels endorse enhancement of the policy to address wind and wave energy facilities, nuclear power cooling water and burgeoning LNG facilities. The Panels also expressed concern about increasing pressures to privatize public trust resources (including the ocean bottom) and conflicts likely to result including conflicts with mandates other than those established under Federal fisheries law.

8) Liquified Natural Gas (LNG) Pipeline Development: Assessing Impacts on Nearshore and Deepwater Coral Habitats

Jocelyn Karaszia with NOAA Fisheries Habitat Conservation gave an overview of LNG facilities. NOAA Fisheries is reviewing three LNG facilities. The southernmost project has been authorized by the Corps, but all three projects are awaiting approval from the Bahamian government. Jocelyn noted there are three lines of reefs off south Florida what would have to be crossed to enter at Port Everglades, FL. Jocelyn noted that some of the pipeline would cross an area of previously disturbed habitat, which does support some reef. The applicants propose to use directional drilling to go under reef habitat. Jocelyn reviewed the NMFS concerns, such as punch outs, and release of bentonite drilling muds. Frac-outs are a concern, when the drilling head moves through unconsolidated sediments. Frac-outs can occur anywhere along a route. Wilson asked

Jocelyn to clarify what a frac-out was. She did so. It is when drilling muds are released to the surface through fissures in the rock, or through unconsolidated sediments. Horizontal Directional Drilling is a 24-hour a day operation. Jocelyn noted that tunneling was proposed, instead of HDD, in order to avoid frac-out potential. Jocelyn noted that tunneling does increase costs, but it is competitive when compared to the total costs including monitoring required for HDD. Tunneling greatly reduced potential impacts. Jocelyn noted the applicant has filed an application with the USCG, for an offshore port for tankers, since the Bahamian government hasn't approved sites based in that country. Jocelyn reviewed the infrastructure that would be associated with an offshore facility. There would be a thermal plume associated with water used for engine cooling. Larval impingement and entrainment are being investigated. The Calypso applicant plans to begin larval monitoring in July. NMFS has recommended five years of pre-project ichthyoplankton monitoring. Calypso proposes to use a water-glycol mix for warming the gas. Jocelyn noted that one of the offshore terminals is proposed to be sited in one of our recommended HAPCs. She noted that Calypso did assemble an outstanding crew (John Reed, Sandra Brooke among them) to characterize the habitats. Jocelyn noted that a shipping route runs through the middle of the proposed site, which is also highly used by swordfishermen and other users. Jocelyn noted that MARAD is the lead agency for licensing deepwater ports. The Maritime Act of 2002 added LNG to the MARAD mandate. Jocelyn reviewed the permitting process for these facilities, which has a statutory time limit of 365 days. Jocelyn reviewed the NOAA LNG documents and noted they are on the Panel members CD. She reviewed the next steps. NOAA-HCD is coordinating with NURC in Wilmington and with NMFS-SEFSC. Calypso proposes to re-submit its application in July for a USCG "completeness determination." The completeness determination triggers the NEPA review and 330-day time clock.

9) Research Associated with Proposed LNG Pipeline Development

John Reed noted that he was involved in three of the pipeline route proposals. He noted that the reports are not ready yet for release, but he wanted to give us background on what he did for the surveys. He made it clear in his contract, when he was contacted by the consulting firm, for the Seafarer route from the Bahamas to Florida with the Johnson-Sea Link used to survey the route. Where they found hard bottom, it was coral. John Reed told the consultant that his final reported, unaltered would have to go to Florida DEP, and NOAA and the Council. Once it is distributed by Seafarer to the Council, John will discuss it with us. John indicated that the protocol given to them by Florida DEP, NOAA Fisheries and MMS. They used a submersible to fly along the bottom and take complete photo and video documentation. There was a pair of lasers pointing down to allow quantification of the organisms. Percent cover (hard versus soft) bottom, as well as all organisms over three inches were counted. They also have detailed CTD and navigation data for each dive. With respect to the Seafarer pipeline, they did find hard bottom in a short portion of the 18 mile route. A three-mile area had hard-bottom habitat. John mentioned one site, in the first three miles, that had Lophelia, with anywhere from 3-15 foot mounds of coral. There was very little live coral, it was mostly standing dead. John quantified the heights of ridges and so forth. After the first three miles it was just plain mud. There was a lot of trash probably from cruise ships. The Calypso Port Project survey covered 24 square miles of bottom with an ROV. The proposed port would be on

top of the Miami Terrace, pretty much outside the proposed HAPC we discussed yesterday, but the new deepwater HAPC we discussed would be impacted. John noted that the applicant tried to move their proposed mooring buoys to the west to avoid hard bottom. John noted where there is hard bottom it is low density with few organisms. He noted that two other proposed facilities will cross the entire deepwater HAPC that we are proposing. That area is entirely hard bottom for both the Cliffs of Suez and the AEC proposals. Once the terrace is crossed, you do hit a mud zone, then enter a Lophelia zone, which is close to the EEZ. John's sites 22, 23 and 59 are the areas where live bottom occurs, Lophelia. There would be varying degrees of impact from the 36-inch pipe. Panel members raised the issue of whether lobster migrations be affected.

The Panels expressed strong support for agency and academic work to protect EFH from damage induced by LNG pipelines and related facilities.

10) Status Report- Consideration of Windfarm Development in the South Atlantic Region

Roger Pugliese presented a brief summary of available information on wind development in the South Atlantic and noted to date that there is no formal permit proposal to date. During discussions, they were trying to identify areas offshore, beyond 15 miles. Roger noted there are habitat implications. He noted that if there is a mandate to put all coastal communities at 20 percent of their energy derived from wind, that is a significant potential increase and we should be thinking now about the long-term impacts. Roger reviewed potential fishery impacts. Roger noted there are a lot of data gaps regarding impacts on benthic and pelagic fish fauna. Roger noted there is work being done in NC to evaluate wind potential. He noted the biggest thing is to keep this on the table for consideration in ongoing policy development discussions.

11) Initiation of the Development of a SAFMC Offshore Aquaculture Policy

The Advisory Panels received written briefing materials and comment letters from interested parties.

The Panels continue to feel that adoption of this policy is especially important given the agency impetus behind marine aquaculture and intends to complete the drafting of the proposed offshore aquaculture policy before September. The Panels will do so using the Council's interactive web portal.

12) Invasive Species: Lionfish Research and Proposed Workshop

Liz Fairey noted that she was making this presentation on behalf of the NOAA Aquatic Nuisance Species program, although she is housed in NOAA-Fisheries. She noted that the work she would be discussing has been conducted largely by Paula Whitfield, James Morris and Wilson Freshwater.

Two different species have been documented off the coast, but volitans is the major one. The lionfish have been spreading relatively rapidly and the area of potential habitat is

very large. At 11 C, most of the lionfish die. At 16 C, they stop feeding in the lab, but they haven't observed cessation of feeding in the wild. Liz noted the researchers are unable to say much about whether the population is increasing, or not, but hope to do so this year. Lionfish have been found in 150-270 feet, which pretty surprising. The sites surveyed included most of the MPA sites. Liz noted this information was presented at an International Aquatic Nuisance Species conference earlier this year. Slides presented showed this species release which was a novelty, has expanded to being the second or third most prevalent fish in formal surveys. Genetics work by Dr. Freshwater indicates the Atlantic Ocean fish have three different haplotypes, which indicates three founder females. The lionfish lay floating eggs, in balls, about 30,000 eggs per spawn. Females mature at around 200-220 mm. For males, maturity is much earlier. They reach maturity at age 1-2. They are eating primarily fishes, but also stomatopod and decapod crustaceans, bivalve and cephalopods and brittle stars. The major prey consumed by the fish analyzed was serranids, followed by scaridae. Doug asked if Liz knew what species of serranids. Stable isotopic ratio analysis suggests that the lionfish are broad generalist feeders. There is a great deal of potential dietary overlap with many native grouper species. Potential threats include human health risk; negative impacts on reef fishes through prey and habitat competition; combined effects to ecosystem from climate change and overfishing; and Caribbean and Gulf expansion potential. The project was funding jointly by NURC and NOAA and NOAA would like to collaborate with the Council on have a lionfish workshop possibly in July, bringing together key researchers and managers to discuss how to deal with the lionfish invasion on the east coast. Liz stated their distribution is really regulated by temperature, and when you get to SC and NC, it is really driven by that factor. Ones driven further north don't survive. Liz speculated that ones moving inshore would not survive the cold winter temperatures.

The Advisory Panels strongly supported the Council's engagement through the FEP in addressing ecological implications of invasive species including lionfish, including co-sponsoring the upcoming lionfish workshop.

13) Development and Management of Regional Ocean Observing Systems

Roger Pugliese briefed the Panel members on the development and management of Regional Ocean Observing Systems. Roger noted we are fortunate to be in a region that is being used as a test case for regional ocean observing systems. These will be designed to allow us to understand the ocean in a three-dimensional framework. Roger noted we have begun building links to these systems on the Ecosystem webpage and connections through the Internet Mapping Server. He noted that the systems will further our understanding of current and other factors, and help us and fishermen understand what is going on beneath the surface. He noted there will be some additional direct work to build the presentation of the data collected by these systems to support the FEP. Roger noted that we can go to the web site and view the presentations on the different systems, from the link to our Research and Monitoring Workshop. He indicated that fisheries has just jumped into this discussion in the last year or so. An opportunity was provided for us to be on the front end of this process. One NOS proposal dealt with ecological modeling, to assess the year-class strength of gag, based on temperature, and this would have fed

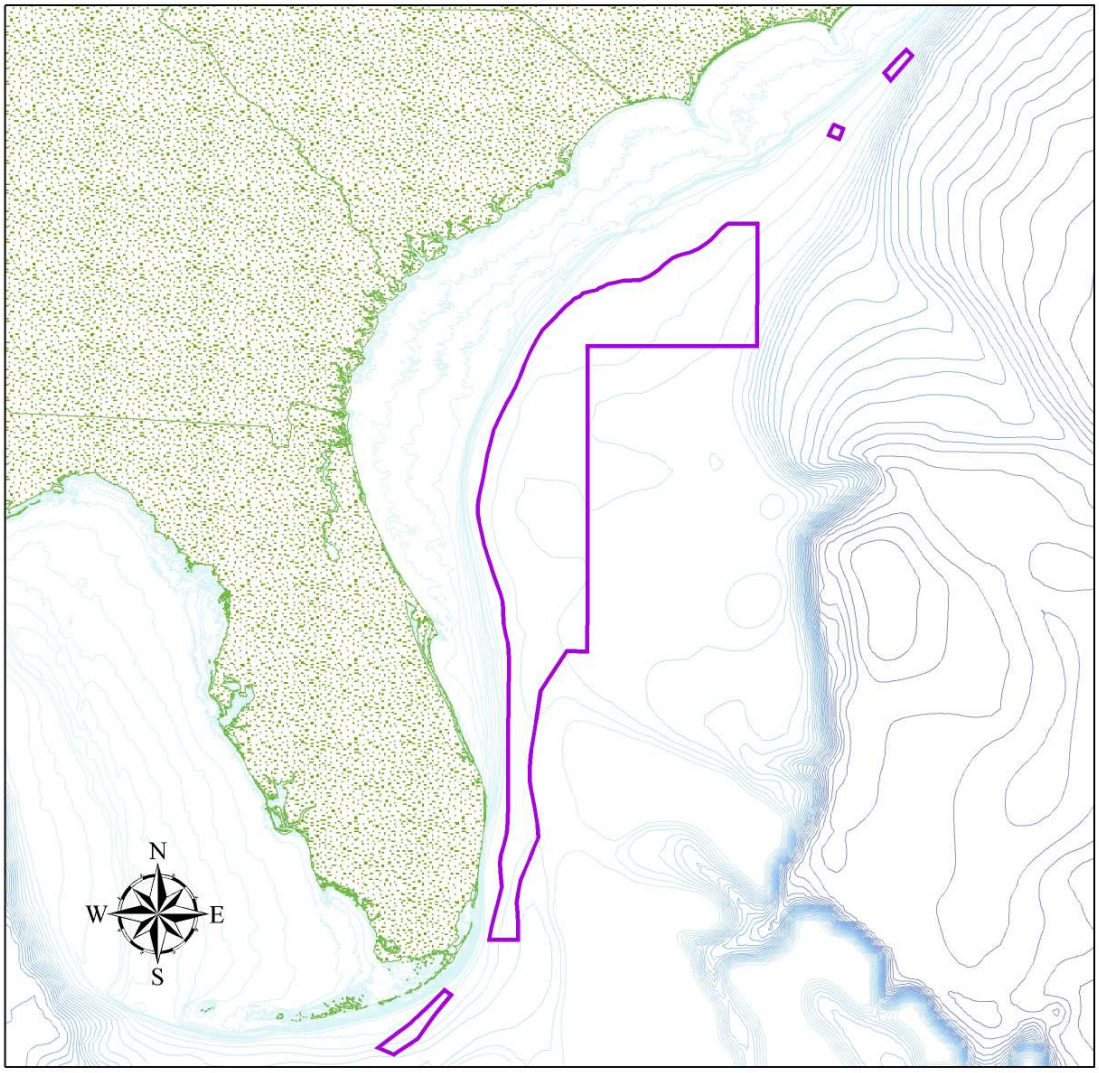
directly into the SEDAR process. The bottom line is that this would have been an excellent collaboration between oceanographers, fishery biologists and managers, but it didn't get funded. Roger noted that we need to find the dollars to support feeding the information from oceanography directly into fisheries assessment and management.

The Advisory Panels support such collaboration and the funding it requires.

14) National Habitat Plan and Southeast Aquatic Resources Partnership

Roger Pugliese addressed the National Fish Habitat Plan that is moving forward. He noted that it was initiated to a large degree by freshwater interests, to address fish habitat across the nation but also regionally. He noted that a partnership has been built in the SE, that covers a broader area than we normally consider. He noted the Council, states, USFWS, TNC, NMFS and many other organizations are participating. One of the first efforts coming out of the group is to develop a SE Aquatic Resource Plan. Roger noted that this will not reinvent the wheel, but will hopefully translate many of the recommendations from the FEP into action, beyond what the FEP could do by itself.

The Advisory Panels support these programs as partners in implementing the FEP.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Prepared by Roger Pugliese, SAFMC (6/20/06)