Evolution of Deepwater Coral Protection in the Southeast U.S

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Overview

▪ Deepwater Corals vs Shallow Corals
▪ Fisheries Management driving protection
▪ Examples in the Southeast U.S.
  – Oculina Habitat Area of Particular Concern (HAPC)
  – Deepwater CHAPCs
Shallow vs. Deepwater
Shallow Coral Reefs

- temperatures between 23-25°C
- between 30N - 30S latitude
- Symbiotic relationship with algae to photosynthesize

Source: NOAA – Office of Coast Survey
Deepwater Coral Reefs

- temperatures between 4 -13°C
- depths of 70–1000 meters
- lack symbiotic algae (zooxanthellae)

Source: NOAA-OER
Threats

Bottom fisheries
trawls
heavy gear
Exploration
Hydrocarbon
minerals
Infrastructure
Cable
pipeline

Source: NOAA-OER
Bottom Trawling

Source: R.Grant Gilmore and Lance Horn
Management

- urgent need to prevent further degradation of these vulnerable reefs
- conserve, protect and manage cold-water coral reefs
  - fisheries regulations
  - environmental impact assessments
  - management plans
  - protected areas
Fisheries Management
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<tr>
<th>Year</th>
<th>Event</th>
<th>Details</th>
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<td>1976</td>
<td>Fishery Conservation and Management Act</td>
<td>Established the Regional Management Councils</td>
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<td>1982</td>
<td>Coral Fishery Management Plan</td>
<td>Identified Habitat Areas of Particular Concern (HAPC)</td>
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<td>1996</td>
<td>Sustainable Fisheries Act</td>
<td>Authorized councils to protect essential fish habitats</td>
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<td>2006</td>
<td>Magnuson-Stevens Fishery Conservation and Management Act Reauthorization</td>
<td>Authorized councils to designate zones to protect deepwater corals</td>
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<td>2010</td>
<td>Comprehensive Ecosystem-based Amendment 1</td>
<td>Established five Deepwater CHAPCs</td>
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<td>2015</td>
<td>Coral Amendment 8</td>
<td>Established HAPC expansions</td>
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Fishery Conservation and Management Act of 1976

- Prevent overfishing
- Rebuild overfished stocks
- Increase long-term economic and social benefits
- Ensure a safe and sustainable supply of seafood
Fishery Conservation and Management Act of 1976

- extended U.S. jurisdiction from 12 to 200 nautical miles
- established eight regional fishery management councils (Councils) with representation from the coastal states and fishery stakeholders
Regional Management Councils
SAFMC

The South Atlantic Fishery Management Council (SAFMC) is responsible for the conservation and management of fish stocks within the federal 200-mile limit of the Atlantic off the coasts of North Carolina, South Carolina, Georgia and east Florida to Key West.
South Atlantic Fishery Management Council (SAFMC)

- Composed of federal and state fishery representatives and private citizens
- Make decisions through a collaborative, open and participatory process based on best available science
- Promote sustainable fisheries and reduce user conflicts and environmental impacts using spatial management and other regulatory measures.
Coral Fishery Management Plan

- Management unit composed of ~400 species
- Principal value of coral defined as habitat for many important fish and shellfish
- Slow growth of corals suggested it be considered a nonrenewable resource
Oculina Bank Habitat Area of Particular Concern (HAPC)
Oculina Varicosa

small coral colony can hold up to over 2,000 individual animals and hundreds of species, including worms, crabs, shrimp and fish.
Oculina Bank Habitat Area of Particular Concern (HAPC)

- In 1994, the Oculina HAPC was closed to all manner of bottom fishing and was designated as the Experimental Oculina Research Reserve.
- In 2000, the area was expanded to 300-square-nautical-miles and prohibited all gears that caused mechanical disruption to the habitat.
Deepwater CHAPCs

- The comprehensive Ecosystem-Based Amendment 1 designated five deepwater CHAPCs
- Possibly the largest known continuous distribution of deepwater corals
Deepwater CHAPCs

Management measures to help protect these sensitive habitats include:

• Prohibit fishing gear (bottom longline, bottom and mid-water trawl, dredge, pot, and trap),
• Prohibit anchoring by fishing vessels,
• Prohibit possession of deep water coral.
Deepwater CHAPCs

Iterative process to define boundaries
Coordinated with universities, research institutes, state and federal agencies, and fishermen
Primary Data Sources

- **Research Cruises**
  - Principal Investigators – Reed, Ross, Sedberry
  - Gray’s Reef & SAFMC – AUV, Multibeam

- **Bathymetry**
  - Vector - CSC, NCDDC
  - Raster – NOAA Nautical Charts (250k), University of Miami, Fishing Charts

- **Benthic Habitat Maps**
  - SEAMAP Continental Shelf
  - ESDIM Deepwater Mapping Project
Allowable Fishing Zones

- access areas for shrimp and golden crab fisheries within the CHAPCs
- obtained through stakeholder input
- configurations for CHAPCs and allowable fishing areas would have minimal impact on deepwater corals while allowing historic fisheries to occur
Shrimp Fishery Access Areas
Golden Crab Allowable Fishing Areas
Recent Explorations

Identified areas of high relief features and hard bottom habitat outside the boundaries of exiting HAPCs

Source: NOAA OER
Coral Amendment 8

- Expand boundaries of the Oculina Bank HAPC
- Implement a transit provision through the Oculina Bank HAPC
- Expand the boundaries of the Stetson-Miami Terrace CHAPC
- Expand the boundaries of the Cape Lookout Lophelia Banks (Cape Lookout) CHAPC
Oculina Bank HAPC Expansions

One area extends from the northern boundary of the Oculina Bank HAPC up St. Augustine. The second area is to the west of the current boundary, primarily between the Oculina Bank HAPC satellite areas (Reed and Farrington 2011).
The Stetson-Miami CHAPC Extension

Modify the boundary of the Stetson-Miami Terrace CHAPC western extension in a manner that releases the flat bottom region to the extent possible while maintaining protection of coral habitat. Allow for a Shrimp Fishery Access Area to be used as a gear haul back/drift zone. 
The Cape Lookout CHAPC Expansion

increases the size of the Cape Lookout CHAPC by 10 square miles (26 square km), for a total area of 326 square miles (844 square km), and extends the current CHAPC gear prohibitions to increase protection of deepwater coral ecosystems.
Summary

- SAFMC used its unique powers to protect the Oculina Bank HAPC in 1984
- Protected one of the largest deepwater coral ecosystems with the Deepwater CHAPCs in 2010
- Expanded the Deepwater CHAPCs in 2015
What can you do?

▪ Conserve Water – the less water you use, the less runoff and wastewater will find their way to the ocean

▪ Conserve Energy – to reduce greenhouse gas emissions. Climate change is one of the leading threats to coral reefs

▪ Educate Yourself about coral reefs and the creatures they support – help others understand the fragility and value of the world’s coral reefs
Thank you!

Source: NOAA OER