

The Deep Sea Coral Research and Technology Program: Exploration and Research to Conserve Biodiverse Deep-Sea Ecosystems

Thomas F. Hourigan¹, John Tomczuk², Andrew David³, M. Elizabeth Clarke⁴, Dan Dorfman⁵, Maile Sullivan¹, Fan Tsao¹

NOAA: (1) National Marine Fisheries Service (NMFS), Office of Habitat Conservation; (2) Office of Oceanic and Atmospheric Research, Ocean Exploration and Research; (3) NMFS Southeast Fisheries Science Center; (4) NMFS Northwest Fisheries Science Center; (5) National Ocean Service, National Centers for Coastal Ocean Science

I. Introduction:

In 2009, the National Oceanic and Atmospheric Administration (NOAA) launched the Deep Sea Coral Research and Technology Program, called for in the reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act, the nation's primary fishing law.

II. Deep-Sea Coral Ecosystems of the Southeast United States: 2009 – 2011

In 2009, the Program began a 3-year field effort in the Southeast United States, developed in consultation with the South Atlantic Fishery Management Council. Priorities were to explore and map deep-sea coral habitats, and understand their importance for other species, including managed fisheries species.

Previously unexplored *Lophelia pertusa* bioherm areas were discovered during the first year's field season, providing new information relevant to the Council's proposed deepwater Coral Habitat Areas of Particular Concern (C-HAPCs), which would be closed to bottom-contact fishing gears. Activity descriptions and preliminary findings of an August 2009 cruise are available in Ross (2009).

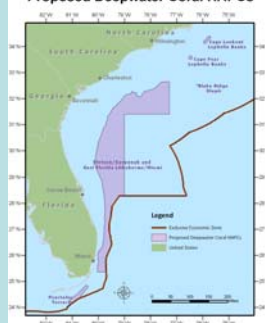


Scientists on the August 2009 deep-sea coral cruise off the Southeast U.S., with the Johnson Sea Link submersible in the background.

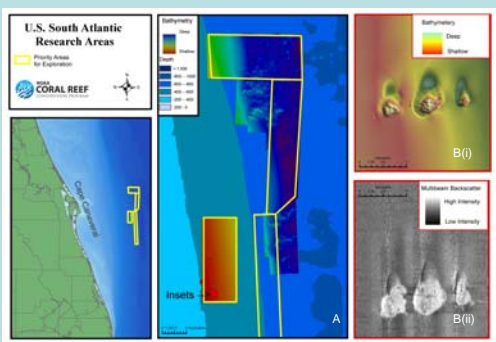


Blackbelly rosefish (*Helicolenus dactylopterus*) and squat lobster (*Eumunida picta*) on a deep-sea *Lophelia* coral reef off Florida on the continental slope (depth > 300 m).

Proposed Deepwater Coral HAPCs



Research targeted coral ecosystems in proposed deepwater coral habitat areas of particular concern (C-HAPCs).



Multibeam imagery of priority deep-sea coral sites off Cape Canaveral, FL.
A) Multibeam bathymetry of areas surveyed.
B) Close up of multibeam bathymetry (i) and backscatter (ii) for three coral pinnacles. Lighter color on the backscatter imagery indicates hard substrata. Submersible dives on these pinnacles showed extensive deep-sea coral cover.

III. Deep-Sea Coral Ecosystems of the United States West Coast: 2010 – 2012

In 2010, the Program will map and study deep-sea coral and hexactinellid sponge reefs habitats off the West Coast using ROVs, AUVs and submersibles.

Priority sites for 2010 West Coast Research include:

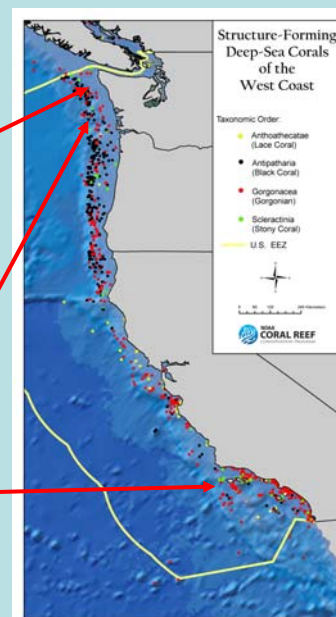
- Coral habitats in Olympic Coast National Marine Sanctuary proposed for bottom-trawl closure
- Sponge reefs in Grays Canyon (depth ~ 160 m)
- Deeper habitats in Channel Islands National Marine Sanctuary and Cowcod Conservation Area



Primnoid coral and rockfish (depth ~ 250 m)



"Christmas tree" black coral (*Antipathes dendrochristos*)



IV. Analyzing and Managing Existing Data:

Many existing datasets collected for other purposes have not been analyzed for deep-sea coral information. To complement new field research, in 2009 and 2010 the Program:

- Began development of a national capability to manage data and information on deep-sea coral and sponge ecosystems.
- Supports small projects in most U.S. regions to analyze:
 - Existing information to inform management of U.S. deep-sea coral ecosystems;
 - The distribution and intensity of fishing activities using gears that may damage deep-sea corals in Federal waters; and
 - Coral and sponge bycatch in fisheries.

For further information: Tom.Hourigan@noaa.gov

Further reading:

Ross, SW (2009). Cruise Report for *R/V Seward Johnson* Deep-sea Corals Cruise, 5-17 Aug 2009. 26 pp.
NOAA (2010). Report to Congress on the implementation of the Deep Sea Coral Research and Technology Program.