



NURP Research Leads to Preservation of the Ivory Tree Coral in Florida's Oculina Banks



Oculina Banks

The Oculina Banks are home to *Oculina varicosa*, the world's only known deepwater stand of ivory tree coral. Situated 25 miles from Florida's eastern shore at a depth of 200 to 350 feet, colonies of *O. varicosa* extend 90 nautical miles along Florida's continental shelf. *O. varicosa* grows less than a half inch per year, forming spherical, branching thicket-like colonies that can stretch for hundreds of yards and reach heights of up to 15 feet.

The Oculina Banks are situated below the Gulf Stream, which deposits many nutrients and larvae onto the reefs. Consequently, the Banks possess a high level of biodiversity despite the low amount of sunlight that reaches the reefs.

Oculina reefs provide critical habitat for a variety of economically important species, including snapper, grouper, and shrimp. The area's plentiful shrimp have historically been harvested with bottom trawling vessels, which crush reefs and other fragile features as heavily weighted nets are dragged across the seafloor. At least 90% of the *Oculina* colonies observed in the 1970s are now rubble (Figure 6), which compared to intact, healthy colonies provide fish with little to no habitat for breeding, nursing or feeding.

NURP Research

In 2001, NOAA's Undersea Research Program (NURP)*, funded an investigation of the Habitat Area of Particular Concern (HAPC), a federally protected area within the Oculina Banks closed since 1994 to most types of fishing. Surveys conducted with a human occupied submersible and a remotely operated vehicle (ROV) revealed that species of grouper in the HAPC appeared to be increasing in number though were much smaller in size than in the 1970s. Other fish species appeared to have greatly decreased in number or were altogether absent.

* All of NURP's Oculina Banks Research was conducted through NURP's National Undersea Research Center for the Southeastern U.S. and Gulf of Mexico (NURC SEGM) at the University of North Carolina, Wilmington (UNCW).

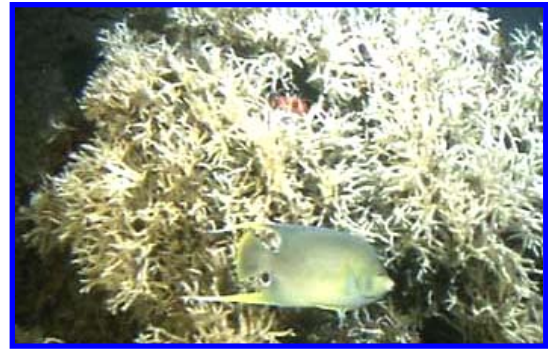


Figure 1: Live *Oculina varicosa* with blue angelfish. Photo credit: NURC SEGM/UNCW

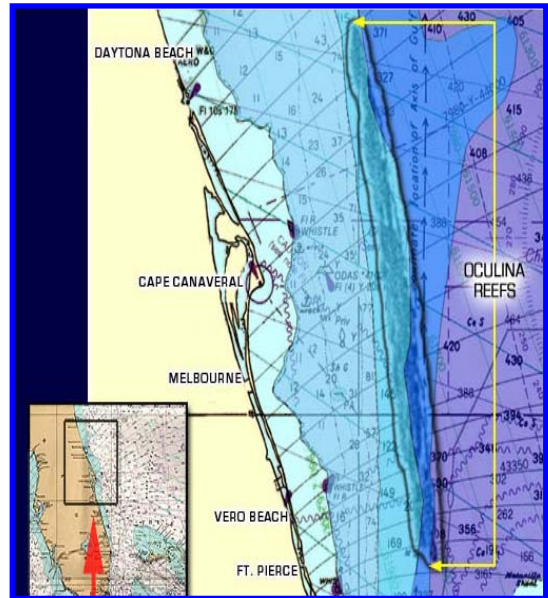


Figure 2: Approximate location of *Oculina* reefs

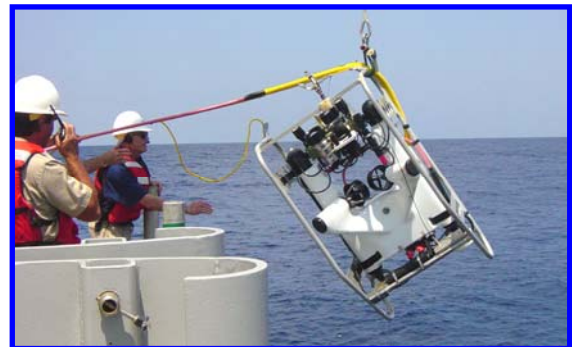


Figure 3: *Phantom II* ROV is prepared for a dive to Oculina Banks. Photo credit: John Reed, HBOI.

In 2002, NURP collaborated with NOAA Fisheries and the National Aeronautics and Space Administration to create the first high resolution three-dimensional map of the Oculina Banks. The detailed and extensive map, produced with a multibeam sonar device that surveyed twenty square miles of the seafloor per day, revealed many undocumented features, including shipwrecks and reefs.

The following year, to further assess the growth and health of the ivory tree coral, a NURP-funded team of scientists surveyed some 35 miles of the Oculina Banks, selecting sites based on the 3-D map created in 2002. A *Phantom II* ROV captured video and collected samples which revealed standing thickets of dead coral as well as large swaths of coral that had been reduced to rubble. In addition, twenty-three large coral pinnacles were discovered outside the federally protected zone.

Research Impacts Management

In June 2003, scientists presented their research results to the South Atlantic Fishery Management Council (SAFMC), the organization responsible for conserving and managing America's fisheries from 3 to 200 miles offshore the U.S.'s southeastern states. Based in large part on the critical needs identified by NURP research, the SAFMC voted to indefinitely ban bottom fishing and trawling in the HAPC, an area originally slated to reopen to these activities in 2004. This measure may contribute significantly to sustaining and recovering what remains of the Oculina Banks ecosystem.



Figure 4: *O. varicosa* . White areas are live coral; brown areas indicate dead coral. Photo credit: NURC SEGM/ UNCW



Top (Figure 5): Live *Oculina* coral head and fish;



Bottom (Figure 6): *Oculina* reefs reduced to rubble. This likely occurred in the '70s or '80s as a result of trawling gear.

Photo credit: L. Horn, NURC SEGM/ UNCW

Milestones in Protecting the Oculina Banks

1984: NOAA designates 92 square mi of the Banks as a Habitat Area of Particular Concern (HAPC), making the area a federally protected zone closed to trawling; **1994:** To counter declining fish populations, the HAPC is also closed to bottom fishing; **2000:** The HAPC is expanded to include an additional 208 sq mi where trawling is banned. The ban on trawling and bottom fishing remains in place for the original HAPC, now referred to as the Experimental Oculina Research Reserve; **2003:** NURP research contributes to an indefinite ban, issued by the SAFMC, on bottom fishing and trawling in the HAPC; the ban had originally been set to expire in 2004.

