



NOAA Explores Underwater Habitats of Southwest Puerto Rico

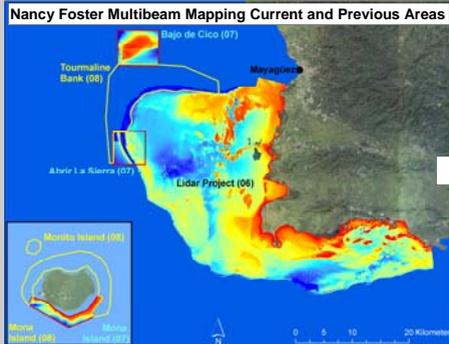


In partnership with the Caribbean Fisheries Management Council, the University of Puerto Rico (Mayagüez), and the Caribbean Coral Reef Institute, NOAA collects sonar and video data in high priority conservation areas within Tourmaline Bank, Mona Island, and Monito Island

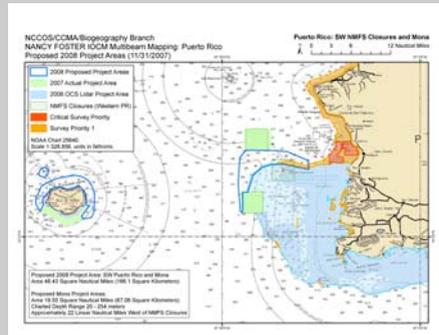
NOAA Project NF-08-04

Project funded by NOAA's Coral Reef Conservation Program

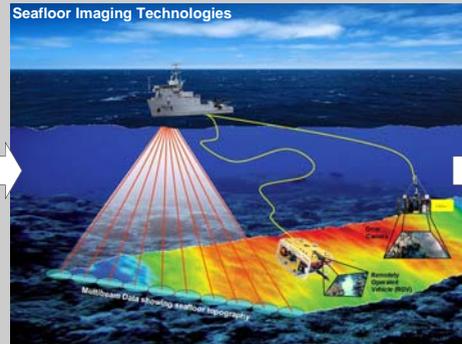
Planning



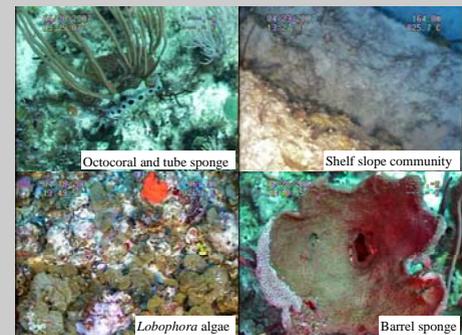
This is the third annual mission in an ongoing research project to explore and characterize near-shore habitats within the waters of Puerto Rico. On this mission, scientists visited Tourmaline Bank, Mona Island, and Monito Island (see maps above and below). These "high priority" areas were chosen in collaboration with the Caribbean Fisheries Management Council and the University of Puerto Rico (see "more about") for their importance to coral reef ecosystems and fisheries. For example, multibeam surveys conducted by NOAA and its partners have helped document grouper spawning grounds like Tourmaline Bank, which is now closed seasonally to protect the fish while they spawn and ensure more sustainable populations.



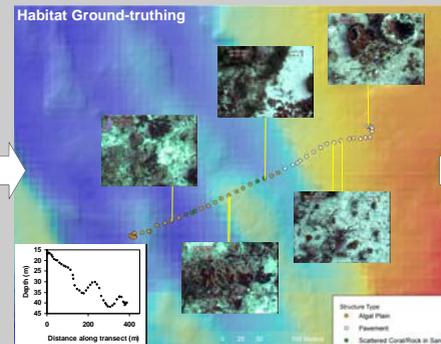
Data Collection



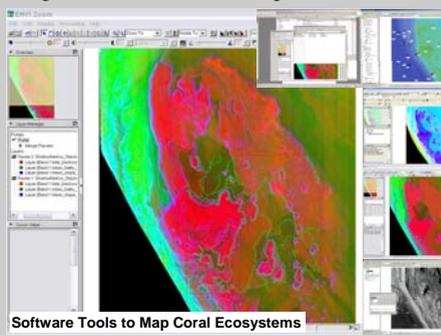
Aboard the NOAA research ship NANCY FOSTER (see "more about") scientists collect abiotic data - high-resolution bathymetry, habitat hardness and habitat roughness - and biotic data - underwater video footage of corals, plants and fish. Depth and backscatter data comes from multibeam echosounders, and video comes from a remotely-operated vehicle. An integrated Global Positioning System and Ultra Short-line Base Receiver provides precise positioning of the camera on the seafloor and on digital charts, to support investigation of specific targets, like the ledge in the upper right picture (below). These acoustic and remote video technologies allow researchers to explore down to 1 km, so as to document the composition, condition, and distribution of critical resources.



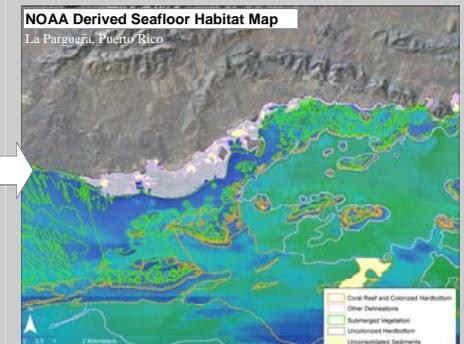
Interpretation



Above is an image of a drop camera transect juxtaposed on seafloor topography. The points represent where the video camera took a picture of the seafloor. Because both the acoustic (physical) and video (biological) data have high positional accuracy, scientists can match them up on a map and look for spatial patterns. This allows them to map the distribution of coral from shallow to deep, and explore species preference for sand versus hardbottom, etc. Developing these "habitat utilization models," which link physical habitat with biological information, is one of the primary objectives of the NOAA Biogeography Branch (see "more about"). The Branch also uses this data to develop signal processing techniques, mapping and sampling designs, and to evaluate new technologies.



Products



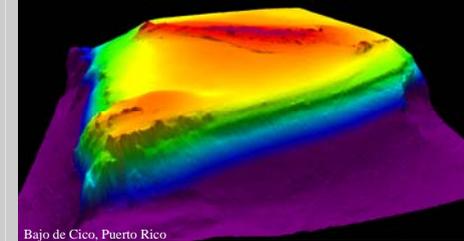
Everyone from scientists to managers use the benthic habitat maps (above) created with data from these missions. Resource managers like the CFMC use it to make informed, ecosystem-based decisions that help ensure the long-term economic, recreational, and environmental viability of coral reef communities, which are under stress from climate change, disease, coastal development, invasive species, and pollution. Other scientists, like our partners at UPI and CCRI, use it to arrive at a more complete understanding of these important marine resources. The data is also available to the public. In fact, images and data from these missions are available online at:

<http://www8.nos.noaa.gov/bhv/bhvMapBrowser.aspx>

For more information:

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Marine Conservation Area Seafloor Topography



More About...

The National Oceanic and Atmospheric Administration

NOAA is an agency of the U.S. Commerce Department. NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and providing environmental stewardship of the nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems (GEOSS), NOAA is working with its federal partners and nearly 60 countries to develop a global monitoring network that is as integrated as the planet it observes.

Our Partners

The Caribbean Coral Reef Institute (CCRI) is a cooperative program between the University of Puerto Rico - Mayagüez (UPRM) and NOAA. CCRI sponsors programs that address management-driven priorities for the understanding of the coral reef ecosystem of the US Caribbean. The Caribbean Fishery Management Council (CFMC) is one of eight regional fishery management councils established under the Magnuson-Stevens Act for the conservation and orderly utilization of the fishery resources of the USA.

The R/V NANCY FOSTER

The NOAA research ship NANCY FOSTER, based in Charleston, SC, is one of a fleet of research and survey vessels used by NOAA to improve understanding of the marine environment. The former U.S. Navy vessel was converted in 2002 to conduct a wide variety of coastal oceanographic research projects along the U.S. Atlantic and Gulf coasts. The ship has 17 permanent crewmembers and accommodations for up to 16 scientists. The NANCY FOSTER began operations in April 2003 and was commissioned on May 10, 2004.

The Center for Coastal Monitoring and Assessment Biogeography Branch

The Biogeography Branch is part of NOAA's National Centers for Coastal Ocean Science in the Center for Coastal Monitoring and Assessment (CCMA), located in Silver Spring, Maryland, USA. The goals of the Biogeography Branch are to develop knowledge and products on the distribution and ecology of living marine resources throughout the nation's estuarine, coastal, and marine environments; and provide resource managers, scientists, and the public with an improved ecosystem basis for making decisions.