NOAA CORAL REEF CONSERVATION PROGRAM

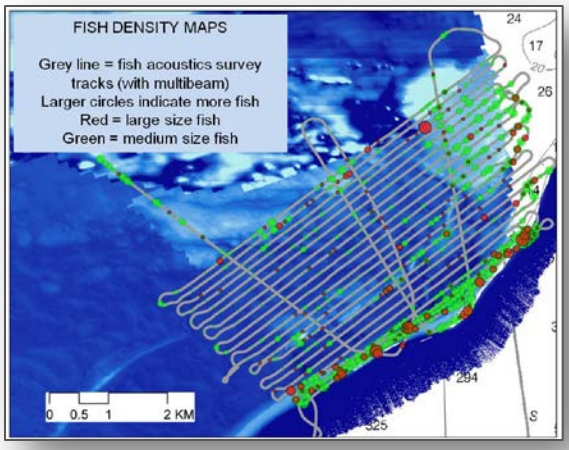
Sea Floor Characterization of the U.S. Caribbean
2011 Field Season
Day 20: April 16, 2011

Full Circle

Backscatter, echo returns, pings - there are a lot of different names for the bits of data that we collect on these surveys to create maps of the USVI. The common thread is that all this mapping relies on sonar to see what the seafloor looks like and what is in the water column. We are simply measuring how sound is reflected off different objects – whether it be fish or coral reefs or sand ridges. As this year's mission winds down, it is exciting how to see how these mapping techniques have come together. Early on, sonar systems were used by the Navy to detect enemy vessels. Today we are using the same basic concepts to map fish and habitats. The equipment on the NOAA ship *Nancy Foster* has certainly evolved just over the last few years. The sonar systems and especially the software for analyzing and mapping this data have become more sophisticated. A new feature of the ship is that the sonars are now all permanently mounted on the hull of the ship. Previously, we had to send divers down to mount transducers before each survey. Having the sonar systems integrated into the ship saves time and makes the work of the crew less risky.

View of the *Nancy Foster* in drydock earlier this year. Sonar systems were permanently mounted to the hull while the ship was "up on blocks." Person circled in red for scale.

CCMA's Biogeography team started this project in 2004, conducting multibeam surveys to map the seafloor. They have really honed the techniques to create top quality mapped products that add to what we know about the coral reef ecosystems around the US Virgin Islands. Fish acoustics surveys to map fish in the water column were added as a mission component in 2008. Over the last few years, we have begun to realize the advantage of combining these activities. We are out here mapping the seafloor, so adding water column mapping at the same time is a great use of ship time. In addition, integrating these two mapping activities gives us a more complete picture of these ecosystems. We can now visualize how fish are distributed around bottom features across the entire region. This information can be used by local policy makers to determine the best approach for managing and protecting these important habitats and the marine species that live here.



Map showing survey tracks where multibeam and fish acoustics were surveyed together.

The most exciting part of this evolution is to see how these maps fit into the needs expressed by the local community and resource managers. As mentioned in previous daily logs, we visited with local resource managers from the Caribbean Fisheries Management Council, University of Virgin Islands researchers, local fisherman, and Congressional staff this week to review what we have learned over the last several years. It was really exciting to see how involved the local community is in this project – not only are they really interested in the maps and habitat information that comes out of these surveys, but they are truly involved as partners who care about the marine environment that surrounds them. It is, after all, their waters, their fish, and their livelihood. We are fortunate to be working with such an informed and caring community of fishers and resource managers. It has been an exciting journey, especially when you see the science evolve to support people who have come together to address issues related to this valuable and beautiful place.

Dr. Tim Battista explaining results of his research to U.S. Delegate to Congress Donna Christensen

Group photo of the scientists and the crew (except for those asleep or on watch) on the back deck of the *Nancy Foster*, with the ROV in front

For more information about NOAA's Center for Coastal Monitoring and Assessment Biogeography Branch visit, http://ccma.nos.noaa.gov/about/biogeography/welcome.html