

# BIOGEOGRAPHY BRANCH

CENTER FOR COASTAL MONITORING & ASSESSMENT  
NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE



## Sea Floor Characterization of the U.S. Caribbean 2011 Field Season Day 4: March 31, 2011

### Small Boat Operations

Tim Battista and Nick Przyuski got the day started with the first small boat operations of the mission off the southern side of St. Thomas and near Buck Island. The two went out on one of the *Nancy Foster's* launch boats to collect ground truthing data with a small drop camera.

Ground truthing is an important step of sea floor mapping. It's the process of verifying and further exploring locations and habitats of interest identified by the multibeam data. While the acoustic multibeam data provide a lot of information about the sea floor, the data don't offer all the necessary details. The only way to get all the information is to visualize the sea floor with video and pictures. That's where the ROV and drop cameras come into play. Researchers established ground validation points across areas that were mapped with acoustic imagery the night before. At each location, either the ROV or a drop camera was used to collect the ground truthing data.

Today's drop camera operations didn't get off to the best start. Battista and Przyuski intended to visit several sites in the morning, but were forced to end their first attempt after only visiting two. The small launch boat they were working from experienced some mechanical issues. Fortunately, the *Nancy Foster* had a backup boat perfect for this operation. The two left again after lunch. Over the next several hours they visited more than a dozen sites and collected hours of ground truthing video data.



The drop camera ground truthing team on their way to the first site.



The drop camera and line.

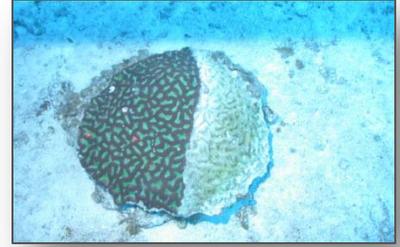
### ROV Operations

Meanwhile, on the back deck and in the wet lab a different kind of ground truthing was well underway. Just after the small boat was safely in the water, day four of ROV operations got started. The ROV captured quite a few encounters with marine life, including: two eagle rays, barrel sponges, a small but colorful school of blue chromis and two large nurse sharks. One nurse shark was lying on top of an active trap!.



The first of two eagle rays spotted during the days (left); a large barrel sponge (center); and a nurse shark (right).

Early in the first ROV dive of the afternoon, the researchers captured some very lush areas of corals. GIS specialists Bryan Costa estimated some spots had live coral cover as high as 40-50%, which is rare. Deeper habitats in this area generally have live coral cover hovering around 10-20%. As the ROV coasted further down the study path, we didn't see many more locations with such high coral cover.

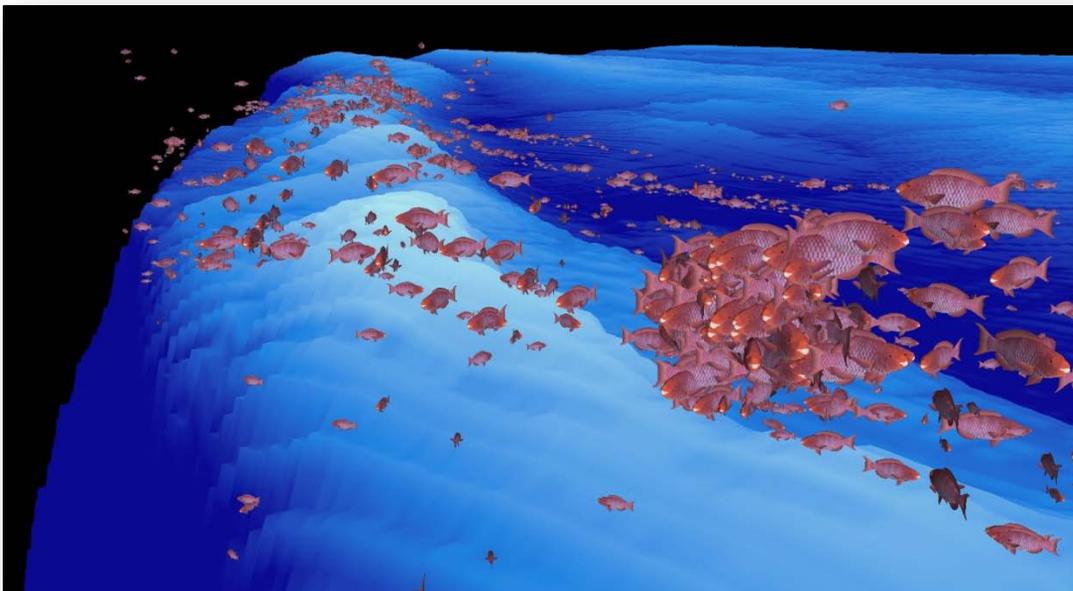


A diseased boulder brain coral.

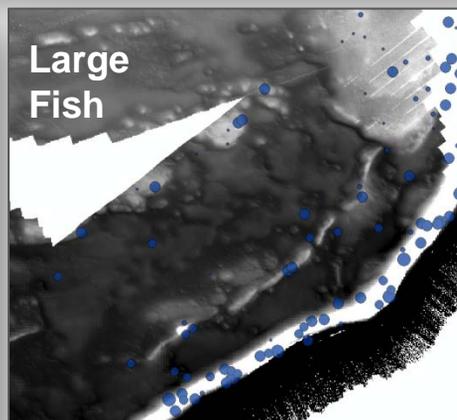
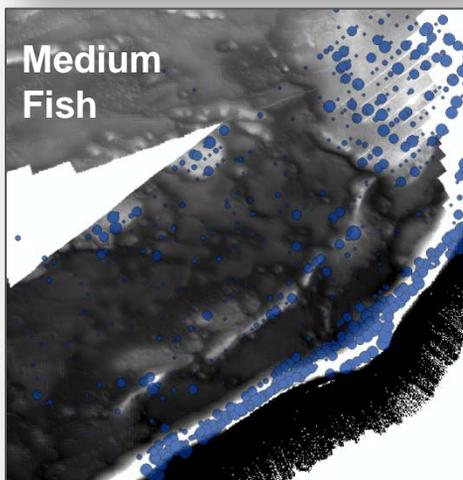
At one point the presence of coral disease became evident. Researchers saw a diseased brain coral and what appeared to be white band disease on another coral.

### Fishery Sonar

Remember the large school of large fish Chris Taylor spotted around Grammanik Bank using fishery acoustic technology on Day 1? Well here they are! Ok, it's a visual representation of fish, but it gives you a good idea of their size and how many there were. Taylor was able to create the image below by analyzing the return strength of the sound waves his fishery sonar equipment emitted into the water.



A 3D perspective of fish (including the large aggregation in the foreground) detected using fishery sonar. The size of the fish is proportional to the actual size of the individual fish (though not to scale to the bathymetry in the background. . . wooph, those would be big fish!).



### St. John Fish Distribution

These preliminary maps show the distribution of medium (left) and large fish (right) estimated from the fishery sonar. The medium-sized fish are concentrated along the reef ridge or in the high relief areas in the NE. Most large fish are in high relief to the NE, or concentrated on the reef ridge along the S and SE.