

Scientific partnerships evaluate coral reef health at Virgin Islands monuments

By Cliff McCreedy

INTERAGENCY PARTNERSHIPS PROVED INVALUABLE in 2005 as the National Park Service sharpened its scientific focus on the health of coral reefs in “no-take” reserves in two Virgin Islands national monuments. Now that fishing and anchoring are prohibited in these reserves, the National Park Service (NPS) must evaluate how fish, shellfish, and corals are responding to this protection.

Coral reefs are the most biologically diverse marine ecosystems on the planet. On a healthy coral reef, several thousand species interact in complex, interdependent relationships that maintain the ecological balance among fish, invertebrates, and marine plants. Overfishing, anchor damage, pollution, and rising sea-surface temperatures disrupt this delicate balance. The National Park System includes more than 276,000 acres (111,780 ha) of coral reefs in Florida, Hawaii, the US Virgin Islands, Guam, and American Samoa. The most recent additions to the park system are the new Virgin Islands Coral Reef National Monument and more than 18,000 acres (7,290 ha) added to Buck Island Reef National Monument, both established in 2001 by presidential proclamation to restore and maintain coral reef ecosystems.

In the Virgin Islands parks, scientific partnerships and interagency collaboration greatly enhance the parks’ capacity to evaluate the extent and condition of coral reef resources. The ecological complexity and variability of coral reefs make evaluation a difficult task that requires an extremely rigorous approach. Several partners, including the NPS Natural Resource Preservation Program, NPS South Florida/Caribbean Inventory and Monitoring Network, individual park staffs, National Oceanic and Atmospheric Administration (NOAA), and US Geological Survey (USGS), work together to develop habitat maps and biological data for park managers.

In the Virgin Islands parks, scientific partnerships and interagency collaboration greatly enhance the parks’ capacity to evaluate the extent and condition of coral reef resources.

Staff from Buck Island Reef National Monument and scientists with the NOAA National Center for Coastal and Ocean Science Biogeography Program have been mapping submerged habitats and documenting marine species in the expanded Buck Island Reef area using aerial photography, satellite imagery, underwater video cameras, and side-scan sonar on remotely operated vehicles towed by the research vessel *Nancy Foster*. Detailed topographic imagery from the USGS Coastal and Marine Geology Program enhances the maps, which are obtained by aircraft scanning the bottom of the sea with a laser altimeter. The end result is detailed seafloor maps that enable resource managers to identify the extent and variation of different

types of coral habitats. Local scientists from the US Virgin Islands Department of Planning and Natural Resources participated in the *Nancy Foster* missions. These efforts continued in 2005 at Buck Island Reef and Virgin Islands Coral Reef National Monuments with funding from the NPS Natural Resource Preservation Program and Geologic Resources Division.

These advanced technological tools provide only part of the picture. To identify marine species using these reefs, divers from the parks, the South Florida/Caribbean Inventory and Monitoring Network, and NOAA make detailed visual surveys of fish and shellfish and measure coral reef habitat. Biologists with the USGS and the National Park Service conduct coral monitoring at both Virgin Islands National Park on St. John and Buck Island Reef National Monument to track coral disease, bleaching and mortality, and long-term coral health.

“These national monuments and the Virgin Islands National Park are highly popular for their beautiful landscapes above and below water,” says Craig Manson, Assistant Secretary for Fish and Wildlife and Parks, in 2004. Manson cochairs the US Coral Reef Task Force. “They are mainstays of the tourism economy of the US Virgin Islands. They protect sensitive coral reef areas enjoyed by hundreds of thousands of visitors every year. That is why we must do everything we can to ensure their success.” ■

cliff_mccreedy@nps.gov

Marine Management Specialist, Water Resources Division, Washington, DC

(Facing page, top) Scientists from the National Park Service and other agencies are collaborating to assess fish and coral habitats in a recently established “no-take” marine reserve at Buck Island Reef National Monument, St. Croix, US Virgin Islands, where blue tangs (*Acanthurus coeruleus*), doctorfish (*Acanthurus chirurgus*), and ocean surgeonfish (*Acanthurus bahianus*) school.

(Facing page, bottom) An NPS science diver measures the size of queen conchs (*Strombus gigas*) at Buck Island Reef National Monument to document the status and potential recovery of this commercially exploited shellfish in a new “no-take” marine reserve.

