



## NOAA Coral Reef Conservation Program Fiscal Year 2005 Accomplishments

*In fiscal year (FY) 2005, the National Oceanic and Atmospheric Administration (NOAA) Coral Reef Conservation Program (CRCP) received \$29.2 million to support activities to conserve, manage, and understand coral reef ecosystems in the U.S. and around the world. The funding allowed NOAA to implement over 125 projects within the agency, and to provide grants for an additional 60 projects. These projects addressed priority goals such as mapping coral reef ecosystems, monitoring reef health, improving management effectiveness, and reducing the impacts of overfishing, coastal uses, and pollution on coral reefs. For more details on all of the activities of the NOAA CRCP, visit the "NOAA's Coral Reef Activities" section of NOAA's Coral Reef Information System (CoRIS).*

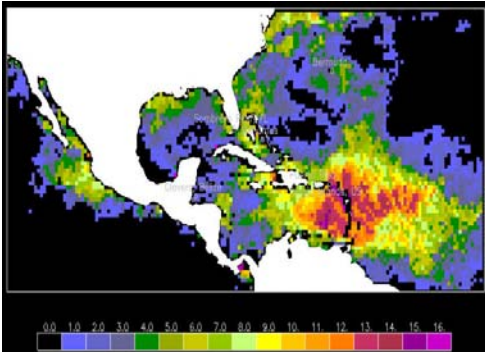


A spectacled parrotfish in the Northwestern Hawaiian Islands, the location of a major CRCP research expedition in 2005. Credit: James Watt.

*Below are just a few of the many accomplishments of the NOAA CRCP over the past year. Working with hundreds of partners in FY2005, NOAA:*

- Released two major reports on the status of coral reef health and coral reef management efforts;
- Launched an automated coral bleaching alert system;
- Produced coral reef maps for all US Pacific Island territories;
- Established a new coral reef research institute in Puerto Rico;
- Conducted a major research expedition in the Northwestern Hawaiian Islands;
- Investigated a coral disease outbreak in the Gulf of Mexico;
- Restored a coral reef damaged by a ship grounding in Hawai'i;
- Developed a model for predicting coral reef resiliency;
- Conducted numerous trainings aimed at building local capacity to manage coral reefs; and
- Awarded over \$10 million in external coral reef conservation grants.

**CRCP Releases Two National Progress Reports on Reef Conservation.** In 2005, the CRCP released two major progress reports on coral reef research, monitoring and management. *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2005* established the first quantitative baseline of the conditions of U.S. shallow coral-reef ecosystems. More than 160 scientists and resource managers contributed to the report, which documents the geographic extent of reef ecosystems and the status of water quality, benthic habitats, associated biological communities and key threats to coral ecosystem health. The second report, *Implementation of the National Coral Reef Action Strategy: Report on U.S. Coral Reef Agency Activities from 2002 to 2003*, highlights the activities of NOAA and the U.S. Coral Reef Task Force under each of the 13 national conservation goals defined by the 2002 U.S. National Coral Reef Action Strategy. The report indicates that collective research and management actions are moving in the right direction, citing examples like the creation of 14 new coral reef protected areas and the creation of Local Action Strategies for conservation.



A satellite-generated image showing intensified sea surface temperatures in the Caribbean in October 2005, during an unprecedented bleaching event in the region. Credit: NOAA Coral Reef Watch.

### **New Coral Reef Bleaching Satellite Monitoring System Launched.**

In 2005, NOAA launched a Coral Reef Watch (CRW) Satellite Bleaching Alert system to track thermal (temperature) stress on corals. When conditions are detected that can lead to coral bleaching, the system generates automated e-mail alerts. Available for 24 coral reefs around the world, the new system allows coral reef managers and scientists to predict coral bleaching outbreaks weeks before they occur, potentially improving prevention and response. To complement NOAA's satellite-based monitoring, CRCP scientists installed the first near real-time (hourly) monitoring system in the waters near Lee Stocking Island, Bahamas. These new monitoring instruments, part of the Coral Reef Early Warning System (CREWS) of monitoring stations, will track "fluorescent yield," a direct measurement of coral reef health. After evaluating this new product, researchers plan to deploy similar instruments in the Great Barrier Reef and in Puerto Rico.

**New Digital Mapping Product Developed for Pacific Island Ecosystems.** In 2005, the CRCP published *Shallow-water Benthic Habitats of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands*. The digital product, available on CD-ROM and on the Web, includes a mapping methodology as well as detailed digital maps depicting the location and distribution of shallow-water seafloor habitats, and satellite imagery. Thirty-four maps represent the first comprehensive assessment of shallow-water benthic habitats for the ecosystems of more than twenty Pacific Islands in the region. The maps and associated data products, coupled with a robust archive of marine biological data, serve as valuable tools for evaluating and delineating potential marine protected areas and for developing coral ecosystem monitoring strategies. Similar products are also available online from past mapping efforts in Hawai'i, Puerto Rico and the US Virgin Islands.

**New Caribbean Coral Reef Institute Established.** In 2005, the CRCP worked with the University of Puerto Rico and the Puerto Rico Department of Natural Resources to establish the Caribbean Coral Reef Institute (CCRI) at the university's Department of Marine Sciences Magueyes Island Research Laboratory. This collaborative program serves as a major hub for applied coral reef research in the Caribbean. The Institute is modeled after the highly successful Hawaii Coral Reef Initiative Research Program and will focus exclusively on the acute problems of Caribbean coral reefs.

**Major Research Expedition in Hawaiian Coral Reef Ecosystem.** In 2005, the 224-foot HI'IALAKAI research vessel completed a 35-day coral reef research expedition in the Northwestern Hawaiian Islands (NWHI) Coral Reef Ecosystem Reserve (Reserve) and adjacent waters. During the cruise, researchers performed nearly 500 scuba dives, conducted substantial oceanographic sampling, and deployed oceanographic buoys to allow remote, long-term monitoring of oceanographic and environmental conditions affecting NWHI coral reef ecosystems. Coral biologists documented the condition of the reefs, which were affected by a major coral bleaching event in 2002. They also monitored an unidentified coral disease syndrome, discovered last year, on two reefs. Results of this cruise will provide valuable characterization of the biology and oceanography of the NWHI, which will serve as a foundation for resource management.

**NOAA Investigates Disease Outbreak in National Marine Sanctuary.** Early in 2005, the NOAA-led Coral Health and Disease Consortium partnered with the U.S. Environmental Protection Agency, Florida International University, Mote Marine Laboratory and George Mason University to investigate a white plague outbreak among the corals in the Flower Garden Banks National Marine Sanctuary in the Gulf of Mexico. White plague is caused by a bacterial pathogen that can kill coral tissue at rates ranging from 3 mm to 10 cm a day. Over the course of 26 separate dives, researchers found that the outbreak had spread to more than 40 coral colonies and three other species in Sanctuary waters. By May, the outbreak appeared to slow down, but scientists are continuing to monitor the affected corals.

### **NOAA Coordinates Emergency Coral Restoration with New Technique.**

On February 2, 2005, the vessel *Cape Flattery* grounded off Oahu, Hawai'i, damaging over six acres of coral reef habitat. Nine more acres of coral reef habitat were damaged while the ship was being recovered from the reef. NOAA scientists led efforts to assess damage to sensitive reefs, prioritize restoration areas, and carry out emergency restoration. Using a new coral restoration technique developed in Florida, the NOAA team reattached overturned coral boulders and broken coral branches using cement, creating new aggregate coral structures that mimic the natural habitat. By March, NOAA scientists had stabilized more than 900 corals over a 660-square-meter area. NOAA will continue to monitor the area over the next five years to determine the long-term success of this unique emergency restoration effort.



An aggregate coral structure created during the restoration of the *Cape Flattery* grounding site. Credit: Dr. Steven Kolinski.

### **NOAA and Australia Partner Investigate Coral Reef Resiliency.**

In December 2005, NOAA announced a new partnership with the State of Florida and the Great Barrier Reef Marine Park Authority (GBRMPA) to exchange information and techniques to improve coral reef resiliency.

Resiliency is the natural ability of corals to survive and recover from stresses in the natural environment. The partnership will increase sharing of the latest science and management practices to accelerate coral reef conservation efforts in U.S. and Australian coral reef ecosystems. As part of this ongoing collaboration, representatives from NOAA's CRCP worked with Australian researchers to develop a tool for predicting coral ecosystem health and coral bleaching.

**Training Programs Increase Effectiveness of Local Reef Management.** In 2005, the CRCP conducted numerous training and capacity-building initiatives to improve local resource management and engage the public in conservation efforts. The CRCP worked with the University of Miami to conduct a workshop to connect more than 40 south Florida teachers with leading coral reef researchers to bring the latest coral reef information into classrooms. In American Samoa, the CRCP worked with local agencies to conduct workshops for fishermen and the public about how to manage diminishing local coastal fisheries. The CRCP also worked with the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the U.S. Coast Guard and the U.S. Department of Justice to conduct an environmental enforcement workshop for American Samoans. Finally, the CRCP also hosted two regional workshops for nearly 50 state and territory agency divisions and NOAA offices to improve planning, execution and evaluation of coral reef outreach, education, and stakeholder involvement initiatives.

**NOAA Awards \$10 Million in Coral Reef Conservation Grants.** In 2005, the CRCP awarded nearly \$10 million in grants to external partners in support of coral reef management, conservation, education and research. These awards reflect NOAA's strong support for coral reef conservation efforts outside the agency and represent over 33 percent of the CRCP budget for 2005. Funds supported a range of activities, from community conservation projects to large-scale coral reef observation systems, and included support for three coral reef research institutes in Hawai'i, Florida and Puerto Rico. Grants also included the jointly managed NOAA-National Fish and Wildlife Foundation Coral Reef Conservation Fund and NOAA's Coral Reef Conservation Grants Program, which supports grants in six categories to address ecosystem research, monitoring and management, improvements to fishery management plans, and international conservation efforts.