

CORAL REEF NEWS
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NOAA Coral Reef News is a monthly e-newsletter established to provide current information on the activities of the National Oceanic and Atmospheric Administration's (NOAA) Coral Reef Conservation Program (CRCP) and other relevant NOAA programs. The CRCP supports effective management and sound science to preserve, sustain and restore valuable coral reef ecosystems. Back issues are available at <http://coralreef.noaa.gov/news/welcome.html>.

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ANNOUNCEMENTS

NCCOS Releases New Benthic Habitat Viewer.

Over 9,000 underwater images collected to support comprehensive characterization of the U.S. Caribbean seafloor are now available to the public. The online [Benthic Habitat Viewer](#) database, developed and managed by NOAA's [National Centers for Coastal Ocean Science](#) (NCCOS), provides easy access to a large set of imagery characterizing coral reef organisms and habitats; images were captured during mapping missions from 2005-2006 in Puerto Rico and the U.S. Virgin Islands. The images are accompanied by information on location, biological inventory, benthic habitat characterization, geomorphological structure, and seafloor terrain characteristics (i.e., bathymetry, slope, and rugosity). It is hoped that this new tool will aid in research, management, education, and future mapping. The new site's images originate from projects funded by NOAA's [Coral Reef Conservation Program](#).

CoRIS Announces New Acronym List.

NOAA's [Coral Reef Information System](#) (CoRIS) added a new feature to its home page, a [list of acronyms and abbreviations](#) found in the site's coral reef literature and other related documents. The list currently contains over 1200 entries; it is also regularly updated as new acronyms or abbreviations are identified.

CRCP Releases First Two Documents Under New Technical Memorandum Series. NOAA's Coral Reef Conservation Program (CRCP) has formally established a NOAA technical memorandum series for publication of information products. There are already two documents published in this series and two others in the planning phase. Look in the 'Publications' section of this issue for citations of the first two publications in this series.

Collaborative Acoustic Telemetry (CAT) System Now Online. To fulfill the growing need

for communication between agencies, the Southeast Fisheries Science Center (SEFSC) has created a national, [online database](#) for Vemco Ltd acoustic tagging equipment users. Frequently, Vemco VR2 receivers will detect signals from acoustic tags not belonging to the user's project. Users can query the database for detected yet unknown tag numbers in order to let the tag owners know where their tagged fish have been. Similarly, users can use the database's information to find nearby receiver arrays to avoid a duplication of effort and promote more efficient use of this equipment. The database creates a collaborative effort that is much needed in this labor-intensive and expensive field.

New PIMPAC Web site Launched. The [Web site](#) was designed to provide all Pacific Islands Marine Protected Area Community (PIMPAC) members with a quick and easy reference to relevant information and materials. Members include over 100 Pacific Islands marine protected area (MPA) managers, practitioners, and supporting agencies or organizations. This site currently includes PIMPAC history, workshop reports, learning exchange request forms, and presentations, reports, and materials developed by regional partners. The Web site will evolve over time to meet the needs of regional MPA managers and their partners. The site was primarily developed by staff from the [Office of Ocean and Coastal Resource Management's](#) (OCRM) [National MPA Center](#), one of PIMPAC's NOAA partners. Other NOAA partners include the OCRM's Coastal Programs Division and [Coral Reef Conservation Program](#), the [National Marine Sanctuaries Program](#), [NOAA Fisheries](#), and the [Pacific Services Center](#).

Coral-List Subscription Tops 4,000. The purpose of the Coral-List listserver is to provide a forum for Internet discussions and announcements among coral health researchers pertaining to coral reef health and monitoring throughout the world. The listserver is intended primarily for use by

coral health researchers and scientists, but also includes students and other interested parties. As of March 28, the forum welcomed its 4000th subscriber. Interested parties can subscribe via [Email](#) or the [Internet](#).

PIRO Presents Two Youth Marine Conservation Conferences. On April 13 and May 23, staff from NOAA's [Pacific Islands Regional Office](#) (PIRO) will hold 'Traditional Marine Conservation Practices' themed workshops in Saipan, Commonwealth of the Northern Mariana Islands. One hundred fifty 4th-6th grade students from ten elementary schools will participate this month. Five high schools will send a total of 150 9th-12th grade students in May. Look for workshop follow-up in future issues of the *Coral Reef News*.

CRCP to Hold First Domestic SocMon Training. NOAA's [Coral Reef Conservation Program](#), in partnership with the Puerto Rico Department of Natural and Environmental Resources (DNER) and the University of Puerto Rico, will hold a socioeconomic monitoring workshop in La Parguera, Puerto Rico on April 19-21. This will be one of the first domestic applications of the [Global Socioeconomic Monitoring Initiative](#) (SocMon). Natural reserve managers will be trained in the SocMon methodology for collecting socioeconomic data. After the workshop, each marine reserve manager will develop a plan to incorporate socioeconomic monitoring at their reserve. Several sites will then be selected for funding to fully implement SocMon, which will allow comparisons to socioeconomic data collected at over 40 other SocMon sites worldwide.

SEFSC Holds Mangrove Education and Outreach Workshops This Month. A [Southeast Fisheries Science Center](#) staff member is organizing education and out-reach workshops on mangroves in Naples, Florida from April 25 - 26. The one-hour 'The Importance of Mangroves to

South Florida's Estuarine Ecosystems' workshop will be offered three times over the two-day period.

CSCOR to Co-Sponsor 33rd AMLC. NOAA's [Center for Sponsored Coastal Ocean Research](#) (CSCOR) is proud to be a co-sponsor of the 33rd Scientific Conference of the Association of the Marine Laboratories of the Caribbean (AMLC). The conference will be held June 4-8 at the [University of the Virgin Islands](#) in St. Thomas. CSCOR anticipates hosting two dedicated sessions during the meeting that will focus on 1) the ecology and management of deep (~50 – 100 m) hermatypic coral reef ecosystems and 2) coral reef research that addresses management needs at the ecosystem level. Coral reef researchers engaged in ecosystem-level research, particularly those developing predictive tools and capabilities or evaluating the effectiveness of management strategies, are encouraged to submit abstracts for the meeting that can fit the two sessions. Work does not have to be performed in the Caribbean but must have applicability to the coral reef issues that affect the region. The abstract submission deadline is April 15. Information on abstract submission and the meeting in general can be found on the [AMLC's Website](#).

'Bleaching Tools Workshop' to Follow American Samoa Task Force Meeting. NOAA's [Coral Reef Conservation Program](#) (CRCP) and [Australia's Great Barrier Reef Marine Park Authority](#) (GBRMPA) announce a joint three-day 'Bleaching Tools Workshop' to increase the ability of coral reef managers to anticipate and respond to coral bleaching events. This is a follow-on event of the [U.S. Coral Reef Task Force Meeting](#) scheduled to take place in American Samoa from August 20-23. Tentative dates for the Workshop are August 27-29; individuals who are traveling to attend the Task Force meeting should plan to extend their stay in order to attend this workshop. Training will be provided in the use of satellite monitoring products to forecast and track

coral bleaching events and in the use of management strategies and planning tools from [A Reef Manager's Guide to Coral Bleaching](#) to help coral reefs survive future bleaching events. The workshop will also include a field component and components on the incorporation and utilization of satellite remote sensing tools into the management protocols in participants' local regions. The workshop is designed for marine park managers, reserve managers, coral scientists, and other interested stakeholders; Task Force Members and staff are welcome to participate. The workshop is offered free of charge, and some travel assistance may be available. Interested parties are encouraged to register early, as space is limited.

UPDATES

Atlantic

NCCOS-supported Symposium Provides Opportunity for Scientific Discourse on Coral Reef Issues in Puerto Rico. The first Puerto Rico Department of Natural and Environmental Resources Coral Reef Symposium was held on April 11th in San Juan, Puerto Rico. The [Caribbean Coral Reef Institute](#) (CCRI), funded through a Cooperative Agreement between NOAA's [National Centers for Coastal Ocean Science](#) (NCCOS) and the University of Puerto Rico at Mayagüez, was a major co-sponsor of the symposium. NCCOS hosted a [similar meeting](#) in 2006 which received significant interest. Presentations and posters at this symposium covered five themes relevant to the [U.S. Coral Reef Task Force's](#) mission and its [Local Action Strategies Initiative](#), including land-based sources of pollution, overfishing, community outreach and education, coral diseases, and resource management. The CCRI is a core component of NOAA's [Coral Reef Conservation Program](#).

VI Mission Geared Towards Understanding Fishery Sustainability and Spawning Aggregations. In an effort to address the long-term sustainability of Virgin Islands (VI) fisheries,

scientists from NOAA conducted biological and physical oceanographic surveys along the banks and offshore waters of the Virgin Islands. This research effort was aimed at mapping larval fish distributions and physical oceanographic processes as part of a larger effort of understanding how unprotected Virgin Islands banks, marine protected areas and seasonal closures, and inshore areas are ecologically linked via regional reef fish larval dispersal, transport and life-history patterns. The research endeavor is directed at a comprehensive understanding of regional spawning aggregations, larval transport, and overall larval recruitment in the study area. The project seeks to quantify the biological and physical processes which drive production on the well known spawning aggregations of Grammanik and Red Hind Banks, located South of St. Thomas, as well as those on adjacent island systems. To this end, the NOAA ship *Nancy Foster* hosted two scientific groups from March 28 to April 8. The Early Life History Team from the [Southeast Fisheries Science Center](#) (SEFSC) and physical oceanographers from the [Atlantic Oceanographic and Meteorological Laboratory](#) (AOML) are both based out of Miami, Florida. SEFSC staff organized the cruise and arranged for collaboration with the University of the Virgin Islands [Center for Marine and Environmental Studies](#) (CMES). CMES also supplied four participants on the research cruise. The early life history fisheries team will continue in-shore research in Brewer's Bay through April 22 by collecting larval and juvenile fish using light traps and channel nets. Samples collected will be analyzed to determine if these fish are recruits from the spawning aggregations of Red Hind Bank and Grammanik Bank.

Florida Keys EcoDiscovery Center and Mote Marine Laboratory to Add Live Coral Reef Aquarium. The [Florida Keys EcoDiscovery Center](#) (EDC) and [Mote Marine Laboratory](#) announce plans to install a 2200-gallon aquarium to Mote's Living Reef exhibit at the EDC in Key

West. The tank will enable visitors to view several species of reef fish as well as view and track the growth of the live coral. The exhibit is expected to open in the late summer or early fall of this year.

SEFSC Demonstrates that Caribbean Acroporid Sexual Recruits Easily

Misidentified. Two recent [Southeast Fisheries Science Center](#) (SEFSC) publications challenged the tendency to identify sexual recruits of Caribbean acroporid corals in the field based on morphology and placement. A publication by Williams and Miller in *Revista Biologia Tropical* traced individual *Acropora cervicornis* colonies over time to show how fragmentation frequently results in small patches of tissue that are easily mistaken as a result of larval recruitment. Additionally, a comment published in *Marine Ecology Progress Series* by Miller et al. reported a genetic screening of *A. palmata* showing that a wide range of morphologies, including those resembling sexual recruits, were present in a population with only clonal (asexual) reproduction. These results are important to management for *Acropora* spp. because the presumption that sexual recruits can be identified by sight may lead to inflated expectations of genotypic diversity, implying the need for incorporating genetic screening in monitoring design.

Paper on Deepwater Reef Fish Surveys in Northwestern Gulf of Mexico. The research staff of the Flower Garden Banks Nhas published a paper focused on deepwater reef fish surveys on select banks in the northwestern Gulf of Mexico. “[Deep reef fish surveys by submersibles on Alderdice, McGrail, and Sonnier Banks in the Northwestern Gulf of Mexico](#)” was published in the NOAA Professional Paper Series.

Leveraged Funds Used to Purchase LiDAR Data. The [Florida Fish and Wildlife Research Institute](#) is reviewing bathymetric Light-Imaging

Detection and Ranging (LiDAR) and associated backscatter data collected in March 2007 along the outer reef tract off the middle Keys starting from the vicinity of Sombrero Key near Marathon, Florida and extending northeast toward Alligator Reef. The LiDAR data were purchased using funds from the South Florida Water Management District. This effort demonstrates how funds and in-kind support from partner organizations are being leveraged to reach the overall goals of the South Florida Coral Ecosystem mapping project. NOAA’s [Coral Reef Conservation Program](#) also provides support for this project.

Wind-driven Traps and Coral Reefs. A [U.S. Fish and Wildlife Service](#) scientist presented a paper, ‘When the Wind Blows: Trap Movement and Impact on Coral Communities in the Florida Keys’, at the Benthic Ecology Meeting 2007 in Atlanta. The paper was presented during the Conservation & Management session and discussed the winter storm intensity threshold necessary to move commercial lobster traps and their subsequent impact on the marine environment. The study indicates sustained winds greater than 15 knots for a duration of two or more days move lobster traps. The Florida Keys experience 10 to 15 storms above this trap-moving threshold each winter, excluding summer tropical storms and hurricanes. On average, traps in shallower waters move 3.0 meters and impact 4.7 m² of marine habitat per winter wind event. Wind-driven trap movement causes significant loss of benthic cover, affecting hard corals, soft corals and sponges. This study is funded jointly by the NOAA [Coral Reef Conservation Program](#), as a cooperative project with the [Southeast Fisheries Science Center](#)-Galveston studying the effects of trap fishing on coral reefs, and the [Marine Fisheries Initiative](#) (MARFIN).

Coral Reef Data Supports SEDAR Process. As part of the [Southeast Data Assessment and Review](#) (SEDAR) process, a stock assessment data workshop was held from March 11-16. The

current assessment, in support of the [Caribbean Fisheries Management Council](#), is looking at the stock status of mutton snapper, yellowfin grouper and queen conch. A staff member from NOAA Fisheries' [Southeast Fisheries Science Center](#) (SEFSC) -Galveston served as team lead collecting and presenting information on various sources of available fishery-independent and Comprehensive Caribbean Coral Ecosystem Monitoring Project (C-CCREMP)-related data that can contribute to the fisheries assessment. Staff from the National Ocean Service's [Biogeography Team](#), discussed additional details of their survey work and possible approaches to GIS modeling. Data from CRCP- and Coral Reef Grant-supported coral reef and reef fish monitoring efforts were presented, as were data from conch research. Additional analysis, including geographic information system (GIS) mapping by the Biogeography Team and SEFSC-Galveston, will be conducted as the SEDAR process moves into the Assessment Modeling stage.

Students Adopt Fish During RiverFest 2007.

On March 25, the Connectivity Project and Adopt-a-Fish/Adopt-a-School, associated with the Layman Lab at Florida International University, partnered with the Loxahatchee River District to bring an education and outreach display to RiverFest 2007 at Jonathan Dickinson State Park. Local children were invited to choose a fish from the display map, determine its 'pinger number' and what habitat it was caught and released in (mangrove and oyster reefs or mangrove and seagrass beds). Once the students learned about their fish's size and its habitat, they named their fish and received a snapper I.D. card that directs them to the Adopt-a-Fish [Web site](#). Students registered with the Connectivity Project coordinator from the University of Miami-[Cooperative Institute for Marine and Atmospheric Studies](#) (CIMAS) and NOAA. They will be notified when they can log on to the site to discover where their fish has been moving and foraging within the estuary.

NCRI Creates Benthic Habitat Maps that Will Help Reduce Future Coral Reef Impacts in Southeast Florida. Scientists at the [National Coral Reef Institute](#) (NCRI) at [Nova Southeastern University](#) (NSU), sponsored by the [Center for Sponsored Coastal Ocean Research](#) (CSCOR), have created accurate, detailed benthic habitat maps of the coastal reef system in southeast Florida. The maps were developed through visual interpretation of high resolution bathymetry and acoustic ground discrimination with the purpose of helping boaters and ship operators avoid these valuable resources when navigating close to shore. In collaboration with NOAA's [Office of Coast Survey](#), the coral reef delineations from this effort have been incorporated into the latest NOAA nautical charts, which previously did not identify the reefs. The NCRI is a Congressionally-directed program that is funded through a grant by CSCOR and is a core component of NOAA's [Coral Reef Conservation Program](#).

CCRI Ceremony Showcases New NOAA

Initiative and Facilities in Puerto Rico. At a ceremony at the University of Puerto Rico/Mayaguez (UPRM) on March 15, the [Center for Sponsored Coastal Ocean Research](#) (CSCOR)-sponsored [Caribbean Coral Reef Institute](#) (CCRI) unveiled new research facilities and announced the launch of the recently awarded Deep Coral Reef Ecosystems Studies (DeepCRES) Atlantic program. DeepCRES focuses on the little-studied coral reefs found between 50 to 100 meters deep. To further highlight the contributions and partnerships with NOAA's [National Undersea Research Program](#) (NURP), the ceremony also commemorated the contribution of Hydrolab, NOAA's first underwater habitat, towards a better understanding of coral reefs of the Caribbean region. The event showcased NOAA's substantial involvement in the region and the cutting-edge research planned through DeepCRES. Participants in the ceremony included high level NOAA staff and local government and academic officials. Speeches by the Governor of Puerto

Rico and the UPRM Chancellor, as well as significant local media reports, demonstrated appreciation of NOAA's contribution to coral reef management in the Commonwealth. CCRI is funded through a Cooperative Agreement between NOAA and UPRM. CCRI funding is administered by CSCOR, in collaboration with NURP, and is a core component of NOAA's [Coral Reef Conservation Program](#).

Project Scope Determined for Pilot

USDA/NOAA Project. NOAA's efforts to collaborate more closely with other [U.S. Coral Reef Task Force](#) (Task Force) [agencies](#) has resulted in a pilot project with the [U.S. Department of Agriculture](#) (USDA). The Conservation Effects Assessment project is working in Jobos Bay, Puerto Rico to detect concrete improvements in near shore habitats that result from agricultural conservation efforts in upstream watersheds. Agreement has been reached between the partners on the scope of this project; the project implementation plan is now under development.

Manta Ray Acoustic Tagging Study Shows Connectivity Within Sanctuary. A scientist from the [Wildlife Conservation Society](#) (WCS) is conducting a manta ray acoustic tagging study within [Flower Garden Banks National Marine Sanctuary](#) (FGBNMS). Last year six animals were tagged with acoustic pingers; acoustic receivers are deployed on the East and West Flower Garden Banks, as well as Stetson Bank. After downloading the three receivers, the scientist documented use of all three banks within FGBNMS by one animal. An animal that was tagged at Stetson Bank traveled over 40 miles to the East Flower Garden Bank, and then back another 12 miles to West Flower Garden Bank. Another animal tagged at East Bank traveled across to West Bank, and then back to East Bank. A third animal showed up at both the East and West Banks. This is the first definitive connectivity of the three sanctuary resources by

large pelagic animals. The sanctuary is also working with WCS to catalog the local population of manta rays, using photographs and video collected throughout the years. This information will be made available to the public via the internet, as well as to divers visiting the Sanctuary.

Pulley Ridge Mapping. In late February, 175-200 km² of the western edge of Pulley Ridge was mapped with multibeam sonar. A remotely operated vehicle (ROV) cruise is tentatively scheduled for July 2007 to ground-truth the multibeam data, search for hermatypic coral formations and determine abundance and distribution of reef fish in the area.

Cruise Underway in Western Sambo. Starting April 1, the NOS Hydrographic Services Division deployed a Navigation Response Team boat and phase differencing acoustic sonar system to collect side scan sonar imagery and acoustic bathymetry of approximately 14 sq. nautical miles of the [Western Sambo Ecological Reserve](#) area near Key West. The survey, which should take about 21 days to complete, is an integrated coastal and ocean mapping project. Side scan sonar is a specialized sonar system for locating objects on the seafloor. The phase differencing sonar system is not affected by turbidity, works in water down to 300 m depth, and has a swath width up to 15 times the depth of the water. As a result, it can collect side scan and bathymetry data of an area much faster, especially in shallow water. The side scan sonar and bathymetry data also are valuable for understanding the relationship between seafloor composition and rugosity and biologic assemblage patterns. This data will be used to demonstrate the technology for updating nautical charts and to support state and Sanctuary research and management activities.

USVI Distribution of Larval Fish Supply. [Southeast Fisheries Science Center](#) (SEFSC) staff are currently on the *Nancy Foster* working around Puerto Rico and St. Thomas, U.S. Virgin Islands

(USVI) collecting fish larvae. The work is part of the Caribbean effort to study the distribution and dispersal of fish larvae. The team will work the passage between Puerto Rico and His-paniola two days, then move on to the USVI.

Acoustic Fish Tracking Project Deploys New Receivers. Building upon the July 2006 mission, [Biogeography Team](#) staff will soon deploy additional receivers for the acoustic fish tracking project in the U.S. Virgin Islands (USVI). In July, nine receivers were deployed and 50 fish tagged to try to determine reef fish habitat utilization patterns and to track movement of fishes between habitats. This mission will download the data from those original receivers and redeploy them, as well as deploying an additional 20 receivers and tagging more fish. The new receivers will be deployed on the southern shore of St. John and will be used to track the movement of various tagged species; project scientists will also attempt to determine whether a historic spawning aggregation of yellowtail parrotfish still exists. This work is jointly underway with the National Park Service, [U.S. Geological Survey](#) Caribbean Field Station and the University of the Virgin Islands to better understand the movements and ecological interactions of species across National Park, National Monument, and USVI Territorial waters.

Seafloor Characterization Mission to Depart this Month. A mapping cruise aboard the *Nancy Foster* will depart on April 14th on the fourth mission for the Seafloor Characterization of the U.S. Caribbean project. This project aims to map benthic habitats of mid- and deep-water communities in the region. This mission will conduct multibeam bathymetry of southwest Puerto Rico, including Mona and Monita islands, completing mapping for two of the three [Caribbean Fishery Management Council's](#) areas of concern that are closed to fishing. This mission will also begin mapping part of the third area. [Cruise logs](#) and data will be posted daily.

Collaborative Nancy Foster Cruise Planning. Staff from the [Southeast Fisheries Science Center](#) and the [Biogeography Team](#) have been participating in collaborative cruise planning, highlighting priority areas for multibeam mapping off western Puerto Rico. If all goes as planned, the sites at Mona Island where the same staff have been researching coral disease and effects on coral reef ecology since 1996, as well as priority sites for [Caribbean Coral Reef Institute](#) (CCRI) -funded studies of grouper spawning aggregations, will be mapped with detailed bathymetry. Additional areas around Mona Island and Monito will be mapped, allowing identification of morphological characteristics along the shelf-edge.

“One NOAA” Cruise Planning. [Gray's Reef National Marine Sanctuary](#) began plans for a regional “One NOAA” cruise aboard NOAA Ship *Nancy Foster*. The Sanctuary has offered up 11 days of ship time to help address priority research needs of the [South Atlantic Fishery Management Council](#). The Council has identified specific questions that need to be addressed relative to management of deep water corals off the coasts of Georgia and North Florida. NOAA's [National Undersea Research Center](#) at Wilmington has offered technicians to operate the [National Institute for Undersea Science and Technology's](#) “Eagle Ray” autonomous undersea vehicle. Contacts are being made within NOAA [National Weather Service](#) and [National Environmental Satellite, Data and Information System](#) line offices to see if there are “piggyback” needs for ship time in the area of operations. If successful, this could represent an opportunity for several line offices of NOAA to be represented on a single cruise where data will be collected to the benefit of all and can be shared to benefit the need across program lines.

Pacific

First Hawai'i Fisheries Extension Tour Concludes. Supported by [Coral Reef Conservation Program](#) funds, Hawai'i's Fisheries Extension Agent concluded the first fisheries extension tour to improve communication and

information exchange between the Hawai'i Fishing Community and national and local resource managers. While visiting with members of the Oahu shore line fishing community, the Extension Agent distributed outreach material from NOAA's [National Marine Fisheries Service](#) (NMFS) and [Hawai'i's Division of Aquatic Resources](#) (HDAR). This material included information on Hawaiian fishing regulations, the new gill net regulations, the Hawai'i marine recreational fishing statistic survey, and a recreational fisheries strategic plan for essential fish habitat. The Extension Agent also listened to the concerns, needs and interests of local fishers, and established a database of 62 fishermen that includes, among other topics, their concerns and information on gear. Input received in the field will be discussed with resource managers and scientists at NMFS and HDAR. Follow-up actions include a weekly dissemination of fisheries related articles, literature and Power Point presentations to fishers who have expressed interest in receiving such information. Future tours will be scheduled as needed; next year the focus will move from Oahu to one of the other Hawaiian Islands.

PFMC Requested to Add Deep Sea Corals to Agenda for Future Meeting. The [Olympic Coast National Marine Sanctuary's](#) Superintendent requested that the [Pacific Fishery Management Council](#) (PFMC) include the findings of a deep sea coral and sponge survey conducted in the sanctuary in 2006 as an agenda topic at a future meeting. The Superintendent also identified the sanctuary's interest in working with the appropriate PFMC committee and the [National Marine Fisheries Service](#) (NMFS) to review the report results and to develop or consider management recommendations for the protection of this unique habitat, as mandated by reauthorization of the Magnuson Stevens Act. The sanctuary has been working closely with the NMFS Northwest Region on follow-up actions from the 2006 coral survey; this includes gathering the scientific information necessary to

support an amendment to the existing Rockfish Conservation Area (RCA) established in the northern portion of the sanctuary last year by PFMC as part of the designated Essential Fish Habitat (EFH) for groundfish. During their week-long meeting in Seattle, PFMC voted to have PFMC staff develop operating procedures for an Essential Fish Habitat (EFH) Oversight Committee to review requests for changes to designated EFH. The sanctuary's request would likely be heard by this committee in June or September of this year.

NOAA Contributes to New U.S. "Tentative List" for the UNESCO World Heritage Sites.

The [National Ocean Service](#) (NOS) coordinated NOAA's response for the [U.S. World Heritage "Tentative List"](#) of U.S. sites that was provided to the National Park Service on March 30. The [World Heritage List](#) is maintained by the [United Nations Educational, Scientific, and Cultural Organization](#) (UNESCO) and is an international list of globally significant cultural and natural properties. NOAA nominated [Fagatele Bay](#) and [Stellwagen Bank National Marine Sanctuaries](#), and the [Papahānaumokuākea Marine National Monument](#) (Monument). The State of Hawaii also developed a nomination for the Monument in collaboration with NOS. Please note that these nominations do not guarantee listing on the "Tentative List".

NWHI Monitoring Program Assessment. Staff from the [Papahānaumokuākea Marine National Monument](#) (Monument) held a meeting last week to kick off an assessment of monitoring and survey data collected in the Northwestern Hawaiian Islands (NWHI). Participating organizations included the Monument, the [Pacific Islands Fisheries Science Center](#) (PIFSC) [Coral Reef Ecosystem Division](#) and the University of Miami's [Rosenstiel School of Marine and Atmospheric Sciences](#); the three agreed upon next steps for the ongoing evaluation. This week discussions will continue with a series of smaller

meetings to evaluate the data by taxonomic groups (ie. fish, coral, algae) and mapping or information management needs.

American Samoa Launches the Management Plan Review of FBNMS. A series of meetings were held March 18-22 to discuss the beginning of a review of [Fagatele Bay National Marine Sanctuary](#) (FBNMS) management and its role in helping the people of American Samoa know and protect its special marine environments. The Sanctuary's management review will be a community driven process, engaging the surrounding villages and all the citizens of American Samoa who have a stake in the future of the territory's marine environment. The process may take several years and could result in the territory redefining what FBNMS is, and what part it will play in how the Samoan people understand, protect and manage their marine environment.

International

CRW Scientists Collaborate with Australian Researchers. Coral Reef Watch (CRW) scientists Drs. Mark Eakin (via video teleconference), William Skirving and Scott Heron (in person) attended meetings at the University of Queensland, Australia (UQ) to discuss the science workplan for a project co-funded by NOAA, the Great Barrier Reef Marine Park Authority and the Australian Research Council. The project also involves collaborators from UQ, James Cook University, the Australian Institute of Marine Science, NASA/Goddard Space Center and the University of Miami. The project focuses on the southern Great Barrier Reef with the aim of examining ecosystem responses to climate change and developing relevant management tools. These management tools will have direct relevance to U.S.-interest and global coral reefs.

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Successful Oceanographic Instrumentation Installation in Australia. A [Coral Reef Watch](#) (CRW) scientist participated in the installation of

a high-frequency radar that is monitoring ocean surface currents and wave height across the southern Great Barrier Reef. The radar, located on the Australian east coast, is the first part of a system that will monitor oceanic conditions across the Capricorn and Bunker groups; a second radar will be deployed later this year on Lady Elliot Island to provide the cross-component of water movement. This project is headed by [James Cook University](#) and the data will be used by NOAA as part of a broader study of ecosystem impacts related to climate change in the GBR. Other collaborators and stakeholders for to this study include [NASA/Goddard Space Flight Center](#), the [University of Miami](#), the [Australian Institute of Marine Science](#), the [University of Queensland](#), the [Great Barrier Reef Marine Park Authority](#) and the [Australian Research Council](#).

Micronesia Coral Reef Ecosystem Monitoring Retreats Planned for June 2007. NOAA's [Coral Reef Conservation Program](#), in partnership with [Palau's International Coral Reef Center](#) and the [Japanese International Cooperation Agency](#), have supported capacity-building efforts in Micronesia over the last two years in order to adequately monitor this region's vast and diverse coral reef resources. Representatives from local government and non-government agencies in Chuuk, Kosrae, Palau, Pohnpei, the Republic of Marshall Islands, and Yap have participated in the Coral and Fish Taxonomy and Reef Sampling Methods workshop (2005) and the Data Analysis and Database Management workshop (2006). Both of these workshops were held at the PICRC in Koror. This summer, PICRC's scientific advisor and Micronesia's Coral Reef Monitoring Coordinator will hold jurisdictional-based retreats to work with each monitoring team more closely. Retreat activities will focus on retraining where necessary, expanding local monitoring efforts based on local threats/concerns, and preparing chapters for the [Global Coral Reef Monitoring Network](#) (GCRMN) and NOAA report series on the state of global and U.S. reefs, respectively. Local

monitoring staff, government representatives, project coordinators, the PICRC, and partners such as [The Nature Conservancy](#) have all worked very hard to build Micronesia's monitoring program. Funding to support Micronesia's monitoring efforts have come from NOAA's Coral Reef Ecosystem Monitoring Program, the Coral Reef Conservation Program's General Grants Program, and the [National Fish and Wildlife Foundation](#) Coral Reef Conservation Fund.

CRW Presents Satellite Training Workshop in Mexico. [Coral Reef Watch](#) (CRW) scientists conducted a satellite tools training workshop for coral reef managers in Puerto Morelos, Mexico, from March 27 - 29. The training was hosted by the Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México, and was attended by 15 coral reef managers and scientists from Belize and Mexico. The workshop, funded under the [World Bank/Global Environment Facility](#) (GEF) [Coral Reef Targeted Research program](#), was designed to build capacity with reef managers for the utilization of NOAA's satellite remote sensing tools that warn of regions at risk for coral bleaching. Lectures on remote sensing and the CRW suite of sea surface temperature data products were followed by hands-on exercises to give the audience practical experience with using the data to find areas at risk for coral bleaching. The goal of the World Bank workshops was to build an informed and active user community, who will incorporate CRW satellite data into their reef management protocols and can give the program feedback to improve future products. In this particular workshop, the feedback began right away, and the training team had fruitful discussions with the Mexican and Belizean researchers.

National/Headquarters

CRW Scientist Testifies to Congress on Climate Change. The Coordinator of [Coral Reef Watch](#) (CRW) recently testified before the U.S. House of Representatives in the Natural Resources

Committee's Subcommittee on Fisheries, Wildlife, and Oceans. The oversight hearing on "[Wildlife and Oceans in a Changing Climate](#)," was chaired by Del. Madeleine Z. Bordallo (D-GU) on Tuesday, April 17. Also present at the hearing were Ranking Member Henry Brown (R-SC), Dale Kildee (D-MI), Patrick Kennedy (D-RI), Lois Capps (D-CA), Wayne Gilchrest (R-MD), and William Sali (R-ID). The hearing was conducted in two panels of five witnesses each: the first panel on terrestrial wildlife, the second on oceans. In the oceans panel, CRW's coordinator testified on the topic of rising temperatures, coral bleaching, the loss of ecosystem services, and their impact on coastal and island communities. Questions for the Record (QFRs) have been received and CRW is working with other NOAA offices to respond by May 4. A list of the witnesses and their written testimonies are available at the link above.

CRW Scientist Featured on *Earth and Sky*. The radio series [Earth and Sky](#) interviewed the coordinator of NOAA's [Coral Reef Watch](#) (CRW), about coral reefs, climate change, and what can be done to protect coral reefs. The ninety second syndicated broadcast entitled "[Just a few degrees of warming affects coral reefs](#)" was released on April 12 for airing on affiliated radio stations. *Earth and Sky* also produced a 5-minute podcast for their *Earth and Sky Clear Voices* series entitled "[Expert: we can stop coral bleaching](#)" that is also available from podcast distributors such as iTunes.

CRW Scientist Speaks to Students from Palau at Ambassador's Residence. On April 4, the coordinator of NOAA's [Coral Reef Watch](#) (CRW), spoke to a small group of teenagers from Palau about coral reefs, climate change, and the impact these are having on Palau. The meeting with high school juniors and seniors was during a luncheon at the home of the Palauan Ambassador to the U.S., the Hon. Hersey Kyota. Ambassador Kyota invited CRW to speak with the students

during their visit to Washington, D.C. as a part of a civics educational program conducted by the [Close Up Foundation](#). The program caters to students from many U.S. states, territories, and Freely Associated States. The Palauan students are quite concerned about the effects that climate change will have in their country and have seen first hand the influence that warming ocean temperatures have had on their coral reefs.

New Data in CoRIS. See page 17.

Publications

Dameron, O.J., Parke, M., Albins, M. & Brainard, R. (2007). [Marine debris accumulation in the Northwestern Hawaiian Islands: An examination of rates and processes.](#) *Marine Pollution Bulletin* 54 (4), 423-433.

Bazilchuk, N. (2007). ‘[An Inexpensive Device Monitors Ocean Health Through Sound.](#)’ *Conservation*. Vol 8 No.1.

Taylor, J. C. 2006. ‘[Emerging technologies for reef fisheries research and management.](#)’ NOAA Professional Paper NMFS 5, 116 pp.

Weaver, D. C., E. L. Hickerson, and G. P. Schmahl. 2006. Deep reef fish surveys by submersibles on Alderdice, McGrail, and Sonnier Banks in the Northwestern Gulf of Mexico. *In* Emerging Technologies for Reef Fisheries Research and Management, J. C. Taylor (ed.), p. 69-87. NOAA Professional Paper NMFS 5.

Puglise, K.A. and R. Kelty (eds.). 2007. NOAA Coral Reef Ecosystem Research Plan for Fiscal Years 2007 to 2011. Silver Spring, MD: NOAA Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 1. 128 pp.

Wusinich-Mendez, D. and C. Trappe (eds.). 2007. Report on the Status of Marine Protected Areas in Coral Reef Ecosystems of the United States

Volume 1: Marine Protected Areas Managed by U.S. States, Territories, and Commonwealths: 2007. Silver Spring, MD: NOAA Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 2. 129 pp. + Appendices.

CORAL REEFS IN THE NEWS

Other Articles

[“Florida Aquarium to Lead Reef Repair Efforts”](#) – April 19, 2007 (*Tampa Bay Business Journal, FL*). “Tampa Bay area scientists have received a new grant to support efforts to transplant coral raised in land-based aquatic ‘farms’ to damaged reefs in the Florida Keys. Scientists with The Florida Aquarium conceived of the idea of rescuing coral fragments, attaching them to concrete bases, then growing them in tanks at the University of Florida’s Tropical Aquaculture Laboratory in Ruskin and in a lab in the Keys.”

[“Indonesia: Quake Causes Mass Death of Coral Reef”](#) – April 17, 2007 (*Radio Australia, Australia and approx. 10 other sources*). “Scientists have revealed that a devastating earthquake off the coast of the Indonesian island of Sumatra two years ago may have resulted in the greatest mass death of coral reef ever recorded.”

[“Extensive Grassfires May Impact Guam’s Water System”](#) – April 17, 2007 (*KUAM News, GU*). “...Chief of forestry David Limtiaco says....‘Soil and silt [are] running into the streams, into Fena Lake and eventually into the coral reefs.’ And when the water is impacted, Limtiaco says that might just translate into fewer fish, more substantial damage to the island’s coral reefs and problems with drinking water for southern residents.”

“Tourists Urged to Back Green Projects” – April 17, 2007 (*Cayman Net News, Cayman Islands*). “....Beginning on 1 April, 2007, Ocean Frontiers Ltd, based in Grand Cayman’s East End, started offering Carbon Offsets to divers, enabling them to offset the carbon emissions produced from the use of dive boats, filling of dive tanks and the production of desalinated water.”

“No-Fishing Zones in Tropics Yield Fast Payoffs for Reefs” – April 17, 2007 (*The New York Times, NY*). “...President Tommy Remengesau Jr., probably the world’s most conservation-minded head of state, caused a splash with his so-called Micronesian Challenge: a call to the rest of the region to set aside for conservation 30 percent of coastal waters and 20 percent of the land area by 2020.... Palau’s challenge has come at a time when reef-fishing communities around the world are discovering that setting aside no-fishing areas yields dividends in a few years because the resurgent fish populations spill over into areas where fishing is allowed.”

“Climate Protesters Tell Congress to ‘Step it Up’” – April 14, 2007 (*ABC News, US*). “From on top of Acadia Mountain in Maine to the coral reefs off the Florida Keys, environmental protesters held up the same sign and it read, ‘Step it up, Congress.’”

“DENR Orders Removal of Coral-Eating Starfish” – April 13, 2007 (*ABS-CBN News, Philippines and approx. 1 other source*). “The government has launched a campaign to rid the country’s coastlines and beaches of the destructive coral-eating starfish also known as crown of thorns.”

“Ancient Coral Reef Tells the History of Kenya’s Soil Erosion” – April 12, 2007 (*Innovations Report, Germany and approx. 3 other source*). “In a study published in the Feb. 22 issue of Geophysical Research Letters, Dunbar and his colleagues used coral samples from the

Indian Ocean to create a 300-year record of soil erosion in Kenya, the longest land-use archive ever obtained in corals.”

“Crown of Thorns Starfish Hit Philippine Reefs” – April 11, 2007 (*World Wildlife Fund press release on www.panda.org.ph, Philippines and approx. 6 other sources*). “A serious infestation of Crown-of-Thorns Starfish (*Acanthaster planci*) can decimate entire sections of coral reef in weeks. A single COT can totally consume six (6) meters of healthy reef yearly.”

“Climate Change Threatens UNESCO World Heritage Sites” – April 10, 2007 (*United Nations Educational, Scientific and Cultural Organization press release on <http://whc.unesco.org>, France*). “The threats posed by climate change to natural and cultural sites on UNESCO’s World Heritage List are outlined in a new UNESCO publication, ‘Case Studies on Climate Change and World Heritage.’ The report features 26 examples - including... the Great Barrier Reef - case studies that are representative of the dangers faced by the 830 sites inscribed on the World Heritage List.”

“A Million Tiny Life Rafts” – April 9, 2007 (*St. Petersburg Times, FL*). “Scientists in Ruskin nurse fragments of coral, creating healthy colonies to join the struggling ones in the Keys.”

“Solomons Quake Lifts Island Up by 3m, Exposes Reef” – April 9, 2007 (*New Zealand Herald, New Zealand and approx. 3 other sources*). “The earthquake that triggered last week’s tsunami in the Solomons lifted an entire island up by 3metres, exposing coral reefs that are now becoming bleached and dying.”

“Reef ‘at Risk in Climate Change’” – April 6, 2007 (*www.physorg.com, US*). “Australian scientists who contributed to the latest global greenhouse study say the Great Barrier Reef is one of the nation’s great assets most at risk under

climate change. The two main threats facing the reef are rising sea temperatures, which cause mass coral die-offs due to bleaching, and the gradual acidifying of the oceans from CO₂ in the atmosphere, which prevents corals from forming their limestone skeletons.”

“IPCC Climate Change Report Delivers Stark Warning” – April 6, 2007 (*All Headline News, NV, and approx. 10 other sources*). “The long-awaited climate change report by the U.N.’s Intergovernmental Panel on Climate Change (IPCC) released Friday was marred by alleged clashes between scientists, seeking to keep as much of the evidence pointing to climate change, and politicians who wanted to water down the report.”

“Starfish Threatens RP Coral Reefs” – April 5, 2007 (*The Philippine Star, Philippines*). “A global conservation group reported yesterday a ‘massive outbreak’ of coral-eating starfish in various parts of the country, as the temperature continues to rise and tourists flock to different beaches nationwide...’ As of today, the damage is not yet great,’ said WWF-Philippines media officer Gregg Yan. ‘(But) unless we act now, entire hectares of our local reefs will be decimated and eaten by summer’s end.’”

“Fire Flattens Island Lab” – April 4, 2007 (*ScienceNOW Daily News on <http://sciencenow.sciencemag.org>, D.C.*). “A fire at the Heron Island Research Station off the coast of Australia has devastated one of the premier scientific facilities on the Great Barrier Reef. Buildings, equipment, and data burned to ashes in a matter of hours. No one was hurt in the accident, however, and researchers vow to get back in action within months.”

“Global Warming Could Increase Exotic Fish Poisoning” – April 3, 2007 (*www.medindia.com, India*). “Ciguatera, human poisoning resulting from eating some exotic fish varieties, is

increasing all along the coastal regions in the world, reports say...Scientists say the risks are getting worse, because of the damage that pollution and global warming are inflicting on the coral reefs where many fish species feed.”

“Sri Lanka’s Corals Find New Life Amidst the Tropical Heat and Tourists” – April 2, 2007 (*Lanka Business Online, Sri Lanka*). “...Part-time marine naturalist and conservationist Prasanna Weerakkody, leads the nature conservation group or ‘Natcog’ that’s restoring life and color to the reefs at the Rumassala cove...Weerakkody and his team are building a coral nursery at Rumassala, to protect as much of this diversity for the future.”

“Panel: Warming Will End Some Species” – March 31, 2007 (*The Associated Press on www.forbes.com and approx. 2 other sources*). “‘Changes in climate are now affecting physical and biological systems on every continent,’ says a draft obtained by *The Associated Press* of a report on warming’s impacts, to be issued by the Intergovernmental Panel on Climate Change (IPCC), the authoritative U.N. network of 2,000 scientists and more than 100 governments”

“Overloaded Oceans” – March 30, 2007 (*National Nine News on <http://news.ninemsn.com.au/>, Australia*). “...Increasing the amount of CO₂ in the oceans causes an increase in hydrogen carbonate ions, HCO₃⁻, but a decrease in carbonate CO₂²⁻ which organisms need to make calcium carbonate shells and other structures. The predicted acidity increase will have unknown consequences for marine life and ecosystems such as coral reefs, tiny marine organisms called pteropods, and fish larvae to name but three.”

“Reefs Under Assault” – March 30, 2007 (*South Florida Sun-Sentinel, FL*). “Divers went into the waters off southern Palm Beach and northern Broward counties Thursday to gather samples of

densely matted algae that are invading and smothering coral reefs. Resembling thick moss, the algae *Cladophora liniformis* block sunlight, deplete oxygen and take up space that could otherwise be used by young corals.”

“Scleractinian Coral Species Survive and Recover from Decalcification” March 30, 2007 (*Science*, DC) “...This study demonstrates that skeleton-producing corals grown in acidified experimental conditions are able to sustain basic life functions, including reproductive ability, in a sea anemone-like form and will resume skeleton building when reintroduced to normal modern marine conditions.”

“Some Corals may Survive Acidification Caused by Rising CO₂ Levels” – March 29, 2007 (www.mongabay.com, US and approx. 2 other sources). “...‘It is important to note that although survival as soft bodies allows corals to persist, substantial decalcification of reefs will cause major changes to the structure and function of coral reef ecosystems and the services they provide to human society,’ the authors write.”

“Earlier Quaternary vs. Present-Day Coral Growth Rates” – March 28, 2007 (*CO₂ Science Magazine*, AZ). “...the results of their measurements indicate that the radial growth rates of the modern corals are 31% greater than those of their more ancient Quaternary cousins, in the case of *Porites* species, and 34% greater in the case of *Favites* species.”

“UQ Helps to Keep An Eye on The State of Coral Reefs” – March 27, 2007 (*UQ News*, Australia). “...‘Our Coral Health Chart is basically a series of sample colours, with variation in brightness representing different stages of bleaching or recovery, based on controlled experiments,’ Professor Marshall said. ‘The charts can be used by anyone – scientists, school children, tourists even politicians.’”

“Overfished Reefs” – March 27, 2007 (*The New York Times*, NY and approx. 1 other source). “...Coral reefs are generally considered to be overfished, however, and a new analysis shows just how bleak the situation is. The study, by Katie Newton of the University of East Anglia in England and colleagues, concludes that the majority of coral reef fisheries are unsustainable; fish, crustaceans and mollusks are being harvested at a faster rate than they are being replenished”

“IPCC to Release ‘Climate Change 2007: Impacts, Adaptation and Vulnerability’ Report” – March 21, 2007 (Intergovernmental Panel on Climate Change press release on www.ipcc.ch, Switzerland). The Working Group II contribution to the "Climate Change 2007" Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) will be presented to the press in Brussels on 6 April 2007. Additional press briefings focusing on specific impacts at the regional level will follow in various locations around the world starting from 10 April.

“Passenger Ferry American Pride Runs Aground on Triangle Reef, Saint Thomas, U.S. Virgin Islands” – March 19, 2007 (U.S. Coast Guard press release on www.piersystem.com, US). “The Coast Guard continues to coordinate the response to Saturday’s grounding of the passenger ferry *American Pride* on Triangle Reef, just off the Charlotte Amalie, Saint Thomas Harbour, U.S. Virgin Islands....The exact extent of the damage to the vessel’s hull and to the coral reef will not be known until the vessel is refloated and a more comprehensive ocean-bottom survey is conducted.”

UPCOMING EVENTS

May 2007

29 – 30: **Conference on Marine Ecosystem of Malaysia (COMEM 07): Interconnectivity in Marine Ecosystem: Opportunities and Challenges.** Port Dickson, Malaysia.
<http://www.ocean.ukm.my/comem2007/>

June 2007

4 –8: **33rd Scientific Conference of the Association of the Marine Laboratories of the Caribbean.** St. Thomas, U.S. Virgin Islands.
www.amlc-carib.org
 13 – 17: **21st Pacific Science Congress.** Okinawa, Japan. www.psc21.net

July 2007

1 – 5: **Society for Conservation Biology, 21st Annual Meeting.** Port Elizabeth, South Africa.
<http://www.nmmu.ac.za/scb/>
 22 – 26: **Coastal Zone '07.** Portland, OR.
<http://www.csc.noaa.gov/cz/index.html>

August 2007

20 – 23: **18th U.S. Coral Reef Task Force Meeting.** Pago Pago, American Samoa. Look for detail at <http://www.coralreef.gov/taskforce/meetings.html> in the future.
 27 – 29: **Bleaching Tools Workshop.** Pago Pago, American Samoa.

New Data in CoRIS.

CoRIS now contains 1637 metadata, with access to a total of 19,549 data products.	
Product Name	Description
NOAA Coral Reef Watch Program NOAA National Environmental Satellite Data and Information Service, AVHRR Sea Surface Temperature Anomaly Charts (Global) 2007	These archived satellite sea surface temperature (SST) anomaly charts are graphic displays of the satellite global nighttime SST anomalies at 50km resolution produced twice-weekly in near real-time fashion. The SST anomaly is the difference of SST compared to daily SST climatology.
Link: http://coris.noaa.gov/metadata/records/html/avhrr_sstanomaly_2007.html	
NOAA Coral Reef Watch Program NOAA National Environmental Satellite Data and Information Service, AVHRR Sea Surface Temperature Charts (Global) 2007	These archived satellite sea surface temperature (SST) charts are graphic displays of the satellite global nighttime composite SSTs at 50km resolution produced twice-weekly in near real-time fashion. Satellite data from the Advanced Very High Resolution Radiometer (AVHRR) on NOAA's Polar Orbiting Environmental Satellite (POES) are used to generate AVHRR-SST.
Link: http://coris.noaa.gov/metadata/records/html/avhrr_sstfield_2007.html	
NOAA Coral Reef Watch Program NOAA National Environmental Satellite Data and Information Service, AVHRR Coral Bleaching Hotspot Charts 2007	These archived coral bleaching HotSpot charts of the Western Hemisphere are graphic displays of the satellite coral bleaching HotSpots of the Western Hemisphere at 50km resolution produced twice-weekly in near real-time fashion. The coral bleaching HotSpot is a special type of sea surface temperature (SST) anomaly and shows the difference of SST compared to a static coral bleaching threshold SST climatology.
Link: http://coris.noaa.gov/metadata/records/html/avhrr_hotspot_west_2007.html	

NOAA Coral Reef Watch Program
NOAA National Environmental
Satellite Data and Information Service,
AVHRR Coral Bleaching Degree
Heating Week Charts 2007

These archived coral bleaching Degree Heating Week (DHW) charts of the Western Hemisphere are graphic displays of the satellite coral bleaching DHWs of the Western Hemisphere at 50km resolution produced twice-weekly in near real-time fashion. DHW is the accumulation of Coral Bleaching HotSpots over a period of 12 consecutive weeks. The coral bleaching HotSpot is a special type of sea surface temperature (SST) anomaly and shows the difference of SST compared to a static coral bleaching threshold SST climatology.

Link: http://coris.noaa.gov/metadata/records/html/avhrr_dhw_west_2007.html

Coral Reef Ecosystem Division
(CRED), NOAA Pacific Island
Fisheries Service Center, Sea Surface
Temperature Mooring Time Series
2003-2005

Depth of temperature sensor is 0.25 m (nominal). CRED SST buoys telemeter hourly temperature data in near-real-time (NRT). NRT SST data is available at <<http://www.pifsc.noaa.gov/cred/oceanography.php>> and is updated on a daily basis. When a SST buoy is recovered, a higher resolution (typically a 1800 second sampling interval) dataset is uploaded from the buoy's data logger which can provide a more detailed timeseries.

Link: http://coris.noaa.gov/metadata/records/html/cred_sst_maug_2003-2005.html

Coral Reef Ecosystem Division
(CRED), NOAA Pacific Island
Fisheries Service Center, (CREWS)
Buoy 2003-2005, Environmental Data
Logger (EDL) Time Series 2003-2005
CNMI

CREWS Enhanced buoys are equipped to measure water temperature and salinity at 1 m (nominal) below the water line (Seabird Model SBE37); air temperature (R.M Young Model 41342); barometric pressure (Heise DXD); wind vectors (Vaisala WAS425A); PAR, UV305 nm, UV330 nm, UV380 nm measured at 2 m (nominal) above the water line (Biosherical BIC2104R); PAR, UV305 nm, UV330 nm, UV380 nm measured at 1 m (nominal) below the water line (Biosherical BIC2104U). A compass (KVH C100 SE-25) is used in the calculation of wind direction and a GPS system provides geolocation.

Link: http://coris.noaa.gov/metadata/records/html/cred_crews_edl_saipan_2003-2005.html

Coral Reef Ecosystem Division
(CRED), NOAA Pacific Island
Fisheries Service Center Surface
Temperature Recorder Time Series
2003-2005 CNMI

Data from CRED Subsurface Temperature Recorders (STR) provide a time series of water temperature at reef sites. Data is typically collected at 1200 second or 1800 second intervals using a SBE Model 39 from Seabird Electronics Inc. Data from prior to the deployment date/time and after the recovery date/time have been removed.

Link: http://coris.noaa.gov/metadata/records/html/cred_str_asuncion_2003-2005.html

Coral Reef Ecosystem Division
(CRED), NOAA Pacific Island
Fisheries Service Center Water
Temperature Recorder Time Series
2003-2005 CNMI

Data from CRED Wave and Tide Recorders (WTR) provide a time series of temperature, wave, and tide data at coral reef ecosystem sites. Data is typically collected using a SBE Model 26 or 26plus from Seabird Electronics Inc. (www.seabird.com). Sensors include: Real-time clock, thermistor, and Digiquartz temperature-compensated pressure sensor.

Link: http://coris.noaa.gov/metadata/records/html/cred_wtr_zealandia_bank_2003-2005.html

Coral Reef Ecosystem Division
(CRED), NOAA Pacific Island
Fisheries Service Center NWHI
Gridded Bathymetry 2000-2006

CRED Gridded bathymetry of the shelf environment. Bottom coverage was achieved in depths between 20 and 250 meters. The bathymetry dataset includes Simrad EM300, EM3002d, and Reson 8101 multibeam data collected as of December 2006.

Link: http://coris.noaa.gov/metadata/records/html/cred_gridded_bathy_5m_kure_atoll_2000-2006.html

NOAA Pacific Island Fisheries Science Center, Coral Reef Ecosystem Division (CRED), Pacific Islands Benthic Habitat Mapping Center, Guam - CNMI Backscatter 2003	Backscatter extracted from gridded bathymetry of the banktops and shelf environments
Link: http://coris.noaa.gov/metadata/records/html/cred_backscatter_guam_2003.html	
Coral Reef Ecosystem Division (CRED), NOAA Pacific Island Fisheries Service Center American Samoa Optical Validation Data	Optical validation data were collected using a Tethered Optical Assessment Device (TOAD), an underwater sled equipped with an underwater digital video camera and lights. These data provide optical observations that will be correlated with bathymetry and acoustic backscatter imagery to develop a benthic habitat maps.
Link: http://coris.noaa.gov/metadata/records/html/flower_garden_banks_habitat_characterization_2006.html	
NCCOS Biogeography Team, Biogeographic Characterization of Benthic Habitat Communities within the Flower Garden Banks National Marine Sanctuary (2006 - Present)	1) To design a spatially robust sampling strategy to quantify in a spatially robust manner the status of the benthic fish community associated with the diveable portion of the coral cap regions within the Sanctuary; 2) To carry out the initial implementation of this sampling strategy; 3) To design a spatially robust sampling strategy to quantify in a spatially robust manner the status of the benthic fish community associated with the portion of the Sanctuary not reachable by standard SCUBA diving techniques; and 4) To develop a GIS based tool that will assist with the implementation of both strategies including site selection.
Link: http://coris.noaa.gov/metadata/records/html/flower_garden_banks_habitat_characterization_2006.html	
National Ocean Service (NOS), Special Projects Office (SPO), IKONOS Imagery for southern Florida	One-meter panchromatic and four-meter multispectral color IKONOS commercial satellite imagery was purchased to support the National Ocean Service, Coral Reef Conservation Programs coral mapping activities in southern Florida.
Link: http://coris.noaa.gov/metadata/records/html/nccos_southern_florida_ikonos_imagery_2005-2006.html	
Atlantic Oceanographic and Meteorological Laboratory , Integrated Coral Observing Network (ICON) stations data for 2006	Instrument arrays to measure the various environmental influences are being deployed at key coral reef areas to gain long-term temporally intensive data coverage, to provide near real-time information products, and to surface-truth NOAA satellite sea surface temperature (SST) products used for coral bleaching predictions ("HotSpot" products).
Link: http://coris.noaa.gov/metadata/records/html/icon_north_normans_patch_reef_2006.html	
NOAA Pacific Island Fisheries Science Center, Coral Reef Ecosystem Division (CRED), Pacific Islands Benthic Habitat Mapping Center, Pacific Remote Island Areas Gridded Bathymetry 2006	CRED Gridded bathymetry of the shelf environment. Bottom coverage was achieved in depths between 20 and 250 meters. The bathymetry dataset includes Simrad EM300, EM3002d, and Reson 8101 multibeam data collected as of December 2006.
Link: http://coris.noaa.gov/metadata/records/html/cred_gridded_5m_bathy_kingman_2006.html	

