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Coral Reef News

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NOAA CORAL REEF CONSERVATION PROGRAM

Volume 6, No. 12 September 2009

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The Coral Reef Conservation Program (CRCP) is a partnership between the NOAA Line Offices working on coral reef issues, including the National Ocean Service (NOS), the National Marine Fisheries Service (NMFS), the Office of Oceanic and Atmospheric Research (OAR) and the National Environmental Satellites, Data and Information Service(NESDIS). From mapping and monitoring to managing reef resources and removing harmful debris, the CRCP addresses the priorities laid out in both the National Action Plan to Conserve Coral Reefs and the National Coral Reef Action Strategy. In 2009, the CRCP realigned its priorities to primarily address the top three threats to global coral reef ecosystems: climate change impacts, fishing impacts, and impacts from land-based sources of pollution.

From the Desk of the Program Manager

I am pleased to share an update about ongoing efforts to improve online access to the CRCP's data and products, as well as the other online coral information hosted by the CRCP. These changes have been made in response to internal guidance and to comments and requests from Website visitors like you.

This month, the Coral Reef Information System (CoRIS) launched a redesigned version of its site. This site hosts all of the data and products produced by CRCP-funded projects, other relevant data, and general coral information. See 'Announcements' for more information.

In addition, we are just one month from launching the redesigned CRCP Website at the 22nd U.S. Coral Reef Task Force meeting. The redesign maintains the content from the existing site, but significantly re-organizes that content and incorporates lots of great new information and products. New content includes a deep-sea coral section, much more background info on coral and the threats they face, a new compilation of educational resources, resources for those wanting to get involved with coral conservation, and more. These changes are anticipated to make our site an even more useful tool for anyone looking to learn more about coral, coral conservation, and the CRCP.

-Kacky

Announcements

Coral Conservation Funding Opportunity: Deadline Approaching. On September 11, the National Fish and Wildlife Foundation, in partnership with the CRCP, announced the availability of grant funding. Click here *(pdf, 116 kb)* to learn more about eligibility, award ranges, proposal categories, application guidelines, and more. ***Pre-proposals are due on October 12, 2009***.

Coral Reauthorization Bill Passed by House of Representatives. H.R.860, the Coral Reef Conservation Act Reauthorization and Enhancement Amendments of 2009 *(pdf, 214 kb)*, was passed by the House of Representatives on September 22nd. This passage is the most recent progress in the effort to reauthorize the Coral Reef Conservation Act of 2000 *(pdf, 36kb)*. Representatives Bordallo (D-Guam), Baird (D-WA), and Ros-Lehtinen (R-FL) each spoke on behalf of the bill, expressing strong support and a dire need to protect this precious resource. This bill would bolster U.S. coral reef conservation efforts by promoting international cooperation to protect coral reefs, codifying the U.S. Coral Reef Task Force, and allowing the Coral Reef Conservation Fund to be utilized for emergency response actions, among other changes. H.R. 860 received the support of a bipartisan group of 19 members of Congress, and has also been endorsed by the Administration; the Governors of Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands; and marine conservation interests. To become a law, identical versions of a bill must be passed in both the House and Senate.

Registration Deadline – USCRTF Meeting in Puerto Rico. The 22nd U.S. Coral Reef Task Force meeting will be held at the Caribe Hilton in San Juan, Puerto Rico, from October 30-November 5. Please note that registration is required for all meeting-related events, including workshops and receptions *(continued on page 2)*

UPCOMING EVENTS

October

12: NOAA/National Fish and Wildlife Foundation's Coral Fund pre-proposals due

16: Deadline for online registration for the 22nd USCRTF meeting.

November

2: Applications due for both the NOAA Coral Reef Conservation Grant Program: General Coral Reef Conservation Grant and Projects to Improve or Amend Coral Reef Fishery Management Plans.

2-5: 22nd U.S. Coral Reef Task Force Meeting, San Juan, Puerto Rico

9: Pre-applications due for NOAA International Coral Reef Grant Program.

20: Pre-applications due for NOAA Coral Reef Monitoring Grant Program.

30: Pre-applications due for NOAA Coral Reef Management Grant Program.

Announcements continued...

and the deadline for online registration is October 16th. For meeting information, including agendas, hotel information, and registration, please click here.

CoRIS Launches Newly Redesigned Website. The Coral Reef Information System (CoRIS) is pleased to announce the launch of its newly redesigned website. Please note that although the content of the website has not changed substantially, CoRIS has worked to improve the overall look, feel, navigability, and functionality of its site. In addition, some new content, such as a new ecosystem essay about the reefs of the U.S. Virgin Islands, has been added during the redesign. Over the next few weeks, they invite you to visit the Website, browse through the pages and associated applications, and provide your feedback. Please submit all comments, questions, and suggestions to: coris@noaa.gov.

2009 Fall Bleaching Outlook Updated. The NOAA Coral Reef Watch (CRW) Coral Bleaching Thermal Stress Outlook now indicates that the potential for coral bleaching in the Caribbean in 2009 has lessened. While there continues to be an elevated potential for higher than normal temperatures in Fall 2009, severe thermal stress is less likely than earlier outlooks indicated. However, warming in the western Caribbean has caused bleaching; bleaching reports have come in from the Cayman Islands and the Yucatan region of Mexico beginning the week of September 21st. There is also still some potential for thermal stress that may lead to bleaching along the Pacific coast of Mexico and islands in the equatorial central Pacific Ocean. Prior to this forecast update, the initial coral bleaching outlook was also featured on the NOAA National Ocean Service homepage in the "What's New" section.

Report Featured in Podcast. Episode 35 of Making Waves, the NOAA National Ocean Service podcast, covers a new report, *A Biogeographic Characterization of Fish Communities and Associated Benthic Habitats within the Flower Garden Banks National Marine Sanctuary*. The report finds that despite impacts from hurricanes, coral disease, energy exploration, commercial and recreational fishing, and other threats, this sanctuary is among the most pristine coral reef ecosystems in the tropical western Atlantic. To read the transcript or hear the podcast, click here. A more detailed description of this report appears in the 'Publications' section of the August issue of this newsletter.

Updates from the Atlantic/Caribbean Region

2009 Dry Tortugas Research Cruise. The Tortugas North Ecological Reserve was designated in July 2001 to protect and preserve the diverse marine life and special habitats in critical areas of the Florida Keys National Marine Sanctuary. For the nearly ten years since the Reserve was established, a Sanctuaries research team, with help from crew and NOAA Corps officers aboard the NOAA Ship *Nancy Foster*, has monitored fish and their habitats through diver surveys, hi-resolution underwater photography and sophisticated sonar. The 2009 research cruise was conducted from September 22-30; the research team revisited all their permanent monitoring stations of reef and soft-bottom habitats of the Tortugas. This will increase the fish and habitat data set that describes changes through time. The team also planned to sample a portion of the Tortugas Banks that is still undescribed. Multibeam sonar was used to develop a detailed contour map of the sea floor. The split-beam sonar system shows how fishes are distributed relative to this landscape. Collected data on the distribution and trends of natural resources is critical to understanding how establishment of the Tortugas Ecological Reserve has affected the ecological balance of the region. To learn more about this mission or to read the daily cruise log, click here.

NOAA divers recorded fish and habitat during survey transects at monitoring stations. Courtesy: NOAA CCFHR

SAFMC Coral Advisory Panel Meeting Outcomes. During the September 1-2 South Atlantic Fishery Management Council (SAFMC) Coral Advisory Panel (AP) meeting in Charleston, SC, the AP received an update on the Comprehensive Ecosystem-Based Amendment (CE-BA) 1. This amendment would designate over 23,000 square miles of deepwater coral and associated habitats as Coral Habitat Areas of Particular Concern (CHAPC). *(continued on page 3)*

Atlantic/Caribbean continued...

The measure would create the largest deepwater coral protected area off the Atlantic Coast. At the September 14-18 SAFMC meeting, the SAFMC members unanimously voted to submit the amendment to the Secretary of Commerce. If it is approved by the Secretary, CE-BA 1 is targeted for implementation in early 2010.

During its meeting, the AP also helped develop an options paper *(pdf, 406 kb)* *(continued on page 2)*for actions under the developing CE-BA 2. Among these were recommendations for maximum sustainable yield, acceptable biological catch, annual catch limit for the octocoral fishery, and critical data needs for effective management of the octocoral fishery. Options to modify the live rock aquaculture permit system were also developed to offset economic impacts that may occur if the SAMFC proposes prohibiting octocoral harvest. The AP discussed a request from Marine Life Harvesters to include the encrusting gorgonians, *Eryhtropodium sp*. and *Briaerum asbestinum*, in the octocorals fishery, in addition to *Tubastrea coccinea*. New proposals for Essential Fish Habitat (EFH) based HAPCs were considered and the AP recommended that the SAFMC move forward with designation of the CHAPCs, deepwater MPAs, and other hard-bottom habitat areas as EFH-HAPCs. A nomination process will be developed at subsequent meetings for recommending additional HAPCs. Finally, alternatives were developed for spiny lobster trapping activities to protect *Acropora sp*., which are listed as Threatened under the Endangered Species Act, in federal waters.

The AP includes three members from NOAA and the SAFMC itself includes one NOAA member and is a government advisory body.

FKNMS Coral Disease and Condition Cruise. The annual Florida Keys National Marine Sanctuary (FKNMS) Coral Disease and Condition Cruise aboard the NOAA Ship *Nancy Foster* embarked September 11 for an eight-day research expedition to monitor coral reef health and gather data on disease prevalence. Since 1997, scientists have been monitoring coral health along approximately 200 miles of the Florida Keys Reef Tract. During each annual mission, researchers conduct more than 120 dives to survey 42 fixed stations at 13 reef sites within the sanctuary, extending from Carysfort Reef off Key Largo westward through the Tortugas Ecological Reserve. FKNMS researchers hosted scientists from NOAA, Mote Marine Laboratory, Harbor Branch Oceanographic Institute at Florida Atlantic University, Smithsonian Institution, George Mason University, Auburn University, Florida Department of Environmental Protection, and the City of Marathon, FL.

Mooring Buoys Installed in Florida. The Miami-Dade County Department of Environmental Resources Management (DERM) has partnered with the Florida Department of Environmental Protection's Coral Reef Conservation Program (FDEP CRCP) to support the initial implementation of the Miami-Dade County Pilot Mooring Buoy Program. The program was developed to protect Miami-Dade County's coral reefs from damage caused by boat anchors.

A DERM boat utilizes one of the new mooring buoys. Courtesy: DERM

NCCOS and Partners Map Deep-sea Coral Habitat. The second leg of the NOAA Deep Water Coral Research and Technology Program cruise is now complete. Scientists from the National Centers for Coastal Ocean Science, the National Marine Fisheries Service Panama City Laboratory, and University of North Carolina Wilmington collaborated on the cruise. The six-day cruise mapped 579 km^2 of seafloor off the coast of Florida aboard the NOAA Ship *Nancy Foster* beginning on September 2. Bathymetry and backscatter data on deep-sea coral habitats were collected approximately 40 nautical miles off the east coast of Florida, extending from Cape Canaveral to Ft. Pierce, using a multibeam sound navigation and ranging (Sonar) sensor well suited for mapping marine environments between 300 and 800 meters deep. The resulting bathymetry and backscatter imagery collected will support the characterization, sampling, and exploration of a series of deep-water limestone mounds and ridges primarily colonized by the stony coral, *Lophelia pertusa*. This slow-growing, branching coral may be threatened in the future by the expansion of bottom fishing and energy exploration activities into deeper waters.

The area mapped on this cruise was informed by the results from the first leg of the cruise; that leg was reported on in the August issue of *Coral Reef News*. The cruise report for the first leg of the cruise has just been completed.

(continued on page 4)

NOAA CORAL REEF CONSERVATION PROGRAM

Have you seen our new graphic identifier?

Take a closer look and you may see a 'hidden' layer.

Be on the lookout as this new identifier is incorporated into our outreach materials in the coming months.

Even if you don't live near a reef, you can help protect coral reefs in the U.S.A. and around the world

Atlantic/Caribbean continued...

FUNDING OPPORTUNITY

Proposals for project funding via the NOAA Coral Reef Conservation Grant Program are being accepted through various dates in November 2009. Learn more by reading the Federal Funding Opportunity.

From 2002 to 2009, NOAA has supported over $50 million in matching grants through these grant programs.; each award also has a matching requirement to leverage additional funding.

Grounding Restoration in Puerto Rico. Emergency restoration for the July 27 grounding of the sailboat, *Mariah*, has been completed. The grounding damaged over 350 fragments of coral, primarily *Diploria strigosa* (symmetrical brain coral) and *D. clivosa* (knobby brain coral), but also some *Porites astreoides* (mustard hill coral) and *Agaricia sp.* Due to rough wave conditions at the grounding site and the quantity of coral damaged during the grounding and subsequent removal of the *Mariah*, emergency restoration was determined to be necessary to save the impacted coral fragments for reattachment and to keep them from further damaging the reef. NOAA's Restoration Center oversaw the emergency response, which was funded by the ship's owner and carried out by the Puerto Rico Department of Natural and Environmental Resources (PRDNER). Over 250 fragments were able to be salvaged and reattached during the emergency response. NOAA established a small monitoring effort at the site and PRDNER is evaluating the need for any additional penalties.

In addition, the three-year check on the recovery of reefs impacted by the *M/T Margara* grounding was completed. The *M/T Margara*, a 228-m (748-ft) tanker went aground on a coral reef on April 27, 2006. The impacted reef is located along the south coast of Puerto Rico and included a large stand of *Acropora cervicornis* (staghorn coral), a species designated as threatened under the Endangered Species Act. Rapid response by PRDNER, NOAA and the Responsible Party in 2006 resulted in the salvage and reattachment of over 10,000 hard and soft corals displaced during the grounding, including over 900 fragments of staghorn coral. Injury assessment and planning for additional restoration activities are underway by NOAA, PRDNER, and the Responsible Party.

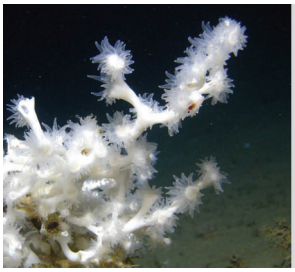
Coral Disease Outbreak Response Training Equips Responders in South Florida. South Florida now has 15 new coral disease outbreak responders to assist in the event of an unusual coral disease outbreak. This valuable resource is the result of a five-day training course sponsored by the Coral Disease and Health Consortium, the National Coral Reef Institute, and the National Centers for Coastal Ocean Science which was held at the Nova Southeastern University Oceanographic Center from August 24-28. Representatives from state and county resource management agencies and universities received classroom and field training in investigative procedures, use of the Incident Command System to manage a response, and

Trainees learn processing techniques to ensure sample integrity for lab analysis. Courtesy: Cheryl Woodley

sample collection and processing techniques. Mock field responses provided participants the opportunity to practice skills needed as members of a response team. Outbreak investigations provide a means to determine the extent and impact of a disease event; increase scientific knowledge of coral diseases, their sources and reservoirs; and help to identify control or management strategies. Training opportunities build a regional capacity for coordinated responses to coral disease outbreaks.

***Lophelia* II 2009: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks.** From August 19th through September 12, 2009, the NOAA Office of Ocean Exploration and Research and *the U.S. Minerals Management Service*, a division of the Department of the Interior sponsored the third cruise in a four-year project aboard the NOAA Ship *Ronald H. Brown*, utilizing the Remotely Operated Vehicle JASON. The overall mission of the project was to explore for new deep-sea corals in the Gulf of Mexico and to develop tools to better predict the occurrence of deep-sea corals.

A total of 17 dives were conducted at 13 natural sites, eight of which were never visually surveyed before. Highlights from the dives included finding deep-sea corals at every site, observing new high-density *Lophelia pertusa* communities at three of the sites, and observing one of the largest continuous *Lophelia* reefs known in the Gulf. The science team also investigated the most active cold seep known to host live *Lophelia* colonies, finding high density black coral communities and a new site with a high abundance of bamboo corals at the northern end of the Florida Escarpment. Cold *(continued on page 10)*



ROV image of *Lophelia pertusa* at 450 m depth. Courtesy: Lophelia II 2009: Deepwater Coral Expedition: Reefs, Rigs, and Wrecks

Updates from the Pacific Region

Hawaiian Marine Debris Cruise. A 30-day Marine Debris cruise departed Honolulu for the Northwestern Hawaiian Islands (NWHI) aboard the NOAA Ship *Oscar Elton Sette* on September 1. Seventeen specially trained technicians conducted in-water surveys and debris removal operations at Kure Atoll, Laysan Island, Lisianski Island, Maro Reef, and Pearl and Hermes Atoll, focusing on areas known to have high densities of derelict fishing gear. Upon its return to port on September 29, the *Oscar Elton Sette* was loaded down with over 40 tons of marine debris; virtually every available portion of the ship's deck was used to stack debris for transport back to Pearl Harbor. The debris was offloaded on Sept. 30th and transported to Schnitzer Steel Hawai`i Corporation to be cut into manageable portions for incineration and power production by Covanta H-Power. Since 2002, all derelict nets removed from the NWHI have been used to create electricity in the nation's first Nets to Energy program. This is a public-private partnership of more than 12 different organizations, businesses and agencies. So far the nets removed from the NWHI have created enough energy to power 245 homes in Hawaii each year.

This mission was the first of two expeditions this calendar year directed towards derelict fishing gear removal. The second cruise will depart in early October and focus on the French Frigate Shoals and Pearl and Hermes Atoll for a 30-day mission.

This removal effort has been ongoing since 1996 with funding and assistance from the NOAA CRCP, the NOAA Marine Debris Program, NOAA Fisheries, the U.S. Fish and Wildlife Service and Papahānaumokuākea Marine National Monument. More than 700 tons of derelict fishing gear has been removed from the reefs and shorelines of the NWHI in that time. The derelict fishing gear pose not only a serious entanglement hazard to marine life, but are also a navigation hazard, damage habitat and may transport invasive species.

Pacific Site Design and Municipal Stormwater Management Workshops. NOAA's Office of Ocean and Coastal Resource Management, in partnership with the Guam Coastal Management Program (CMP), and Commonwealth of the Northern Mariana Islands (CNMI) Division of Environmental Quality, sponsored two free workshops aimed at reducing land-based pollution impacts to coral reefs. Staff from the Center for Watershed Protection,

Guam workshop participants worked in groups to "better design" existing site plans. Courtesy: Kathy Chaston

Horsley Witten Group, and the CRCP conducted the workshops and provided field training. A one-day workshop on "Designing Better Development to Protect Water Quality on Guam" was held on September 2nd in Guam. This was followed by a two-day field training on better site design for Guam CMP staff and its watershed partners in the Piti/Asan Watershed. The "CNMI Municipal Stormwater Management" workshop was held on Saipan, CNMI from September 8-9. It included a storm water sleuth field exercise. Both workshops promoted sustainable land use planning and storm water management that aims to reduce the footprint of development and reduce impacts to sensitive coastal resources such as coral reefs. Over 70 representatives from private engineering and architecture firms, government agencies and non-governmental organizations attended the Guam workshop. The Saipan workshop was attended by 30 representatives from CNMI government agencies. These workshops directly support ongoing Local Action Strategies efforts to Address Land-based Pollution Threats to Coral Reefs in Guam and CNMI.

**Coral Disease Workshop in Hawai`i.** As part of the CRCP-funded project 'Environmental Monitoring of Coral Disease and Bleaching in the Hawaiian Islands,' a coral disease workshop was held in Honolulu, Hawaii on August 24-26. The project was developed in response to a request from the Point of Contact for the Hawai`i Local Action Strategy to investigate the relationship between coral disease progression or transmission and temperature and bleaching stress. This workshop sought to devlop products and solutions to meet the management needs for coral disease and bleaching in the Hawaiian Islands; identifying information gaps to meet those needs; and undertaking the development of an experimental predictive tool to assess the risk of bleaching and disease in Hawai`i based on satellite-derived SST metrics.

The workshop was convened by NOAA's Coral Reef Watch and Coral Reef Ecosystem Division. It brought together a diverse group of participants, including State of *(continued on page 6)*

Be a Reef-Hugger

As you do your Fall yard work, please fertilize less and use eco-friendly fertilizer or alternatives to fertilizer. ALWAYS dispose of household, yard, and garage chemicals properly.

Pacific continued...

Hawaii Department of Aquatic Resources, the Coral Reef Targeted Research Program Coral Disease and Remote Sensing Working Groups, the U.S. Fish and Wildlife Service, as well as disease specialists from James Cook University (Australia), Cornell University (USA), Victoria University of Wellington (New Zealand), the Hawai`i Institute of Marine Biology (USA) and the World Conservation Monitoring Centre of the United Nations Environment Programme (UK). One important outcome from the workshop was a list provided by the State organizations that outlines goals for disease studies. Key sites for disease studies within the archipelago were also identified and further considerations are underway to determine which of these will have enhanced monitoring through the project.

HI disease workshop participants. Courtesy: Mark Eakin

Mesophotic Coral Reef Exploration in the NWHI. Papahānaumokuākea Marine National Monument's latest research cruise, conducted from August 8 through September 6 on the NOAA Ship Hi`ialakai, focused on characterizing the biodiversity of the mesophotic coral reef ecosystems of the Northwestern Hawaiian Islands (NWHI). Most coral reef research to date has been conducted in depths of 100 feet or less, yet some reef-building corals live at depths exceeding 300 ft. Using technical mixed gas diving to access depths between 180 and 280 feet, scientists discovered diverse algal beds in over 200 feet of water that serve as an extensive nursery habitat for juvenile deep-water coral reef fishes. Many of the fishes observed in this habitat are endemic species which are unique to Hawai`i and are not found anywhere else on earth. The scientists collected the holotype (specimen used as the example when a new species is described) of a new species of butterflyfish (genus *Prognathodes*) in 200 feet of water at Pearl and Hermes Atoll. This species was first observed from submersibles, and had not previously been seen shallower than 400 feet. The scientists also recorded the northernmost occurrences of two species Hawaiian black coral at Laysan Island and Pearl and Hermes Atoll. To read the mission log, click here.

Left: New butterflyfish species. Right: Chief Scientist, Randy Kosaki, next to a large colony of black coral (*Antipathes ulex*) at 190 feet. Courtesy: Greg McFall

DID YOU KNOW...

One estimate places the total net benefit per year provided by the world's coral reefs at $29.8 billion!

Worldwide, 30 million people are virtually totally dependent upon coral reefs for their livelihoods or the land they live on!

Coral reefs are one of the only living structures that can be seen from space!

International Updates

International Workshop on *Corallium*. The "International Workshop on Red Coral Science, Management and Trading: Lessons from the Mediterranean" was held September 23-26 in Naples, Italy. This workshop, co-supported by the governments of Italy and the U.S., was convened to survey the state of knowledge regarding *Corallium rubrum* in the Mediterranean. International experts from governments, academia, non-government organizations, and the Convention on International Trade in Endangered Species Secretariat shared information on biological, fisheries, and trade data and discussed issues that should be addressed to improve management and sustainability of this species.

Coral Mapping and Monitoring in the Marshall Islands. From September 1-13, National Centers for Coastal Ocean Science scientists collected field data to support international coral reef mapping in Majuro, an atoll in the Republic of the Marshall Islands. The team collected GPS, digital photographs, and habitat data to characterize about 300 locations. The data will guide creation of a map of the coral reef ecosystems around the atoll and be used as a spatial framework for monitoring reef resources and their changes through time.

Instruments Deployed in Coral Triangle MPA. From August29 –September 5, a team of NOAA scientists, together with a colleague from The Nature Conservancy (TNC) and a local supporter, successfully deployed oceanographic instruments in the Kimbe Bay Marine Protected Area (MPA) Network in Papua New Guinea. Kimbe Bay is situated on the volcanic island of New Britain, an area rich in biodiversity - the Coral Triangle is the center of global reef biodiversity, comprising a *(continued on page 7)*

International continued...

staggering proportion of diversity (75% of coral species, 50% of reef fish species, and 53% of coral reefs). The Kimbe Bay MPA is the flagship effort by TNC to apply resilience principles to protect marine areas in the Coral Triangle from climate change.

Left: NOAA CRED scientists deploying subsurface temperature recorder at Tuari Reef in Kimbe Bay. Right: Walindi Resort staff loading SST buoy for deployment at Bradford Shoal in Kimbe Bay. Courtesy: Mark Eakin, Alison Green/TNC

The NOAA team consisted of staff from the Coral Reef Watch (CRW) and the Coral Reef Ecosystem Division. This CRCP-funded project deployed a moored, Sea Surface Temperature (SST) buoy, nine Autonomous Reef Monitoring Structures (ARMS) to monitor the biodiversity of cryptic invertebrates, and nine subsurface temperature recorders. In addition to the nine ARMS that are part of an international project under the Census of Marine Life, an additional Ecological Acoustic Recorder (EAR) was deployed to record the bioacoustic activity of these coral reef ecosystems, collect information about the frequency and occurrence of human activities in MPAs, and for local outreach efforts. These deployments extend the Coral Reef Ecosystem Integrated Observing System (CREIOS) into the Coral Triangle. Work at Kimbe Bay would not have been possible without the logistical support donated by Walindi Plantation Resort in Kimbe Bay.

Data from this work will play three main roles: (1) improve SST data used by TNC for development and execution of coral reef protection in Kimbe Bay, (2) improve NOAA satellite-based SST products through calibration and validation for a location frequently covered by clouds, and (3) monitor biological responses to changes in SST at the site. Data from the SST buoy is now online and available to resource managers.

As a result of this work, NOAA and CRW were featured in Cool Green Science, the TNC conservation blog entries. The September 16 installment discussed the SST buoy. On September 22, the blog discussed ARMS in depth, and on September 29, the blog covered EARs.

New Data in CoRIS

Product Name	Description
Intertidal Species Inventory and Quantitative Data Collected on Oahu and Maui during 2001-2005 (NODC Accession 0002447) *Link to sample metadata for this product*	Two types of data sets were generated by this project: species inventories and quantitative counts of key organisms.
Map of percent scleractinian coral cover along camera sled and ROV tracks in the Auau Channel, Hawaii *Link to sample metadata for this product*	This map displays optical validation observation locations and percent coverage of scleractinian coral overlaid on bathymetry and landsat imagery.
Integrated Coral Observing Network (ICON) stations data for 2008 *Link to sample metadata for this product*	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).

(continued on page 8)

Every Act Counts

It stinks to send chemicals into our waterways.

Whether you live one mile or one thousand miles from a coral reef, the chemicals we use to clean our houses and beautify our lawns end up in our waterways and are carried to the oceans. Just one pound of phosphorus in water produces an estimated five hundred pounds of algae, blocking sunlight and starving coral reefs.

Do your part by using naturally-derived and biodegradable detergents and cleaning products. Outside the house, minimize the impacts of fertilizer by using zero-phosphorus products or no more than one pound per 1,000 square feet of turf area for nitrogen (you need just half that amount in shade).

Whether you live one mile or one thousand miles from a coral reef, your actions affect the reefs' future – and the reefs' future affects yours.

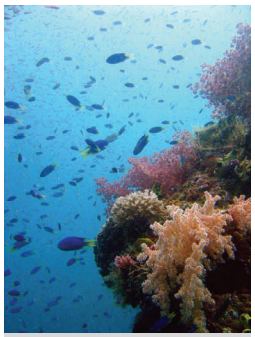
New Data in CoRIS continued...

Product Name	Description
CNMI-Guam Gridded Geomorphology data files *Link to sample metadata for this product*	The geomorphological data layers of substrate, slope, rugosity, and bathymetric position index (BPI) produced at the Pacific Islands Benthic Habitat Mapping Center (PIBHMC) are derived from multi-beam bathymetry. These data sets are for the shelf and slope environments of Guam, Pagan, Saipan, Tinian, Supply Reef, Sarigan, Rota, Maug, Guguan, Farallon de Pajaros, Asuncion, Alamagan and Agrihan.
CRED REA Reef Fish Assessment Surveys *Link to sample metadata for this product*	Reef fish assessment surveys were focused on cataloging the diversity (species richness), abundance (numeric density [# fish 100 m-2] and biomass density [kg 100 m-2]) of diurnally active reef fish assemblages. Three complementary noninvasive underwater survey methods were used, including belt-transect, stationary point count, and roving-diver surveys. Updates include 2008 data for American Samoa, Main Hawaiian Islands, Northwestern Hawaiian Islands, Johnston Atoll, Kingman Reef and Palmyra Atoll. 2009 data are available for CNMI, Guam and Wake Island.
CRED REA Belt Surveys of Coral Population and Disease Assessments *Link to sample metadata for this product*	The coral belt surveys were focused on quantifying the diversity, abundance, density, and size-class distribution of the anthozoan and hydrozoan corals as well as the condition and health state of the coral reef populations. The surveys were conducted along two consecutively-placed, 25m transect lines. When a coral colony exhibited signs of disease or compromised health, additional information was recorded including type of affliction, severity of the affliction , as well as photographic documentation and sometimes tissue samples. 2009 data were collected in CNMI, Guam and Wake Island. 2008 data were collected in the Main Hawaiian Islands and Northwestern Hawaiian Islands.
CRED REA Line Point Intercept Surveys of Benthic Parameter Assessments *Link to sample metadata for this product*	The line point intercept surveys were used to quantitatively assess average percent live coral cover and other benthic substrates at REA sites. The surveys were conducted along two consecutively-placed 25m transect lines by a coral biologist. All benthic elements falling directly underneath the transect line at 20-cm to 50-cm intervals were recorded as one of nine benthic categories. Benthic parameter data were collected at Wake Island, Northwestern Hawaiian Islands, American Samoa, PRIAs, CNMI, Guam and the Main Hawaiian Islands.
Hawaii State-wide Water Quality Sampling Dataset 1973-2006 *Link to sample metadata for this product*	The Monitoring Section of the State of Hawaii, Department of Health, Clean Water Branch collects water quality data at over 300 coastal locations state-wide using well-established instruments and methodologies. NODC Accession 0013724 - covers 1973 to 1998. NODC Accession 0013723 - covers 1999 to 2006.

(continued on page 9)

FUNDING OPPORTUNITY

Proposals for project funding via the NOAA CRCP and National Fish and Wildlife Foundation partnership are being accepted through October12.;click here *(pdf, 116 kb)* to learn more.



Coral Reefs support more species per unit area than any other marine environment. Courtesy: Dave Burdick

New Data in CoRIS Continued...

Product Name	Description
Wave and Current Data from Kuhio Bay in Hilo, Hawaii March through June 2007 (NODC Accession 0050188) *Link to sample metadata for this product*	Field data collection was conducted for the U.S. Army Engineer District, Pacific Ocean, Honolulu (POH), during 21 March through 7 June 2007, in Kuhio Bay of Hilo, Hawaii (Big Island). Wave and current data were collected at three fixed locations using bottom-mounted RD Instruments Workhorse, 1.2 MHz, ADCPs (Acoustic Doppler Current Profilers).
Macro-algae Biomass and Cover from Near-shore Regions of the Natatorium War Memorial, Waikiki, Oahu, Hawaii 1966-2005 (NODC Accession 0040082) *Link to sample metadata for this product*	The Department of Zoology, University of Hawaii at Manoa, incorporated surveys of macro-algae as part of the Zoology 439L "Laboratory in Ecology" during annual field experiments 1970-2005. Macro-algae species were identified and biomass and percent substrate cover were quantified using a 200m transect extending seaward from Natatorium Wall sampling at 10m intervals.
Hourly surface currents measured by High Frequency (HF) Wellen radars (WERA) off western Oahu, Hawaii, from September 2002 to May 2003 (NODC Accession 0013133) *Link to sample metadata for this product*	A pair of High Frequency Wellen radars (WERA) shore-based at southwest Oahu (Ko'Olina) and northwest Oahu (Kaena), Hawaii measured surface currents over a nine-month period from September 2002 to May 2003.
Temperature, Salinity, Dissolved Oxygen, and Chloropigment Profile Data from R/V Oscar Elton Sette Cruise OES 04-03 near American Samoa *Link to sample metadata for this product*	The Ecosystems and Oceanography Division of the Pacific Islands Fisheries Science Center, National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA), conducted a cruise, OES 04-03, in March 2004 near American Samoa on the R/V Oscar Elton Sette. This finalized data set contains the profiles of temperature, salinity, dissolved oxygen, and chloropigments.
Water Quality and Sedimentation Data of the Coastal Intensive Site Network (CISNet) Long Term Monitoring Sites in Kaneohe Bay, Oahu, Hawaii from 1998 to 2001 *Link to sample metadata for this product*	A long term project to monitor water quality and sediment processes in Kaneohe Bay was initiated in November 1998 and continued through July 2001. Measurements included, temperature, conductivity, salinity, dissolved oxygen, turbidity, light penetration, chlorophyll and nutrients.
Data from a Directional Waverider Buoy off Kailua Bay, Windward Oahu, Hawaii during August 2000 - July 2004 (NODC Accession 0001660) *Link to sample metadata for this product*	The University of Hawaii (UH) has maintained a Datawell Mark 2 Directional Waverider Buoy roughly 4 miles southeast of Mokapu Point, Oahu in roughly 100 m ocean depth since 9 August, 2000. It is located at the seaward edge of Kailua Bay, Windward Oahu. The buoy is a 0.9 m metallic floating sphere with a combination of a bungee and chain anchoring system. The long-term availability of this mooring is uncertain.
Data from a Directional Waverider Buoy off Waimea Bay, North Shore, Oahu during December 2001 - July 2004 (NODC Accession 0001626) *Link to sample metadata for this product*	The University of Hawaii (UH) has maintained a Datawell Directional Waverider Buoy roughly 5 km northwest of Waimea Bay, Oahu in roughly 200 m ocean depth since 9 December, 2001. The buoy is a 0.9 m metallic floating sphere with a combination of a bungee and chain anchoring system. The long-term availability of this mooring is uncertain.

TOO PRECIOUS TO WEAR
Creating a Demand for Coral Conservation

As part of SeaWeb's Too Precious to Wear Campaign, top New York and Los Angeles designers created an ocean-inspired jewelry collection that celebrates the ocean without harming it. This collection launched in NYC in February.

CORALS ARE ALREADY A GIFT · DON'T GIVE THEM AS PRESENTS

Be a Reef-Hugger

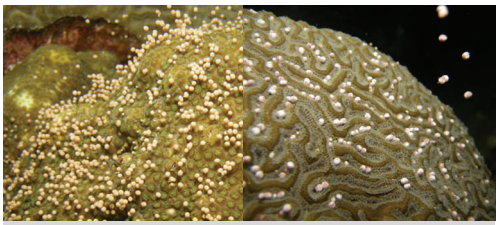
Corals are already a gift. Don't give them as presents.

Atlantic/Caribbean continued...

seeps occur where methane gas escapes from large stores beneath the ocean floor. This site in DeSoto Canyon set a new depth record for six different genera of octocorals, including three different species of bamboo corals. In addition to the deep-sea coral findings, the science team collected the first alkalinity data from the Gulf to begin understanding the potential impact of ocean acidification on deep-sea corals. To read the Web logs and view more images, click here.

FGBNMS Coral Spawning. The Flower Garden Banks National Marine Sanctuary (FGBNMS) harbors two separate coral reef banks that are located 100 miles south of the Texas/Louisiana border in the Northwestern Gulf of Mexico. The two banks, East (EFGB) and West Flower Garden Banks, are approximately 12 miles apart. The reefs are dominated by enormous brain and star corals, most of which are mass spawning species. Each year, sanctuary scientists and researchers from other facilities observe this phenomenon in an effort to learn more about this reproductive process. This year, there was also a NOAA film crew present to capture coral spawning footage.

During the 2009 mass coral spawning events in the FGBNMS, two vessels with a total of 24 divers were at stations in EFGB making observations. Each diver spent approximately 45minutes at depth, and covered a very limited portion of the reef. The following is a summary of spawning sightings from both vessels: 94 *Montastrea franksi* (boulder star coral) colonies, 20 *M. faveolata* (mountainous star coral) colonies, 13 *M. cavernosa* (great star coral) colonies, 33 *Diptheria strigosa* (symmetrical brain coral) colonies, and one *Stephanocoenia intersepta* (blushing star coral) colony. The groups also observed Christmas tree worm and barrel sponge spawning.



Left: Boulder star coral spawning. Right: Symmetrical brain coral spawning. Courtesy: Emma Hickerson/FGBNMS

Publications

CDHC Releases Strategic Plan to Combat Coral Disease in the Pacific. A product of the Coral Disease and Health Consortium (CDHC), *Coral Health and Disease in the Pacific: Vision for Action* is a strategic plan of action to combat the health crisis for Pacific coral reefs. It documents the proceedings of the "Coral Health and Disease in the Pacific: Vision For Action" workshop held by the CDHC and is designed to enable regional scientific efforts to detect, identify, characterize, and manage coral diseases in the Pacific. For hard copies or to obtain more information, please contact the CDHC.
Citation: Galloway, S.B., Bruckner, A.W. and Woodley, C.M. (eds.), 2009. *Coral Health and Disease in the Pacific: Vision for Action.* NOAA Technical Memorandum NOS NCCOS 97 and CRCP 7. National Oceanic and Atmospheric Administration, Silver Spring, MD 314pp.

NCCOS Scientists Contribute to Book. Scientists from the National Center for Coastal Ocean Science authored a chapter on landscape ecology and ecological connectivity for a new book entitled *Ecological Connectivity among Tropical Coastal Ecosystems*. This book provides a comprehensive review of the major ecological interactions across tropical marine ecosystems that result from the mutual exchange of nutrients, organic matter, fish and crustaceans. Included are chapters that review tools to study and quantify these linkages, the importance of such linkages for fisheries, and how tropical ecosystems should be conserved and managed for sustainable use.
Chapter citation: Grober-Dunsmore R, Pittman SJ, Caldow C, Kendall MA & Fraser T (2009). A landscape ecology approach for the study of ecological connectivity across tropical marine seascapes. Chapter 14 In (Nagelkerken ed.) Ecological Connectivity Among Tropical Coastal Ecosystems. Springer.

Hoeke, R. K., J. M. Gove, , K. B. Wong, R. E. Brainard E. Smith, P. Fisher-Pool, M. Lammers, D. Merritt, O. J. Vetter, and C. W. Young (2009), Coral reef ecosystem integrated observing system: In-situ oceanographic observations at the US Pacific islands and atolls, Journal of Operational Oceanography, 2, 3-14.

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The CRCP supports effective management and sound science to preserve, sustain and restore valuable coral reef ecosystems.

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