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Coral Reef News



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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](#).

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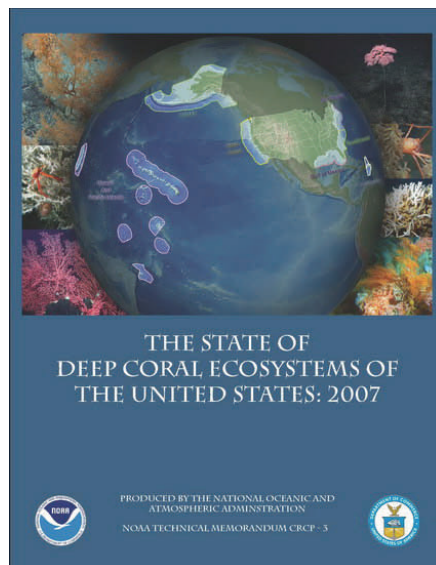
Special Features

CRCP External Review Report Now Available. In September, the NOAA [Coral Reef Conservation Program](#) (CRCP) convened a panel of distinguished experts to conduct an external review of the program. The panel was charged with assessing CRCP effectiveness over a five-year period (fiscal years 2002-2006) and providing recommendations for the future direction of the program. The CRCP has received the panel's report; it is available for download [here](#), along with other documents associated with the review. The CRCP is now in the early stages of developing a framework within which to craft the future direction of the program. This effort will incorporate the review panel's recommendations, any new mandates that may be included in a reauthorized Coral Reef Conservation Act, and suggestions solicited from reef managers, scientists, advocates, and stakeholders.

NOAA Releases First Deep Coral Ecosystem Status Report. On December 10, NOAA released a new report, [The State of Deep Coral Ecosystems of the United States](#), prepared by the [Coral Reef Conservation Program](#) (CRCP). The report, written by experts in seven regions

around the country, provides an up-to-date assessment of deep coral ecosystems in U.S. waters including: the biology of deep corals and their associated species, their spatial distribution, the stressors that may threaten their survival, current management measures, and regional priorities for future research. *The State of Deep Coral Ecosystems of the United States* report shows that these habitats, found at depths ranging from 50-3000+ meters, may be much more extensive and important to ocean ecosystems than previously known. NOAA works with Regional Fishery Management Councils, Fishery Science Centers, other Federal partners, academia, the environmental and fishing communities and other stakeholders to understand and protect these unique and vulnerable ecosystems. The report will serve as the basis for the first biennial report to Congress on NOAA's implementation of the Deep Sea Research and Technology Program. For more information, read the [NOAA press release](#) on this report.

New Science Paper Says Carbon Emissions Threaten Coral Reefs. On the eve of [International Year of the Reef 2008](#), scientists are warning that most coral reefs will not survive the rapid increases in global temperatures and atmospheric CO₂ that are forecast over this century by the [Intergovernmental Panel on Climate Change](#) unless drastic action is taken to curb CO₂ emissions. Even emission curbs will not be enough without concerted management of other threats to these ecosystems. NOAA [Coral Reef Watch](#) (CRW) coordinator Mark Eakin, and 17 fellow coral scientists from seven countries around the globe co-authored a [paper](#) on these findings that appears as the cover story in the December 13th issue of the peer-reviewed journal, [Science](#). The paper notes that one of the important tools reef managers have been using is the NOAA CRW warning system which was launched in 2000. The system provides managers with automated e-mail alerts when NOAA satellite observations indicate rising water temperature beyond critical limits, conditions warranting extra measures to reduce stress on the local reefs. For more information, read the [NOAA press release](#).



UPCOMING EVENTS

January 2008

24 – 25: Launch of International Year of the Reef.

Washington, DC

28 – 31: Coral Reef Management Fellowship Orientation.

Honolulu, HI

February 2008

27 – 29: 19th U.S. Coral Reef Task Force Meeting, Washington, DC



The **11th ICRS**, with the theme of **Reefs for the Future**, will be held in Ft. Lauderdale, FL, July 7-11, 2008. The 11th ICRS is also a key-stone event within the **International Year of the Reef (IYOR) 2008**.

Announcements

NOAA Seeks Public Comment on Proposed Protections for Threatened Elkhorn and Staghorn Corals. NOAA is proposing to extend most of the prohibitions of the Endangered Species Act (ESA), normally applied only to endangered species, to the threatened elkhorn and staghorn corals. Both species were listed as threatened in May 2006. Species listed as endangered under the ESA are automatically covered by a suite of protective measures and prohibitions in the law. However, for species listed as threatened, these same measures and prohibitions do not automatically apply. Therefore, NOAA Fisheries Service developed a separate proposed rule, called a 4(d) rule after section 4(d) of the ESA, detailing the prohibitions necessary to provide for the conservation of elkhorn and staghorn corals. The proposed rule would prohibit the take, trade and all commercial activities involving elkhorn and staghorn corals. For corals, collection or any activity that will result in mortality and harm is considered a “take” of the species. Other prohibited activities include anchoring or grounding a vessel on the coral, dragging fishing gear on the species, removing or altering the corals’ habitat; or discharging any pollutant or contaminant that will harm the species. Allowable activities are limited to qualified scientific research and enhancement and restoration activities carried out by an authorized agency. The public has 90 days to comment on the proposed rule; the comment period ends on March 13, 2008. Please find the *Federal Register* notice for the full proposed rule (Vol. 72 No. 240, pages 71102-71111), supporting documents, instructions for submitting comments, and Frequently Asked Questions on the NOAA [Southeast Regional Office](#) Web site. More information can also be found in the [NOAA press release](#).



Staghorn coral, one of the threatened species affected by the proposed 4d rule, is shown here. Courtesy: Andy Bruckner, NOAA Fisheries

Funding Opportunity for Coral Reef Research in the Pacific Region. The [Hawai'i Undersea Research Laboratory](#) (HURL), a [NOAA Undersea Research Program](#) Center, in

partnership with the NOAA [Coral Reef Conservation Program](#) (CRCP) is soliciting research pre-proposals for coral reef research for fiscal year (FY) 2009 and FY 2010. This funding opportunity is for one to two year targeted research projects that address one or more of the following threats facing U.S. coral reefs: fishing, pollution, coastal uses (including invasive species), climate change, and extreme events. Proposals should be for work in the waters of the Main and Northwestern Hawaiian Islands, America Samoa, Guam, Commonwealth of the Northern Mariana Islands, the U.S. Pacific Remote Insular Areas, the Republic of the Marshall Islands, Federated States of Micronesia, or the Republic of Palau. They should also demonstrate how products from the project would enable resource managers to address threats to reefs and advance conservation of coral reef ecosystems. The full funding announcement and further directions can be accessed [here](#). Pre-proposals are due on *January 18, 2008*. For any further information regarding this opportunity, please contact [Dr. John R. Smith](#), (808) 956-9669.

Funding Opportunity for Coral Reef Research in the Southeast U.S. and the Gulf of Mexico. [NOAA Undersea Research Program](#) Center at the University of North Carolina Wilmington is soliciting research pre-proposals for *two specific funding opportunities* for coral reef and reef-related ocean acidification research for 2008 and 2009. Both opportunities require a focus on the Southeast U.S. or Gulf of Mexico, including coral reef ecosystems in the Florida Keys, Southeast Florida, Eastern Gulf of Mexico, and the Flower Garden Banks. The first opportunity is direct science support for a research mission focused on the impacts of ocean acidification on coral reefs at [Aquarius](#) during October 2008. The second opportunity is for one to two year targeted research projects that address one or more of the following threats facing U.S. coral reefs: fishing, pollution, coastal uses (including invasive species), climate change, and extreme events. Proposals should be geared towards management-oriented research and should clearly demonstrate how the products from the project would enable resource managers to address threats to reefs and advance conservation of coral reef ecosystems. The full funding announcement and further directions can be accessed [here](#). Pre-proposals are due on *January 14, 2008*. For any further information regarding this opportunity, please contact [Thomas Potts](#), (910) 962-2442. (continued on page 6)

Updates from Headquarters

CRW Participates in Data Integration Meeting in Florida Keys. On December 12-13, a [Coral Reef Watch](#) (CRW) scientist attended a workshop on data integration for the [Florida Reef Resilience Program](#) (FRRP) in Key West, FL. The scientist presented on "NOAA Coral Reef Watch: Remote sensing tools for Florida," with a discussion on long-term satellite-derived sea surface temperature data and other parameters that may be useful to set the climatological context for the extensive *in situ* data collected in 2005-2007 by the FRRP. The FRRP includes researchers from [The Nature Conservancy](#), the NOAA [Florida Keys National Marine Sanctuary](#), [The World Wildlife Fund](#), the [State of Florida Fish and Wildlife Commission](#), the [U.S. Environmental Protection Agency](#), [Mote Marine Laboratory](#), the [Florida Institute of Technology](#), and many others.

CoRIS Data Workshop a Success. From November 5-7, members of NOAA's [Coral Reef Information System](#) (CoRIS) met with the coral program managers and scientists of the [Coral Reef Ecosystem Division \(CRED\)](#) at the [Pacific Islands Fisheries Science Center](#) (PIFSC) in Honolulu, HI. Individual meetings were held with each of the CRED working groups in order to continue the process of gaining, and providing access to, coral data and publications, and to offer assistance however possible. CoRIS was also fortunate enough to meet with members of the [Pacific Islands Regional Office \(PIRO\)](#), [Papa-hānaumokuākea Marine National Monument](#), [Hawaii Division of Aquatic Resources \(DAR\)](#), and [Hawaii Institute of Marine Biology \(HIMB\)](#). As a result of the workshop, CoRIS received additional metadata submissions from the participating offices for future archiving on the CoRIS Web site.



The International Year of the Reef (IYOR) 2008 is a worldwide campaign to raise awareness about the value and importance of coral reefs and threats to their sustainability, and to motivate people to take action to protect them.

Updates from the Atlantic/Caribbean Region

SEFSC Participates in Workshop on Fishery Resources and Management of Biscayne National Park. On Nov 27-28, [Southeast Fisheries Science Center](#) (SEFSC) researchers and [University of Miami](#) (UM) collaborators participated in a workshop sponsored by [Biscayne National Park](#) (BNP) to further development of a Fishery Management Plan for Florida's BNP. A main objective of the workshop, which was attended by managers and researchers from the [National Park Service](#), the [State of Florida Fish and Wildlife Commission](#), UM, and SEFSC, was to agree on the status of fishery resources in BNP and discuss appropriate management responses. Data generated by SEFSC in [Coral Reef Conservation Program](#)-funded projects was a focal point of the workshop.

Ocean Acidification Think Tank Held in Cayman Islands. The [Central Caribbean Marine Institute's Little Cayman Research Center](#) (LCRC) hosted *Think Tank #5: A Strategic Planning Session for Ocean Acidification Research* December 3-7 in the Cayman Islands. LCRC will be the site of the next Integrated Coral Observing Network /Coral Reef Early Warning System (ICON/CREWS) station and will include a sensor for measuring pCO₂. Scientists from NOAA ([Atlantic Oceanographic and Meteorological Laboratory](#), [National Environmental Satellite Data and Information Service](#), [Pacific Marine Environmental Laboratory](#)), the [U.S. Geological](#)

[Survey](#), the [National Center for Atmospheric Research](#), [University of South Florida](#), University of Miami's [Rosenstiel School of Marine and Atmospheric Science](#), the [University of Queensland](#) (Australia), and the Cayman Islands Department of Environment attended the workshop. In total, 18 experts worked together to better understand and explain the effect of climate change and specifically ocean acidification on coral reefs. A document of recommendations for future action has been drafted and is being written for publication as a [Coral Reef Conservation Program](#) (CRCP) Technical Memorandum. Funding for the workshop was provided through NOAA's CRCP.

Diadema Workshop Held in the Keys. On December 5th and 6th, a *Diadema* Restoration Workshop was held at the [Florida Keys National Marine Sanctuary](#). *Diadema antillarum* is the grazing sea urchin that experienced a mass die-off throughout the Caribbean region in 1983, and has only partially recovered at some locations such as Jamaica and the U.S. Virgin Islands. The population in the Florida Keys remains at a very low level. The workshop was organized by the [Mote Marine Laboratory](#); its primary aims were to prioritize research needs with respect to *Diadema* restoration, and establish designs for a project or a set of projects to address key issues. Six issues were identified as top priority, in three broad categories: (continued on page 4)

"Our findings are simple. Increasing concentrations of atmospheric carbon dioxide are warming and acidifying the oceans. The impacts will be dramatic. Coral reef ecosystems will begin to disappear within the next 50 to 75 years. Warming and acidification will have devastating impacts on marine biodiversity and human livelihoods, especially in developing nations that depend on reefs for much of their economic well being."

– Mark Eakin,
NOAA Coral Reef
Watch Coordinator
(feature on page 1)

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



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

Atlantic/Caribbean continued...

(1) understanding habitat influences on *Diadema* settlement, recruitment, and survival; (2) developing *Diadema* mass-rearing capacity; and (3) developing a *Diadema* population model to synthesize information and aid decision-making. A joint grant proposal is being prepared that combines aquaculture technology development with field experimentation, integrated closely with *Diadema* population modeling work and outreach efforts to educate local citizens about coral reef conservation needs.

CRCP and NMSP Partner to Present Coral Restoration Workshop in Puerto Rico. Drawing on over 25 years of NOAA [National Marine Sanctuary Program's](#) (NMSP) experience in the Florida Keys and wider Caribbean, the NMSP packaged their recommendations for standardized methods of prevention, monitoring, damage assessment, and restoration for an audience of scientists and resource managers from the Caribbean region. A coral reef restoration workshop was held in La Parguera, Puerto Rico on Dec 5-6. Seventeen biologists and resource managers representing 13 Caribbean nations, territories, and U.K. Crown colonies attended. The training was organized and put on by staff from NOAA's NMSP headquarters, the [Florida Keys National Marine Sanctuary](#), the [Restoration Center](#), the [National Ocean Service's International Program Office](#) and the [Coral Reef Conservation Program](#). Presentations and classroom work were augmented with "in-the-water" opportunities for observation, instruction, and hands-on work. The event included a site visit to the *Margara* grounding, believed to be the largest post-grounding coral restoration project ever undertaken. Funding for this workshop was provided by NOAA's CRCP.

Greater Integration of NOS Activities to Benefit Management of Vieques Island Habitats. Scientists from three [National Ocean Service](#) (NOS) offices ([National Centers for Coastal Ocean Science](#), [Office of Response and Restoration](#), and [Office of Coast Survey](#)) met in Silver Spring on Nov. 28 to discuss the status of the NOAA [Vieques Project](#). Significant attention was given to developing a strategy to

complete an ecological assessment of Vieques, Puerto Rico to support local resource management. Meeting participants provided project status reports, discussed data integration requirements, and outlined future collaboration opportunities. The focus of this strategy was on benthic habitat mapping and characterization, fish, and invertebrate community structure; an assessment of chemical and nutrient contamination in water, sediments, and coral tissues; and novel techniques for characterizing military ordnance abundance, distribution, and composition. Vieques Island was used for nearly 60 years as a military training ground.

NOAA Initiates Marine Debris Monitoring at GRNMS. NOAA has established a new monitoring program in [Gray's Reef National Marine Sanctuary](#) (GRNMS) to collect data on the location and types of marine debris in the sanctuary. The monitoring data will be used to support cleanup efforts and reduce harmful effects on sanctuary resources.

"Understanding the sources of marine debris, and the processes that distribute it throughout the sanctuary, is crucial for designing debris prevention, education, and cleanup efforts to improve habitat quality. Results from this new monitoring program will greatly enhance marine debris removal efforts in the sanctuary."

- George Sedberry, Gray's Reef National Marine Sanctuary superintendent.

to determine the frequency of monitoring and cleanup efforts. The monitoring program is based on a 2007 NOAA study, and both the study and monitoring program address needs outlined in the GRNMS 2006 Final Management Plan to assess and monitor the status of marine debris in the sanctuary. The monitoring program at Gray's Reef is funded by the NOAA Marine Debris Program. Located off the Georgia coast, GRNMS is one of the largest nearshore live-bottom reefs off the southeastern United States, covering approximately 23 square miles. For more information, read the NOAA [press release](#).

Nine long-term monitoring sites are being established throughout the sanctuary to compare debris accumulation rates among regions with differing levels of human use. Sites will be monitored by trained volunteer divers quarterly. The data will allow sanctuary managers to target locations in need of debris removal, and

Updates from the Pacific Region

NMSP Maritime Heritage Program Launches Web site on 2007 Papahānaumokuākea Expedition. From August 25th until September 10th, archaeologists from the [Maritime Heritage Program](#) (MHP), the Pacific Islands Region, and the [Papahānaumokuākea Marine National Monument](#) (Monument) conducted non-invasive surveys on shipwreck sites at Midway Atoll, Pearl and Hermes Atoll, and French Frigate Shoals in the Monument that furthered understanding of maritime heritage resources in the Northwestern Hawaiian Islands. The archaeology team's goal was to locate new wreck sites and continue the documentation of known sites by using methods such as photo and video documentation, site drawings, and GIS mapping. Working aboard the NOAA ship *Hi'ialakai* for this [expedition](#), the maritime heritage team investigated several sites including a World War II, F4U-I Corsair at Midway Atoll, the former Liberty ship *SS Quartette* at Pearl and Hermes Atoll, and a new wreck site at French Frigate Shoals. The latter is most likely the 19th-century wooden four-masted schooner *Churchill*, which sank in the area in 1917. The 2007 maritime heritage team included the maritime heritage coordinator for the Pacific Islands Region; a maritime archaeologist for the Monument; a maritime archaeologist from the MHP; and the Deputy Superintendent of the Monument.



Bits from the shipwreck *SS Quartette*, a Liberty ship wrecked at Pearl and Hermes Atoll. Courtesy: Tane Casserley, NOAA

Deep Sea Coral Research in the Monument. Researchers recently returned from [Papahānaumokuākea Marine National Monument](#) (Monument) and reported the discovery of new deepwater coral and sponge beds found thousands of feet below the surface. The *Pisces V* submersible, operated by the [Hawaii Undersea Research Laboratory](#) (HURL), was used to survey two study sites in the monument: a volcanic ridge located near Twin Banks and a seamount

located near French Frigate Shoals. HURL will be working with the Monument to conduct additional surveys of deepwater ecosystems in the Northwestern Hawaiian Islands; the organisms of these habitats are virtually unknown. This research cruise took place on the [University of Hawaii's](#) R/V *Ka'imikai-o-Kanaloa* and was an opportunity to better understand precious corals in these deepwater environments. Staff from NOAA's [Pacific Islands Fisheries Science Center](#) and a group from [Stanford University](#) were also aboard for separate research projects on the ages and growth rates of precious corals, as well as how deepwater coral beds are related to current velocity and direction.

CRED Hosts Workshop to Develop Monitoring Protocol for Apra Harbor. The NOAA [Pacific Islands Fisheries Science Center's Coral Reef Ecosystem Division](#) (CRED) hosted a four day workshop in partnership with the Navy, University of Guam, and the University of Miami [Rosenstiel School of Marine and Atmospheric Science](#) on an opportunity to conduct long-term monitoring in Apra Harbor, Guam. The Navy hopes to extend Kilo Wharf in Apra Harbor, and hopes that this partnership would allow scientists to better understand any impacts the expansion would cause on local coral reef ecosystems. Scientists collaborated to develop a monitoring protocol that would effectively document any changes to the benthic habitat in the harbor. Resource managers from the [Environmental Protection Agency](#) and NOAA Fisheries [Pacific Islands Regional Office](#) were also in attendance for a portion of the workshop.

Malolo I Completes Successful Test Flights. The NOAA [Pacific Islands Fisheries Science Center's Coral Reef Ecosystem Division](#) (CRED) hosted [Airborne Technologies, Inc.](#) in Honolulu for three days of field tests for the Unmanned Aerial System (UAS) *Malolo I* ("flying fish"). The UAS, developed in partnership with the [Papahānaumokuākea Marine National Monument](#) (Monument), has a 7-foot wingspan and weights under 10 pounds. The UAS has now been successfully deployed and recovered from a small boat and camera systems are operational. The next deployment will take place aboard the NOAA vessel *Oscar Elton Sette* on a two-week cruise to the convergence zone, an area north of the Hawaiian Archipelago, where it is anticipated the UAS will assist in locating marine debris conglomerates in the open ocean. The debris will then be tagged with satellite-tracked drifter buoys, or be removed and transported back to Honolulu.

Protect Reefs

- Be an informed consumer.
- Only buy marine fish and other reef organisms when you know they have been collected in an ecologically sound manner.
- Ask store managers where the organisms come from and how they were collected.
- Does the country have a management plan to insure the harvest was legal and sustainable over time?
- Click [here](#) for more information on how to find sustainably harvested reef fish.

Announcements continued...

CRCP Headquarters Acquires 2008 Sea Grant Fellow. NOAA's [Coral Reef Conservation Program](#) (CRCP) is pleased to announce that the headquarters office will be gaining a 2008 [Sea Grant Fellow](#) in February. Paulo Maurin, of Hawaii Sea Grant, will take on the duties of assisting the [U.S. Coral Reef Task Force](#) (USCRTF) during the [International Year of the Reef 2008](#) and working with the CRCP to implement recommendations provided by the external review panel. He will be responsible

for assisting the USCRTF steering committee co-chairs with planning and logistics for two week-long formal meetings, coordinating implementation of USCRTF resolutions, and serving as a point of contact for state and territorial relationships. He will also assist with the development of a NOAA Coral Program strategic plan that implements recommendations from the external review and new authorities eventually provided in a reauthorized Coral Reef Conservation Act.

International Updates

NOAA CRW Participates in World Bank Student Training Forum: The [Coral Reef Targeted Research and Capacity Building for Management Program](#) (CRTR) is a partnership between the World Bank/[Global Environment Facility](#) (WB/GEF), the [University of Queensland](#) (Australia), NOAA, and many others. As well as supporting research, the CRTR Program currently supports 52 students and junior researchers from around the world. These young scientists, mostly from developing nations, were brought to the University of Queensland for a week-long "Future Leaders Forum." This forum was conceived to develop a network of the future leaders in marine and coral reef ecosystem research and management by assisting in building their capacity to understand global issues impacting these ecosystems, and by developing new knowledge and skills to assist them in their current and future roles. Scientists from the CRTR Program were chosen to act as men-

tors and to help facilitate and serve as trainers for the forum, including a CRW staff member located in Australia



Participants in the Coral Reef Targeted Research (CRTR) Program "Future Leaders Forum" gather for a group photo in Queensland, Australia. Courtesy: William Skirving, NOAA Coral Reef Watch

Publications

Smithsonian Book Features Work by CRCP Scientists. On December 3, NOAA and the [Smithsonian Institution](#) released the book, *Hidden Depths: Atlas of the Oceans*, as part of an ongoing partnership for the Smithsonian's 2008 Ocean Hall exhibit. The book features several chapters that were written by CRCP scientists or include references to CRCP-funded projects and data. The lead authors of these chapters relied on the input of both internal and external partners to create the final text.

New CHAMP Publication. Manzello DP, Berkelmans R, Hendee JC (2007) Coral bleaching indices and thresholds for the Florida Reef Tract, Bahamas, and US Virgin Islands. *Marine Pollution Bulletin* 54: 1923-1931.

We value your feedback. Feel free to [email us](#) comments on the new format.

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

