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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 Satellite, 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](#).

Volume 6, No. 6

March 2009

From the Desk of the Program Manager

The CRCP Threat-Based and International Draft Goals and Objectives are available for comment March 27 – April 24, 2009. These draft goals and objectives have been developed over the past six months by an interdisciplinary team of coral reef scientists and managers. The participants to these [Working Groups](#) have spent a significant amount of time in developing these documents. My sincere thanks to them all for their service.

I encourage everyone in the coral reef community to provide comments. Your comments are important to us and will help inform the Final Goals and Objectives for the CRCP. Comments received will be forwarded to the appropriate working group (Fishing Impacts, Land-Based Sources of Pollution, Climate Change, and International) for consideration and incorporation into the final document, as appropriate.

When providing comments, we are particularly interested in the following:

- Are the Goals and Objectives at the appropriate scale (20-year Goals and 5-year Objectives)?
- Are there significant gaps?
- Are the Goals and Objectives sufficiently focused to achieve measurable improvement

in coral reef ecosystem condition?

- Identify which objectives you feel should be the top priority for the CRCP.

For more information, directions on how to provide public comment and to access the Draft documents, please visit the [Public Comment](#) page on the CRCP Web site.

By setting goals and objectives, we at NOAA are striving to make the CRCP more effective so we can accomplish more to conserve coral reefs in the U.S. and the international arena. We need your help to make sure we are setting goals and objectives that are meaningful, measurable and achievable so please take the time to provide your input. We look forward to hearing your thoughts.

-Kacky

Click [here](#) to take advantage of this public comment opportunity.

Announcements

Atlantic/Caribbean Mapping and Monitoring Workshop. The NOAA [Coral Reef Conservation Program](#) (CRCP) is reviewing its portfolio of monitoring and mapping activities, collectively called the [Coral Reef Ecosystem Integrated Observing System](#) (CREIOS), to ensure they are cost-effective, aligned with jurisdictional management needs, and able to deliver products and services in a timely manner to essential users, given funding constraints. As part of a strategic planning effort to strengthen the link between science and management, the CRCP will bring together coral reef ecosystem managers and CRCP scientists at a two-day workshop

May 13-14 in San Juan, Puerto Rico. The geographic focus will primarily be on Florida, Puerto Rico, and the U.S. Virgin Islands, and to a lesser extent, Navassa Island and coral-dominated banks in the Gulf of Mexico. The workshop will be similar to the November 18-20, 2008 workshop that was held in Honolulu, Hawai'i to discuss efforts in the Pacific region. The Puerto Rico workshop objectives are to 1) identify mapping and monitoring priorities for local, regional, and national management efforts, 2) identify data and information needed to address current gaps, and 3) identify potential products and new solutions for meeting manage- (continued on page 2)

UPCOMING EVENTS

April

2: NSTA Web Seminar: [The Heat is On!: Climate Change and Coral Reef Ecosystems](#)

6: [Applications due: Stimulus Plan Coral Reef Restoration Projects.](#)

6: [Public Comment Deadline: Nominations to National System of MPAs.](#)

24: [Public Comment Deadline: Draft CRCP Goals and Objectives](#)

30: NSTA Web Seminar: [The Heat is On!: Climate Change and Coral Reef Ecosystems](#)

May

11-15: [World Ocean Conference](#), North Sulawesi, Indonesia.

13-15: Caribbean Mapping & Monitoring Workshop, San Juan, PR. By invitation only; contact [Jenny Waddell](#) for details.

June

29-30: [National Marine Educators Association National Conference](#), Pacific Grove, CA.

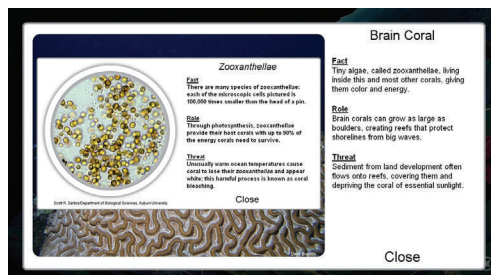
July

1-3: [National Marine Educators Association National Conference](#), Pacific Grove, CA.

Announcements continued...

ment needs. This facilitated workshop is intended to be a forum for participants to determine how NOAA's scientific capabilities can best be directed toward addressing location-specific needs articulated by the managers. The outcome from the meeting will inform strategic long-term funding decisions with regard to the CRCP's CREIOS program.

Interactive Reef Available at Select U.S. Museums and Aquariums. The [Coral Reef Conservation Program](#) and [National Ocean Service](#) Outreach and Education Division have developed a new interactive product that debuted March 24th on ten "Ocean Today" kiosks around the nation. This product utilizes the artist Wyland's 'International Year of the Reef' painting, and displays 10 of the featured species as interactive elements on the kiosks' touch screens. Upon touching the selected species, a photograph of the species pops up, highlighting a Fact, Role, and Threat to each particular animal. In addition to the primary kiosk, located in the new [Sant Ocean Hall](#) at the [Smithsonian National Museum of Natural History](#) in Washington, D.C., nine sister kiosks around the country now feature the interactive coral reef. They are located at the [Aquarium of the Pacific](#) (Long Beach, CA), [J.L. Scott Marine Education Center and Aquarium](#) (Ocean Springs, MS), [Maryland Science Center](#) (Baltimore, MD), [National Aquarium in Baltimore](#) (Baltimore, MD), [National Mississippi River Museum and Aquarium](#) (Dubuque, IA), [Nauticus](#) (Norfolk, VA), [Shedd Aquarium](#) (Chicago, IL), NOAA's National Ocean Service Headquarters (Silver Spring, MD), and NOAA [Pacific Services Center](#) (Honolulu, HI). Kiosk content is updated regularly; be sure to check out this product during your next visit!



This image shows an example of the information available in the interactive reef product created for the Ocean Today Kiosks. By touching one of ten highlighted species on the main screen, a pop-up with a photo, fact, ecosystem role, and threat will appear. Courtesy: National Ocean Service Special Projects

CRCP Funds International *Corallium*

Workshop. The family Corallidae, commonly known as pink and red corals in the genus *Corallium* and *Paracorallium*, contains the most valuable and rarest taxa of precious corals in commerce. Seven species in this family have been intensively fished for use as a raw material for jewelry, amulets, art objects, and homeopathic medicines. There is a well established pattern of discovery, exploitation, and rapid depletion of stocks, with fisheries moving on to new beds as old ones are depleted. Because of concerns about the sustainability of these fisheries, the role of the U.S. in this trade, and the potential threat due to over-harvesting and destructive fishing methods utilized to supply international markets with precious coral jewelry, this family is being considered for listing in CITES Appendix II. An Appendix II listing includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival. These corals are also the subject of a recent SeaWeb campaign, 'Too Precious to Wear'.



Precious red and pink coral, like this *Corallium*, species, are harvested for use in jewelry and other products. Courtesy: Andy Bruckner, NOAA Fisheries

The first International Workshop on the Science, Management and Trade in *Corallium* was held March 16-20, 2009, in Hong Kong. This workshop, funded by the NOAA [Coral Reef Conservation Program](#), was convened to resolve a number of challenges in implementing and enforcing a potential CITES Appendix II listing, and to determine if adequate biological data were available for Pacific *Corallium* populations to demonstrate that the taxa had declined to levels required for listing the species in CITES. International experts from governments, academia, NGOs, and the CITES Secretariat shared information on biological, fisheries and trade data and discussed issues that could improve the effectiveness of a potential CITES Appendix II listing. The participants identified approaches to ensure the precious corals are sustainably harvested and traded, the feasibility of a CITES listing, and mechanisms to improve the effectiveness of this listing. Their recommendations focused on: 1) possible steps to improve national management; 2) feasibility of identifying (continued on page 3)

Announcements continued...

Corallium products in trade; 3) approaches to reduce illegal harvest and trade; 3) information gaps and research needs to better understand the status and trends of wild populations; and 4) measures to reduce administrative burden and enforcement challenges associated with a potential CITES Appendix II listing. The group also identified ongoing concerns regarding Pacific fisheries and trade, and benefits of a CITES Appendix II listing. The outcomes of the workshop will serve as a framework for the second International *Corallium* workshop, to be held in Italy in the summer of 2009.

Public Comment Opportunity: Nominations to National System of MPAs. The [National Marine Protected Areas Center](#) has received the first round of [nominations for existing MPAs](#) to join the national system of MPAs, based on a call for nominations from November 2008 through February 2009. This [list of nominated sites](#) has now been published in the [Federal Register](#) (pdf, 56 kb) for a 30-day public review period ending April 6.

The group of 225 sites includes all 13 [National Marine Sanctuaries](#), four [National Estuarine Research Reserves](#), the [Papahānaumokuākea Marine National Monument](#), ten [National Parks](#), 99 [National Wildlife Refuges](#), and 101 sites managed by nine coastal state and territorial governments. Territorial and state governments nominating sites to the national system included American Samoa, California, Florida, Hawaii, Maryland, Massachusetts, New Jersey, Virginia, and Washington. Following review of public comments, the final nominations will be formally accepted as charter members of the national system in April. More detail on the national system of MPAs can be found in the [Framework for the National System of Marine Protected Areas of the United States of America](#), which describes how the [national system](#) will be built from existing MPAs across all levels of government to enhance collective efforts to protect the nation's natural and cultural marine heritage.

Updates from Headquarters

Coral Symposium at NSTA. A NOAA team, including staff from the [Office of National Marine Sanctuaries](#), the [Office of Oceanic and Atmospheric Research](#), [Coral Reef Watch](#), [National Ocean Service Education](#), and [Coral Reef Conservation Program](#) headquarters conducted a symposium entitled 'The Heat is On!: Climate Change and Coral Reef Ecosystems' at the [Na-](#)

MARAMP Cruise Underway. The [NOAA Ship Hi'ialakai](#) departed Honolulu on March 12 to begin the 66 day Marianas Archipelago Reef Assessment and Monitoring Program (MARAMP) expedition to monitor the coral reef ecosystems of Wake Atoll, the Territory of Guam, and the Commonwealth of the Northern Mariana Islands (CNMI). The first leg of the cruise, March 12- April 1, will include ecosystem surveys at Wake Atoll. Inter-observer calibration surveys, where two divers conduct the same reef survey at the same time and compare results to test their accuracy, will be conducted with local partners while the ship is in port in Guam April 1-4. The second leg of the cruise, April 5-14, will include ecosystem surveys around Guam, Rota, Tinian, and Aguijan Islands in partnership with colleagues from Guam resource management agencies and the [University of Guam](#). The final leg of the cruise, April 18 - May 7, will include ecosystem surveys of the remaining islands in CNMI, including areas in the recently designated Marianas Trench Marine National Monument. Learn more about this cruise by visiting its [blog](#) or the NOAA [Coral Reef Ecosystem Division Facebook page](#). Look for post-cruise results in future issues of this publication.

New Socioeconomics Pages Launched on ONMS Web Site. To provide the best possible social science to give all stakeholders a voice in the management of sanctuary resources and foster a more cooperative management process, NOAA's [Office of National Marine Sanctuaries](#) (ONMS) has launched a new section to its Web site focusing on its socioeconomic research. This research, conducted by social scientists, focuses on the understanding of how humans interact with natural and cultural resources and how they depend upon these resources for their lives and livelihoods. Among other information, the new [Socioeconomics Web pages](#) include data, including reef-related data, for the Florida Keys.

[tional Science Teacher Association](#) (NSTA) [annual conference](#) in New Orleans, March 21, 2009. Over 30 teachers participated in the half-day symposium. In addition to a hands-on coral model building activity and an activity using real-time NOAA satellite data, the symposium provided an overview of a variety of coral-related themes, including basic (continued on page 4)



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.



Be a Reef-Hugger

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

DID YOU KNOW...

Recruitment for the 2010-2012 term of NOAA's Coral Reef Management Fellowship will begin in June 2009.

Learn more by visiting the Fellowship's [Web page](#).

"There is truly no other job out there like the Coral Management Fellowship....I have the luxury of working directly with both people and the natural resources themselves. To me the Coral Fellowship is a proverbial 'dream job.'"
—Karlyn Langhjahr (USVI 06-09)

Headquarters continued...



Teachers from around the country participated in the coral symposium at NSTA, which included the simulated coral feeding activity pictured. Courtesy: Paul Tingle, National Science Teachers Association

biology, bleaching, and ocean acidification. Immediately following up the symposium, six related seminars explored each of the symposium topics in more detail. Participants received many classroom-ready educational materials, including the Coral Educational Resources CD, a newly released NOAA 2009 Year of the Science DVD, and a number of products created by the ongoing partnership between NOAA and NSTA. In addition, two related [free Web seminars](#) will be held in April.

The NOAA exhibit booth showcased [Science on a Sphere](#) as a premier educational medium. A coral dataset, '[Coral Science from Outer Space to Inner Space](#)', was shown in a rotational basis, with symposium presenters providing the narration and explanation for the audience of teachers. This ongoing NOAA and NSTA partnership has resulted in tailored NOAA products for educators over the years, including the ever-popular annual coral symposium and coral Web seminars, and the Coral Reef Ecosystem [SciGuide](#) and [SciPack](#).

Pacific Coral Reef Management Fellows Travel to D.C. The NOAA [Coral Reef Management Fellowship](#) was established to respond to the need for additional coral reef management capacity in the U.S. Flag Pacific and Caribbean islands. The program provides U.S. state and territorial coral reef management agencies with highly qualified candidates whose education and work experience meet each island's specific needs, while providing the individual fellows with professional experience in coastal and coral reef resources management. The four fellows from the Pacific attended the [21st U.S. Coral Reef Task Force Meeting](#) in late February. Their week-long agenda was full of productive activities complementing Task Force events. Some fellows participated in one day of training in the [RARE](#) curriculum, learning about building stake-

holder consensus and workshops, as well as concept modeling. Alyssa Edwards (American Samoa (AS)) continued her work in population growth by visiting the NGOs [Population Connection](#) and [Population Action International](#). AS is the only U.S. jurisdiction that has identified population growth as a key threat to coral reefs in its [Local Action Strategy](#). As a result of Alyssa's visits, the AS government was invited to send staff to participate in an NGO-sponsored population educator training that will be held in DC later this year.



Coral Reef Management Fellows received a copy of *Hidden Depths* after presenting for the NOAA Central Library seminar series. L-R: Alyssa Edwards, Elaina Todd, Kathleen Hermann. Courtesy: CRCP

Three of the fellows also gave presentations on their [projects](#) at the NOAA Central Library as part of its Brownbag seminars. Kathleen Hermann (Commonwealth of the Northern Mariana Islands (CNMI)) shared her involvement in the Conservation Action Plans being implemented in the CNMI, including the [Talakhaya Watershed Restoration Project](#), which has planted over 31,000 seedlings in the area to reduce runoff. Alyssa Edwards presented how rapid population growth is impacting the coastal resources in AS. Elaina Todd (Guam (GU)) talked about the RARE Pride Environmental Campaign in Guam, a long-term project to raise public awareness about the link between land use and coral reefs. The fellows also met with [SeaWeb's](#) headquarters staff to learn about innovative ways in which social marketing is being used for a variety of ocean conservation campaigns.

21st Meeting of the U.S. Coral Reef Task Force. The [U.S. Coral Reef Task Force](#) (USCRTF) met in Washington D.C. on Wednesday, February 25. The meeting, officially hosted by the U.S. [Department of the Interior](#) (DOI), was co-chaired by Mary Glackin on behalf of NOAA. As the first meet- (continued on page 5)

Headquarters continued...

ing in the new administration, this meeting emphasized the importance of coral reef conservation, highlighted conservation strategies and successes in member jurisdictions, and promoted an enhanced vision for how the USCRTF and its members can work to meet the challenges facing coral reefs and local communities. Highlights include the following:

- CEQ Chairwoman Nancy Sutley called on the USCRTF to challenge itself to consider new and innovative ways to address the threats facing coral reefs and expressed interest in keeping current on efforts of the USCRTF.
- The Governors of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI) all expressed a sense of urgency in the effort to conserve reefs and strongly communicated the need for renewed determination and enthusiasm.
- Finally, DOI Secretary Ken Salazar shared aspects of the new administra-

tion's agenda as it relates to coral reefs. He provided an inspiring vision for continued and strengthened action.

Dr. Richard Aronson of the [Florida Institute of Technology](#) and President of the [International Society for Reef Studies](#) provided a keynote address, which highlighted the need for managers and policy-makers to make the hard choices needed to conserve our coral reefs. The meeting was followed by an evening reception hosted by non-governmental partners at the National Aquarium in the U.S. [Department of Commerce](#); Gregorio "Kiilili" Sablan, CNMI's first delegate to Congress, and the artist Wyland were keynote speakers. Associated USCRTF side meetings were held Monday through Thursday. The USCRTF is co-chaired by the Departments of Commerce and of the Interior, and includes leaders of 12 federal agencies, seven U.S. states and territories, and three freely associated states. The mission is to lead, coordinate, and strengthen U.S. government actions to better preserve and protect coral reef ecosystems.

Updates from the Atlantic/Caribbean Region

Informational Signs Installed in PR to Reduce Impacts to Coral and Seagrass. A total of 19 signs have been installed near boat launching ramps and commercial fishing facilities in Puerto Rico. These signs have been installed over the past few weeks in Aguadilla, Mayagüez, Patillas, Camuy, Hatillo, Manatí, Arecibo, Vega Baja, and Dorado. The installation of these signs is part of a Puerto Rico [Local Action Strategy](#) project to coordinate conservation activities with coastal municipalities and reduce the impacts of activities, such as boating and fishing, to seagrass and corals. Locations for the signs



A new informational sign installed at a boat ramp in Puerto Rico encourages boaters to 'Care for and Conserve Marine Life'. Courtesy: Lisamarie Carrubba, NOAA Fisheries Southeast Regional Office

were selected in coordination with Puerto Rico's Department of Natural and Environmental Resources to ensure that signs were placed in high priority locations known to have large numbers of visitors.

Puerto Rican Enforcement Officers Receive Tools to Assist with Prosecution of Fisheries Law Violations. Violations of reef fishery regulations are a significant problem in Puerto Rico. For instance, during the red hind closed season in January 2008, Puerto Rico's (PR) [Department of Natural and Environmental Resources](#) (DNER) Ranger Corps seized 480 illegally caught red hind from a single fisher. These comprised the majority of a total 502 red hind that were discovered, along with three Nassau grouper, which are permanently prohibited for capture, and 44 undersized yellowtail snapper, in a fish house in Humacao by DNER Rangers. For this reason, officers want to become more adept at identifying managed species and ensuring violations result in penalties to try and improve compliance with PR's fisheries regulations.

As part of this effort, the Caribbean Field Office of NOAA Fisheries held a Question and Answer session on March 9 for all (*continued on page 6*)

Threat-based Working Groups

The primary objective of the CRCP is now to address strategic coral reef management needs; as such, the CRCP is narrowing its focus by emphasizing efforts on understanding and addressing the top three global and national threats to coral reef ecosystems:

- fishing impacts,
- land-based sources of pollution, and
- climate change.

In order to implement the proposed changes, the CRCP has put into place working groups to provide recommendations on the strategic goals and objectives the Program should work towards.

The working groups have delivered their draft goals and objectives. The [public comment period](#) is open until April 24th.

Click [here](#) to track the progress of the working groups.

Atlantic/Caribbean continued...

Funding Opportunity

Through April 6, NOAA is accepting applications for a variety of habitat restoration projects – including coral reef restoration. Applicants must demonstrate that their project can achieve significant ecological benefits, maximize jobs creation/preservation, and are “shovel-ready.”

Due Date: April 6, 2009

**Funding Range:
\$500,000-
\$20,000,000**

Click [here](#) to learn more.



A DNER Fisheries agent leads a field activity to help enforcement officers identify regulated and lookalike species. Courtesy: Lisamarie Carrubba, NOAA Fisheries Southeast Regional Office

law enforcement personnel from PR DNER Ranger Corps, PR [Police Department Rapid Action Forces](#) (FURA), and [U.S. Coast Guard](#) (USCG). Lawyers from [NOAA Fisheries](#); DNER Legal Division, Permitting Division, and Examining Officers; and NOAA [Office for Law Enforcement](#) (OLE) presented a complete case study from the initial intervention through the court case or administrative hearing to compare and contrast federal and local procedures and information needs. A steering committee composed of personnel from the various agencies that attended the training recognized the identification of managed fishery species as a top priority to achieve effective enforcement of fisheries laws; they also requested the full-day session with lawyers to clarify procedures to ensure that cases of violations of fisheries laws end in prosecutions. Participants submitted questions in advance of the event and the lawyers presented the responses to the questions in federal and local sessions. Participants were also given the opportunity to ask additional questions during the federal and local sessions.

The following week, participants also attended field activities to identify managed fishery species in fish markets; two were held in San Juan and one in Rincón and Puerto Real. Lawyers from NOAA Fisheries and DNER Legal Division also participated in the field activities in order to answer any questions regarding intervention procedures in the field. The activities were held on location in different regions of PR to enable officers who work in different areas of the island to view species they will commonly encounter during fisheries interventions. DNER fisheries agents led the field trainings and explained the fisheries' statistics data they collect as well as how to identify regulated species and discrimi-

nate between, for instance, regulated grouper and snapper species. The participants were able to view species such as deep water (lane) snapper and red hind that have closed seasons and learn how to distinguish these fish from other unregulated snappers and groupers. These field activities are particularly timely since fish are in high demand from PR's Catholic population during Lent, but the closed season for lane and muton snapper begin April 1 in federal and territorial waters.

These activities continue efforts to strengthen collaboration between FURA, DNER, USCG, and OLE in order to improve enforcement of regulations to protect the coral reef ecosystems of PR. This project is part of a multi-year effort to improve environmental enforcement, which is a focal area of the [U.S. Coral Reef Task Force](#), as well as the [Local Action Strategy](#) developed for Puerto Rico.

Atlantic Ocean Acidification Test-bed Update. During the week of February 23, a team of scientists from NOAA, the [U.S. Geological Survey](#) (USGS), [University of Miami Rosenstiel School of Marine and Atmospheric Science](#) (RSMAS), and [Columbia University](#) engaged in ocean acidification research and monitoring activities at the Atlantic Ocean Acidification Test-bed in La Parguera, Puerto Rico. Together with colleagues from the [University of Puerto Rico at Mayagüez](#), they oversaw maintenance of the recently deployed Moored Autonomous pCO₂ (MAPCO₂) buoy at Cayo Enrique Reef. This new system is an important tool in NOAA's ability to monitor ocean acidification (OA) and its impacts using *in situ* and remotely sensed data and will improve ocean OA monitoring products for the Caribbean recently released by NOAA [Coral Reef Watch](#).

In addition to overseeing deployment of acoustic doppler current profilers along the forereef, the team also deployed a unique benthic flux machine from [Columbia University](#) capable of rapid determination of reef metabolic activity. USGS partners surveyed potential (*continued on page 7*)



Dwight Gledhill (NOAA) and Kim Yates (USGS) work on the MAPCO₂ buoy at Cayo Enrique reef in the La Parguera embayment, Puerto Rico. Courtesy: Nate Smiley, U.S. Geological Survey

Atlantic/Caribbean continued...

sites along the forereef for Submersible Habitat for Analyzing Reef Quality (S.H.A.R.Q.) mesocosm deployment later this month. The SHARQ is a large-scale underwater incubation chamber designed by USGS scientists to isolate a mass of water over the ocean bottom; it enables scientists to measure changes in water chemistry that result from benthic community metabolism and to calculate metabolic rates associated with different types of benthic habitats.



The SHARQ was created and tested by USGS scientists at other U.S. reef locations (above) prior to being incorporated into the OA Test-bed project. Courtesy: U.S. Geological Survey

The OA Test-bed was first reported in the January 2009 issue of this publication; more information is also available by viewing the [deployment blog](#). CRW continues to play a crucial role in both strategic planning and product development related to OA.

Invasive Lionfish Impacts Could Cause Decline in Caribbean's Reef Fish Communities. On February 19, NOAA's [National Centers for Coastal Ocean Science](#) presented the potential effects of invasive lionfish to NOAA's Ocean Council. [Invasive lionfish](#), established at many locations along the southeastern U.S. coast and the Bahamas, are presently invading the Caribbean and pose a significant threat to the coral reef fish communities and to human health. Lionfish are likely to compete with native top-level predators, including snapper and grouper, for dietary resources and reef space. This competition could then hamper stock rebuilding efforts and lead to a decline in economically-important fisheries. The success of lionfish, the first marine reef fish invader to become established in the Northwestern Atlantic and Caribbean, demonstrates the importance of early detection and rapid response programs and the need for new approaches to manage

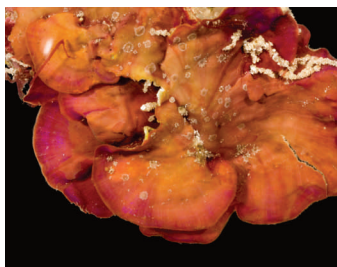
marine invasive species. Recent observations or capture of invasive lionfish in new regions of the Caribbean have been reported in the December 2008 and January 2009 issues of this publication.

Updated Benthic Habitat Maps to Support Management of USVI Marine Resources.

NOAA's [National Centers for Coastal Ocean Science](#), in cooperation with the U.S. [National Park Service](#) (NPS), conducted a field mission from February 9-20 to assess the accuracy of a shallow-water (<30 m) benthic habitat map of St. John, U.S. Virgin Islands. The new fine-scale habitat map represents an improvement from NOAA's digital maps of the U.S. Caribbean from 1999 due to its expanded habitat classification scheme, smaller minimum mapping units and more recent imagery. The updated maps will support research and monitoring activities conducted by NPS and other partners, as well as the management and conservation of the national parks and monuments on St. John. Click [here](#) to view the results of the accuracy assessment and all associated mapping products. This mission is part of the same project that reported on a January ground validation mission in the last issue of this publication.

New Biodiversity Records to Improve Understanding and Protection of Caribbean Mesophotic Coral Ecosystems.

Researchers in the Caribbean, funded by NOAA's [National Centers for Coastal Ocean Science](#), are using the latest in deep-diving technology to discover new species living in light-dependent coral communities from 30 to more than 150 meters, known as [mesophotic coral ecosystems](#) (MCEs). Several new algal species, including one species previously only known from the Pacific, were recently discovered in these communities off the coast of Puerto Rico. Due to the difficulties of studying deeper realms, MCEs have been largely ignored until now as an important ecosystem for coral, algae, fish, and other species. As coral ecosystems become progressively more threatened, increased knowledge about biodiversity at mesophotic depths is important for the management and protection of these natural resources.



This new species of *Pyssonnelia* algae was discovered off Puerto Rico's coast. Courtesy: Hector Ruiz

Every Act Counts

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

Corals are popular as souvenirs, for home decor and in costume jewelry, yet corals are living animals that eat, grow and reproduce. It takes corals decades or longer to create reef structures, so leave corals and other marine life on the reef.

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. As the natural guardians of our shores, reefs play a vital role in our global ecosystem. With climate change, pollution, and overfishing contributing to coral reef degradation, we can all play a role in protecting our land, sea and sky. And all it takes is a few simple changes to your daily routine.

Updates from the Pacific Region



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

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

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

Managers and Scientists Conduct Biogeographic Assessment toward Potential Network of Samoan MPAs. Scientists from NOAA's [National Centers for Coastal Ocean Science](#) and managers from the [Office of National Marine Sanctuaries](#), in collaboration with counterparts from the Territory of American Samoa, are compiling and analyzing data to complete a biogeographic assessment defining a potential network(s) of marine protected areas (MPAs) in American Samoa. This work is directly linked to the [Fagatele Bay National Marine Sanctuary](#) management plan. In mid-February the NOAA team met with key natural resource management agencies from American Samoa to exchange data. The NOAA team also conducted dive surveys with the U.S. [National Park Service](#) across a range of habitats to characterize both the habitats and associated fauna at representative sites.

FLASH Sets Near-term Objectives to Improve Hawaiian Coral Reef Fisheries Management. Coral reef resources are an integral part of life in Hawai'i. The impacts of overfishing not only endanger fisheries, but also threaten many aspects of daily life for Hawaiians, such as income, health, recreation, tourism, and culture. The [Local Action Strategy](#) on fisheries was developed to address concerns and assist the State

to ensure a sustainable coral reef fishery. The purpose of Hawai'i's Fisheries Local Action Strategy (FLASH) is to develop viable fisheries management solutions; enhance public understanding of Hawai'i's coral reefs; and facilitate public involvement in coral reef stewardship. FLASH also will support projects by promoting collaboration, outreach, and engagement amongst stakeholders; offering technical support; and identifying funding opportunities. The FLASH steering committee recently met to prioritize its objectives over the next 3-5 years. FLASH has two goals; 1) [To restore and maintain healthy coral reef ecosystems by supporting effective fishery management approaches](#) based on sound science, responsible practice, and stewardship; 2) To improve information exchange and communication amongst stakeholders to enhance collaboration and compliance. The top three priority objectives were determined to be 1) Top three priority coral reef resource species showing a positive population increase trend by 2015, top five species by 2020; 2) 75% of State fisheries management decisions informed by catch, effort, and/or stock data by 2012; 3) designate a sufficient area of marine waters under effective conservation by 2016 to ensure sustainable and resilient coral reef ecosystems. The next step will be to develop priority actions under each objective.

International Updates

Western Indian Ocean Bleaching Alerts Feature CRW Products. NOAA's NOAA [Coral Reef Watch](#) (CRW) products have been the key to allowing managers and scientists to put teams in the water to monitor coral bleaching as it occurs, as well as warning resource management in coral reef jurisdictions of impending bleaching conditions. Collaboration with international partners puts these NOAA satellite-based products to work around the globe. One such collaboration is a new regional bleaching update that was launched in January 2009 by the international non-governmental organization Coastal Oceans Research and De-

velopment in the Indian Ocean (CORDIO). CORDIO is using the CRW product suite to give a regional picture of the thermal stress that can lead to coral bleaching. NOAA products used in these new alerts include CRW satellite bleaching alerts for current conditions and both the CRW seasonal bleaching outlooks and NOAA forecasts of El Niño-Southern Oscillation conditions. The CORDIO monthly alert summaries are issued during the warmest months. They alert subscribers to coral bleaching conditions in the western Indian Ocean and encourage local observers to send in their latest bleaching observations.

Publications

Evaluation of Damage Assessment Methods Improves Estimation of Lost Coral Reef Services. To improve the measurement of coral ecosystem services, scientists from NOAA's [National Centers for Coastal Ocean Science](#) and Coral [Coral Reef Conservation](#)

[Program](#) evaluated current and potential approaches. The NOAA scientists then made recommendations to improve natural resource damage assessments which are conducted to quantify services lost when public trust coral reefs are damaged by *(continued on page 9)*

New Data in CoRIS

Product Name	Description
CRED REA Algal Assessments - Main Hawaiian Islands (2006), Northwestern Hawaiian Islands (2006), CNMI (2007), PRIA (2007) and Wake Island (2007) Link to sample metadata for this product	The goal of algal surveys is to quantitatively describe the algal community and prepare a comprehensive species list for each site. Raw survey data included genus presence and relative abundance, and voucher specimens. Detailed taxonomic analyses of voucher specimens are presented.
CRED Gridded Bathymetry - Northwestern Hawaiian Islands Link to sample metadata for this product	Multibeam bathymetry collected by the Coral Reef Ecosystem Division (CRED)/Pacific Islands Benthic Habitat Mapping Center (PIBHMC) in the Northwestern Hawaiian Islands has been processed and is available for download as 5-, 20- and/or 60-m grids, depending upon the depth ranges covered. Bathymetric data files are available in NetCDF/GMT and Arc ASCII format.
CRED Gridded Bathymetry - American Samoa Link to sample metadata for this product	Multibeam bathymetry collected by the Coral Reef Ecosystem Division (CRED)/Pacific Islands Benthic Habitat Mapping Center (PIBHMC) in American Samoa has been processed and is available for download as 5-, 10-, 20- and/or 40-m grids, depending upon the depth ranges covered. Almost complete coverage of multibeam data across 1013 km ² of seafloor between depths of 20 and 3000 m has been achieved. Bathymetric data files are available in NetCDF/GMT and Arc ASCII format.
CRED Gridded Bathymetry - CNMI - Guam Link to sample metadata for this product	Multibeam bathymetry collected by the Coral Reef Ecosystem Division (CRED)/Pacific Islands Benthic Habitat Mapping Center (PIBHMC) in the Mariana Archipelago has been processed and is available for download as 5-, 10- and/or 60-m grids, depending upon the depth ranges covered. Bathymetric data files are available in NetCDF/GMT and Arc ASCII format.
CRED Gridded Bathymetry - PRIA Link to sample metadata for this product	Multibeam bathymetry collected by the Coral Reef Ecosystem Division (CRED)/Pacific Islands Benthic Habitat Mapping Center (PIBHMC) in the PRIAs has been processed and is available for download as 5-, 20-, 40- and/or 60-m grids, depending upon the depth ranges covered. Bathymetric data files are available in NetCDF/GMT and Arc ASCII format.

Publications continued...

incidents such as vessel groundings or oil spills. The potential reauthorization of the Coral Reef Conservation Act may significantly expand NOAA's authority to pursue compensation for coral injuries, making this a timely review of current practices and perspectives. The analysis '[Coral reef metrics and habitat equivalency analysis](#),' was published in the most recent issue of the journal [Ocean & Coastal Management](#).

Report Targets the Ecological Aftermath of Coral Bleaching. NOAA's [National Centers for Coastal Ocean Science](#) and its [National Park Service](#) partners have recently published a study of the ecological condition of shallow-water coral reef habitats following a 2005 bleaching event in [Buck Island Reef National Monument](#), St. Croix, U.S. Virgin Islands. During October, 2005, widespread coral bleaching of

approximately 51% of live coral cover was observed within the study area, preceded by 10 weeks of higher than average water temperatures. Nineteen of 23 coral species within 16 genera and two hydrocoral species exhibited signs of bleaching. Subsequent monitoring of the same area revealed bleaching had subsided to 15% in April 2006, and 3% in October 2006. Since 2001, biannual fish and habitat monitoring has been conducted in the shallow (<30 m) waters of the monument and adjacent areas. The report, entitled [Spatial and Temporal Ppatters of Coral Bleaching Around Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands](#) is available in full text online to [Bulletin of Marine Science](#) subscribers; the abstract is available at the link above and preliminary data is also available [online](#).

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