

Subscribe to this
publication, the monthly e-newsletter of NOAA's Coral Reef Conservation Program.

INSIDE THIS ISSUE:

<u>From the Desk of the Program Manager:</u>	1
<u>Announcements:</u>	1
<u>Upcoming Events:</u>	2
<u>Currents: What's New on the Web:</u>	3
<u>Updates:</u>	
<u>Atlantic/Caribbean</u>	2
<u>Pacific</u>	2
<u>International</u>	3
<u>Dive Deeper: Deep-sea Coral:</u>	4
<u>New Data in CoRIS:</u>	4
<u>Publications</u>	9

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](#).

Coral Reef News



Volume 7, No. 4

January 2010

From the Desk of the Program Manager

This month, I am pleased to introduce the addition of two new sections to this publication: "Dive Deeper: Deep-sea Corals" and "Currents: What's New on the Web."

Deep-sea corals, also referred to as "cold-water corals," are a diverse collection of organisms that occur in deeper or colder oceanic waters. These corals inhabit deeper waters on continental shelves, slopes, canyons, and seamounts in waters ranging from 50 m to over 2,000 m in depth. They are often extremely long-lived, slow growing animals, characteristics that make them particularly vulnerable to physical disturbance. The high biodiversity associated with deep-sea coral communities has shown potential value for commercially important fishes and advancing pharmaceutical and medicinal applications. NOAA plays an important role in the research, exploration, and conservation of deep-sea coral ecosystems. In fiscal year-2009, NOAA began implementation of the Deep Sea Coral Research and Technology Program, as mandated by Congress in the [reauthorized Magnuson-Stevens Act](#) (Sec. 408).

NOAA is also in the final stages of preparing the *NOAA Strategic Plan for Deep-sea Coral and Sponge Ecosystems: Research, Management, and International Cooperation*, which will guide NOAA's deep-sea coral work in the coming years. NOAA's role is to work with fisheries management councils in coordination with other federal agencies and educational institutions to gain a more thorough understanding of deep-sea coral ecosystems and their associated threats. The new section will serve as a place to consolidate updates on NOAA's efforts to conserve these important ecosystems.

The "Currents: What's New on the Web" section will feature content of note that has been added to the CRCP Website each month as a means for readers to easily keep abreast of improvements or new content.

Like the other sections of the newsletter, these new sections will appear each month when there is relevant news to share.

- Kacky

Announcements

Determination on a Petition to Revise *Acropora* Critical Habitat. Elkhorn and staghorn corals are listed as [threatened](#) under the Endangered Species Act (ESA) throughout their ranges. On November 26, 2008, NOAA designated [critical habitat](#) consisting of substrate of suitable quality and availability to support 1) successful larval settlement and recruitment of coral polyps, and 2) successful reattachment and recruitment of asexual fragments, in water depths shallower than 30 meters in four areas in Florida, Puerto Rico, and the US Virgin Islands.

On January 6, 2009, NOAA Fisheries Service's Southeast Regional Office received a petition to revise the critical habitat designation from [Palm Beach County Reef Rescue](#). The petition seeks to extend the northern boundary of designated critical habitat in the Florida area to the Lake

Worth Inlet, which is approximately 15.5 miles (25 km) north of the current boundary at Boynton Beach Inlet. The petition is based on the discovery of staghorn corals north of the existing critical habitat boundary. NOAA evaluated the available scientific information and have decided, based on the adequacy of the existing, recent designation to meet the corals' conservation needs; the relatively low benefit the requested revision would provide; the protections afforded to the species from the recent ESA section 4(d) regulations; and our need to complete higher priority conservation activities for these and other coral species, to deny the petitioned action. For more information, visit the NOAA [Threatened Elkhorn and Staghorn Corals](#) Web page and read the [Federal Register Notice](#) (pdf, 185 kb).

UPCOMING EVENTS

February

15-19: 2nd Micronesia Challenge Measures Meeting, Koror, Palau.
23-24: [23rd US Coral Reef Task Force Meeting](#), Washington, DC.

March

13-25: [CITES Fifteenth Meeting of the Conference of the Parties \(CoP15\)](#), Doha, Qatar.
18-21: [2010 National Science Teachers Association National Conference](#), Philadelphia, PA.

18-31: Mapping mission: "Characterization of seafloor habitats of the US Caribbean", eastern PR and USVI waters
27: Education Open House Aboard the NOAA Ship *Nancy Foster*, Charlotte Amalie, USVI. *By invitation only.*
29: VIP/Media Day Aboard the NOAA Ship *Nancy Foster*, Charlotte Amalie, USVI. *By invitation only.*

April

1-6: Mapping mission: "Characterization of seafloor habitats of the US Caribbean", eastern PR and USVI waters

Updates from the Atlantic/Caribbean Region

Sanctuaries Team Responds to Florida Cold Water Bleaching Event. [Florida Keys National Marine Sanctuary](#) (FKNMS) management and biologists are responding to a coral bleaching and mortality event triggered by record cold water temperatures. [Coral bleaching](#) is most frequently associated with elevated water temperatures, but stress also occurs when water temperatures drop. Temperatures in



This staghorn coral on an inshore reef was unable to withstand recent cold water temps. Courtesy: The Nature Conservancy

some nearshore areas of the FKNMS dropped to 52 degrees Fahrenheit for several days—well below average for this time of year—with fatal results for some corals. Initial inspections showed very recent mortality, especially on the mid-channel and nearshore reefs; the offshore reefs seemed to have fared better. The last time such a cold water bleaching event happened in Florida was the winter of 1977-78.

Over the next two weeks the FKNMS [Damage Assessment, Restoration and Resource Protection](#) team will be coordinating with partners, including [Mote Marine Laboratory](#) and [The Nature Conservancy](#), to survey established reef monitoring sites as part of a disturbance response monitoring effort. DARRP's coral reef monitoring allows resource managers to document impacts to the resource from both natural and anthropogenic events. The multi-agency monitoring event will help shed light on reef resilience, and help determine which corals bounce back after a stress event. For more information, read the [press release](#) and check back for an update in the February issue.

Updates from the Pacific Region

RAMP Cruise Monitors American Samoa and PRIAs. The [NOAA Ship *Hi`ialakai*](#) left Honolulu on Thursday, January 21 with 22 scientists aboard from NOAA's [Pacific Islands Fisheries Science Center Coral Reef Ecosystem Division](#), the [University of Hawaii](#), and the [US Fish and Wildlife Service \(USFWS\)](#) on a three-month-long expedition to monitor the condition of coral reefs in the Pacific. This is the first of three legs of the biennial Reef Assessment and Monitoring Program (RAMP) cruises which will work in the Pacific Remote Island Areas (PRIAS) and American Samoa this year. Specifically, the first leg of the cruise will focus on Johnston, Howland, and Baker Islands and a portion of the American Samoa archipelago. The second segment will be conducted around all islands of American Samoa and the third will travel to Jarvis Island, Kingman Reef, and Palmyra Atoll. This is the fifth [Coral Reef Conservation Program](#) expedition to American Samoa and the seventh to the US Line and Phoenix Islands.

During each segment of the research expedition, the scientists will conduct comprehensive monitoring surveys of shallow-water marine resources. Teams of specialists will survey and assess the status of [fishes](#), [corals](#), [algae](#) and [ma-](#)



A NOAA diver conducts a tow-board survey at Johnston Atoll on Day 2. Courtesy: NOA A Coral Reef Ecosystem Division

[rine invertebrates](#) while SCUBA diving from small boats launched from the *Hi`ialakai*. Fine-scale assessments will be conducted by divers surveying along 25-meter transect lines, and larger-scale assessments will be conducted through [towed-diver surveys](#). Oceanographers will collect data using various kinds of oceanographic monitoring equipment, including data telemetry moorings, underwater moored instruments, and sensors on the ship. These cruises also provide the USFWS with a rare opportunity to visit and monitor seven islands that are USFWS reserves and a part of the newly established Marine National (continued on page 3)

Pacific continued...

Monuments: the [Pacific Remote Islands Areas](#) and [Rose Atoll](#). During its stay in American Samoa waters, the *Hi`ialakai* will devote a day to an education and outreach project for local high schools directed by staff of the NOAA's [National Marine Sanctuaries Program](#).

[Track the ship](#) or follow the [expedition blog](#) for daily updates from this expedition. A RAMP cruise to the Northwestern Hawaiian Islands occurred in the Fall and was reported in the October issue of this publication.

International Updates

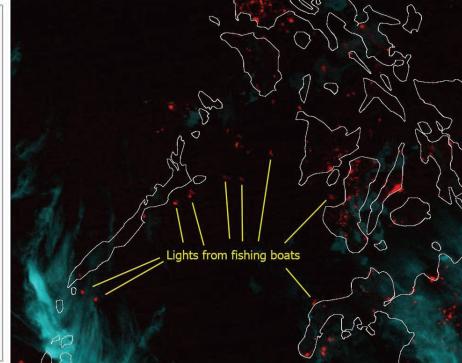
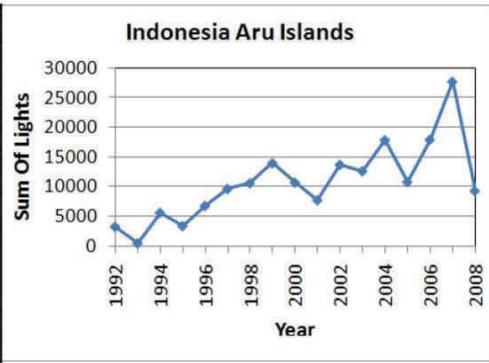
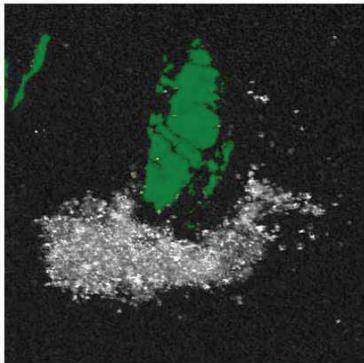
Detection of Heavily Lit Fishing Boats in the Coral Triangle Region. The use of lighting to attract squid and fish species is a widespread practice in East and Southeast Asia. Since the year 2000, the [NOAA-NESDIS National Geophysical Data Center](#) (NGDC) has been providing near-real-time satellite imagery for the detection of lit fishing boats to agencies engaged in managing and protecting fishing grounds and Exclusive Economic Zones. The data are collected by the [US Air Force Defense Meteorological Satellite Program's \(DMSP\) Operational Linescan System](#) (OLS). At night, the signal in the OLS visible band is intensified a million-fold to enable the detection of moonlit clouds. This extreme intensification makes it possible to detect lights present at the earth's surface, including those from fishing boats that use light to attract their catch. Several studies have demonstrated the value of DMSP nighttime lights in defining the location and history of lit fishing boat activity in the waters surrounding Japan, the South Atlantic Ocean, and Southern California. The NGDC is the long term archive for this data.

In response to calls for the provision of data related to the protection of coral reefs and marine resources in support of the [Coral Triangle Initiative](#), NGDC established a near-real-time [Web service](#) providing access to nighttime visible and thermal images. In addition, NGDC processed annual cloud-free composites for each year from 1992 to 2008 and a summary

image of the brightest cloud-free light detections for the entire period.

NGDC's analysis found that lit fishing boat activity has been extensive in the Central and Southwestern Philippines, South China Sea, Java Sea, and Arafura Sea. One of the keys to developing an ecosystem approach to management of fisheries in the Coral Triangle region is a capability to monitoring fishing activities (numbers of fishing boats, fishing platforms and fish aggregating devices, ideally in near-real-time. Applications of this data include: tracking of boats and fishing platforms to contribute to the enforcement of fishing regulations in protected areas; the identification and interdiction of illegal, unreported and unregulated fishing; and support for regulation on the number fishing boats and constraints on the timing and location of fishing boat activity to constrain tuna harvesting and improve protection of tuna spawning and juvenile growth areas. Click [here](#) (pdf, 581 kb) to learn more.

A) The super-max image and chart of the Aru Islands area, recording the brightest detected light from all cloud-free observations and sum-of-lights, respectively, from 1992-2008. Note the dense cluster of lit fishing boat detections south of the island. **B)** DMSP-OLS image of the central Philippines from the night of January 5, 2010. Detected lights are red and clouds are blue. Courtesy: Earth Observation Group, NOAA-NESDIS National Geophysical Data Center



CURRENTS: WHAT'S NEW ON THE WEB

Featured Stories: [Reef Monitoring](#), [Tsunami Debris](#), [PR Reefs](#), [Mapping Tool](#)

Corals in the News: [January 2010](#)

Coral Facts: [Coral and the Economy](#)

Video: [Tsunami Debris](#) and others linked from [Values: Medicine](#), [Conservation](#), [Methods](#), [Deep-sea Corals](#), and [Threats](#) pages.

Dive Deeper: Deep-sea Corals

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.

NOAA's Current Deep-sea Coral Conservation Efforts. NOAA's Current Deep-sea Coral Conservation Efforts.

NOAA's Current Deep-sea Coral Conservation Efforts. In fiscal year 2009, NOAA began implementation of the Deep Sea Coral Research and Technology Program mandated by Congress in the [reauthorized Magnuson-Stevens Act](#) (Sec. 408). New field research activities completed during the first year focused on the Southeastern US and addressed program requirements to locate and map locations of deep-sea corals and conduct research on deep-sea corals and related species—providing key information needed to protect deep-sea coral habitats in this region. A key component of the process was coordination with the [South Atlantic Fishery Management Council](#) (SAFMC) in the determination of specific areas to target and issues to address. In addition, NOAA worked with a multitude of partners, including the [US Geological Survey](#) and academic collaborators.

Three field [research missions](#) were completed in 2009: they included a submersible operation with the [R/V Seward Johnson](#) and the [Johnson Sea Link](#) (JSL); a multibeam mapping survey cruise with the [NOAA Ship Nancy Foster](#); and a [benthic lan-](#)



A benthic lander and its containers for coral growth experiments sit on the deck of the R/V Cape Hatteras prior to deployment in December, and b) on the seafloor in the Gulf of Mexico during its previous data collecting mission, as captured by the JSL's camera, before it was retrieved.

Courtesy: USGS DISCOVRE

[der](#) deployment with the [University of North Carolina at Wilmington](#).

The submersible mission targeted areas of known or suspected deep-sea coral, specifically *Lophelia pertusa*, in the waters off the coast of northern Florida that are in close proximity to the boundary between a proposed Coral Habitat Area of Particular Concern (C-HAPC) where all bottom damaging gear would be prohibited and an adjacent allowable fishing area. The mission collected scientific information that can potentially inform SAFMC's conservation efforts and refine the C-HAPC boundaries.



The JSL and its crew surface after a dive during the submersible mission.
Courtesy: USGS DISCOVRE

The mapping cruises targeted areas of suspected deep-sea coral ecosystems to provide dive site information for future research efforts. In addition to the snap shots that ROVs and submersibles provided, long-term monitoring from benthic landers deployed in the Southeast US will help researchers and managers understand variations in oceanographic parameters and other ecosystem parameters. Benthic landers are a type of monitoring equipment that can be deployed in deep seabeds for up to a year to collect a variety of data; in this case, they were also equipped with containers in which [deep-sea coral growth experiments](#) are being conducted.

All of these research missions supported NOAA's efforts to map, monitor, research, and conserve deep-sea coral ecosystems. To learn more about NOAA's past deep-sea coral research cruises, click [here](#) or read the cruise logs linked above.

New Data in CoRIS

Product Name	Description
Gridded bathymetry of Niihau Island, Hawaii, USA Link to sample metadata for this product	Gridded bathymetry of the shelf, bank and slope environments of Ni'iuhau Island. This 5 m grid contains data between 0 and 100 meters. The netCDF and Arc ASCII grids include multibeam bathymetry from the Simrad EM300 and Reson 8101 multibeam sonars collected as of December 2009 by the NOAA Coral Reef Ecosystem Division. The sonar frequencies are 30 and 240 kHz respectively.

(continued on page 5)

New Data in CoRIS continued...

Product Name	Description
Impervious Surface Data for St. Thomas, St. John and St. Croix Link to sample metadata for this product	These layers represent a baseline inventory of impervious surfaces for the U.S. Virgin Islands. This data set utilized 2002-2005 Quickbird multispectral scenes which were processed to detect impervious features.
Mosaics of gridded multibeam bathymetry and bathymetry derived from multispectral IKONOS satellite imagery for selected locations in CNMI, American Samoa and the PRIs. Link to sample metadata for this product	Gridded multibeam bathymetry is integrated with bathymetry derived from multispectral IKONOS satellite data. Bathymetry values shallower than 25 m were derived by gauging the relative attenuation of blue and green spectral radiance as a function of depth.
2009 Vieques, Puerto Rico data from the Seafloor Characterization of the U.S. Caribbean project Link to sample metadata for this product	Multibeam data were collected with a hull-mounted Simrad EM 1002 multibeam SONAR for water depths greater than 75 m, and with a moon pool flange-mounted Reson 7125 multibeam echosounder for areas shallower than 75 m. Available bathymetry products include ASCII XYZ text files, an ESRI Grid for the multi-year unified bathymetry, and georeferenced TIFF images. Backscatter data were collected using a Simrad EM 1002 and a Seabat 7125 multibeam echosounder. In addition, bathymetric slope and rugosity products are available.
Florida Reef Fish Visual Census 1999 - 2006 Link to sample metadata for this product	This data set of Excel files contain data from visual sampling of coral reef fish species in the National Marine Sanctuary along the Florida Keys. The dataset contains information about 5 classes of coral reefs, 216 fish species, and 6 benthic habitats. The data were collected from 1999 to 2006.
Impervious Surface Data for the Jobos Bay Watershed, Puerto Rico Link to sample metadata for this product	The data set is an inventory of impervious surfaces for the Jobos Bay Watershed, Puerto Rico, for the year 2007. This data set utilized natural color ADS40 scenes which were processed to detect impervious features of the Jobos Bay Watershed in Puerto Rico.
C-CAP Land Cover Data, United States Virgin Islands Link to sample metadata for this product	This data set consists of land cover derived from high resolution imagery and was analyzed according to the Coastal Change Analysis Program (C-CAP) protocol to determine land cover. This data set utilized Quickbird multispectral scenes. All scenes were processed to detect C-CAP land cover features. Data are available for St. Croix (2002), St. Thomas (2003) and St.John (2005).
Hawaii Coral Reef Assessment and Monitoring Program (CRAMP): Digital Still Images from Transects on Maui, Molokai, and Kauai, 2007 (NODC Accession 0056791) Link to sample metadata for this product	This dataset consists of digital still transect images (JPG files) from CRAMP surveys taken in 2007 from 9 sites on Maui, 3 sites on Molokai, and 1 site on Kauai. Sites typically have two transects along different isobaths, shallow (~3m) and deep (~10m) lines. In a separate NODC Accession, 0051060, text data files are given of the substrate types and coverages as derived objectively from photographic images using PhotoGrid, a software package which analyzes random points on images of coral reefs and substrate.

(continued on page 6)

DID YOU KNOW...

Our new Website has a section dedicated to helping you get personally involved in coral conservation, whether you are looking for a job, internship, volunteer work, funding, or want to know what you can do in your daily life to help.

Check out the 'Get Involved' section of our site to learn more!



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

New Data in CoRIS continued...

DID YOU KNOW...

Coral reefs are found in 109 countries; significant reef degradation has occurred in 93.



Interactive Reef

Looking for a fun way to learn about some of the creatures that inhabit coral reefs? Check out the [Interactive Reef](#), a Flash-driven product that provides a photo of, fact about, threat to, and ecosystem role of ten Caribbean reef species.

Product Name	Description
<p>Reson 8101ER Multibeam Sonar Data from Cruise AHI0902 - Main Hawaiian Islands</p> <p>Link to sample metadata for this product</p>	<p>Reson 8101ER multibeam Data were collected in May 21 - June 15, 2009 aboard NOAA Survey Launch Acoustic Habitat Investigator (AHI) in the Main Hawaiian Islands at Oahu, Molokai, Lanai, and Maui during cruise AHI0902. These multibeam data were collected using SAIC ISS-2000 v 4.0.0.3.0 software in the Generic Sensor Format and processed using SABER editing software.</p>
<p>Reson 8101ER Multibeam Sonar Data from Cruise AHI0605 - Main Hawaiian Islands</p> <p>Link to sample metadata for this product</p>	<p>Reson 8101ER multibeam Data were collected in 19-24 April and 28 April-11 May 2006 aboard NOAA Survey Launch Acoustic Habitat Investigator (AHI) in the Main Hawaiian Islands at Penguin Bank, N. Shore Molokai, Lanai, and the Big Island of Hawaii during cruise AHI0605. These multibeam data were collected using SAIC ISS-2000 software in the Generic Sensor Format and processed using SABER editing software.</p>
<p>EM300 and EM3002D Multibeam Sonar Data from Cruise Hi'ialakai HI-06-05 - Main Hawaiian Islands</p> <p>Link to sample metadata for this product</p>	<p>EM300 and EM3002D multibeam Data were collected on 19-24 April, and 28 April - 11 May 2006 aboard NOAA Ship Hi'ialakai in the Main Hawaiian Islands at Penguin Bank, N. Shore Molokai, Lanai, and the Big Island of Hawaii during cruise HI-06-05. These multibeam data were collected using SAIC ISS-2000 software in the Generic Sensor Format and processed using SABER editing software.</p>
<p>Backscatter imagery of Ni'ihiu Island, Hawaii, USA</p> <p>Link to sample metadata for this product</p>	<p>Backscatter imagery extracted from gridded bathymetry of Ni'ihiu Island, Hawaii, USA. These data provide almost complete coverage between 0 and 100 meters. The backscatter dataset includes Simrad EM3002d, Simrad EM300 and Reson 8101 data. The sonars frequencies are 300 kHz, 30 kHz and 240 kHz respectively and are processed and gridded separately.</p>
<p>Backscatter imagery extracted from gridded bathymetry of Penguin Bank, Molokai, Hawaii, USA.</p> <p>Link to sample metadata for this product</p>	<p>Backscatter imagery extracted from gridded bathymetry of Penguin Bank, Molokai, Hawaii, USA. These data provide almost complete coverage between 0 and 100 meters. The backscatter dataset includes Simrad EM3002d and Reson 8101 data. The sonars frequencies are 300 kHz and 240 kHz respectively and are processed and gridded separately.</p>
<p>Gridded bathymetry of Penguin Bank, Hawaii, USA</p> <p>Link to sample metadata for this product</p>	<p>Gridded bathymetry (5 m cell size) of Penguin Bank, Hawaii, USA. The netCDF grid and ArcGIS ASCII file include multibeam bathymetry from the Simrad EM3002d, and Reson 8101 multibeam sonars collected during cruises in 2005 and 2006 by the NOAA Coral Reef Ecosystem Division in depths between 0 and 200 meters.</p>
<p>Coastal Fish Surveys in the main Hawaiian Islands from Various Projects and Sources during the 1970s through 1990s (NODC Accession 0001666)</p> <p>Link to sample metadata for this product</p>	<p>This data set was centralized for the Marine Gap Analysis Project of the Hawaii Natural Heritage Program. It was obtained from various principle investigators for a multitude of projects. It includes surveys from 183 locations on the eight main Hawaiian Islands. The data were placed in a relational database.</p>

(continued on page 7)

New Data in CoRIS continued...

Product Name	Description
Gridded multibeam bathymetry and SHOALS LIDAR bathymetry of Penguin Bank, Hawaii, USA Link to sample metadata for this product	Gridded bathymetry (5 m cell size) of Penguin Bank, Hawaii, USA. The netCDF grid and ArcGIS ASCII file include multibeam bathymetry from the Simrad EM3002d, and Reson 8101 multibeam sonars collected during cruises in 2005 and 2006 by the NOAA Coral Reef Ecosystem Division in depths between 0 and 200 meters. SHOALS LIDAR bathymetry are also included in depths between 0 and 40 meters.
Southwest Molokai non-directional wave data taken during 2001-2002 at 5 areas in depths of 4-13 m (NODC Accession 0011265) Link to sample metadata for this product	US Geological Survey (USGS) Western Region Coastal and Marine Geology Team deployed NIWA Doble-A non-directional wave gauges in 5 nearshore areas of southwestern Molokai in depths from 4 to 13m during February 2001 - February 2002. Finalized data are provided in ASCII format.
Wave and Current Data from Southeast Oahu, Hawaii during August - September 2005 (NODC Accession 0051075) Link to sample metadata for this product	Field data collection was conducted for the U.S. Army Engineer District, Pacific Ocean, Honolulu, during August 9 - September 14, 2005, off Kailua, Lanikai, and Waimanalo, Oahu, Hawaii. Wave and current data were collected at five fixed locations using bottom-mounted RD Instruments Workhorse, 1.2 MHz, ADCPs and Sontek Hydra ADVs. The ADCPs include wave measurements. Four inexpensive current drifters were designed and built at the CHL Field Research Facility that used GPS tracking and radio telemetry for positioning were also used.

Publications

CRCP Technical Memo Introduces Climate Change Resilience into MPA Design. In 2003, NOAA and the [Australian Institute of Marine Science](#) joined forces with [The Nature Conservancy](#) and the Palau Government to produce a heat stress model for use in protected areas network (PAN) planning for Palau's coral reef ecosystems and to identify factors that might confer resilience to climate change. The work described in this Technical Report represents an important new tool for marine protected area (MPA) design. Physical variables to build resilience against climate change and, in particular, coral bleaching are incorporated into MPA design. This project demonstrated that a simplistic physical model can be used to improve MPA planning to incorporate resilience against future coral bleaching events. Appendix 1 presents a comprehensive overview of the data collected and allows a brief view of some of the time series collected. These time series are of sufficient length to undertake a tidal current analysis for hind-casting or prediction. Appendices 2 and 3 are publications that came out of the modeling effort in Palau.

Citation: Skirving, W.J., S.F. Heron, C.R. Steinberg, C. McLean, B.A.A. Parker, C.M. Eakin, M.L. Heron, A.E. Strong, and L.F. Arzayus. 2010. [Determining Thermal Capacitance for Protected Area Network Design in Palau](#). Silver Spring, MD: NOAA Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 12. 317 pp.

Bilingual Guide for Law Enforcement Officers in USVI Now Available. The bilingual *Guide for Law Enforcement Officers: Regulations & Biology of Marine Ecosystems in the US Virgin Islands* is now available through the [NOAA Fisheries Service's](#) Caribbean Field Office. The guide has been distributed to the US Coast Guard (USCG), NOAA Fisheries [Office of Law Enforcement](#) (OLE), and the US Virgin Islands (USVI) [Department of Planning and Natural Resources Division of Environmental Enforcement](#). In March 2010, workshops with enforcement officers in St. Croix and St. Thomas will be held to practice using the guide in the field, as well as to train the officers in evidence collection for federal cases. The training will be conducted in cooperation with OLE. *(continued on page 8)*



Be a Reef-Hugger

Long-lasting light bulbs are a bright idea.



NAVIGATING OUR NEW WEBSITE

Having trouble finding some of the content from our old Website in the redesigned format?

Try using the search function or the [Site Map](#) to find the new location of pages and documents.

Publications continued...

The guide and associated educational activities are part of a CRCP-funded multi-year effort to work with enforcement officers in the US Caribbean in order to improve enforcement of regulations to protect coral reef ecosystems. The guide and educational activities associated with the guide are meant to improve the condition of the coral reef ecosystem in the USVI by educating enforcement officers regarding marine protection regulations, intervention, evidence collection procedures to build strong cases, and the biology behind regulations that ensure the conservation of reef species. A similar publication has already been completed for officers in Puerto Rico and distributed through classroom and field activities with the USCG, Puerto Rico [Police Department](#), and [Department of Natural and Environmental Resources Ranger Corps](#).

Work Plan for the Biogeographic Assessment of Samoa Now Available. Scientists with NOAA's [National Centers for Coastal Ocean Science](#) recently published the first step in [developing a biogeographic assessment for Samoa](#). The work plan, entitled *Biogeographic Assessment of Samoa: In Support of the Two Samoas Initiative*, outlines planned research to provide information to support marine resource management in Samoa and help identify potential areas for a network of marine protected areas (MPAs) within the Samoan archipelago. The document is intended to foster discussion, explore ideas, and obtain feedback on the evolving scope and approach of the work. Planned products include geospatial analyses and maps depicting the spatial and temporal distribution of oceanographic features and patterns, potential larval transport pathways among islands, selected marine species; species assemblages, and identification of biologically significant areas. Ultimately, the study will support the Two Samoas Initiative between Samoa and American Samoa by identifying shared environmental problems, facilitating the exchange of management approaches, and considering resources that would benefit from coordinated management. This work aids in the evolving co-management of marine resources shared by the two nations' and will provide fundamental geospatial data products in support of MPA designation and evaluation.

SEFSC Publishes Findings on Source of Snapper Recruits in South Florida. The [NOAA Fisheries Service's Southeast Fisheries Science Center Early Life History Team](#) has published the results of the CRCP funded project, "Monitoring Coral Reef Fish Utilization of Marine Protected Areas and Inshore Habitats in Florida Bay." This project establishes distinct isotopic signatures that chemically link adult fish to their juvenile habitat. Specifically, the research established chemical profiles, based on the isotopic composition of juvenile gray snapper otoliths, to identify specific nursery habitats and map the source of snapper recruits in south Florida. Determining the source of recruits is particularly important for efforts to restore Florida Bay, establish marine protected areas, and assesses the [Tortugas Ecological Reserve](#). Healthy coral reefs need an established and protected source of recruits if they are to function effectively. The results from this project pave the way for linking adult reef fish with their natal habitats. Establishing the linkages between juvenile and adult reef fish habitat use is necessary to ensure that major recruitment corridors are adequately protected.

Citation: Gerard, T. and Muhling, B. 2010. *Fishery Bulletin. Variations in the isotopic signatures of juvenile gray snapper (*Lutjanus griseus*) from five southern Florida regions* (pdf, 397 kb). Vol. 108 no. 1, p. 98-105.

Journal Article Explores USVI Mesophotic Coral Banks. Coral reef banks may form an important component of mesophotic coral ecosystems in the Caribbean, but remain poorly explored relative to shallower reefs and mesophotic habitats on slopes and walls. Consequently, the processes structuring mesophotic coral reef communities are not well understood, particularly the role of disturbance processes. A large and regionally important mesophotic system, the Hind Bank Marine Conservation District of St. Thomas, US Virgin Islands (USVI), was systematically surveyed, leading to the publication of the article.

Citation: Smith TB, Blondeau J, Nemeth RS, Pittman SJ, Calnan JM, Kadison E, Gass J. 2009. [Benthic structure and cryptic mortality in a Caribbean mesophotic coral reef bank system, the Hind Bank Marine Conservation District, US Virgin Islands](#) (pdf, 1.81 mb). *Coral Reefs*. DOI: 10.1007/s00338-009-0575-8.

[Subscribe to this publication](#), the monthly e-newsletter of NOAA's Coral Reef Conservation Program .

Attn: Outreach and Education
NOAA Coral Reef Conservation Program, N/OCRM
1305 East West Highway, 10th Floor
Silver Spring, MD 20910-3281
Phone: (301) 713-3155
Fax: (301) 713-4389
E-mail: coralreef@noaa.gov

<http://coralreef.noaa.gov>

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



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