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Coral Reef News

NOAA CORAL REEF CONSERVATION PROGRAM

Volume 7, No. 3 December 2009

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The Coral Reef Conservation Program (CRCP) is a partnership between the NOAA Line Offices working on coral reef issues, including the National Ocean Service (NOS), the National Marine Fisheries Service (NMFS), the Office of Oceanic and Atmospheric Research (OAR) and the National Environmental Satellites, Data and Information Service(NESDIS). From mapping and monitoring to managing reef resources and removing harmful debris, the CRCP addresses the priorities laid out in both the National Action Plan to Conserve Coral Reefs and the National Coral Reef Action Strategy.

From the Desk of the Program Manager

The reauthorization of the Coral Reef Conservation Act continues to make progress in Congress. As you may recall, the House version of the bill (H.R.860) passed the House in September. The Senate version of the bill is now moving as well.

On Wednesday, December 9, Senator Inouye (D-HI) introduced S.2859, the Coral Reef Conservation Amendments Act of 2009 *(pdf, 265 kb)*, to reauthorize and enhance the Coral Reef Conservation Act of 2000. S.2859 is cosponsored by Sen. Kerry (D-MA), Sen. Rockefeller (D-WV), Sen. Bill Nelson (D-FL), and Sen. Snowe (R-ME) providing bipartisan support. The Senate Commerce Committee marked-up S.2859 in full Committee Thursday, December 17 and by voice vote approved the bill without objection or amendments. The bill is now headed to the Senate floor. In Senator Inouye's words "The Coral Reef Conservation Amendments Act of 2009 would strengthen NOAA's ability to comprehensively address threats to coral reefs..." For more information on S.2859 and other updates on the status of reauthorization, click here.

- Kacky

Announcements

NOAA Provides Coral Reefs, Satellites, and Bleaching Online Training for Teachers. On December 15, the NOAA Coral Reef Watch (CRW) Coordinator, assisted by a team of CRW staff members, taught over 40 science teachers using an online system called Elluminate in a program sponsored by the National Science Teachers Association (NSTA). This training was part of a series of Webinars presented through a partnership with the NOAA Education Council and NSTA. This particular Webinar was one of two sponsored by the NOAA's National Environmental Satellite, Data, and Information Service Education office and was entitled "Higher than a Sea-Bird's Eye View: Coral Reef Remote Sensing using Satellites." The presentation focused on the effects of climate change on coral reef ecosystems and the tools that NOAA provides to help track those changes. Elluminate is an interactive online teaching environment that allows presenters to ask the participants for input during the lecture; it also allowed teachers to ask questions as the lecture progressed. For more information on NOAA CRW's educational offerings, click here.

New Technique Developed to Improve the Efficiency of Habitat Mapping. Coral reef ecosystems in the US Caribbean are under increasing pressure from environmental and anthropogenic stressors. Coral reefs play a role in local economies by supporting both fisheries and tourism. Benthic habitat mapping is an important part in ecosystem-based management approaches.

Scientists from the NOAA National Centers for Coastal Ocean Science recently developed a new semi-automated approach to mapping seafloor habitats. This technique uses edge-detection techniques to identify differences in seafloor depth which are then placed into distinct management classes. This new approach will increase the efficiency with which maps are produced. The ability to quickly, accurately, and objectively create benthic habitat maps will transform the process of mapping into a quick assessment tool for managers. A report describing this approach in more detail is available online.

UPCOMING EVENTS

January

12-15: International Coral Reef Initiative General Meeting, Monaco.

February

23-24: 23rd US Coral Reef Task Force Meeting, Washington, DC.

Be a Reef-Hugger

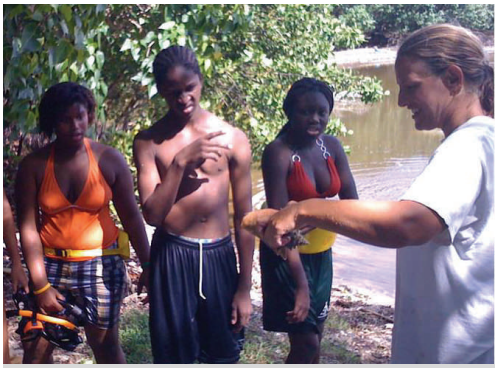
Corals are already a gift. Don't give them as presents this holiday season.

Updates from the Atlantic/Caribbean Region

NOAA and NPS Mapping Improves Park Management in USVI. Coral reef ecosystems in the US Caribbean are under increasing pressure from environmental and anthropogenic stressors. Coral reefs play a major role in local economies by supporting both fisheries and tourism. Reducing threats to these ecosystems requires that resource managers understand the distribution of coral reefs, making seafloor habitat mapping an integral part of ecosystem-based approaches to management.

Scientists from the NOAA National Centers for Coastal Ocean Science, in partnership with the US National Park Service (NPS), recently created habitat maps for the US Virgin Islands (USVI) to assist resource managers. The mapping was conducted within the boundaries of the Virgin Islands National Park and the Virgin Islands Coral Reef National Monument in St. John. Thirty-two distinct habitat types within 12 zones were mapped using aerial imagery for shallow-water areas (<30 m), and acoustic imagery from moderate depth areas (30-60 m). This effort marks the first time moderate-depth habitats have been mapped south of St. John, providing managers with a snapshot of the environment. St. John's shallow-water habitats; however, were mapped previously in 1999. Comparisons indicate that live coral cover has declined, while seagrass beds have increased measurably since the last map iteration. The standardized procedures used in this effort will not only enable scientists and mangers to compare coral reef ecosystems around St. John, but also compare them to reef habitats throughout the US territories.

Researchers Visit USVI Classrooms. Coinciding with scheduled field work for queen conch and staghorn coral (*Acropora cervicornis*) monitoring projects, researchers from NOAA Fisheries' Galveston Laboratory completed classroom presentations and field trips with second, seventh, and tenth grade students from the Gifft Hill School on St. John, USVI. Three



Students from the Gifft Hill School learn about queen conch biology & how NOAA researchers measure and tag them. Courtesy: Kris Bennett, Gifft Hill School

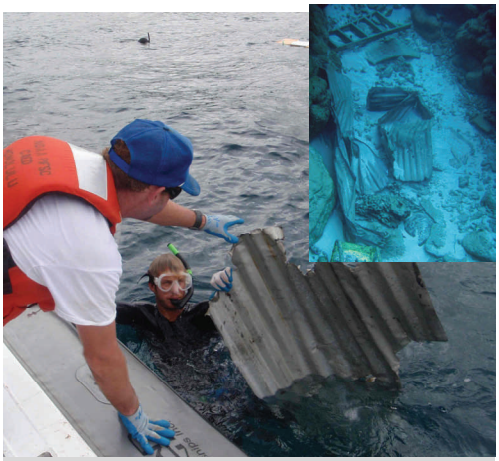
days of activities and presentations covered information about NOAA, queen conch biology and ecology, fisheries management, and coral reef research. Posters, story books, activity pages, magnets, and measuring rulers were distributed to the students. The high school class learned about habitat types, field survey methods, environmental data collection, and tagged and measured conch during a field trip to Fish Bay. The students are conducting two projects for the remainder of the academic year. The first is an "Adopt-a-Conch" project, where classroom groups are tracking movements, growth, and habitat utilization patterns of tagged conch in Fish Bay. For the second project the students are assisting with shoreline surveys of fished conch, and have already developed their own campaign to "Stop Killing Baby Conch." Additional visits are planned for spring 2010, to follow up and discuss the results of their projects. These successful classroom visits represent the beginning of an ongoing relationship with the Gifft Hill School, where students and teachers will continue learning about coral reef and related fisheries research.

Updates from the Pacific Region

Post-tsunami Survey and Removal of Marine Debris Protects Coral Reefs in American Samoa. On September 29, a devastating tsunami struck American Samoa and neighboring island nations. The 15-20 foot waves damaged property, swept villages out to sea, and caused fatalities. In addition, they deposited a great deal of debris on the reefs in the territory; marine debris can cause damage to reefs as it is moved around by waves and currents. A NOAA team has been working in American Samoa since November 29 to assess and mitigate the impact that the marine debris has had on the coral reef ecosystems around Tutuila Island. The team's primary mission is to complete a preliminary survey of the amount and effect of marine debris in the reef ecosystems to demonstrate the extent of *(continued on page 3)*

Pacific continued...

future support necessary. This information will also help prioritize potential future removal operations. Working with other federal and territorial agency representatives, village leaders, local news agencies, and volunteers, this 19-member marine debris team includes NOAA personnel from the Pacific Islands Fisheries Science Center (PIFSC), Pacific Islands Regional Office, Office of Response and Restoration, Office of National Marine Sanctuaries, National Weather Service, and Coral Reef Conservation Program. As of Dec. 15, experienced marine debris divers from the PIFSC Coral Reef Ecosystem Division had helped to survey 74 km of coral reef habitat, collect and remove a total of over 8,000 pounds of debris, and identify 253 additional targets for debris removal. The team completed this preliminary survey on December 17. Click here to learn more.



Submerged marine debris (inset) was surveyed and removal initiated from reefs in American Samoa. Courtesy: NOAA

International Updates

International Reef fish Spawning Aggregation Workshop Held at 62nd GCFI Conference. An international workshop on reef fish spawning aggregations was hosted by the Gulf and Caribbean Fisheries Institute (GCFI) in November 2009. The event was initiated and co-organized by NOAA's Coral Reef Conservation Program and the National Centers for Coastal Ocean Science, along with collaborators from Texas A&M University and the University of the Virgin Islands. Approximately 50 people from 20 countries attended, including fishermen, managers and scientists. Participants shared data and described the physical and biological characteristics of Gulf of Mexico and Caribbean spawning aggregations. The data supported a growing consensus that many reef fish spawning aggregations (FSA) are situated at distinct seafloor features such as promontories, banks, and humps, making them easier to locate. The participants recommended a regional survey and monitoring initiative for FSAs and the creation of a Gulf and Caribbean Regional branch of the Society for the Conservation of Reef Fish Aggregations (SCRFA) to support effective management of FSAs for sustainable coral reefs and associated fisheries. This workshop fostered international collaboration on the understanding and management of fish spawning aggregation sites across the region.

SEM-Pasifika Training Held in Palau. Building local capacity to conduct community level surveys and socioeconomic assessments furthers coral reef conservation by involving the local community in management decisions. Enabling training participants to actually undertake a socioeconomic assessment provides a hands-on training opportunity that has proven more effective than traditional classroom trainings. From November 16 – 25, a socioeconomic monitoring for Pacific Island countries training was carried out by NOAA's Coral Reef Conservation Program in partnership with the Palau International Coral Reef Center and the Helen Reef Project. The training is based upon the manual by the same name—SEM-Pasifika—that was developed by the Global Socioeconomic Monitoring Initiative for Coastal Management.
Seventeen participants attended this training from various state agencies and non-government organizations (NGOs). The ambitious nine-day training was designed to take participants through every step of an *(continued on page 3)*

Training participants conduct socioeconomic surveys in Palau as part of the SEM-Pasifika training. Courtesy: Christy Loper

NAVIGATING OUR NEW WEBSITE

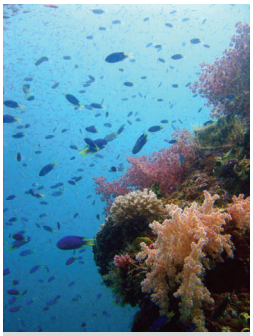
Having trouble finding some of the content from our old Website in the redesigned format?

Most of the site's old content is captured in the 'About CRCP' and 'Education' sections of the new site.

Try using the search function or the Site Map to find the new location of pages and documents.

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.



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

International continued...

actual socioeconomic assessment, including: developing assessment objectives; choosing indicators; conducting key informant, focus group, and household interviews; survey design; pre-testing; data entry; data analysis; communication of results; and adaptive management. To do this, the assessment activities were based on Helen Reef Project site and management goals. Participants successfully interviewed 94 percent of the targeted community.

Upon completion of the assessment, the participants presented the results to the Helen Reef Project Board and other agency and NGO leaders. The local managers are already utilizing this assessment. In addition, the community leaders are very pleased with the outcomes of the training workshop and the assessment; not only do they finally have community information about local support for the Helen Reef Project, but they now have specific recommendations from the community to improve the management of Helen Reef.

New Data in CoRIS

Product Name	Description
Cumulative Maps of Percent Scleractinian Coral Cover from CNMI and American Samoa *Link to sample metadata for this product*	These maps display optical validation observation locations and percent coverage of scleractinian coral overlaid on bathymetry
CRED Fish Biomass Estimates at Tutuila Island, Laysan Island and Gardner Pinnacles *Link to sample metadata for this product*	Mobile fauna data were collected using the Tethered Optical Assessment Device (TOAD), a sled equipped with underwater video camera and lights. These data are used to provide fish count and biomass maps where benthic habitat classification has been completed.
Coral Reef Temperature Anomaly Database (CoRTAD) Version 2 - Global, 4 km Sea Surface Temperature and Related Thermal Stress Metrics for 1982-2008 *Link to sample metadata for this product*	The Coral Reef Temperature Anomaly Database (CoRTAD) is a collection of sea surface temperature (SST) and related thermal stress metrics, developed specifically for coral reef ecosystem applications but relevant to other ecosystems as well. The CoRTAD Version 2 contains global, approximately 4 km resolution SST data on a weekly time scale from 1982 through 2008.
Synoptic Bi-monthly and Storm Response Water Quality Sampling in Southern Kaneohe Bay, HI 2005-2007 (NODC Accession 0060061) *Link to sample metadata for this product*	Synoptic sampling including water column profiles and collected surface water samples was conducted on a bi-monthly basis throughout the rainy season (October-May) and on a monthly basis in the dry season (June-September) at nine locations in southern Kaneohe Bay in support of the Coral Reef Instrumented Monitoring Platform (CRIMP) program.
CRED 60m Gridded bathymetry and IKONOS estimated depths within UTM Zone 3, Northwestern Hawaiian Islands *Link to sample metadata for this product*	Gridded bathymetry and IKONOS estimated depths of the shelf and slope environments of the Northwestern Hawaiian Islands, USA within UTM Zone 3. Bottom coverage was achieved in depths between 0 and 5200 meters. Gridded bathymetry files were updated to include 2008 survey data. Data are available in netCDF and Arc ASCII format.

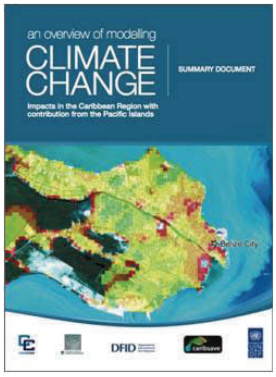
(continued on page 5)

New Data in CoRIS continued...

Product Name	Description
Backscatter imagery of the western and central banktop and bank edge environments at French Frigate Shoals *Link to sample metadata for this product*	Backscatter imagery extracted from gridded bathymetry of the western and central banktop and bank edge environments at French Frigate Shoals, Northwestern Hawaiian Islands, USA. These data provide almost complete coverage between 20 and 100 meters. Data are available in netCDF and GeoTIFF format.
French Frigate Shoals - Gridded Geomorphology data files *Link to sample metadata for this product*	The geomorphological data layers of substrate, slope, rugosity, and bathymetric position index (BPI) produced at the Pacific Islands Benthic Habitat Mapping Center (PIBHMC) are derived from multibeam bathymetry. These data sets are for the shelf and slope environments of French Frigate Shoals
Hard and soft bottom seafloor substrate maps for Saipan, Pagan, Tinian and Tutuila *Link to sample metadata for this product*	Preliminary hard and soft bottom seafloor substrate maps were derived from an unsupervised classification of gridded backscatter and bathymetry derivatives.

Publications

Report on Climate Change and Caribbean Corals Released in Copenhagen. A new report spearheaded by the CARIBSAVE project, funded by the United Nations (UN) Development Programme, highlights the impacts of climate change on Caribbean nations and natural resources. In particular, the report highlights the difference in the impacts at the 2.0°C increase being pushed by many UN negotiators versus the 1.5°C increase promoted by the Alliance of Small Island States. The report focuses on: the implications of ice sheet melt for global sea level rise (SLR); the projections and implications of SLR for the Caribbean region; evaluation of the differential impacts of +1.5° and +2°C on coral reefs, and water resources and agriculture in the Caribbean, with additional analysis for the Pacific islands. Of particular interest are the sections on climate change and ocean acidification impacts on Caribbean coral reefs—analysis led by NOAA's Coral Reef Watch (CRW) and its partners. The report's Key Findings, Executive Summary, and promotional posters were released at the Copenhagen UN Climate Change Conference can be downloaded from the CRW Website. The full report is still being finalized.



CRW Contributes to Publication on Coral Reefs and Climate Change: A publication "Coral Reefs and Climate Change: The Guide for Education and Awareness" was recently released by CoralWatch, a research project of the University of Queensland. The book explains the affects of climate change by using coral reefs as an example with the goal of informing, educating and enabling people to begin to question the future. It combines some of the latest scientific research with informative imagery (over 600 illustrations and images) to cover topics such as oceanography, coral reef biology, the issues of climate change and suggestions for ways forward. The book is aimed at educators, students, reef enthusiasts, professionals and all people who are interested in coral reefs and climate change. It also includes an Activity CD with Workbook, a CoralWatch Instructional Video, and a virtual coral reef poster. The book features information on NOAA's Coral Reef Watch (CRW) and contains images and information put together by CRW and NOAA's Environmental Visualization Lab. Read the press release or visit CoralWatch to learn more.

CRW and AOML Publish Satellite Paper in Special Issue of *Oceanography*. Over a period of less than a decade, ocean acidification—the change in sea- *(continued on page 6)*

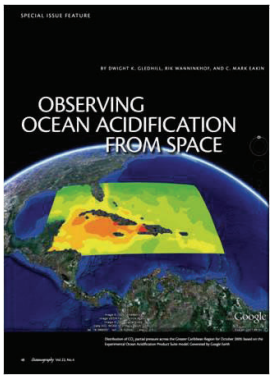
DID YOU KNOW...

Our new Website has a section dedicated to helping you get personally involved in coral reef 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!

Publications continued...

water chemistry due to rising atmospheric carbon dioxide (CO_2) levels and subsequent impacts on marine life—has become one of the most critical and pressing issues facing the ocean research community and marine resource managers alike. A special issue of *Oceanography* published this month provides an overview of the current scientific understanding of ocean acidification as well as to indicate the substantial gaps in our present knowledge. NOAA staff published a paper in the issue entitled "Observing Ocean Acidification from Space" on the product suite developed at NOAA's Coral Reef Watch (CRW). Ocean acidification has the potential to be one of the biggest threats to important ocean systems and satellite data can be used to monitor this threat.



Other papers in the special issue discuss the past, current, and future trends in seawater chemistry; highlight potential vulnerabilities to marine species, ecosystems, and marine resources to elevated CO_2; and outline a roadmap toward future research directions. This journal issue is open access and articles can be downloaded here.

DID YOU KNOW...

Coral reefs form natural barriers that protect nearby shorelines from the eroding forces of the sea, thereby protecting coastal dwellings, agricultural land, and beaches.

Scientists are looking to coral reefs to provide critical medical compounds for use in the treatment of cancer, HIV, cardiovascular diseases, ulcers, and other ailments.

32 of the 34 recognized animal Phyla are found on coral reefs compared to nine Phyla in tropical rainforests!

We value your feedback. Feel free to email us comments or suggestions.

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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

We're on the Web!
http://coralreef.noaa.gov

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

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