Coral Reef News
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FROM THE DESK OF THE PROGRAM MANAGER

This month, I'd like to bring to your attention two coral conservation events of note.

First, the 25th bi-annual meeting of the US Coral Reef Task Force (USCRTF) was held on February 24. During the meeting, the USCRTF voted in favor of Resolution 25.1 which outlines a process to formally engage in the National Ocean Policy (NOP), including related priority actions for the USCRTF over the next three years. This decision places the USCRTF firmly as a leading intergovernmental body for coral reef conservation in relation to the NOP. Also of note, the USCRTF selected Ka'anapali, Maui as the priority Pacific watershed to be addressed in a USCRTF place-based partnership where multiple USCRTF agencies will bring resources to bear in collaboration with local organizations. Additional outcomes of the meeting are presented in the 'Updates from Headquarters' section of this issue.

Second, the *Reefs at Risk Revisited* report was launched on February 23. This report is an update of the World Resources Institute's (WRI) 1998 global analysis of threats to coral reefs using new high-resolution data and improved modeling methods. This is the first Reefs at Risk study that evaluates global threats to reefs, such as warming seas and ocean acidification, and includes a global analysis of the vulnerability of coastal communities to reef degradation. Dr. Lubchenco, NOAA Administrator, provided the keynote address at the launch in Washington, DC. USCRTF members were among the invited guests in attendance.

-Steve

ANNOUNCEMENTS

Workshop: *Establishing an Acropora Surveillance Network in the Caribbean.* Incorporating aspects of environmental and wildlife epidemiology into addressing coral health issues is critical to improving our ability to identify health problems in coral populations, identify risk factors for developing disease, and effectively managing for healthy coral resources. Surveillance is a part of epidemiology that involves collating and interpreting specific health-related data during monitoring to detect changes in the population's health. The goal of this workshop is to provide a method that can assist coral reef managers, particularly those with limited resources, to assess and manage the health of their respective coral populations. Based on World Health Organization and Centers for Disease Control models, the method will have a hierarchical structure in which surveillance is conducted to detect anomalies; resource managers are given inexpensive techniques they can use to diagnose the change; and then managers are given access to expertise

UPCOMING EVENTS

March
10-13: National Science Teachers Association National Conference: Celebrating the Joy of Science, San Francisco, CA.
20-25: 5th International Marine Debris Conference, Honolulu, HI.
30: Watersheds to Reefs Educator Webinar, free registration.

April
16: Submissions to 2nd Annual NOAA Marine Debris Program Art Contest due.
16-18: "Establishing an Acropora Surveillance Network in the Caribbean" workshop, Grand Cayman, British West Indies.

May
14-18: 2nd International Marine Conservation Congress: Making Marine Science Matter, Vancouver, BC, Canada.

July
17-21: Coastal Zone 2011, Chicago, IL.

UPCOMING MISSIONS

March 10-May 24: Wake Atoll and CNMI Reef Assessment and Monitoring Program cruise, NOAA Ship *Hi'ialakai*.

March 28-April 16: Annual Caribbean seafloor mapping mission, NOAA Ship *Nancy Foster*.

April 15-May 5: Mesophotic Coral Ecosystems Cruise to PR and USVI, Charter *M/V Spree*.

when situations demand more specialized investigations. This workshop is being held April 16-18 on Grand Cayman, British West Indies, and will be co-sponsored by the Coral Disease and Health Consortium—with funding from the NOAA CRCP—and St. Matthew's University, School of Veterinary Medicine.

Marine Debris Art Contest for Kids. Do you know an artistic student in grades K-8? The NOAA Marine Debris Program would like to know how marine debris impacts them and what they are doing about it, as depicted in a piece of original artwork**.** The winning artwork will be showcased in a 2012 calendar that will help in raising awareness about the global problem of marine debris. Additionally, the winners will be featured on the Program's website and in their newsletter, reaching over 200,000 people each month! Artwork must be postmarked no later than April 16, 2011. Click here to learn more, including contest eligibility and mailing instructions.

Free Webinar for Educators During National Environmental Education Week. On March 30, NOAA staff representing Gray's Reef National Marine Sanctuary and the CRCP will share their knowledge and ideas for compelling classroom activities addressing the impacts of watersheds on coral reefs and other offshore habitats. Registered National Environmental Education Week 2011 participants can join the NOAA presenters for an educator webinar - Teaching Ocean Connections: Watersheds to Reefs. Topics covered will include water quality monitoring, bringing data sets into the classroom, and the importance of experiencing watersheds through field trips. To register, click here.

New Website Tracks Coastal, Ocean Investments and Successes by State. NOAA's Office of Ocean and Coastal Resource Management (OCRM) has launched a new interactive web feature that shows the scope of coastal program investments and successes in NOAA's 34 partner states and territories, including the seven US reef states and territories.

Using the latest GIS/web technology, *OCRM in Your State* lets users click on a state/jurisdiction to see current federal funding and state matching funds for coastal programs administered by OCRM. It also has thumbnail descriptions of results from those investments in every state and territory and links to more information about each state's coastal programs. The site will be updated to report new funding and success stories. A future phase is planned that will allow users to click on regions and Congressional districts for funding and success stories Read the press release to learn more.

Update: Petition to List 83 Species of Coral Under the ESA. On 25 January 2011, The Center for Biological Diversity formally notified the NOAA National Marine Fisheries Service of its intent to sue the agency for its failure to respond to a petition seeking to protect 83 imperiled coral species under the Endangered Species Act by the specified deadline. The Endangered Species Act requires that the National Marine Fisheries Service respond to the petition within 12 months of the initial petition to list these species, and this initial finding is late. The citizen lawsuit provision of the Endangered Species Act requires a written notice of violation and intention to sue be provided to the government sixty days prior to the commencement of legal action.

UPDATES FROM HEADQUARTERS

25th Meeting of the US Coral Reef Task Force. The 25th bi-annual meeting of the US Coral Reef Task Force (USCRTF) was held on February 24 at the US Department of the Interior (DOI) in Washington, DC. Highlights of the meeting include:

- U.S. Department of the Interior Secretary, Ken Salazar, provided opening remarks promoting the Administration's collaborative conservation efforts.
- Two USCRTF Governor Members attended and provided remarks, highlighting recent conservation work in their jurisdictions and requested USCRTF support for two regional conservation initiatives.
- A presentation by the White House Center on Environmental Quality outlined how the National Ocean Policy (NOP) is organized and will be carried forward and how the USCRTF can engage in this process, helping members prepare to vote upon Resolution 25.1.
- Resolution 25.1, USCRTF Engagement in the National Ocean Policy and Framework for FY11-14 Priority Action, was unanimously passed. In addition to the significance to the USCRTF's engagement in the NOP mentioned above on the front page of this issue, it also implements some changes to the way the USCRTF conducts business. In addition, the resolution puts forward mitigation as a transjurisdictional issue the USCRTF will work on in the coming year. In response, the USCRTF is establishing a Mitigation Working Group and is currently recruiting volunteer members from the USCRTF federal family.
- The USCRTF heard public comment from eight individuals and organizations.

In the coming weeks, the resolution, presentations from the meeting, public comment transcripts, and other associated meeting files, will be posted here.

Coral Reauthorization Bills Recently Introduced by Senate and House. The 112th Congress has introduced two bills which are the most recent progress in the effort to reauthorize the Coral Reef Conservation Act of 2000. S.46, the Coral Reef Conservation Amendments Act of 2011 was introduced by Senator Inouye (D-HI) on January 25, 2011. H.R.738, the House's reauthorization bill, was introduced by Congresswoman Bordallo (D-Guam) on February 16, 2011. S.46 is cosponsored by Sen. Kerry (D-MA), Sen. Rockefeller (D-WV), Sen. Bill Nelson (D-FL), and Sen. Snowe (R-ME) providing bipartisan support. H.R.738 is cosponsored by fourteen democrats.

Both bills would strengthen NOAA's ability to comprehensively address threats to coral reefs and empower the agency with tools to ensure that damage to our coral reef ecosystems is

prevented or effectively mitigated. The bills also establish consistent practices for maintaining data, products, and information, and promote the widespread availability and dissemination of that environmental information. Both allow the Secretary of Commerce to further develop partnerships with foreign governments and international organizations as well as with Federal agencies, State and local governments, tribal organizations, educational institutions, nonprofit organizations, commercial organizations, and other public and private entities. These partnerships are critical not only to the understanding of our coral reef ecosystems, but also to their protection and restoration. Finally, both bills allow for any amount received by the United States as a result of illegal activity resulting in the destruction, take, loss, or injury of coral reefs to be used toward restoration efforts. Currently, these two bills have several key differences; to become a law, identical versions of a bill must be passed in both the House and Senate and then signed by the President. Click here to see periodic updates on reauthorization, as well as to see archives from reauthorization efforts by previous sessions of Congress. To see the text of either bill, please search them by bill number on THOMAS, the Library of Congress website.

UPDATES FROM THE ATLANTIC/CARIBBEAN REGION

Partial Pacific Remote Islands Marine National Monument Map Now Available. Researchers from the National Centers for Coastal Ocean Science recently released the first benthic habitat maps for the shallow-water coral reef ecosystems of Palmyra Atoll. The maps were completed using high-resolution satellite imagery and show the area is dominated by medium density macroalgae cover (37%), aggregate reef (42%), and low density percent live coral (46%). Just as street maps help drivers navigate a city; benthic habitat maps help scientists identify ecologically significant areas to focus their research efforts. Because the maps clearly define reef habitat characteristics and distribution, they are essential decision-making tools for resource managers tasked with the sustainable management of coral reefs. The maps are available online via the Palmyra BIOMapper, a fully interactive data and map exploration portal developed by the Biogeography Branch.

Palmyra Atoll's waters are rich with marine life, such as fish, sharks, and invertebrates, and over 130 species of stony corals. New sea floor habitat maps will help managers make sound ecosystem-based conservation decisions. Photos courtesy: Alan Friedlander

Located within the Pacific Remote Islands Marine National Monument, Palmyra Atoll is home to a pristine and diverse coral reef ecosystem and a large population of nesting seabirds, making it an epicenter for ocean science. This mapping effort was completed in partnership with The

Nature Conservancy, the U.S. Fish and Wildlife Service and Analytical Laboratories of Hawaii. Learn more about this mapping project online.

Passive Hydroacoustics Used to Map and Monitor Fish Spawning Aggregations off the West Coast off Puerto Rico. During the months of January through May 2010, Caribbean Coral Reef Institute (CCRI) researchers from University of Puerto Rico, Mayagüez surveyed and monitored red hind and yellowfin grouper spawning aggregations at "Abrir La Sierra" and Mona Island in Puerto Rico. Listening for the distinctive call of the male groupers, passive hydrophones were used to locate and map red hind spawning aggregation sites. Long-term audio recorders were also placed at the two sites throughout much of the season, capturing the acoustic behavior of red hind and yellowfin grouper. The results provide insight into the formation of spawning aggregations and the timing of actual spawning relative to environmental cues. A time-saving process was developed to automatically count red hind calls, which will greatly facilitate future work by eliminating time-consuming manual listening and counting. This NOAA-supported work is based on initial CCRI-sponsored research to categorize calls from groupers at spawning aggregations. The timing and intensity of red hind calls is being compared to data from active acoustic and diver surveys as a means for monitoring grouper aggregations. The ultimate goal from these comparisons is to develop automated and efficient methods for assessing grouper stocks that are independent of winter weather conditions and diver availability at the time of spawning. Similar CCRI-sponsored research on the spawning aggregations of groupers (red hind, yellowfin and tiger) have led the Puerto Rico Department of Natural and Environmental Resources to change the boundaries of closed fishing areas from a distance measure to a depth contour to include observed spawning sites, as well as enact regulations closing fishing on red hind and mutton snapper during the two key months of spawning activity.

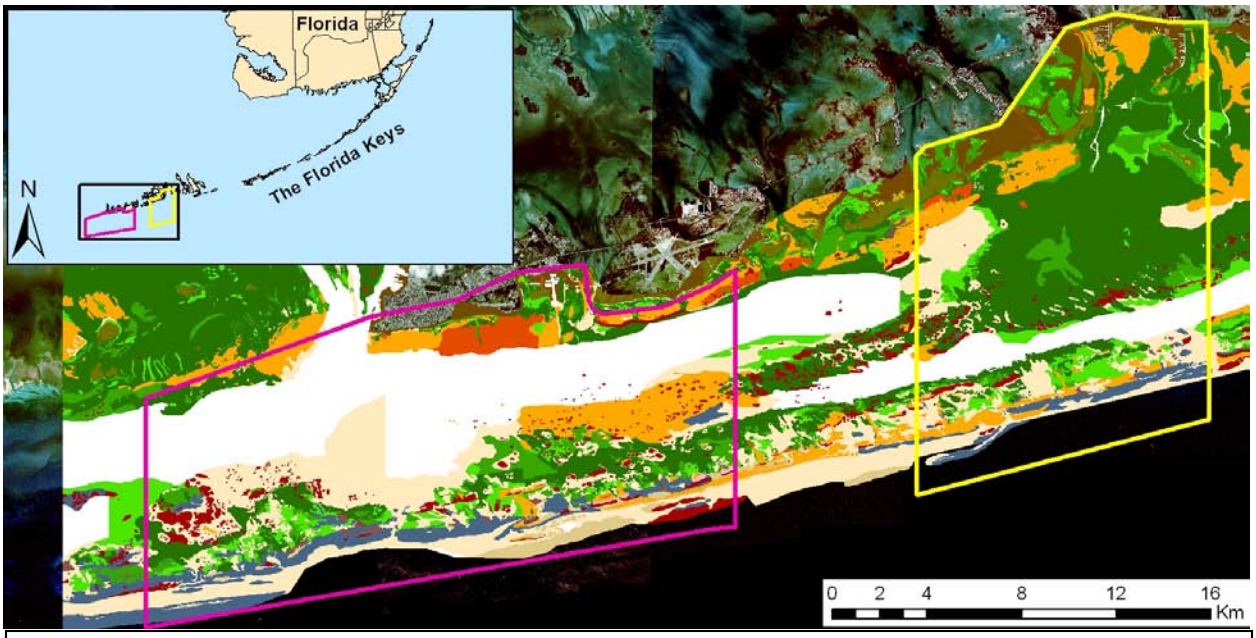
A red hind grouper photographed off Mona Island, PR in February 2010. Photo courtesy: W. Merten, UPRM/CCRI

NCRI Researchers Collaborate on Grouper Spawning Aggregation Population Dynamics in USVI. Groupers are among the most overfished coral reef fishes with marked population declines documented throughout the Caribbean and Indo-Pacific. On Caribbean and US Atlantic coral reefs, the Nassau grouper is the "poster-fish" for major population declines resulting from heavy fishing on its spawning aggregations and on reefs. This species is a candidate for US Endangered Species Act listing and its effective spatial management is a high priority, requiring an understanding of the population dynamics, larval dispersal from and connectivity of Nassau grouper spawning aggregations. To assist NOAA managers in this effort, National Coral Reef Institute (NCRI) scientists, based at the Oceanographic Center of Nova Southeastern University, and in collaboration with the

Nassau grouper in USVI. Photo courtesy: Kirk Kilfoyle, NCRI

University of the Virgin Islands, are studying the spatial and temporal population dynamics of the Nassau grouper aggregation at the Grammanik Bank in St. Thomas, USVI as a model system. This aggregation was fished to near extinction but has been seasonally closed to fishing since 2005. The initial collapse followed by subsequent protection of this aggregation makes it an ideal population to study the dynamics of spawning aggregation recovery. The following objectives are currently being addressed: 1) Assessment of the impacts of severe overfishing on genetic diversity by comparison to relatively healthy aggregations elsewhere; 2) Assessment of the temporal dynamics (2008-2013) of genetic diversity changes in the recovering aggregation; and 3) Determination of the spatial and temporal dispersal of fish originating from the recovering USVI aggregation. Population dynamics research into this once severely depleted fish stock provides new insight into the dynamics of population recovery following a seasonal closure of a specific fishery.

NCRI Assesses Accuracy of Florida Keys Benthic Habitat Maps for NOAA. As part of NOAA's regional mapping and monitoring effort in the Florida Keys, National Coral Reef Institute (NCRI) scientists conducted an independent accuracy assessment to statistically test the accuracy of the GIS-based benthic habitat map recently produced for the Lower Keys. This independent accuracy assessment by NCRI scientists ensures that the benthic habitat maps produced by the NOAA's Benthic Habitat Mapping of Florida Coral Reef Ecosystems project are as accurate as possible.



Accuracy Assessment Area 1 (ROI-1) (yellow) and Area 2 (ROI-2) (magenta), within the overall NOAA mapped region of the Lower FL Keys. ROI-1 included the seaward seafloor south of Cudjoe and Sugarloaf Keys including American Shoals. ROI-2 included the region between Sand Key and Eastern Sambo from the shoreline intertidal zone to the outer bank/shelf escarpment at a depth of approximately 33m. Photo credit: NCRI

Two accuracy assessment corridors were conducted between Cudjoe Key and Sand Key that extended from the shoreline intertidal zone, through Hawk Channel and the reef tract, before terminating on the outer bank/shelf escarpment at a depth of approximately 33m. A total of 1036

sampling stations were visited, of which 957 were used in the accuracy assessment. The sites were selected using a stratified random sampling protocol that equally distributed sampling points amongst the detailed structure categories. The known map proportions were used to remove the bias introduced to the producer's and user's accuracies by differential sampling intensity.

Efficacy of the benthic habitat map was assessed by a number of classification metrics derived from error matrices of the Major and Detailed levels of Geomorphological Structure and Biological Cover. The combined overall accuracy of the NOAA Lower Keys benthic habitat map after adjusting for map marginal proportions ranged from 94.0% and 86.5% at the Major and Detailed levels of Structure respectively, and the overall accuracy at the Major and Detailed levels of Cover ranged from 80.2% and 78.0%.

The true error of non-sampled portions of the map is ultimately unknown and further sampling in these areas of the map would allow for a better understanding of the entire map accuracy; however, the combined accuracy assessments ensured that a well-distributed, representative set of monitoring locations were surveyed that closely represented the entire mapped region. Comparison of accuracy results between corridors showed that map accuracy is different throughout the region. Therefore, as the Florida Keys benthic habitat mapping effort proceeds, it is important to evaluate new areas to understand both local and regional map accuracies. With NOAA support, NCRI is planning to conduct at least two more assessments of newly mapped areas; one in the middle Keys, and one in the upper Keys.

The NCRI, based at the Oceanographic Center of Nova Southeastern University, is a Congressionally-appropriated core component of the CRCP and is administered by the Center for Sponsored Coastal Ocean Research.

UPDATES FROM THE PACIFIC REGION

American Samoa Holds Climate Summit. A member of the NOAA Coral Reef Watch staff served as a facilitator at the *Making Climate Change Local: Building Resilient Communities in the Pacific* Summit in Pago Pago, American Samoa, February 1-2. The Summit was hosted by the American Samoa Department of Commerce's Coastal Management Program and the Coral Reef Advisory Group. Recognizing that a multitude of climate change adaptation activities are currently underway in the Pacific, the Summit served as a regional forum for participants to exchange best practices and lessons learned. Summit goals included establishing a regional partnership network and prioritizing strategies to build climate change resilience in traditional communities. The first day of the Summit focused on impacts of climate change in different sectors, including Human Settlement and Infrastructure, Human Health, Food Security, and Coral Reefs and Mangrove Ecosystems; the second day focused on recommendations for adaptation strategies, at the local (village) level within each of these sectors. Invited participants included traditional leaders, policy and decision-makers, scientists, representatives from the private sector, and non-governmental organizations from American Samoa and across the Pacific. A large contingency of high school students, teachers, and administrators from American Samoa also took part in the Summit. During the summit, a facilitated working group was

organized for each focus area. The top 3-5 recommendations from each focus area group were then presented in a resolution to Governor Tulafono of American Samoa. The remaining recommendations will be considered by a Climate Change Task Force, to be formed in the future. The Climate Change Task Force will develop a framework for villages to help them respond and adapt to climate change impacts.

INTERNATIONAL UPDATES

CRCP Leads Survey to Gauge Community Support for Chuuk's First Legislated MPA. From January 18-28, the CRCP—in partnership with the Chuuk Conservation Society, Micronesia Conservation Trust, and Pacific Islands Marine Protected Areas Community (PIMPAC)—led a socioeconomic assessment and training in Chuuk, Federated States of Micronesia. The training accomplished three objectives:

- Complete a socioeconomic assessment for the island of Parem, which is being considered for Chuuk's first legislated marine protected area (MPA). There are many traditional MPAs in Chuuk, but this would be the first recognized under Chuuk State law.
- Ttrain 14 community leaders, non-governmental organization and local agency staff on how to use the SEM-Pasifika guidelines to carry out a socioeconomic assessment; and
- Work with five new regional trainers from Pohnpei, Palau, and Chuuk to increase capacity for training within Micronesia.

The assessment highlighted the importance of marine resources to the community—87% of respondents participating in fishing activities—and showed that 72% of respondents would support a legislated MPA in Parem.

DIVE DEEPER: DEEP-SEA CORALS

In the Mid-Atlantic Bight–from the southern edge of Georges Bank to Cape Hatteras–concentrations of deep-sea corals are found in and around submarine canyons. They range from stony corals located at the rim of Hudson Canyon about 100 m deep to gorgonian corals in Baltimore and Norfolk Canyons at depths greater than 400 m. These corals and canyons are getting the attention of fishery managers in the region.

The Mid-Atlantic Fishery Management Council held a Habitat-Ecosystem Workshop December 13-14, 2010 in Virginia Beach, VA. The workshop was organized by the Council along with the NOAA Fisheries Service (NMFS) Office of Habitat Conservation, Office of Science & Technology, and Northeast Regional Office. The goal was to identify projects and opportunities for the Council to move toward the forefront in utilizing the latest habitat and ecosystem science, policy, and management to provide healthy mid-Atlantic fisheries. Participants included NOAA, the New England and South Atlantic Fishery Management Councils, Atlantic States Marine Fisheries Commission, states, regional governance bodies (ie: governors' regional association, Mid-Atlantic Regional Council on the Ocean), environmental organizations, and fishing industry. Topics were identified to advance collective efforts to enhance, protect, and restore habitats and ecosystems, with extensive discussions on new policies such as the President

Obama's National Ocean Policy, ecosystem approaches based on regional priorities, new tools, and new partnerships.

At the workshop, the NMFS Office of Habitat Conservation presented an overview of deep-sea corals and deep-sea coral research and management in the mid-Atlantic region, including the Deep Sea Coral Research and Technology Program (DSCRTP). NMFS' recommendations to the Council included participating in the DSCRTP's northeast research priorities workshop for 2013-15 fieldwork; exercising Magnuson-Stevens Act discretionary authority to designate deep-sea coral protection zones; using Essential Fish Habitat as a tool for deep-sea coral management; and monitoring bycatch and habitat impacts of fishing on deep-sea corals in the region. The Council members were engaged in a lively discussion about opportunities to study and conserve deep-sea coral habitats. The workshop proceedings will be published as a NOAA technical memo in 2011.

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