

NOAA IN THE CARIBBEAN

CONNECTING NOAA & PARTNERS ACROSS THE CARIBBEAN



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NOAA's Caribbean Strategy Approved by Administrator

New comprehensive strategy aims to strengthen regional partnerships

NOAA Administrator Kathryn Sullivan recently approved NOAA's Caribbean Strategy, a key step to addressing regional needs. The Caribbean Strategy, developed by NOAA over several years of careful review with input from partners in the Caribbean, is intended to help coordinate and integrate the abilities of all NOAA offices to address priority regional issues, improve partnering and mission effectiveness, and strengthen international cooperation.

The strategy centers around three, interconnected goals and objectives, each with a list of priority near-term and long-term actions:

- ✓ Improved conservation and management of ocean and coastal ecosystems and resources;
- ✓ Strengthened understanding of, and adaptation to, a changing climate; and
- ✓ Enhanced multi-hazard monitoring, forecasting, and risk management.

The Caribbean Strategy recognizes that the diverse cultures and economies of the Caribbean rely on healthy and productive

coastal and marine ecosystems for food security, income, protection from storms, recreation and tourism, and other vital services.

The strategy also acknowledges that coastal communities benefit from accurate and timely environmental information to inform decision-making.

For instance, NOAA has a long history of supplying Caribbean communities with critical satellite-derived weather and climate data that would otherwise be unavailable to some countries. Thus, the strategy serves as a guiding document to review existing NOAA capabilities and focal areas, and to identify priority goals and objectives for future activities.

The strategy has already been used to help improve NOAA coordination, communications and implementation of actions in the Caribbean region. An early outcome was the creation of the NOAA in the Caribbean Steering Committee whose members seek to build and strengthen collaborative partnerships in the region.

"Support for NOAA's efforts in the Caribbean are enhanced and enabled through the cooperation and assistance we receive from our partners in the region," Alan Leonardi, chair of NOAA in the Caribbean and deputy director of NOAA's Atlantic Oceanographic and Meteorological Laboratory, said. "The strategy recognizes that many nations across the Caribbean share similar challenges with environmental change and risk management. Strengthening partnerships as part of a comprehensive strategy is an effective first step in addressing the multifaceted issues within the region."

Visit <http://www.regions.noaa.gov/secure/index.php/noaa-in-the-caribbean/>.

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The geographical scope of NOAA's Caribbean Strategy is based on the Caribbean Sea Large Marine Ecosystem region. Credit: Google Earth

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Don't Stop Talking Fish Event—a Huge Success!

Event brought together hundreds of residents to celebrate and learn about their fishing heritage

Hundreds of people came out to celebrate and learn about the fisheries ecology, heritage and culture of the U.S. Virgin Islands at the first-ever Don't Stop Talking Fish Family Fun and Cultural Event on June 28, 2014.

Crowds gathered at Camp Arawak, Great Pond in St. Croix East End Marine Park during territorially-designated "Fishers Appreciation Week" to participate in several fun and educational activities, including an expo of marine-based agencies and organizations, a fishers' expo, games, face painting, music and more.



Don't Stop Talking Fish, a free family event in St. Croix, U.S. Virgin Islands, brought together the community to celebrate their fishing heritage.

"Don't Stop Talking Fish Family Fun and Cultural Event was designed to engage families in creative and interactive ways to learn about the importance of essential fish habitat, fish species, and the social and economic importance of sustaining local fisheries," Lia Ortiz, the project manager of the Don't Stop Talking Fish initiative and the U.S. Virgin Islands Fisheries Liaison for NOAA's Coral Reef Conservation Program, said.

Winners of a week-long and very successful lionfish derby hosted by the U.S. Virgin Islands Department of Planning and Natural Resources (DPNR) were also announced at the event. The first award for 'Don't Stop Talking Fish Fisher of the Year' was presented to Theodore "Chino" Hansen for his efficiency in reporting catch data to the U.S. Virgin Islands Division of Fish and Wildlife.

As the sun set, the educational festivities continued with a film festival featuring a short film on the history of the St. Croix fishing community, a film on Buck Island Reef National Monument and Rhythm of

Life music video. Finally, participants got in the groove and enjoyed the "concert of the summer" featuring local artists, DJs and bands.

"The Don't Stop Talking Fish initiative is important to residents because fishing is such a large part of our lives" a representative from DPNR said. "The event displayed all the ongoing efforts being made to sustain our fisheries, such as the work that NOAA Fisheries and the Coral Reef Conservation Program, as well as the Caribbean Fishery Management Council (CFMC), does on behalf of the region, and the role marine protected areas play in protecting valuable fisheries resources."

Partners include NOAA's Coral Reef Conservation Program, NOAA Fisheries, DPNR, CFMC, The Nature Conservancy, Earthbound Studios and many others. Visit www.dontstoptalkingfish.com.

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U.S. Virgin Islands is Tsunami Ready

The territory celebrates tsunami readiness and hosts meeting to plan for future

The U.S. Virgin Islands is the first U.S. jurisdiction in the southeast region to be designated as Tsunami Ready by NOAA. Tsunami Ready is granted by NOAA once certain requirements are met, such as establishing an emergency operations center and a 24-hour warning point to receive tsunami information.

"We have worked long and hard for this recognition and as a result of our efforts, the territory is better prepared to save lives from the onslaught of tsunamis," Governor John P. de Jongh said at the 9th session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System

for the Caribbean and Adjacent Regions. The meeting, hosted by the Virgin Islands Territorial Emergency Management Agency from May 13-15, 2014, was attended by 56 participants from 15 Caribbean countries.

Participants called for member states to contribution towards the Caribbean Tsunami Information Center to enable it to fulfill its role as a key instrument for tsunami preparedness and awareness in the Caribbean region. ■

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U.S. Virgin Islands Governor de Jongh and delegates at the UNESCO meeting on the Caribbean Tsunami Warning System in St. Thomas. Credit: National Weather Service

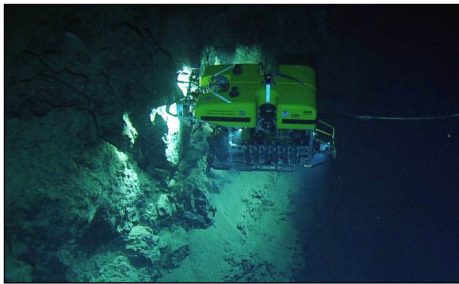


Subs Explore Deep Sea off Puerto Rico and USVI for Signs of Tsunami hazards

Team unearths clues to the cause of the 1918 earthquake and tsunami

Last year, a team of researchers, including NOAA scientists, deployed underwater vehicles to investigate the cause of an earthquake and 20-foot tsunami wave that killed 116 people in the U.S. Caribbean in October 1918.

The team, which included staff from Ocean Exploration Trust, U.S. Geological Survey, University of Puerto Rico at Mayaguez and University of Rhode Island, discovered evidence of a major landslide on the sea floor in the Mona Passage between Puerto Rico and the Dominican Republic that may have caused the



ROV Hercules is seen taking some samples during exploration at a dive site. Credit: Ocean Exploration Trust

reported magnitude 7.2 earthquake almost a century ago.

The Exploration Vessel Nautilus, a 210-ft ship under the direction of Robert Ballard, famed for discovering the wreck of the Titanic, conducted deep-water surveys off the coast of Puerto Rico and the Virgin Islands between October 4-18, 2013. In addition to the primary goal of investigating several previously identified sources of seismic and tsunami hazards in the region, the team's biologists identified the biological diversity in this largely unknown region of deep water.

The Hercules and Argus remotely operated vehicles (ROVs), equipped with a number of tools, were used to obtain high-definition video footage of seafloor features, and to collect biological and geological samples to depths of 3,000 m. The ROVs spent a total of 4.5 days of sea-bottom time at seven dive sites in Mona and Anegada Passages. Exploration of this region yielded new insights into the distribution, abundance,

and community structure of deep-sea benthic communities, including corals, sponges, other invertebrates, and fishes.

"This is the first time scientists have explored the eastern end of the Septentrional fault up close, finding an unusual circular depression not seen in any other major strike-slip fault in the world," Uri Ten Brink, the lead investigator of the cruise, said.

The Nautilus transmitted real-time video during the expedition connecting scientists with the public and reaching record audiences through their web portal, nautiluslive.org. The \$3 million mission that began in Puerto Rico and ended in Grenada was funded through a partnership with agencies and organizations including NOAA, National Geographic and the University of Rhode Island. ■

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News from Around the Caribbean

Connecting you with news and updates from NOAA and partners around the U.S. and international Caribbean

U.S. Caribbean

CoCoRaHS expands to Puerto Rico

Recently, the Community Collaborative Rain Hail and Snow (CoCoRaHS) network was launched in Puerto Rico, expanding the volunteer network to the U.S. Caribbean for the first time. CoCoRaHS is a community-based network of volunteers who measure and map precipitation (rain, snow, hail). Volunteers from across the U.S. enter daily precipitation measurements into an online database making the information rapidly available to meteorologists, climatologists, hydrologists and anyone

interested in precipitation. Coordinated by the NOAA San Juan Weather Forecast Office and the University of Puerto Rico at Mayaguez, volunteers are now regularly reporting daily precipitation from across Puerto Rico. Learn more about CoCoRaHS at www.cocorahs.org. ■

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Fishery regulations made consistent for three key Puerto Rican fish spawning areas

To resolve some inconsistencies in fishery regulations for Abrir la Sierra

Bank, Bajo de Sico and Tourmaline Bank, off the west coast of Puerto Rico, the CFMC is proposing new federal fishery regulations. The [amendment](#) will ensure that regulations are consistent in federal waters and areas that straddle both commonwealth waters and federal waters (i.e., Tourmaline Bank and Bajo de Sico). The CFMC also seeks to ensure that regulations are compatible between relevant management agencies. The fishery management objective remains unchanged in that regulations are intended to provide adequate protection for important fish spawning aggregations and the benthic habitats supporting



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U.S. Caribbean News

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those aggregations. These areas are essential fish habitat supporting a variety of reef fish species at a critical time in their reproductive cycle and their protection is key to the long-term sustainability of the stock. ■

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New plan to help fishery managers respond more quickly to change

NOAA's National Marine Fisheries Service (NMFS), in collaboration with the CFMC, developed a comprehensive amendment to the U.S. Caribbean Fishery Management Plans that establishes an "Annual Catch Limit Control Rule". The control rule adjusts the current buffer reduction applied to the overfishing limit, or to the acceptable biological catch, to derive the annual catch limit for species managed by the CFMC in federal waters of Puerto Rico and the U.S. Virgin Islands. This action would apply a specific buffer reduction based on the current overfishing status of the fishery management unit as determined by NMFS. Establishing this control rule would provide the CFMC and NMFS the flexibility to respond quickly to changes in the fishery. ■

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Fishers and fishery managers review accountability measure-based closures in light of economic impacts

Fishers in the U.S. Caribbean have expressed that the timing of seasonal closures for species that have exceeded their annual catch limit results in negative socioeconomic impacts. To address this issue, the CFMC is proposing to develop a mechanism that allows the establishment of closure dates other than the standard end of year closures in the event of an overage of the annual catch limit for a specific group of species.

Presently, in U.S. Caribbean federal waters, accountability measures require NMFS to shorten the length of the fishing season, for any fishery management unit for which the annual catch limit has been exceeded. Accountability measures are implemented beginning on December 31st of the appropriate year and extend backwards in the year for the number of days necessary to achieve the required reduction in landings. The ultimate goal is to remain within catch limits and minimize undesirable socioeconomic impacts. ■

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Study describes social-ecological system of La Parguera, Puerto Rico

A recent study describes the social-ecological system of La Parguera, Puerto Rico, and identifies the different pressures that have changed this system over the last 40 years. The report, titled [People, Habitats Species and Governance: An Assessment of the Social-Ecological System of La Parguera, Puerto Rico](#), identifies multiple pressures that have changed this ecosystem, including: sedimentation, nutrient enrichment, elevated seawater temperatures and overfishing. The new report contains maps representing the geographical distribution of habitats, human governance, and the human footprint of roads, settlements, and urban development. The assessment incorporates the views of various local stakeholder groups and provides an informational baseline and framework to help guide communities and agencies in restoration of the ecosystem. ■

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Phone survey of big game fishers in Puerto Rico

Blue marlin and other billfish are targets of the recreational big game fishery in the U.S. Caribbean. Information on these highly migratory species is hard to come by. In 2011 a yearlong telephone survey was conducted by [NOAA Fisheries Marine Recreational Information Program](#) to

gather baseline data to allow fishery managers to better understand the fishery. The survey was conducted by the University of Puerto Rico Mayagüez Sea Grant College Program and focused on determining attributes of catch and effort in the recreational blue marlin fishery. Results show that one-third of private boat trips targeting blue marlin were participating in a tournament and charter boats accounted for about one-fourth of all blue marlin caught. The results are available in a report titled [Puerto Rico Highly Migratory Species Telephone Survey Pilot Study](#). ■

International Caribbean

The story of the lionfish invasion using interactive maps

NOAA National Centers for Coastal Ocean Science (NCCOS) developed an interactive story map to educate audiences on the lionfish invasion of the Western Atlantic and how communities are fighting back. [Invasive lionfish: Little fish, big problem](#) is a story map that lets users interactively explore how people from New York City to Venezuela are using science, food, art and culture to stop these invaders in their tracks. The story map also includes links to more information about lionfish and the invasion from NCCOS and other organizations. ■

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Questions or Comments?

We want to hear from you! Please e-mail us to subscribe/unsubscribe to the newsletter or to submit any questions, comments and story ideas at: CaribbeanNews@noaa.gov.

Editorial Note: blue underlined text indicates a live hyperlink. When viewing pages in an Adobe PDF, click to open relevant web pages.



News from Around the Caribbean

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International Caribbean

(continued from page 4)

31 nations participate in regional tsunami exercise

As many as 200,000 people across 31 Caribbean nations and 16 territories took part in the third regional CARIBE WAVE/LANTEX tsunami exercise held in March 2014. The exercise was coordinated by a task team led by the U.S. National Weather Service (NWS) Caribbean Tsunami Warning Program. For this year's exercise two scenarios were developed. Tsunami scenarios simulated an 8.5 earthquake off southwest Portugal in the Atlantic Ocean and a 6.6 earthquake which triggered a submarine landslide originating in the Gulf of Mexico. Information was disseminated via emails, web sites, social media, text messages, and sirens and emergency alert radios were used. A fourth exercise is already being planned for March 2015. ■

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NOAA lends technical support for international MPA capacity building

NOAA's Coral Reef Conservation Program, in partnership with the Gulf and Caribbean Fisheries Institute (GCFI), is providing tailored assistance to Saint Lucia National Trust to update the Pointe Sable Environmental Protection Area Management Plan, and to the Bahamas National Trust to prepare the Abaco Marine Parks Management Plan. The assistance includes expert technical reviews of draft plans, consultation meetings with national agencies and with stakeholders, assistance with drafting management objectives, prioritizing actions and determining indicators of management effectiveness. This effort builds on the [Caribbean MPA Management Capacity Assessment](#) and addresses the Coral Reef Conservation Program's efforts to support regional initiatives in long-term MPA capacity building programs. ■

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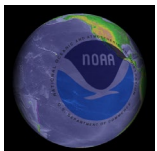


Participants at the Point Sable Environmental Protection Area stakeholder consultation meeting. Credit: E. Doyle, GCFI

First Ridge to Reef Expedition sees sustainable financing in action

Through NOAA's Cooperative Agreement with the GCFI, the Toledo Institute for Development and Environment (TIDE) in Belize is working to become more financially sustainable by establishing a paying volunteer expedition program. The first Ridge to Reef Expedition began on July 1, 2014, with seven paying volunteers from the U.S., U.K. and Belize. Follow the action as it unfolds via the [Ridge to Reef Expeditions](#) web site. ■

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Data Zone

Here we connect you with NOAA data portals and datasets for the Caribbean that are easily accessible via the internet

New coral bleaching and thermal stress monitoring tool

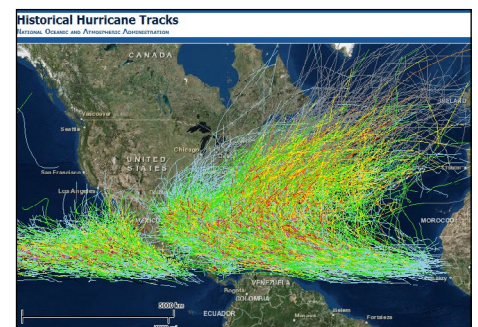
High and prolonged exposure to elevated water temperatures has caused mass coral mortality events in the Caribbean and climate predictions indicate that these catastrophic events will occur more frequently in our future. To help people predict and anticipate vulnerable times and places for coral bleaching, NOAA's Coral Reef Watch released a new online monitoring tool using improved daily 5 km thermal stress predictions derived from satellite data. This high-resolution product suite provides near coral reef-scale measurements of thermal stress to help managers prepare for

climate change impacts on coral reef environments. For more information, please visit: <http://coralreefwatch.noaa.gov/satellite/bleaching5km/index.php>. ■

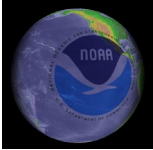
Improved historical hurricane tracks tool

NOAA's Coastal Services Center has redesigned an [online map tool](#) for visualizing the tracks of historical hurricanes. The tool has more than 6,000 tropical cyclones tracked across the globe and provides interactive features that allow you to view all hurricanes or search for a hurricane by name or see tracks by location. You can select a search radius or zoom in to the area of interest. Once

you have selected a collection of tracks you can click for more details for specific storms or save selected storms under 'My Storms' for later viewing. ■



Visualize historical hurricane tracks with this online map tool.



Data Zone (continued from page 5)

Here we connect you with NOAA data portals and datasets for the Caribbean that are easily accessible via the internet

New topographic data available for the U.S. Virgin Islands

NOAA's Coastal Services Center collected topographic LiDAR (Light Detection & Ranging) data to measure detailed land terrain elevation for inundation and wetland migration mapping. The data were collected using the U.S. Geological Survey's LiDAR Base Specification, Version 1.0. The project covers 140 square miles and includes the islands of St. Croix, St. John, and St. Thomas. The ground control points were collected in January 2014 with the help of partners on each island. The data will be available through [NOAA Digital Coast](#) later this summer as a classified point cloud and a one-meter resolution, hydro-flattened digital elevation model. ■



Research in action! Scientists support the collection of LiDAR data in St. Croix. Credit: Coastal Services Center

Ocean exploration and research portal

NOAA's Office of Ocean Exploration and Research conducts and supports deep water exploration globally with many missions conducted in the Caribbean region. The data collected include underwater video, photographs and grab samples. This [online map tool](#) allows

you to see where the missions were located and to view both summary and detailed information on the mission, as well as where the data are stored, who to contact to request data and links to relevant scientific publications. The data are continually updated with the latest mission information. ■



Follow NOAA's deep ocean explorations with this data portal.

Profiles in Partnership

Research highlights from the Caribbean with a focus on collaborations between NOAA and partners

Students obtain hands-on experience with NOAA through Educational Partnership Program

NOAA's Office of Education and the University of Puerto Rico, Mayagüez are working together to support and educate the next generation of marine and atmospheric scientists in the Caribbean. This article is the first of a three-part Profiles in Partnership series to highlight the special ties between NOAA's Office of Education and a leading university in the Caribbean.

This year, two students from the University of Puerto Rico, Mayagüez are conducting internships with NOAA as part of the Educational Partnership Program's (EPP) Undergraduate Scholarship Program. To advance collaborative research in the NOAA-mission sciences and increase the diversity of the science, technology, engineering and mathematics workforce, NOAA works with universities through the EPP to build research capacity.

For the past 13 years, NOAA has been collaborating with the University of Puerto Rico at Mayagüez to build capacity in physics and atmospheric

science. In addition to capacity building, NOAA Office of Education administers competitive undergraduate scholarship opportunities, including the EPP Undergraduate Scholarship and the Hollings Scholarship, which provide financial support for educational expenses and give students the opportunity to conduct a paid internship at a NOAA facility.

Kelly Nunez Ocasio is a senior at the University of Puerto Rico at Mayagüez majoring in theoretical physics with a minor in atmospheric sciences. This summer she's interning at the Atlantic



Kelly Nunez Ocasio, EPP Undergraduate Scholar from University of Puerto Rico.



Profiles in Partnership (continued from page 6)

Research highlights from the Caribbean with a focus on collaborations between NOAA and partners

Oceanographic and Meteorological Laboratory in Miami. Kelly is comparing data collected during a NOAA P3 research flight into Hurricane Felix (2007) to data obtained from Hurricane Hugo (1989), two storms that greatly impacted the Caribbean region. Kelly will also study the eye and eye wall dynamics and thermodynamics of Hurricane Felix.

Meanwhile, Pedro Matos-Llavona, a senior at the University of Puerto Rico majoring in physics and meteorology, spent the first part of the summer working on tidal harmonic analysis at Florida Gulf Coast University. He created a program for analyzing currents data collected by an Acoustic Doppler Current

Profiler and performed harmonic analysis on different sites along the West Florida Shelf. For the second portion of his project, he is working with the Ocean Circulation Group from the University of South Florida, College of Marine Science, preparing for a research cruise in which they will deploy instruments that collect data on ocean currents.

Applications for both the EPP and Hollings Scholarship will be available September 1, 2014. Visit: http://www.epp.noaa.gov/ssp_undergrad_page.html for more information. ■

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Pedro Matos-Llavona, EPP Undergraduate Scholar from University of Puerto Rico.

Community collaboration produces four new management plans for Northeast Puerto Rico

Stakeholders in Puerto Rico recently completed the development of four management action plans for the Canal de Luis Peña and Arrecifes la Cordillera Natural Reserves, both of which are now part of the Northeast Ecological Corridor Marine Reserve. The two-year process actively involved the community in conversations with resource managers to address key management issues, such as illegal fishing, inappropriate ecotourism practices and limited community outreach and education in the region.

“Our approach was to establish a public participation strategy to strengthen the dialogue and exchange between key stakeholders from both reserves,” Alejandro Torres-Abreu, the East Puerto Rico coral reef community outreach specialist for NOAA’s Coral Reef Conservation Program, said. “These dialogues centered on the concept that current management efforts can be more effective if a more democratic and participatory decision-making and



First meeting of the Canal de Luis Peña Management Board. Credit: E. Alicea

management process takes place in these reserves.”

One of the main accomplishments of this exercise was the establishment of two management boards composed of representatives from different sectors with interest in the reserves. The purpose of these boards is to guide and inform future conservation and management efforts.

Another outcome was the development of management action plans for each reserve. These plans were developed with intense stakeholder input. Torres and his colleagues began the implementation of these plans earlier this year. The Puerto Rico Department of Natural and Environmental Resources and the management boards are scheduled to follow up with further implementation of activities in the plans over the next several months.

Torres points out that, “When one integrates local knowledge into management actions, marine protected areas are managed with greater efficiency and effectiveness.”

The four management action plans and other documents from the community planning process are available online at: <http://www.coris.noaa.gov/>. ■

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Endangered Species Act listing explained!

How is a species listed on the Endangered Species Act? Here's an overview

NOAA National Marine Fisheries Service recently announced the [listing of five additional Caribbean coral species as threatened](#) under the Endangered Species Act (ESA), bringing the total to seven species in the U.S. Caribbean. Nassau grouper and queen conch are widespread throughout the Caribbean and are currently being considered by NOAA Fisheries for protection under the



Nassau grouper. Credit: NMFS

ESA. So, how does a species become listed?

Two mechanisms can lead to a species being considered for ESA listing: 1) any interested person or organization can petition NOAA to list a marine species under the ESA; or 2) the agency can initiate a status review to evaluate whether the species requires protection under the ESA. For example, the [petitions](#) for Nassau grouper and queen conch came from WildEarth Guardians and the petition for corals from the Center for Biological Diversity.

After determining if a petition contains the appropriate information, NOAA then reviews the status of the species using information on the species' biology

and threats. The ESA offers [five factors](#) to consider for listing a species with determinations based solely on the best scientific and commercial information available. Economic impacts are not considered. NOAA must then either: 1) determine the species does not warrant listing, or 2) propose to list under the ESA.

Any proposed listing must include the data on which the rule is based and show how the information relates to status. At least 60 days is allowed for public comment and for people to provide additional data and information to support or challenge the proposed listing. ■

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NOAA Ship Maps Fish Spawning Sites on St. Croix

NOAA scientists explore sea floor habitats and fish in the region

This spring a team of scientists from NOAA's [NCCOS](#) and partner organizations conducted a three-week mission onboard the [NOAA Ship Nancy Foster](#) in St. Croix, U.S. Virgin Islands. The scientists mapped the distribution of fish and seafloor habitats in and around the Red Hind Bank Spawning Aggregation Area at Lang Bank east of St. Croix and the Mutton Snapper Spawning Aggregation Area on the southwest shelf edge of St. Croix.

"These two locations are very important areas for commercial fishes because they travel there in large numbers from many miles around to reproduce" Tim Battista, lead oceanographer with NCCOS, explained.

The researchers mapped a total of 369 km² over the course of the mission, collecting video and photos of the underwater habitats and marine life they encountered along the way. They found that seafloor habitats on the southwest

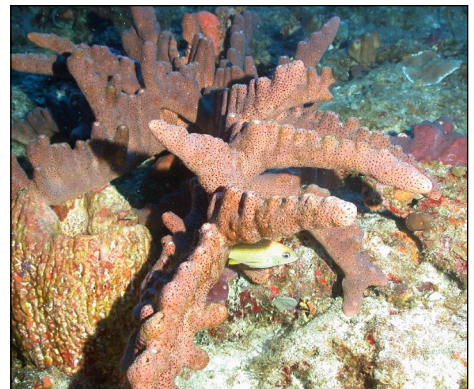
side of St. Croix were colonized by algae and sponges, whereas the east side contained many more large colonies (>30 cm) of hard corals and dense thickets of soft corals.

The team deployed a ROV to gather 66 hours of video and 1,300 photographs in these two unique locations. The ROV dives filmed lemon sharks, giant barrel sponges, ocean triggerfish, black jacks, bar jacks, silk snappers, Creole wrasse, horse-eye jacks and many other animals. The researchers also used a split-beam acoustic sensor to map the distribution and size of fishes at the spawning sites to try to identify the different ways that fish use the area.

This research provides much needed information that will help local agencies improve coral reef ecosystem management plans and conservation efforts in St. Croix. The work was made possible with the crew and officers of the

NOAA Ship *Nancy Foster*, funding support from NOAA's Coral Reef Conservation Program and mission support from jurisdictional partners in the U.S. Virgin Islands. Visit http://ccma.nos.noaa.gov/ecosystems/coralreef/usvi_nps.aspx. ■

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Some of the colorful marine life encountered during the mission. Credit: NCCOS



Tracking Hurricanes to Protect Caribbean Communities

It's hurricane season and NOAA scientists are actively working to track and predict storms

Each year scientists with the NOAA's NWS have the critical task of preparing an outlook for the upcoming hurricane season. This year, the NOAA hurricane outlook suggests a near-average season, with eight to 13 named storms and three to six hurricanes. Hurricane forecasting exemplifies how science can literally affect countless lives.

So how do NOAA scientists take on such a monumental task? Meteorologists and



Ernesto Morales, warning and coordination meteorologist, with the NWS Weather Forecast Office in San Juan, Puerto Rico, talks to a group about hurricane preparedness during an outreach event. Credit: NWS

modelers look at certain conditions, particularly El Niño in the Pacific and sea surface temperatures in the Atlantic Ocean and Caribbean Sea, along with other climatological models to develop an annual hurricane outlook. Scientists also use sophisticated tools, such as weather balloons, Doppler radar, buoys and specially equipped planes dubbed 'hurricane hunters' to collect data that informs the outlook. They are constantly tracking changing conditions to update their forecasts.

"This year, the models are forecasting El Niño to be at a moderate level at the peak of hurricane season, which is August through October," Roberto Garcia, meteorologist-in-charge, at the NWS Weather Forecast Office in San Juan, Puerto Rico, said. "There's always a level of uncertainty when something is based on forecast models, so if conditions change—say El Niño doesn't get as strong as originally forecasted—then the number of predicted storms could change."

NOAA staff stationed at the Weather Forecast Office in San Juan work closely with their colleagues at the national level to determine the potential impacts of a storm for the U.S. Virgin Islands and Puerto Rico. They engage and educate the communities who may be affected by these storms through talks, conferences, the media and other outlets.

"I always caution people to be prepared no matter what. We should prepare for a less active year the same way we would prepare for a very active year because it only takes one storm. This is the message we always tell people," Garcia said.

To learn more about the 2014 hurricane season and access hurricane preparedness resources, visit NOAA's National Hurricane Center at <http://www.nhc.noaa.gov/>.

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SHARE YOUR Underwater Photos & Artwork

A picture is worth a thousand words, so we want to hear from you! Share your best Caribbean underwater and science-in-action stories captured through a camera's lens or an artist's pen. Two images will be featured in each issue. Please e-mail your photo or artwork to CaribbeanNews@noaa.gov. Be sure to include your full name, affiliation, a one or two sentence description and the date the image was made.



Photographer: NOAA NCCOS
Description: Pillar coral (*Dendrogyra cylindrus*) is now listed as threatened on the ESA. This photo was taken in St. John, USVI. Learn more about the recent ESA listing of corals at: <http://www.nmfs.noaa.gov/pr/species/invertebrates/corals.htm>.



Photographer: Lia Ortiz, NOAA NMFS
Description: Don't Stop Talking Fish 2014 Fisher of the Year winner Theodore "Chino" Hansen was recognized for efficiency of commercial catch reporting.



Upcoming Events & Announcements

A preview of upcoming important events and happenings around the Caribbean and beyond

Events

Keep up-to-date with events using the new NOAA in the Caribbean online calendar at: <http://www.regions.noaa.gov/secar/index.php/noaa-in-the-caribbean>

October

1-2: [Energy Caribbean Conference](#), Trinidad

November

3-7: [67th Meeting of the GCFI](#), Christ Church, Barbados

December

4-5: [Caribbean Landscape Conservation Cooperative](#) meeting, U.S. Virgin Islands

6-8: FAO workshop: Marine protected areas as tools for responsible fisheries and sustainable livelihoods in the Caribbean, Christ Church, Barbados

December (continued)

9-10: [Caribbean Fishery Management Council](#) Regular Meeting, St. Thomas, U.S. Virgin Islands

February 2015

18-20: International Symposium on Research in Applied Science and Engineering, Gurabo, Puerto Rico. Contact symposium@prec.pr for more information.

March 2015

25: CARIBE WAVE/LANTEX Regional Tsunami Exercise, more info at <http://www.srh.noaa.gov/srh/ctwp/>

Announcements

Domestic Coral Reef Conservation Grants competition

Applications for FY2015 grants must be submitted by January 7, 2015. Visit www.grants.gov and search by funding opportunity number NOAA-NOS-OCRM-2015-2004207.

Comment period for Nassau grouper

The comment period on the proposed Endangered Species Act listing rule for Nassau grouper is open until December 31, 2014. Visit: <http://www.nmfs.noaa.gov/pr/species/fish/nassaugrouper.htm>.

Elkhorn and staghorn comment period

The public comment period for elkhorn (*Acropora palmata*) and staghorn (*A. cervicornis*) corals is available for public review until October 20, 2014. Visit http://sero.nmfs.noaa.gov/protected_resources/coral/index.html

NOAA in the Caribbean Newsletter Editorial Team

Please e-mail us at CaribbeanNews@noaa.gov to subscribe or unsubscribe to the newsletter or to submit any questions, comments, story ideas, artwork and photographs. NOAA in the Caribbean Newsletter is produced by NOAA's [National Centers for Coastal Ocean Science](#) for the [Southeast and Caribbean Regional Team](#) with support from NOAA [Coral Reef Conservation Program](#), NOAA [Coastal Services Center](#) and NOAA [Atlantic Oceanographic and Meteorological Laboratory](#). Contract labor was provided by CSS-Dynamac.

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