

CORAL REEF NEWS
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NOAA Coral Reef News is a monthly e-newsletter established to provide current information on the activities of the National Oceanic and Atmospheric Administration's (NOAA) Coral Reef Conservation Program (CRCP) and other relevant NOAA programs. The CRCP supports effective management and sound science to preserve, sustain and restore valuable coral reef ecosystems. Back issues are available at <http://www.coralreef.noaa.gov>.

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OF SPECIAL NOTE

Agenda Available for September U.S. Coral Reef Task Force Meeting. A detailed agenda for the upcoming U.S. Coral Reef Task Force meeting is now posted on the Task Force website at <http://www.ces.fau.edu/taskforce>. The meeting will be held September 14 and 15, 2004 at the Eden Roc Hotel in Miami Beach, Florida, in conjunction with a meeting of the South Florida Ecosystem Restoration Task Force at the same location and dates. There will be a series of scientific, management and volunteer seminars and workshops including a workshop for 50 South Florida teachers on Saturday, September 11. The meeting is open to the public. There is no charge to attend, but all those planning to attend must register by Friday, September 3, 2004, at <http://www.ces.fau.edu/taskforce>.

Send potential items of Special Note (new discoveries, key events, notable facts, etc.) for future issues to coralreef@noaa.gov.

ANNOUNCEMENTS

Northwestern Hawaiian Islands Symposium Announced. The Western Pacific Regional Fishery Management Council, NOAA Fisheries, NOAA Ocean Service, the U.S. Fish and Wildlife Service, the University of Hawai'i, and the Hawai'i Department of Land and Natural Resources are pleased to announce that the *3rd Scientific Symposium for the Northwestern Hawaiian Islands* will be held November 2 – 4, 2004 at the Hawai'i Convention Center, in Honolulu, Hawai'i. Visit <http://www.hawaiianatolls.org/sym3> for more information or contact prc@hawaii.rr.com.

NOAA Vessel HI'IALAKAI Commissioned. NOAA's newest ship, HI'IALAKAI, will be commissioned in Honolulu, Hawai'i on September 3, 2004. The vessel will conduct coral reef ecosystem mapping, monitoring, and assessment in Hawai'i and the greater Pacific. In addition, the HI'IALAKAI will conduct

activities required to continue the sanctuary designation process for the Northwest Hawaiian Islands Coral Reef Ecosystem Reserve. HI'IALAKAI, which means "embracing the sea," will accomplish its missions through NOAA's cross Coral Reef Conservation Program and external partnerships with the U.S. Coral Reef Task Force, the State of Hawai'i, the University of Hawai'i, and the Coast Guard. The inaugural cruise for the vessel will be a coral reef monitoring and assessment mission to the Northwestern Hawaiian Islands sailing on September 13, 2004.

UPDATES

10th International Coral Reef Symposium (ICRS) Abstracts Available Online.

Abstracts from the 10th ICRS, held in Okinawa, Japan in June 2004 are now available on-line. To view the abstracts, visit <http://www.plando.co.jp/icrs2004/> and click "Abstracts" in the menu.

Hurricane Charley Cuts Short Aquarius Undersea Mission.

On Wednesday, August 11, Hurricane Charley, bearing down on the Florida Keys, caused the cancellation of an undersea research mission of NOAA's underwater laboratory Aquarius. Rather than let the aquanauts, who were 60 feet below the surface, ride out a storm, the decision was made to cancel the mission and bring everyone safely to the surface and to shore. The next mission aboard Aquarius is slated for mid-September. Read the full article on-line at <http://www.noaanews.noaa.gov/stories2004/s2284.htm>.

NOAA and the State of Florida Begin a New Era in Seagrass Restoration. NOAA and the State of Florida's Department of Environmental Protection have completed the first two blowhole fill projects in the Florida Keys

National Marine Sanctuary under the Restoration and Assessment of Coral Ecosystems (RACE) Program. Blowholes are formations caused when boaters run aground in shallow waters and attempt to power off with their engines. The result is a hole that can often be the size of a swimming pool. Using techniques first put forth by NOAA's Center for Coastal Fisheries and Habitat Research, these two holes were filled to the surrounding grade with 0.25-inch native crushed limestone. After thirty days, biologists will place seagrass planting units and bird roosting stakes within the sites to help seagrass grow across the new fill. These two sites mark the beginning of fill restoration at a number of injury sites throughout the Keys that are being restored by the RACE Program.

Derelict Vessels in Saipan, Commonwealth of the Northern Marianas Islands (CNMI).

In July of 1993, the NOAA Abandoned Vessel Program surveyed 31 vessels on the island of Saipan, CNMI. Several vessels, including the Nago 15 (a long liner grounded in a rich seagrass bed) and the Mwaali Saat (a floating derelict steel trawler abandoned alongside a pier) were identified as potential hazards and high priority for removal. In June of 2004, Typhoon Tingting pushed the Nago 15 approximately 200 feet farther across the seagrass bed, creating a significant scar. The same storm caused the Mwaali Saat to break from its mooring and sink in the harbor. This second event resulted in a diesel spill, and the position of the wreck near the commercial port now hampers fuel delivery to the island. These events highlight the potential harm from abandoned vessels and the increasing costs of vessel removal as vessels are driven farther ashore or sink. *Visit*

<http://response.restoration.noaa.gov/dac/vessel> for more information about the NOAA Abandoned Vessel Program.

National Center for Coastal Ocean Science (NCCOS) Scientists Lead Large-scale Study of Reef Fishes and Benthic Habitats in Virgin Islands.

NCCOS is conducting large-scale fish and benthic communities studies within and outside the Virgin Islands National Park and the Virgin Islands Coral Reef National Monument (VICRNM) to characterize (1) the spatial distribution and size of fish assemblages, (2) the composition of benthic communities, and (3) spatial variation in fish community structure to assess the effects of resource protection, such as closure to fishing. The team conducted 360 visual fish surveys and 180 quadrant surveys of fish benthic communities in July. Previously collected data from 520 sites in St. John, USVI are being used to develop predictive models that explain time/space patterns in fish assemblage structure and assess long-term changes in these fish and benthic habitats. The NPS and USGS consult on the efficacy of the national park relative to the protection of fish assemblages and a definition of a baseline fish population within the VICRNM prior to "no take" regulations. *Visit <http://www.nccos.noaa.gov/> for more information on NOAA's NCCOS.*

Forecasting Seagrass and Coral Recovery.

Coastal managers are now empowered with the damage assessment information necessary to hold recreational and commercial boaters accountable for seagrass and coral damage when they run aground. NCCOS/CCFHR researcher Mark Fonseca presented an invited paper, "Forecasting recovery of injured trust resources using spatially explicit models," at the June Limnology and Oceanography meeting. The paper shows that scientists can arrive at the recovery rate for an injury by accessing its footprint to evaluate damage from the shape, and not just size of the trench. Long and narrow damage recovers faster than wider, rounder injuries. Resources in shallow waters, even in protected nurseries and sanctuaries, experience heavy impacts from human

stressors. Visit <http://www.sgmeet.com/aslo/savannah2004/vie/wabstract2.asp?AbstractID=318&SessionID=S09> to read Mark Fonseca's paper.

Energetic Response of Juvenile Gray Snapper to Environmental Stressors. In response to the restoration of freshwater flows in Florida Bay, a bioenergetic model is being developed to evaluate the effects of the physiochemical environment on nursery habitat value for juvenile gray snapper. A manuscript, accepted for publication in the *Journal of Experimental Marine Biology and Ecology*, reports the results of laboratory experiments carried out at NCCOS/CCFHR to determine growth rates, feeding rates, and gross growth efficiency of young gray snapper over a wide range of temperatures and salinities. A decrease in growth efficiency was observed at high salinities, likely attributed to increased metabolic costs. Due to higher growth efficiency, juvenile gray snapper from lower salinity habitats may have enhanced growth and/or survival, and may provide more survivors.

Ciguatera Fish Poisoning Characterized by Tropical Dinoflagellates' DNA. For the first time, DNA from toxic dinoflagellates was isolated at the Smithsonian's Laboratory in Belize (Caribbean Coral Reef Ecosystem Program). Toxic dinoflagellates are the suspected cause of the ciguatera fish poison problem throughout Caribbean and other tropical waters. Dinoflagellate cell culture material is being provided through collaborative fieldwork with staff from the Smithsonian Institution (SI) and will be used at the NCCOS/CCFHR. Once assay development is complete, these DNA extracts will be used to estimate the abundance of toxic species in the different habitats sampled. In addition, this project marries the traditional morphological taxonomic approach (SI) with molecular identification (CCFHR) for the description of

new toxic dinoflagellates. Visit <http://shrimp.ccfhrb.noaa.gov/> for more information on CCFHR.

Snowflakes Unwelcome in the Tropics! Scientists Fight to Eradicate Invasive Coral. For the last week, scientists from the NCCOS-funded Hawai'i Coral Reef Initiative Research Program, the University of Hawai'i, and the state Department of Land and Natural Resources, Division of Aquatic Resources (DAR) dove off South Kauai to try to eradicate a deadly, invasive "snowflake" coral species that threatens Hawai'i's \$30-million-a-year black coral industry and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. The snowflake coral, *Carijoa riisei*, has been found in the waters off most of the other main Hawaiian Islands. In Maui County, it has overtaken deeper black coral beds, which seed others that are harvested to make popular jewelry sold in Hawai'i and throughout the world. It is believed that snowflake coral was introduced over thirty years ago from the bottom of ships or as larvae in a vessel's ballast water. Unchecked, it could decimate the black coral by covering it and removing the rust-colored or red-colored tissue and leaving a skeletal frame. Visit <http://www.hawaii.edu/ssri/hcri/> or <http://www.state.hi.us/dlnr/dar/> for more information on the Hawai'i Coral Reef Initiative Research Program or Hawai'i DAR.

Invasive Lionfish Thriving off North Carolina Coast. NCCOS researchers and divers from NOAA's Undersea Research Center in Wilmington have collected and observed 145 lionfish from 15 locations in water depths over 100 feet off the coast of North Carolina. These lionfish range in size from approximately 5 to 45 cm in total length and weighed between 100 to 1080 grams. Preliminary field examinations of stomach contents suggest lionfish eat primarily smaller fishes of a variety of species and that they are

likely spawning off the North Carolina coastline. The Indo-Pacific lionfish were first recorded off North Carolina in 2000 and observed off the east coast of Florida in the early to mid 1990s. *Visit*

<http://www.nurp.noaa.gov/> for more information on NOAA's NURP.

CoRIS Technical Guidelines for Metadata Preparation. The NOAA Coral Reef Information System (CoRIS) Metadata Team recently released "Technical Guidelines for Metadata Preparation." The document defines metadata, presents information about Federal Geographic Data Committee standards, outlines a general methodology for preparing metadata, and includes sample metadata records. *Visit* <http://www.coris.noaa.gov/> for more information on the NOAA CoRIS.

Coral Ecosystem Scientific Names. A spreadsheet file of over 3,000 scientific names of coral ecosystem biota is available from the CoRIS Web site. The recently updated list is composed of names that are listed in NOAA coral data sets available from CoRIS. The scientific names and hierarchy are verified against the Integrated Taxonomic Information System (ITIS, <http://www.itis.usda.gov/>) to ensure accuracy. *The file can be viewed* (http://www.coris.noaa.gov/data/taxonomy5_1_04.html) or downloaded as a comma-separated value file (http://www.coris.noaa.gov/data/taxonomy5_1_04.csv) for use in spreadsheet software.

CoRIS – New Professional Exchange on Genome Sequencing in Corals. The National Human Genome Research Institute (NHGRI) of the National Institutes of Health (NIH) is considering a \$9 million proposal to sequence a coral genome. The objective of this effort is to identify all the genes in coral DNA, determine their sequences, store information in accessible databases, and compare them with reference DNA sequences in organisms that are better

studied to understand gene function. Recent advances in gene sequencing, coupled with the relatively small size of many coral genomes (1.12×10^9 bp/haploid genome) will allow this to be accomplished relatively quickly with appropriate funding. This exchange on coral genome sequencing had three general topics: (1) the importance of sequencing the genome of a reef-building coral species, (2) the specific coral species to sequence, and (3) the concept of selecting a representative species as a coral "lab rat." *View the professional exchange at* <http://www.coris.noaa.gov/exchanges/coralgenome/coralgenome.html>.

Video Clips of Oculina Banks Habitat. Metadata for fourteen dives of the submersible Clelia in 2001, on the Oculina Banks Habitat Area of Particular Concern, were recently added to CoRIS. Preparation of these metadata was a collaborative effort between Andrew Shepard, of the NOAA Undersea Research Center in North Carolina, and CoRIS. Narratives, including habitat descriptions and estimates of megafaunal species abundance, were derived from videotapes recorded during the dives. Dive narrative text describes what is seen in still and video imagery (digital mpeg, jpeg or gif files). *Go to* <http://coris.noaa.gov/metadata/list/VisualImageSBiology.html> for access to metadata and clips.

National Geophysical Data Center (NGDC) Studies Satellite Detection of Coral Bleaching. NGDC is conducting research on the satellite detection of coral reef bleaching using four-meter resolution IKONOS multispectral satellite data. Results from a 2002 bleaching event in the Keppel Islands (Great Barrier Reef) indicated that severe bleaching (>90%) can be detected using IKONOS imagery by differencing radiometrically normalized image data collected during the bleaching event and prior to (or after) the bleaching, despite partial cloud cover. Locations with severe bleaching show

up as a golden color in a band difference color composite (difference bands 1,2,3 and red, green, blue). The Keppel Island results can be viewed at http://dmsp.ngdc.noaa.gov/html/coral_reefs.html.

In current research Chris Elvidge (NOAA-NESDIS-NGDC) and John Dietz (CIRA) are examining the detection of mild bleaching (5-10%) which occurred earlier this year at Heron Island (Great Barrier Reef). IKONOS imagery was acquired on March 12, 2004 and is being compared to IKONOS imagery acquired May 7, 2001. Preliminary results indicate that mild bleaching is not detectable with IKONOS data. Collaborators include Al Strong (NESDIS), William Skirving (CIRA), Ray Berkemans (Australian Institute of Marine Science), Serge Andréfouët (University of New Caledonia), and Stuart Phinn (University of Queensland). Visit <http://www.ngdc.noaa.gov/> for more information on NOAA's NGDC.

National Marine Protected Areas (MPA) Center Sponsors July/August 2004 Edition of the National Marine Educators Association's (NMEA) Quarterly Journal, *Current: The Journal of Marine Education*. The issue explores challenges facing MPA managers committed to wise public resource use and conservation, education about our nation's coastal and marine environment, and the public's interest in both enjoying these resources and preserving them for future generations. The issue includes articles on seabirds and whales, coastal habitats and underwater shipwrecks, fisheries management, reserve design, a native Hawaiian approach to marine resource management and coral reef protection, and questions that managers face when considering MPA networks. Three activities accompany the articles, enabling teachers to bring some of these issues directly into their classrooms. Jim Toomey, who draws "Sherman's Lagoon," generously contributed illustrations. Over the coming year, the MPA

Center will develop other activities to supplement the articles, and will post those activities on the www.MPA.gov website. Visit <http://www.marine-ed.org/> for more information on NMEA.

CORAL REEFS IN THE NEWS

"Help save our seas, divers urged" – July 27, 2004 (BBC News). "Divers and snorkellers across the globe are being enlisted to help save the seas and oceans." <http://news.bbc.co.uk/2/hi/science/nature/3929647.stm>

"Coral bleaching: Thermal adaptation in reef coral symbionts," Rowan, et al. – August 9, 2004 (Nature). "...Some corals have adapted to higher temperatures, at least in part, by hosting specifically adapted Symbiodinium." http://www.nature.com/cgi-taf/DynaPage.taf?file=/nature/journal/v430/n7001/full/430742a_fs.html

"Coral reefs: Corals' adaptive response to climate change," Baker, et al. – August 9, 2004 (Nature). "Shifting to new algal symbionts may safeguard devastated reefs from extinction." http://www.nature.com/cgi-taf/DynaPage.taf?file=/nature/journal/v430/n7001/full/430741a_fs.html

"New Campaign Fights to Protect Tropical Reefs" – August 16, 2004 (Environmental News Network). "Earth Island Institute (EII) is pleased to add Reef Protection International to its growing family of projects working for the conservation, preservation, and restoration of the global environment. Reef Protection International will address coral reef conservation by enabling reform in the saltwater aquarium trade." <http://www.enn.com/direct/display-release.asp?objid=D1D1366D000000FE68B7724C2DE9FD71>

“Coral May Survive Global Warming, But Not CO2 Increase” – August 20, 2004

(DiverNet). “Corals could adapt to the higher sea temperatures caused by global warming, but increased levels of carbon dioxide will increase the acidity of the ocean.”

<http://www.divernet.com/news/stories/coral200804.shtml>

“Jolts of low-voltage electricity are reviving damaged coral reef off Indonesian resort” – August 20, 2004

(Associated Press, in Environmental News Network and approx. 45 other publications). “...The wires are part of highly original and ambitious underwater experiment: the use of low-voltage electrical current to stimulate regrowth in a badly damaged coral reef. Conceived by coral expert Tom Goreau of the United States and German architecture professor Wolf Hilbertz, the project began four years ago and has already achieved remarkable results.”

http://www.enn.com/news/2004-08-20/s_26634.asp

“New depths for coral study: Scientists conducting marine research now rely on satellite images to give them a big-picture sense of what’s going on” – August 21, 2004

(The Miami Herald). “Scientists trying to get a handle on the health and condition of the world's fragile coral reefs have turned to sophisticated tools -- including satellite technology -- that are best known for their use in tracking terrorists and hurricanes. Satellite data and images -- available to researchers from a variety of government sources -- including the National Oceanic and Atmospheric Administration and NASA -- are providing complex pictures of everything from ocean temperature to coral cover.”

<http://www.miami.com/mld/miamiherald/9462902.htm?1c> (registration required)

“Town resisting Bahamas pipeline” – August 22, 2004

(South Florida Sun-Sentinel). “A proposed Bahamas-to-Palm Beach County natural-gas pipeline is generating concern because it would cut across offshore coral reefs and reach underneath Palm Beach Shores -- a town that doesn't want it.” <http://www.sun-sentinel.com/news/local/palmbeach/sfl-ppipeline22aug22,0,6488377.story?coll=sfla-news-palm>

“Expedition to shed light on 'undiscovered' reefs” – August 22, 2004

(ABC News Online). “Geoscience Australia says there is evidence suggesting there could be undiscovered coral reefs in the Gulf of Carpentaria. Three submerged living coral reefs, covering 80 square kilometers, were found in the Gulf last year, which was a significant find for the region.”

<http://www.abc.net.au/news/newsitems/200408/s1182647.htm>

“China prevents massive coral heist: Authorities on the Chinese island of Hainan have seized 40 tonnes of stolen coral, according to state media” – August 23, 2004

(BBC News, UK). “Police set up an ambush in a car park in Haikou city, after getting a tip-off about two trucks containing the illegal harvest, Xinhua news agency said. The truck drivers claimed they were carrying rocks, but the vehicles were found to contain live coral. The coral was immediately returned to the sea so it could have a chance of surviving, Xinhua said.”

<http://news.bbc.co.uk/2/hi/asia-pacific/3590484.stm>

“Ritual Attracts Biologists Seeking Genomic Clues to Coral Bleaching” – August 23, 2004

(Newswise press release). “The one-night-a-year spawning of massive star corals (Montastraea species) off of the Florida coast generates millions of infant corals, each of which has the potential to help replenish coral reefs that have undergone significant environmental damage in recent years.”

<http://www.newswise.com/articles/view/506707/>

“Helping to replenish coral reefs” – August 28, 2004 (*The Malaysia Star*, Malaysia).

“Malaysia’s coral reefs have been highlighted in the media lately due to increasing stress from too many divers, El Nino and industrial accidents. Malaysia, like many other countries which rely on these fragile beauties for eco-tourism, has had to find ways to replenish endangered sites.”

<http://thestar.com.my/lifestyle/story.asp?file=/2004/8/28/features/8750928&sec=features>

“Acid oceans spell doom for coral” – August 30, 2004 (*BBC News*). “The increasing acidity of the world's oceans could banish all coral by 2065, a leading marine expert has warned.”

<http://news.bbc.co.uk/2/hi/science/nature/3605908.stm>

“Destroying Coral’s Color” – August 31, 2004 (*The New York Times*).

“Bleaching of coral reefs has become a worldwide problem, and it is often linked to rising ocean temperatures. A local increase of as little as 3 degrees Fahrenheit can cause the death of symbiotic algae that, among other things, give the coral its color.”

<http://www.nytimes.com/2004/08/31/science/31obse.html>

UPCOMING EVENTS

If you have events you would like listed in future newsletters please contact coralreef@noaa.gov.

September 2004

12 – 15: **Restore America's Estuaries' 2nd National Conference on Coastal and Estuarine Habitat Restoration.** Seattle, WA. <http://www.estuaries.org>.

13 – 15: **America's Shoreline: Beach and Ecosystem Restoration in the 21st Century.** New Orleans, LA. <http://www.asbpa.org/cfp2004mtg.html>.

14 – 15: **12th U.S. Coral Reef Task Force Meeting.** Miami Beach, Florida. <http://www.coralreef.gov>.

18 – 23: **American Zoo and Aquarium Association – Annual Conference.** New Orleans, LA. <http://www.aza2004.com>.

20 – 24: **13th International Conference of Aquatic Invasive Species.** Ennis, County Clare, Ireland. <http://www.aquatic-invasive-species-conference.org>.

20 – 22: **Littoral 2004: Seventh International Conference - Delivering Sustainable Coasts: Connecting Science and Policy.** Aberdeen, Scotland. <http://www.littoral2004.org>.

21 – 24: **MPA Federal Advisory Committee Meeting.** Maui, HI. <http://www.mpa.gov/fac/fac.html>.

October 2004

4: **Presenters' abstracts due for Coastal Zone 05 – Balancing on the Edge.** New Orleans, LA. <http://www.csc.noaa.gov/cz/>

12 – 15: **Coastal States Organization Annual Meeting.** Traverse City, Michigan; <http://www.sso.org/cso/conferences01.htm>.

13 – 16: **Diving Equipment and Marketing Association (DEMA) Convention.** Houston, TX. www.demashow.com.

November 2004

2 – 4: **Third Scientific Symposium on Resource Investigations in the Northwestern Hawaiian Islands.** Honolulu, HI. <http://www.wpcouncil.org/nwhisymposium.htm>.

17 – 25: **3rd IUCN World Conservation Congress.** Bangkok, Thailand. <http://www.iucn.org/congress>.

December 2004

13 – 17: **American Geophysical Union Annual Meeting.** San Francisco, CA. <http://www.agu.org/meetings/fm04>.

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Questions, comments?

Contact coralreef@noaa.gov, NOAA Coral Reef Conservation Program.

Access to NOAA's coral reef data and information is provided through NOAA's Coral Reef Information System at <http://www.coris.noaa.gov>. Current news on NOAA's coral reef activities can be found on the NOAA Coral Reef Conservation Program Web site, <http://www.coralreef.noaa.gov>.

