

Sounding Line

News of the Florida Keys National Marine Sanctuary

Summer/Autumn 2001

Fishcount Marks Dedication of New Reserve

Cheva Heck, FKNMS Public Affairs Officer

Florida Keys National Marine Sanctuary Superintendent Billy Causey dedicated the nation's largest permanent marine reserve on July 1, 2001, launching a new area of protection for the lush coral reefs of the remote Tortugas. Located more than eighty miles west of Key West, the new reserve encompasses more than 150 square nautical miles of spectacular deepwater corals and critical fish spawning sites.

"By extending the highest level of protection to the productive waters of the Tortugas Ecological Reserve, we are helping to ensure the health of the entire region," said Superintendent Causey. "The reefs of the Tortugas are stunning and filled with life, yet they clearly show the signs of human impact. Our hope is to return to the waters of the reserve in the coming years to document increasing numbers of fish on thriving coral reefs."

After a ceremonial ribbon-cutting at the stern of the Sanctuary Research Vessel *Irene C*, a team of divers plunged into the waters of the new reserve to conduct a fish count, which will assist in tracking changes in fish populations.

The count also marked the kick-off for the Great



William J. Harrigan
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Sanctuary team member Ben Richards admires a strangely-shaped coral formation in the new Tortugas Ecological Reserve.

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American Fish Count, a campaign during the month of July by Reef Environmental Education Foundation (REEF) to encourage volunteer divers and snorkelers to conduct fish surveys that provide marine resource managers with valuable data on fish populations, particularly in national marine sanctuaries.

"Our fish count today in the Tortugas Ecological Reserve will help the Florida Keys National Marine Sanctuary track changes in the fish life on these beautiful reefs as the new protections take effect," said Laddie Akins, executive director of REEF, a nonprofit organization based in Key Largo, Florida.

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Message from the Superintendent



Dear Readers,

On July 1, 2001, Sanctuary friends and staff celebrated the implementation of the Tortugas Ecological Reserve. At 151 square nautical miles, this remote region is the largest fully protected underwater ecological reserve in North America.

At a ceremony in Washington, D.C. on May 10, 2001, the Sanctuary's Tortugas team received the Administrator's Award, the highest honor given by the National Oceanic and Atmospheric Administration and a clear indication of the reserve's significance. Many Sanctuary team members poured their hearts into this project. Much of the groundswell of support for the reserve came from the excellent media coverage generated by Cheva Heck, our Public Outreach Coordinator. Additionally, Steve Baumgartner, our Lower Keys Operations Coordinator, and his incredible team of captains and mates supported the scientists and managers in surveys and monitoring trips that proved essential to our success.

The Administrator's Award belongs as well to the many partners who stood by us during the three years it took to bring the reserve from conception to reality. The broad coalition of groups and individuals who supported the reserve in front of the Fish and Wildlife Conservation Commission (FWC) and the Governor and Cabinet bears testimony to the success of the consensus process carried out by the Tortugas 2000 working group. I would like to acknowledge the dedication of the working group and extend sincere gratitude to everyone in our community who took time out of their busy lives to help create the Tortugas Ecological Reserve.

Tony Iarocci, Peter Gladding and Richard Grathwohl were among the fishermen who traveled to meetings throughout Florida, telling our appointed and elected officials that fishermen clearly see that reserves are in their long-term interest. Bob Harris and John Stewart of the dive community also came forward to support the reserve. Don Kincaid, the dive/snorkel industry representative for the SAC, spoke eloquently in front of both the FWC and the Governor and Cabinet. The message delivered by Mrs. Pinkas' students from Stanley Switlik clearly moved everyone and is perhaps the most resounding reason to establish the reserve, "Leave something for our future."

Additionally, the World Wildlife Fund, the Ocean Conservancy (formerly the Center for Marine Conservation), Environmental Defense, ReefKeeper International, and The Nature Conservancy have been steadfast supporters, and local conservation organization Reef Relief weighed in with their support before the FWC and the Governor and Cabinet. Debbie Harrison of World Wildlife Fund in particular worked tirelessly to forge an agreement on the reserve and support it through a complex approval process.

Finally, I want to express our sincere congratulations to our partners in the Dry Tortugas National Park. On July 27, 2001, the National Park Service Regional Director signed the Record of Decision for the Dry Tortugas National Park General Management Plan Amendment. Their plan, which was developed concurrently with the Tortugas Ecological Reserve, calls for the establishment of a 46 square nautical mile Research Natural Area that adjoins the Sanctuary's reserve. This RNA will provide protection to critical shallow-water habitats that will enhance the effectiveness of the reserve. This is great news and we are celebrating with our Park Service partners!

Sincerely,

Billy D. Causey

Florida Keys National Marine Sanctuary

Billy D. Causey
Superintendent

Anna Marie Hartman
State Co-trustee

Nancy G. Diersing
Sounding Line Editor

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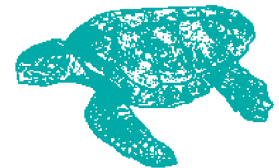
Sanctuary Undergoes Five-Year Plan Review

In accordance with the National Marine Sanctuaries Act and the 1997 resolution of the Florida Governor and Cabinet, the Florida Keys National Marine Sanctuary is initiating a review of its Management Plan. The purpose of this review is to evaluate substantive progress toward implementing the goals for the Sanctuary, and to make revisions to the plan and regulations as necessary to fulfill the purposes and policies of the National Marine Sanctuaries Act and the Florida Keys National Marine Sanctuary and Protection Act.

In an effort to involve the public in the review process, three public scoping meetings were held in June to gather information and comments from individuals, organizations, and government agencies on the scope, types and significance of issues related to the Sanctuary's management plan and regulations.

Working Groups have been created for each the ten action plans and for the Damage Assessment and Restoration Program. The purpose of each group is to discuss an individual action plan, confer with constituents, and recommend changes that will be communicated to the Sanctuary Advisory Council (SAC). After hearing from each Working Group, the SAC will then make recommendations to the Florida Keys National Marine Sanctuary for consideration. Each Working Group is co-chaired by a member of the SAC as well as a Sanctuary staff member.

Members of the public are encouraged to participate in any Working Group in which they have an interest. The groups are: Channel/Reef Marking; Damage Assessment and Restoration; Education and Outreach; Enforcement; Mooring Buoy; Regulatory; Research and Monitoring; Submerged Cultural Resources; Volunteer; Water Quality; and Zoning. Please feel free to contact a SAC member to find out more about participating in the process or call (305) 743-2437 for more information. (SAC members are listed on the inside cover of this Sounding Line issue.)



International Maritime Organization approves PSSA

The National Ocean Service has received initial approval for an international measure that extends existing protections for the Florida Keys. The measure is intended to reduce threats posed by international shipping activity to coral reefs, seagrass meadows and mangrove forests.

On behalf of the National Oceanic and Atmospheric Administration and the State of Florida, the United States submitted a proposal to the International Maritime Organization (IMO) to designate the marine area around the Florida Keys as a Particularly Sensitive Sea Area (PSSA). The International Maritime Organization is a specialized agency of the United Nations that is responsible for issues relating to international shipping.

The coral reef ecosystem of the Keys would be the third area in the world selected for this designation, joining Australia's Great Barrier Reef and Sabana-Camaguey Archipelago in Cuba. The PSSA would stretch from Biscayne National Park to the Tortugas encompassing all of the Florida Keys National Marine Sanctuary.

Two measures related to the PSSA designation also received initial approval by the IMO. The measures include a prohibition against anchoring in the North and South areas of the new Tortugas Ecological Reserve and in an area located outside the reserve in the Tortugas Bank for ships 50 meters or greater in length. The second measure is an amendment to the existing Areas To Be Avoided (ATBA) that created buffer areas to keep ships greater than 50 meters in length from the reef tract. An ATBA is an area that all classes of ships should avoid because navigation is hazardous or it is important to avoid casualties within the area. The amendment will create safer shipping tracts along the ATBA to reduce the potential for collisions or groundings that would threaten the coral reef from spills of oil, fuel and other contaminants.

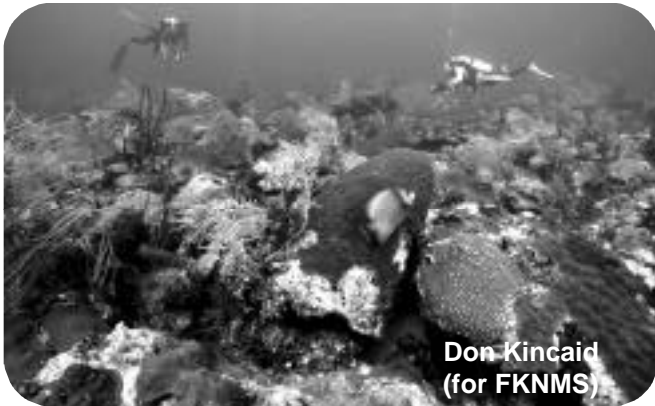


Tortugas: A Legacy of Ocean Wilderness

Joanne Delaney, FKNMS Research Interpreter

One hundred years ago, forward-thinking leaders in this country tested the concept of preserving areas rich in natural and cultural heritage. The result of their inspiration, the National Park System, spurred a lasting legacy of public natural resource protection. To this day our national parks, preserves, and protected lands serve a vital role in sustaining the cultural and natural heritage of an ever-changing America. In the 21st century, as human development moves beyond land ecosystems to the coast, it is fitting that the focus of protection should shift to the ocean.

The Florida Keys National Marine Sanctuary implements a variety of strategies to protect our local ocean resources. One strategy, marine zoning, uses a common sense approach. Much like zoning on land, marine zoning separates activities into specific areas. Ecological Reserves, Sanctuary Preservation Areas, and Special Use Areas have been used in the Sanctuary since 1997 to protect key species and habitats. The establishment of the Tortugas Ecological Reserve, a permanent, 151 square nautical mile “no-take” reserve, marks the beginning of an important era in marine conservation for not only the Sanctuary, but also the entire country. Designed with the best available scientific information in mind and with extensive input from the public and user groups, the Tortugas Ecological Reserve promises to ensure a legacy of ocean wilderness in the Florida Keys.



The concept of fully protected marine areas, or “reserves”, has been relatively slow to catch on in the United States. For the past century, collapses in fish stocks and a growing list of global problems such as pollution and climate change have shown that single-species or single-issue policies are not successful for managing complex ocean resources.

Two divers take photographs of Sherwood Forest’s rich coral reefs in Tortugas North.

In contrast, marine reserves provide an effective and simple tool for conserving all of the creatures, habitats,

and associated biological processes contained in certain critical areas. Reserves not only conserve marine ecosystems effectively, they restore the ecological integrity of impacted areas, provided the reserve offers protection to all inhabitants and includes diverse habitats. Areas located adjacent to reserves benefit from their protected status when marine species move across reserve boundaries. Also, free-floating larvae spawned in a reserve are likely to populate adjacent areas when ocean currents disperse them.

The Tortugas region of the Florida Keys is ideal for the establishment of a marine reserve for several reasons, the most important of which may be its central location in broad-scale oceanic circulation. Marine larvae from the pristine habitats of the Tortugas are carried by ocean currents to the east coast of Florida and beyond, helping sustain populations of lobster, fish, and other marine life in these areas. The presence of hundreds of marine species (220 fish species alone) and complex habitats are a tribute to the diversity of the Tortugas. The new Tortugas Ecological Reserve will protect many of these unique and, until now, threatened species and habitats.

With the establishment of the Tortugas Ecological Reserve, the Sanctuary has created a seascape of promise – a place where the ecosystem’s full potential can be realized and that humans can learn from and respect. Please join the Sanctuary in celebrating this wonderful accomplishment.

For more information on marine protected areas, visit: www.mpa.gov/.

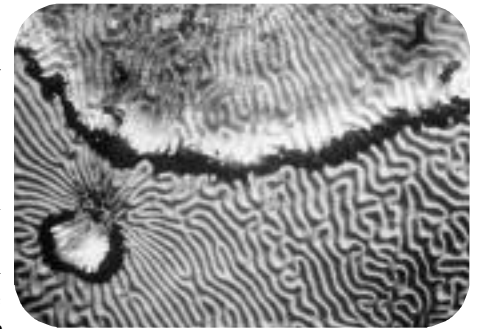


Coral Diseases in the Florida Keys

Erich Mueller, Ph.D., Mote Marine Laboratory, Center for Tropical Research

The first coral disease, “black-band”, was described in 1973. As reef research increased, additional diseases were described and warnings issued about their potential impact on reefs. However, the first documented reef “epizootic” (equivalent to a human epidemic) involved the long-spined sea urchin, *Diadema antillarum*, rather than corals. These urchins suffered a massive mortality in 1983-1984 throughout the Greater Caribbean. The mortality has been attributed to a bacterium, *Clostridium botulina*, although this identification was not definitive. Because the urchins are major algae grazers on reefs, their loss has contributed to an abundance of algae that compete with corals and other bottom-dwelling reef animals for space.

Shortly thereafter, heavy losses of the elkhorn coral, *Acropora palmata*, were reported in the Caribbean due to “white-band” disease, greatly increasing concern about disease-related declines in reef health. This was accompanied by the increasing frequency and severity of “bleaching”, events in which corals lose their symbiotic algae on a reef or larger scale. In 1997-1998 (coincident with an El Niño event), bleaching caused extensive mortality at the global scale. Bleaching is usually associated with high water temperatures and light, so it has often been considered separately from diseases that were known, or presumed, to be caused by infective pathogens. The broadest definition of disease is “an impairment of an organism’s normal function”, and may be biotic (i.e., an infective pathogen) or abiotic (i.e., physical or chemical factors). In at least one case, bleaching is caused by a bacterial infection.



The bacterial mat known as “black-band” has moved across this brain coral, leaving behind dead coral (lighter in color than living coral).

While a number of coral diseases and/or syndromes have been described, there are still many questions to be answered regarding causes. Pathogens have been identified for several diseases, but this is a difficult process because when tissue dies, many opportunistic organisms are found in addition to what actually caused the disease. Until the cause is confirmed, none of these may truly be considered diseases. For example, one widely reported disease turned out to be predation by parrotfish. Thus, the inclusive term “syndrome” (a group of signs typical of a disease, disturbance, condition or lesion) is perhaps more useful. Although many scientists feel that increased coral bleaching is linked to global warming, there is only circumstantial evidence at this time to associate coral diseases with human activities.

What impacts have coral diseases had on the Florida Keys? Outbreaks of black-band disease have been noted on reefs with high visitor use such as Looe Key since the 1980s. Techniques were developed to remove black-band disease from such areas. An apparent sharp increase in disease occurrence led to a Keys-wide, annual coral disease survey by Dr. Deborah Santavy (U.S. Environmental Protection Agency) starting in 1997. Disease incidence was relatively high in 1998, accompanied by extensive bleaching. The survey has also found that the Key West area has a statistically higher incidence of disease (10-25%) than the Dry Tortugas (1-5%). Other areas of the Keys generally have disease incidences between the values observed in Key West and the Dry Tortugas, but they are not statistically different from either. Surveys have also been conducted near the sparsely populated area of Lee Stocking Island (Exumas, Bahamas) where disease incidence was similar to the Dry Tortugas. Both bleaching and the other syndromes appear to be less common since 1999. There was considerable mortality in the Keys and Bahamas in 1998 due to bleaching and Hurricane Georges. Large stands of elkhorn coral died at Sand Key (near Key West), at Elkhorn Reef (Biscayne National Park) and other locations. The loss of disease-susceptible corals might be at least partly responsible for the lower disease incidence of corals seen since 1998.

Coral diseases appear to affect Caribbean reefs more than in the Pacific and Indian Oceans. However, the global distribution of bleaching events in 1997-1998 demonstrated that at least some coral diseases know no boundaries. With another El Niño expected in the next 1-2 years, numerous researchers will be anxious to see the effect of warmer waters on bleaching and other coral diseases. For more information visit: www.mote.org/.



New Tortugas Ecological Reserve

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The new reserve consists of two sections: Tortugas North and Tortugas South. Tortugas North protects the luxuriant coral gardens of Sherwood Forest and the stunning pinnacles of Tortugas Bank. Tortugas South protects Riley's Hump, a low profile reef that is a spawning site for grouper and snapper. Because Riley's Hump is upstream from the Florida Keys reef tract, protecting these spawning sites may sustain fish and marine life stocks in the Keys and further north. Tortugas South also includes valuable deepwater habitat found nowhere else in the Sanctuary that supports commercially important golden crab, tilefish and snowy grouper.



REEF Education Outreach Coordinator Julie Dutcher records fish species and abundance during her dive to 80 feet in the new reserve.

The region boasts the highest water quality and the healthiest coral communities in the Sanctuary, but even these remote reefs faced the threats of overfishing, damage from fishing gear and destruction by boat anchors. The ecological reserve now fully protects all marine life, including fish, coral and invertebrates, such as shrimp and lobster. Tortugas North remains open to diving, and the Sanctuary has installed mooring buoys to protect the fragile coral reefs from anchor damage. Tortugas South is open only to vessels in transit, and to researchers and educators holding a Sanctuary permit. Sanctuary boundaries now encompass Sherwood Forest and Riley's Hump, permitting the Sanctuary to address anchor damage and water pollution from vessel discharges in these sensitive areas.



Florida Keys Community College Biology Professor Tracy Hamilton and Marine Environmental Technology student Anthony "T.J." Pacot discuss the fish observed on their Tortugas dive.

The federal National Oceanic and Atmospheric Administration, part of the Department of Commerce, and the state of Florida jointly manage the Sanctuary, and approximately half of the Tortugas reserve lies in state waters.

"The Tortugas Ecological Reserve is a reality today because of a three-year, community-based collaborative process that focused diverse stakeholders on common goals," said Daniel J. Basta, Director of NOAA's Office of National Marine Sanctuaries. "The lesson for other communities considering reserves as a tool to protect our oceans is that success takes time and commitment, but the results are worth it."

Florida's governor and cabinet gave their unanimous approval to include state waters in the reserve on April 24, 2001. "The dedication of the Tortugas Ecological Reserve moves Florida into the forefront of ocean conservation," said Governor Jeb Bush. "I'm proud that Floridians have worked together to create a reserve that will provide a productive spawning nursery for fisheries along the entire coast and protect our state's precious ocean resources for the future."

For more information on the Tortugas Ecological Reserve, visit the Sanctuary's web page at <http://www.fknms.nos.noaa.gov/tortugas> or call (305) 743-2437. For more information on REEF and the Great American Fish Count, visit <http://www.fishcount.org> or call (305) 451-0312.

Educational Experiences

Coral Reef Classroom Celebrates Ninth Year

The Sanctuary's Coral Reef Classroom (CRC) program has been providing experiences in coral reef ecology and water quality sampling for Florida Keys middle school students for the past nine years.



Ken Korshin, CRC volunteer, shows a Key Largo class how to set up the Niskin Bottle, an instrument used to obtain water samples at depth.



Kay Partch, CRC volunteer, assists students operating the Secchi Disc, which is lowered into the water as a sight indicator of water turbidity (visibility).



Two eighth-graders from Key Largo Middle School deploy the plankton net. After a ten minute tow, the plankton is collected and observed through two-way microscopes.



A student checks his mask fit before snorkeling at one of the coral reefs in the Florida Keys National Marine Sanctuary. A favorite part of the CRC experience for everyone is the snorkel trip.



Sanctuary and NOAA Ship Ferrel Host Open House

Residents and visitors got a firsthand look at high-tech ocean exploration when the NOAA Ship *Ferrel* and the Sanctuary hosted an open house at Mallory Square in Key West on Saturday, July 7th. The *Ferrel* had just returned from its latest mission, documenting types of habitat on the ocean floor in the Tortugas.

Visitors who toured the ship learned about its research capabilities and met the scientists, crew, and technicians. Guests were also able to view video footage taken by research scientists studying the sandy bottom habitats and coral reefs of the Tortugas.

The NOAA Ship *Gordon Gunter*

also investigated the marine life of the Tortugas as part of the 2001 Sustainable Seas Expeditions (SSE) season. SSE seeks to explore the National Marine Sanctuaries using the DeepWorker submersible, a one person sub that can dive to a depth of 2,000 feet.



Youngsters enjoyed the "Build an Ocean" activity at the Sanctuary information booth during the open house in Key West.

Sanctuary Education Specialists staffed an information booth at the open house and were on-hand to answer questions and to give away (SSE) posters, stickers and fact sheets.

For more information, visit the Sustainable Seas Expeditions web site at:

<http://sustainableseas.noaa.gov>



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