

Sounding Line

News of the Florida Keys National Marine Sanctuary

Spring 2002

Scientists Issue Sanctuary Report Card

Nancy Diersing, FKNMS Education Specialist

"The waters of the Florida Keys National Marine Sanctuary are a living laboratory; they contain one of the most intensively studied coral reef ecosystems in the world. It is our responsibility to communicate the knowledge we've gained and show others how to make successful strides in marine conservation," stated Dan Basta, National Marine Sanctuaries Program Director, in his opening remarks to the 200 attendees at the FKNMS science symposium held in Washington D.C. this past December.

The symposium, entitled "The Florida Keys National Marine Sanctuary: An ecosystem report card," was held immediately after the most recent Coral Reef Task Force meeting, making it possible for interested parties from the Task Force to attend. "The purpose of holding the symposium in the Washington area was to reach beyond the scientific community and share what has been learned in the Florida Keys with ecosystem managers, politicians, and others involved in coral reef management around the world," commented Billy Causey, Florida Keys National Marine Sanctuary Superintendent.

FKNMS Science Coordinator Brian Keller added that "The goal for the day was to review and evaluate the progress made in long-term Sanctuary-wide monitoring projects, including those that compare fully protected zones with reference sites open to fishing and collecting. We also heard updates on groundwater research and NOAA research partnerships."



At the science symposium, USGS Geologist Gene Shinn demonstrated the porosity of Key Largo limestone by pouring water through a limestone rock.

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Key partners offered brief comments before the morning science sessions began. Fred McManus of the U.S. Environmental Protection Agency noted that the EPA has been funding long-term and special projects in the Keys since 1994. Under the Water Quality Protection Program launched by the EPA, water quality parameters, coral reef communities, and seagrasses have been measured at fixed locations throughout the Sanctuary. This information forms the baseline data needed to evaluate status and trends of water quality and key marine communities, and will be especially useful as restoration of the Everglades takes place just north of the Sanctuary.

Ken Haddad of the Florida Marine Research Institute reiterated the value of partnerships and stated that science forms the basis for all sound management decisions and should be given a high priority. Florida

see Science Symposium, p.4

Message from the Superintendent



Dear Readers,

It is hard to believe that it was ten years ago, February 1992, that the Florida Keys National Marine Sanctuary launched into a partnership with The Nature Conservancy (TNC) to establish a volunteer program for the Sanctuary. At that time, Mary Enstrom was hired by the TNC to coordinate the Sanctuary's Volunteer Program. She hit the ground running; her first day on the job coincided with the first meeting of the newly formed Sanctuary Advisory Council. It was through Mary's personal commitment and ability to engage with various groups that the Volunteer Program was able to grow into a network that today includes many partners and hundreds of individuals who give freely of their time to protect the unique marine resources of the Florida Keys.

Florida Keys National Marine Sanctuary

Billy D. Causey
Superintendent

Danny Riley
State Co-trustee

Nancy G. Diersing
Sounding Line Editor

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Tourism-Upper Keys

Vacant
Charter Fishing/Sport Fishing

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Richard Grathwohl
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Debra Harrison
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Don Kincaid
Diving-Lower Keys

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Citizen at Large-Upper Keys

R. Duncan Mathewson III
Submerged Cultural Resources

Ken Nedimyer
Commercial Fishing-Marine/Tropical

Anita Schwessinger
Tourism-Lower Keys

Deborah A. Shaw
Research and Monitoring

This is also the tenth year since Reef Environmental Education Foundation (REEF), under the dedicated leadership of Laddie Akins, began the Great American Fish Count (GAFC), a program that trains volunteer divers to identify and census fish in the Florida Keys National Marine Sanctuary. Today, the GAFC takes place in other Sanctuaries throughout the U.S. and many places around the world. In fact, to reflect the program's global approach, it is now being called the Great *Annual* Fish Count.

Over the years, the Sanctuary has worked closely with various non-profit groups to forge a number of long-lasting partnerships. The partnerships with TNC and REEF are excellent examples of what can be done when government agencies work with groups that represent the broader public to accomplish specific tasks or perform certain jobs. In each case, our partnership built a successful program that produces thousands of volunteer hours every year, saving U.S. taxpayers millions of dollars.

There are many diverse opportunities for volunteers in the Sanctuary. Whether assisting with the Coral Reef Classroom program, which offers snorkeling opportunities to students, or joining Team OCEAN (Ocean Conservation Education Action Network) on the water to distribute information to boaters and Sanctuary visitors, volunteers contribute in a very significant way toward protecting this very special place.

Periodically, I have the opportunity to meet with some of our volunteers and hear about their projects. Their enthusiasm and dedication rubs off on me, and it is their commitment that helps keep my personal "batteries" charged! Never, for even a moment, do I want our volunteers to think that their work and contributions are taken for granted or that they are not fully appreciated by each and every Sanctuary team member. Without the assistance of dedicated volunteers, our jobs would be a lot harder and most definitely less fulfilling.

At a recent luncheon held by TNC to recognize volunteers and their outstanding achievements, I could not help but be proud of what has been accomplished during the past ten years. In preparing my remarks for the luncheon, I recalled President George W. Bush's State of the Union message, when he called for all Americans to donate two years of their lives to special initiatives or projects. At the time I heard these remarks, I thought to myself that in the Florida Keys we are blessed with a wonderful community of people who are living this charge every day by giving freely of their precious time. From the bottom of my heart, I thank each and every volunteer and make a call for others to join in to help protect the exceptional marine environment of the Florida Keys National Marine Sanctuary.

Sincerely,






The Nature Conservancy Recognizes Outstanding Volunteers for 2001

Team OCEAN



Photo: Ivy Kelley

Jim Brush has a wonderful, very positive attitude and is a great asset to the Team OCEAN program and the Florida Keys National Marine Sanctuary. Jim is always willing to go out on the water at a moment's notice, and his knowledge of the Keys, the resources, and the Sanctuary has expanded greatly. Jim is a role model for Team OCEAN. *(Pictured with Upper Keys Team Ocean Coordinator Amy Massey, left.)*



Photo: Ivy Kelley

Coral Reef Classroom

Billy Gotthardt has been a pillar of the Sanctuary's Coral Reef Classroom for the past seven years. His ever-pleasant personality, willingness to pitch in on short notice, and ability to work with young people have all earned him the undying gratitude of the program. Congratulations, Billy, on receiving the first ever Coral Reef Classroom Pillar Coral Award! *(Pictured with Coral Reef Classroom Coordinator Ivy Kelley, above right.)*

Submerged Resources Inventory



Photo: Nick Tagliareni

Denis Trelewicz is dedicated to locating and documenting submerged resource locations in the Upper Keys of the Sanctuary. He has spent considerable time conducting archival research, developing summary reports, and assisting with the development of an artifact inventory database. His contributions have been instrumental in furthering Sanctuary management objectives and are especially deserving of recognition. *(Pictured with Upper Region Manager Lt. Cmdr. Dave Score, left.)*

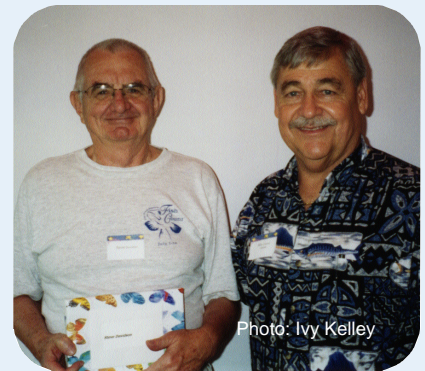


Photo: Ivy Kelley

Special Projects

During the past year, **Steve Davidson** devoted many of his volunteer hours to the use of GIS (Geographical Information Systems) technology to assist Sanctuary Managers in a variety of projects. His GIS assistance with the Mooring Buoy team, Damage Assessment team, and scientists working in the Sanctuary has been invaluable. His many hours devoted to bringing this innovative technology into practice in the Sanctuary is appreciated by the entire Sanctuary team. *(Pictured above with FKNMS Superintendent Billy Causey.)*



Photo: Ivy Kelley



Photo: Ivy Kelley

Two Ten Year Volunteers were recognized at the recent The Nature Conservancy luncheon. **David Hawtof** is pictured above with FKNMS Superintendent Billy Causey and **George Swartz** is pictured with TNC Florida Keys Program Director Jody Thomas.

Symposium Results

- * Geology and topography control the distribution of coral reefs and the movement, flow direction, and seepage of groundwater.
- * Sewage contaminates groundwater in areas of the Keys.
- * Surface circulation patterns are complex and exhibit a high potential for larval retention within the Sanctuary.
- * Declines in coral cover were probably associated with extreme events: 1997-98 severe bleaching, Hurricane Georges.
- * Many reefs have only about 5-10% live coral cover; generally, higher coral cover occurs in the Dry Tortugas and nearshore patch reefs along the Keys.
- * Seagrasses appear to have remained stable in distribution & abundance except for losses due to erosion or burial associated with hurricanes.
- * Most species of commercially caught reef fishes are highly overexploited; some have shown positive responses to full protection.
- * Dust from Africa carries nutrients, pesticides, heavy metals, viable microbes, and fungus spores from dust may infect sea fans.
- * A cellular diagnostic system can aid in determining whether coral stressors are local or larger scale and can be used to predict coral health conditions, e.g., bleaching.
- * Larvae from the Tortugas region may settle along the western and eastern coasts of Florida and in the Keys.
- * Seagrass and algal production on bottom habitats around Tortugas coral reefs appear to contribute significantly to fish production.
- * Improved methods of habitat characterization and a seagrass recovery model are improving our capacity to assess and restore damaged beds.
- * Socioeconomic monitoring indicates that zone usage is highly seasonal and that compliance with "no-take" regulations is relatively high.
- * Commercial fishermen displaced from the Western Sambo Ecological Reserve have not suffered short-term financial losses.

Science Symposium

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Department of Environmental Protection's representative, Paula Allen, noted that without the promise of research and monitoring to track the expected changes, the establishment of fully protected zones throughout the Sanctuary would not have taken place. Zone monitoring projects form a major part of the Sanctuary science program and are essential in evaluating the effectiveness of "no-take" zones as a management tool.

To provide the necessary background information needed to understand marine communities of the Keys, U.S. Geological Survey Geologist Gene Shinn summarized the geology and hydrology of the porous *see Results, p.5*



The Water Quality Monitoring Project for the Florida Keys National Marine Sanctuary is part of the Sanctuary's Water Quality Protection Program. The goal of this large-scale project is to assemble a holistic view of the broad physical, chemical, and biological interactions occurring in south

Florida's surface waters. This project includes data collected from 154 fixed stations within the Sanctuary. Field parameters measured at each station include salinity, temperature, dissolved oxygen, turbidity, relative fluorescence, and light attenuation. Water samples collected from each site are analyzed to provide water chemistry data, including nutrient concentrations. Phytoplankton biomass in the water column is measured by analyzing collected water samples for chlorophyll-a levels. For more information on this project, visit: <http://serc.fiu.edu/wqmnetwork>.

Project Investigators: Ronald D. Jones and Joseph N. Boyer, Florida International University.



Results of Sanctuary Research

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limestone rock that makes up the Keys, and NOAA's Libby Johns explained what is known about surface water circulation, currents that are critical for the recruitment of marine larvae into the ecosystem.

Shinn and Johns were followed by investigators reporting on long-term Water Quality Protection Program projects that monitor water quality, seagrasses, and coral reefs throughout the Sanctuary and results from special studies conducted about sewage and groundwater contamination.

Several investigators from the Sanctuary's Zone Monitoring Program reported on the effects of the fully protected zones on reef condition, fish communities, and spiny lobsters. Four years of monitoring the fully protected zones indicates that some heavily exploited species, such as the spiny lobster, have increased in abundance and size within the zones compared to fished reference sites.

The final session included talks on data management, socioeconomic research, long-range transport of diseases by African dust, biomarkers of stress in corals, the ecology of bottom habitats in the Tortugas, habitat characterization, and seagrass restoration. In his closing remarks, Bill Kruczynski of the EPA, summarized the major findings that were reported. To learn more about these results, research projects and Sanctuary management, see *Symposium Results* (p. 4) and visit the Sanctuary's website where project summaries have been compiled in the *Sanctuary Monitoring Report 2000*, available at: http://www.fknms.nos.noaa.gov/research_monitoring/welcome.html

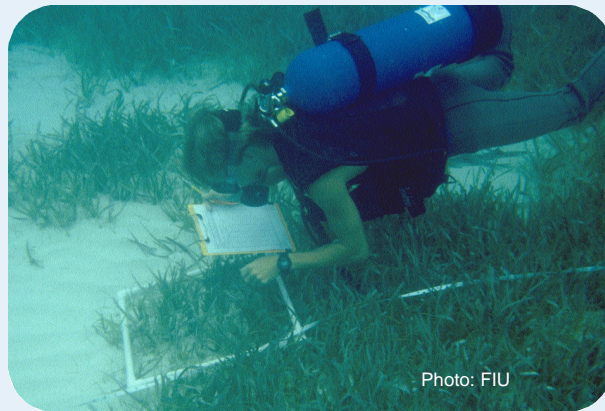


Photo: FIU

The objective of seagrass monitoring is to measure the status and trends of seagrass communities within the Florida Keys National Marine Sanctuary. The benthic surveys conducted as part of this project have documented the distribution and importance of seagrasses within the Sanctuary. The seagrass bed that carpets 80% of the Sanctuary is part of the largest documented contiguous seagrass bed on earth. These extensive meadows are vital for the ecological functioning of all the marine ecosystems in south Florida. For more information about this project, visit: <http://www.fiu.edu/~seagrass/>

Project Investigators: James W. Fourqurean, Florida International University; Michael J. Durako, University of North Carolina at Wilmington; Joseph C. Zeiman, University of Virginia.



Photo: FMRI

The Coral Reef Monitoring Project (CRMP) uses Sanctuary-wide spatial coverage, repeated sampling, and statistically valid findings to document status and trends of coral communities. Stony coral species richness and disease presence are documented at each station. Analyses of video transect images yield percent cover for stony coral and other types of bottom habitat. Between 1996 and 2000, the CRMP reported a 37% reduction in stony coral cover Sanctuary-wide. Project results assist managers in understanding, protecting, and restoring the living marine resources of the Sanctuary. For more information about this project, visit: <http://www.floridamarine.org/>.

Project Investigators: Walter C. Jaap and Jennifer Wheaton, Florida Fish and Wildlife Conservation Commission/Florida Marine Research Institute; James W. Porter, University of Virginia.



Dolphin Ecology Project Describes Unique Behavior

Nancy Diersing, FKNMS Education Specialist

Marine Mammal and Sea Turtle Viewing Code



Photo: Laura Engleby

- 1. Remain a respectful distance from marine mammals and sea turtles. The minimum recommended distances are: dolphins, porpoises, seals=50 yards; sea turtles=50 yards; whales=100 yards. (Federal law prohibits all approaches to right whales within 500 yards.)**
- 2. Time spent observing marine mammals and sea turtles should be limited to 1/2 hour.**
- 3. Marine mammals and sea turtles should not be encircled or trapped between watercraft, or watercraft and shore.**
- 4. If approached by a marine mammal or sea turtle, put your watercraft's engine in neutral and allow the animal to pass. Any vessel movement should be from the rear of the animal. (Pursuit of marine mammals and sea turtles is prohibited by Federal law.)**
- 5. Never feed or attempt to feed marine mammals or sea turtles. (Federal law prohibits feeding or attempting to feed marine mammals.)**

Immediately report injured, stranded, or dead dolphins or whales by calling 1-800 Dial FMP (1-800-342-5367)



People who spend time in Florida Bay have been watching dolphins for years, but researchers had never fully described an unusual feeding behavior of bottlenose dolphins until recently when the Dolphin Ecology Project came along. "The Dolphin Ecology Project is a nonprofit organization whose mission is to support research and education on wild dolphins while promoting conservation of marine and estuarine ecosystems," according to project organizer, Laura Engleby. The Project is supported by grants and works in partnership with The Nature Conservancy, Duke University, and the Florida Keys National Marine Sanctuary. Working with volunteers and graduate students, Laura has been documenting the life history, habitat use, behavior, distribution, and general ecology of bottlenose dolphins in the Keys for the past three years. During that time, she has also observed and recorded an unusual feeding behavior in Florida Bay that had not previously been described by biologists studying these intelligent marine mammals.

The culminating moment in the feeding behavior takes place when an entire school of fish leap out of the water into the mouths of hungry dolphins, who are ready and positioned to capture the escaping prey. But, how do the dolphins get the fish to jump into their mouths? Apparently, one dolphin swims quickly in a circle (usually counter-clockwise) herding the fish toward the other dolphins that are already lined up next to one another, forming a barrier with their bodies. When the "ring-maker" dolphin circles back toward the others, the fish are effectively trapped and attempt to flee by leaping out of the water. At that moment, the hungry dolphins are ready with their heads above the water and mouths agape to catch the fish as they leap frantically through the air. This seemingly fun game of catch is a coordinated group behavior that takes place in less than a minute. On average, 4 dolphins participate in this feeding behavior, although researchers have documented between one to twelve dolphins engaging in mud-ring feeding. The same pod has been observed carrying out this feeding strategy up to 59 times in a three hour period.

see Dolphin Ecology, p.7



SAC Finds Consensus on Marine Mammal Issue

Çeva Heck, FKNMS Public Outreach Officer

At a January 17th workshop on dolphin and whale stranding response in the Florida Keys, the Florida Keys National Marine Sanctuary Advisory Council (SAC) once again proved up to the challenge of forging consensus on an emotional environmental issue. Monroe County commissioners asked Sanctuary staff to convene the workshop after two organizations asked the County to take over the local stranding network, citing concerns over the speed and competence of stranding response.

The Marine Mammal Protection Act charges NOAA Fisheries (a sister agency to the National Ocean Service, which includes the National Marine Sanctuary Program) with the responsibility for overseeing response to dolphin and whale strandings through a series of regional stranding networks. The Florida Keys are part of the Southeast Regional Stranding Network, with a coordinator based in Miami and three organizations holding letters of agreement to respond to local strandings.

Overall, the SAC found that the three local response organizations (Marine Animal Rescue Society, Marine Mammal Rescue Foundation and Florida Keys Marine Mammal Rescue Team) exhibited excellent communication and cooperation, shared volunteers and equipment, and had a high degree of expertise. The SAC also found that the three current LOA holders and their extensive network of volunteers provided sufficient stranding response coverage for the Florida Keys.

see Marine Mammal Stranding Meeting, p.9

Dolphin Ecology, continued from page 6



Photo: Lee Tiller

Dolphins engaged in mud-ring feeding behavior prepare to catch the fish in mid-air.

The behavior has been dubbed "mud-ring feeding" because a trail of mud is stirred up from the shallow bay bottom by the "ring-maker" dolphin. Mud-ring feeding is most commonly observed along the edges of mudbanks in waters about three feet deep and has been observed throughout most of Florida Bay. BBC Wildlife recently filmed this unusual feeding behavior; the footage will air on the Discovery Channel this Spring.

Using a field technique that allows individual dolphins to be identified, the Dolphin Ecology Project also collects information about the distribution of dolphins in the Keys. Each dolphin's dorsal fin is marked by notches and nicks that have been acquired over time and are unique to that individual. Photographs of the dorsal fins taken from a boat, along with location information are compiled in a photo-ID catalog that currently contains records of 185 individuals.

Recently, the Dolphin Ecology Project welcomed Ph.D. graduate student Leigh Torres, from Duke University, who joined the project to expand on the habitat use research that began two years ago. Other upcoming projects include investigating contaminants and conducting health assessments of Keys dolphins. To find out more about the results of the Dolphin Ecology Project or information on how to become involved, visit: <http://www.dolphinecology.org/FindOut/>

Note: The Dolphin Ecology Project conducts research under NMFS Scientific Permit Number 911-1466.



Photo: Laura Engleby

Even though additional nicks and cuts may be acquired through time, dorsal fins of dolphins provide a reliable means of identifying individual animals.





Reef Restoration Planned for MV Wellwood

In the heat of the summer of 2001, Florida Keys National Marine Sanctuary “Reef Doctor” Harold Hudson and his team of assistants began constructing the concrete and limestone rock modules that will be used in restoring part of Molasses Reef damaged by a freighter in 1984. Hudson designed the restoration modules to be placed in such a way as to rebuild the older spur and groove formation of the original coral reef and provide maximum habitat for fish, corals, and the many marine organisms that live within or attached to the reef.

Each dome-shaped module is roughly 5 feet in diameter and 3 feet in height, and consists of limestone rocks embedded in an irregular base. The rocks are hand-selected by Hudson himself from a quarry in Dade County. The modules contain numerous crevices, holes, and a central "cave" inside, making them similar to the natural reef in that they offer shelter for spiny lobsters, fish, and other marine life.



Each of the 22 reef restoration modules is made of limestone rock and concrete and contains many crevices and a central “cave” to serve as shelter for marine life.

The *M/V Wellwood*, a 122-meter freighter registered in Cyprus, ran aground in approximately 22 feet of water on Molasses Reef in the Key Largo National Marine Sanctuary on August 4, 1984, and remained there for 12 days. The grounding destroyed over 1,000 square meters of living coral, causing widespread destruction of bottom-dwelling organisms and displacing fish and other marine life. The ship's collision with the reef not only destroyed living coral, it severely damaged the reef framework, making it more susceptible to erosion and damage from winter storms and hurricanes. In 1998, Hurricane Georges excavated 14 craters within the main injury site. The largest was 30 feet long, 15 feet wide, and 3 feet deep. The modules will be placed in these craters and a special underwater concrete will be pumped around each unit to anchor it to the reef. When completed, the repair will prevent further erosion of the site.

In December of 1986, the Wellwood Shipping Company and the Hanseatic Shipping Company settled with the federal government for \$6.275 million to be paid over 15 years. The amount includes a civil penalty, as well as response, assessment and restoration costs. Initial payments were used to reimburse the extensive emergency response costs of NOAA and the U.S. Coast Guard. Shortly after the grounding incident, Sanctuary staff transplanted corals into the injury site and initiated a scientific monitoring program. By December 2001, when the final payment was made, sufficient restoration funds had accrued in the account, making comprehensive physical and biological restoration possible for the Wellwood site.



Harold Hudson is shown righting a coral head turned over during a boat grounding incident on the reef. Over the past 10 years, the Sanctuary's damage assessment team has undertaken restoration projects at grounding sites throughout the Sanctuary and recently consulted with salvors and park personnel regarding several boat groundings in Dry Tortugas National Park.

The FKNMS recently held a public meeting in Key Largo to detail plans for the restoration, which is scheduled to begin in mid May and last about a month. Sanctuary staff will work with the contractor to place the modules at 14 locations on the grounding site. Several mooring buoys nearby will be temporarily removed, but replaced after the process is complete. Residents and visitors will be asked to avoid the construction zone for their own safety. Physical restoration using Hudson's modules is only the first step in the process, additional biological restoration is also planned.



Marine Mammal Stranding Meeting

continued from SAC Finds Consensus, p.7

The SAC developed two sets of recommendations, which Sanctuary Superintendent Billy Causey forwarded to NOAA Fisheries for consideration. The first set seeks to have NOAA Fisheries formalize several policies that already are practiced by the Southeast Regional Stranding Network. The SAC asks NOAA Fisheries to: ensure that LOA-holders retain their autonomy and decision-making ability in strandings; call the closest LOA holder first to respond to a stranding and have them become the on-site coordinator; require LOA holders to have round-the-clock ability to respond.

The second set of recommendations addresses the availability of marine mammal rehabilitation facilities in the Florida Keys. SAC members recommended that NOAA Fisheries approve a rehabilitation facility in the Upper Keys. Concerned about the possibility of another mass stranding event like the stranding of approximately 150 dolphins off Long Key in 2000, the SAC members recommended that NOAA Fisheries inventory all potential rehabilitation facilities in the Florida Keys and approve them for temporary or permanent use, as appropriate.

Council members developed these recommendations after hearing five panels present information regarding different aspects of stranding response. NOAA Fisheries officials discussed the Marine Mammal Protection Act as it governs stranding response and described the structure and procedures of the Southeast Regional Stranding Network. Marine mammal veterinarians discussed what is known about why marine mammals come ashore and how best to help them. The three local response organizations talked about their missions, equipment, volunteers and training programs and their working relationships with each other. Representatives of the Marine Mammal Conservancy and the Dolphin Freedom Foundation expressed their concerns with the state of stranding response in the Keys.

After each panel, SAC members had the opportunity to ask questions of presenters and highlight areas that required clarification. A public comment session followed the panels, and then facilitator Alex Score led the council members in developing their recommendations.

Fact sheets on marine mammal strandings and the stranding response network are available on the Sanctuary website at: <http://www.fknms.nos.noaa.gov>.

Waterways Adds New Producer and “Species Spotlight”

Waterways, a television program that focuses on the unique aspects of the South Florida environment, now includes a "Species Spotlight" segment. The new feature offers a closer look at some of the more interesting animals and plants inhabiting the Florida Keys. The addition of the "**Species Spotlight**" coincides with the employment of a new producer, Erik Hutchins. Hutchins joined **Waterways** nearly a year ago after working in video production for AT&T Broadband and private clients including the City of Key West, Monroe County, the U.S. Army Corps of Engineers and Artificial Reefs of the Keys.



Some of the newer episodes of **Waterways** focus on the Dolphin Ecology Project in Florida Bay and the care of endangered sea turtles. Future programs will cover shark tagging, a Sanctuary project to remove illegal lobster "condos" and a species spotlight on roseate spoonbills. **Waterways** airs on AT&T Channel 19 on Friday and Monday nights at 7:30 pm. The program is sponsored by the Florida Keys National Marine Sanctuary, the U.S. Environmental Protection Agency, and Everglades National Park.





Frequently Asked Questions About

1. What is a cultural resource?



According to National Marine Sanctuary Program regulations, a cultural resource is one that has any type of historical, cultural, archaeological or paleontological significance and is greater than 50 years old. These can be shipwreck sites, structures, and objects that can be associated with earlier people, cultures, human activities or events.

of the Federal Archaeological Program. These include developing resource management programs and overseeing federal activities that may affect cultural resources. NOAA issues permits necessary for the exploration or disturbance of a cultural resource and has a responsibility to inventory and evaluate cultural resources within sanctuaries, and nominate them to the National Register of Historic Places.

2. What are some examples of cultural resources?

One example of a cultural resource is a prehistoric site. At a prehistoric site, you may find plant remains or animal bones, stone tools, items carved from wood or bone, or pieces of pottery, all of which are considered cultural resources. A historic site may contain wreckage from a shipwreck or could be a wharf or other submerged structure. Shipwrecks can include parts of the actual ship structure such as pieces of wooden or iron hull and frames, as well as associated items like masts, cannons, and ship's fittings. It is also common to find items associated with the crew or cargo, including ceramics, glassware and coins. Cultural resources can even include living cultures. For example, Native Hawaiian traditional fishing practices are being studied at the Hawaiian Islands Humpback Whale National Marine Sanctuary.

5. How does NOAA protect these resources within National Marine Sanctuaries?

The National Marine Sanctuary Act makes it illegal to disturb a site or recover artifacts without a permit. NOAA encourages responsible institutions to conduct permitted research in the sanctuaries under certain conditions. All permits require that a qualified marine archaeologist oversee the project. Applications require a research plan and carefully considered methodology. An applicant must also provide plans for the conservation and curation of artifacts and submit a comprehensive professional report at the completion of the project.

3. Why are cultural resources important?

We can learn much about how people lived from material culture or artifacts. Cultural resources help us learn about Native American culture before European contact, when there were no written records. Even more recent finds like shipwrecks add to our knowledge of Keys maritime history, ship architecture, and the everyday lives of sailors and coastal residents. Proper archaeological excavations can teach us about a culture's economy, customs and social organization.

6. Am I allowed to dive in areas of the Florida Keys National Marine Sanctuary that contain cultural resources?

Most of the Sanctuary is open to diving and snorkeling, including the nine shipwreck sites featured on the Sanctuary's Shipwreck Trail. However, the "Research-only Areas" of the Florida Keys National Marine Sanctuary are "no-entry" zones that are set aside for research purposes. Therefore, no diving or snorkeling is permitted within these zones. Research-only Areas are located at Tennessee Reef, Conch Reef, Looe Key patch reef and Eastern Sambo. The Tortugas South Ecological Reserve is also closed to diving and snorkeling. For more exact locations of closed areas or for information about the Shipwreck Trail, visit: <http://www.fknms.nos.noaa.gov> or contact the Sanctuary.



4. What are some of NOAA's responsibilities regarding cultural resources?

The National Oceanic Atmospheric Administration (NOAA) has a responsibility to protect and manage cultural resources discovered within a National Marine Sanctuary. The National Marine Sanctuaries Act mandates NOAA to abide by laws and regulations

7. What do I do if I find a cultural resource?

If you discover a cultural resource in the Florida Keys National Marine Sanctuary, please notify the Upper Keys Regional Manager at (305) 852-7717, ext. 35. Proper steps will then be taken to document the artifact and ensure that important archaeological



Submerged Cultural Resources

and historical information is not lost. Artifacts must be left where they are found and not touched or disturbed in any way. You should list the items that were observed and describe the material, dimension, and type of artifact. It is also helpful to photograph objects at the site and to sketch a site map. Remember to include a latitude/longitude of the site's position.

8. Is everything I find while I am diving considered to be a cultural resource?



The Archaeological Resources Protection Act covers artifacts and sites that are more than 100 years old and of archaeological interest. The National Register of Historic Places recognizes sites more than 50 years old that meet certain criteria of significance. If you are not sure, anything that does not look modern and looks man-made should be considered a cultural resource, until proven otherwise.

9. Why should I not disturb or take a cultural resource?

Submerged cultural resources represent our shared cultural heritage. Researchers gain a better understanding of the past when they are able to study artifacts in their original context. The relationship of one artifact to another and to the surrounding soil is important, and if artifacts are moved, the information value of the site is diminished. After proper investigation, researchers have an obligation to educate people about past cultures through museum exhibits, publications and other forms of interpretation. Disturbing a cultural resource often leads to deterioration. Special chemical and physical treatments are necessary for artifacts that are removed from the water. These procedures are best carried out by a professional conservator.

10. Is it ever necessary to disturb a cultural resource?

Under certain circumstances, the removal of artifacts may be necessary. In such situations, there is a need for controlled and planned recovery in accordance with the permit process and federal laws. Some possible reasons for recovering artifacts include: protecting artifacts from harsh environmental

conditions; conducting research that includes public education; making artifacts more available to the public; and improving the scientific understanding of the Sanctuary.

11. Is it possible for me to be involved with NOAA's study of cultural resources in the National Marine Sanctuaries?

One of the Sanctuary Program's goals is to involve the public in the study, protection and enjoyment of submerged cultural resources. If you would like to volunteer to assist the Sanctuary Program in protecting submerged cultural resources, please call the Upper Keys Regional Manager at (305) 852-7717, ext. 35.

12. What role does the State of Florida play in managing submerged cultural resources?

The National Oceanic Atmospheric Administration (NOAA) and the Division of Historical Resources of the Florida Department of State share responsibility for submerged cultural resources within the Florida Keys National Marine Sanctuary. All historic resources are managed in accordance with the Florida Keys National Marine Sanctuary and Protection Act, the National Marine Sanctuaries Act, the Abandoned Shipwreck Act, and Florida state law in accordance with the Federal Archaeological Program. The Florida Division of Historical Resources retains title to abandoned shipwrecks on state-owned submerged lands within Sanctuary boundaries. However, NOAA and the State share co-trustee responsibilities for natural and historic resources within the state portions of the Sanctuary. A Programmatic Agreement established between NOAA, the Advisory Council on Historic Preservation, and the State of Florida details the management policies and procedures governing submerged cultural resources in the Sanctuary. Copies can be obtained by contacting the Upper Region Sanctuary Office at (305) 852-7717, ext. 35.

Note: The artifacts pictured above were recovered from Spanish shipwreck sites in the Florida Keys. These artifacts ("Ming" tea cup, jug, and bar shot, circa 1733) are housed at Florida's Bureau of Archaeological Research in Tallahassee. Photos taken by the Florida Bureau of Archeological Research.

GAFC Celebrates 10th Anniversary



This year marks the 10th anniversary for the Great American Fish Count (GAFC). This milestone for the GAFC is a great occasion to celebrate its success and expansion over the last decade. Due to the exponential growth of the GAFC last year, the National Marine Sanctuary Program and Reef Environmental Education Foundation (REEF) have taken this opportunity to change the official name to the **Great Annual Fish Count**.

The Great Annual Fish Count has become an



REEF's Advanced Assessment Team uses the Roving Diver Technique to conduct fish surveys in 37 sites in the FKNMS, including 10 new areas in the vicinity of the new Tortugas Ecological Reserve.



Alex Score, Education Coordinator, REEF

international event and REEF invites other countries to recruit volunteers to conduct fish surveys in the Caribbean, Mexico, Central America, South America and Canada. Fish have no nationality and cannot distinguish between country lines or regions. Many migrate between countries and spawn in different areas.

GAFC educates divers and snorkelers as stewards and protectors of the marine environment. The GAFC takes place each year during the entire month of July. For more details about GAFC, visit: www.fishcount.org.

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