

Fieldwork

Ground-Truthing Sea-Floor Data with the New Mini SEABOSS— Mapping the South Essex Ocean Sanctuary

By Brian Andrews, Dann Blackwood, and Seth Ackerman

The U.S. Geological Survey (USGS)'s Woods Hole Science Center, in cooperation with the Massachusetts Office of Coastal Zone Management (CZM) and the National Oceanic and Atmospheric Administration (NOAA), is conducting high-resolution geologic mapping of the sea floor to characterize bottom morphology, surficial-sediment distribution, and subsurface geology in the shallow coastal waters of Massachusetts. The long-term goal of this mapping effort is to produce detailed sea-floor geologic maps that will be used in aggregate-resource and benthic-habitat studies by State and other Federal agencies.

In May 2004, **Dann Blackwood**, **Brian Andrews**, **Barry Irwin** (all of USGS, Woods Hole), and **Seth Ackerman** (CZM, Woods Hole) conducted a remote sea-floor ground-truthing survey in the South Essex Ocean Sanctuary, using a new version of the successful SEABOSS (SEABed Observation and Sampling System; see URL <http://pubs.usgs.gov/fs/fs142-00/>). The new, more compact SEABOSS, called "Mini SEABOSS," is smaller than the original SEABOSS and was specifically designed by **Dann Blackwood** and **Ray Davis** (USGS, Woods Hole) for nearshore survey operations.

One hundred potential stations were identified within the South Essex Ocean Sanctuary on the basis of high-resolution swath bathymetry and sidescan-sonar data. All of the planned stations were occupied in just three survey days. The survey of a typical station began with a several-minute drift during which bottom video footage and still photographs were collected; most



Brian Andrews with the Mini SEABOSS ready for deployment from the research vessel *Rafael*. The power davit is on the left, and the cable-management reel is just right of center.

of the surveys concluded with a sediment grab, using the modified van Veen grab sampler. On many surveys, the video drifts were planned across suspected transition zones to pinpoint areas with a distinct change in sea-floor type. A short selection from one of the video drifts can be viewed online at URL <http://soundwaves.usgs.gov/2004/08/>.

The Mini SEABOSS was designed and built to bring the ground-truthing capabilities (*Mini SEABOSS* continued on page 2)



Silty bottom with crab and sand dollars. Image is approximately 30 cm across.

Sound Waves

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SOUND WAVES (WITH ADDITIONAL LINKS)
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Submission Guidelines

Deadline: The deadline for news items and publication lists for the October 2004 issue of *Sound Waves* is Wednesday, September 15.

Publications: When new publications or products are released, please notify the editor with a full reference and a bulleted summary or description.

Images: Please submit all images at publication size (column, 2-column, or page width). Resolution of 200 to 300 dpi (dots per inch) is best. Adobe Illustrator® files or EPS files work well with vector files (such as graphs or diagrams). TIFF and JPEG files work well with raster files (photographs or rasterized vector files).

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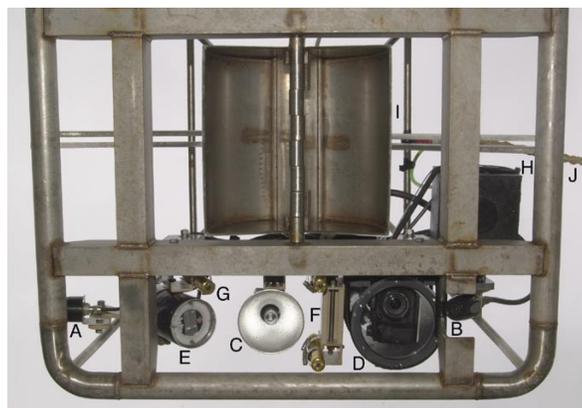
Fieldwork, continued

(Mini SEABOSS continued from page 1)

ties of the original SEABOSS onto a trailerable research vessel, for coastal, lake, and river research. It offers the researcher two video cameras, a digital still camera, and a bottom grab sampler. It is built around the same 0.1-m²-area van Veen grab sampler as the original SEABOSS but uses a slightly smaller and lighter frame; it weighs about 185 lb.

The Mini SEABOSS is deployed from a manually pivoting davit mounted through the gunwale. A fully variable speed electric winch is mounted on the davit. The system can be used to a depth of just more than 40 meters. The grab itself is raised and lowered with a 3/16-inch Aramid fiber winchline with a breaking strength of 5,600 lb. The davit is secured when the Mini SEABOSS is in the water. The electrical cable is on a spring-wound takeup reel with electrical slip rings that is mounted aft of the sampler. This arrangement protects the 0.38-in. multiconductor cable and keeps the Mini SEABOSS correctly oriented with the boat.

During normal sampling operations, the Mini SEABOSS is not brought into the boat between deployments but is placed outboard and secured to the gunwale, using mounts to hold it in place. With the Mini SEABOSS in this position, the sediment samples can be recovered and placed in containers, minor adjustments can be



Mini SEABOSS components viewed from below: A, forward video camera; B, downward video camera; C, video light; D, digital still camera and housing; E, strobe light; F, parallel lasers for scale; G, laser for ranging; H, junction block; I, van Veen grab sampler; J, multi-conducting cable.

made, and the grab can be conveniently cleaned out for the next sample without sediment entering the boat. Because of the secure gunwale mounting system, the Mini SEABOSS is quite stable in this position during short transits between stations. During long transits or to service the digital camera, the Mini SEABOSS can be swung inboard and lowered into the cockpit.

The imaging components are all mounted on a fiberglass strut that can be easily removed so that the grab can also be used for basic sampling operations. The digital camera, mounted in a simple machined-plastic housing, generates a 5-MB image. Depending on the card used and image compression, many hundreds of images can be taken before the card is removed and downloaded. The video signals can be

recorded in various formats. The 50-W/s flash unit is battery powered and was recycled from the original SEABOSS. The battery-powered lasers are set 15 cm apart for scale measurements. A third laser is positioned at an angle so that when it intersects the other lasers, the Mini SEABOSS is at the proper height off the bottom for a still photograph.

(Mini SEABOSS continued on page 3)



Cobbles with magenta calcareous algae, starfish, and mussels. Image is approximately 30 cm across.

(Mini SEABOSS continued from page 2)

Over the course of three days, 597 images were obtained on the South Essex Ocean Sanctuary survey, and only a few minor adjustments and changes were needed. The cable takeup reel performed

well and kept personnel from having to handle and coil the conducting cable. The boat could be gently maneuvered when the system was deployed to optimize speed over the bottom and adjust transect

direction. The Mini SEABOSS is a tool that can provide useful ground-truth data in shallow regions inexpensively and in a timely manner. ❁

USGS and WHOI Investigate Gas-Hydrate Mounds on the Gulf of Mexico Sea Floor

By Lauren Gilbert

In mid-June 2004, researchers from the Woods Hole Oceanographic Institution (WHOI) and the U.S. Geological Survey (USGS) participated in a 5-day cruise aboard the research vessel *Pelican* to investigate gas-hydrate mounds in the northern Gulf of Mexico. This cruise was one of several site-survey cruises characterizing the sea floor before shallow drilling that is anticipated in spring 2005 (see related article in *Sound Waves*, July 2003, at URL <http://soundwaves.usgs.gov/2003/07/fieldwork.html>). The purpose of the recent cruise was to collect electrical and photographic data that complement and augment existing multichannel-seismic, vertical-array-seismic, geochemical, and thermal data sets.

USGS and WHOI are just two of the many institutions involved in this joint venture of Federal, academic, and industry groups collaborating on drilling gas hydrates in the Gulf of Mexico. The Joint Industry Program (JIP) intends to assess the hazards associated with drilling in sediment containing gas hydrate, and the two mounds in Mississippi Canyon visited during the *Pelican* cruise are potential JIP drillsites.

Gas-hydrate mounds are well documented in shallower waters of the Gulf of Mexico, and many mounds host chemosynthetic communities. The two mounds visited during this cruise are in water about 1,300 m deep. The mounds revealed varying electrical conductivities, some chemosynthetic communities, white masses on the sea floor that might be hydrate or carbonate, and various fish, crabs, and other animals. This cruise was the first to use WHOI's high-resolution digital tow camera in the Gulf of Mexico, and also the first test cruise for the bottom-towed electromagnetic streamer. Both instruments functioned flawlessly. The bottom photographs have been linked with navi-

gation data in a geographic information system (GIS) and will ultimately be put in a mosaic, providing a comprehensive visualization of sea-floor features in this particular area of the Gulf of Mexico. The electrical measurements will provide new hydrate- and salinity-distribution information to augment previously collected data sets in the Atwater Valley region.

Scientific crew members on board included WHOI scientists **Rob Evans** (Chief Scientist) and **Dan Fornari**, with additional support from **Marshall Swartz** and **Alan Gardner**. A navigation team from

the USGS office in Menlo Park, CA, was led by **Mike Boyle** and **Jennifer Dougherty**, and **John Evans** and **Lauren Gilbert** from the USGS Woods Hole Science Center provided GIS and navigation support.

The cruise was a scientific and culinary success. The data collection benefited from calm seas and perfect weather, and the cuisine benefited from a sizable mahi mahi hooked on the final day of research. Even with a menu featuring made-to-order eggs and crème brûlée, no reward is greater than fresh fish after a long day of data collection at sea! ❁



*Towcam system going over the side. The frame is rigged with a camera on the bottom surrounded by orange battery packs. Electronic equipment, including a device that measures the conductivity, temperature, and depth (CTD) of seawater, sits at the top level of the frame. Strobe lights are positioned on the wings extending from the apparatus. Pictured deploying the system are (left to right) **Alan Gardner**, **Marshall Swartz**, and **Rob Evans**.*



*Electromagnetic streamer being deployed from the stern of the research vessel *Pelican*. Shown on deck are the transmitter (large body with the yellow nose cone) and two of the three receivers. The third receiver is already in the water. Pictured (left to right) are a deckhand, **Rob Evans**, and **Alan Gardner**.*

California Margin's Ancient Volcanic History—MBARI Cruise to California Seamounts

By Brandie McIntyre

An interdisciplinary team of scientists recently undertook a seamount cruise along the California margin as a followup to a cruise completed in October 2003 (see article in *Sound Waves*, December 2003/January 2004). Both cruises were conducted by the Monterey Bay Aquarium Research Institute (MBARI) and led by MBARI volcanologist **Dave Clague**. Other participants in the 2004 cruise included **Alicé Davis**, **Jenny Paduan**, **Lonny Lundsten**, and **Joe Jones** of MBARI; **Jim Hein** and **Brandie McIntyre** of the U.S. Geological Survey (USGS); **Kathie Marsaglia** of California State University, Northridge; and **Tessa Hill** of the University of California, Santa Barbara. The 2003 cruise explored Pioneer and Rodriguez Seamounts off central California; the 2004 cruise expanded the study to seamounts south of Point Conception, plus one dive on the Patton Escarpment, a steep scarp that delineates the ancient subduction margin of North America.

The two-week cruise began on April 27, 2004, when we departed at 0600 from Moss Landing, CA, only to return 3 hours later to replace a powerboard on the remotely operated vehicle (ROV) that was damaged during a power spike the day before. Leaving again at 1730 necessitated modification of our next day's dive plan and left the team wondering if this cruise would be similar to its October predecessor, which suffered



Scientific party (left to right): **Dave Clague**, **Alicé Davis**, **James Hein**, **Brandie McIntyre**, **Lonny Lundsten**, **Jenny Paduan**, **Joe Jones**, **Tessa Hill**, and **Kathy Marsaglia**.

many delays as the result of high winds.

Despite this less than auspicious beginning, we experienced spectacular weather for the rest of the cruise, and the full complement of 10 dives were completed successfully: two dives on Rodriguez Seamount, three on San Juan Seamount, two on Northeast Bank, one on the Patton Escarpment, one on Little Joe Seamount in the Ponderosa seamount group, and one on San Marcos Seamount. Like the seamounts studied during the 2003 cruise, these extinct volcanoes are examples of a previously unrecognized type of oceanic volcanism, reflecting changes in the Pacific/North American Plate boundary as it shifted from a convergent to a transform margin.

The team used the specialized ROV *Tiburon* housed on the research vessel *Western Flyer* to explore and collect samples from the seamounts. We collected samples from depths ranging from 500 to 3,600 m, including 332 rock samples, 26 sediment push cores and sediment scoop samples, and 175 animals, in addition to the multitude of critters clinging to the collected rocks.

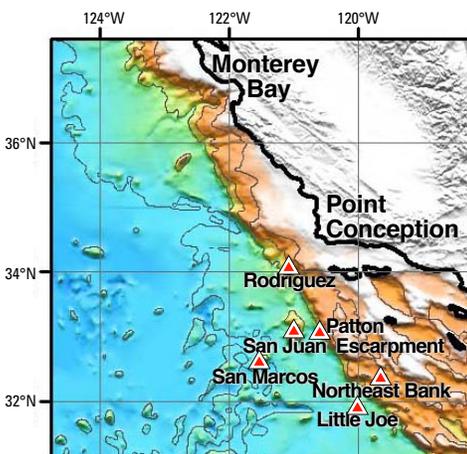
Our main objectives were

- rock sampling for dating,
- characterization of magma and its source region,
- identification of subaerial volcanic or other deposits that would indicate the existence of former islands, and
- characterization of fauna and biohabitats for this unique environment dominated by hard-rock substrates. We col-

lected clams and paragorgia corals for genetic studies, crinoids for taxonomic studies, predatory tunicates for taxonomic and genetic studies, and bamboo corals for paleoclimate studies.

Highlights of the cruise included two additional dives on Rodriguez Seamount, bringing the total to six dives for the 2003 and 2004 cruises. These dives provide a thorough view of the seamount's biology and geology and show profound differences in the characteristics of the many cones that make up the seamount.

(California Seamounts continued on page 5)



Locations of seamounts explored during this cruise.



Scientific party members examining and describing rocks.

Fieldwork, continued

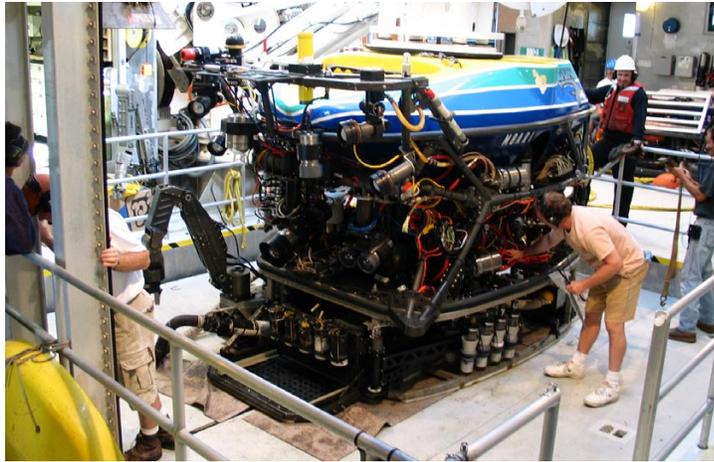
(California Seamounts continued from page 4)

We had an exciting find on San Marcos Seamount, where we collected an extremely large (7 cm diameter at the base), nearly dead bamboo coral. The coral was so large that the ROV's manipulator couldn't break it, and so, to collect it, we had to drive the vehicle into the coral to snap it from its base. The annual growth rings of this specimen and several other large bamboo corals that we collected will help **Tessa Hill** decipher past climates and ocean circulation during her postdoctoral fellowship at the University of California, Davis. These corals may record 100 to 200 years of ocean history with annual resolution.

Another interesting find was a fossil-bearing layer underlying volcanoclastic deposits on Northeast Bank. The sea-floor surface was littered with partly dissolved fossil solitary corals that had been eroded from the outcrop. The corals were of a type not observed on the seamount and may be as much as 5 to 10 million years old. On the second dive at Northeast Bank, evidence was found for the shoreline of an ancient island, confirming that the seamount was subaerial in the past. A beach rock composed of rounded pebbles was collected at about 550-m water depth at the break in slope that delineated the ancient shoreline.

The single exploratory dive on the Patton Escarpment recovered a range of rock types and sediment samples that **Kathie Marsaglia** will compare with clastic sand samples recovered at several nearby Deep Sea Drilling Sites. The entire 3.5-km traverse showed outcrops of compositionally varied breccia and talus, completely encrusted by Fe-Mn crusts that are far thicker and more extensive than anticipated. We had expected deformed sedimentary rocks related to subduction at the former North American margin.

Marine biologist **Joe Jones** collected translucent-shelled clams to provide a more thorough picture of the evolutionary processes that influence the distribution and genetic composition of these unique animals, and to analyze their reproductive cycle on the seamounts. He was rewarded with samples from Rodriguez Seamount, San Juan Seamount, the Patton Escarpment, and Northeast Bank. He also has a new, larger species to study that was recovered from relatively shallow water.



ROV Tiburon being inspected before launching for the day's dive.

Jim Hein and I will study the formation of Fe-Mn crusts observed on all of the seamounts, primarily focusing on the many paleoceanographic conditions that can be deciphered from a careful study of sequential crust layers. We will also determine the growth rates and compositions of these unusual accumulations of metals. The seamounts appear to young southward, and so we anticipated only thin (a few millimeters thick) Fe-Mn oxide crusts; but on several of the seamounts, such as Northeast Bank and Little Joe Seamount, crusts were abundant, covering most of the sea floor and measuring as much as 40 mm thick. This cruise was especially fruitful, adding at least 200 samples to our collection. One of the real



Tessa Hill shows off her largest bamboo coral sample—7 cm in diameter at its base!

surprises was the amount of hydrothermal Mn oxide collected during the cruise, considering that these seamounts are mostly Miocene and volcanism ceased millions of years ago. These hydrothermal deposits are relicts from the early history of the seamounts, when hydrothermal activity was an important process along the California margin. Now, if we can only find the time to analyze all of it!

Each dive was a great success, providing new observations about submarine eruptive styles, benthic-animal distribution, and even some great midwater squid and jellyfish observations. The biology and geology of the California Continental Borderland is so varied and fascinating! We observed a vast array of sponges, including glass, lacy, and barrel; many types of corals, including golden and paragonia; a mysterious and beautiful purple hydroid; brittlestars, seastars, and slime stars galore; dinner-plate-size sea urchins; stalked and swimming crinoids; crabs; a type of sea cucumber affectionately known as "Pinky the slime bag"; different species of squid and octopi; jellyfish; and even a 6- to 8-ft-long sleeper shark! The ROV traveled over volcanoclastic debris flows; onto blocky, jointed basalt ledges; and up to pelagic sediment pools at the tops of seamount cones. Overall, the cruise was a huge success that will contribute much to our knowledge of the California margin, and it reinforces how important and useful interdisciplinary studies are for science.

For additional information about the cruise, visit URL <http://www.mbari.org/expeditions/Seamounts04/>. ☼

Little Marine Explorers Learn About the USGS

By Jennifer Leigh Oates

The U.S. Geological Survey (USGS)'s Center for Coastal and Watershed Studies in St. Petersburg, FL, helped sponsor the Little Marine Explorers Summer Camp with The Pier Aquarium on June 21-25. The camp taught children entering kindergarten through second grade how science is involved in everything. Even the daily snack had an educational message, from learning which animals live where in an estuary, to using a straw to understand how core samples of the Earth are collected.

The children enjoyed coloring and investigating animals on the USGS' "SO-FIA Kid's Page" (at URL http://sofia.usgs.gov/virtual_tour/kids/). The campers kept busy finding out about sharks, catching and identifying fish, looking at sediment cores, and touring The Pier Aquarium (URL <http://www.stpete-pier.com/pieraquarium>).



Some of the Little Marine Explorers, with an important landmark for St. Petersburg residents—The Pier—in the background. The campers enjoyed catching and identifying fish in nets along The Pier seawall.

The USGS and The Pier Aquarium logos were on the camp T-shirts.

The camp provided a great opportunity for USGS employees to figure out what material is age appropriate for the up-

coming annual USGS open house in St. Petersburg. Next year, the USGS may participate in a camp for older students that is sponsored by The Pier Aquarium and local environmental agencies. ☼

Tampa Bay Estuary Recipe

(A tasty summer recipe to make with the kids)

- 1 bag gummy worms (worms)
- 2 boxes instant chocolate pudding / add milk (mud)
- 1 bag oyster crackers (oysters)
- 1 bag stick pretzels (mangrove roots)
- 1 bag chocolate chips (snails)
- 1 box goldfish crackers (fish)
- 1 box golden raisins (shrimp)
- 1 bag grated coconut / colored green with food coloring (sea grass)
- 1 box vanilla wafers (bedrock)
- 1 bottle yellow sprinkles (sand)
- 1 bottle star sprinkles (sea stars)
- 1 9" x 11" foil pan (estuary)
- 1 big spoon

First, begin by explaining what an **estuary** is to the children helping you create the snack. *An estuary is a partly enclosed coastal body of water in which river water is mixed with sea water, creating brackish water. An estuary is similar to a baby nursery. An estuary is where baby fish and sea animals grow up.*

Tell the children that a layer of **bedrock** is on the bottom of an estu-

ary. Cover the bottom of the foil pan with semicrushed (be sure to keep some chunks) vanilla wafers. The easiest way to crush the vanilla wafers is in a large Ziploc bag.

Ask the children what they think covers the bedrock. *What covers the bottom of Tampa Bay under the sand? A layer of **mud** covers the bedrock.* Generously apply a layer of instant chocolate pudding over the vanilla wafers, using a large spoon.

Ask the children what animals live in the mud. (You will receive a thousand different answers.) The answer you want is **worms**. The child who provides the right answer is allowed to spread gummy worms throughout the pan (use approximately 15).

Ask what plant has long prop roots, grows near the shoreline, and plays an important role in preventing coastal erosion. The answer is **mangroves**. The pretzel sticks can be placed in the mud along the edge of the pan.

Ask what animal they think lives on the walls, mangrove roots, and "in beds" in an estuary. The correct answer is **oysters**. The child who answers correctly can line the edges of the pan with the oyster crackers and

make a circle of about five oysters in the mud, called an oyster bed.

*What covers the mud on the bottom of the ocean? **Sand** covers the sea floor.* The yellow sprinkles can be used to represent sand.

Then, in a snack-size Ziploc bag, combine grated coconut and several drops of green food coloring. Ask what green plants grow on the bottom of Tampa Bay. ***Sea grass** grows on the sea floor.* The student who answers correctly can put small bunches of sea grass throughout the center of the pan.

What animals live in the sea grass?

Snails, sea stars, fish, and shrimp, to name a few. Let the children be creative and list everything they can imagine. Snails, fish, and sea stars can be found in the sand, sea grass, and in the mangroves (edge of pan). The shrimp are primarily hidden in the sea grass. Have the children add the corresponding ingredients—chocolate chips, star sprinkles, goldfish crackers, golden raisins—to the pan.

Film Crew Visits USGS to Uncover the Truth about the Spanish Slave Ship *Guerrero*

By Jennifer Leigh Oates

Producer/director **Karuna Eberl** and her film crew visited the U.S. Geological Survey (USGS)'s Center for Coastal and Watershed Studies in St. Petersburg, FL, on May 21 to investigate a scientific link with the sinking of the Spanish slave ship *Guerrero*. The documentary "Slave Ship *Guerrero*" is being produced by Wandering Dog Films and Public Broadcasting Service (PBS) station WEDU in Tampa. Filming concluded in May 2004, and the documentary will be distributed to local and national markets for broadcasting in fall 2004.

First to be interviewed for the film was USGS geologist **Gene Shinn**, who described the atmosphere in the Florida Keys during the 1950s and the popularity of treasure hunting. **Karuna** was interested in whether any artifacts from the *Guerrero* could possibly have been collected by treasure hunters. **Gene** gave **Karuna** an article he had written for *Skin Diver Magazine* in 1958, called "Historical Finds Under Florida Waters." The

article showed cannons and other artifacts collected off Florida's coasts.

Gene and USGS microbiologist **Dale Griffin** then discussed how microorganisms in giant dust storms from Africa were carried across the Atlantic Ocean long before the *Guerrero* sailed. **Dale** explained how microorganisms in dust samples are identified to understand the possible effects of African dust on coral reefs and the implications for airborne transmission of agricultural, cattle, and human disease, and for homeland security.

Ginger Tiling was interviewed in the laboratory while completing research on sediment samples from a core collected in the Everglades. She was filmed measuring the bulk density of samples from a creek, a mangrove habitat, and a marsh area in the Everglades.

For more information about the *Guerrero* project, visit URL <http://www.theguerrero.org/>. ❁



Gene Shinn removes a cannonball from its limestone-encrusted casing. Photograph from **Gene's** article "Historical Finds Under Florida Waters," written for *Skin Diver Magazine* in 1958.

The National Map Comes to Florida

By Jennifer Leigh Oates

Barbara Ryan, Associate Director of Geography for the U.S. Geological Survey (USGS), gave a presentation about *The National Map* at the Bentley Empowered Conference, sponsored by the Bentley Institute and held in Orlando, FL, on May 24-26. The title of Barbara's presentation was "*The National Map*—from Mapping to Geography." The same presentation was also given at New England's Geospatial Information Summit in May.

The Bentley Institute has a large international and domestic engineering customer base, and the recent conference had approximately 2,000 attendees. An international magazine journalist, interested in a story about *The National Map*, spoke with **Barbara** about the magazine's readership and asked her to submit an article. Employees working for the Florida Department of Transportation and other State agencies around the country were eager to learn about *The National Map* and how they could contribute to the project.



Barbara Ryan (left) and **Julia Giller** (seated) explain how *The National Map* was created.

At the USGS exhibit, **Julia Giller** and **Jennifer Oates** used a laptop computer to demonstrate the capabilities of *The National Map*.

Available at URL <http://nationalmap.usgs.gov/>, *The National Map* provides a consistent framework for geographic knowledge needed by the Nation. It provides public access to high-quality geo-

spatial data and information from multiple partners to help support decisionmaking by resource managers and the public. The USGS is working to build long-term partnerships to identify needs for base geographic data, sharing and maintaining data, ensuring data access, developing tools and standards, research, and applica-

(*National Map continued on page 8*)

Outreach, continued

(National Map *continued from page 7*)

tions. The eight priority layers for the USGS are (1) digital ortho-imagery, (2) elevation and bathymetry, (3) hydrography, (4) transportation, (5) structures, (6) geographic names, (7) land cover, and (8) administrative boundaries.

Partners include Federal, State, tribal, regional, and local governments, the private-industry sector, universities, and libraries. National Dataset Partners include

Terraserver USA (URL <http://terraserver.homeadvisor.msn.com/>), the National Geospatial-Intelligence Agency (NGA) (URL <http://www.nga.mil/>), the Bureau of Land Management (BLM)'s Land Survey Information System (URL <http://www.geocommunicator.gov/lsi/>), the USDA Forest Service Geodata Clearinghouse (URL <http://fsgeodata.fs.fed.us/>), and the U.S. Fish and Wildlife Service

(USFWS)'s National Wetlands Inventory (URL <http://wetlands.fws.gov/>).

For more information about *The National Map*, visit URL <http://nationalmap.usgs.gov/>. **Barbara Ryan's** presentation is available to USGS employees on an internal Web site at URL <http://ergnet.er.usgs.gov/liasons/index.html> (click on "PowerPoint Presentations" on left side of page). ☼

Meetings

10th International Coral Reef Symposium (ICRS)

By Curt Storlazzi

The 10th International Coral Reef Symposium (ICRS) was convened on June 28–July 2, 2004, in the city of Naha, Okinawa, Japan, by the International Society for Reef Studies in cooperation with the Japanese Coral Reef Society.

The ICRS, which is held only once every four years, is the premier meeting for coral-reef scientists. This meeting's theme was the "Stability and Degradation of Coral Reef Ecosystems" around the globe. This is a particularly important topic, for it appears that anthropogenic modifications to the land (overgrazing, development), the sea (overfishing, increased sedimentation, nutrients and contaminants), and the air (greenhouse gases, dust) are the primary sources of degradation to coral reefs worldwide. The meeting was divided into the following four main themes, in each of which at least one USGS scientist presented findings:

1. The Evolution of Coral Reef Ecosystems
2. Environmental Factors Controlling Coral Reef Ecosystems
3. Towards a System Where Humans and Coral Reefs Coexist
4. Remote Sensing of Coral Reefs

Two sessions in the Environmental Factors Controlling Coral Reef Ecosystems theme—"The Influence of Storms and Floods on Reefs" and "The Physical and Hydrodynamics Environments: Their Effects on Coral Reef Processes"—were chaired by USGS scientists **Mike Field** (Santa Cruz, CA) and **Cliff Hearn** (St. Pe-

Underwater image of a healthy reef system in the Kerama Islands off southwestern Okinawa. Note the abundant live-coral coverage, numerous fish, sparse macroalgae coverage, and clear water. Several talks at the conference related increased sediment input and decreased fish populations to increased growth of macroalgae and reduced live-coral coverage on reefs around the globe. Photograph by Curt Storlazzi.



tersburg, FL), respectively.

Coral-reef science is an interdisciplinary topic involving ecologists, biologists, oceanographers, marine geologists, and planners and managers. The meeting's participants came from diverse international organizations, including federal, state, and local governments, academia, private consulting firms, and nongovernmental organizations.

The USGS was represented by **John Brock** (St. Petersburg), **Mike Field**, **Eric Grossman** (Santa Cruz), **Cliff Hearn**, **Greg Piniak** (Santa Cruz), and **Curt Storlazzi** (Santa Cruz) from the Geologic Discipline's Coastal and Marine Geology Program and **Charles Birkeland** (Honolulu, HI), **Scott Carr** (Corpus Christi, TX), **Rikki Dunsmore** (St. Petersburg), **Ginger Garrison** (St. Petersburg), **Isa Kuffner** (St. Petersburg), and **Jim Parrish** (Honolulu) from the Biological Resources Discipline. Furthermore, **Eric Brown**,

(*Coral Reef Symposium continued on page 9*)

Underwater image of a stressed reef system in the Kerama Islands off southwestern Okinawa. In comparison with the healthy reef system shown above, this one is affected by higher sediment runoff, causing more turbid water, less live-coral coverage, and more macroalgae coverage. Photograph by Curt Storlazzi.



Meetings, continued

(Coral Reef Symposium continued from page 8)

Paul Jokiel, and **John Rooney** (all from the University of Hawai'i) presented research funded under the USGS Coastal and Marine Geology Program's Coral Reef Project-University of Hawai'i cooperative agreement.

Some of the specific topics addressed by the USGS participants included:

- The impacts of storm waves and flood sediment on coral reefs (**Field, Jokiel, Piniak, Storlazzi**)
- Remote sensing of coral reefs (**Brock, Dunsmore, Kuffner**)
- Coral larval dispersal, coral recruitment, and reef linkages (**Birkeland, Brown, Dunsmore, Storlazzi**)
- Natural controls on Holocene reef accretion (**Grossman, Rooney**)

- Impact of microorganisms, airborne particles, and (or) aquatic chemicals on coral reefs (**Carr, Garrison**)
- Coral-reef restoration (**Garrison, Piniak**)

Abstracts by these researchers and by all the other participants in the symposium can be downloaded from the official Web site at URL <http://www.plando.co.jp/icrs2004/>.

Not only was the meeting successful in terms of the scientists being able to disseminate their findings to others in the coral-reef-research community, but it also gave those of us located in several different USGS disciplines and offices scattered across the country an opportunity to inter-

act with one another and discuss better-integrated multidisciplinary USGS studies in the future.

Underscoring the theme of the meeting, typhoon Dianmu (116-knot winds) passed just to the east of Okinawa during the second half of the conference, followed by typhoon Conson (95-knot winds), which passed just to the west of Okinawa during the two days after the conference (see map at URL <http://www.solar.ifa.hawaii.edu/Tropical/GifArchive/nwp2004.gif>). Both of these typhoons caused large waves and heavy precipitation, resulting in the cancellation of several postconference tours and scuba-diving trips, as heavy terrestrial runoff obscured many of the nearshore reefs off Okinawa. ☼

Awards

USGS Video Product Receives Prestigious Silver Telly Award

U.S. Geological Survey (USGS) video producer **Stephen Wessells** was recently awarded a First Place 2004 Silver Telly—in the documentary category for broadcast and cable television programs—for the USGS video product “Delta Revival: Restoring a California Ecosystem.” **Wessells** produced and directed the 22-minute television program, first broadcast in August 2003 and nonspecifically scheduled for future broadcasts throughout central California. The program shows scientists from many disciplines working together to guide the unprecedented restoration of the Sacramen-

to-San Joaquin Delta ecosystem east of San Francisco Bay by attempting to understand ecosystem responses to toxic contaminants, invasive species, and water diversions.

The Telly Awards annually showcases the best work of the world's most respected advertising agencies, production companies, television stations, cable operators, and corporate video departments and is a widely known and highly respected national and international competition, receiving more than 10,000 global entries annually (visit URL <http://telly.com/> for more information and for lists of past and

current winners). “Delta Revival” also recently received the first-place award in the documentary category from the National Association of Government Communicators (see related article in *Sound Waves*, June 2004, at URL <http://soundwaves.usgs.gov/2004/06/awards.html>).

Copies of “Delta Revival” are available on DVD to teachers who wish to use the program in courses on aquatic or environmental science at the middle-school, high-school, or lower-division undergraduate level; please send inquires to **Jim Cloern** (jeclorn@usgs.gov). ☼

Staff and Center News

Geographer Joins USGS in St. Petersburg, FL

Barbara Poore joined the staff at the U.S. Geological Survey (USGS)'s Center for Coastal and Watershed Studies at St. Petersburg, FL, early in July 2004. **Barbara** has a strong background in geographic and environmental-policy research and communications. She received a B.A. in art history from Wellesley College, an M.A. in art history from Brown University, and a Ph.D. in geography from the University of Washington. Her research interests include the use of in-

formation by scientists and stakeholders in environmental decisionmaking, public attitudes toward the environment, the history of geographic-information technologies, and histories of land-use change. In addition to continuing these research projects, **Barbara** will be exploring linkages between Florida Integrated Science Center science and *The National Map* of the USGS.

Barbara was previously the communications director for the Federal Geograph-



Barbara Poore.

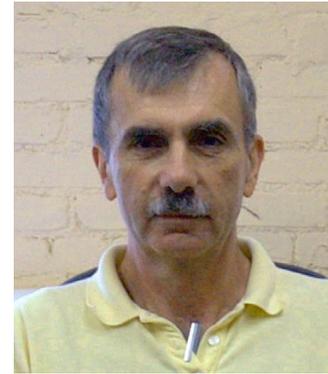
ic Data Committee and has held editorial positions within the USGS. ☼

Geologist Joins USGS in St. Petersburg, FL

Richard Poore is newly stationed at the U.S. Geological Survey (USGS)'s Center for Coastal and Watershed Studies in St. Petersburg, FL, to which he brings a strong background in paleoceanography, paleoclimatology, geology, and micropaleontology. **Dick** received a B.S. in Earth science from the State University of New York (SUNY) Fredonia and an M.S. and Ph.D. in geology from Brown University. He has led several research projects for the USGS and is currently project chief for the Gulf of Mexico Climate and Environmental History Project, which is supported by the Earth Surface Dynamics Program.

The project is developing information on paleoceanographic, climatic, and environmental changes in the Gulf of Mexico and adjacent land areas. The study will provide a detailed history of climatic and environmental changes that can be used to estimate the impacts of possible future climate warming and provide a baseline for identifying any human-related changes.

Dick has also held several management positions within the USGS; for example, he served as coordinator of the Geologic Division's Climate History Program and chief scientist of the Eastern Region's Climate History Team. He recently completed



Dick Poore.

a detail as program director in the Marine Geology and Geophysics Program at the National Science Foundation. ❁

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