

Fieldwork

New Equipment Deployed to Map Sea-Floor Geology in Southern Maine

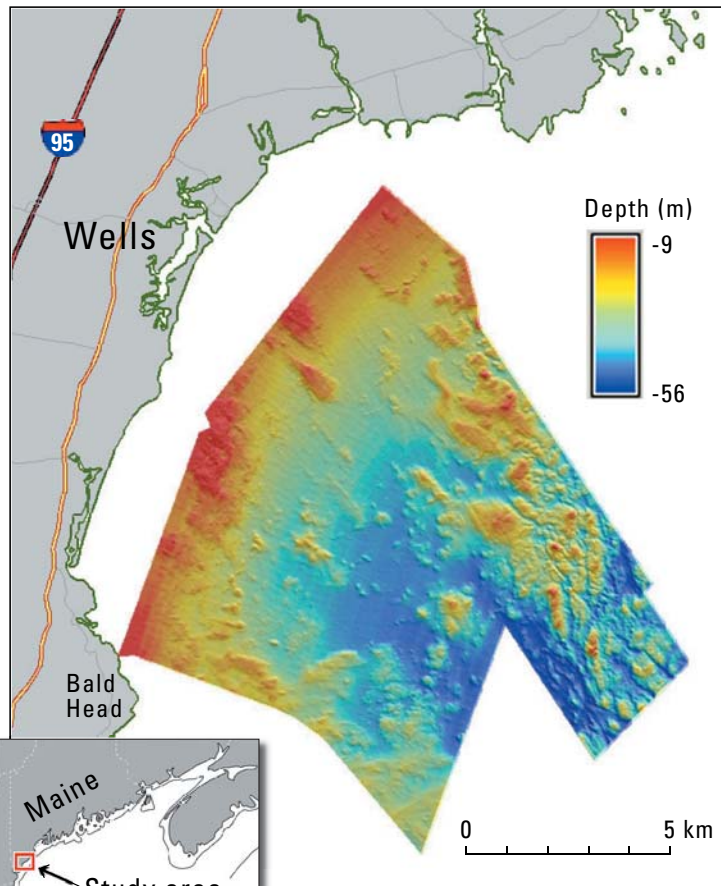
By **Walter Barnhardt**

The arcuate embayment at Wells, Maine, is bounded by rocky headlands and contains sandy barrier beaches that support an important tourism industry in the area. The barriers also protect extensive salt marshes that compose part of the Rachel Carson National Wildlife Reserve and the Wells National Estuarine Research Reserve. In recent years, loss of sand from these beaches has accelerated, with serious economic and social consequences.

In cooperation with **Joe Kelley** from the University of Maine, scientists from the U.S. Geological Survey (USGS)'s Woods Hole Science Center conducted a research cruise on the 26-ft research vessel *Rafael* to map the geology of the inner continental shelf in early June. The survey provided an opportunity to test new transducers that were recently acquired for the interferometric sonar (Submetrix SwathPlus). Backscatter data were also collected with a sidescan sonar (Klein 3000), and subbottom profiles with a chirp seismic-reflection system (Edgetech 424). The USGS team was led by **Walter Barnhardt** and benefited from the superb seamanship of **Barry Irwin**, the technical expertise of **Chuck Worley** and **Bill Danforth**, and the data-processing wizardry of **Erika Hammar-Klose**. Special acknowledgment also goes to **Tommy O'Brien**, who broke land speed records to deliver spare parts.

The lower-frequency (117 kHz) transducers provided high-resolution bathymetric data in the relatively deep water of Wells Embayment, where depths range from 20 to 60 m. As expected with new gear, problems arose to challenge our technical staff, including interference from the Klein sidescan sonar (100/500 kHz) and a bow-mounted sonar head that

(Maine Mapping continued on page 2)



◀ *Shaded-relief bathymetric map of Wells Embayment. Inset shows the location of the study area in the western Gulf of Maine.*

▼ *The research vessel Rafael departs Wells harbor early on a foggy Maine morning. Rough seas caused flexing of the bow-mounted sonar head, which was reconfigured the next day and deployed farther aft on a side boom. During surveys, the sonar head is lowered into the water, where it rides about 3 ft under the surface. Photograph by **Erika Hammar-Klose**.*



Sound Waves

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Submission Guidelines

Deadline: The deadline for news items and publication lists for the February 2006 issue of *Sound Waves* is Thursday, January 12.

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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Need to find natural-science data or information? Visit the USGS Frequently Asked Questions (FAQ's) at URL <http://ask.usgs.gov/faqs.html>

Can't find the answer to your question on the Web? Call **1-888-ASK-USGS**

Want to e-mail your question to the USGS? Send it to this address: ask@usgs.gov

Fieldwork, continued

(Maine Mapping continued from page 1)

threatened to wreck the *Rafael*. Despite these and weather-related problems, we fully imaged 102 km² of the inner continental shelf and collected about 400 km of seismic-reflection profiles.

Preliminary data from the cruise reveal a complex sea floor with high-relief bathymetry that is characteristic of formerly glaciated continental shelves. The extremely heterogeneous sea-floor environments were influenced by a complex history of deglaciation, relative sea-level change, and sediment reworking since the end of the latest Ice Age, about 14,000 years ago. Progressive northward retreat of

the Laurentide Ice Sheet is recorded by a series of lobate, seaward-convex ridges of till (moraines) in nearshore areas. Erosion of these moraines, which occurred during multiple cycles of sea-level change, probably has been the main contributor of sand to the local sediment budget.

These data will be compiled with existing geophysical, sample, and core data from the University of Maine to produce interpretive geologic maps of the inner continental shelf. Detailed bathymetric data and geologic maps will provide a physical framework for research and management of the Maine coastal zone. ❁

Sea Squirt Colonies Persist on Georges Bank— Found Over More Area, Less Abundant at Some Sites

By Page Valentine

Researchers recently completed a field survey on Georges Bank off New England of invasive sea squirt colonies that were first discovered in 2003. This year, researchers looked more widely for the sea squirt and mapped it over about twice the area observed in 2004 (see article about 2004 survey in *Sound Waves*, Dec. 2004/Jan. 2005, at URL <http://soundwaves.usgs.gov/2005/01/fieldwork4.html>). Results show that the species is present in two adjacent areas totaling 88 mi² in U.S. waters near the United States-Canadian

border. Though observed over a larger area, the sea squirt was less abundant in some places this year. The very large mat-like colonies observed at some sites in 2004 have been replaced by fewer, smaller ones, possibly owing to disturbance by fishing trawls and scallop dredges. The Georges Bank occurrence is the largest known infestation of colonial sea squirts in a major offshore fishing ground.

Page Valentine of the U.S. Geological Survey (USGS), **Bob Reid** of the National



*Tunicate colony of Didemnum sp., with a typical lumpy surface, encrusting and cementing pebbles and a razor-clam shell that form the seabed. Northern Georges Bank (lat 41°51.658' N., long 67°25.672' W.); water depth, 58 m; August 2005. Specimen is 5.3 in. (13.5 cm) wide; small pebble in lower center of image is 0.5 in. (1.2 cm) long. Collectors: **Page Valentine** (USGS), **Jeremy Collie** (URI), and **Robert Reid** (NOAA). Photograph by **Dann Blackwood** (USGS).*

Oceanic and Atmospheric Administration (NOAA), and **Jeremy Collie** of the University of Rhode Island (URI) conducted the survey aboard the NOAA ship *Delaware II* during the last 2 weeks of August 2005. In the 2004 survey, sea squirt colonies were mapped over a 40-mi² area before weather truncated the cruise. This year's wider survey showed sea squirts to be present within an area of at least 67 mi² in the same general locality. Scientists also discovered an

(Sea Squirt Colonies continued on page 3)

Fieldwork, continued

(Sea Squirt Colonies continued from page 2)

additional infestation, possibly in an early stage, of a 21-mi² zone that lies 10 mi east of the original observations, in an area now closed to fishing.

The research team also surveyed three sites in Canadian waters where seabed conditions are similar to those on the U.S. part of the bank; they found no evidence of the sea squirt at the Canadian sites.

Sea squirts are tunicates, a type of sea life with a primitive spinal cord in the larval stage and a firm, flexible outer covering in the adult stage called a “tunic,” from which the name derives. The Georges Bank colonies are of the genus *Didemnum*. The animal is known to thrive in marine environments that lie within its preferred temperature range (28-75°F) and have firm substrates and plentiful food. The colonies form dense mats, made up of thousands of minute individuals that attach to firm substrates such as gravel, sea scallops, mussels, docks and other structures, and even seaweed. Tunicates can overgrow sea scallops and mussels, and they may affect other species of clams and worms that live in the seabed below the tunicate colony. The tunicates could change the composition of benthic communities on gravel habitats that lie along the north edge of Georges Bank and the immobile-sand habitats characteristic of southern Georges Bank. *Didemnum* sp. cannot survive on



Closeup of the surface of *Didemnum* sp. showing small, yellow individual sea squirts arranged along common canal systems. Northern Georges Bank (lat 41°51.658' N., long 67°25.672' W.); water depth 58 m; August 2005. Small pebble in upper left is 0.5 in. (1.2 cm) long. Collectors: **Page Valentine** (USGS), **Jeremy Collie** (URI), and **Robert Reid** (NOAA). Photograph by **Dann Blackwood** (USGS).

habitats of moving sand, and so much of the shallow crest of Georges Bank is not threatened. The species is not yet known to occur on mud habitats that are typical of the deep basins of the Gulf of Maine.

During the 2005 survey, mats were observed on the north edge of Georges Bank on gravel substrate that has traditionally been highly productive for fish and sea scallops. Video and photo transects made by using the USGS seabed observation and sampling system (SeaBOSS) documented the distribution of the colonies in water depths of 45 to 65 m (145-213 ft).

Scientists will analyze data collected on the cruise to determine whether the sea squirt invasion has the potential to alter seabed communities that sustain commercial

fish species. There is concern that the sea squirt mats could form a barrier between fish and their prey living in the seabed. Moreover, because no organisms have been observed to grow on the mats, the sea squirt mats may be an unfavorable surface for settlement of the larvae of scallops and other species. Samples of the sea squirt will be evaluated to determine its nutritional value to predators, and to confirm identification of the species through DNA analysis.

For more information on *Didemnum* sp. on Georges Bank and the worldwide occurrence of this and related *Didemnum* species, visit the Web site “Marine Nuisance Species” at URL <http://woodhole.er.usgs.gov/project-pages/stellwagen/didemnum/>. ☼

Outreach

Preparing for Future Hurricanes—USGS Briefing Reveals Lessons from Katrina and Rita

By Helen Gibbons and Clarice Nassif Ransom

Today, more than half of the U.S. population lives within 50 mi of the coast, and this trend is increasing. Many of these coastal areas will be in the direct path of future hurricanes. On October 28, 2005, the U.S. Geological Survey (USGS) hosted a congressional briefing on how science can help reduce America’s risk from hurricanes and their aftermath.

“Experts tell us we’re entering a 20-year period of increased severe-storm intensity,” said Senator **Jim DeMint**, Chairman of the Commerce, Science, and Transportation Subcommittee on Disaster Prevention

and Prediction and one of the sponsors of the briefing. “Hurricane Katrina was likely the worst natural disaster to ever hit America, and it is likely just the beginning. The fact is that we’re only in the first inning of a nine-inning game, and we need to do everything we can to maintain and improve accurate predictions of natural disasters.”

The briefing was kicked off by U.S. Representative **James** (Hurricane Briefing continued on page 4)



USGS hurricane expert **Abby Sallenger** addresses attendees at the recent congressional briefing on how science can assist the Nation in preparing for and responding to hurricanes. Photograph by **Lew Thompson**.

Outreach, continued

(Hurricane Briefing continued from page 3)

Moran, another sponsor of the event, who complimented the USGS on the immense amount of scientific information it provides. **Moran** noted that leaders on Capitol Hill “desperately need this kind of information” to make decisions that will help keep natural hazards from becoming national disasters.

Next came a presentation by USGS Acting Director **P. Patrick Leahy**, who emphasized the value of having scientists on site to work with emergency responders. Immediately after Hurricane Katrina, for example, USGS scientists used satellite and aerial imagery to create maps linking 911 calls to locations where people needed to be rescued. Other examples included real-time monitoring of floodwaters and testing of sediment and water quality to assess the safety of water for human contact.

The Department of the Interior’s Assistant Secretary for Policy, Management, and Budget, **Lynn Scarlett**, briefly outlined DOI’s response to the extreme storms of 2005 and stressed the need to plan for future hurricanes.

Asbury “Abby” Sallenger, a hurricane expert from the USGS Center for Coastal



*(Left to right) U.S. Representative **James Moran**, Department of the Interior’s Assistant Secretary for Policy, Management, and Budget **Lynn Scarlett**, and USGS Acting Director **Pat Leahy** converse before the congressional briefing on hurricanes. Photograph by **Lew Thompson**.*

and Watershed Studies in St. Petersburg, Fla., gave a presentation on the extreme coastal changes caused by Hurricanes Katrina and Rita. He used striking before-and-after photographs and lidar (light detection and ranging) images to show how the recent hurricanes had altered coastal landforms. He noted that the degradation of barrier islands leaves the mainland even more vulnerable to future storms, and he showed maps ranking the relative vulnerability of Gulf of Mexico coastlines. **Sallenger** pointed out that knowledge gained from hurricane studies can be used to assist evacuation by forecasting coastal changes

as hurricanes approach, and to rebuild hurricane-damaged areas more safely.

Leahy, **Scarlett**, and **Sallenger** fielded numerous questions from a wide range of attendees, which included congressional staffers and representatives of government agencies, scientific societies, civil-engineering groups, and environmental organizations.

Congressional sponsors for the briefing were U.S. Senator **Jim DeMint** and U.S. Representative **James Moran**. Other sponsors were the Geological Society of America, the American Geological Institute, and the American Geophysical Union. ❁

USGS Woods Hole Staff Go to Washington, D.C., for Oceans 2005

By **Chris Polloni**, **Ellen Mecray**, **Dave Nichols**, and **Dave Foster**

Team members from the U.S. Geological Survey (USGS)’s Woods Hole Science Center organized a booth and presented the capabilities of the USGS Coastal and Marine Geology Program (CMGP) at the Oceans 2005 Conference in Washington, D.C., September 19-23, 2005. Nicknamed the USGS “campsite,” the booth showcased posters and fact sheets from science projects across the program, as well as PowerPoint presentations and three-dimensional sea-floor images presented by using the portable GeoWall system.

The posters had been collected by outreach officers from across CMGP, including **Chris Polloni**, **Ellen Mecray**, **Ann Tihansky**, and **Helen Gibbons**. We had more posters than we could display all at once, and so we grouped them by theme and

showed a different group of posters on each day of the 3-day exposition. Posters displayed on the first day highlighted CMGP’s technology and information themes, those on the second day showcased our work on hazards, and those on the third day focused on our regional approach to science, using *(Oceans continued on page 5)*

Dave Foster prepares a laptop computer to display slide shows about sea-floor-imaging technology. Photograph by **Chris Polloni**.



Outreach, continued

(Oceans continued from page 4)

the Gulf of Maine as an example. Highlighted technologies included autonomous underwater vehicles, laboratory capabilities across the program, gas-hydrate testing, digital shoreline analysis, an underwater microscope system (“the eyeball”), and sea-floor mapping. Highlighted hazard projects included Louisiana coastal studies, tsunami mapping, investigations of hurricanes in southwestern Florida, and the USGS response to Hurricane Katrina. The final poster exhibit highlighted regional projects that are conducted by using sea-floor mapping, textural analysis, contaminant inventories, geologic mapping, and sediment-transport modeling.

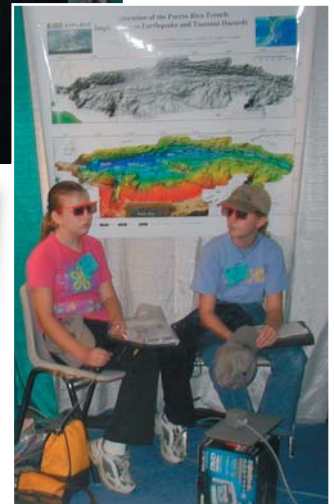
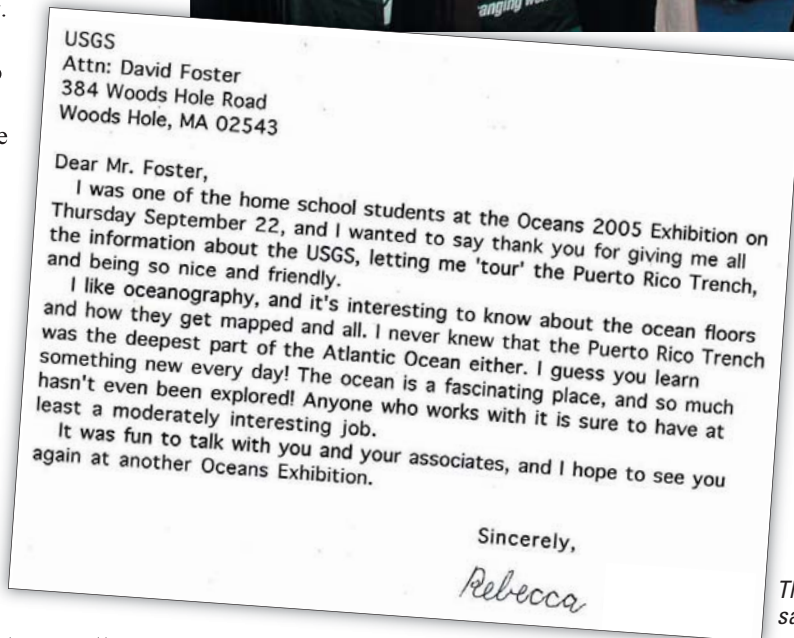
Thank you to all of the project chiefs who contributed to this effort!

Visitors were drawn to the USGS booth’s interactive displays of three-dimensional sea-floor imagery around Puerto Rico, outer Cape Cod, Mass., and Tampa Bay, Fla. The GeoWall flight simulator and Fledermaus software allowed visitors to “fly” through integrated lidar (light detection and ranging), DEM (digital-elevation model), orthophoto, and multibeam-bathymetric data. Visitors to the booth included home-schooled students, college students, professors, and representatives of nonprofit organizations, ocean industries, and all branches of ocean-related military offices. There was a homework assignment circulating in the exhibit hall that asked for the “favorite booth,” and the USGS booth was cited! Visitors to the booth left with a renewed excitement about the oceans and a better understanding of the USGS’ role in conducting unbiased scientific research for the public.

The Oceans Conference is an annual technical and professional conference sponsored by the Marine Technology Society and the IEEE Oceanic Engineering Society. It typically includes participants from government, industry, and academia, as well as many others who have



The USGS team fields questions, offers fact sheets and DVDs, and directs the flight simulator located under the tent (right rear). Photograph by Chris Polloni.



Two students “fly” through three-dimensional imagery around the Puerto Rico Trench (girl on left holds 3-D mouse that controls the flight path). Photograph by Chris Polloni.

Thank-you note from a satisfied customer.

interests across the entire spectrum of ocean science, technology, engineering, policy, education, and related disciplines. This year’s conference was organized around the central theme of “One Ocean” to emphasize people from all sectors of ocean science working together in ocean technology, education, and policy. The conference included several sessions devoted to understanding the President’s Ocean Action Plan (available online at URL <http://ocean.ceq.gov/>), the need for ocean education at all levels, and emerging technologies to explore the ocean realm. At the booth, we fielded questions about the scientific activities conducted by the USGS, as well as questions about why we map the sea floor, how we use the lat-

est technologies, and how the USGS will be involved in the integrated government response to Hurricane Katrina. We also pointed visitors to our collection of fact sheets highlighting work conducted across the country in marine and coastal areas.

The preparation and execution of the USGS Coastal and Marine Geology Program booth would not have been possible without the help and dedication of **Tom O’Brien, Bill Danforth, Brian Buczkowski, Chris Polloni, Ellen Mecray, Dave Nichols, Dave Foster, Ann Tihansky, Betsy Boynton, Kate Ciembronowicz, Hank Chezar, Nancy Soderberg, Florence Wong**, and each of the project scientists who contributed posters and fact sheets for the event. ❁

USGS Scientists Featured in National News Segment on Investigating Broken Levees in New Orleans

U.S. Geological Survey (USGS) researchers **Robert Kayen** and **Brian Collins** were among the experts featured in a 10-minute television news feature about a multiagency investigation of the New Orleans levee failures after Hurricane Katrina. The segment aired on October 20, 2005, on the “News Hour with Jim Lehrer,” a national Public Broadcasting Service (PBS) news program.

Kayen is a research civil engineer in the USGS Western Coastal and Marine Geology Team (WCMG) whose professional interests include geotechnical earthquake engineering and slope stability. **Collins** recently joined WCMG as a USGS Mendenhall Postdoctoral Fellow, having completed a Ph.D. in geotechnical engineering and engineering geology at the University of California, Berkeley. The two scientists, stationed in Menlo Park, Calif., worked in New Orleans from October 9 to 15 as part of a National Science Foundation investigative team brought in at the request of the U.S. Army Corps of Engineers to conduct an independent review of the levee system’s design and performance.

A transcript, photographs, and links to video and audio files of the television



feature, called “Investigating Broken Levees,” are available online at URL http://www.pbs.org/newshour/bb/science/july-dec05/levees_10-20.html.

The multiagency team’s preliminary report is available online at URL http://hsgac.senate.gov/_files/Katrina/Preliminary_Report.pdf. ❁

Brian Collins (left) and Robert Kayen at the breach of the 17th Street Canal levee, New Orleans. The LIDAR scanner is set up to image the water-scour pond and temporary-repair levee. Photograph by Lee Wooten, GEI Consultants, Inc.

Meetings

USGS Scientists Participate in a Workshop on Dredging, Beach Nourishment, and Bird Conservation

By Jeff Williams

Several U.S. Geological Survey (USGS) scientists were invited to participate in a workshop on dredging, beach nourishment, and bird conservation sponsored by the American Bird Conservancy and the U.S. Army Corps of Engineers, October 25-27, 2005, in Islip, N.Y. The second of four such regional workshops, this meeting focused on the Atlantic Coast from Maine to Virginia (for more information, visit URL <http://el.erdc.usace.army.mil/05oct-birdwksp.pdf>). The workshop brought together a diverse crowd of ornithologists, engineers, coastal geologists, project planners, ecologists, geomorpholo-

gists, regulators, and others to share information across their disciplines.

A session titled “Coastal Processes, Coastal Engineering, and Sediment Management” was chaired by USGS coastal-marine geologist and specialist in offshore sand and gravel resources **S. Jeffress Williams** (Woods Hole, Mass.). **Williams** also presented a paper titled “Geologic Character and Sand Resources of the Atlantic Inner Continental Shelf, Maine to Virginia.” Other participants from the USGS were **Wallace P. Bolen**, a sand-



Piping plover, a small shorebird that nests on sandy beaches from South Carolina to Newfoundland (for more information, visit URL <http://www.fws.gov/northeast/pipingplover/>). Since 1986, the Atlantic coast population has been protected as a threatened species under the U.S. Endangered Species Act. Photograph by Luther Goldman, U.S. Fish and Wildlife Service.

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Meetings, continued

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and-gravel commodity specialist at the USGS National Center (Reston, Va.); **Jeffrey A. Spindel**, a wildlife biologist at the Patuxent Wildlife Research Center (Laurel, Md.); and **David R. Smith**, a statistician at the Leetown Science Center (Kearneysville, W.Va.).

Beach nourishment is the improvement or restoration of eroded coastal beaches through the placement of sand and gravel; this material is normally obtained by dredging offshore sand and gravel depos-

its. The U.S. Army Corps of Engineers usually manages these offshore-dredging and beach-nourishment activities, in cooperation with the Minerals Management Service; other Federal, State, and local government agencies; and private dredging companies.

The workshop included presentations about the environmental costs and benefits of offshore dredging and beach nourishment. The USGS has conducted numerous studies that include regional-

scale geologic mapping of offshore areas for the evaluation of sand resources on the inner continental shelf, and **Williams** is leading a project to assess offshore aggregate resources nationwide. These studies, as well as others on how wildlife responds to beach-replenishment projects, will help the U.S. Army Corps of Engineers and the bird-conservation community coordinate their activities on coasts around the Nation. ❁

Awards

USGS Team Studying Coastal Habitats in Puget Sound Wins Award for Innovation in Integrated Science

A newly established award for Innovation in Integrated Science was presented to the U.S. Geological Survey (USGS)'s Coastal Habitats in Puget Sound (CHIPS) team at the Western Region 2005 Awards Ceremony on October 12, 2005, in Menlo Park, Calif. The CHIPS team consists of **Cindi Barton** (director, Washington Water Science Center), **Lee Case** (chief, Technology Support Section, National Geospatial Technology Operations Center IV), **Guy Gelfenbaum** (oceanographer, Coastal and Marine Geology Program),

Lief Horwitz (natural-resource specialist, Biological Resources Discipline, Western Regional Office), **Rob Koeppen** (Western Regional Science Coordinator), **Lyman Thorsteinson** (director, Western Fisheries Research Center), **Marijke van Heeswijk** (hydrologist, Washington Water Science Center), and **Dave Woodson** (deputy director, Western Fisheries Research Center).

Western Regional Deputy Director **Brian Cole** described the team's accomplishments at the awards ceremony:

"This team has worked together to support the Puget Sound Nearshore Partnership—a coalition of Federal, State, tribal, local, and nongovernmental organizations working to restore the Puget Sound ecosystem. By working closely with partners at all levels, they have helped develop a science-based, adaptive-management approach to Puget Sound restoration. Because of them, the USGS is now a major force in the development of strategic science to support Puget Sound restoration. Undeterred by administrative barriers, they planned for USGS science that builds on the strengths of each discipline and is a showcase of how interdisciplinary collaboration can and should work. These successes played a key role in new Congressional appropriations in FY06 that will allow three new pilot projects to begin in this region."

After the ceremony, awardee **Guy Gelfenbaum** added that the CHIPS project could not have gone forward without the support of Western Regional Biologist **Anne Kinsinger** and Coastal and Marine Geology Program Coordinator **John Haines**. "One reason this effort is succeeding is because the Puget Sound project meets both regional goals and program goals, as outlined in the Bureau Coastal Plan that was led by **John**." ❁



From left to right, **Rob Koeppen**, **Brian Cole** (behind podium), **Marijke van Heeswijk**, **Lee Case**, **Cindi Barton**, **Guy Gelfenbaum**, and Western Regional Director **Doug Buffington** at October's Western Region Awards Ceremony.

Research Wildlife Biologist Keith Miles Wins Unsung Hero Award

A Department of the Interior Unsung Hero Award has been given to research wildlife biologist **Keith Miles**, whose work includes studies of community ecology and contaminants in nearshore and estuarine environments (for example, see “Public Lecture on Balancing Wildlife Needs and Wetland Restoration in San Francisco Bay” in *Sound Waves*, Sept. 2005, at URL <http://soundwaves.usgs.gov/2005/09/outreach2.html>).

The award was presented at the Western Region Awards Ceremony on October 12, 2005, in Menlo Park, Calif., where Western Regional Deputy Director **Brian Cole** noted:

“**Keith Miles** is a premier scientist at the Western Ecological Research Center, but he also believes it is his responsibility to engage young scientists to help guide them in their careers. Since 1990, **Keith** has served as a mentor to minority and women students through the Minorities in the Aquatic Sciences program, run by the American Society of Limnology and Oceanography (ASLO) and Hampton University, with funding from the National Science Foundation and the National Oceanic and Atmospheric Administration.

He is the only mentor from the Department of the Interior in this program. Two of the 50 students he mentored are now mentors in the same program. **Keith** also mentors minority and women students through the Wildlife Society, chairing sessions highlighting wildlife research by minority and women scientists and co-

authoring a paper on increasing diversity in wildlife professions. He has advised 17 women graduate students at the University of California, Davis. **Keith** has profoundly changed many people’s lives, although one has to discover this in ways other than talking to him because he has never sought the spotlight or recognition.”✿



Research wildlife biologist **Keith Miles** (left) receives a Department of the Interior Unsung Hero Award from Western Regional Director **Doug Buffington**.

Marlene Noble Wins Reimbursable Activities Recognition Award



Physical oceanographer **Marlene Noble** received the 2005 Geology Discipline Reimbursable Activities Recognition Award at the Western Region 2005 Awards Ceremony, held October 12, 2005, in Menlo Park, Calif. The award was announced by Western Regional Deputy Director **Brian Cole**, who said:

“**Marlene Noble** has provided the Bureau and the Geology Discipline with outstanding scientific leadership. **Marlene**’s work has significantly contributed to advancing the understanding of sediment- and pollutant-transport processes,

the mechanics of oceanographic events such as internal waves and bores, and the application of geologic studies to human health. Her efforts have generated considerable reimbursable income and have contributed to the overall financial health of the USGS and its Geology Discipline. **Marlene** has been successful in obtaining funds from the U.S. Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Department of Justice, and the Orange County and Los Angeles County Sanitation Districts. Her work has led to a greater understanding of ocean circulation near major urban cities, including Los Angeles and San Francisco.”✿

Marlene Noble was the recipient of the 2005 Geology Discipline Reimbursable Activities Recognition Award.

Tsunami Researchers Win the Western Region Communicator of the Year Award

At the Western Region Awards Ceremony held October 12, 2005, in Menlo Park, Calif., the Communicator of the Year Award was given to **Brian Atwater** (Earthquake Hazards Program [EHZ]), **Eric Geist** (Coastal and Marine Geology Program [CMG]), **Guy Gelfenbaum** (CMG), **Bruce Jaffe** (CMG), **David Oppenheimer** (EHZ), and **Craig Weaver** (EHZ) for their responses to the 2004 Indian Ocean tsunami. The award was presented by Western Region Chief of Communications **Stephanie Hanna**, who said:

“Selecting from the great communicators here in the Western Region is always difficult. We have benefited on many occasions from talented spokespeople, willing to stand for hours downstairs in the visitors center, to get up in the middle of the night or go out on a weekend to do a national news program, to devote hundreds of hours to ensure that our presence at conferences presents the best face of the USGS for important customers and stakeholders, or to write articles for pub-

lications that give recognition to our scientific milestones and accomplishments.

“This year, the Communicator of the Year Award goes to an ad hoc group that tirelessly responded to the devastating tsunami that hit 11 Indian Ocean countries following a major earthquake that occurred on Christmas Eve, Pacific time. Suddenly and for the next several weeks, they responded to countless media requests, gave up family time during the holidays, traveled to the hardest-hit areas, and turned the USGS into a major source, partner, and contributor in the science of tsu-



Guy Gelfenbaum, shown here with his wife **Terry**, is part of the group that won the Communicator of the Year Award for their tireless responses to the devastating tsunami that hit countries around the Indian Ocean in December 2004. (The other award winners could not attend the ceremony.)

namis. Most of all, this group helped to educate Americans that tsunami risk is not just present in Alaska, Hawai‘i, and distant lands, but is a very real threat to our coasts, and that only preparedness and real-time warning systems can avert future catastrophic loss of life. So, this is a group of lifesavers, not just to us in [the Office of] Communications but in a very real sense to all of us. **Brian Atwater**, who made *Time* magazine’s top 100; **Bruce Jaffe**, who’s on every reporter’s speed-dial, it seems; **David Oppenheimer**, our representative on the Pacific Tsunami Council; **Eric Geist**, earthquake and tsunami expert; **Guy Gelfenbaum**, who lent his expertise to the international effort; and **Craig Weaver**, who held many public meetings in the Pacific Northwest (even with the families of the first responders on the USS *Abraham Lincoln*), are our Communicators of the Year for 2005. We are also very grateful to [Western Coastal and Marine Geology] team chief **Sam Johnson** and to the outreach efforts of [Western Coastal and Marine Geology team outreach coordinator] **Helen Gibbons**.”

USGS Volunteer Wins AAPG Pacific Section Award for Best Paper at Annual Meeting

By **Bill Normark** and **Helen Gibbons**

U.S. Geological Survey (USGS) volunteer and Stanford Ph.D. student **Jake Covault** won the A.I. Levorsen Memorial Award for the best paper at last May’s American Association of Petroleum Geologists (AAPG) Pacific Section meeting, held jointly with the Geological Society of America (GSA) Cordilleran Section meeting in San Jose, Calif. Every year a Levorsen Award is given for one paper at each of the AAPG section meetings, with particular emphasis on creative thinking toward new ideas in exploration. **Jake’s** paper, entitled “Sea-Level and Tectonic Controls on Late Quaternary Sedimentation in San Diego Trough, Offshore California,” was based



Jake Covault during a break in fieldwork in Chilean Patagonia, March 2005. The low mountain behind **Jake** is Cerro Ballena, named for its whale-like shape, and the taller mountain to the right is Monumento Moore. The big body of water is the Seno Última Esperanza (Last Hope Sound). View southward.

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on data collected for USGS studies of offshore earthquake hazards in southern California. **Jake** has been working as a volunteer with the Western Coastal and Marine Geology Team (WCMG) since February 2004, first on studies of southern California offshore earthquake hazards and currently on studies of sediment transport in submarine canyons.

The Levorsen Award is named for **A.I. Levorsen**, a prominent petroleum geologist who served as the first dean of Stanford University's School of Mineral Sciences (now School of Earth Sciences) when it was established in 1947. As a historical note, the first Levorsen Award was presented to USGS scientist **Dave Scholl** (now a USGS scientist emeritus)

in 1968. For more information about the award, visit URL http://www.aapg.org/business/honors_awards/levorsen.cfm.

Jake's award-winning paper will constitute part of the dissertation he is writing as a Ph.D. candidate in Stanford's Department of Geological and Environmental Sciences, where he also earned a B.S. degree. No stranger to awards, **Jake** was a scholarship football player during his undergraduate years at Stanford and was named All Pac-10 in 2003.

Jake's Levorsen Award was announced on page 22 of the October issue of the *AAPG Explorer*, as reprinted below:

"**Jacob A. Covault**, with the Department of Geological and Environmental

Sciences, Stanford University, in Stanford, Calif., is the winner of the Pacific Section's A.I. Levorsen Memorial Award, presented at the group's annual meeting.

"**Covault's** paper was titled 'Sea-Level and Tectonic Controls on Late Quaternary Sedimentation in San Diego Trough, Offshore California.'

"His coauthors were **William R. Normark** with the U.S. Geological Survey in Menlo Park, Calif., and **Stephan A. Graham** with the Department of Geological and Environmental Sciences, Stanford University, in Stanford, Calif.

"**Covault** will receive his award at the 2006 Pacific Section meeting, set for May 8-11 in Anchorage, Alaska." ❁

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- Barry, J.P., Paull, C.K., Xu, J.P., Buck, K.R., Whaling, P., Ussler, W. III, and Caress, D., The tempo and intensity of turbidity flows in Monterey Canyon [abs.]: Ocean Sciences Meeting, Honolulu, Hawai'i, February 20-24, 2006.
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